Updated 9/6/2024

FEDERAL PROJECT

Effective May 15, 2020
Supersedes April 22, 2020

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, (if required), and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

For an Electronic Bid:

NOTE: Not all projects accept Electronic Bids. Please review the Notice to Contractors and see if it specifically states that Electronic Bids will be accepted.

a) a completed Bid using Expedite® software and submitted via the Bid Express™ web-based service, b) an electronic Bid Guaranty (if required) or a faxed copy of a Bid Bond (with original to be delivered within 72 hours), and c) any other Certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

3. Include prices for all items in the Schedule of Items (excluding non-selected alternates).
4. Bid Guaranty acceptable forms are:
   a) a properly completed and signed Bid Bond on the Department's prescribed form (or on a form that does not contain any significant variations from the Department's form as determined by the Department) for 5% of the Bid Amount or
   b) an Official Bank Check, Cashier's Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors or
   c) an electronic bid bond submitted with an electronic bid.

5. If a paper Bid is to be sent, "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. Complete the DBE Proposed Utilization form, and submit with your bid. If you are submitting your bid electronically, you must FAX the form to (207) 624-3431. This is a curable defect.

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, March 2020 Edition.

April 28, 2017
Supersedes November 05, 2014

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled and allow for an electronic downloading of bid packages from our website, while continuing to maintain an optional plan holders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments must fill out the on-line plan holder registration form and provide an email address to the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via http://www.BIDX.com. For information on electronic bidding contact Dave Oakes at dave.oakes@maine.gov or **Guy Berthiaume at guy.berthiaume@maine.gov.**

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open
PIN:
Town:
Date of Bid Opening:
Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed
PIN:
Town:
Date of Bid Opening:
Name of Contractor:
This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open
PIN:
Town:
Name of Contractor:

STATE OF MAINE DEPARTMENT OF TRANSPORTATION

Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of_____and State of_____

as Principal, and_____as Surety, a

Corporation duly organized under the laws of the State of_____and having a usual place of

Business in_____and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of_____,for payment which Principal and Surety bind

themselves, their heirs, executers, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a part herein, to enter into a written contract for the construction of _____

_____

_____and if the Department shall accept said bid and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said bid) and shall furnish bonds for this faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full force, and effect.

Signed and sealed this_____day of_____20_____

WITNESS:

_____

_____

_____

WITNESS

_____

_____

_____

PRINCIPAL:

By_____

By:_____

By:_____

SURETY:

By_____

By:_____

Name of Local Agency: _____

SAMPLE

NOTICE

Bidders:

Please use the attached "Request for Information" form when submitting questions concerning specific Contracts that have been advertised for Bid, include additional numbered pages as required. RFI's may be faxed to 207-624-3431, submitted electronically through the Departments web page of advertised projects by selecting the RFI tab on the project details page or via e-mail to RFI-Contracts.MDOT@maine.gov.

These are the only allowable mechanisms for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

When submitting RFIs by Email please follow the same guidelines as stated on the "Request for Information" form and include the word "RFI" along with the Project name and Identification number in the subject line.

State of Maine
Department of Transportation

RFI No: _____

REQUEST FOR INFORMATION

Date _____ Time _____

Information Requested for:

WIN(S): _____ Town(s):_____Bid Date: _____

Question(s):_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Request by:

Company Name:_____**Phone:(_____)**_____

Email:_____**Fax: (_____)**_____

Complete this form and fax to 207-624-3431, Attn: Project Manager (name listed on the "Notice to Contractors"), or Email questions to RFI-Contracts.MDOT@maine.gov. Please include the word "RFI" along with the Project Name and Identification Number in the Subject line, or electronically by using the RFI Tab located on the Individual Projects Detail page.

NOTICE

Disadvantaged Business Enterprise Commitment Confirmation

All Bidders must submit the Commitment Confirmation form with their bid.

The Commitment Confirmation form contains information required by USDOT.

The Commitment Confirmation form must be completed by each Prime Contractor.

A copy of the new Commitment Confirmation form and instructions for completing it are attached.

The DBE Directory can be found on the MaineDOT Website at: https://www.maine.gov/mdot/civilrights/dbe/

Questions about the Directory or this form should be sent to the Civil Rights Office at mary.bryant@maine.gov or by calling 207-624-3056.

Revised: 6/2024

INSTRUCTIONS FOR PREPARING THE MAINEDOT COMMITMENTCONFIRMATION FORM

The Contractor shall extend equal opportunity to MaineDOT certified DBE firms (as listed in MaineDOT's DBE Directory of Certified Businesses) in the selection and utilization of subcontractors and suppliers.

Each prime contractor submitting a bid on a federally funded project must complete each section of the Commitment Confirmation form in its entirety for itself and each subcontractor on that project.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Section A:

1. Insert Contractor Name
2. Insert WIN for the Federal Project bidding on
3. Insert Bid Date
4. Insert Project Location
5. Insert Email address of Contact Person

Section B:

A. Enter each Contractor's and Sub-Contractor's name and address (including zip code) – Prime Contractor's name should be listed in first box of this section; then each additional line would be proposed subcontractors – DBE or NonDBE
B. Enter each Contractor's and Sub-Contractor's annual gross receipts bracket (see the legend on the form)
C. Enter DBE status (DBE or non-DBE) for each contractor/sub-contractor
D. Enter each Contractor's and Sub-Contractor's NAICS (North Amer. Industry Classification System) code (may be more than one) and Scope of Work
E. For each Contractor and Sub-Contractor enter the Race and Gender of the firm's majority owner
F. Enter the Age of each Contractor/Sub-Contractor
G. Enter the Proposed amount of payment (Bid amount) for each Contractor/Sub-Contractor.

Maine Department of Transportation

COMMITMENT CONFIRMATION

Section A. Bidder/Prime Contractor Information.
This section must be completed by the Bidder/Prime Contractor.

1. Prime Contractor Name:		2. Federal Project WIN:		3. Bid Date:	
4. Project Location:		5. Email Address:			

Section B. Commitment Details - Prime Contractor and all Proposed Subcontractor Information is Required in This Section

A. Firm's Name & Address, Including Zip Code Prime must be listed first	B. Annual Gross Receipt Bracket Select 1 to 7*	C. Status DBE or Non-DBE	D. NAICS Code(s) and Scope of Work	E. Race & Gender of each Firm's Majority Owner	F. Age of Each Firm	G. Proposed Amount

***1) Less Than $1M, 2) $1 - $3M, 3) $3 - $6M, 4) $6 - $10M, 5) $10 - $20M, 6) $20 - $50M, 7) Greater Than $50M - More than 5 Subs use a new form**

MaineDOT Use Only:

Form Received: ____/____/____ Verified by: _____

FHWA ☐ FTA ☐ FAA ☐

For a complete list of certified DBE firms please visit: http://www.maine.gov/mdot/civilrights/

Note: This information is required pursuant to 49 CFR §26.11 and is used to track data in all federally funded MaineDOT contracts.

DBE GOAL NOTICE

Maine Department of Transportation
Disadvantaged Business Enterprise Program

Notice is hereby given that in accordance with US DOT regulation 49 CFR Part 26, the Maine Department of Transportation (MaineDOT) has established a Disadvantaged Business Enterprise Program (DBE) for disadvantaged business participation in the federal-aid highway and bridge construction programs; MaineDOT contracts covered by the program include consulting, construction, supplies, manufacturing, and service contracts.

Beginning September 1, 2024, MaineDOT has established an annual DBE participation goal of **1.43%** to be achieved through race/gender neutral means. This goal has been approved by the Federal Highway Administration through August 31, 2027. MaineDOT must meet this goal each federal fiscal year. If the goal is not met, MaineDOT must provide a justification for not meeting the goal and provide a plan to ensure the goal is met, which may include contract goals on certain projects that contractors will be required to meet.

MaineDOT asks all contractors, consultants and subcontractors to seek certified DBE firms for projects and to work to meet the determined 1.43% goal without the need to impose contract goals. DBE firms are listed on the MaineDOT website at:

http://www.maine.gov/mdot/disadvantaged-business-enterprises/pdf/directory.pdf

Interested parties may view MaineDOT's DBE goal setting methodology, also posted on this website. If you have questions regarding this goal or the DBE program you may contact Sherry Tompkins at the Maine Department of Transportation, Civil Rights Office by telephone at (207) 624-3066 or by e-mail at: sherry.tompkins@maine.gov

Maine Department of Transportation Civil Rights Office

Directory of Certified Disadvantaged Business Enterprises

Listing can be found at:

https://www.maine.gov/mdot/civilrights/dbe/

For additional information and guidance contact:

Civil Rights Office at (207) 624-3056

It is the responsibility of the Contractor to access the DBE Directory at this site in order to have the most current listing.

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –
http://www.maine.gov/purchases/venbid/index.shtml

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

Sealed bids from contractors addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "**Bids for construction of a breakwater, in Lubec**" will be received at the MaineDOT Building, Capitol Street, Augusta, Maine, until 11:00 a.m. (prevailing time) on **Jan. 15, 2024,** and at that time and place publicly opened and read. Only prequalified bidders who participated in the Contractor Input Design process for this specific project will be allowed to submit bids. The lowest responsive bidder will be considered for the award of this contract.

MaineDOT accepts electronic bids for bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. MaineDOT will accept a facsimile of the bid bond, but the MaineDOT Contracts Section must receive the original within 72 hours of the bid opening. Until further notice, MaineDOT will accept dual bids (one paper, one electronic) – with the paper copy taking precedence.

Description: Maine Federal-Aid Project No. 2682400 / WIN: 026824.00

Location: In Washington County, project is located at 125 Main St. in the town of Lubec.

Outline of Work: Breakwater with roadway, float system, parking lot, boat launch, and privy.

Project-specific questions using the electronic RFI form should be faxed to (207) 624-3431, attn.: **Project Manager Aurele Gorneau II**. Questions may be emailed to RFI-Contracts.MDOT@maine.gov – with project name and identification number in the subject line. Questions received after 12:00 Noon of the Monday before bid date (or if the Monday is a holiday, the Friday before) will not be answered. For general information, call George Macdougall at (207) 624-3410. Bidders shall not contact any other MaineDOT staff for clarification of Contract provisions, and MaineDOT will not be responsible for interpretations so obtained. TTY users call Maine Relay 711.

Digital bid documents are available online free of charge: www.maine.gov/mdot/contractors/. Paper bid documents may be purchased from 7:00-3:30 M-F by cash, Visa/Mastercard or check payable to "Treasurer, State of Maine" sent to Maine Department of Transportation, Attention: Mailroom, 24 Child St., Augusta, ME 04333-0016. They also may be purchased by phone at (207) 624-3536 from 7:00-3:30, as follows: as follows: full-size plans are **$99.00** ($105.00 by mail); half-size plans are **$49.50** ($53.00 by mail); bid book is $10 ($13 by mail); single sheets are $2 – payable in advance, all non-refundable.

Each Bid must be made upon MaineDOT blank forms and accompanied by a bid bond for 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or U.S. postal money order for 5% of the bid amount, payable to "Treasurer, State of Maine" as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each for 100% of the Contract price, will be required of the successful Bidder.

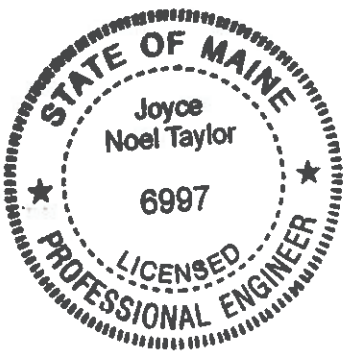
This Contract is subject to all applicable Federal laws and to compliance with the Disadvantaged Business Enterprise Program requirements as set forth by MaineDOT.

All work shall be governed by *State of Maine Department of Transportation, Standard Specifications, March 2020*, price $10 [$15 by mail] and *Standard Details, March 2020 Edition*, price $10 [$15 by mail]. They may be purchased by phone at (207) 624-3536 from 7:00-3:30 M-F. Updates: www.maine.gov/mdot/contractors/publications/.

MaineDOT hereby reserves the right to reject any or all bids.

Augusta, Maine
December 18, 2024

JOYCE NOEL TAYLOR, P.E.
CHIEF ENGINEER



SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each project under advertisement, Amendments are posted at www.maine.gov/mdot/contractors/. It is the Bidder's responsibility to determine if there are Amendments, to download them, to incorporate them into the Bid Package, and to reference the Amendment number and the date in the table below. MaineDOT will not post Bid Amendments later than Noon the day before Bid Opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0010	201.23 REMOVING SINGLE TREE TOP ONLY	6.000 EA				
0020	202.1221 REMOVE ABANDONED CONCRETE FOUNDATION	LUMP SUM	LUMP SUM			
0030	203.20 COMMON EXCAVATION	6,391.000 CY				
0040	304.10 AGGREGATE SUBBASE COURSE - GRAVEL (PAVED AND STONE-SLOPE PROTECTION AREAS)	2,778.000 CY				
0050	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	363.000 T				
0060	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	25.000 T				
0070	403.2131 12.5 MM POLYMER MODIFIED HMA BASE	545.000 T				
0080	409.15 BITUMINOUS TACK COAT - APPLIED	250.000 G				
0090	411.09 UNTREATED AGGREGATE SURFACE COURSE (RUBBLE MOUND & BOAT RAMP)	1,010.000 CY				
0100	419.30 SAW CUTTING BITUMINOUS PAVEMENT	100.000 LF				
0110	501.235 ACOUSTIC MONITOR	365.000 CD				

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0120	501.236 PROTECTED SPECIES OBSERVER	5,840.000 HOUR				
0130	501.303 STEEL SHEET PILING - DELIVERED	11,562.000 SF				
0140	501.304 STEEL SHEET PILING - IN PLACE	11,562.000 SF				
0150	501.543 STEEL H-BEAM SECTIONS, DELIVERED (HP16X141) (163,560 LBS)	1,160.000 LF				
0160	501.544 STEEL H-BEAM SECTIONS, IN PLACE (HP16X141) (163,560 LBS)	LUMP SUM	LUMP SUM			
0170	501.545 STEEL W-BEAM SECTIONS, DELIVERED (W10X100) (42,000 LBS)	420.000 LF				
0180	501.545 STEEL W-BEAM SECTIONS, DELIVERED (W18X311) (223,920 LBS)	720.000 LF				
0190	501.545 STEEL W-BEAM SECTIONS, DELIVERED (W21X201) (281,400 LBS)	1,400.000 LF				
0200	501.546 STEEL W-BEAM SECTIONS, IN PLACE (W10X100) (42,000 LBS)	LUMP SUM	LUMP SUM			
0210	501.546 STEEL W-BEAM SECTIONS, IN PLACE (W18X311) (223,920 LBS)	LUMP SUM	LUMP SUM			
0220	501.546 STEEL W-BEAM SECTIONS, IN PLACE (W21X201) (281,400 LBS)	LUMP SUM	LUMP SUM			

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0230	501.70 STEEL PIPE PILES, DELIVERED (12" DIAMETER X 1/2" WT)	780.000 LF				
0240	501.70 STEEL PIPE PILES, DELIVERED (24" DIAMETER X 1/2" WT)	1,540.000 LF				
0250	501.70 STEEL PIPE PILES, DELIVERED (36" DIAMETER X 1" WT)	5,067.000 LF				
0260	501.701 STEEL PIPE PILES, IN PLACE (12" DIAMETER X 1/2" WT)	780.000 LF				
0270	501.701 STEEL PIPE PILES, IN PLACE (24" DIAMETER X 1/2" WT)	1,540.000 LF				
0280	501.701 STEEL PIPE PILES, IN PLACE (36" DIAMETER X 1" WT)	5,067.000 LF				
0290	501.72 STEEL CASINGS, DELIVERED (18" DIAMETER)	624.000 LF				
0300	501.72 STEEL CASINGS, DELIVERED (30" DIAMETER)	878.000 LF				
0310	501.72 STEEL CASINGS, DELIVERED (42" DIAMETER)	833.000 LF				
0320	501.721 STEEL CASINGS, IN PLACE (18" DIAMETER)	624.000 LF				
0330	501.721 STEEL CASINGS, IN PLACE (30" DIAMETER)	878.000 LF				

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0340	501.721 STEEL CASINGS, IN PLACE (42" DIAMETER)	833.000 LF	_____.____	_____.____
0350	501.802 ROCK SOCKET (15" DIAMETER)	36.000 LF	_____.____	_____.____
0360	501.802 ROCK SOCKET (18" DIAMETER)	220.000 LF	_____.____	_____.____
0370	501.802 ROCK SOCKET (30" DIAMETER)	1,600.000 LF	_____.____	_____.____
0380	501.804 DRILLING EQUIPMENT MOBILIZATION	LUMP SUM	LUMP SUM	_____.____
0390	501.90 PILE TIPS (STEEL PILES)	115.000 EA	_____.____	_____.____
0400	501.91 PILE SPLICES	5.000 EA	_____.____	_____.____
0410	501.92 PILE DRIVING EQUIPMENT MOBILIZATION	LUMP SUM	LUMP SUM	_____.____
0420	502.2351 STRUCTURAL CONCRETE, PILE CAP	79.000 CY	_____.____	_____.____
0430	502.2354 STRUCTURAL CONCRETE, PILE FILL	1,172.000 CY	_____.____	_____.____
0440	502.263 STRUCTURAL CONCRETE ROADWAY AND END POSTS ON STEEL BRIDGES	LUMP SUM	LUMP SUM	_____.____
0450	502.264 STRUCTURAL CONCRETE PARAPETS	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0460	502.411 STRUCTURAL CONCRETE, PIER DECK SLAB	469.000 CY				
0470	502.45 STRUCTURAL CONCRETE APPROACH SLABS (BOAT RAMP TRANSITION)	20.000 CY				
0480	503.14 EPOXY-COATED REINFORCING STEEL, FABRICATED AND DELIVERED	633,000.000 LB				
0490	503.15 EPOXY-COATED REINFORCING STEEL, PLACING	633,000.000 LB				
0500	504.510 MISC. FABRICATION	LUMP SUM	LUMP SUM			
0510	504.60 TIMBER FENDER SYSTEM	LUMP SUM	LUMP SUM			
0520	504.70 STRUCTURAL STEEL FABRICATED AND DELIVERED (W24X117)	LUMP SUM	LUMP SUM			
0530	504.71 STRUCTURAL STEEL ERECTION (W24X117)	LUMP SUM	LUMP SUM			
0540	505.08 SHEAR CONNECTORS	LUMP SUM	LUMP SUM			
0550	515.20 PROTECTIVE COATING FOR CONCRETE SURFACES	6,370.000 SY				
0560	531.90 HOIST (2 TON CAPACITY)	2.000 EA				

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0570	531.91 FLOAT (TIMBER, CONCRETE OR STEEL)	12,100.000 SF				
0580	531.9601 ALUMINUM GANGWAY - 80 LF	1.000 EA				
0590	534.76022 PRECAST PIER, CAP	 LUMP SUM	 LUMP SUM			
0600	535.60 PRESTRESSED STRUCTURAL CONCRETE SLAB	 LUMP SUM	 LUMP SUM			
0610	606.15 GUARDRAIL TYPE 3A - SINGLE RAIL	360.000 LF				
0620	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	4.000 EA				
0630	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	8.000 EA				
0640	607.163 CHAIN LINK FENCE - 4 FOOT P.V.C. COATED	400.000 LF				
0650	607.35 BRACING ASSEMBLY CHAIN LINK FENCE PVC COATED	5.000 EA				
0660	609.21 CONCRETE SLIPFORM CURB	26.000 LF				
0670	609.219 CONCRETE SLIPFORM CURB - TERMINAL END	60.000 LF				
0680	610.08 PLAIN RIPRAP	68,695.000 CY				

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0690	610.16 HEAVY RIPRAP	16,354.000 CY				
0700	610.17 ARMOR STONE	13,855.000 T				
0710	610.18 STONE DITCH PROTECTION	7,720.000 CY				
0720	610.45 LEVEL LIP SPREADER	LUMP SUM	LUMP SUM			
0730	615.07 LOAM	137.000 CY				
0740	615.27 UNDERDRAIN SOIL FILTER	LUMP SUM	LUMP SUM			
0750	618.13 SEEDING METHOD NUMBER 1	1.000 UN				
0760	618.14 SEEDING METHOD NUMBER 2	3.000 UN				
0770	619.12 MULCH	4.000 UN				
0780	619.14 EROSION CONTROL MIX	74.000 CY				
0790	620.58 EROSION CONTROL GEOTEXTILE - (NON-WOVEN - UPLAND)	1,485.000 SY				
0800	620.60 SEPARATION GEOTEXTILE -(NON-WOVEN - RUBBLE MOUND AND BOAT RAMP)	3,785.000 SY				

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0810	626.11 PRECAST CONCRETE JUNCTION BOX	5.000 EA				
0820	626.221 NON-METALLIC CONDUIT CONCRETE ENCASED [2.5", 2", 1")]	1,017.000 LF				
0830	626.222 FRP CONDUIT (1 INCH)	20.000 LF				
0840	626.222 FRP CONDUIT (2.5 INCH)	10.000 LF				
0850	626.38 GROUND MOUNTED CABINET FOUNDATION	1.000 EA				
0860	626.385 METER ENCLOSURE	1.000 EA				
0870	626.421 24 INCH DIAMETER FOUNDATION	51.000 LF				
0880	626.74 PANELBOARD	LUMP SUM	LUMP SUM			
0890	626.91 POWER DISTRIBUTION PANELBOARD AND CIRCUIT BREAKERS	LUMP SUM	LUMP SUM			
0900	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	4,410.000 LF				
0910	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	85.000 SF				
0920	634.1812 1" LIQUID-TIGHT FLEXIBLE CONDUIT	12.000 LF				

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0930	634.1941 1" PVC CONDUIT	2,189.000 LF				
0940	634.1944 2" SCHEDULE 40 PVC CONDUIT	1,331.000 LF				
0950	634.1949 2 1/2" SCHEDULE 40 PVC CONDUIT	1,359.000 LF				
0960	634.2042 LED LUMINARIES (TYPE D1 SOLAR DOCK LIGHT)	70.000 EA				
0970	634.2042 LED LUMINARIES (TYPE OC, P1)	1.000 EA				
0980	634.2042 LED LUMINARIES (TYPE T3, R1 AND R2)	31.000 EA				
0990	634.2101 TYPE A LIGHT STANDARD	6.000 EA				
1000	634.2102 TYPE B LIGHT STANDARD	13.000 EA				
1010	634.2311 STAINLESS STEEL EXTERIOR PULL BOX	12.000 EA				
1020	634.312 # 2 AWG COPPER WIRING	1,335.000 LF				
1030	634.313 # 4/0 AWG COPPER WIRING	5,434.000 LF				
1040	634.314 #6 AWG COPPER WIRE	8,382.000 LF				

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
1050	634.316 #10 AWG COPPER WIRE	616.000 LF				
1060	634.3161 #12 AWG COPPER WIRING	3,620.000 LF				
1070	637.071 DUST CONTROL	LUMP SUM	LUMP SUM			
1080	639.18 FIELD OFFICE TYPE A	1.000 EA				
1090	641.42 SIGN POSTS	8.000 EA				
1100	645.292 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS TYPE II	26.750 SF				
1110	652.31 TYPE I BARRICADE	6.000 EA				
1120	652.33 DRUM	40.000 EA				
1130	652.34 CONE	25.000 EA				
1140	652.35 CONSTRUCTION SIGNS	192.000 SF				
1150	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP SUM	LUMP SUM			
1160	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM			

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 026824.00 **Project(s):** 026824.00

SECTION: 1 MAIN PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1170	659.10 MOBILIZATION	LUMP SUM	LUMP SUM			
1180	815.50 PRIVY BUILDING	LUMP SUM	LUMP SUM			
1190	832.05 SURVEY MONITORING POINT	10.000 EA				
1200	853.15 BOAT RAMP	LUMP SUM	LUMP SUM			
1210	853.50 LIFE RING ASSEMPBLY	6.000 EA				
	Section: 1		**Total:**			
			Total Bid:			

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and _____

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the Contract), hereby agree as follows:

A. The Work

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 026824.00**, for the construction of **a breakwater, boat launch, and wharf, and parking area** off of Main Street in the town of **Lubec**, County of **Washington,** in the **State of**, **Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work; performing construction quality control including inspection, testing and documentation; providing all required documentation at the conclusion of the project; warrantying its work; and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract. Payment shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 3, 2027.** Furthermore, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond. Therefore, the amount of this offer is _____ _____ $_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 026824.00 – construction of a breakwater, boat launch, wharf, and parking area on the waterfront - in the town of Lubec

State of Maine, on which bids will be received until the time specified in the Notice to Contractors do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached Schedule of Items.

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached Schedule of Items in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Bruce A. Van Note, Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and _____

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

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The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the Contract), hereby agree as follows:

A. The Work

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 026824.00**, for the construction of **a breakwater, boat launch, and wharf, and parking area** off of Main Street in the town of **Lubec**, County of **Washington,** in the **State of**, **Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work; performing construction quality control including inspection, testing and documentation; providing all required documentation at the conclusion of the project; warrantying its work; and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract. Payment shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 3, 2027.** Furthermore, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond. Therefore, the amount of this offer is _____

_____

$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 026824.00 – construction of a breakwater, boat launch, wharf, and parking area on the waterfront - in the town of Lubec

State of Maine, on which bids will be received until the time specified in the Notice to Contractors do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached Schedule of Items.

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached Schedule of Items in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Bruce A. Van Note, Commissioner
_____	
Witness	

"General Decision Number: ME20240027 01/05/2024

Superseded General Decision Number: ME20230027

State: Maine

Construction Type: Heavy

County: Washington County in Maine.

HEAVY CONSTRUCTION PROJECTS
Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024

SUME2014-008 01/30/2017

	Rates	Fringes
CARPENTER, Includes Form Work	$ 18.07	4.33
ELECTRICIAN	$ 24.87	8.54
IRONWORKER, STRUCTURAL	$ 24.95	12.32
LABORER: Common or General	$ 13.72 **	2.91
LABORER: Pipelayer	$ 21.17	5.63
OPERATOR: Backhoe/Excavator/Trackhoe	$ 23.48	4.96
OPERATOR: Bulldozer	$ 22.91	6.04
OPERATOR: Crane	$ 22.70	6.40
OPERATOR: Loader	$ 14.62 **	4.24
TRUCK DRIVER: Dump Truck	$ 15.91 **	3.78

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is

based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION"

Town: **Lubec, Route 189, Breakwater**
Project: **026824.00**
Date: **October 02, 2024**

SPECIAL PROVISIONS
SECTION 104
Utilities

UTILITY COORDINATION

The contractor has primary responsibility for coordinating their work with utilities **after contract award**. The contractor shall communicate directly with the utilities regarding any utility work necessary to maintain the contractor's schedule and prevent project construction delays. The contractor shall notify the resident of any issues.

THE CONTRACTOR SHALL PLAN AND CONDUCT WORK ACCORDINGLY.

MEETING

A Preconstruction Utility Conference **IS NOT** required, as defined in Subsection 104.4.6 of the Standard Specifications.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for utility and/or railroad work to be undertaken in conjunction with this project. The following list identifies all known utilities or railroads having facilities presently located within the limits of this project or intending to install facilities during project construction.

Utilities have been notified and will be furnished with a project specification.

The Contractor shall give all Utilities **ten (10) working days' notice** prior to beginning **ANY** work on this project.

OVERVIEW

Utility	Aerial	Subsurface	Contact Person	Contact Phone
Charter Communications	X		Erik Dougan	(207) 460-8414
Consolidated Communications	X		Brian Ouellette	(207) 991-6719
Lubec Water District		X	Michael Morey	(207) 733-5526
Town of Lubec		X	Bruce Greene	(207) 733-4867
Versant Power	X		David Perkins	(207) 949-3918

Temporary utility adjustments **ARE NOT** anticipated. If any unexpected utility relocations become necessary, they shall be scheduled in accordance with Section 104 of the Standard Specifications and shall be performed by the appropriate utility company in conjunction with the work by the Contractor. Should the Contractor choose to have any poles temporarily relocated, all work shall be done at the Contractor's request and expense, with no additional cost or schedule impacts to the Department.

All adjustments are to be made by the respective utility/railroad unless otherwise specified herein.

Fire hydrants shall not be disturbed until all necessary work has been accomplished to provide proper fire protection.

***** Specific information regarding the line voltage can be requested from* Versant Power****

Utility/railroad working days are Monday through Friday. Times are estimated on the basis of a single crew for each utility/railroad. Any times and dates mentioned are **estimates only** and are dependent upon favorable weather, working conditions, and freedom from emergencies.

AERIAL

Aerial utility adjustments are not anticipated as part of this project. Utilities have been notified and if utility relocations, though unexpected, become necessary, they will be scheduled in compliance with Section 104 of the Standard Specifications and will be done by the utilities in conjunction with the work by the Contractor.

UNDERGROUND

Underground utility adjustments are not anticipated as part of this project. Utilities have been notified and if utility relocations, though unexpected, become necessary, they will be scheduled in compliance with Section 104 of the Standard Specifications and will be done by the utilities in conjunction with the work by the Contractor.

PLEASE NOTE

All underground utilities require **5 working days' notice** for any/all excavation or any other subsurface work around any underground facilities to schedule an on-site representative to be present. The contractor shall hand dig around all the underground facilities.

MAINTAINING UTILITY LOCATION MARKINGS

The Contractor will be responsible for maintaining the buried utility location markings following the initial locating by the appropriate utility or their designated representative.

UTILITY SIGNING

Any utility working within the construction limits of this project shall ensure that the traveling public is adequately protected at all times. All work areas shall be signed, lighted, and traffic flaggers employed as determined by field conditions. All traffic controls shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, as issued by the Federal Highway Administration.

SPECIAL PROVISION
SECTION 105 – General Scope of Work
(Environmental Requirements)

I. In-Water Work consists of any activity conducted below the highest astronomical tide (HAT) as identified in the tide tables published by the National Ocean Service (http://www.oceanservice.noaa.gov)

1. In-Water Work shall be allowed anytime with the following restrictions:

Table 1. In-Water Work conditions and requirements

Activity	Conditions and Requirements
Pile Installation • Pile supported platform (PSP) • Floating docks • Temporary Falsework	1. Pile driving by impact or vibratory hammer shall not occur for more than 12 hours in a 24-hour period 2. Soft start procedure required: a. For vibratory pile driving, contractors shall initiate noise from the vibratory hammer for 15 seconds at reduced energy, followed by a 1-minute waiting period. The procedure shall be repeated two additional times, followed immediately by pile driving at full rate and energy. b. For impact hammering, contractors shall provide an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1- minute waiting period, then two subsequent three-strike sets at 40% energy with 1 minute waiting period before initiating continuous impact driving. c. Repeat if hammering ceases for more than 30 minutes. 3. Marine Mammal Observation and Monitoring (MMOM) required. See Special Provision 105 for requirements. 4. Noise attenuation is required. See Special Provision 105 for requirements. 5. Pile driving by impact hammer must utilize sound absorption cushions. 6. Noise attenuation not required for temporary falsework piles.
Rubble Mound Placement	Turbidity curtain required when placing rock or other fill.

II. Special Conditions:

1. Special Conditions of Army Corps of Engineers (ACOE) Individual permit apply (see permit and conditions in contract documents).
2. Conditions of Maine Department of Environmental Protection (MDEP) Individual apply (see permit and conditions in contract documents).
3. Special Conditions of Endangered Species Act (Section 7) with National Oceanic and Atmospheric Administration (NOAA) apply (summarized in this Special Provision 105).
4. The contractor shall hold a pre-construction meeting with appropriate MaineDOT Environmental Office (ENV) staff, MaineDOT personnel, and contractor(s) to review all procedures and requirements for avoiding and minimizing effects to Atlantic salmon, shortnose sturgeon, and Atlantic sturgeon and to emphasize the importance of these measures for protecting these species and their habitat. ACOE (Jami Macneil, jami.e.macneil@usace.army.mil) and Service staff (Zachary Jylkka, zachary.jylkka@noaa.gov) shall also be invited to the meeting.
5. The Contractor shall visually monitor in-water turbidity, and all erosion controls shall be inspected daily to minimize suspension of sediments. If inspection shows that the erosion controls are ineffective, immediate action shall be taken to repair, replace, or reinforce controls as necessary.
6. No blasting or use of explosives is allowed.

7. The number of project vessels must be limited to the greatest extents practicable, as appropriate to the size and scope of the project
8. Project vessels operating within the action area to speeds below 10 knots. See Also Special Provision 150 for marine mammal observer monitoring for additional requirements related to observations and avoidance of marine mammals.

III. Approvals:
1. Temporary Soil Erosion and Water Pollution Control Plan
2. MDEP Individual Permit L-28159-NJ-B-N, -4P-C-N and as modified (*pending*).
3. ACOE Individual Permit NAE-2020-01783 and as amended.
4. Permitted Impacts (see ACOE permit for locations)

NOTE: The time limit for completing in water work is December 31, 2028, if more time is required the Contractor must submit a request for extension to the MaineDOT ENV Office by September 15, 2028.

SPECIAL PROVISION
SECTION 105 – General Scope of Work
(Underwater Noise Attenuation)

I. Underwater Noise Attenuation (UNA) is required for compliance with various permits and authorizations. UNA includes passive measures such as changing hammer type, reducing driving duration, reducing force settings on the hammer; and active measures. Active measures shall consist of cushions and bubble curtains.

A. UNA is required for project activities as follows: installation of piles for pile supported platform (PSP) and floating dock piles;

1. UNA is not required for pile installation associated with falsework platforms

B. The contractor shall prepare a UNA Plan for approval that includes the following:

1. The contractor shall employ a bubble curtain for in-water pile installation and DTH drilling.
2. The bubble curtain shall meet the design specifications and performance requirements in the attached Bubble Curtain Specification.
3. The contractor shall complete a performance test of the bubble curtain prior to beginning pile installation activities. The performance test shall confirm the calculated pressures and flow rates at each manifold ring.

II. Approvals

A. Noise Attenuation Plan

These specifications are verbatim from National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), Western Washington Fish and Wildlife Office Impact Pile Driving Sound Attenuation Specification

Unconfined Bubble Curtain Specifications:

1. General - An unconfined bubble curtain is composed of an air compressor(s), supply lines to deliver the air, distribution manifolds or headers, perforated aeration pipe, and a frame. The frame facilitates transport and placement of the system, keeps the aeration pipes stable, and provides ballast to counteract the buoyancy of the aeration pipes in operation.

2. The aeration pipe system shall consist of multiple layers of perforated pipe rings, stacked vertically in accordance with the following:

Water Depth (m)	No. of Layers
0 to less than 5	2
5 to less than 10	4
10 to less than 15	7
15 to less than 20	10
20 to less than 25	13

3. The pipes in all layers shall be arranged in a geometric pattern which shall allow for the pile being driven to be completely enclosed by bubbles for the full depth of the water column and with a radial dimension such that the rings are no more than 0.5 meters from the outside surface of the pile.

4. The lowest layer of perforated aeration pipe shall be designed to ensure contact with the substrate without burial and shall accommodate sloped conditions.

5. Air holes shall be 1.6 mm (1/16-inch) in diameter and shall be spaced approximately 20 mm (3/4 inch) apart. Air holes with this size and spacing shall be placed in four adjacent rows along the pipe to provide uniform bubble flux.
6. The system shall provide a bubble flux of 3.0 cubic meters per minute per linear meter of pipe in each layer (32.91 cubic feet per minute per linear foot of pipe in each layer). The total volume of air per layer is the product of the bubble flux and the circumference of the ring:

   $V_t = 3.0\ m^3/min/m$ * Circum of the aeration ring in m

   or

   $V_t = 32.91\ ft^3/min/ft$ * Circum of the aeration ring in ft

7. Meters shall be provided as follows:

a. Pressure meters shall be installed at all inlets to aeration pipelines and at points of lowest pressure in each branch of the aeration pipeline.

b. Flow meters shall be installed in the main line at each compressor and at each branch of the aeration pipelines at each inlet. In applications where the feed line from the compressor is continuous from the compressor to the aeration pipe inlet the flow meter at the compressor can be eliminated.

c. Flow meters shall be installed according to the manufactures recommendation based on either laminar flow or non-laminar flow.

Confined Bubble Curtain Specifications:

1. General - A confined bubble curtain is composed of an air compressor(s), supply lines to deliver the air, distribution manifolds or headers, perforated aeration pipe(s), and a means of confining the bubbles.

   a. The confinement (e.g. fabric, plastic or metal sleeve, or equivalent) shall extend from the substrate to a sufficient elevation above the maximum water level expected during pile installation such that when the air delivery system is adjusted properly, the bubble curtain does not act as a water pump (i.e., little or no water should be pumped out of the top of the confinement system).

   b. The confinement shall contain resilient pile guides that prevent the pile and the confinement from coming into contact with each other and do not transmit vibrations to the confinement sleeve and into the water column (e.g. rubber spacers, air filled cushions).

2. In water less than 15 meters deep, the system shall have a single aeration ring at the substrate level. In waters greater than 15 meters deep, the system shall have at least two rings, one at the substrate level and the other at mid-depth.

3. The lowest layer of perforated aeration pipe shall be designed to ensure contact with the substrate without sinking into the substrate and shall accommodate for sloped conditions.

4. Air holes shall be 1.6 mm (1/16-inch) in diameter and shall be spaced approximately 20 mm (3/4 inch) apart. Air holes with this size and spacing shall be placed in four adjacent rows along the pipe to provide uniform bubble flux.

8. The system shall provide a bubble flux of 3.0 cubic meters per minute per linear meter of pipe in each layer (32.91 cubic feet per minute per linear foot of pipe in each layer). The total volume of air per layer is the product of the bubble flux and the circumference of the ring:

   $V_t = 3.0\ m^3/min/m$ * Circ of the aeration ring in m

or

$V_t = 32.91\ ft^3/min/ft$ * Circ of the aeration ring in ft

5. Meters shall be provided as follows:

   a. Pressure meters shall be installed at all inlets to aeration pipelines and at points of lowest pressure in each branch of the aeration pipeline.

   b. Flow meters shall be installed in the main line at each compressor and at each branch of the aeration pipelines at each inlet. In applications where the feed line from the compressor is continuous from the compressor to the aeration pipe inlet the flow meter at the compressor can be eliminated.

   c. Flow meters shall be installed according to the manufactures recommendation based on either laminar flow or non-laminar flow.

SPECIAL PROVISION
SECTION 105 – General Scope of Work
(Marine Mammal Protection Requirements)

MaineDOT is in the process of receiving an Incidental Harassment Authorization (IHA) from NOAA NMFS, for Level B Harassment of marine mammals, in compliance with the Marine Mammal Protection Act (MMPA), Level A harassment is not permitted by the IHA. The selected contractor will be responsible for ensuring compliance with all requirements provided in the approved IHA, MaineDOT will confirm approval of the IHA with the Contractor prior to the start of In-Water work. The following establishes the requirements for Marine Mammal Observation and Monitoring (MMOM). An approved IHA is expected in February 2025 and will be valid for a period of one year from the date of issuance.

I. Visual Monitoring

A. Protected Species Observers (PSO) Qualifications

1. PSOs must be employed by a third-party observer provider, must have no tasks other than to conduct Marine Mammal Observation and Monitoring (MMOM), collect data, and communicate with and instruct construction crew members with regard to the presence of protected species and mitigation requirements.
2. All PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. Educational requirements may be waived, upon approval, if the individual has acquired relevant skills through a suitable amount of alternate experience. In addition, all PSOs must successfully complete the required training course within the last ten years and obtain a certificate of course completion.
3. PSO credentials must be supplied, along with the monitoring plan, to MaineDOT. See Section 2A for monitoring plan requirements (Nick Koltai – Nicholas.Koltai@maine.gov).
4. The contractor shall employ a minimum of two (see 2. A. i. for additional information) biologically-trained, NMFS-approved protected species observers (PSOs) to conduct dedicated marine mammal monitoring for its Lubec Safe Harbor construction project. The contractor may select individuals previously approved by NMFS or may supply resume and qualifications to NMFS for approval (Benjamin Laws - NOAA –NMFS, Benjamin.Laws@NOAA.gov).
5. PSOs must have visual acuity in both eyes (with correction of vision being permissible) sufficient enough to discern moving targets on the water's surface with the ability to estimate the target size and distance (binocular use is allowable); ability to conduct field observations and collect data according to the assigned protocols; sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations; writing skills sufficient to document observations; and the ability to communicate orally, by radio, or in-person, with Project personnel to provide real-time information on marine mammals observed in the area.

B. PSO Construction Monitoring Requirements

1. Monitoring Plan: The Contractor shall submit a monitoring plan no less than 30 days prior to pile installation activities. The Monitoring Plan will aim to set the procedures by which PSOs conduct their monitoring during pile installation. At a minimum the monitoring plan will describe the following measures:
    a) At least 2 PSOs will be on duty at the same time during pile installation. Following NOAA Fisheries standards, the PSO team will work in shifts: each PSO will work no

more than four consecutive hours without a 2-hour break or longer than 12 hours during any 24 hour period.

b) PSOs shall visually monitor the Level A zone for marine mammals 30 minutes before, during, and 30 minutes after all impact and vibratory pile driving or down the hole drilling activities. To ensure IHA compliance, monitoring zones in are subject to change at the request of MaineDOT.

c) PSOs must be located at the best vantage point(s) possible to properly observe the entire Level A zone and to the extent possible the Level B zone during pile installation activities. This may require monitoring from boats, barges, docks, and/or land.

(1) Land based monitoring locations that are privately owned will require permission to access. This access must be obtained by The Contractor and reported in writing to MaineDOT (Nick Koltai, Nicholas.Koltai@maine.gov).

d) Marine binoculars with a reticle rangefinder and/or the naked eye will be used to continuously search for marine mammals during all in-water pile installation activities.

e) Handheld range finders will be used to measure distances from the PSO to the sighting, if possible.

f) All observation data will be recorded using waterproof notebooks or entered into a digital database. Observation data will include:

(1) Environmental conditions (i.e., weather conditions, wind speed/direction, wave height, cloud cover, visibility, and glare) will be recorded at the start and end of monitoring.

(2) Date and time of each pile installation activity (start and end time)

(3) All marine mammals sightings will be fully documented (See Section 2.B and Section 3 for reporting requirements).

2. PSO will be required to monitor available observation data for presence of right whale (an endangered species for which *no take* is authorized) in the vicinity of the Project.

a) "Vicinity of the Project" is defined as: in Grand Manan Channel (the channel east of mainland Maine and west of Grand Manan Island); in Western Passage (the channel north and east of Eastport, Maine and west of Deer Island, New Brunswick); and in Head Harbour Passage (the channel north of Campobello Island, New Brunswick).

b) If a Right Whale has been documented by any other entity within the above defined limits, the Lead PSO must immediately contact the MaineDOT Environmental Office (Nick Koltai, 207-557-3471).

(1) While observation of right whale is unlikely and not expected in the vicinity of the Project, pile installation activities must stop until the Lead PSO and MaineDOT confirms work may resume.

(2) MaineDOT will consult with agency partners to review available information (e.g.,Right Whale's location and/or heading), MaineDOT will notify Lead PSO if pile installation activities must cease or if pile installation may continue.

c) PSOs will be required to verify there have been no right whale sightings within the above defined limits at the start of each work day before pile installation activities begin. These results must be recorded in the daily log and included in the monitoring report.

3. PSO monitor(s) shall attend all Contractor team progress meetings to provide an update on the marine mammal observations.

C. Monitoring Report Requirements

1. The Monitoring Report shall contain the following:

a) Summary of completed pile installation activity including:
   (1) Duration of activity (start and end time) for each impact pile driving, vibratory pile driving, and DTH drilling event
   (2) The amount and type of piles that are driven, the project component that the piles are installed for (pile supported platform [PSP], floating docks, boat launch), and method of installation (impact, vibratory, DTH drilling)
   (3) Location of activity (latitude/longitude)
   (4) Number of days of activity
   (5) Times and durations of all shutdown events due to the present of marine mammals
   (6) Summary of water (e.g. Beaufort sea state, tidal state) and weather conditions at the start and end of each monitoring shift.
   (7) Right whale observations documented by others in the vicinity of the Project.
   (8) Summary of PSO monitoring and marine mammal sightings including:
      (a) Date and time of PSO monitoring (start and end time)
      (b) Name and contact information of the PSO on duty
      (c) Location (latitude/longitude), date, and time of sighting
      (d) Locations (latitude/longitude) of observation station
      (e) Total, estimated number of animals sighted
      (f) Distance and bearing of the animal(s) related to activity
      (g) Estimated time that the animal spent in the harassment zone
      (h) Identification of species to the lowest possible taxonomic level (or unidentified)
      (i) Photograph or video footage, if captured
      (j) Description of observed behavior (both in the presence and absence of pile installation activities)
      (k) Weather conditions during each sighting
      (l) Detailed information about implementation of any mitigation measures (e.g., shutdowns and delays) and resulting changes in behavior of the animal
      (m) Assessment of implementation and effectiveness of prescribed mitigation and monitoring measures

2. The lead PSO will submit the monitoring report to MaineDOT within 60 days of the conclusion of monitoring. MaineDOT will provide review comments within 2 weeks. The lead PSO shall provide a final draft within 1 week.
3. MaineDOT will submit the final report to NOAA-NMFS within 90 days of the conclusion of the construction work as described in Section I.2.B.
   a) If comments are received from the NMFS GARFO or NMFS Office of Protected Resources on the report, a final report shall be submitted to NMFS within 30 days thereafter. If no comments are received from NMFS, the report as submitted will be considered the final report.

D. "Take" Definitions and Incident Reporting Requirements
1. "Level B Take" of a marine mammal is considered behavioral modification (e.g., change in direction or habits). The amount of Level B Take authorized by the approved IHA will be provided. Level B Take is reported in Monitoring Reports and communicated to the Project Team.
2. "Level A Take" of a marine mammal is considered injury, serious injury, or mortality (e.g., ship strike, gear interaction, and/or entanglement). *Level A Take is prohibited in the pending IHA and requires an Incident Report.*

3. The lead PSO is responsible for determining the cause of Level A Take that is reported as an incident. An "Incident" which requires an Incident Report is *any Level A take determined to be caused by the project or observed within the project.*
4. If construction activities clearly cause the Level A take of a marine mammal in a manner prohibited by this Authorization the following is required:
    a) All operations shall immediately cease.
    b) The Lead PSO shall immediately contact the MaineDOT Environmental Office (Nick Koltai: 207-557-3471).
    c) The Lead PSO will provide MaineDOT with an incident report within 24 hours.
    d) MaineDOT will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the GARFO Stranding Coordinators.
        (1) The incident report must include the following information:
            (a) Time, date, and location (latitude/longitude) of the incident;
            (b) Description of the incident;
            (c) Status of all sound source use in the 24 hours preceding the incident; environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, visibility, and water depth);
            (d) Description of marine mammal observations in the 24 hours preceding the incident;
            (e) Species identification or description of the animal(s) involved;
            (f) The fate of the animal(s); and
            (g) Photographs or video footage of the animal (if equipment is available).
            (h) Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with MaineDOT to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Contractor may not resume their activities until notified by NMFS via letter, email, or telephone.
5. If an injured or dead marine mammal is discovered within the project, and the lead PSO determines that the cause of Level A Take is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition) the following is required:
    a) The Lead PSO will immediately contact the MaineDOT Environmental Office (Nick Koltai: 207-557-3471).
    b) The Lead PSO will provide MaineDOT with an incident report within 24 hours. The incident report must include the same information identified in Section I.D.4.d).(1).
    c) MaineDOT will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the GARFO Stranding Coordinators
    d) Activities may continue while NOAA-NMFS reviews the circumstances of the incident. NMFS will work with MaineDOT to determine whether modifications in the activities are appropriate.
6. If an injured or dead marine mammal is discovered, and the lead PSO determines that the cause of Level A Take is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the following is required:
    a) The Lead PSO will immediately contact the MaineDOT Environmental Office (Nick Koltai: 207-557-3471).

b) The Lead PSO will provide MaineDOT with an incident report within 24 hours. The incident report must include the same information identified in Section I.D.4.d).(1).
c) MaineDOT shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the GARFO Stranding Coordinators, within 24 hours of the discovery.
d) MaineDOT shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.
e) Construction activities may continue.

II. Pile Installation Requirements

A. Pre-start clearance monitoring will be conducted during periods of visibility sufficient for the lead PSO to determine the shutdown zones clear of marine mammals. Pile installation will not begin until the visibility determination is made.
B. A noise attenuation device (e.g., bubble curtain) is required for installation of piles for the pile supported platform and floating dock piles, including for pile driving and DTH drilling activities. Noise attenuation is *not* required for pile installation associated with falsework platforms. Specifications for noise attenuation is provided in Special Provision 105 – Noise Attenuation.
C. The Contractor will coordinate with the PSO to implement the shutdown zone for marine mammals observed entering or within the shutdown zones, pile installation activity will be delayed or halted as soon as it is safe to do so.
D. If pile installation is delayed or halted due to the presence of a marine mammal, the activity will not begin or resume until either the animal has voluntarily exited (and the exit is visually confirmed by a PSO) beyond the shutdown zone, or 15 minutes have passed without re-detection of the animal.
    1. The contractor and PSOs will avoid direct physical interaction with marine mammals during construction activity. If a marine mammal approaches within 10 m of such activity, work will cease, or vessels will reduce speed to a minimum necessary to maintain steerage.
    2. The Contractor will use soft start techniques when initiating impact pile driving in accordance with SP 105 – Environmental Requirements.

III. Shutdown Measures

A. Pile driving activity will be halted by the PSOs if either of the following occur: observation of a species for which incidental take is not authorized; or the PSOs determine that the authorized amount of take has been met for 24 hours.
B. If a marine mammal is sighted within or approaching the Level A zone prior to start of vibratory or impact pile driving or DTH drilling, the PSO would notify the on-site project lead (or other authorized individual).
    1. Pile installation activities shall be delayed until the animal has moved out of the Level A zone or if the animal has not been re-detected within 30 minutes.
C. If a marine mammal is sighted within or on a path toward the Level A zone during pile installation activities, the PSO would notify the on-site project lead (or other authorized individual.
    1. Pile installation activity will stop until that animal has moved out of the exclusion zone or if the animal has not been re-detected within 30 minutes. .
D. Pile driving activities will stop for recorded observations of right whale within the Project Vicinity as described in Section I. B. 2.

IV. Vessel Use Requirements

A. Vessel operators must be vigilant for marine mammals and slow down or stop the vessel to avoid striking any animals.
B. At least one vessel crew member will watch for marine mammals while underway.

C. Vessels will remain on course and avoid abrupt changes in direction.
D. All vessels will reduce speed to 10 knots or less when safe to do so if a marine mammal is present.

V. Approvals

A. NOAA-NMFS Incidental Harassment Authorization (*PENDING*)
B. Marine Mammal Monitoring Plan
C. PSO Qualifications

NOTE: Payment will be made under Pay Item: 501.236 – Protected Species Observer. Pay Unit: Hour

Environmental Summary Sheet

WIN: 26824.00 **Date Submitted: 12/9/2024**
Town: Lubec
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Ryan Annis

NEPA Complete: USDOT Marine Administration FONSI: 7/30/2021, Re-evaluation: 8/24/2024

Section 106
Review Complete: SHPO Concurrence - No effect Approved 1/29/2024
Section 106 Resources: none

Section 4(f) and 6(f)

Section 4(f)	Section 6(f)
Review Complete - No use	Review Complete - No takes

Maine Department of Inland Fisheries and Wildlife
Not Applicable **Timing Window:** Not Applicable

Section 7
May affect, not likely to adversely affect:
Species of Concern: Northern long-eared bat, Roseate tern, Atlantic salmon DPS & CH, Atlantic & Shortnose sturgeon, Green, Kemp's ridley sea turtle, Loggerhead, and Leatherback sea turtles

Essential Fish Habitat
Adverse effect not substantial
Species of Concern: multi-species

Maine Department of Agriculture, Conservation, and Forestry
Public Lands, Submerged Land Lease: Complete - Completed by the Town.
Maine Land Use Planning Commission: Not Applicable

Maine Department of Environmental Protection
Individual Permit – NRPA Permit L-28159-NJ-B-N, -4P-C-N and as revised (*revision pending*)
**Applicable Standards and Permits are included with the contract*

Army Corps of Engineers: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.
Individual - Corps Permit #NAE-2020-01783 and as modified
-Work Start Notification form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
-Compliance Certification Form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
**Applicable Standards and Permits are included with the contract*

Stormwater Review
Chapter 500 - See SP 615 and off site stormwater design included in the contract

Hazardous Material Review
Review complete – no concerns

☒ **Special Provisions Required**

Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒
Special Provision 105-Environmental Requirements	N/A☐	Applicable☒
Special Provision 105-Marine Mammal Protection Requirements	N/A☐	Applicable☒
Special Provision 105-Underwater Noise Attenuation	N/A☐	Applicable☒
Special Provision 203-Dredge Spec	N/A☒	Applicable☐
General Note for Hazardous Waste	N/A☒	Applicable☐

**All permits and approvals based on plans/scope as of: 9/3/2024*

Lubec
2682400
WIN 26824.00
December 4, 2024

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Buy American - Build America, Buy America)

This contract has multiple funding sources, each having different material source requirements. Buy American Act, Buy America and Build America, Buy America (BABA).

An estimated $19,650,000 in funding expenditures shall comply with the Buy American Act, 41 U.S.C. 8301-8305. This amount may include costs previously incurred or costs to be incurred by the Department, such as Preliminary Engineering, Right-of-Way, Construction (contractor payments) and Construction Engineering. MARAD is requiring this funding to be expended by September 30, 2026.

The remainder of the expenditures shall meet both Buy America and BABA requirements. There is a waiver specifically for aggregates under BABA, but that waiver does not apply to the Buy American Act cited in the paragraph above (41 U.S.C. 8301-8305).

No additional compensation or adjustment in bid price shall be considered for materials incorporated or paid for after any one funding source is fully expended and the contractor is required to meet the requirements of the remaining funding source. The Department will make payment utilizing the remaining fund source and advise the contractor if Buy American or BABA certification is needed.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Build America, Buy America)

105.11 Other Federal Requirements Amend this section by adding the following:

This special provision was created for the Build America, Buy America Act (BABA) to expand the list of construction materials required to be manufactured in the United States beyond what is currently only required for steel/iron products. The Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58 includes the Build America, Buy America Act. The Office of Management and Budget issued memorandum M-22-11 to provide guidance on the law which can be found here:

https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf

All iron/steel, including the iron/steel in construction materials and manufactured products, must satisfy Buy America 23 CFR 635.410 requirements.

All construction materials, as defined in the following, that are permanently incorporated into federal-aid projects shall meet Build America, Buy America requirements.

For the purpose of this Specification, construction materials shall include an article, material, or supply that is or consists primarily of the following.

- Non-ferrous metals,
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
- Glass (including optic glass),
- Lumber, or
- Drywall.

All manufacturing processes for construction materials shall occur within the United States. The category of construction materials excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

Due to a nationwide waiver, BABA requirements do not apply to manufactured products for FHWA funded projects. Manufactured products are items that consist of two or more of the listed construction materials that have been combined through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed (including steel/iron) through a manufacturing process.

The Contractor shall certify in writing that all permanently incorporated Construction Materials for this contract meet the BABA requirements.

December 5, 2011
Supersedes December 1, 2010

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Buy America Certification)

105.11 Federal Requirements Add the following as the third and subsequent paragraphs:

"Prior to payment by the Department, the Contractor shall provide a certification from the producer of steel or iron, or any product containing steel or iron as a component, stating that all steel or iron furnished or incorporated into the furnished product was manufactured in the United States in accordance with the requirements of the Buy America provisions of 23 CFR 635.410, as amended. Such certification shall also include (1) a statement that the iron or steel product or component was produced entirely within the United States, or (2) a statement that the iron or steel product or component was produced within the United States except for minimal quantities of foreign steel and iron valued at $ (actual value).

All manufacturing processes must take place domestically. Manufacturing begins with the initial melting and mixing, and continues through the coating stage. Any process which modifies the chemical content, the physical size and shape, or the final finish is considered a manufacturing process. These processes include rolling, extruding, machining, bending, grinding, drilling, and coating. "Coating" includes epoxy coating, galvanizing, painting, or any other coating that protects or enhances the value of the material.

A Buy America Certification is required from each manufacturer, fabricator, supplier, subcontractor, etc. that meets the "manufacturing" definition above.

Buy America does not apply to raw materials (iron ore and alloys), scrap, pig iron, or processed, pelletized, and reduced iron ore."

SPECIAL PROVISION
SECTION 107
TIME
(Contract Time)

The Contractor will be allowed to commence work when all plans required under this contract have been approved and pre-construction meeting has been held.

The completion date for this contract is **December 3, 2027**.

All work schedule changes must be submitted to the Department for approval a minimum of 48 hours before the requested change.

WORK PROGRESS:

1. The Contractor shall plan operations so that the Resident will have sufficient notification to provide the necessary inspection and testing. Sufficient notification is considered 48 hours.

2. A 48-hour notice is required prior to working any Saturdays.

3. The Contractor's traffic control plan shall be operationally effective, complete and in conformity with Federal requirements, Contract provisions, the current edition of the MUTCD, and Department policy and procedures as determined by the Department prior to beginning work.

4. The Contractor shall request absences at least 72 hours in advance. The Department will review and approve all such absences based on existing roadway condition, paving deadlines, adherence toschedule, traffic restrictions, and detours. The Contractor shall assure that the roadway surface and signage are maintained for safe passage of the traveling public during any approved absences. The Department will not modify the Contract Completion Date for approved absences.

5. For every weekday not worked once operations commence, the Contractor will be charged supplemental liquidated damages under Section 107.7.2 of the Standard Specifications – excluding days lost to inclement weather, holidays, and approved absences.

Special Provision
Section 107
Time
(Supplemental Liquidated Damages for Fabrication Time)

Section 107 of the Standard Specification is amended by addition of the following:

107.8.1 Fabrication Time The Department has budgeted for the following amounts of continuous full time fabrication/shop QA inspection for the following Work components:

Element	Time (Calendar Days)	Supplemental Liquidated Damages ($ per Calendar Day)
Prestressed Structural Concrete Slab	75	$1,000
Precast Pier, Cap	60	$1,000

The Contractor is responsible for requiring their fabricators and suppliers to produce these products for the Work continuously until finished, including any needed actions to correct unacceptable workmanship or materials. If the Department determines that QA inspection beyond these times is required, then the corresponding Supplemental Liquidated Damages will be deducted as they occur from the amounts otherwise due to the Contractor. These allowed Fabrication Time begins on the first day of fabrication and runs consecutively until expiration or the work is complete.

If a fabricator or supplier works more than one shift per day and the Department determines that inspection is required for each shift, each shift will count as a calendar day and the Supplemental Liquidated Damages rate will be the noted amount per shift per Calendar Day in lieu of per Calendar Day.

QA inspector presence is required but not limited to the following activities:

> Tensioning of strands, batching and casting of concrete, breaking of test cylinders, de-tensioning of strands, repairs, finishing fascia surfaces and any other times as required in the Standard Specifications or Special Provisions.

Lubec
WIN 26824.00
December 9, 2024

SPECIAL PROVISION
SECTION 108
PAYMENT

In SECTION 108 – PAYMENT, of the Maine Department of Transportation, Standard Specification, Section 108.2.2 Payment – Shall be revised as follows:

In the first sentence, REPLACE the words “15 Days” with “25 Days”.

SPECIAL PROVISION
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 202 – REMOVING STRUCTURES AND OBSTRUCTIONS, with the following modifications:

202.04 Removing Portland Cement Concrete Pavement

Replace the first sentence at the beginning of Subsection 202.04:

> All Portland cement concrete pavement, Portland cement concrete base course designated for removal, and any unknown concrete structures, including but not limited to old foundations, platforms, or other remnants, shall be broken into pieces suitable for use in construction of embankments or disposed, as directed by the Resident.

Lubec
Breakwater
WIN: 26824.00
September 27, 2024

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(CONTAMINATED SOIL AND GROUNDWATER MANAGEMENT)

General: The work under this specification shall be performed in conformance with all the procedures and requirements described herein for the following activities: contaminated soil handling, reuse, transportation, storage, and disposal and, contaminated water handling, storage, treatment, and disposal. This specification also addresses contaminated soil location, identification, and classification. The intent of this specification is to ensure that any contaminated soil and/or water encountered during construction will be managed in a manner that protects worker health and safety, public welfare, and the environment.

Environmental Site Conditions: The Maine Department of Transportation Environmental Office (MaineDOT-ENV) conducted a series of assessments related to the Lubec - Breakwater. An initial Phase I Environmental Assessment for the project area was completed to obtain a general understanding of the environmental conditions in the vicinity of the project location. Data garnered from this assessment was used to design a Modified, Phase II Contamination Assessment for the project. The primary focus of the assessments was to evaluate environmental surface and subsurface conditions at strategic locations relative to historical use. The Phase I Assessment included a review of relevant Maine Department of Environmental Protection (MDEP) and Environmental Protection Agency (EPA) databases and field reconnaissance of the project area. During Phase II, test pits were advanced at accessible, strategic locations over the site for investigative purposes. Using data gathered from the excavation of these test pits, MaineDOT-ENV was able to identify soil impacts. A photo-ionization detector (PID) was used to test soil grab samples from the test pit locations for volatile organic compound (VOC) concentrations, which would be indicative of petroleum products. (See *Identified Zone of Contamination* below). Select samples for laboratory testing were also collected to further assist in evaluating subsurface conditions. Results of these investigations are available for review from the Senior Geologist at MaineDOT-ENV in Augusta (207-624-3000).

Identified Zone of Contamination: The MaineDOT-ENV investigation identified a general zone of affected / impacted soil associated with this project initiative. Specifically, the assessment identified that site soil, present from the ground surface to top of bedrock (approximately between 5 to 10-feet below ground surface), is

contaminated with low concentrations of select heavy metals. For reference, the impacted zone is identified as **Area A**. Specifically, **Area A** is identified as located from MaineDOT Station 96+50 through MaineDOT Station 98+50 – 20 feet left and right of centerline. Former land use activity in the southern portion of the project site included a fish processing facility, and later, a cat food manufacturing plant. Both historical facilities likely included petroleum product storage and use, and combustion of coal, oil, gas, wood, or garbage. Any bedrock encountered is inert and not considered to be contaminated.

Within **Area A**, poly-bag field samples screened with a PID did not indicate detectable concentrations of VOCs. Laboratory results (Method 8260C for VOCs) indicate that all VOCs tested following this method were below detection limits. Laboratory results for testing of Semivolatile Organic Compounds (SVOCs) (Method 8270D) indicate the presence of some compounds associated with Polycyclic Aromatic Hydrocarbons (PAHs). However, concentrations of those SVOCs detected are well below MDEP Maine Remedial Action Guidelines for Contaminated Sites (RAGs) (05/01/21) following the Construction Worker Exposure Scenario. Laboratory samples were also submitted for analysis of Resource Conservation Recovery Act (RCRA) 8 Metals. Concentrations of RCRA 8 metals were also well below MDEP RAGs following the Construction Worker Exposure Scenario. However, RCRA 8 Metals concentrations in soils in **Area A** are such that excavated material shall be managed as a Special Waste per Maine Solid Waste Management Regulations – Chapter 418.

Impacts associated with **Area A** appear to be related to historical land use activity on a portion of the project site (fish curing facility and later redeveloped as a cat food manufacturing facility – National Pet Food, Inc.) Based on these activities, wood ash or related by-products may have been deposited at the site.

In addition, some of this material may be identified as **Urban Fill**. **Urban Fill** (soils mixed with non-inert materials (brick, concrete, wood, wood ash, coal, coal ash, boiler ash, glass, plastic, metal, and demolition debris) that may be encountered in **Area A** shall be considered as **Special Waste**. **Special Waste** requires special handling, transportation, and disposal procedures.

Identifying Contaminated Soil and Groundwater: During excavation operations, **Area A** soil will be visually inspected and classified by the Resident (or MaineDOT-ENV representative). Identification and classification of contaminated soil will be based on project stationing and/or visual distinctions in soil units, or the presence of Urban Fill.

Soil excavated from within the project limits shall be classified as Group 1 or Group 2.

> **Group 1** soil shall be those soils excavated from within **Area A** and are considered contaminated. **Area A** soil shall be soil material excavated from the ground surface to the bedrock surface and/or through depth of the excavation. Impacted soil is anticipated to be encountered throughout the project area along

the driveway alignment and immediate adjacent areas of excavation. Specifically, soils excavated from MaineDOT Station 96+50 through MaineDOT Station 98+50 – 20 feet left and right of centerline.

Group 2 soil shall be those soils encountered and excavated from outside the MaineDOT Stationing identified for the Group 1 soil category. Group 2 soils are not considered to be contaminated.

Handling and Disposition of Soil Materials: Within **Area A**, soil material excavated during construction shall be handled and managed as follows:

Group 1 soils are considered as contaminated. Thus, special handling and/or disposal are required for Group 1 soil. Group 1 soil shall not be excavated without prior approval by the Resident. Excavated Group 1 soil shall be reused on the Lubec Breakwater project site property at the discretion of the Resident. Group 1 soil can be reused onsite as fill, road base material, berm material, or utilized in any means deemed appropriate by the Resident. It is anticipated all Group 1 soil can be reused on site. However, if any volume of Group 1 soil is not reutilized on the property, it is considered Surplus Group 1 soil. Surplus Group 1 soil must be disposed of or treated at a facility licensed by MDEP to accept Special Waste. If any Group 1 soil requires disposal, it will be paid for as Force Account Work under Standard Specification 109.7.5 – Force Account Work. The Contractor is solely responsible for obtaining the associated permits and approvals for the disposal or treatment of Surplus Group 1 soil from relevant Municipal, State, and Federal agencies at no additional cost to MaineDOT. Notification shall be given to the Resident once approval is granted for the acceptance of this material at the off-site facility. No removal of Surplus Group 1 soil from the project shall occur without prior approval by the Resident. If the Contractor proposes other reutilization, disposal, or treatment options, the Contractor is solely responsible for obtaining the associated permits and approvals from relevant Municipal, State, and Federal agencies at no additional cost to the MaineDOT.

Group 2 soils are not considered contaminated. Thus, special handling and disposal are not required for Group 2 soil.

The Resident is responsible for signing any manifests or bills of lading required to transport and dispose of contaminated soil. The Resident will send all manifests and bills of lading to MaineDOT, Environmental Office – Groundwater and Hazardous Waste Division, Station 16, Augusta, Maine 04333.

Health and Safety/Right-to-Know: Contractors and subcontractors are required to notify their workers of the history of the site and contaminants in **Area A** soil. As mentioned previously, analytical data indicates **Area A** soil is below relevant and applicable MDEP RAG Construction Worker Exposure Scenario thresholds. However, it

is advised the Contractor review site data, and if deemed appropriate, develop procedures based on their internal health and safety protocols. The Contractor shall notify the Resident **at least three business days** prior to commencing any excavation in **Area A**.

Dust Control: The Contractor shall employ dust control measures to minimize the creation of airborne dust during the construction process in potentially contaminated areas. As a minimum, standard dust control techniques shall be employed where heavy equipment and the public will be traveling. These may include techniques such as watering down the site or spreading hygroscopic salts.

Unanticipated Contamination: If the Contractor encounters previously undiscovered contamination or potentially hazardous conditions related to contamination, the Contractor shall immediately suspend work and secure the area. The Contractor shall notify the Resident immediately. These potentially hazardous conditions include, but are not limited to, buried containers, drums, tanks, "oil saturated soils", strong odors, or the presence of petroleum sufficient to cause a sheen on groundwater. The area of potential hazard shall be secured to minimize health risks to workers and the public and to prevent a release of contaminants into the environment. The source of any suspected contamination shall be evaluated by the Resident (or MaineDOT-ENV representative). As appropriate, the Resident will notify MDEP Response Services Unit in Bangor and MaineDOT-ENV. The Lubec Fire Department must also be notified prior to removal of buried storage tanks and associated piping. The Contractor will evaluate the impact of the hazard on construction, and with the Resident's approval, resume work in accordance with the procedures of this Special Provision.

Method of Measurement: There will be no measurement for identification and environmental screening of contaminated soil material (this will be done by the Resident or MaineDOT-ENV representative).

Measurement of off-site treatment or disposal of Surplus Group 1 soils will be by the ton of Special Excavation.

There will be no measurement for additional laboratory testing of contaminated soil that is required by the landfill or treatment facility. Testing is incidental to the disposal of Special Waste/Excavation.

Basis of Payment: There will be no payment for the identification and environmental screening of contaminated soil material (this will be done by the Resident or MaineDOT-ENV representative).

Although not anticipated, if any Group 1 soil requires disposal, it will be paid for as Force Account Work under Standard Specification 109.7.5 – Force Account Work.

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 203 – EXCAVATION AND EMBANKMENT, with the following modifications:

203.09 Preparation of the Embankment Area

Add the following sentence to the beginning of Subsection 203.09:

Preparation of the subgrade in earthwork areas of the project shall be in accordance with Subsection 203.17 of this Special Provision.

203.17 Preparation and Protection of the Subgrade

Add the following paragraphs to the beginning of Subsection 203.17:

All existing vegetation, unsuitable existing fill materials, asphalt, topsoil and other organic or deleterious material shall be removed from earthwork areas of the project to expose suitable subgrade soils consisting of inorganic granular soils. The subgrade preparation area for the onshore earthwork consisting of the parking lot, boat ramp, and slope protection shall extend outward from the edge of Main Street to the edge of the breakwater. The proposed surface will slope from the edge of Main Street to the edge of the breakwater at varying slopes indicated on the Contract Plans. The limit of the zone of influence is defined by a line extending downward and outward at a 1.5 horizontal to 1 vertical slope from a point two feet outside of the lower outside edge of the slab to the exposed subgrade surface.

Unsuitable subgrade soils observed in the earthwork areas shall be over-excavated and replaced using granular material that meets the material specifications for Granular Borrow Backfill (MaineDOT Standard Specification 703.19). The subgrade soils shall be proof rolled using a 10-ton smooth-drum vibratory roller with a minimum of 12 passes, and successive passes should be overlapped a minimum of 20%. Loose or yielding areas shall also be over-excavated and replaced using Granular Borrow Backfill. Borrow material shall be placed in loose lifts not to exceed 10 inches and compacted to 90% of the material's maximum dry density as determined by AASHTO T-180. The in-place density shall be verified for each lift placed. The moisture content of Granular Borrow material shall be within +/- 2% of optimum moisture content as provided by the Modified Proctor. Special placement and compaction methods may be warranted in wet areas. Crushed stone wrapped in geotextile fabric is typically used to fill depressions in wet areas. Geotextile used will be in accordance with MaineDOT Standard Specifications 722.04 and 620.

SECTION 401 - HOT MIX ASPHALT PAVEMENT

401.01 Description The Contractor shall furnish a uniformly blended, homogeneous mixture placed as one or more courses of Hot Mix Asphalt Pavement (HMA) on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the MaineDOT Policies and Procedures for HMA Sampling and Testing.

401.02 Materials Materials shall meet the requirements specified in Section 700 - Materials:

Asphalt Cement	702.01
Aggregates for HMA Pavement	703.07
RAP for HMA Pavement	703.08
HMA Mixture Composition	703.09

401.03 Composition of Mixtures The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), approved antistrip, warm mix additive, and/or mineral filler if required. HMA shall be designed and tested according to AASHTO R 35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). Unless otherwise noted in Special Provision 403 - Hot Mix Asphalt Pavement, the design, verification, Quality Control, and Acceptance tests for this mix will be performed at 65 gyrations.

TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	**Required Density (Percent of G_{mm})**			**Voids in the Mineral Aggregate (VMA) (Minimum Percent)**					**Voids Filled with Binder (VFB) (Minimum %)**	**Fines/Eff. Binder Ratio**
				Nominal Maximum Aggregate Size (mm)						
	$N_{initial}$	**N_{design}**	**N_{max}**	**25.0**	**19.0**	**12.5**	**9.5**	**4.75**		
< 3.0	≤90.5	96.0	≤98.0	13.0	14.0	15.0	16.0	16.0	65-80*	0.6-1.2
3 to <10	≤89.0									
≥ 10										

*For 9.5 mm nominal maximum aggregate size mixtures, the maximum VFB is 82. For 4.75 mm nominal maximum aggregate size mixtures, the maximum VFB is 84.

The Contractor shall submit a JMF to the Department for each mixture to be supplied. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles and 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Contractor shall provide aggregate samples to the Department unless otherwise required. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce

samples for testing of the mixture. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes for a JMF as outlined in the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual: Mix Design Approval Section.

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be reduced up to 10 percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

401.031 Warm Mix Technology The Contractor may place Hot Mix Asphalt Pavement produced with an accepted WMA technology if approved by the Department. Methods or technologies shall generally be at the Contractors option, but will be limited to proven, Agency and Industry accepted practice. Mixture production, placement and volumetric testing details, including temperatures, shall be included in the project specific QCP, and submitted to the Department for approval prior to any work.

401.04 Temperature Requirements The temperature of the mixture shall conform to the tolerances in Table 2 as measured at the truck at the mixing plant and at the paver unless otherwise authorized by the Department.

TABLE 2: ALLOWABLE TEMPERATURE RANGES

PGAB Grade(s)	**Temperature Range (°F)**
PG58-28 / PG64-28	275-325
PG64E-28 / PG70E-28	285-335

401.05 Performance Graded Asphalt Binder The Contractor shall utilize either a PG58-28, PG64-28, PG64E-28, PG70E-28, or other grade as specified in the 403 Special Provision. The Contractor shall utilize a PG64-28 if no liquid grade is specified within the 403 Special Provision.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

a. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
b. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

Use	Minimum Ambient Air Temperature	Zone 1 Allowable Placement Dates	Zone 2 Allowable Placement Dates
Surface course (travelway & adjacent shoulders*) less than 1 in. thick placed during conditions defined as "night work"	50°F	June 1 to Saturday following September 1	
Surface course (travelway & adjacent shoulders*) less than 1 in. thick	50°F	May 15 to Saturday following September 15	
Travelway surface course greater than or equal to 1 in. thick	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for surface course on bridge decks	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for base or shim course on bridge decks	50°F	April 15 to November 15	
HMA for use other than travelway surface course	40°F	April 15 to November 15	
HMA for curb, driveways, sidewalks, islands, or other incidentals	40°F	N/A	N/A
HMA produced with an approved WMA technology for base or shim course	35°F	April 15 to November 15	
*Adjacent shoulders shall be considered shoulders paved in the same operation as the travelway.			

The ambient air temperature shall be determined by an approved thermometer placed in the shade at the paving location. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface regardless of the ambient air temperature. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

401.07 Hot Mix Asphalt Plant

401.071 General Requirements HMA plants shall conform to AASHTO M 156, Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures with exception of Section 4.2.1, 4.2.2, 4.3.4, 4.3.5, and 4.12.2.

All HMA plants will be inspected annually by the Department prior to producing HMA for Department projects. The Contractor shall provide the Department at least 72 hours' notice that the plant is ready for inspection. The Contractor shall equip the plant with ladders and platforms that are accessible and safe to obtain samples of PGAB, aggregate and mix from the relevant tanks, collector belts and haul units. Silo storage time of mixtures shall not exceed 36 hours.

401.072 Stockpiles The Contractor shall provide sufficient space for stockpiles and maintain a minimum of supply for 2 days production of all aggregate products used in MaineDOT approved mix designs currently under production. A minimum stockpile supply of 100 ton (70 yards) shall be

maintained at all times. The Contractor shall construct stockpiles to prevent intermingling and to minimize segregation. All stockpiles used in MaineDOT mixes shall be identified with weatherproof signs at least 12" high and 24" wide, with reflective lettering at least 2" high.

401.073 Cold Feeds Cold Feed Bins will have bin dividers to keep aggregate products separated. Adequate means must be provided for obtaining samples of the combined flow of all Cold feed bins.

401.074 Dryer Dryer shall be capable of heating aggregate to required mixing temperature and shall be in good operation and condition. Dryer shall be subject to annual inspection prior to start-up. The Contractor shall dry and heat the aggregates for the HMA to the required temperature, adjusting flames to avoid damaging the aggregates. The Contractor shall provide the Department a minimum period of 72 hours to inspect the dryer and provide at least 24 hours' notice that the dryer is ready for inspection.

401.075 Asphalt Binder The plant shall include a heating system and insulation to maintain the asphalt binder at a uniform temperature for proper mixing and compaction. A thermometer shall be provided in the asphalt binder line. No direct flame may come in contact with tank. A sampling valve shall be provided in the circulation line downstream of any binder additive used unless otherwise approved by the Department. The Contractor shall drain down the asphalt as low as safely possible in any tank that will be switched to a new source or grade prior to adding the new PGAB.

401.076 Additives Additives (WMA, anti-strip, etc.) introduced into the binder at the HMA plant shall be introduced per the supplier's recommendations and shall be approved by the Department. The system for introducing additives shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all production rates and batch sizes. Additive introduction systems shall be controlled by a proportioning device to the amount required on the JMF plus or minus 0.1% of the target. Additive introduction systems shall
be interlocked with the plant and the recordation (batch tickets or drum recordation) shall display the additive and the weight and percentage added. A means for sampling the PG binder with additive introduced will be provided. The sampling point shall be after the additive is mixed with the PGAB before entering the drum or mixer unit.

401.077 Batch Plants

Hot Bins Hot bins shall provide uniform continuous operation and be in good working condition. The plant shall be able to provide samples of hot bins upon request. Overflow shall be provided for each hot bin. Hot bin gates shall close without leaking. Bin walls must prevent intermingling between bins. Each hot bin shall have low level indicators which will alert the operator when the bin is empty.

Mixer Unit Clearance between blades and liner shall be 1" maximum, unless the aggregate exceeds 1 ¼" then the clearance shall be 1 ½". The spray bar length shall be at least 75% of the mixer length. The mixer unit shall be a twin pug mill-type mixer capable of mixing continuously for at least 45 seconds after all materials have been introduced into the mixer. The blades in the mixer shall be capable of producing a homogenous mixture. If the mixer is not enclosed, it shall be equipped with an adjustable hood to prevent loss of dust by dispersion. The mixer unit shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department the opportunity to inspect the mixer unit prior to the

annual inspection. The Contractor shall provide the Department a minimum period of 72 hours to inspect the mixer unit and provide at least 24 hours' notice that the mixer unit is ready for inspection.

Mineral Filler Mineral filler and fiber shall utilize separate bins and feed systems to store and proportion the required quantity into the mixture. The feed systems shall be accurate to no more than 10% of the required weight with a convenient and accurate means of calibration. Mineral filler and fiber shall be introduced in the weigh hopper and uniformly distributed prior to the injection of the asphalt binder.

Automation The HMA batch plant shall automatically batch, mix and discharges mixes. The batch plant shall accurately proportion the various materials in the proper order by weight. The entire batching and mixing cycle shall be continuous and shall not require any manual operations. The batch plant shall use auxiliary interlock circuits to trigger an audible alarm whenever an error exceeding the acceptable tolerance occurs. Along with the alarm, the printer shall print an asterisk on the delivery slip in the same row containing the out-of-tolerance weight. The automatic proportioning system shall be capable of consistently delivering material within the full range of batch sizes. When RAP is being used, the plant must be capable of automatically compensating for the moisture content of the RAP.

The HMA batch plant shall be operated within the following tolerances:

Each aggregate component	+/- 1.5% cumulative, per bin
Mineral Filler	+/- 0.5%
Bituminous Material	+/- 0.1%
Zero return (aggregate)	+/- 0.5%
Zero Return (AC)	+/- 0.1%
Additives	+/- 0.1%

Recordation All plants shall be equipped with an approved digital recording device. The printer shall mark any weight on the ticket that exceeds tolerance. The delivery slip shall contain information required under Section 108.1.3 - Provisions Relating to Certain Measurements, Mass and paragraphs a, b, and c of Section 401.078.

401.078 Drum Plants

Cold Feeds and Delivery System A scalper screen shall be used to remove oversize material. The accuracy of the belt scale shall be within +/- 1.0% of the actual weight being measured. The plant shall be capable of correcting for aggregate moisture. Mineral filler and fiber shall utilize separate bin(s) and feeder systems to store and proportion the required quantity into the mixture. The feed systems shall be accurate to no more than +/- 10% of the required weight with a convenient and accurate means of calibration. The plant shall be equipped with a single control to change all feed rates. Mineral filler and fiber shall be introduced such that dry mixing is accomplished no less than 18 inches prior to the injection of the asphalt binder. The Contractor shall ensure that the mineral filler does not become entrained in the exhaust stream of the dryer.

Binder System The flow of asphalt binder shall adjust automatically with dry aggregate weights. The Department will conduct an asphalt flow meter check annually and after each change of plant location. The flow meter check must be performed prior to producing mix for Department projects. The plant must be configured to provide a convenient means to check accuracy of the flow meter. The flow meter will be considered accurate if the measured weight is within 1% of actual weight.

Drum Mixer The plant shall be equipped with a diversion system where mix can be diverted at startup/shutdown and any time. The drum mixer shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department a minimum period of 72 hours to inspect the drum mixer while providing at least 72 hours' notice that the drum mixer is ready for inspection.

Recordation An approved automatic ticket printer system shall be used to print delivery slips. The requirements for delivery slips for payment of materials measured by weight, as given in the following Sections, shall be waived: 108.1.3 a., 108.1.3 b., 108.1.3 c., and 108.1.3 d. The automatic printed ticket will be considered as the Weight Certificate. The dry aggregate weights and binder flow shall be recorded as well as mineral filler and all binder additives. The recordation of materials shall be printed a minimum of every ten minutes while in production.

The requirements of Section 108.1.3 f. - Delivery Slips, shall be met by the delivery slip printed by the automatic system, which accompanies each truckload, except for the following changes:

a. The quantity information required shall be individual weights of each batch or total net weigh of each truckload.
b. Signatures (legible initials acceptable) of Weighmaster (required only in the event of a malfunction as described in 401.074 c.).
c. The MaineDOT designation for the JMF.

401.079 Scales and Weight Checks Scales shall meeting the requirements of Section 108 - Payment. The scales shall be inspected and sealed by the State Sealer (or approved alternative) as often as the Department deems necessary to verify their accuracy. Plant scales shall be checked prior to the start of the paving season, and each time a plant is moved to a new location. Subsequent checks will be made as determined by the Resident. The Contractor will have at least ten 50 pound masses for scale testing at batch plants. At Contractor's option, the Contractor can use one single test weight that has been checked on sealed scales. This weight shall be 1,000 lbs. or greater. At least twice during each 5 days of production either of the following checks will be performed:

a. A loaded truck may be intercepted and weighed on a platform scale that has been sealed by the State Sealer of Weights and Measures within the past 12 months. The inspector will notify the producer to take corrective action on any discrepancy over 1.0%. The producer may continue to operate for 48 hours under the following conditions.
    1. If the discrepancy does not exceed 1.5%; payment will still be governed by the printed ticket.
    2. If the discrepancy exceeds 1.5%, the plant will be allowed to operate as long as payment is determined by truck platform scale net weight.

    If, after 48 hours the discrepancy has not been addressed and reduced below 1.0%, then plant operations will cease. Plant operation may resume after the discrepancy has been brought within 1.0%.
b. Where platform scales are not readily available, a check will be made to verify the accuracy and sensitivity of each scale within the normal weighing range and to assure that the interlocking devices and automatic printer system are functioning properly. If platform scales are not readily available, a weight with a known mass-verified and sealed annually by a licensed scale company, may be used by hanging weight from silo or surge hopper, at lower middle and upper third levels upon request to verify scale accuracy.
c. In the event of a malfunction of the automatic printer system, production may be continued without the use of platform truck scales for a period not to exceed the next two working

days, providing total weights of each batch are recorded on weight tickets and certified by a Licensed Public Weighmaster.

401.08 Hauling Equipment Units hauling HMA shall have tight, clean, and smooth metal bodies, which have been thinly coated with a small amount of approved release agent to prevent the mixture from adhering to the bodies. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed.

All mix haul units shall have a cover of water repellent material capable of heat retention, which completely covers the mixture. The cover shall be securely fastened on the truck, unless unloading. Haul units shall have an opening on both sides near the midpoint of the body, at least 12 in above the bed, which will accommodate a thermometer stem.

401.09 Pavers The Contractor shall use pavers meeting the requirements of this section unless otherwise authorized by the Department. Pavers shall meet the requirements of Table 4: Paver Requirements.

TABLE 4: PAVER REQUIREMENTS

Use	Paver Requirement
Traveled Way & Auxiliary Lanes	Equipped with a 10 ft minimum main screed with activated extensions. The minimum tractor weight shall be 30,000 pounds.
	Equipped with automatic grade and slope controls that automatically adjust the screed and increase or decrease the layer thickness to compensate for irregularities in the preceding course. The controls shall maintain the proper transverse slope and be readily adjustable so that transitions and superelevated curves can be properly paved. The controls shall operate from a fixed or moving reference such as a grade wire or ski type device (floating beam) with a minimum length of 30 ft, a non-contact grade control with a minimum span of 24 ft, except that a 40 ft reference shall be used on interstate and divided highway projects.
All HMA Placement	Self-contained, self-propelled units of sufficient class and size to place Hot Mix Asphalt Pavement in full lane widths specified in the contract on the main line, shoulder, or similar construction.
	Equipped with a free-floating activated heated main screed with activated extensions. Pavers with extendible screeds shall have auger extensions and tunnel extenders as per the manufacturer's recommendations, a copy of which shall be available if requested.
	Equipped with a receiving hopper with sufficient capacity for a uniform spreading operation and a distribution system to place the mixture uniformly, without segregation in front of the screed.
	Operated in such a manner as to produce a visually uniform surface texture and a thickness within the requirements of Section 401.11 - Surface Tolerances. The screed assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

The Contractor shall have the paver at the project site sufficiently before the start of paving operations to be inspected and approved by the Department. The Contractor shall repair or replace any paver found worn or defective, either before or during placement, to the satisfaction of the Department. Pavers that produce an unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects. On a daily basis, the Contractor shall perform density testing across that mat as detailed in Section 401.191 Quality Control - Method A, B & C.

401.10 Rollers Rollers shall be static steel, pneumatic tire, oscillatory, or approved vibrator type. Rollers shall be in good mechanical condition, capable of starting and stopping smoothly, and be free from backlash when reversing direction. Rollers shall be equipped and operated in such a way as to prevent the picking up of hot mixed material by the roller drums or tires. Crushing of the aggregate or displacement of the HMA during rolling will not be permitted. Any HMA Pavement that becomes loose, broken, contaminated, shows an excess or deficiency of PGAB, or is in any other way defective shall be removed and replaced at no additional cost with fresh material which shall be immediately compacted to conform to the adjacent area.

The Contractor shall repair or replace any roller found to be worn or defective, either before or during placement, to the satisfaction of the Department. Rollers that produce grooved, unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA. The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option unless otherwise specified in the contract, provided specified density is attained and with the following requirements:

a. On variable-depth courses, the first lift of pavement over gravel, reclaimed pavement, on irregular or milled surfaces, or on bridges, at least one roller shall be 16 ton pneumatic-tired. Pneumatic-tired rollers shall be equipped with skirting to minimize the pickup of HMA materials from the paved surface. When required by the Resident, the roller shall be ballasted to 20 ton.
b. Compaction with a vibratory or steel wheel roller shall precede pneumatic-tired rolling, unless otherwise authorized by the Department.
c. Vibratory rollers shall not be operated in the vibratory mode on bridge decks.
d. Any method, which results in cracking or checking of the mat, will be discontinued and corrective action taken.
e. The use of an oscillating steel roller shall be required to compact all mixtures placed on bridge decks.

The maximum operating speed for a steel wheel or pneumatic roller shall not exceed the manufacturer's recommendations, a copy of which shall be available if requested.

401.11 Surface Tolerances The Department will check the following surface tolerances:

a. Longitudinally: The pavement surface profile shall be free of deviations in excess of +/- ¼ inches from the required pavement surface profile grade. To verify the surface tolerance a straight plane shall be established using 16 foot straight edge or a taught string line placed parallel to the direction of travel and checked continuously across the width of the lane.
b. Transversely: The pavement surface profile shall be free of deviations in excess of 0 inches below and ¼ inches above the required cross-sectional profile grade. To verify the surface tolerance a straight plane shall be established using a 10 foot straight edge or taught string line placed perpendicular to the direction of travel and checked continuously along the length of the lane.

The Contractor shall correct defective areas by removing defective work and replacing it with new material as directed by the Department. The Contractor shall furnish a 10 foot straightedge for the Department's use.

401.12 Preparation of Existing Surface The Contractor shall thoroughly clean the surface upon which Hot Mix Asphalt Pavement is to be placed of all objectionable material. When the surface of the existing base or pavement is irregular, the Contractor shall bring it to uniform grade and cross section. All surfaces shall have a tack coat applied prior to placing any new HMA course. Tack coat shall conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

401.13 Spreading and Finishing On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the Contractor shall spread, rake, and lute the HMA with hand tools to provide the required compacted thickness. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed. On roadways with adjoining lanes carrying traffic, the Contractor shall place each course per the conditions in Table 5, unless otherwise noted by the Department in Section 403 - Hot Mix Asphalt Pavement.

TABLE 5: PLACEMENT CONDITIONS FOR ADJOINING LANES

Depth (at centerline)	Placement Conditions
Vertical Longitudinal Joint	
¾" and less (incl. shim)	The Contractor may place the HMA course over the full single travel lane width for each production day.
1" to 1 ¼"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension.
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.
Greater than 2"	The Contractor shall place each course over the full width of the traveled way section being paved that day.
Notched-Wedge Longitudinal Joint	
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint length of 0.5 miles will be permitted over the weekend.
Greater than 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.

The Contractor shall place the specified course over the full width of the mainline traveled way being paved, regardless of use, depth, or longitudinal joint type prior to Memorial Day, July 4th, Labor Day, paving suspensions exceeding three days, or other dates as specified by special provision.

The Contractor shall install additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double application of raised pavement markers at 100 foot intervals, or temporary painted line. For any exposed vertical edge between the shoulder and traveled way, at a minimum, the use of temporary painted line, or RPMs placed along the edge of traveled way at 200 foot intervals is required. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of

0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

401.14 Hot Mix Asphalt Placement on Bridge Decks Hot mix asphalt pavement placed on bridges shall also conform to Section 508.04 and the following requirements.

a. The minimum production and placement temperature for the Hot Mix Asphalt placed over membrane shall conform to the manufacturer's recommendations.
b. The bottom course shall be placed with an approved rubber mounted paver of such type and operated in such a manner that the membrane waterproofing will not be damaged in any way.
c. The top course shall not be placed until the bottom course has cooled sufficiently to provide stability.
d. The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck, unless otherwise directed by Special Provision.
e. After the top course has been placed, the shoulder areas shall be sealed 3 ft wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 612.03 - Sealing and Section 702.12 - Emulsified Bituminous Sealing Compound. The first application shall be pre-mixed with fine, sharp sand, similar to mortar sand, as needed to fill all voids in the mix in the area being sealed. The second application may be applied without sand. The sealer shall be carried to the curb at the gutter line in sufficient quantity to leave a bead or fillet of material at the face of the curb. The area to be sealed shall be clean, dry and the surface shall be at ambient temperature. The furnishing and applying of the required quantity of sealer for the bridge shoulder areas shall be incidental to placing the hot mix asphalt pavement.
f. The area between the edge of the membrane and the vertical surface shall be completely sealed with hot-applied rubberized asphalt material, meeting the requirements of Type 4 crack seal; shall be applied to form a complete seal between the membrane and the vertical surface and shall extend up the vertical surface to within ½ inch of the top of the HMA wearing surface. This work shall be considered incidental to the contract pavement items unless 508 membrane items are included in the contract.

401.15 Compaction Immediately after the Hot Mix Asphalt Pavement has been spread, struck off, and any surface irregularities adjusted, the Contractor shall thoroughly and uniformly compact the HMA by rolling.

The Contractor shall roll the surface when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving. The Contractor shall prevent adhesion of the HMA to the rollers or vibrating compactors without the use of fuel oil or other petroleum-based release agents. Solvents designed to strip asphalt binders from aggregates will not be permitted as release agents on equipment, tools, or pavement surfaces.

The Contractor shall immediately correct any displacement occurring as a result of the reversing of the direction of a roller or from other causes to the satisfaction of the Department. Any operation other than placement of variable depth shim course that results in breakdown of the aggregate shall be discontinued. Any new pavement that shows obvious cracking, checking, or displacement shall be removed and replaced for the full lane width as directed by the Resident at no cost to the Department.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, the Contractor shall thoroughly compact the HMA with mechanical vibrating compactors. The Contractor shall only use hand tamping in areas inaccessible to all other compaction equipment. On depressed areas, the Contractor may use a trench roller or cleated compression strips under a roller to transmit compression to the depressed area.

Any HMA that becomes unacceptable due to cooling, cracking, checking, segregation or deformation as a result of an interruption in mix delivery shall be removed and replaced with material that meets contract specifications at no cost to the Department.

For all items requiring pavement density testing, the Contractor shall cut 6-inch diameter cores at no additional cost to the Department by the end of the working day following paving. Cores shall be cut such that the nearest edge at least 9 inches from any joint. Pre-testing of the cores will not be allowed. If the Contractor and the Department mutually determine that a core is damaged, the Contractor shall cut new core(s) at the same offset and within 3 ft of the initial sample. The Contractor and the Department will mutually determine if underlying material is adhered to the core and if so will mark the core at the point where sawing is needed. The Department will place the cores in a secure container and the Contractor shall transport the cores to the designated MaineDOT lab. The cores will be saw cut by the Department to remove underlying layers. No recuts are allowed at a test location after the core has been tested.

On all sections of overlay with wearing courses designed to be 1 in or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Mix Asphalt Pavement. For overlays designed to be 1 in or less in thickness, density shall be obtained by the same rolling train and methods as used on mainline travelway surface courses with a pay adjustment for density, unless otherwise directed by the Department.

There shall be no pay adjustment for density on shoulders unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. Density for shoulders shall be obtained by the same rolling train and methods as used on mainline travelway, unless otherwise directed by the Department. Efforts to obtain optimum compaction will not be waived by the Department unless it is apparent during construction that local conditions make densification to this point detrimental to the finished pavement surface course.

401.16 Joints The Contractor shall construct wearing course transverse and longitudinal joints in such a manner that minimum tolerances shown in Section 401.11 - Surface Tolerances are met when measured with a straightedge. The paver screed shall maintain a uniform head of HMA during transverse and longitudinal joint construction. The HMA shall be free of segregation and meet temperature requirements outlined in Section 401.04. Transverse joints of the wearing course shall be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools. The Contractor shall apply a coating of emulsified asphalt immediately before paving all joints to the vertical face and 3 in of the adjacent portion of any pavement being overlaid except those formed by pavers operating in echelon. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one working day.

Where pavement under this contract joins an existing pavement, or when the Department directs, the Contractor shall cut the existing pavement along a smooth line, producing a neat, even, vertical joint. The Department will not permit broken or raveled edges. The cost of all work necessary for the preparation of joints is incidental to related contract pay items. Longitudinal joints shall be generally straight to the line of travel and constructed in a manner that best ensure joint integrity. Methods or activities that prove detrimental to the construction of straight, sound longitudinal joints will be discontinued.

The Contractor may utilize an approved notched wedge joint device on all HMA layers 1 ½ inches in depth or greater. A notched wedge joint shall be constructed as shown in Figure 1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches.

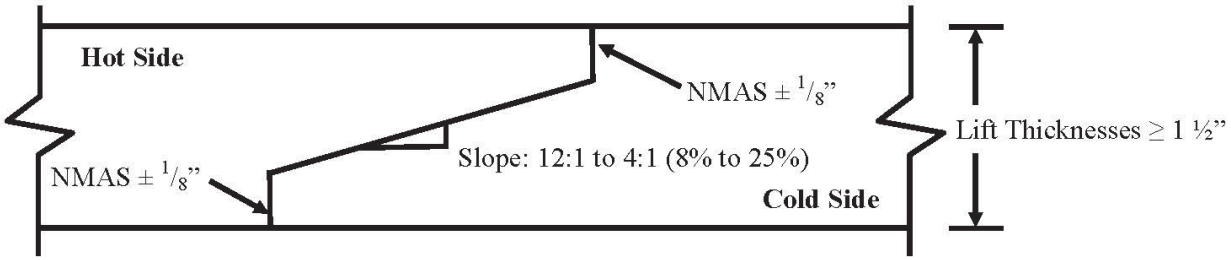


FIGURE 1: Notched Wedge Joint

Notes
1. An emulsified tack coat shall be applied to the vertical edges and the wedge surface so that the total rate is 0.05 G/SY plus the normal specified rate prior to placing the adjacent layer. The Contractor may elect to apply the emulsified tack coat in one or multiple passes.
2. Dimensions shown are compacted depths (after rolling is complete).

The Department reserves the right to have centerline cores cut by the Contractor's QC personnel for informational purposes to monitor the density along the joint. Informational cores at the centerline joint will be taken centered over the tapered part of the wedge joint.

Any notched wedge joint constructed areas that become cracked or broken shall be trimmed back to the limits affected prior to placing the adjoining lane. Any materials that become unbound or separated from the wedge or tapered joint section, or contaminated by materials determined by the Department as being detrimental to the construction of a sound construction joint, shall be removed by sweeping, compressed air and lance, or by hand tools as required. This work, if necessary, will not be paid for directly, but shall be considered incidental to the related contract items.

The Contractor shall apply a coating of emulsified asphalt on the vertical and tapered surface of the longitudinal centerline joint immediately before paving if the notched wedge joint device is used.

The total rate of application shall be 0.050 G/SY plus the normal specified tack coat rate. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces.

401.17 Hot Mix Asphalt Documentation The Contractor and the Department shall agree on the amount of Hot Mix Asphalt Pavement that has been placed each day. All delivery slips shall conform to the requirements of 401.078.

401.18 Prepave Meeting Prior to placing any mix, the Department and the Contractor shall hold a Pre-paving conference to discuss the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, random sampling, project lots and sublots and traffic control. A copy of the density QC random numbers to be used on the project shall be provided to the Resident. The Departments' random numbers for Acceptance testing shall be generated and on file with the Resident and the Project Manager. All personnel of the Department and the Contractor who have significant information relevant to the paving items shall attend, including the responsible onsite paving supervisor for the Contractor. The Resident will prepare minutes of the conference and distribute them to all attendees. Any requests to revise the minutes must be made to the Resident within 7 Days of Receipt. These minutes will constitute the final record of the Pre-paving conference. On the first day of paving and whenever there is a change in the onsite paving foreman or paving inspector, the Department and the Contractor shall hold an informal onsite meeting to review the minutes of the Pre-paving conference, Project Specific QCP, Plans, Typicals, Special Provisions and communication process. This meeting shall be held prior to placing any mix and, at minimum, shall occur yearly for multi-year contracts. The onsite paving supervisor, QCT, Superintendent, Resident and/or paving inspector shall attend.

401.19 Contractor Quality Control – Method A, B, C & D
The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The Contractor shall not begin paving operations until the Department approves the QCP in writing.

401.191 Quality Control The QCP shall meet the requirements of Section 106.6 – Acceptance and this Section. The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement, and shall include the following personnel meeting these minimum requirements:

a. QCP Administrator – The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or their designee in the QCP Administrator's absence) shall be available to communicate with the Department at all times.
    - For items accepted under Methods A and B, the QCP Administrator shall be certified as a Quality Assurance Technologist (QAT) by NETTCP.
    - For items accepted under Methods C and D, the QCP Administrator shall be certified by NETTCP as a Quality Assurance Technologist (QAT), Plant Technician, or Paving Inspector.
b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.
c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT

shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

The QCP shall detail the coordination of the activities of the Plan Administrator, the PCT and the QCT. The Project Superintendent shall be named in the QCP, and the responsibilities for successful implementation of the QCP shall be outlined.

The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement including, but not limited to, the following:

a. General Requirements:
    - Job Mix Formulas (JMFs)
    - Name of QCP Administrator, and certification number
    - Description of corrective action process
    - Disposition of defective material
    - A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.
b. Process Control Requirements: Each Hot Mix Asphalt plant shall have a Plant Specific Process Control Plan. At minimum the plan shall include:
    - Name of Plant Specific Process Control Technician(s) and certification number(s)
    - Hot mix asphalt plant details
    - Stockpile Management
    - Mixing & transportation
    - Silo management and details
    - A detailed description of RAP processing, stockpiling and introduction into the plant
    - PG Binder management:
        - Tanks and storage (including polymer modified binders if applicable)
        - Binder temperature
        - Sample points
        - Method to ensure mixture contains the specified binder grade
        - Additive introduction details if introduced at the plant
    - Testing and inspection plan for control of aggregates and RAP
    - Mix Testing and inspection plan
c. Quality Control Requirements – Method A & B:
    - Name of Quality Control Technicians(s) and certification number(s)
    - Laydown operations
    - Longitudinal joint construction including the tacking of all joints.
    - Procedures for avoiding paving in inclement weather
    - Compaction of shoulders
    - Methods to ensure that segregation is minimized
    - Procedures to determine the maximum rolling and paving speeds based on best engineering practices and past experience in achieving acceptable pavement smoothness.

- Sequence for paving around drainage structures, under guard rail, around curb, at bridges, intersections, drives and minor approaches to ensure proper compaction, finish, and drainage.
- Type of release agent to be used on haul units, tools and rollers.

d. Quality Control Requirements – Method C and D:
   - Name of QCP Administrator and certification number(s) as specified in Section 401.19.
   - Name of Process Control Technicians(s) and certification number(s).
   - Name of Quality Control Technicians(s) and certification number(s).
   - Anticipated Compaction Temperature Zones for each roller pass during placement.
   - Mix TMD to be used for density gauge setting for method spec density work
   - Procedures for avoiding paving in inclement weather.
   - Type of release agent to be used on haul units, tools and rollers.
   - A note stating that the use of petroleum-based fuel oils, such as diesel or kerosene, or asphalt stripping solvents will not be permitted.

The Contractor shall also supply a Laydown Operation Plan that addresses sequence of work, layout of work, longitudinal joint construction, compaction of shoulders, methods to minimize segregation, and procedures to achieve acceptable pavement smoothness.

For each production day, a summary of each day's results, including a daily paving report, summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and the number of roller passes, shall be recorded and signed by the QCT and presented to the Department's representative by 1 PM the following working day.

Unless otherwise noted in Section 403 – Hot Mix Asphalt Pavement, the Contractor shall submit a modified QC Plan every year detailing, how the mix is to be placed, what equipment is to be used, and what HMA plant is to be used for Items covered under the Plan. All mix designs (JMF) shall be approved and verified by MaineDOT prior to use.

A QCP, certified QC personnel, and a Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) accepted under visual or Method D. An approved JMF shall be provided to the Resident prior to placement.

The Contractor shall certify the mix and the test results for each item by a Certificate of Compliance.

The Contractor shall have a testing lab at the plant site, equipped with all testing equipment necessary to complete the tests in Table 6. The Contractor shall generate QC sampling random numbers for each approved mix design every year. A copy of the random numbers shall be emailed to the QC.mainedot@maine.gov email address and remain on-file (in print) and be available for inspection at the QC laboratory. The Contractor shall sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with the minimum frequencies per each approved mix design.

TABLE 6: MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Temperature of mix	6 per day at street and plant	-
Temperature of mat	4 per day	-
%TMD (In-Place Density - Surface)	1 per 125 ton	AASHTO T 355 or AASHTO T 343
%TMD (In-Place Density - Base)	1 per 250 ton	AASHTO T 355 or AASHTO T 343
Fines / Effective Binder	1 per 500 ton	AASHTO T 312*
Gradation	1 per 500 ton	AASHTO T 30
PGAB Content	1 per 500 ton	AASHTO T 164 or AASHTO T 308
Voids at N_{design}	1 per 500 ton	AASHTO T 312*
VMA at N_{design}	1 per 500 ton	AASHTO T 312*
Rice Specific Gravity	1 per 500 ton	AASHTO T 209
Percent Fractured Particles	1 per 5,000 ton	AASHTO T 335
Flat and Elongated Particles	1 Per 5,000 ton	ASTM D4791
Fine Aggregate Angularity	1 Per 5,000 ton	AASHTO T 304

*Method A and B only

The Contractor shall monitor plant production on each approved mix design using running average of three control charts as specified in Section 106 - Quality. Control limits shall be as noted in Table 7 below. The UCL and LCL, shall not exceed the allowable gradation control points for the particular type of mixture as outlined in Table 1 of Section 703.09.

TABLE 7: CONTROL LIMITS

Property	UCL and LCL
Percent Passing 4.75 mm and larger sieves	Target +/- 4.0
Percent Passing 2.36 mm sieve	Target +/- 2.5
Percent Passing 0.075 mm sieve	Target +/- 1.0
PGAB Content	Target +/- 0.25
VMA at N_{design}	LCL = LSL + 0.2
Voids at N_{design}	JMF Target +/- 1.2
Theoretical Maximum Specific Gravity	JMF Target +/- 0.020

The Contractor shall submit all QC test and inspection reports and updated control charts to the Resident and QC.mainedot@maine.gov by email. The reports and updated control charts shall be signed by the appropriate technician and be submitted to the Department by 1:00 P.M. on the next working day, except when otherwise noted in the QCP and approved by the Department.

The Contractor shall also retain splits of the previous 5 QC tests, with QC results enclosed for random selection and testing by the Department. Test results of splits that do not meet the Dispute Resolution

Variance Limits in Table 18 shall trigger an investigation by the MaineDOT Independent Assurance Unit and may result in that lab losing NETTCP certification and the ability to request a dispute [Section 401.50 - Process for Dispute Resolution].

The Contractor shall make density test results, including randomly sampled densities, available to the Department onsite. Summaries of each day's results, including a daily paving report summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and the number of

roller passes, shall be recorded and signed by the QCT and provided to the QC.mainedot@maine.gov email address and Resident in writing by 1:00 p.m. the next working day. The Contractor shall fill all holes in the pavement resulting from cutting cores by the Contractor or the Department with a properly compacted, acceptable mixture no later than the following working day. Before filling, the Contractor shall carefully clean the holes and apply a coating of emulsified asphalt. The Contractor may only cut additional cores for verification of the densometer, at a rate not to exceed 3 per day or 2 per 1000 ton placed.

If the Contractor's control chart shows the process for a given mix design to be out of control (defined as a single point outside of the control limits on the running average of three chart) on any property listed in Table 7: Control Limits, the Contractor shall notify the Resident of all affected projects in writing of the corrective action by 1:00 PM the next working day. The written description shall detail what action is being taken by the Contractor to bring the property in question back within control limits. Subsequent quality control results are expected to demonstrate an improvement and regression towards the aim. The Department reserves the right to take action, to include cessation of production, in the case of repeated results outside the Table 7 control chart control limits.

On a daily basis, or whenever equipment type or sequence is modified, the Contractor shall perform density testing across the mat being placed, prior to being compacted by equipment at 12 in intervals. If the density values vary by more than 2.0% from the mean, the Contractor shall make adjustments to the screed until the inconsistencies are remedied. Failure to replace or repair defective placement equipment may result in a letter of suspension of work and notification of a quality control violation resulting in possible monetary penalties as governed by Section 106 – Quality.

The Contractor shall cease paving operations whenever one of the following occurs:

a. The quality level for density using all quality control tests for the current Lot is less than 60 PWL.
b. The Coarse Aggregate Angularity or Fine Aggregate Angularity value falls below the requirements of Section 703.07, Table 3: Aggregate Consensus Properties Criteria for the design traffic level.
c. The Flat and Elongated Particles value exceeds 10% by ASTM D4791.
d. There is any visible damage to the aggregate due to over-densification other than on variable depth shim courses.
e. The Contractor fails to follow the approved QCP.

The Contractor shall notify the Resident in writing as to the reason for shutdown, as well as the corrective action, by the end of the workday. Failure to do so will be treated as a second incident under 106.4.6 QCP Non-compliance. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production. The Department

retains the exclusive right, with the exception of the first day's production of a new JMF, to determine whether the resumption of production involves a significant change to the production process. If the Department so determines, then the current lot will be terminated, a pay factor established, and a new lot will begin.

The Contractor may utilize innovative equipment or techniques not addressed by the Contract documents to produce or monitor the production of the mix, subject to approval by the Department.

401.192 Quality Control for Method D, (sidewalks, drives, islands & incidentals) and visual acceptance items A QCP, certified QC personnel, or Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) accepted under visual or Method D. An approved JMF shall be provided to the Resident prior to placement.

401.20 Acceptance Method A & C These methods utilize Quality Level Analysis and pay factor specifications. For Hot Mix Asphalt Pavement designated for acceptance under Quality Assurance provisions, the Department will sample once per sublot on a statistically random basis, test, and evaluate in accordance with the Acceptance Properties as outlined in Table 8:

TABLE 8: ACCEPTANCE PROPERTIES – METHOD A & C

Properties	**Point of Sampling**	**Test Method**
Gradation	Paver Hopper	AASHTO T 30
PGAB Content	Paver Hopper	AASHTO T 308
% TMD (In-Place Density)	Mat behind all Rollers	AASHTO T 269
Voids at N_{design}	Paver Hopper	AASHTO T 312
VMA at N_{design}	Paver Hopper	AASHTO T 312
Fines to Effective Binder	Paver Hopper	AASHTO T 312
VFB	Paver Hopper	AASHTO T 312

The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO R 97, Sampling Asphalt Mixtures, and the MaineDOT Policies and Procedures for HMA Sampling and Testing. The Contractor shall transport the samples in containers provided by the Department to the designated MaineDOT Laboratory within 48 hours except when otherwise noted in the project specific QCP or as directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6–QCP Non-Compliance.

Target values shall be as specified in the JMF. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split. Upon conclusion of each lot being evaluated under quality level analysis, where there is a minimum of four sublots, results shall be examined for statistical outliers, as stated in Section 106.7.2 - Statistical Outliers.

Lot sizes and sublot sizes shall be determined as outlined in Table 9.

TABLE 9: LOT AND SUBLOT SIZES – METHOD A & C

Lot Size*	Entire production per item per contract per year up to 6000 ton
Maximum Sublot Size – Mix	750 ton
Maximum Sublot Size – Density	Surface Layers – 250 ton Base / Intermediate Layers – 500 ton
Minimum Number of Samples – Mix	Four
Minimum Number of Samples – Density	Five

*General – Lot and Sublot size may be adjusted to accommodate the work scope and schedule, or as otherwise agreed upon at the Prepave Meeting

If there is less than one-half of a sublot remaining at the end of production for the year, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end of production for the year, then it shall constitute the last sublot and shall be represented by test results. If it becomes apparent partway through a Lot that, due to an underrun, there will be insufficient mix quantity to obtain the minimum number of sublots needed, the Resident may adjust the size of the remaining sublots and select new sample locations based on the estimated quantity of material remaining in the Lot. Unanticipated over-runs of up to 1500 ton shall be rolled into the last lot. Cases where the lot is terminated prior to reaching completion shall be handled in accordance with Section 106.7.3 Early Termination of Lots. In cases where density incentive/disincentive provision apply, additional cores shall be taken to attain a minimum of three for the Lot.

Isolated Areas During the course of inspection, should it appear that there is an isolated area that is not representative of the lot based on a lack of observed compactive effort, excessive segregation, a change in process or any other questionable practice, that area may be isolated and tested separately. An area so isolated that has a calculated pay factor below 0.80 for Method A, based on three random tests shall be removed and replaced at the expense of the Contractor for the full lane width and a length not to be less than 150 ft.

TABLE 10: ACCEPTANCE LIMITS – METHOD A & C

Property	**USL and LSL**	
	Method A	**Method C**
Percent Passing 4.75 mm and larger sieves	Target +/- 7%	Target +/- 7%
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/- 4%	Target +/- 5%
Percent Passing 0.60 mm sieve	Target +/- 3%	Target +/- 4%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/- 2%	Target +/- 2%
PGAB Content	Target +/- 0.4%	Target +/- 0.4%
Voids at N_{design}	4.0% +/- 1.5%	N/A
Fines to Effective Binder	0.9 +/- 0.3	N/A
VMA at N_{design}	LSL from Table 1	N/A
VFB	Table 1 plus a 4% production tolerance for USL	N/A
% TMD (In-place Density)	94.5% +/- 2.5%	94.5% +/- 2.5%

Cease Production The Contractor shall cease paving operations whenever one of the following occurs on a lot in progress:

TABLE 11: CEASE PRODUCTION – METHOD A & C

Property	Percent Within Limits (PWL)	
	Method A	**Method C**
Percent Passing NMAS sieve*	<60 PWL	<60 PWL
Percent Passing 2.36 mm sieve*		
Percent Passing 0.30 mm sieve*		
Percent Passing 0.075 mm sieve*		
PGAB Content		
Voids at N_{design}		N/A
Fines to Effective Binder*		
VMA at N_{design}		
VFB		
% TMD (In-place Density)		<60 PWL

*Paving operations shall not be required to cease if the mean test value is equal to the LSL or USL and s = 0.

In cases where the Contractor is to cease paving operations based upon an Acceptance result or payfactor, the Contractor will submit a corrective action plan to the Department. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

401.201 Pay Adjustment - Method A & C The Department will use the following criteria for pay adjustment at the completion of the Lot using the pay adjustment factors under Section 106.7 - Quality Level Analysis.

Density Upon conclusion of each lot, density results shall be examined for statistical outliers as stated in Section 106.7.2. If the pay factor for Density falls below 0.80, all of the cores will be randomly re-cut by Sublot. A new pay factor will be calculated that combines all initial and retest results. If the resulting pay factor is below 0.80 , the entire Lot shall be removed and replaced with material meeting the specifications at no additional cost to the Department, except that the Department may, when it appears that there is a distinct pattern of defective material, isolate any defective material by investigating each mix sample sublot and require removal of defective mix sample sublots only, leaving any acceptable material in place if it is found to be free of defective material. Pay factors equal to or greater than the reject level will be paid accordingly.

Mix Properties The Department will determine a pay factor (PF) using the applicable Acceptance Limits. If all three pay factors for PGAB Content, VMA at N_{design}, and Voids at N_{design} fall below 0.80 for Method A, then the composite pay factor for PGAB Content, VMA at N_{design}, and Voids at N_{design} shall be 0.50.

The following variables will be used for pay adjustment:

PA = Pay Adjustment
Q = Quantity represented by PF in ton
P = Contract price per ton
PF = Pay Factor

The Department will determine a pay adjustment using Table 12: Pay Adjustment Calculations as follows:

TABLE 12: PAY ADJUSTMENT CALCULATIONS – METHOD A & C

Acceptance Method	Mix Properties / Gradation	Density
Method A	PA = (Voids @ N_d PF - 1.0)(Q)(P)x0.20 + (VMA @ N_d -1.0)(Q)(P)x0.20 + (PGAB Content PF- 1.0)(Q)(P)x0.10	PA = (density PF-1.0)(Q)(P)x0.50
Method C	PA = (% Passing Nom. Max PF-1.0)(Q)(P)x0.05+(% passing 2.36 mm PF-1.0)(Q)(P)x0.05+(%passing 0.30 mm PF-1.0)(Q)(P)x0.05+(%passing 0.075 mm PF-1.0)(Q)(P)x0.10+(PGAB Content PF-1.0)(Q)(P)x0.25	PA = (density PF-1.0)(Q)(P)x0.50

In addition, for 9.5 mm NMAS mixtures the following pay adjustment shall also apply:

The average percent passing for the 0.075 mm sieve shall be evaluated for each Lot. If the average is greater than 6.5%, a pay adjustment according to Table 13 below shall apply in addition to the other pay adjustments for the given method of testing.

TABLE 13: 0.075 MM SIEVE PAY ADJUSTMENT

Average Percent Passing 0.075 mm Sieve	Pay Adjustment
6.6% - 7.0%	-5%
> 7.0%	-10%

The Department shall notify the Contractor whenever the average of at least three samples in a given Lot is greater than 6.5%.

401.21 Acceptance Method B & D Unless otherwise stated in the 403 special provision, the Lot shall be the entire mix quantity per item per contract per year. The Department will sample once per sublot per pay item on a statistically random basis, test, and evaluate in accordance with the Acceptance Properties in Table 14. The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO R 97, Sampling Asphalt Mixtures, and the MaineDOT Policies and Procedures for HMA Sampling and Testing. The Contractor shall transport the samples in containers provided by the Department to the designated MaineDOT Laboratory within 48 hours except when otherwise noted in the project specific QCP or as directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6–QCP Non-Compliance. Target values shall be as specified in the JMF. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split.

TABLE 14: ACCEPTANCE PROPERTIES – METHOD B & D

Properties	Point of Sampling		Test Method
	Method B	Method D	
Gradation	Paver Hopper	Paver Hopper or Truck	AASHTO T 30
PGAB Content	Paver Hopper	Paver Hopper or Truck	AASHTO T 308
% TMD (In-Place Density)	Mat behind all Rollers	Mat behind all Rollers	AASHTO T 269
Voids at N_{design}	Paver Hopper	N/A	AASHTO T 312
VMA at N_{design}	Paver Hopper	N/A	AASHTO T 312
Fines to Effective Binder	Paver Hopper	N/A	AASHTO T 312
VFB	Paver Hopper	N/A	AASHTO T 312

TABLE 15: LOT AND SUBLOT SIZES – METHOD B & D

Lot Size*	Entire mix quantity per item per contract per year	
Maximum Sublot Size – Mix	(Lot size ≤ 1000 tons)	(Lot size > 1000 tons)
	250 ton	750 ton
Sublot Size – Density	125 ton (Max 5 Sublots)	250 ton

*General – Lot and Sublot size may be adjusted to accommodate the work scope and schedule, or as otherwise agreed upon at the Prepave Meeting

If there is less than one-half of a sublot remaining at the end of production for the year, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end of production for the year, then it shall constitute the last sublot.

TABLE 16: ACCEPTANCE LIMITS – METHOD B & D

Property	USL and LSL	
	Method B	Method D
Percent Passing 4.75 mm and larger	Target +/- 7%	Target +/- 7%
Percent Passing 2.36 mm sieve	Target +/- 5%	Target +/- 7%
Percent Passing 1.18 mm sieve	Target +/- 5%	Target +/- 5%
Percent Passing 0.60 mm sieve	Target +/- 4%	Target +/- 4%
Percent Passing 0.30 mm sieve	Target +/- 3%	Target +/- 3%
Percent Passing 0.075 mm sieve	Target +/- 3%	Target +/- 3%
PGAB Content	Target +/- 0.5%	Target +/- 0.5%
Voids at N_{design}	4.0% +/- 2.0%	N/A
Fines to Effective Binder	0.9 +/- 0.3	N/A
VMA at N_{design}	LSL from Table 1	N/A
VFB	Table 1 plus a 4% production tolerance for USL	N/A
% TMD (In-place Density)	94.5% +/- 2.5%	LSL of 92.0%

The Contractor shall cease paving operations whenever two consecutive Method B or D tests fall outside specification limits on the same property. The Contractor will submit a corrective action plan to the Department. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

401.211 Pay Adjustment - Method B & D For items accepted under Method B or D, if the mix is within the tolerances listed in Table 16, the Department will pay the contract unit price, otherwise pay adjustments as shown in Table 17 shall be applied to the quantity of mix represented by the test. The Contractor shall cut one 6 in core per sublot unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. If the density result is not within the specified limits the disincentive shall apply. If the sublot density is less than 88.5 percent or greater than 99.0 percent of the sublot TMD, two additional cores shall be cut at random locations determined by the Department. If either of the additional cores has a density less than 88.5 percent or greater than 99.0 percent of the sublot TMD, the sublot shall be removed and replaced at no cost to the Department; otherwise, the average of the three cores will be used to determine the sublot pay adjustment.

TABLE 17: PAY ADJUSTMENTS – METHOD B & D

Property	**Method B**		**Method D**	
Percent Passing 2.36 mm sieve	N/A		-2.0%	
Percent Passing 0.30 mm sieve	N/A		-1.0%	
Percent Passing 0.075 mm sieve	-2.0%		-2.0%	
PGAB Content	-5.0%		-5.0%	
Voids at N_{design}	-3.0%		N/A	
% TMD (In-place Density)	91.5% - 91.9% or 97.1% - 97.5%	-5.0%	91.5% - 91.9%	-5.0%
	90.5% - 91.4% or 97.6% - 98.5%	-10.0%	90.5% - 91.4%	-10.0%
	89.5% - 90.4% or 98.6% - 99.0%	-20.0%	89.5% - 90.4%	-20.0%
	88.5% - 89.4%	-30.0%	88.5% - 89.4%	-30.0%
	<88.5% or >99.0%	Reject	<88.5% or >99.0%	Reject

401.30 Method of Measurement The Department will measure Hot Mix Asphalt Pavement by the ton in accordance with Section 108.1 - Measurement of Quantities for Payment.

401.40 Basis of Payment The Department will pay for the work, in place and accepted, in accordance with the applicable sections of this Section, for each type of HMA specified.

The Department will pay for the work specified in Section 401.12, for the HMA used, except that cleaning objectionable material from the pavement and furnishing and applying bituminous material to joints and contact surfaces is incidental.-Payment for this work under the appropriate pay items shall be full compensation for all labor, equipment, materials, and incidentals necessary to meet all related contract requirements, including design of the JMF, implementation of the QCP, obtaining core samples, transporting cores and samples, filling core holes, applying emulsified asphalt to joints, and providing testing facilities and equipment. The Department will make a pay adjustment for quality as specified in Section 401.20 Acceptance Method A & B or 401.21 Acceptance Method C & D.

401.50 Process for Dispute Resolution At the time of Hot-Mix Asphalt sampling, the Department will obtain a split sample of each Acceptance test random sample for possible dispute resolution testing. The Contractor shall also obtain a split sample of the HMA at this same time. If the

Contractor wishes to retain the option of requesting dispute testing of the initial Acceptance sample, the Contractor will test their split of the Acceptance sample in accordance with applicable AASHTO procedure and accepted supplemental practice as described in the Department's HMA Sampling and Testing Policies and Procedures manual. The Contractor shall report their results to the Resident, with a copy to Contractor.mainedot@maine.gov by 7:00 AM, on the second working day from time of QA sampling, otherwise dispute resolution will not be initiated. The Department's dispute resolution split sample will be properly labeled and stored for a period of at least two weeks after it has been reported, or until the sample is tested. The properties eligible for dispute and the respective variances are shown in Table 18.

The Contractor may dispute the Department's Acceptance results and request that the dispute resolution split sample be tested by notifying the Department's Resident and QA Engineer in writing within two working days after the results of the Acceptance test are reported. The following shall be provided in the request:

- Acceptance sample reference number
- The specific test result(s) or property(ies) being disputed, and
- The complete, signed report of the Contractor's testing (In a lab certified by the NETTCP and MaineDOT) of their split of the Acceptance sample indicating that the variances in Table 18 for the specific test result(s) or property(ies) were exceeded.

TABLE 18: DISPUTE RESOLUTION VARIANCE LIMITS

Property	Method A & B	Method C & D*	Variance Limits
PGAB Content	Yes	Yes	+/- 0.4%
G_{mb}	Yes	No	+/- 0.030
G_{mm}	Yes	Only if referenced to a Core	+/- 0.020
Voids at N_{design}	Only if G_{mb} or G_{mm} is not disputable	No	+/- 0.8%
VMA at N_{design}	Only if G_{mb} or G_{mm} is not disputable	No	+/- 0.8%
Percent Passing 4.75 mm and larger sieves	No	Yes^	+/- 4.0%
Percent Passing 2.36 mm to 0.60 mm sieves	No	Yes^	+/- 3.0%
Percent Passing 0.30 mm to 0.15 mm sieves	No	Yes^	+/- 2.0 %
0.075 mm sieve	Only for 9.5 mm NMAS mixes	Yes	+/- 0.8%

*Disputes will not be allowed on Item 403.209

^Disputes will only be allowed on Sieve Sizes used for pay adjustment calculations

The value of any disputed result or property reported for the initial Acceptance sample shall stand if the value reported for the dispute resolution sample is not closer to the value the Contractor reported for their split sample than to the value reported for the initial Acceptance sample. If the value reported for the dispute resolution falls precisely half-way between the other two values the value reported for the dispute resolution will replace the original acceptance value. Otherwise, the

value reported for the dispute resolution sample will replace the value reported for the initial Acceptance sample and will be used to re-calculate any other affected results or properties.

SECTION 402 - PAVEMENT SMOOTHNESS

402.00 Smoothness Projects Projects to have their pavement smoothness analyzed in accordance with this Specification will be so noted in Special Provision 403 - Hot Mix Asphalt Pavement.

402.01 Pavement Smoothness The final pavement surface shall be evaluated for smoothness using a Class I or Class II profiler as defined by ASTM E950 (94). Smoothness measurements will be expressed in terms of the International Roughness Index (IRI) as defined by the World Bank, in units of inches/mile.

402.02 Lot Size Lot size for smoothness will be 3000 lane-feet. A sublot will consist of 50 lane-feet. Partial lots will be included in the previous lot if less than one-half the size of a normal lot. If equal to or greater than one-half the normal lot size, it will be tested as a separate lot.

402.03 Acceptance Testing The Department will conduct Acceptance testing following completion of the surface course. Sections to be excluded from testing include the following:

- Bridge decks and joints (no smoothness measurements will be taken within 100 ft of bridge joints)
- Acceleration and deceleration lanes
- Shoulders and ramps
- Side streets and roads
- Within 100 ft of transverse joints at the beginning and end of the project
- Within 100 ft of railroad crossings
- Urban areas with speed limits of 30 mph or lower

Each lot shall have 2 measurements made in each wheel path. The average of the 4 measurements will determine the smoothness for that lot. The smoothness measurements will be statistically evaluated for pay factors as described in Subsection 106.7 - Quality Level Analysis, using the specification limits shown below.

TABLE 1: ACCEPTANCE LIMITS

Level	USL
I	55 in/mile
II	65 in/mile
III	75 in/mile

Computation of Smoothness Pay Adjustment:

PA = (PF-1.0)(Q)(P) where:
Q = Quantity of surface course in the Lot (excluding shoulders, side streets, bridge decks, ramps, acceleration and deceleration lanes)
PF = smoothness pay factor for the Lot
P = Contract unit price for surface pavement
PA = pay adjustment

402.04 Unacceptable Work In the event that any Lot is found to have a pay factor less than 0.80, the Contractor shall take whatever remedial action is required to correct the pavement surface in that Lot at no additional expense to the Department. Such remedial action may include but is not limited to removal and replacement of the unacceptable pavement. In the event remedial action is necessary, the Contractor shall submit a written plan to the Resident outlining the scope of the remedial work. The Resident must approve this plan before the remedial work can begin. Following remedial work, the Lot shall be retested, and will be subject to the specification limits listed above. The resulting pay factor, if within the acceptable range, will be used in the final pay adjustment. The Contractor shall pay the cost of retesting the pavement following corrective action.

Localized surface tolerance defects will be subject to the provisions outlined in Section 401.11 Surface Tolerances.

Payment will be made under:

Pay Item	Pay Unit
402.10 Incentive/Disincentive - Pavement Smoothness	Lump Sum

SECTION 403 - HOT MIX ASPHALT PAVEMENT

403.01 Description This work shall consist of constructing one or more courses of Hot Mix Asphalt pavement on an approved base in accordance with these specifications, and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the plans or established. The HMA pavement shall be composed of a mixture of aggregate, filler if required, and asphalt material.

403.02 General The materials and their use shall conform to the requirements of Section 401 - Hot Mix Asphalt Pavement.

403.03 Construction The construction requirements shall be as specified in Section 401 - Hot Mix Asphalt Pavement.

403.04 Method of Measurement Hot mix asphalt pavement will be measured as specified in Section 401.21- Method of Measurement.

403.05 Basis of Payment The accepted quantities of hot mix asphalt pavement will be paid for at the contract unit price per ton for the mixtures, including hot mix asphalt material complete in place. Method A, Method B, Method C and Method D shall be used for acceptance as specified in Section 401 - Hot Mix Asphalt Pavements. (See Complementary Notes, Section 403 - Hot Mix Asphalt Pavement, for Method location).

Payment will be made under:

Pay Item		Pay Unit
403.102	Hot Mix Asphalt Pavement for Special Areas	Ton
403.206	Hot Mix Asphalt, 25 mm Nominal Maximum Size	Ton
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton
403.2071	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2072	Asphalt Rich Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Asphalt Rich Base and Intermediate course)	Ton
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	Ton
403.2081	Hot Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Sidewalks, Drives, Islands & Incidentals)	Ton
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton
403.2101	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2104	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Thin Lift Surface Treatment)	Ton
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton
403.2111	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming, Polymer Modified))	Ton
403.212	Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	Ton
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.2131	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course, Polymer Modified)	Ton
403.2132	Asphalt Rich Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.214	Hot Mix Asphalt, 4.75 Nominal Maximum Size (5/8” Surface Treatment)	Ton

SECTION 400
HOT MIX ASPHALT PAVEMENT
(Weather and Seasonal Limitations)

The following section of Special Provision Section 400 – Weather and Seasonal Limitations Table3: SEASONAL AND TEMPERATURE LIMITATIONS has been replaced by the following Table 3: SEASONAL AND TEMPERATURE LIMITATIONS. All other requirements not amended or replaced by Table 3 by this special provision shall be considered unchanged.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

a. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
b. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

Description	**Zone 1 Allowable Placement Dates**	**Zone 2 Allowable Placement Dates**	**Minimum Ambient Air Temperature**
HMA Surface Course greater than or equal to 1” (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	50°F
HMA Surface Course less than 1” (Travelway)	May 15 to Saturday following September 15	May 15 to Saturday following October 1	
HMA Surface Course less than 1” considered to be “**Night Work**” (Travelway)	June 1 to the Saturday following September 1		
HMA Surface Course less than 1” (Shoulders)	May 15 to the Saturday following October 15		
HMA for Surface Course on **Bridge Decks**	May 1 to Saturday following October 1	April 15 to Saturday following October 15	
HMA for Base or Shim Course on **Bridge Decks**	April 15 to November 15		
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1”, Intermediate, Base, Shim)	April 15 to November 15		40°F
HMA for curb, driveways, sidewalks, islands, or other incidentals	N/A		

With Use of Approved Warm Mix Technology as Compaction Aid (Surface Course Ambient Air Temperature Allowances)			
HMA Surface Course greater than or equal to 1” (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	Begin at 50°F and pave **down to** 45°F
HMA Surface Course less than 1” (Travelway)	May 15 to Saturday following October 1	May 15 to Saturday following October 15	
HMA Surface Course less than 1” considered to be “**Night Work**” (Travelway)	June 1 to the Saturday following September 15		
HMA Surface Course less than 1” (Shoulders)	May 15 to the Saturday following October 15		
With Use of Approved Warm Mix Technology as Compaction Aid (Seasonal Limitation Extensions)			
HMA Surface Course greater than or equal to 1” (Travelway)	Saturday following October 1 to Saturday following October 15	Saturday following October 15 to Saturday following October 29	50°F
HMA Surface Course less than 1” (Shoulders)	Saturday following October 15 to Saturday following October 29		50°F
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1”, Intermediate, Base, Shim)	April 15 to Saturday following November 15		35°F

1. Shoulders paved with the travelway pass shall meet travelway ambient air temperatures
2. Refer to the 461 SP for UTBWC for seasonal and temperature requirements.

The ambient air temperature shall be determined by an approved thermometer placed in the shade at the paving location. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface regardless of the ambient air temperature. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
5" HMA Areas					
Parking Lot & Access Road Travelway (As Indicated)					
Wearing	12.5 mm	403.2081	2"	1	2,4,10,12,40,42,53
Base	12.5 mm	403.2131	3"	1/more	2,4,10,12,40,42,53
2" HMA Areas - Walkway Construction					
Sidewalks, ADA Ramps, Misc. (As Indicated or Directed)					
Wearing	9.5 mm	403.209	2"	1/more	3,20,30,32

COMPLEMENTARY NOTES

2. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets **PG 64E-28** grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet the **PG 64E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.
3. The aggregate qualities shall meet the design traffic level of <3 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
4. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
10. Section 106.6 Acceptance, (2) **Method D** as specified Section 401.21 - Quality Assurance Methods B and D.
12. A Pre-Pave Meeting is **required** prior to the commencement of work paid under this item. The Contractor shall submit an approved Mix Design and a QCP to the Resident no less than 14 days prior to the beginning of work on this item.
20. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.
30. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on bridge decks.
32. In areas inaccessible to a **10 ton** roller, compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller. Areas less than 2 feet wide shall be compacted with a minimum of a **150 pound** plate compactor. An approved release agent is required to ensure the mixture does not adhere to hand tools, rollers, pavers, and truck bodies. The use of petroleum based fuel oils, or asphalt stripping solvents will not be permitted.
40. The entire roadway from curb to curb, including parking areas, shall be considered mainline travelway for density testing purposes according to the specified testing method.

42. The Contractor shall plan its construction sequencing so that no longitudinal joints fall within the mainline travelway lanes (excluding center turn lanes)
53. At the discretion of the Contractor, the use of concrete fill will be allowed in lieu of pavement and gravel to back fill around granite curbing (Type 1 & 5). When utilized, at least 3" of HMA shall be placed on top of the concrete fill for cover on the mainline edge of curb (face of curb). At minimum, the Concrete shall be a 3000 psi Class A concrete. **Flowable fill shall not be permitted**. Unless otherwise specified, there will not be additional compensation for the Concrete Fill but shall be considered incidental to the 609 items.

Tack Coat

A tack coat of emulsified asphalt, RS-1, RS-1h, CRS-1 or CRS-1h, Item 409.15 shall be applied to any existing pavement at a rate of approximately 0.030 gal/yd², and on milled pavement approximately 0.05 gal/yd² prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim /base courses and surface course as well as to any bridge membrane prior to the placement of HMA layers at a rate not to exceed 0.030 gal/yd². Tack used will be **paid for at the contract unit price** for Item 409.15 Bituminous Tack Coat.

SPECIAL PROVISION
SECTION 419
SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT

419.01 Description

This work consists of sawing bituminous concrete pavement as shown on the Plans, as specified herein or as approved by the Resident.

419.02 General

The bituminous concrete pavement to be sawed shall be accurately marked before cutting. The marking shall be in accordance with the locations as shown on the Plans or as approved by the Resident. Cutting shall be with an approved power-driven saw with an abrasive blade.

Unless otherwise noted or directed, the sawcut shall be vertical, a minimum of 3/8 inch wide, and extend to a depth sufficient to create a clean-cut line but no less than 2 inches, or as approved by the Resident.

Residue or debris from the sawing operation shall be removed immediately and legally disposed of by the Contractor.

419.03 Method of Measurement

Sawing Bituminous Pavement will be measured by the linear foot of pavement cut and accepted. No additional payment will be made for variations in the pavement thickness.

419.04 Basis of Payment

Sawing Bituminous Pavement will be paid for at the Contract unit price per linear foot which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. The disposal of sawcut residue shall be incidental to the pay item.

Payment will be made under:

Pay Item	Pay Unit
419.30 Saw Cutting Bituminous Pavement	Linear Foot

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES
(Steel Sheet Piling - Delivered)
(Steel Sheet Piling – In Place)

501.01 Description

This work shall consist of furnishing, delivering, storing and installing steel sheet piling for construction of the wave screen assembly. Steel sheet piling shall be of the types and dimensions specified on the Contract Plans.

501.02 Materials

Add the following to this section:

Steel sheet piling shall conform to ASTM A 572, Grade 50.

501.05 Method of Measurement

Add the following:

Steel Sheet Piling, Delivered will be measured for payment by square foot of sheet piling, satisfactorily furnished, delivered and stored on site prior to its installation.

Steel Sheet Piling, In Place will be measured for payment by square foot of sheet piling, satisfactorily installed on site as part of the wave screen assembly.

501.06 Basis of Payment:

Add the following:

The accepted quantities of Steel Sheet Piling, Delivered and Steel Sheet Piling, In Place will be paid for at the Contract price per square foot, satisfactorily completed and accepted by the Resident. Such payment shall constitute full compensation for providing all labor, materials, equipment and incidentals necessary for the completion of the work. No separate payment will be made for surface preparations, coatings, coating repairs and horizontal connections between the steel sheet piling and wales.

Payment will be made under:

Pay Items	Description	Pay Unit
501.303	Steel Sheet Piling, Delivered	Square Foot
501.304	Steel Sheet Piling, In Place	Square Foot

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES
(Steel Pipe Piles)
(Rock Sockets)
(Drilling Equipment Mobilization)
(Pile Tips)

All work and materials shall conform to the Plans and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 501 – FOUNDATION PILES, with the following modifications:

501.01 Description

This Subsection is replaced with the following:

This work shall consist of furnishing and installing steel pipe piles, including drilled rock sockets into bedrock; cleaning out pipe piles and rock socket; furnishing wide flange structural members for the sockets and reinforcement steel for the upper portion of the piles, and furnishing concrete in the pipe piles and rock sockets in accordance with the Contract Plans and Specifications.

Work of this Subsection shall also include installing steel protective casings to allow for installation of piles after portions of the rubble mound breakwater have been installed.

501.012 Definitions

Add this Subsection:

A. Design Position: The location of the centroid of the pile at cutoff elevation (x, y, and z coordinates) as shown.

B. Deviation: Difference between actual as-constructed horizontal location of center of pile and the Design Position.

C. Plumbness: Difference in horizontal location of center of pile measured at top and at bottom.

D. Pile: Includes both the steel pipe pile and rock socket.

E. Steel Pipe Pile: Pipe pile and casings installed at the initial stages of the pile construction.

F. Rock Socket: Portion of pile that is drilled below tip of steel pile in the bedrock.

G. Submersible Inspection Device (SID): An inspection device consisting of a digital video camera and video control housing unit used for inspection of the bottom of the drilled rock socketed pile excavation capable of being submersed in water.

H. Downhole Camera: An inspection device consisting of a digital video camera and video control housing unit used for inspection of the sides of the drilled steel pipe pile excavation and rock socket, capable of being submersed in water.

501.013 Submittals

Add this Subsection:

A minimum of four (4) weeks prior to the start of installation of the rock socketed pipe piles, the Contractor performing the work set forth in this Special Provision shall submit a Quality Control Plan (QCP) that is prepared in accordance with Subsection 501.03 of this Special Provision for review by the Department.

501.02 Materials

This Subsection is amended with the following:

Pipe pile material shall meet the requirements of ASTM A252, Grade 3 MOD with minimum yield strength of 50 ksi and shall meet the requirements of MaineDOT Standard Specification 711.01.

Pipe pile shoes shall support installation by open-ended driving or drilling operations and shall meet or exceed the strength requirements of ASTM A148, Grade 90/60 for steel casings. Pipe pile cutting shoes shall have an outside flange.

Pipe pile splices shall be conducted with a continuous full penetration weld and shall be capable of developing the full axial, tensile, and flexural strength of the section of the pile.

Cast-in-Place concrete for pipe pile shall be Class LP with 5,000 psi minimum compressive strength and shall meet the requirements of Section 502 - Structural Concrete.

Steel casing material used to protect and facilitate installation of piles within the rubble mound breakwater shall meet the requirements of ASTM A252, Grade 1 with minimum yield strength of 30 ksi, or greater.

Structural steel wide flange sections used in the rock sockets shall meet the requirements of MaineDOT Standard Specification Section 504 – Structural Steel.

Pile reinforcing steel shall meet the requirements of MaineDOT Standard Specification Sections 503 – Reinforcing Steel and 709.01 – Reinforcing Steel.

Noise attenuation measures shall be designed to prevent injury and harrassment of ESA-listed species and marine animals. Pile installation shall occur within a bubble curtain.

501.03 Quality Control Plan

This Subsection is replaced with the following:

The Contractor shall control the quality of the foundation piles through practices and inspection, which shall be described in the Contractor-prepared Quality Control Plan (QCP), sufficient to assure a product meeting the Contract requirements. A QCP for rock socketed pipe pile foundations shall be prepared by the Contractor and submitted in accordance with Subsection 106.4.1 of the Standard Specifications. The QCP shall meet the requirements of Section 106, Quality, Section 501, Foundation Piles, and this Special Provision. The Department will use criteria established in the approved QCP to accept the work provided in this Special Provision.

No work under this item shall proceed until the QCP, or amendments to the QCP, is submitted to and approved by the Resident.

The QCP shall address all elements that affect the quality of the foundation piles, including but not limited to, the following:

A. Installation Equipment - List and description of proposed equipment to be used for pipe pile installation, including cranes, bit and/or shoe assemblies proposed for use on the pipe piles, and equipment for driving or drilling through overburden and drilling rock sockets into bedrock, cleaning, checking cleanliness, and concreting.

B. Installation Procedures - Details of overall pipe pile and rock socket construction sequence. Details of proposed procedures and sequence for pipe pile installation, including methods for drilling overburden and bedrock, methods for confirming the top of competent bedrock and for confirming adequate length of rock socket, cleaning, concreting and details of attachments for angles and anodes.

C. Details of template to be constructed to assure proper design position and alignment/plumbness of the piles.

D. Details of the structural steel fabrication, handling, lifting, and installation along with methods and devices that will be used to center the structural steel wide flange members in the rock sockets and maintain concrete cover.

E. Details of steel reinforcement fabrication, handling, lifting, and installation along with methods and devices that will be used to center the steel reinforcement and maintain concrete cover.

F. Details of methods for concrete mixing, transport, and placement including operational procedures. Placement procedures shall demonstrate that a continuous supply of concrete is provided to the finished elevation. Include procedure used to ensure that unsuitable concrete is removed by overfilling or other methods. Describe concrete placement and curing procedures to be used during hot/cold weather to protect and provide acceptable concrete. Provide a procedure and detail for an emergency cold joint.

G. Procedures for advancing through boulders and other obstructions.

H. Procedures for flushing drill spoils and cleaning the drilled rock socketed pipe pile.

I. Number of Pile Splices, locations and details.

J. Procedures for achieving and verifying the rock socketed pipe piles meet the project tolerances.

K. Installation Log Form and an example installation record. The Contractor shall maintain a log during pipe pile installation through overburden and into bedrock, cleaning, and preparation for rock socket installation activities. The log shall include, but is not limited to the following: drill rig operator, inspector name, bit and/or shoe assembly used, drilling method used, drill rig type and model, drill rig output (i.e., down pressure, torque, RPM) as appropriate for the rig being used, description of overburden and bedrock encountered, advancement rate per foot in overburden and bedrock, advancement observations, depth of any obstructions, description of unusual behavior and/or conditions, deviations from anticipated parameters/conditions, and cleaning methods. The log shall demonstrate the pipe pile achieves an acceptable rock socket and is cleaned of drill spoils. All methods to be used to identify the depth to the top of competent rock and subsequent depth of the rock socket shall be identified on the log. These shall include, but not be limited to, visual examination of the drill spoils, and advancement rates and advancement observations over small enough depth increments (e.g. inches) to identify boulders and/or cobbles overlying bedrock or open fractures within bedrock.

L. Certified Test Results and testing agency(ies) performing each of the tests required: Concrete mix design and aggregates. Shaft Inspection Device (SID) testing of the socket, and downhole camera video. Testing agencies must have at least three (3) years of work experience on projects using the drilled rock socketed pipe pile foundation with similar diameter and length shown on the Plans.

M. Pipe Pile Contractor's Experience - Proof of the successful installation of drilled rock socketed pipe piles with similar diameter and length and using drilling methods similar to those required in this Special Provision for a minimum of three (3) prior projects.

N. Pipe Pile Contractor’s Personnel - List identifying the following Contractor’s personnel assigned to the project, together with their experience installing drilled rock socketed pipe piles of both the diameter and length similar to those required for the work covered in the Contract Plans and this

Special Provision: on-site supervisor, QC personnel, and drill rig operators. On-site supervisors and QC personnel shall have supervised the successful installation of drilled rock socketed pipe piles on at least two (2) projects under similar site conditions. Drill rig operators shall have at least one (1) year experience in construction of drilled rock socketed pipe pile foundations.

The Contractor's Schedule of Work shall allow time for the review of the QCP or amendments to the QCP, as noted in Section 106.4.1.B, Approval.

The Department will evaluate the QCP / pipe pile installation plan, and all procedural approvals given by the Resident shall be subject to trial in the field and shall not relieve the Contractor of the responsibility to satisfactorily complete the work as detailed in the Plans and Specifications. Failure by the Contractor to demonstrate adequate methods and equipment shall be reason for the Resident to require alterations in equipment and/or method by the Contractor to eliminate unsatisfactory results. Any altered methods or construction equipment shall be at the Contractor's expense and incidental to the related Contract items.

501.042 Equipment for Installing Piles

This Subsection is supplemented with the following:

Pipe piles shall be installed open-ended. The pipe piles shall be advanced (i.e., driven or drilled) through overburden and embedded into the bedrock to achieve the required rock socket using an acceptable drilling method. Acceptable drilling methods include rotary percussion with a down-the-hole (DTH) hammer, rotary drilling, and diamond drilling. The pipe pile shall be driven or advanced with the bore; open/unsupported bores into which the pipe pile is subsequently placed will not be allowed. Drill cuttings shall be removed from the bore as the pipe pile is advanced. Samples of cuttings shall be obtained periodically and/or at the request of the inspector to allow for visual examination.

Drilling equipment shall have adequate capacity, including power, torque and down thrust to drill a bore of both the diameter and to an overburden depth 120% of the proposed drilled pile length, but not less than 15 feet beyond the rock socket tip depths indicated on the Plans. Submit the minimum output of the drill rig torque and crowd to the Resident.

Steel pipe piles may be installed with a vibratory/impact hammer prior to drilling the overburden soil and rock inside the pile. If such approach is utilized, the Contractor shall be required to perform initially a WEAP Analysis to verify the adequacy of the proposed equipment, and to assure that the pile materials are not overstressed due to the installation process.

During pipe pile installation operations, the Contractor shall use the approved equipment. No variations in the equipment will be permitted without an amendment to the QCP.

Acceptance of the pipe pile installation equipment does not relieve the Contractor of the responsibility to properly install the piling.

501.043 Installation Procedures and Tolerances

This Subsection is replaced with the following:

Installation General - Steel pipe piles shall be installed open-ended using driving or drilling methods. The pipe piles shall be embedded into bedrock and have drilled rock sockets to the depths indicated on the Plans. The piles shall be cleaned out and their locations, pipe pile and rock socket accepted prior to installing concrete plugs for the rock sockets.

In accordance with the accepted QCP, the Contractor shall maintain a log during pipe pile installation through overburden and into bedrock, cleaning, and preparation for rock socket installation activities. The log shall include, but is not limited to the following: bit and/or shoe assembly used, drilling method used, drill rig type and model, drill rig output (i.e., down pressure, torque, RPM) as appropriate for the rig being used, advancement rate per foot, or shorter intervals, in overburden and bedrock, advancement observations, depth of any obstructions, description of drill spoils from key depths, and cleaning methods.

The log shall demonstrate the pipe pile achieves an acceptable rock socket and is cleaned of drill spoils. The installation log shall demonstrate the minimum required bedrock socket length is achieved.

The sequence for installing the pipe piles shall be as set forth in the accepted QCP. The Contractor shall furnish all assistance required by the Resident and/or inspectors to make any observations and measurements. Prior to commencing pile installation, elevation control shall be established. Elevation control shall be sufficient to allow observers to track installation elevations. If the reference elevation is subject to fluctuating with the tide, a tide board with its own reference elevation shall be established. Prior to placing any pile section in the leads, the Contractor shall make the pile section available for measurement and/or foot and inch marking by the Resident or inspector.

Drill spoils shall be removed from the bore as the pipe pile is advanced.

The Contractor shall deploy a bubble curtain around each pile prior to installation. Upon commencement of the pile installation activities, the Contractor shall begin with a “soft-start” to allow animals within the immediate vicinity an opportunity to leave the area before sound pressure increases.

The Contractor shall handle the piles in a manner that does not cause impact or abrasive damage by the crane, installation equipment, or pile installation template/frame. The installation frame shall be cushioned to prevent damage to the pile during installation.

When necessary, pipe pile shall be cut in accordance with submitted and approved field process plan using an abrasive cut-off wheel suitable of cutting 5/8” minimum thickness ASTM A252, Grade 3 steel or other method approved by the Resident and the manufacturer’s representative.

The steel pipe piles shall first be advanced to the required depth through the overburden soil and seated adequately into the top of competent bedrock. Used methods shall permit the pipe pile to be embedded a minimum of 2 feet into impervious material or bedrock to create a tight seal before drilling the rock socket to the required depth into competent bedrock. Drill spoils shall be removed as the pipe pile is advanced. The Contractor shall perform the necessary cleaning/flushing of drill spoils such that the pipe pile is clean of debris and ready for rock socket construction in an acceptable fashion. If used, water may be recirculated. Spoils shall be contained to allow for visual examination. Upon completion of the drilling operations, the spoils which are removed from pipe piles shall be disposed of by the Contractor in accordance with the applicable specifications for disposal of excavated materials. Cleaning operations shall be covered in the Contractor’s Soil Erosion and Water Pollution Control Plan (SEWPCP) in accordance with MaineDOT Standard Section 656 – Temporary Soil Erosion and Water Pollution Control.

Once the excavation operation has been started, the excavation shall be conducted in a continuous operation until the excavation of the pile is completed, except for pauses and stops as noted, using approved equipment capable of excavating through the type of material expected including boulders, rubble, or other obstructions, if present. When the material encountered cannot be drilled using conventional earth augers and/or underreaming tools, provide special drilling equipment, including but not limited to rock augers, core barrels, rock tools, air tools, and other equipment necessary to continue the steel pipe pile excavation to the size and depth shown on the Plans. Pauses during this excavation operation, except for removal of obstructions will not be allowed. Determination of acceptable durations of pauses shall be solely at the discretion of the Resident. Excavation for pipe piles shall be advanced by rotary drilling methods approved by the Resident which do not permit loss of ground and which will not adversely affect adjacent structures. Equipment used shall be capable of excavating through the type of materials expected to be encountered.

No separate payment will be made for either cleaning out of materials of different densities or employment of special tools or procedures necessary to accomplish the excavation. If after cleaning it is determined by the Resident that the steel pipe pile is not socketed to the required depth into bedrock, the pipe pile shall be advanced further by driving or drilling and cleaned out again.

Drilling tools and excavation procedures shall be utilized that minimize the negative pressure in the excavation that might include soil heave into the bottom of the excavation. An auger, if used, shall be withdrawn slowly. Surface and subsurface obstructions at the pipe pile locations, both internal and external,

shall be removed or otherwise penetrated by the Contractor. Such obstructions may include, but are not limited to riprap, timbers, cobbles, and boulders. Jetting and/or air tool methods may not be used without the approval of the Resident. Installation of the steel pipe pile shall continue until an adequate seal is developed between the pipe pile material and the bedrock.

Upon installation, all steel pipe piles shall be inspected and any pipe piles showing bends, crushing, kinks or other deformations that would impair the strength, efficiency, or axial capacity of the completed piles shall be replaced or repaired in a manner satisfactory to the Resident. Repairing or replacing any such damaged steel pipe pile as ordered by the Resident will be at no additional expense to the Department.

Steel pipe piles shall maintain intimate contact with bedrock after drilling the rock socket to preserve the axial load carrying capacity achieved by the rock socket. If the pipe pile/bedrock contact is disturbed during rock socket drilling or cleanout, the bedrock socket for the pipe pile shall be re-drilled and/or extended in accordance with project requirements at no additional cost to the Department.

Rock sockets shall not be drilled until the steel pipe piles have been checked for location/alignment/plumbness and cleanliness and the piles are accepted. During rock socket drilling, the Contractor shall maintain a positive seal of steel pipe pile in the bedrock socket to prevent entry of overburden or piping in of overburden into the socket drill hole or the pile. This shall be accomplished by embedding the pile a minimum of 2 feet into impervious material or bedrock.

The rock socket shall be drilled or chopped into the rock using rock augers, down the hole hammers, or rotary core drills to the depths necessary to provide the required depth of socket in competent rock as shown on the Plans. The depth of competent rock will be defined as rock with RQD of 50% or larger. The Contractor shall remove all rock fragments, soil or other foreign matter to provide a clean bearing surface at the bottom using either an air lift or hydraulic pump. Length of sockets shall be measured below the steel pipe pile set into competent rock. Top of competent rock shall be determined at each socket installation by a Professional Engineer licensed in the state of Maine with sufficient geotechnical expertise and serving as a representative of the Resident. The Resident shall have final opinion in determining top of competent rock. The Resident may direct the Contractor to perform additional SPT borings to aid in determining top of competent rock.

The rock socket shall be drilled, inspected, and accepted, and the pile shall be flushed clean prior to concreting the pile. Deviation from this sequence shall only be allowed if set forth in the accepted QCP. Concreting the pile prior to testing and acceptance of the rock socket shall be at the Contractor's risk. Remediation of failing piles will be at the Contractor's expense.

Immediately prior to positioning the steel wide flange section, roughen the rock socket walls, clean and inspect the bottom of shaft excavation using a SID. Rock socket side walls shall be scoured with a grooving tool and roughened using a "back scratcher" roughening tool as deemed adequate by the Resident immediately prior to final cleanout and inspection.

Use the SID water flushing jets to clean sediment from the rock as directed by the Resident. Provide an approved, qualified individual to operate the SID and allow the Resident to visually evaluate the bottom condition of the rock socket. Provide slack in line and ensure SID is fully seated on the bottom of the rock socket before taking measurements of sediment. Using the SID, observe the bottom of the rock socket at a minimum of five locations, including the center of the base and the 3, 6, 9, and 12 o'clock positions around the perimeter to verify the cleanliness requirements are met. Locate perimeter positions approximately 1 foot from the wall of the socket. Based on the results of readings at these five locations, make additional observations at other locations as directed by the Resident. Perform cleaning operations for the base of the rock socket so that, at the time of concrete placement, a minimum of 50% of the base of each socket will have less than ½ inch of sediment and the maximum depth of sediment or other debris at any place on the base of the socket cannot exceed 1-1/2 inch.

Rock socket side integrity shall be video inspected by the Contractor for approval by the Resident using a downhole camera and/or other means considered appropriate by the Resident. Using the camera, observe

the shaft and rock socket sides of pile at a minimum of four locations, including the 3, 6, 9, and 12 o'clock positions around the perimeter to visually inspect the quality of the rock. Flush the pile with clean water to increase visibility as directed. Make additional observations as directed.

Tolerances - The following construction tolerances apply:

a) The pipe pile shall be within 2 inches of the plan position in the horizontal plane at the plan elevation for the top of the pile. Pulling of pipe piles into position will not be permitted.

b) The diameter of the steel pipe piles and rock sockets shall not be less than the diameter shown on the Contract Plans. The drilled rock sockets will have a diameter of 6 inches less than the diameter of the steel pipe piles.

c) Vertical alignment of a pipe pile shall not vary from the plan alignment by more than ¼ inch per foot of length. The alignment of a battered pile shall not vary by more than ½ inch per foot of length from the prescribed batter.

d) Do not expose the rock socket to water for more than 48 hours without approval. Ream rock socket exceeding 48 hours of water exposure, or that, as determined by the Resident, has deteriorated due to exposure to water, with an approved grooving tool to a depth of not less than ½ inch, or as directed. Reaming of the rock socket, if necessary, is incidental to drilling the rock socket.

e) Do not drive or excavate within three diameters of piles with new concrete until 24 hours after concrete placement.

f) Provide casing through soil and broken or unstable rock during cleaning and inspection of the excavation.

g) During drilling or excavation of the pile, the Contractor shall make frequent checks on plumbness, alignment, and dimensions of the pile. Any deviation exceeding the allowable tolerances shall be corrected with a procedure approved by the Resident.

h) Structural steel or steel reinforcement bars shall be no higher than 6 inches above or three inches below the plan elevation.

i) The structural steel or steel reinforcement shall be concentric with the pile excavation within a tolerance of 1½ inches.

j) The installation log maintained in accordance with the QCP shall demonstrate the minimum required bedrock socket length is achieved.

Steel pipe piles and rock sockets not constructed within the required tolerances are unacceptable. The Contractor shall be responsible for correcting all unacceptable pile installations to the satisfaction of the Department. Materials and work necessary, including work to correct piles that are out of tolerance shall be furnished without either cost to the Department or an extension of the completion dates of the project.

501.044 Special Requirements for Steel Pipe Piles and Steel Casings

The third paragraph shall be deleted and replaced with the following and add the following:

Tremie concrete shall be used for the pipe piles rock socket, where identified in the contract documents, shall be placed in one continuous operation. Portland cement concrete for filling the upper portion of the piles, where identified in the contract documents as CIP concrete plug shall be placed in one continuous operation to fill the pile completely without causing water contamination. An internal type vibrator shall be used in the upper portion of the pile (CIP concrete plug). Pile heads shall be protected and cured in accordance with Section 502, Structural Concrete.

Steel pipe piles shall be installed open-ended using driving or drilling methods. The steel pipe piles shall be socketed into bedrock a minimum of 2 feet as indicated on the Plans, cleaned out, and their

locations, steel pipe pile, and rock socket accepted prior to installing steel wide flange section and steel reinforcement and concrete plug.

Steel casings shall be installed at pile locations within the rubble mound breakwater to facilitate the installation of the piles after complete or partial installation of the breakwater.

Concreting - The Contractor shall provide cylindrical feet to support the rock socket steel beam at the proper elevation and centralizers for properly aligning the steel reinforcement, made of a material that is not detrimental to the reinforcement or the concrete. The type of centralizer used must be approved by the Resident. The bottom of the steel reinforcing beam shall be positioned such that the steel is not allowed to come into contact with the rock and to ensure that the bottom of the beam is maintained a proper distance above the base as identified in the Plans or as directed by the Resident.

Concrete shall be placed within 48 hours of the completion of excavation, within 8 hours of final inspection approval, and after the reinforcement has been installed in the pile and rock socket is approved. Concrete shall be placed in such a manner that will prevent segregation of aggregate, infiltration of water, or any other occurrence which will tend to decrease the strength of the concrete or the integrity of the finished shaft.

Concrete placement shall be continuous from the bottom to the top elevation of the steel pipe pile without causing water contamination. Concrete shall be placed through a tremie. The tremie discharge end shall be immersed at least 5 feet in concrete, at all times, after starting the flow of concrete. An internal type vibrator shall be used in the top 5 feet. Any voids occurring in the top portion of the pile concrete shall be filled with grout. Pile heads shall be protected and cured in accordance with Section 502 - Structural Concrete.

If the placement of concrete is not performed in one continuous operation (i.e., interrupted), the Resident may direct the Contractor perform integrity testing by core drilling or by using methods to prove that there are no significant anomalies and/or defects (i.e., voids, defective concrete, and/or horizontal joints) in the placed concrete.

Should the results of the drilling and/or testing reveal significant anomalies and/or defects, the Contractor shall prepare and submit to the Resident for review and approval a plan for mitigating and repairing the drilled pile so that it is in conformance with the Plans. The cost of any drilling and/or testing and repair work required to remediate a non-conforming drilled pile shall be incidental to the construction of the drilled pile.

Should the extent of the repair work be such that it is not feasible or practical to repair the non-conforming drilled pile, a replacement pile shall be installed. The Contractor shall prepare and submit to the Resident for review and approval a plan for installing the replacement pile. The cost for the replacement pile as well as any associated and required engineering re-designs shall be borne by the Contractor.

Cover open excavations immediately upon completion or, if work is discontinued for any period of time, with a cover capable of preventing persons from falling into or entering the excavation without proper authorization. Secure the cover by approved methods.

Inspection and Acceptance - The Contractor shall keep a daily construction record, including detailed Pile installation logs, which shall be submitted to the Resident each day. Prior to rock socket installation, the Contractor shall provide access and equipment for checking the location, alignment, and plumbness of each steel pipe pile and for checking the condition of the steel pipe pile to be free from rupture and undue deformation, and cleanliness of installation. Post rock socket installation, the Contractor shall provide access and equipment for checking the adequate depth, diameter, and condition of the rock socket. Pile cleanliness will be demonstrated by the Contractor to the satisfaction of the Resident prior to and again at the completion of rock socket installation. Concrete placement shall not begin until the Department’s approval of the rock socket and steel pipe pile has been obtained. The Resident shall be allowed unrestricted access.

501.046 Driven Pile Resistance, Pile Testing, and Acceptance

This Subsection is deleted in its entirety. However, WEAP analysis will be required to prove that if the pile is driven, the pile material will not be overstressed.

501.05 Method of Measurement

Add the following paragraphs to Paragraph (c):

Installation of rock sockets in the steel pipe piles with steel wide flange beam.

Rock Socket shall include full compensation for drilling the rock socket to the required diameter and depth in competent bedrock. Cleaning out of the rock socket and the installation of a steel beam wide flange section and concrete plug shall be incidental to the Rock Socket pay item.

Steel casings shall be installed at pile locations within the rubble mound breakwater to facilitate the installation of the piles after complete or partial installation of the breakwater. Steel casings delivered shall include full compensation for the delivery and on-site storage of the casings prior to installation. Steel casings shall include full compensation for installing casings to the top of competent bedrock and providing necessary support.

No separate measurement will be made for installation, maintenance, and removal of temporary turbidity curtains and debris booms. These items shall be incidental to the Contract.

No separate measurement will be made for surveys required for layout of the proposed piles or templates used for the installation; or monitor pile heave. Surveys and support shall be incidental to the Steel Pipe Pile, In-Place pay item.

No separate measurement will be made for plastic conical pile caps. Plastic conical pile caps shall be incidental to the respective Steel Pipe Pile, In Place pay item.

501.06 Basis of Payment:

Add the following paragraphs:

The accepted quantities of Steel Pipe Piles, Delivered and In-Place will be paid for at the Contract price per linear foot, for the measure of work completed and accepted by the Resident. Such payment shall constitute full compensation for providing all labor, materials, and equipment and for all incidental items necessary for the completion of the work, as described in the paragraphs above. Payment shall also include the plastic conical pile caps. The steel connections between the top of the guide piles and the concrete deck shall be covered under Section 504.

Rock Socket shall be paid at the Contract unit price per linear foot of rock socket of the diameter specified. Rock Socket unit price shall include placement of the steel wide flange beam and concrete placement. Such payment shall be full compensation for all labor, materials, equipment, tools, and drilling equipment.

Drilling Equipment Mobilization shall be paid at the lump sum price for the mobilization of all equipment, tools, and drilling equipment.

Steel Reinforcement will be paid for separately under Reinforcing Steel pay items listed in Section 503 – Reinforcing Steel.

The last line and table of pay items shall be deleted and replaced with the following:

Payment will be made under:

Pay Items	Description	Pay Unit

501.543	H-Beam Sections (HP16x141), Delivered	Linear Foot
501.544	H-Beam Sections (HP16x141), In-Place	Linear Foot
501.545	W-Beam Sections (W21x201), Delivered	Linear Foot
501.545	W-Beam Sections (W18x311), Delivered	Linear Foot
501.545	W-Beam Sections (W10x100), Delivered	Linear Foot
501.546	W-Beam Sections (W21x201), In-Place	Linear Foot
501.546	W-Beam Sections (W18x311), In-Place	Linear Foot
501.546	W-Beam Sections (W10x100), In-Place	Linear Foot
501.70	Steel Pipe piles (12” dia., ½” w.t.), Delivered	Linear Foot
501.70	Steel Pipe Piles (24” dia., ½” w.t.), Delivered	Linear Foot
501.70	Steel Pipe Piles (36” dia., 1” w.t.), Delivered	Linear Foot
501. 701	Steel Pipe piles (12” dia., ½” w.t.), In-Place	Linear Foot
501.701	Steel Pipe Piles (24” dia., ½” w.t.), In-Place	Linear Foot
501.701	Steel Pipe Piles (36” dia., 1” w.t.), In-Place	Linear Foot
501.72	Steel Casing (18” for 15” Rock Socket), Delivered	Linear Foot
501.72	Steel Casings (30” dia,), Delivered	Linear Foot
501.72	Steel Casings (42” dia.), Delivered	Linear Foot
501.721	Steel Casing (18” for 15” Rock Socket), In-Place	Linear Foot
501.721	Steel Casings (30” dia,), In-Place	Linear Foot
501.721	Steel Casings (42” dia.), In-Place	Linear Foot
501.802	15” Rock Socket	Linear Foot
501.802	18” Rock Socket	Linear Foot
501.802	30” Rock Socket	Linear Foot
501.804	Drilling Equipment Mobilization	Lump Sum
501.90	Pile Tips	Each
501.91	Pile Splices	Each
501.92	Pile Driving Equipment Mobilization	Lump Sum

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Structural Concrete, Pile Cap)
(Structural Concrete, Pile Fill)
(Structural Concrete, Roadway - Rubble Mound)
(Structural Concrete Parapets)
(Structural Concrete, Pier Deck Slab)
(Structural Concrete, Approach Slab - Boat Ramp Transition Slab)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 502 – STRUCTURAL CONCRETE, with the following modifications:

Section 502.01 Description

Add the following after the first paragraph:

This work shall consist of furnishing and placing Portland Cement Concrete for concrete waterfront structures including deck topping at platform, pile cap closure pours, roadway concrete at the rubble mound, approach slab, and tremie concrete pile fill in accordance with these Specifications and in conformity with the lines, grades, and dimensions shown on the Plans.

Section 502.05 Composition and Proportioning

Modify Table 1 in accordance with the following:

Concrete Class LP shall include Note 2: inclusion of Calcium Nitrite.

Modify Table 1, Note 2, in accordance with the following:

Calcium Nitrite shall be added at a rate of 5.0 gallons per cubic yard except for Structural Concrete, Pile Fill.

Replace Table 1, Note 5 with the following:

Coarse aggregate for concrete with the exception of structural concrete for pile fill shall meet the requirements of Section 703.02 for Class "AA." The maximum coarse aggregate size for structural concrete mix for pile fill shall be 3/8 inches; and fine aggregates shall make up 40 to 50 percent of the total aggregate by weight.

Add the following to the second paragraph:

Concrete mix designs for structural concrete shall meet the following additional requirements:

1. Structural Concrete, Fill requires a high range water reducing admixture selected from the QPL.
2. Water to cementitious materials ratio (W/Cm) in all structural concrete mix designs shall be limited to a maximum value of 0.40.
3. Limit water-soluble, chloride ion content in hardened concrete, percent by mass of cementitious materials to 0.10 for Structural Concrete, Pile Fill and 0.15 for all other concrete. Limits are stated in terms of water-soluble chloride ions (Cl-) in percent by mass of cementitious materials.
4. Structural Concrete, Fill (tremie concrete) requires an anti-washout admixture.

Add the following to Section G:

Maximum slump shall be 8 inches (with superplasticizers) per AASHTO M 194.

Add the following to Section I:

Mixes shall include the following additional admixtures:

1. Anti-washout admixture for Structural Concrete, Pipe Fill (tremie) mix design only. Provide certification that the anti-washout admixture is compatible with the cementitious materials and other chemical admixtures in the proposed concrete mix.
2. Shrinkage-reducing/Compensating Admixture meeting ASTM C494, Type S and the following:
   a. Designed to expand at a rate that closely compensates for shrinkage of concrete mix and reduces capillary surface tension of concrete pore water.
   b. Provides at least 80 percent shrinkage reduction as measured and documented by field performance.
   c. Dosage rate and mixing sequence shall be per manufacturer's recommendations.
   d. Shall have documented performance of ASTM C1581, run with concrete (maximum aggregate size not to exceed 0.5 inch): No cracking for minimum 120 days.

Add the following new section:

K. Water soluble chloride ion content in hardened concrete. Provide one of the following:

1. Test report in accordance with ASTM C1218/C1218M at an age between 28 days and 42 days.
2. Calculation of water-soluble chloride content based on certified chloride content of each constituent material and proportion of constituent material in concrete mixture.
3. All of the following items:
   a. Manufacturer's Certificate of Compliance that each admixture does not intentionally add chlorides and/or that chloride content of each admixture does not exceed trace amounts.
   b. Verification that potable water is used in concrete mix or test data documenting chloride content of water.
   c. Letter from concrete supplier stating that fine aggregates and coarse aggregates are from sources that are not known to be susceptible to chlorides in aggregates.

Add the following new section:

L. Shrinkage Test Results for Mix

1. In accordance with ASTM C157, with the following modifications:
   a. Prisms must be moist cured for 7 days prior to 28 day drying period.
   b. Comparator reading at end of 7-day moist cure must be used as initial length in length change calculation.

c. Reported results must be average of three prisms.

d. If shrinkage of a specimen departs from average of that test age by more than 0.004 percent, disregard results obtained from that specimen.

e. Only 4-inch prisms shall be used.

2. Results at end of 28 day drying period must not exceed 0.035 percent if 4-inch prisms are used.

Add the following new section:

M. Thermal Control Plan for Mass Concrete complying with ACI 301 and requirements described herein. Plan shall be signed and sealed by a Professional Engineer licensed in the State of Maine.
Provide documentation that maximum concrete temperature in structure will not exceed 160 degrees F, and maximum temperature differential between center of section and external surfaces of concrete will not exceed 35 degrees F.

Replace the sixth paragraph with the following:

Concrete mix designs shall contain no more than 25 percent fly ash, no more than 10 percent silica fume and no more than 50 percent total of fly ash, slag pozzolan cement and silica fume.

Section 502.18 Method of Measurement

Add the following before the first paragraph:

Measurement of concrete satisfactorily placed and accepted will be measured by the cubic yard in accordance with the dimensions shown on the Plans or authorized changes in the Plans.

Structural Concrete, Pile Fill for steel pipe piles will be measured separately and shall be covered under Pay Item 502.2354.

Section 502.19 Basis of Payment

Add the following before the first paragraph:

Structural Concrete will be paid for at the Contract cubic yard price for the respective Contract items which shall be full compensation for all labor, materials, falsework, staging, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Add the following Pay Items:

Pay Item	Description	Pay Unit
502.2351	Structural Concrete, Pile Cap	Cubic Yard
502.2354	Structural Concrete, Pile Fill	Cubic Yard
502.263	Structural Concrete, Roadway (Rubble Mound)	Cubic Yard
502.264	Structural Concrete, Parapets	Cubic Yard
502.411	Structural Concrete, Pier Deck Slab	Cubic Yard
502.45	Structural Concrete, Approach Slab (Boat Ramp Transition Slab)	Cubic Yard

SPECIAL PROVISIONS
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 502 – STRUCTURAL CONCRETE, with the following modifications:

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
LP	502.2351	Structural Concrete, Pile Cap	450	A
LP	502.2354	Structural Concrete, Pile Fill	450	A
LP	502.263	Structural Concrete, Roadway (Rubble Mound)	450	A
LP	502.264	Structural Concrete, Parapets	450	A
LP	502.411	Structural Concrete, Pier Deck Slab	450	A
LP	502.45	Structural Concrete, Approach Slab (Boat Ramp Transition Slab)	450	A
LP	626.38	Ground Mtd Cabinet Foundation	450	A

P values listed above reflect the price per cubic yard (yd^3) for all pay adjustment purposes.

SPECIAL PROVISIONS
SECTION 504
STRUCTURAL STEEL
(Miscellaneous Fabrication)

All work and materials shall conform to the Contract Drawings and provisions of the State of Maine, Department of Transportation, Standard Specifications, March 2020, SECTION 504, STRUCTURAL STEEL, with the following changes:

504.01 Description

Replace the first paragraph with the following:

This work shall consist of detailing, fabricating, and erecting the access ladders and miscellaneous structural steel required for construction of the pile supported platform structure, including but not limited to, W-shape struts, MC-shape wales as part of the wave screen assembly, the steel connection between the top of guide piles and the concrete deck, ladders and steel connections. Materials, workmanship, inspection and documentation not specifically addressed by this Specification shall be done in accordance with the applicable sections of the AASHTO/AWS D1.5 Bridge Welding Code including Commentary (the D1.5 Code), the AASHTO Guide Specification For Highway Bridge Fabrication with HPS 70W (HPS 485W) STEEL (the Fab Guide) and other Standards and Specifications referenced herein.

Piles including embedded W-shape and HP-shape sections (core beams) are included under Section 501 for the foundation piles.

504.02 Materials

All materials shall be delivered, stored and handled so that they are not damaged.

Structural steel for the platform construction, including rolled shapes and plates, shall conform to the sizes and grades indicated on the Contract Plans.

All steel hardware items, steel wales and struts, except stainless steel (if applicable), under this Section shall be hot-dipped galvanized unless noted. Galvanizing shall be by the hot dip method according to ASTM A 123 and A 153. All welding requirements referenced in Section 504 shall comply with AWS D1.5. Welding electrodes shall be E70XX grade.

504.03 Drawings

Add the following to the end of this section:

The Contractor shall submit for approval all shop drawings prior to fabrication. Shop drawings shall include all information necessary for the fabrication of the component parts. Indicate size and weight of members, type and location of shop and field connections, the type, size and extent of all welds, and welding sequences. Use American Welding Society welding symbols. Approval of shop drawings will be for size and arrangement of principal and auxiliary members and strength of connections. Any errors in dimensions shown on shop drawings shall be the responsibility of the Contractor.

The Contractor shall submit for approval the manufacturer’s specifications on all connectors, hardware, bolts and certificates of compliance with applicable ASTM specifications.

504.04 Facility Requirements

Replace this section with the following:

Fabricate structural steel for platform construction in a facility holding a current AISC SBR or BU certification.

Access ladder shall be considered an ancillary product requiring a AISC Fabrication or MaineDOT certification.

504.50 Installation

Fabricated steel items shall be stored on skids, not on ground, in such a fashion as to prevent bending, twisting, or similar damage. Fabrications shall not be dumped off a truck. Any parts damaged or improperly fabricated shall be removed and replaced or corrected as directed by the Department and at no additional cost to the Department.

Prior to installation, work shall be cleaned of weld splatter, dirt and other foreign materials. Protect installed work as required from damage.

504.65 Method of Measurement

Add the following:

Unless otherwise specified, Miscellaneous Fabrication will be measured as a lump sum complete and accepted, consisting of all miscellaneous structural steel required for construction of the pile supported platform including W-shape struts, MC walers as part of the wave screen assembly, guide pile connections to concrete deck, steel connections and other miscellaneous steel fabrications not covered elsewhere in the Contract.

504.66 Basis of Payment

Add the following:

Miscellaneous Fabrication will be paid for at the respective Contract lump sum price. This price will be full compensation for the materials, labor and equipment required to fabricate, deliver, store and erect miscellaneous steel for access ladder and as required for construction of the pile supported platform including struts, walers, steel connections and other miscellaneous steel fabrications not covered elsewhere in the Contract.

Steel core beams in pipe piles will be paid for separately under their respective pay items.

Payment will be made under:

Pay Item	Description	Pay Unit
504.510	Miscellaneous Fabrication	Lump Sum

SPECIAL PROVISION
SECTION 504
STRUCTURAL TIMBER
(Timber Fender System)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following additions:

504.01 Description

Add the following paragraph:

The work also includes the following:

This section applies to all work necessary by the Contractor to construct the timber fender system and all requirements listed herein and in accordance with the drawings. Contractor shall be qualified in the field of timber work and installation with at least five years of experience.

504.011 General References

Add the following paragraph:

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

A. AMERICAN WOOD-PROTECTION ASSOCIATION (AWPA) – Use current Standard

AWPA U1	User Specification for Treated Wood
AWPA T1	Processing and Treatment Standard
AWPA M4	Standard for the Care of Preservative-Treated Wood Products
AWPA M6	Brands Used on Forest Products
AWPA P5	Standard for Waterborne Preservatives
AWPA U1	Lumber, Timbers, Bridge Ties and Mine Ties – Pressure Treatment
AWPA M4	Care of Preservative-Treated Wood Products
AWPA M6	Brands Used on Forest Products
AWPA P2	Creosote Solutions
AWPA P5	Waterborne Preservatives

B. ASTM INTERNATIONAL (ASTM) – Use current Standard

ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 307	Carbon Steel Threaded Rod, 36,000 psi Tensile Strength

Except as otherwise indicated on the drawings or specified herein, the industry standards shall apply to all work under this section. Where requirements indicate on the drawings or specified herein differ from the industry standards, the more stringent requirements shall govern.

504.015 Submittals

This Subsection is added and shall include the following:

The Contractor shall provide the submittals listed below in accordance with Section 105.70 of the MaineDOT Standard Specification. Specific components of the submittals are listed in the referenced MaineDOT SECTION 501.

A. Timber preservative inspection test report. Submit the inspection report of an independent inspection agency, for approval by the Department, that offered products complying with applicable AWPA Standards. Identify treatment on each piece by the quality mark of an agency accredited by the Board of Review of the American Lumber Standard Committee.

B. Provide Safety Data Sheets (SDS) associated with timber preservative treatment. Contractor shall comply with all safety precautions indicated on SDS.

E. Shop Drawings:

1) Timberwork: Submit drawings of timber showing dimensions of cut, framed, or bored timbers.

2) Hardware: Submit drawings of hardware showing sizes, dimensions and finishes.

504.018 Delivery, Storage, and Handling

A. Open-stack untreated timber and lumber material on skids at least 12 in. aboveground, in a manner that will prevent warping and allow shedding of water. Close-stack treated timber and lumber material in a manner that will prevent long timbers from sagging or becoming crooked. Protect materials from weather. Handle treated timber with ropes or chain slings without dropping, breaking outer fibers, bruising, or penetrating surface with tools. Do not use cant dogs, peaveys, hooks, or pike poles. Protect timber and hardware from damage.

504.02 Materials

This Subsection is added and replaced with the following:

A. Treated Lumbers and Timbers

1) Solid Sawn:

(a) Provide solid rough sawn timber of Southern Yellow Pine, Structural Grade or better with a minimum allowable flexural strength (Fb) of 1,500 psi, and identified by the grade mark of a recognized association or independent inspection agency using the specific grading requirements of an association recognized as covering the species used. The association or independent inspection agency shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used.

(b) Provide solid sawn lumber of Southern Yellow Pine, or approved equal, for timber board facing.

2) Preservative Treatment: Fabricate lumber and timbers before preservative treatment. Each piece of treated lumber or timber shall be branded, by the producer, in accordance with AWPA M6. The type of preservative, retention, and penetration must be based on Use Category provided and applicable species and in accordance with AWPA U1 and AWPA T1. The Contractor shall be responsible for the quality of treated wood products.

(a) Lumber and timber preservative treatment shall be waterbourne preservative in accordance with AWPA P5 (CCA – Chromated Copper Arsenate).

B. Hardware:

1) Bolts with necessary nuts and washers, timber connectors, drift pins, dowels, nails, screws,

spikes and other fastenings:

(a) Bolts and nuts shall conform to ASTM A307 unless otherwise indicated on the Contract Drawings.

(b) Provide cast-iron ogee, malleable iron washers, or plate or cut washers where indicated.

(c) Provide bolts with washers under nut and head. Provide timber connectors and other metal fastenings of type and size shown.

(d) Hot-dipped galvanized hardware.

2) Wire Rope and Fittings FS RR-W-410, Type I, Class 2, Type III, Class 2 or 3 unless otherwise indicated on the Contract Drawings.
3) Provide Staples of 0.375-inch diameter stainless steel at least 5 inches long.
4) Provide clips or clamps of zinc-coated steel.

C. Zinc-Coating: Galvanize steel specified or indicated by the hot-dip process in accordance with ASTM A123 or ASTM A153, as applicable, with 20 ounces of zinc per square foot.

504.043 Installation Procedures and Tolerances

The following paragraphs are added:

CONSTRUCTION

Use timber members that have been cut, beveled, and faced prior to plant preservative treatment. In addition to the contract clause entitled "Accident Prevention" provide protective equipment for personnel fabricating, field treating, or handling materials treated with CCA.

FRAMING

Cut and frame lumber and timber so that joints will fit over contact surface. Secure timbers and piles in alignment. Open joints are unacceptable. Make lead hole for shank the same diameter as shank. Make lead hole for the threaded portion approximately two-thirds of the shank diameter. Bore holes in small timbers for boat or wire spikes with a bit of the same diameter or smallest dimension of the spike to prevent splitting. Counterbore for countersinking wherever smooth faces are indicated or specified.

FRAMED BENTS

A. Wales and Vertical Timbers

1. Align bents before bracing is placed. Provide bracing of sufficient length to provide a minimum distance of 8 inches between outside bolt and end of brace. Bracing and girts shall bear firmly against piles or timber to which secured. Place fillers to avoid bending the bracing more than one inch out of line when bracing bolts or other fastenings are drawn up tight. Built-up fillers will not be permitted. Make filler a single piece of the same treated lumber as that in the brace, with a width of at least 6 inches and a length of at least 12 inches. Bolt ends of bracing through pile, post, or cap with a bolt of at least one inch diameter, unless otherwise shown on the drawings.

B. Fastening

1. Vertical rods shall have nuts on the lower end. Where rods are used to fasten timber to timber, timber to concrete, or timber to steel, bolt members together when they are installed and retighten immediately prior to final acceptance of Contract. Provide rods having sufficient additional threading to provide at least 3/8 inch per foot thickness of timber for future retightening. Provide timber connectors of types indicated.

FIELD TREATMENT

A. Timberwork
1. Field treat cuts, bevels, notches, refacing and abrasions made in the field in treated timbers in accordance with AWPA M4 and SDS. Wood preservatives are restricted use pesticides and shall be applied according to applicable standards. Trim cuts and abrasions before field treatment.

B. Galvanized Surfaces
1. Repair and recoat zinc coating which has been field or shop cut, burned by welding, abraded, or otherwise damaged to such an extent as to expose the base metal. Thoroughly clean the damaged area by wire brushing and remove traces of welding flux and loose or cracked zinc coating prior to painting. Paint cleaned area with two coats of zinc oxide-zinc dust paint. Compound paint with a suitable vehicle in a ratio of one part zinc oxide to four parts zinc dust by weight.

504.08 Method of Measurement

Structural Timber – Fender system will be measured by the lump sum, and shall include all labor, materials, incidentals, and equipment necessary to satisfactorily install the timber fender system.

504.09 Basis of Payment

Structural Timber – Fender system will be paid for at the Contract Lump Sum price, and shall include all labor, materials, incidentals, and equipment necessary to satisfactorily install the timber fender system at the job site. Payment shall include pressure treatment, hardware connections, and inspections.

Payment will be made under:

Pay Item	Description	Pay Unit
504.60	Timber Fender System	Lump Sum

SPECIAL PROVISION
SECTION 531
MARINE
(TIMBER FLOATING DOCKS)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following additions:

GENERAL REQUIREMENTS

531.01 Description

This specification provides the performance and main technical requirements for the timber floating docks to be installed for the fishing vessels.

The Work consists of providing a complete floating dock system to accommodate the indicated design vessels and other requirements, including but not limited to the floating dock modules, articulated connections between the dock modules, transition ramps, mooring cleats, fenders and UHMW rubbing/sliding panels, pile guides, corner knee braces, and dock accessories as indicated.

531.02 General

The floating dock system shall consist of individual timber deck floats with rotationally molded polyethylene outer shell and expanded polystyrene cores. Floats shall be interconnected with heavy rubber compression blocks and reinforced connection points and fabricated structural steel bracing subassemblies and pile guides.

Manufacturer: The floating dock modules shall consist of timber decking, structural waler system steel or timber reinforced, pressure treated southern yellow pine deck and molded polyethylene encasing a solid encapsulated expanded polystyrene core on all sides.

Contractor: Shall retain the services of a qualified Floating Dock Manufacturer who shall provide the final design, calculations, and shop drawings for the complete floating dock system signed and sealed by a licensed State of Maine Professional Engineer.

Floating Dock Manufacturer: Shall also fabricate, deliver to, and assemble the Floating Dock system at the Lubec Breakwater project site in its final operating location. All tools, equipment, materials, and supplies to perform all labor, supervision, fabrication, assembly, and installation of the floating dock system should be furnished. The Floating Dock Manufacturer shall perform all stability calculations for individual modules and assembled dock system and submit them to the Department for review and approval prior to the start of manufacturing of the dock modules.

531.03 References

A. Maine Uniform Building and Energy Code (MUBEC).

A. AMERICAN WOOD-PROTECTION ASSOCIATION (AWPA) – Use current Standard

AWPA U1	User Specification for Treated Wood
AWPA T1	Processing and Treatment Standard
AWPA M4	Standard for the Care of Preservative-Treated Wood Products
AWPA M6	Brands Used on Forest Products
AWPA P5	Standard for Waterborne Preservatives
AWPA U1	Lumber, Timbers, Bridge Ties and Mine Ties – Pressure Treatment
AWPA M4	Care of Preservative-Treated Wood Products

AWPA M6	Brands Used on Forest Products
AWPA P2	Creosote Solutions
AWPA P5	Waterborne Preservatives

C. American Welding Society (AWS):

1. AWS D1.1/D1.1M: Structural Welding Code - Steel.
2. AWS D1.2/D1.2M: Structural Welding Code - Aluminum.
3. AWS D1.4/D1.4M: Structural Welding Code - Reinforcing Steel.
4.3. AWS D1.6/D1.6M: Structural Welding Code - Stainless Steel.

D. ASTM International (ASTM):

1. ASTM A27/A27M: Standard Specification for Steel Castings, Carbon, for General Application.
2. ASTM A36/A36M: Standard Specification for Carbon Structural Steel.
3. ASTM A47/A47M: Standard Specification for Ferritic Malleable Iron Castings.
4. A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
5. ASTM A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
6. ASTM A153/A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
7. ASTM A307: Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
8. A325/A325M: Specification for Structural Bolts, Steel, Heat Treated 120/105 ksi Minimum Tensile Strength.
9. A501/A501M: Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
10. ASTM A563: Standard Specification for Carbon and Alloy Steel Nuts.
14. ASTM A780/A780M: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
21.15. ASTM C272/C272M: Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions.
24.16. ASTM C578: Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
29.17. ASTM D256: Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
30.18. ASTM D570: Standard Test Method for Water Absorption of Plastics.
31.19. ASTM D638: Standard Test Method for Tensile Properties of Plastics.
32.20. ASTM D792: Density and Specific Gravity (Relative Density) of Plastics by Displacement.
33.21. ASTM D1535: Standard Practice for Specifying Color by the Munsell System.
34.22. ASTM D1894: Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting.
35.23. ASTM D2240: Standard Test Method for Rubber Property - Durometer Hardness.
36.24. ASTM D4020: Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials.
37.25. ASTM D5456: Standard Specification for Evaluation of Structural Composite Lumber Products.
38.26. ASTM F844: Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

531.04 Submittals

A. Shop Drawings: Submit shop drawings indicating complete information for the fabrication, handling, and installation of the timber deck floats. Drawings shall not be reproductions of contract drawings or copies of drawings for other projects undertaken by the Floating Dock Manufacturer. Design drawings of floats (including connections) shall be prepared and sealed by a State of Maine Licensed professional Engineer and submitted for approval to the Department prior to fabrication. The Drawings shall indicate, as a minimum, the following information:
   a. Floating pier system layout.
   b. Marking of floats for assembly.
   c. Flexible articulated connections between floats, and connections between floats and other construction.
   d. Location and anchorage of mooring fittings.
   e. Fendering/Waler size and splice pattern.
   f. Connection to guide piles.
   g. Structural details.
   h. Material properties of all materials used.
   i. Lifting and assembly inserts and embedded items.
   j. Dimensions and surface finishes of each float.
   k. Erection sequence and handling requirements.
   l. All loads used in design (such as live, dead, wind, current, berthing, handling, and erection).
   m. Bracing/shoring required.
   n. Receptacle Stations.
   o. Utility routing and connections for work of other trades.
   p. Lifesaving equipment and supporting posts.

B. Design Calculations: Submit calculations reflecting design conforming to requirements of the Contract Documents prior to erection of timber floats. Design calculations of timber floats (including connections) shall be prepared and sealed by a ME Licensed Professional Engineer and submitted for approval prior to fabrication. In addition to member sizing calculations, submit calculations for the pier system which include:
   a. Anchorage attachment points to ensure reactions shall be appropriately and rationally distributed throughout the system.
   b. Overall system loads under full occupancy, with consideration for shielding factors, and deflection of the system and its effects on anchor loading.
   c. Anchorage system capacity for individual and overall load considerations.
   d. Coordinate with Contract Drawings and Engineer to confirm guide pile locations and applied forces.
   e. Stability and listing slope calculation for all loads, load combinations, including partial and unbalancing loads, and metocean conditions during incremental installation of modules and final configuration of all modules.

C. Paint Coating System: Submit IEEE C57.12.29 coating system performance requirements test on "test specimens" of the same material used in fabrication of the receptacle stations.

D. Product Data:
   1. Anchorage and lifting inserts and devices.
   2. Flotation Foam.
   3. Fenders, cleats, ladders and lifesaving equipment.

E. Certificates:
   1. All Materials including Vendor proprietary products to be used in construction.
   2. Fabrication.

3. UHMW rubbing panels.
4. Coating System.

531.05 Timber Floating Docks

A. Timber floating docks shall be the product of a manufacturer specializing in the production of timber floating docks.
B. The Contract Drawings are general in nature and show the basic system layout and details, with required nominal or minimal dimensions, size and number of cleat locations, guide piles, elevations, and materials.
C. The Contract Documents intent is to allow consideration of proprietary timber floating dock systems of different manufactures, provided they meet the requirements of the Drawings and Specifications, are constructed of the specified materials and minimum dimensions, and are of quality equal to or greater than that indicated.
D. The Contract Documents are not intended to be used as detailed shop or fabrication drawings for the manufacture of the floating dock system.
E. The timber floating dock system shall be manufactured, assembled, and installed based on the submitted design calculations, shop drawings, assembly drawings, and installation instructions furnished by the floating dock manufacturer.
F. The timber floating dock system shall be designed and constructed in accordance with local, state, and federal codes and permits.
G. The use of steel or concrete floats may be considered, subject to approval of the Department and Engineer at their sole discretion.

531.07 Design and Performance Requirements

A. Floating Dock System shall be designed, detailed, and fabricated in compliance with the current edition of the local building codes.
    1. Floating Dock and Gangway, their attachments, and all related components shall be fully designed and fabricated by a qualified manufacturer. The manufacturer shall have in-house capability to provide design, engineering and fabrication thus providing an integrated approach that delivers design and fabrication services with a single point of responsibility.
    2. A State of Maine Licensed Professional Engineer shall be responsible for the design and shall sign and seal the design calculations, drawings, and erection procedures. The engineer shall certify that timber float modules and assembled floating dock have been fabricated in accordance with the design and details.
    3. The manufacturer shall be responsible for the delivery of all materials needed for the construction and installation.
    4. The manufacturer shall submit for review: design calculations, drawings, shipping, handling, storage, and erection procedures, warranty information, welder qualifications, inspections and maintenance procedures, and engineer's certification.
B. General: The design of the floating dock system, including the anchorages, articulated joints between individual float modules, cleats, fenders, and connections, shall include but not be limited to the following:
    1. Determination of extreme fiber stresses in major members under combined loading conditions applied at various locations along the floating pier.
    2. Effects of combined loading conditions on the connections.
    3. Transfer of vessel loads to fenders and cleats, from cleats and fenders to the floating dock system.
    4. Transfer of floating dock loads to guide/anchor piles.

5. Guide pile framing and connections, including loads into piling, to adequately and safely secure the entire floating dock system under the specified design loads.
6. Detail design of a corner knee brace assemblies to resist indicated combined loading conditions.
7. Transfer of forces by use of adequate bracing, struts, bolting, etc., including utility through internal braces as required.
8. Flotation and stability calculations for all typical system components, in particular those subject to concentrated dead or live loads, such as gangway landing on floats.
9. Detail design of splices for loads transferred from wale/fender to float and from wale to wale.

C. Design Loads:
1. The floating docks, anchorages, wales, cleats, and connections shall be designed in accordance with applicable local, state, and federal codes and standards. The design shall accommodate the appropriate loading conditions and combinations, including those indicated herein.

D. Design Vessels:
1. The primary design vessel is a fishing boat with the following characteristics:
   - Length Overall..... 40 ft
   - Beam ..... 16 ft
   - Draft ..... 4 ft
2. A secondary vessel to be accommodated within the harbor is a marine patrol boat with the following characteristics:
   - Length Overall..... 42 ft
   - Beam ..... 15 ft
   - Draft ..... 4 ft

E. Vessel Berthing Impact and Mooring Forces:
1. The dock fender system, mooring system, and applicable foundation and anchorage elements shall be designed for anticipated design vessels impact and mooring forces at any point on the floating dock. The Manufacturer shall independently verify the following anticipated design berthing and mooring loads:
2. Fender Loads:
   a. Perpendicular Load: Rated reaction of 1.0 ft x 2.5 ft foam filled fender, prorated for manufacturer's tolerances and adjustments.
   b. Horizontal (longitudinal) Load: 20% of rated fender reaction simultaneously applied with the perpendicular load.
   c. Vertical Load: 20% of the rated fender reaction simultaneously applied with the perpendicular load.
3. Mooring Loads:
   a. 10 tons rated capacity of the mooring cleats/bollard at each mooring point, applied in the horizontal and vertical range of direction as indicated herein, unless otherwise noted on the Contract Documents:
      1) 0 to 90 degrees in the horizontal plane, measured from the centerline of the bollard/cleat, counterclockwise and clockwise.
      2) 0 to 45 degrees in the vertical plane, measured from the horizontal upward.

F. Dead Loads, Vertical:
1. Float modules shall be sized so that a single module is used to attain the indicated pier width. The use of more than one module connected side by side to attain pier width is unacceptable.
2. The floating dock system shall support the calculated dead load(s) and live loads with a freeboard not less than 20 inches nor more than 24 inches upon installation

and acceptance. The minimum freeboard shall be at least 6 inches under the full live load. Floats shall be designed to float level under dead load(s).

a. Dead loads shall include the weight of all framing, connections, decking, floatation units, pile guides, and other structural components, in addition to all permanently attached features such as gangways, cleats, fenders, equipment, and utilities.
b. At the time of acceptance, the dock shall be within ±1 inch of the calculated freeboard.
c. When evaluated one year after acceptance, the dock may lose no more than 1 inch of freeboard from that measured at acceptance.
d. When evaluated five years after acceptance, the dock may lose no more than 2 inches from that measured at acceptance.

3. Floats shall be designed to float level with no live load applied. The decks of the floating dock shall be within the followings tolerances of being level:
   a. Longitudinal slope shall be not more than ½ inch in 6 feet of length (0.4 degrees) when accepted or more than ¾ inch in 6 feet (0.6 degrees) at the end of five years.
   b. Transverse slope shall be not more than ½ inch across the total width.
   c. Deck surfaces between adjacent dock units shall be at the same elevation with no more than 1/8-inch differential.

G. Live Loads, Vertical:
1. The floating dock system shall support a uniform live load of not less than 50 pounds per square foot (psf).
2. The stability of the dock system shall be analyzed for various partial uniform and concentrated load conditions to determine maximum longitudinal and transverse cross slope conditions and float stability.
3. The floating dock shall be capable of supporting:
   a. A 500-pound moving point load over a 1 square foot area anywhere on a module without causing excessive rolling or tilting of the pier.
   b. A 400-pound point load at 1 foot from the offshore end of the pier and lose no more than 4 inches of freeboard; and
   c. A 300-pound point load applied to the corner of the offshore end of the pier and lose no more than 2 inches of freeboard differential per 3 feet of pier width between the offshore corners.

H. Wind Loads, Horizontal:
1. The floating dock system shall be capable of withstanding the stresses imposed on the dock and vessel by:
   a. Wind Speed:
      1) Maximum/Hurricane: 117 mph, Risk Category II, 700 year event.
      2) Service: 108 mph, Risk Category II, 100-year event.
      3) Vessels at Berth: 58 mph (50 knots), Risk Category II.
         b. Exposure Category C.
         c. Surface Roughness Category D.
         d. Topographic Factor 1.0.
         e. Calculations shall be performed for wind loads both parallel and perpendicular to the pier.
         f. Wind pressure shall be assumed to act on the projected area of the pier and moored vessels.

I. Current Loads on Floats and Vessels:
1. Minimum current pressure: 8.5 psf (2.5 fps velocity).

2. Acting on the projected area of the pier and moored vessels, assuming normal occupancy.

J. Wave and Surge Loads:
1. Wave height, period, and other factors shall be computed based on the methodology presented in the U.S. Army Corps of Engineers "Shore Protection Manual", or the Naval Facilities Engineering Command Design Manual 26.2 "Coastal Protection", or similar approved method.
2. The floating dock system shall be capable of withstanding the stresses imposed on it by non-breaking waves with the following criteria:
   a. Without a moored vessel: 2.5 feet high wave with a period of 2.6 seconds (100 year wave).
   b. With a moored vessel: 1.31 feet high wave with a period of 2.7 seconds (1 year wave)
   c. The design wave shall be located so as to produce the maximum stresses in sagging and hogging.
3. Acting on the projected area of the pier and moored vessels, assuming normal occupancy.

K. Snow & Ice Loads, Vertical:
1. Ground Snow pressure: 50 psf.
2. 2" Radial Ice: 10 psf.
3. Exposure Factor: 0.9.
4. Thermal Factor: 1.2.
5. Importance Factor: 1.0.

L. Load Combinations:
1. The floating dock system shall be designed for the loads specified in Unified Facilities Criteria (UFC) 4-152-07 Design: Small Craft Berthing Facilities and combined in accordance with UFC 4-152-01 Design: Piers and Wharves.

M. Stability Calculations:
1. The floating dock system shall be analyzed for load combinations, including live, wind, wave, surge, snow & ice, fender, and mooring loads to determine maximum expected longitudinal and transverse slope and stability conditions.
2. Designer shall present loading conditions and combinations along with results to the Engineer for approval.
3. The decks of the floating dock shall not exceed the followings tolerances of being level with live loads applied (operating conditions):
   a. Longitudinal slope shall be not more than 1 inch in 18 inches of length (3.2 degrees).
   b. Longitudinal angle between adjacent section shall not exceed 5 degrees.
   c. Transverse slope shall be not more than 3 inch across the total width.

N. Loads at Gangway Landing:
1. The effect of the following loads carried by the gangway shall be considered at the gangway landing point on the timber floats.
   a. Uniform Load: 85 pounds per square foot.
   b. Concentrated Load: 400 pounds over a 1 square foot area.
   c. Uniform and concentrated loads need not be assumed to act concurrently.
2. The effect of the critical loads carried by the gangway shall be considered at the gangway landing point on the high platform deck. The hinged connection shall also allow for effects of critical wind loads in direction perpendicular to gangway.

O. Dimensions:
1. Relevant control dimensions shall be as indicated in the Contract Documents.
2. The proposed floating dock system manufacturer may make adjustments in the overall float dimensions to accommodate its proprietary dock system's standard

dimensions, or adjustments to provide structural integrity and overall stability of the floating deck system.

3. The overall floating dock dimensions shall not be increased without specific written approval by the Department.
4. All proposed dimensional changes made by the floating dock system manufacturer shall be pointed out in writing to the Department and Engineer and in the submittal of the floating dock drawings.
5. Special floats must be designed to support the additional concentrated loads as imposed by gangways or other equipment. Modules with special loadings shall have the same freeboard as standard modules without special loading, so that there will be no residual stresses or tilting when modules are interconnected.

531.08 Guarantee

A. Contractor shall execute and deliver to the Department, before Final Completion, a guarantee. The Contractor shall guarantee that all components of the floating dock system have been properly designed, manufactured and installed, and are free from defects in material and workmanship. For the period of the guarantee, defined as one year from the Department's date of acceptance, the Contractor shall furnish and install, without additional cost to the Department, any part or assembly, which examination shall disclose as defective in materials and/or installation.

B. The guarantee shall cover repair of any defects or damages which may develop within the guarantee period, from date of Final Acceptance of the Work performed under this Contract, provided said defects or damages are caused by inadequate design, manufacture, or installation of the floating dock system. If the defects or damages are not repairable, the defective or damaged portion or assembly shall be removed and replaced, at no additional cost to the Department, to its original "as-new" condition.

C. Acts of nature producing conditions exceeding the design criteria set forth in these Specifications, shall not be covered by this guarantee.

D. Guarantee Requirements:
   1. Floatation Material and Float: At the end of the guarantee period, the deck surface shall float not more than 1 (one) inch below the freeboard under dead load as specified in the Contract Documents and the float shall show no signs of unexpected deterioration which would cause future loss of freeboard. Floats shall be replaced and installed by the Manufacturer, at no cost to the Department, if this requirement is not met.
   2. Deck Material: At the end of the guarantee period, the deck material shall remain structurally sound and free from major defects. Any part of the deck which is not structurally sound or which has developed significant defects, in the judgment of the Department, shall be removed and replaced by the Contractor, at no additional cost to the Department.
   3. Framing and Connections: Structural damage resulting from defective material or workmanship during the guarantee period, such as broken welds, broken bolts, bent, fractured, or splintered member, shall be replaced or repaired by the Contractor, at no additional cost to the Department.
   4. Anchorage: Any damage resulting from defective guide pile frames during the guarantee period shall be repaired by the Contractor, at no additional cost to the Department.

E. Department will give notice in writing of apparent defects in the floating dock system, to the Contractor immediately upon observance. The Department will complete an "end of guarantee" inspection on the anniversary of the guarantee and will notify the Contractor of all apparent defects within 2 (two) weeks of the inspection.

531.09 Operation and Maintenance Manual

A. Contractor shall furnish 3 (three) copies of a manual containing detailed written instructions for operating and maintaining (O&M) the floating dock system. Complete and detailed instructions shall be furnished on the repair or removal and replacement of components of the floating dock system and gangway.
B. The O&M Manual shall include schedules and maintenance procedures for all elements, including but not limited to, timber surfaces, timbers, wales and rub rails, hinges, pile guides, and all commercially available components used.

531.10 Shipping, Handling, Delivery and Storage

A. Lift and support floats at the lifting and supporting points indicated on the shop drawings.
B. Ship and handle all material comprising the floating dock system so as not to cause corrosion, damage, or discoloration.
C. Materials delivered and stored at either the staging area or the jobsite shall be properly stored off the ground on dunnage, or by other appropriate means, to prevent direct contact with the ground and causing damage or discoloration. Separate stacked floats by battens across the full width of each bearing point. Protect from weather, marring, damage, and overload.

FLOATING DOCK FABRICATION

531.21 Floating Dock System

A. Use materials compatible with a marine saltwater environment. These materials shall be resistant to corrosion, sunlight, marine organisms, and other destructive features associated with a marine environment.
B. The floating dock system shall consist of modular sections designed in such a manner that modules may be replaced with standard modules in case of repairs.
C. Walking surface of floating docks shall be level and flush with respect to the adjacent floats and shall provide a skid free surface under wet conditions.
D. The floating dock system shall be warranted against sinking, excessive water absorption, cracking, leaking, and against structural failure under design load conditions.
E. The floating dock system shall be anchored to the indicated piles.

531.22 Prefabricated Timber Floating Docks

A. General:
    1. Timber floating docks shall be shop-fabricated in a factory-controlled environment and shall not be site-fabricated.
    2. Timber floating docks shall be sized so that a single dock is used to attain the indicated pier width. The use of more than one timber floating dock connected side by side to attain floating dock width will not be accepted.
    3. Timber floating docks shall be structurally connected by an articulate joint system that will allow relative movement between the timber floating docks, and replacement without affecting the timber floating docks. Connection methods that create structural failure of the float when overstressed will not be allowed.
    4. Special floats may be required to support concentrated loads as imposed by gangway landing point, utility boxes, or other equipment.

a. Timber floating docks with special loadings shall have the same freeboard as standard docks without special loading, so that there will be no residual stresses or tilting when timber floating docks are interconnected.

5. The timber floating docks float shall consist of a solid, closed-cell flotation material core, either preformed or expanded in place, fully encased by molded polyethylene.
   a. There shall be no floodable enclosed spaces.
6. Timber floating dock floats shall be compartmentalized such that breach of float walls in any one compartment shall not result in sinking of the float.

B. Timber Deck:
1. The deck structure shall be of Southern Yellow Pine timber decking that is not less than 1.5 inches thick with UC4B splash zone rated treatment.

C. Timber Floating Dock Framing:
1. The framing shall consist of a minimum of 6x8 pressure treated southern yellow pine UC4B splash zone rated treatment.
2. The use of steel framing may be considered, subject to approval of the Department and Engineer at their sole discretion.

D. Polyethylene Floats:
1. Floats shall have a minimum thickness of 0.150 inches.
2. Floats shall be comprised of a thick-walled polyethylene shell and encapsulating high-density expanded polystyrene.

E. Handling, and Storage:
2. Contactor shall take care in establishing handling methods that avoid damage to the floats during form removal, storage, handling, assembly, and installation.
3. Storage of the floats shall be on level surfaces on timber dunnage, and it shall be the responsibility of the Contractor to determine how high units shall be allowed to be stacked without damage.
4. Floats shall be protected from damage from a cause.
5. Any damaged unit shall be rejected and removed from the project site.

F. Metal Accessories:
1. Inserts: As per manufacturer’s recommendations (or) ASTM A47/A47M, Grade 22010 32510 or 35018, or ASTM A27/A27M Grade 415-205 U-60-30.
2. Structural Steel (for any elements like life safety post which not in contact with seawater): ASTM A36/A36M. Hot dip galvanized in accordance with ASTM A123 or ASTM A153/A153M
3. Structural Steel for Pile Guides and Corner braces: Refer Section 2.5
4. Structural Steel for Ladders (in contact with seawater): 316L or ASTM A240.
5. Bolts, Nuts and Washers: 316L or ASTM F593.

G. Flotation Material (Foam):
1. All float chambers shall be completely filled with a closed cell, expanded polystyrene (EPS), complying with ASTM C578.
   a. Density: 0.95 to 1.10 pounds per cubic foot.
   b. Compressive Strength: 20 pound per square inch minimum at 5 percent deflection.
   c. Tensile Strength: 40 pounds per square inch minimum at break.
   d. Shear Strength: 25 pounds per square inch minimum at break.
   e. Water absorption: Shall not exceed three (3) percent by volume when measured in accordance with ASTM C272.
2. Expanded polystyrene shall consist of solid sections with no more than four laminated sections and shall contain no reground material.
3. Foam core laminations shall be glued with a low solvent glue. Core shall not be made from more than four laminated sections.

a. Horizontal laminations in the upper 10 inches are not permitted.
b. Core shall be strapped to prevent de lamination during transportation and handling.
c. Core shall not contain more than 10 percent reground EPS foam material. Reground foam pieces shall not exceed 3/8 inch diameter.

4. Surface shall be pressed, polished, free from splinter or cracks, dents, waviness, heat marks, or deep scratches. Variation in color indicative of damage or deterioration shall not be accepted.
5. The floatation material shall be fully encased in a protective polyethylene shell that will provide a watertight coating and protect against damage during shipping and construction; vessel impact; stresses from structural loading; degradation from sunlight; and damage from marine organisms, oil, salt water, and other deleterious materials likely to be encountered in a marine environment. Floatation must be fully encased on all sides.
6. Surfaces of the finished planks shall lie in normal planes so that the plank, when installed in final position in the float shall lie in a true horizontal plane with the water. Edges formed by molding or cut sections may be either rounded or squared.

531.23 Surfaces- Ultra-High Molecular Weight Polyethylene (UHMW PE)

A. Ultra high molecular weight polyethylene (UHMW PE) shall be comprised of virgin resin complying with ASTM D4020. No reprocessed resin shall be used. Resin shall be oil and moisture free (0.2 percent by weight, maximum).
B. Resin shall comprise a minimum 95.0 percent by weight concentration in the formulation.
C. The finished form shall maintain ultraviolet stability for a minimum of 25 years and be free of saltwater or petroleum product leachable materials.
E. Exterior edges shall be rounded to ¾ inch radius.
F. Pads shall be installed using countersunk stainless steel bolts, grade 316L.

531.24 Steel Assemblies

A. Steel assemblies such as pile guide frames, corner knee braces, and utility through internal braces shall be designed and shop fabricated in conformance with AISC “Specifications” to accommodate the loads specified herein.
B. Steel shall conform to ASTM A572 or ASTM A992 and assemblies shall be hot dip galvanized per ASTM A123.
C. Minimum member thickness shall be 3/8 inch.
D. Welding shall conform to the AWS Steel Welding code requirements. If the structural requirements do not require a fully welded joint section, provide 1/8 inch seal welds in the joint so that the final joint is a fully welded joint, with no cracks, openings, crevices, etc., to collect saltwater. All welds shall be visually inspected and tested or reworked if questionable.
E. Pile guides frames shall be a multiple roller type with one roller per side of pile (minimum 4 roller per pile) and provide for full vertical movement of the floating dock system without inducing binding or torsion into the system.

1. Pile guides frames shall be designed to transmit all lateral loads from the floating dock system to the anchor piles without causing damage to the float or the pile.
2. Rollers shall be of ultra high molecular weight (UHMW) polyethylene material with ultraviolet light inhibitor added and ANSI Type 316L stainless steel axles.
3. Provide not more than 2 inches clear from roller to guide pile, unless specifically approved in writing by the Engineer.
4. Side mounted pile guide assemblies shall permit longitudinal field adjustment of their positions to fit field conditions of the guide piles.

5. Guide Pile Frame shall allow for the installation and removal of the floats from the guide piles without removal of the piles or lifting the floats over the piles.
6. Contractor/Fabricator is responsible for the design and fabrication of the guide pile frame and rollers.

F. All pile guide hardware, including bolts, nuts, axles, and other fasteners shall be stainless steel Type 316L.

G. Corner knee braces shall be designed and fabricated to act as a rigid connection where applicable. Minimum brace size shall be 4 foot by 4 foot and shall be increased in size as required by the structural design calculations.

H. Braces shall be installed on each float on the inside of the utility troughs and shall provide structural continuity of the floats where the deck structure is interrupted by the trough, where required by the structural design calculations.

I. Fasten all structural steel assemblies and guides to the floating dock by means of through-rods at 12 inch centers, or closer if indicated by structural calculations. Internal utility trough braces shall be fabricated so that they may be removed by loosening only the nuts securing the specific brace.

J. All steel members, assemblies, guides, and parts shall be hot dip galvanized per ASTM A123.

531.25 Hardware

A. Clip angles, plates, bars, etc., shall conform to ASTM A36, ASTM A572, or ASTM A992, as applicable.

C. High strength bolts and nuts shall conform to ASTM A325X, with threads excluded.

D. Stainless steel screw and bolts shall comply with ANSI Type 316L.

E. Fasteners:

1. Bolts, nuts, washers, screws, nails, and other fasteners shall be Type 316L stainless steel.

531.26 Mooring Cleats

A. Mooring cleats and their connection shall be in accordance with the Special Provision in Section 531, Marine, Mooring Hardware - Cleats.

531.32 Guide Piles

A. Pile size and locations are indicated on the Contract Drawings. The Contractor shall take these into account in the float design and bring it to Department’s attention if any change is needed to improve stability of the floating dock system.

FLOATING DOCK INSTALLATION

531.42 Float Damage Repairs

A. Prior to erection, and again after installation, floats shall be checked for damage. As directed by the Department, floats that do not meet the surface finish requirements specified shall be repaired or removed and replaced with new floats.

B. Damage caused to the floats by shipping, handling or installing by the Contractor shall be repaired, or at the Department's direction, the float shall be replaced.

531.43 Galvanizing Repair

A. Repair damage to galvanized coatings using ASTM A780/A780M zinc rich paint for galvanized surfaces damaged by handling, transporting, cutting, welding, bolting, or acid washing. Do not heat surfaces to which repair paint has been applied.

531.45 Structural Steel Assemblies

A. Fasten to timber floats by means of through bolts at 12-inch centers, maximum spacing.
B. Provide at least 2 through bolts to fasten each leg of an assembly to the floats.

531.46 Launch and Assembly

A. Assemble in accordance with the approved shop drawings.
B. Brace floats, unless design calculations submitted with the shop drawings indicate bracing is not required.
C. Follow the manufacturer's recommendations for maximum construction loads.

531.47 Welding

A. AWS D1.4/D1.4M for welding connections. Weld continuously along the entire area of contact. Grind smooth visible welds in the finished installation.

531.49 Manufacturer's Services

A. Provide Manufacturer's representative at the Site for installation assistance, inspection, and certification of proper installation.

531.50 Inspections

A. At the option of the Department, the Contractor shall not fabricate floats until an inspection is made by the Department's inspector of the manufacturer's facility and procedures. The manufacturer's facility shall be open to the Department, the Department's representative, and the Department's inspector at any time that the timber floating dock system for this project is being manufactured.
B. Contractor shall inspect all of the timber floating dock system components and assemblies immediately upon delivery to the site to ensure that each component and assembly is in an undamaged condition.
C. Contractor shall submit a written statement outlining all damaged dock system components to the Department within 7 days of receipt. The statement shall also indicate his acceptance of the components received, method of repair for those components that are repairable, and a schedule of replacement components for those that are not repairable.

531.51 Workmanship

A. Contractor shall use only experienced personnel to perform the Work and shall provide a qualified company employee to perform full time inspection and supervision of the manufacturing assembly and floatation process and shall assume full and complete responsibility for successful manufacture, assembly and anchorage of the system.

B. Work not representing a finished and acceptable appearance shall be rejected.

C. Finished metal members shall be free from twists, bends, distortions, open joints, sharp edges and burrs. Ends of exposed metal members shall be rounded or beveled. All coping and mitering shall be done with care. Galvanizing shall take place after the metal components and assemblies are fabricated.

D. Minimize drilling and cutting of steel, after galvanizing. Where necessary, such holes and edges shall be painted with high zinc dust content paint. All welds over galvanized material shall be thoroughly cleaned and coated with two coats of cold galvanizing compound.

E. All welding shall conform to the requirements of the American Welding Society, "Welding code – Steel" (AWS D1.1). Welds shall be a solid and homogeneous part of the metals joined and shall be free from pits or scale and shall be of full area and length required to develop the required strength for the intended use. If a structural weld is not continuous "all-around" for the full joint width, then 1/8 inch. seal welds shall be used to complete the joint width so that no open joint or gap or crevice remains to collect saltwater.

F. Bolts, nuts and washers shall be set square with connecting structural members and the nuts shall be drawn tight. Lock washers shall be used to prevent nuts from loosening, after being properly tightened. High strength bolts shall be used where required to carry the design load, in accordance with the American Institute of Steel Construction Specifications "Structural Joints Using ASTM A325 or A490 Bolts".

G. Timber members shall be counterbored wherever projecting bolt heads or nuts may damage boats or provide a hazard to dock users. Counterboring shall be sufficiently deep to permit installation of the bolts and nuts with washers well below the surface of the plastic timber. The heads of dome head volts may project above the surface.

H. Connections between floats or other elements, such as lifting rings, shall not protrude above the level of the deck.

I. Connections shall be accomplished to permit removal and replacement of connectors without the necessity of removing other components for access. Connectors shall be of materials that are easily available and shall be positively contained so as to prevent their working free under anticipated wind and wave loading conditions.

J. Floats shall be rigidly connected to the wales, knee braces and pile guides by through bolts.

K. The timber floating dock system shall be anchored with a pile anchorage system. The pile anchorage system shall secure the floating docks under the most severe loading combinations, as specified under Article, Design and Performance Requirements herein and at all water levels as indicated on the Contract Documents.

L. Floats shall sit level in the water with the specified dead load freeboard as shown on the Contract Documents. Tolerance in freeboard shall be 1 inch, plus or minus, with maximum transverse tolerance of 1/8 inch per foot of float width.

M. Where gangways land on floating docks, additional flotation shall be provided such that the specified dead load and live load freeboard criteria are met under full live load for the gangway area.

N. Any potentially corrosive installation of dissimilar materials shall be properly insulated to eliminate corrosion in the marine environment. Aluminum in contact with steel shall be separated by a rubber gasket.

531.85 Method of Measurement

Timber Floating Docks will be measured by the square foot and shall include all labor, materials including mooring cleats, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications. Measurement shall include furnishing and installing the Timber Floating Docks including transport to the site. Installation shall include all hardware to fasten and secure docks into place.

531.90 Basis of Payment

Timber Floating Docks will be paid for at the Contract square foot unit price which shall be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Item	Pay Unit
531.91 Timber Floating Docks	Square Foot

END OF SECTION

SPECIAL PROVISIONS
SECTION 531
MARINE
(Aluminum Gangway 80 LF)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following additions:

GENERAL REQUIREMENTS

531.01 Description

This work shall consist of furnishing all labor, materials, equipment, transportation and incidentals required to assemble and install aluminum gangways, complete, as shown on the Contract Plans to include anchor bolts, nuts, washers, transition plates, shims, and all other hardware required to construct gangways in accordance with these Specifications and shown on the Plans.

531.02 Materials All materials shall conform to the following:

Stainless Steel	711.12
Aluminum	716.01
UHMW-Polyethylene	731.04
MDS-Nylon	731.05

Gangways and their secondary components shall be fabricated of ASTM B221, Aluminum Alloy 6061T6 or 6063-T5. Secondary fabricated components shall consist of handrails, treadplates, kick plates, hinges, and anchor plates.

All fastener bolts and studs shall be stainless steel ASTM F593, Type 316. Fastener nuts and washers shall be ASTM F594, Type 316.

When rollers are provided at the free end of the gangway, they shall be fabricated of UHMW-Polyethylene or a MDS Nylon material.

531.03 Submittals Submit the following for review and approval prior to ordering any materials:

1. Shop Drawings: Illustrate dimensions and thicknesses of all components. Drawings shall be signed and stamped by a professional engineer licensed in the State of Maine.
2. Product Data: Indicate the make and model of the gangway unless custom-fabricated and its load carrying capability. Provide a maintenance manual listing regularly schedule maintenance activities to be performed by the Department.
3. Material Certifications: Aluminum, stainless steel, and UHMW-Polyethylene.
4. Certificate of Conformance: Manufacturer shall provide written documentation of product conformance in the form of a written certificate. Also, a metal name tag shall be affixed to the side of the gangway within 3 ft from the end of rail in a conspicuous location with manufacturer’s contact information and live load capacity.
5. Design Calculations: Computations indicating conformance to the design loads shown on the Contract Plans and within these Specifications. Calculations shall be signed and stamped by a professional engineer licensed in the State of Maine.
6. Quality Control Plan

7. Welding Procedures

531.04 Design The aluminum gangway shall be designed to the current edition of The Aluminum Association Specifications and Guide for Aluminum Structures. The design of aluminum gangways shall meet the criteria noted below and as indicated on the Contract Plans. The designer shall consider the environmental forces and effects associated with the marine environment specific to the site including the extreme conditions of wind and wave forces.

General Gangway:

1. The Plans will illustrate and identify the following attributes based on the marine environmental condition and the intended functionality of the gangway:
    i. Vertical live load requirements (minimum 85 psf).
    ii. ADA compliance features.
    iii. Overall dimensions including width, clear width (between handrails), and length.
2. The length of the gangway shall be designed to accommodate the full range of tidal conditions from MLLW minus 2 ft to MHHW plus 2 ft in accordance with the closest NOAA Tidal Station data. Accommodation of this tidal range shall mean that a 4 ft by 4 ft landing is maintained at each end of the gangway during the extreme tidal range noted above.
3. The maximum deflection shall not exceed L/180 where L is the length of the gangway in inches.
4. Handrail Horizontal Load - Handrails shall be capable of withstanding a 200-pound concentrated horizontal load applied at the top of the railing.
5. Handrail Vertical Load - Handrails shall be capable of withstanding a 50-pound per-foot vertical loading applied at the top of the railing.

Provisions shall be made for supporting utilities beneath or alongside the gangway when required by Contract. Hangers shall be the sizes, shapes, and lengths sufficient for their intended use and hot-dipped galvanized in accordance with ASTM A123. Protection from galvanic reaction of dissimilar metals shall be provided.

The walkway surface shall be comprised of planks with perforations to provide an integral non-skid surface. The use of cross cleats or other mechanical devices to achieve non-skid capacity shall only be allowed when specifically called for on the plans.

Handrail height shall be 34 inches (min.) to 42 inches (max.) from the top of deck. When the top rail of the gangway also serves as the handrail, the top rail shall be round, schedule 40 aluminum pipe of no less than 2-inch diameter. The handrail shall extend a minimum of 12 inches past the walking surface of the gangway at both ends.

When specified on the Plans, a continuous kick plate shall be installed along the edge of the walking surface along the bottom of each railing on the inside faces. The plates shall be 1/4 inch x 3 inches flat bar.

Transition plates shall be installed at the ends of the gangway using piano-style hinges. The transition plate dimensions shall be 1/4 inches x 48 inches wide by 24 inches long with a non-slip surface. The hinged end of the gangway (hinge and latch) shall be designed and detailed by the manufacturer to conform to the load requirements and schematics given and shown in the Contract Plans, including the details for attachment to the gangway support structure.

The roller at the free end of the gangway shall be 3-inch minimum diameter and the full width of the gangway unless otherwise dimensioned on the Contract Plans.

All bolts, nuts, and washers shall be as indicated on the shop drawings, or if not so indicated, shall be of sizes, shapes and lengths sufficient for their intended uses and shall be stainless steel.

531.05 Fabrication All components of the gangway shall be shop fabricated and assembled in accordance with the details shown on the Contract Plans. Welded components of Aluminum gangways shall be performed by experienced operators in accordance with ANSI/AWS D1.2-97 using the gas metal arc welding process. All exposed surfaces and their welded joints shall be smooth and free of sharp or jagged edges.

531.06 Delivery Gangways shall be delivered, handled, and stored to prevent damage. Place the gangway on level dunnage to avoid warping. Protect transition plates, anchorage plates, and rollers.

531.07 Installation Gangways shall be installed level in the transverse direction and anchored at one end in accordance with the Plans. Anchorages shall be comprised of bolted connections in oversized slotted holes to permit longitudinal expansion and contraction. The free end of the gangway shall be vertically supported yet confined horizontally using guide plates or a recessed pocket if indicated on the plans.

531.85 Method of Measurement

Aluminum Gangways will be measured by the unit, and shall include all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications. Measurement shall include furnishing and installing the gangways including transport to the site. Installation shall include all hardware to fasten, secure, and level the gangway(s) into place.

531.90 Basis of Payment

Aluminum Gangways will be paid for at the Contract unit price for the respective Contract items which shall be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Item	Description	Pay Unit
531.9601	Aluminum Gangway – 80 LF	Each

END OF SECTION

SPECIAL PROVISION
SECTION 531
MARINE
(HOISTS)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following additions:

531.01 Description

The work consists of providing and installing two identical hydraulic fixed length boom hoists (davit arm style) that are to be located on the pile supported platform in accordance with these specifications and as shown on the Plans.

531.02 Standards and References

The hoists (cranes) will be designed in accordance with recognized structural design standards and API Specification 2C, 8th Edition, "Offshore Pedestal-mounted Cranes." The cylinders will be designed per the requirements of ASME Section VIII (unfired pressure vessels) and will also meet U.S.C.G. burst and failsafe specifications.

531.03 General Requirements

A. Hydraulic davit arm style with push button controls for all functions.

B. Maximum Reach length = 20 feet from centerline of rotation

C. Minimum Reach = 6 feet from centerline of rotation

D. Safe Working Load at Maximum Reach = 4,000 lbs. (Static)

E. The hoists will meet Buy America, Build America requirements.

F. Hoists to be fully designed by vendor and meet or exceed general requirements listed below. Submit any proposed changes or alternates to Department for review and approval before proceeding with furnishing the hoists.

G. Boom:
   a. The boom is to be of a box design, fully seal welded for corrosion resistance, and to be manufactured from High Strength Low Alloy (HSLA) steel.

H. Turret:
   a. The turret of the crane is to be fully seal welded for corrosion resistance and manufactured from HSLA steel. The turret is to be mounted on a roller/ball bearing type slew bearing with internal gear teeth, protected from the marine environment.

I. Pins and Bushings:
   a. The boom, cylinder, and sheave pins are to be manufactured from stainless steel. All dynamic (rotating) bushings are to be synthetic self-lubricating type. All pivot points are to be line-bored for straightness and long life.

J. Bolting:
   a. All non-critical fasteners smaller than 5/8" diameter, are to be corrosion resistant stainless steel, 304/316 series, and all critical fasteners are phosphorous coated grade 8 at minimum.

K. Controls:
   a. Wired pushbutton type minimum IP65 rated with emergency stop button, and manual back up operation at the pedestal.

L. Environmental Protection System:
   a. The crane will be finished with an approved grade 3 coat marine paint system using a zinc rich primer, epoxy mid coat, and a polyurethane topcoat applied according to manufacturer's recommended directions and temperature range for application.

M. Winch:
   a. Hydraulic planetary type with failsafe automatic brake minimum of 4,400 lbs. bare drum line pull.
   b. Rigging will consist of 85 feet of 7/16" high strength pre-lubricated wire rope with a 3-ton swiveling weighted load hook with safety latch.
   c. Hook Drop: 30 ft below base of pedestal at minimum reach.
   d. Hoisting Speed will be approximately 60 FPM.

N. Boom:
   a. 20-foot-long boom (one piece), fully seal welded for corrosion resistance.
   b. Hinge Pins: Stainless steel
   c. Hydraulic Cylinder: Chromed steel rod, steel or cast-iron piston, bolt-on head gland retainer, and built-in counterbalance safety valve on the base end of the cylinder.
   d. Slew Drive: 1 ea. triple-reduction planetary drive or self-locking worm gear drive
   e. Slewing Angle: 360°, Non-continuous rotation
   f. Slewing Speed: Set to 1 RPM maximum
   g. 25.0" diameter pedestal, 72" high with bottom drilled base plate for bolt down installation.
   h. Operational Wind Speed: 20 kts
   i. Stowed Wind Speed 125 kts or wind lock
   j. List and Trim: not applicable
   k. Minimum Design Temperature: 15° F
   l. Maximum Design Temperature: 110° F
   m. Boom Material: ASTM A572 Grade 50
   n. Design Pressure: Approx 2,800 PSI pressure drop across crane maximum
   o. Design Flow: Approx 11 GPM
   p. Crane Control Valve: Fixed control valve mounted on pedestal with hinged cover
   q. Fittings and Hose Ends: Zinc plated steel
   r. Anti-two block system: Hydraulic type
   s. Sheave Bearing: Bronze bushings
   t. Tube & Adapters: Grade 316 Stainless Steel tubing and adapters
   u. LED floodlight on gravity leveling mounting IP56 rated housing.
   v. All electrical will be in NEMA 4X stainless steel enclosures.
   w. Paint Color: Safety Yellow

O. Hydraulic Power Unit
   a. 15 HP pedestal mounted hydraulic power Unit (HPU). Approximate flow and pressure 11 GPM @ 2600 PSI.
   b. TEFC 480 VAC 60 Hz 3 Phase IP56 electric motor.
   c. C-face adapter/coupling; fixed displacement gear or vane pump.
   d. High pressure hydraulic gauge.
   e. Approx 50-gallon reservoir inside pedestal.
   f. Reservoir includes fluid level sight glass, 10 micron return line filtration, shut-off valves, and filler-breather.
   g. Starter supplied.

531.04 Submittals

Submit supplier data, test procedures, wire rope certificate, operations and maintenance manuals, standard catalog cut sheets for review.

531.05 Start-up Testing and Commissioning

Perform start-up testing and commissioning per the hoist manufacturers requirements to provide fully operating hoists and perform training for State selected individuals.

Section 531.06 Method of Measurement

Hoists will be paid for at the contract unit price each, which price shall be full compensation for the design, fabrication, testing, and delivery.

Section 531.90 Basis of Payment

Payment will be made under:

Pay Item	Pay Unit
531.90 Hoists (2-Ton Capacity)	Each

END OF SECTION

SPECIAL PROVISION
SECTION 531
MARINE
(Mooring Hardware – Cleats)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following modifications:

Add the following:

531.01 Description

The work shall consist of providing and installing cleats in accordance with the locations designated on the Plans. These cleats will be installed atop timber floating docks at locations shown on the plans.

531.02 General

Furnish and install cast steel mooring cleats as indicated on the Contract Documents and specified herein. Supply of all anchor bolts, bolt templates, nuts, washers, fittings, coatings, and filling of bolt holes with sealant. Includes all submissions, testing, and quality control requirements. The supply shall include spare anchor bolts, nuts, washers, and such necessary hardware that facilitate continuity of the installation, if any of the hardware is lost in waters accidentally during the works

531.03 References

The following is a list of standards which may be referenced in this section:

American Society for Testing and Materials International (ASTM):

A27, Standard Specification for Steel Castings, Carbon, for General Application.

A36, Standard Specification for Carbon Structural Steel.

A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

A143, Standard for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

A536, Standard Specification for Ductile Iron Castings.

A563, Standard Specification for Carbon and Alloy Steel Nuts.

C109, test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube specimens).

C920, Standard Specification for Elastomeric Joint Sealants.

C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

E94, Standard Guide for Radiographic Examination.

E186, Standard Reference Radiographs for Heavy-Walled (2 to 4½-in.) Steel Castings.

E280, Standard Reference Radiographs for Heavy-Walled (4½ to 12 in.) Steel Castings.

E446, Standard Reference for Steel Castings up to 2 in. Thickness.

F436, Standard Specification for Hardened Steel Washers.

F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

F2329, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

American Institute of Steel Construction (AISC):

Steel Construction Manual.

Society for Protective Coatings (SSPC):

SSPC SP 10, Near White Blast Cleaning.

American Galvanizers Association (AGA).

International Code Council Evaluation Services (ICC-ES).

531.04 Definitions

The following is a list of definitions which may be referenced in this section:

Definitions

Products:

Items for incorporation in the Work, purchased by Contractor for the Project.

Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.

Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

Cleat: Mooring fitting intended for use in the maritime (shipping) industry to secure ship's mooring lines (ropes) to the wharf, pier, quay, dock, or other structure.

Cleats are mooring fixtures that typically consist of two "horn" extending parallel to the deck which a mooring line may be wound or secured about. Capacities typically range from 5 to 35 tonnes.

Anchor Bolt:

Bolted anchor.

Units of Measurement: All measurements shall be presented in United States Standard Measures of feet and pounds.

531.05 Submittals

The following is a list of submittals:

Product Data:

Mooring Device (Cleats).

Anchor bolts, sleeve couplers, nuts, washers

Epoxy adhesive.

Coating system.

Calculations:

Cleat: Submit detailed design calculations that prove the bollard/cleat meet the loading requirements.

Anchor Bolts: If proposed anchor bolt configuration or size differs from that shown on the Contract Documents:

Submit detailed design calculation that prove the anchor bolts size, embedment, and steel grade meet the loading requirement.

Submit anchor bolt calculations.

Approved deviations from that shown on the Contract Documents will be the responsibility of the Contractor at no additional cost to the Department.

Signed and seal calculations by a Professional Engineer registered in the State of Maine.

At the sole discretion of the Engineer, testing may be accepted in lieu of or in support of calculations.

Manufacturer's Technical Data Sheet(s).

Cleat Data sheets.

Coating System Data sheets.

Shop Contract Documents for cleat, anchor bolts, and anchorage hardware.

Include thickness, type, grade, class of metal, and dimensions.

Show construction details, including relation to structure.

Installation Instructions: Provide complete instructions and Contract Documents for the method, sequence, and procedure for the installation.

Informational Submittals:

Certificate of Compliance for line pull rating at range of pull angles shown on Contract Documents.

Galvanizing: Certificate of compliance signed by galvanizer, with description of material processed, certifying that the galvanizing was performed according to and meets the requirements of ASTM A153 or A123 as applicable.

Mill test certificates for each casting heat number.

Record showing heat numbers and serial numbers for each cleat.

Mill certificates for all anchor bolts and anchorage hardware.

531.06 Quality Assurance

Qualifications:

Cleat Manufacturer shall have not less than 10 years' experience producing mooring cleats of the type indicated.

Provide reference letters from at least 5 U.S. clients for similar installations, including current contact information.

Provide a list of not less than 10 completed projects with same type of cleat installed within the last 5 years.

Galvanized Coating Applicator: Company specializing in hot-dip galvanizing after fabrication and following procedures of Quality Assurance Manual of the American Galvanizers Association.

Inspection and Testing of Castings:

One casting from each heat shall be made with two (2) coupons. One coupon shall be tested at the factory, and the results sent to the Contractor (and Department) prior to shipment of the bollard/cleat(s). The second coupon shall remain attached to the casting with final delivery, for testing by the Department.

Perform radiographic inspection of 10 percent, but not less than 1 casting of each mooring device type. The procedure for making, evaluating, and reporting the radiographic inspection shall conform to the requirements of ASTM E94, ASTM E446, ASTM E186, and ASTM E280.

The Department reserves the right to require the Contractor to perform additional radiographic tests if the results place the quality of the casting in doubt, and to remove additional coupons from completed castings when doubt as to soundness of the casting cannot be resolved by nondestructive testing.

No cutting of the mooring hardware material or repairs shall be accepted.

531.07 Delivery, Storage, and Handling

Package, tag, and ship to the site in a manner to protect from damage and corrosion. Inspect items upon delivery and replace or repair damage material as directed by the Department.

Package stainless steel items in a manner to provide protection from carbon impregnation.

Protect coatings and hot-dip galvanized finishes from damage as a result of metal banding and rough handling. Use padded slings and straps.

Store fabricated items in dry area, not in direct contact with ground. Inspect stored items weekly for damage and corrosion. Promptly notify the Department of any damage, corrosion, or missing parts, and correct as directed by the Department.

531.08 Guarantee

Manufacturer’s extended guarantee or warranty, with Department named as beneficiary, in writing, as special guarantee. Special guarantee shall provide for correction, or at option of Department, removal and replacement of work found defective during a period of 5 years after date of Substantial Completion.

531.20 Mooring Cleats

Materials

Cleat: Fabricate from new cast steel of the configuration and loading requirements as indicated on the Contract Documents.

Casting shall be fabricated from cast steel conforming to ASTM A27, Grades 65-35.

Casting shall be performed in one piece. Welding of multiple castings to create section will not be permitted.

All fins and protrusions shall be ground smooth. No sharp edges or angles, including around bolting area, shall be allowed or shall exist after installation.

Each cleat shall be clearly identified by raised markings cast or stamped into the surface the following:

Manufacturer.

Date of casting.

Heat Number.

Serial number.

Safe working load (SWL) rating.

Weight.

Dimensions of castings shown on approved detail Contract Documents shall be finished dimensions. Castings that are warped or otherwise distorted or that are oversize to an extent that will interfere with proper fit will be rejected.

The structure of metal in castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in castings will be cause for rejection. Do not make repairs to castings without approval by the Department. Surface imperfections may be considered minor when the depth of the cavity is the lesser of 10 percent of the actual wall thickness or one-quarter inch.

Anchorage bolts shall conform to ASTM F1554, Grade 105.

Anchorage bolts and hardware, including placing template, shall be provided by the bollard/cleat manufacturer.

All anchorage bolts and hardware shall be hot-dip galvanized conforming to ASTM A153.

Heavy Hex Nuts shall conform to ASTM A563, and zinc coated by the hot dipped process conforming to ASTM F2329.

Washers shall confirm to ASTM A36 or ASTM F436, and hot dipped galvanized conforming to ASTM A123.

Coating: Exterior surfaces of cleats, including anchor bolt holes/recesses, shall have a multiple coat epoxy marine coating system applied.

Provide coating system by Carboline Company as follows, or approved equivalent.

Primer coat, factory applied: Carbozine 11 Marine Inorganic Zinc, minimum 3.0 mils DFT, not to exceed 6 mils. Color, Green.

Prepare surfaces for coating, SSPC-SP10 – Near White Blast Cleaning, as recommended by coating manufacturer. Primer coat shall be applied not more than 4 hours after near-white blast cleaning.

Intermediate coat, factory or field applied: Carboguard 893 Marine Cycloaliphatic Amine Epoxy, minimum 6.0 mils DFT, not to exceed 10 mils. Color, Red.

Prepare surface per manufacture recommendations.

Topcoat, field applied: Carbothane 893 SG Marine Epoxy Polyamide, minimum 6.0 mills DFT, not to exceed 10 mills. Color, Day Glow Yellow.

Prepare surface per manufacture recommendations.

Combined dry film thickness for the intermediate and topcoat shall be not less than 16.0 mils DFT.

Cleat bottom shall have prime coat applied in the factory.

531.21 Design Criteria

Cleat shall have a Safe Working Load (SWL) Rating (casting and anchorage) as on the Contract Documents in the horizontal and vertical range of directions as indicated herein, unless otherwise noted on the Contract Documents.

Cleats shall be 10-ton rated capacity unless otherwise noted on the Contract drawings.

0 to 90 degrees in the horizontal plane, measured from the centerline of the bollard/cleat, counter-clockwise and clockwise.

-15 to 60 degrees in the vertical plane, measured from the horizontal upward.

The theoretical point of line loading shall be the intersection of the vertical axis centerline and the horizontal axis running through the center of the horns.

Unless otherwise indicated on the drawings, anchorage hardware shall be designed in accordance with the AISC Manual of Steel Construction, Allowable Stress Design methodology.

Anchor bolts shall be designed and detailed by the manufacturer.

The Factor of Safety of the bollard/cleat, including the anchor bolts, against:

Yielding shall be not less than 2.0.

Breaking shall be not less than 3.0.

531.31 Installation

Anchor bolts shall be of the size, type and location as recommended by the mooring hardware manufacturer. Contractor shall verify bolt size and spacing for mooring devices. Anchor bolts and sleeves shall be held in place with templates that match bollard manufacturer's bolt pattern. Cleats shall arrive at the project site pre-installed on the floating dock units.

531.32 Field Quality Control

In-field load capacity testing of new or refurbished mooring equipment is not required.

Touch-up/repair bare and damaged coating after installation in accordance with coating manufacturer's instructions.

Spare hardware as required to complete the installation.

531.03 Method of Measurement

Mooring cleats on the floating docks will not be measured for payment but rather shall be incidental to the Pay Item 531.91, Timber Floating Dock.

SPECIAL PROVISION
SECTION 533
NON-SHRINK GROUT

533.01 Description

The work covered by this document consists of furnishing all equipment, materials, labor and performing all operations required for the installation of fluid, high strength, non-shrink grouts as directed by the engineer or Department. The non-shrink grout shall be used under chocks, double bitts, and light and navigational light posts.

533.02 Quality Assurance

The manufacturer shall have been in the business of manufacturing similar products for over ten years, maintain a strict quality assurance program, offer technical services and provide representative at the jobsite for product training, prior to product installation, upon written request.

The contractor shall submit to the engineer or Department, at least three job references where the contractor has successfully completed similar applications.

533.03 Materials

Non-shrink grout cementitious grout shall be a fluid consistency, pre-packaged, cement-based grout requiring only the addition of potable water. The manufacturer shall be ISO 9001 certified and have at least 10 years of experience in the manufacture of precision cement-based grouts. The manufacturer shall offer technical services and provide a representative at the jobsite for product training prior to product installation upon five days advance notice.

The grout material shall meet the following typical performance criteria when cured at 73°F (23°C):

1. Grout shall not contain metallic aggregate, expansive cement, or gas generating additives such as aluminum powder.
2. Grout shall contain air release aggregate to generate positive expansion.
3. Early Height Change, ASTM C 827 0.0 to 4.0%
4. Hardened Height Change, ASTM C 1090 0.0 to 0.3%
5. Effective Bearing Area 95%
6. Compressive Strength, ASTM C 942
   1 Day 3000 psi
   7 Days 5000 psi
   28 Days 7000 psi
7. Bond Strength, ASTM C 882 28 Days 2000 psi (13.8 MPa)
8. Consistency, ASTM C 939 20 – 30 seconds
9. Working Time 30 minutes
10. Application Temperature 40°F to 90°F (4°C to 32°C)
11. Material Temperature 40°F to 90°F (4°C to 32°C)
12. Meets performance requirements of ASTM C 1107-02, Grades A, B and C for 30 minutes at 40°F to 90°F (4°C to 32°C).

Three references of successfully completed projects of similar nature and scope of the work detailed in this specification shall be provided, as well as a minimum ten-year history of use in the industry. The testing laboratory shall certify to any modifications made to tests performed and provide details of modifications.

533.04 Delivery, Storage, and Handling

All materials shall be delivered to the jobsite in their original, unopened packages, clearly labeled with the manufacturer's identification, printed instructions and batch code.

Store and condition the specified product in accordance with the appropriate product data sheet.

For handling instructions, refer to the Material Safety Data Sheet.

533.05 Concrete Surfaces

Completely remove all oil, grease, laitance and other contaminants. Blow surfaces free of dust and debris using oil-free compressed air.

Prior to placement, soak concrete surfaces thoroughly for a minimum of eight hours to an optimum 24 hours with potable water. Concrete shall be saturated and free of standing water at time of placement.

533.06 Metal Surfaces

Surface shall be clean, free of oil, grease, rust and other contaminants.

533.07 Environmental Conditions

Condition and maintain all materials and surfaces that contact grout to between 40°F to 90°F (4°C to 32°C). Shade from direct sunlight as necessary.

533.071 Cold Weather Grouting

Low temperatures delay the set, increase working time and delay the strength development of cement-based products. The procedures below may compensate for these conditions.

A. Materials shall be conditioned as necessary so that the mixed grout is between 40°F to 80°F (4°C to 27°C). Due to the mass of palletized material. up to 72 hours of conditioning may be required. Store grout in an indoor or tarped and heated area when required.
B. All surfaces in contact with grout must be preconditioned and maintained at a temperature between 40°F to 90°F (4°C to 32°C) for at least 24 hours.
C. Heating shall be accomplished by indirect exposure. Heated enclosures must be windproof and weatherproof. Combustion heaters must be vented and shall not be permitted to heat and dry the concrete locally.
D. Grout temperature shall be maintained above 40°F (4°C) until the grout reaches 1000 psi (6.9 MPa).
E. Gradually reduce temperature of grout to ambient temperature to avoid thermal shock.

533.072 Hot Weather Grouting

High temperatures accelerate the set, decrease working time, and accelerate the strength gain of cement-based products. The procedures below may compensate for these conditions.

A. Materials should be pre-conditioned so that the grout mix temperature is between 50°F (10°C) and 95°F (35°C). Due to the mass of palletized material, up to 72 hours of pre-conditioning may be required. Store grout in a shaded area out of direct sunlight.

B. All surfaces in contact with cement based grout shall be pre-conditioned and maintained below 95°F (35°C) for a minimum of 24 hours. Pre soaking of surfaces, mixing of equipment and wheelbarrows with cold or iced water will facilitate cooling of surfaces.
C. Mix grout using cold or iced water. Do not put ice directly in with grout during mixing.
D. Provide shading during grout placement and where feasible, place grout when temperatures are decreasing, at night or early morning. Provide protection from excessive wind to reduce rapid drying and evaporation of water from exposed grout surfaces.
E. Begin wet cure immediately after grout takes initial set and continuously wet cure all exposed grout surfaces using wet rags, burlap or burlene. Place plastic sheeting over material used for wet cure to ensure continuous wet cure. Monitor condition of material used for wet cure to ensure drying does not occur.
F. After a minimum 24 hour continuous wet cure, continue wet cure for an additional 48 hours or coat all exposed grout surfaces with an approved curing compound meeting the water retention requirements of ASTM C 309.

533.08 Equipment

All necessary tools, equipment and materials shall be as close as possible to the area being grouted, such as mortar mixers, measuring containers, trowels and grout.

Appropriate clothing and safety equipment shall be worn to avoid breathing dust and prevent eye and skin contact with both dry and mixed grout.

Wheelbarrows, buckets, shovels and pumps shall be clean, dampened and readily available for transporting mixed grout.

Provide headbox and plunger when pouring grout. Provide backboard, ram and hammer when dry-pack grouting.

An ample source of potable water shall be available for preconditioning, mixing, cleaning and curing.

533.09 Mixing

Mortar Mixer (Stationary Barrel with Moving Paddles)

A. Provide an adequate number of mortar mixers in good operating condition for uninterrupted placement. Do not exceed one-half the maximum capacity of the mortar mixer.
B. Pre-wet mortar mixer, empty excess water.
C. Start by adding the minimum amount of premeasured potable water to mixer. While mixing, slowly add grout and mix to a uniform consistency.
D. Mix thoroughly for approximately five minutes. To achieve desired consistency, add remaining water as necessary. Do not exceed maximum water content as stated on product packaging or add an amount that will cause segregation.
E. Do not mix more material than can be placed within the working time of the grout. Do not retemper the mix by adding additional water.
F. Transport mixed material by wheelbarrow or buckets, taking care not to allow material to segregate.
G. For puts requiring aggregate extension, add clean, damp coarse aggregate meeting the requirements of ASTM C 33 before final water adjustment.

533.10 Pumping Procedures

The type and size of pump discharge line used are dependent on the parameters of each installation. Contact the pump and group manufacturers for recommendations. The proposed pumping equipment and procedures shall be submitted for approval. Pump grout at less than fluid consistency.

Pumping raises the grout temperature and shortens the working time while reducing its consistency. Keep mix temperature as cool as necessary, except in cold weather.

The grout shall be mixed to a consistency that will not segregate while pumping.

The grout shall be passed through a #4 screen prior to placement into the pump hopper.

Before pumping, determine the working time under jobsite conditions. Pumpability shall be determined by field testing.

The pump shall be positioned to minimize the pumping distance. Keep the discharge line as close to horizontal as possible. All hose connections must be watertight.

Immediately prior to pumping, the pump and lines shall be primed with a priming slurry leaving hopper empty to prevent overwatering.

Once the pumping has begun, it is important not to use any of the priming slurry from the discharge lines. Grout shall not be used until a uniform consistency is obtained at the discharge nozzle.

Provide an adequate volume of mixed grout to keep the pump hopper at least half full. The grout shall be placed into pump hopper in a manner to prevent air entrapment.

The discharge nozzle shall be withdrawn only while pumping, keeping it submerged within the grout at all times.

533.11 Curing

Grout shall be wet cured for a minimum of three days, or coated with a Department Qualified Products List approved curing compound after a minimum 24 hour wet cure. Grout shall be protected from excessive evaporation with wet rags prior to set.

The grout shall be protected from wind, rain, freezing and vibration until a minimum compressive strength of 1000 psi (6.9 MPa) is achieved.

533.12 Basis of Payment

Any grout work shall be considered incidental to the work being performed.

SPECIAL PROVISIONS
SECTION 534
PRECAST STRUCTURAL CONCRETE
(Precast Pile Cap)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 534 – PRECAST STRUCTURAL CONCRETE, with the following modifications:

Section 534.01 Description

Replace this section with the following:

The Contractor shall manufacture, furnish, and install precast concrete pile caps and precast concrete boat ramp planks, and all associated appurtenances, in accordance with the Contract Documents.

Section 534.02 Materials

Replace the first three paragraphs with the following:

The precast pile caps and boat ramp planks shall meet the requirements of the following Standard Specification Subsection and contract drawings, except as noted otherwise in this specification.

Structural Precast Concrete Units 712.061

Concrete mix designs, including all materials, shall meet the requirements of Special Provision 502. Comply with Special Provision 502 requirements for Chloride ion content and shrinkage limits.

Section 534.13 Concrete Placement

Add the following paragraph:

Comply with the mass concrete requirements specified in Special Provision 502 for the precast pile caps.

Section 534.21 Method of Measurement

Replace this section with the following:

Precast Pile Caps satisfactorily placed and accepted will be measured by the cubic yard of fabricated precast pile cap units in accordance with the dimensions shown on the Plans or authorized changes in the Plans. Cast-in-place concrete for pile cap closure pours will be measured separately under Pay Item, 502.2351.

Precast boat ramp planks will not be measured or paid under this section, but rather shall be measured and paid under Section 853, Maritime.

Section 534.22 Basis of Payment

Add the following paragraph:

Precast pile caps will be paid for at the Contract cubic yard price which shall be full compensation for all labor, materials, reinforcing steel, embedded corrugated metal pipe, falsework, staging, equipment and all incidentals necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Item		Pay Unit
534.76022	Precast Pier, Cap	Lump Sum

SPECIAL PROVISION
SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE
(Prestressed Structural Concrete Slab)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 535 – PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE, with the following modifications:

Section 535.02 Materials

Add the following:

Concrete mix designs including Portland cement type and all other materials shall meet the requirements of Section 502 for Structural Concrete, Pile Caps and Section 535.13. Comply with Section 502 requirements for chloride ion content and shrinkage limits. Refer to the contract drawings for the minimum concrete compressive strength and prestressing strand requirements.

Section 535.13 Concrete

Replace the second paragraph and table with the following:

The concrete mix design shall meet the requirements of Section 502 for Structural Concrete, Pile caps.

Section 535.26 Method of Measurement

Replace this section with the following:

Unless otherwise specified, Prestressed Structural Concrete Slab will be measured as a lump sum complete and satisfactorily placed and accepted fabricated precast prestressed slab units in accordance with the dimensions shown on the Plans or authorized changes in the Plans.

Section 535.27 Basis of Payment

Prestressed Structural Concrete Slab will be paid for at the respective Contract lump sum price which shall be full compensation for all labor, materials, strands, reinforcing steel, anchoring devices, falsework, staging, equipment and all related items necessary to satisfactorily complete the work in accordance with the Plans and Specifications. Related items will include, but not limited to: Working Drawings, preformed pads, transportation, erecting the units, grouting keyways and required concrete admixtures.

Payment will be made under:

Pay Item	Pay Unit
535.60 Prestressed Structural Concrete Slab	Lump Sum

END OF SECTION

WIN 26824.00
Lubec
Nov. 15, 2024

SPECIAL PROVISION 610
Level Lip Spreader

Description This work shall consist of constructing a (Stone Bermed) Level Lip Spreader as a component for a stormwater quality filter buffer at the Lubec Town Garage site, designated on the plans and as specified in the Figure 1 below.

Preconstruction Site Walk The Contractor shall have a preconstruction site walk with the Resident and a representative of the Surface Water Quality Unit to review the proposed location and alignment and answer questions regarding layout and construction.

Materials All materials specified, except the berm stone shall be in accordance with existing standard specifications.

The berm stone for Level Lip Spreaders must consist of sound durable rock that does not disintegrate by exposure to water or weather. Fieldstone, rough quarried stone, blasted ledge rock or tailings may be used. The stone must be well-graded within the limits provided in the table below or as otherwise approved by the Resident.

Sieve Designation (US Customary)	Percent, by Weight, Passing Square Mesh Sieve
12 in	100
6 in	84 - 100
3 in	68 - 83
1 in	42 - 55
No. 4	8 - 12

Construction

The Stone Bermed Level Lip Spreader shall be constructed at a location designated on the plans and as specified in Figure 1 of this Special Provision.

The area under Stone Bermed Level Lip Spreader and trapezoidal trough shall be grubbed and graded to form a firm base for. The surface under the Stone Bermed Level Lip Spreader will be excavated as shown in Figure 1. and common borrow shall be placed and compacted according to Highway Standards, Section 203.10 Embankment Construction - General and smoothed to form a firm continuous level surface with a continuous elevation equal to “Level Lip Spreader Crest Elevation” as shown in the Plans and approved by the Resident.

Trapezoidal trough on the upstream side of the level-lip spreader shall be shaped to the final dimension shown in Figure 1, seeded with Method 2, Item 618.14; and stabilized with Erosion Control Blanket, Item 613.319.

A 2 ft. wide by 3 ft. long apron shall be placed at the outlet of the inlet pipe from the Flow Splitter.

Method of Measurement

The Level Lip Spreader shall be measured by the Lump Sum.

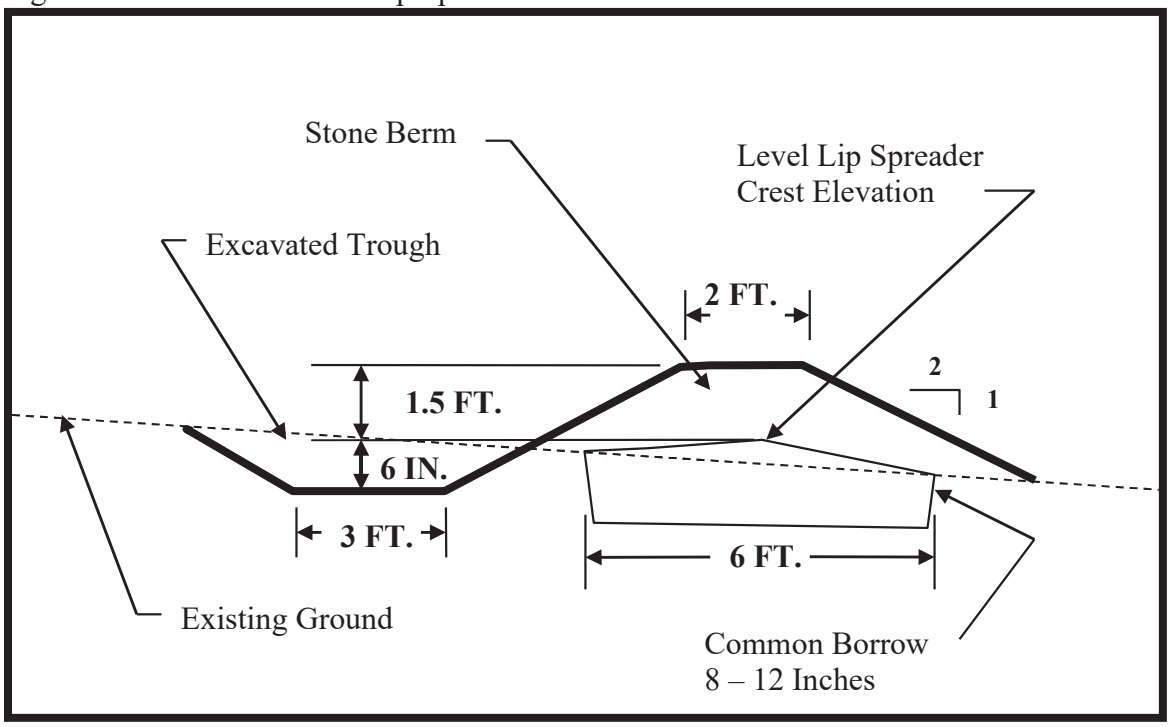
Basis of Payment

The Level Lip Spreader will be paid for at the contract Lump Sum price. The berm control elevation mounding, compaction, clearing, ditching, check dams, erosion control, loam, seed, and mulch shall be considered incidental to the Level Lip Spreader Pay Item and no separate payment will be made.

Payments will be made under:

Pay Item		Pay Unit
610.45	Level Lip Spreader	Lump Sum

Figure 1. Stone Berm Level Lip Spreader



SPECIAL PROVISION
SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION
(Plain Riprap, Slope Protection)
(Plain Riprap, Breakwater)
(Heavy Riprap, Breakwater)
(Armor Stone, Breakwater)
(French Drain Stone, Boat Ramp Core Stone)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following additions:

Section 610.01 Description

Section 610.011 General Description of the Work

These Specifications cover the requirements for the construction of the Lubec Breakwater. The Lubec Breakwater is a combination rock armored rubble mound structure and pile-supported high-level platform with a wave screen on its seaward side, to be constructed from various sizes of rock as denoted on the drawings.

Section 610.012 Scope of Work

These Specifications comprise the requirements for providing materials, equipment, plants and workmanship necessary for the construction and completion of the Lubec Breakwater. The scope of work includes the following rock supply and placement including tolerances.

Section 610.013 Codes and Standards

The codes and standards to be adopted for the included works are referred to in the relevant paragraphs of this Specification and include, but are not limited to:

a.) CIRIA, CUR, CETMEF (2007): The Rock Manual. The Use of Rock in Hydraulic Engineering (2nd Edition), C683, CIRIA, London

b.) CIRIA/CUR SP83: Manual on the use of rock in coastal and shoreline engineering (CIRIA Special publication 83), 1991

c.) ASTM C 97: Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone

d.) ASTM C 170: Standard Test Method for Compressive Strength of Dimension Stone

e.) ASTM C 535: Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

f.) ASTM D5371: Standard Test Method for Determination of the Point Load Strength Index of Rock and Application to Rock Strength Classifications.

The Contractor may propose alternative international or internationally recognized codes and standards, provided that these offer guarantees of safety, suitability, and fitness for purpose equivalent to those offered by the codes and standards indicated in this Specification and subject to the approval of the Department.

It should be noted that USA Standards have priority over International Standards, provided that they are relevant. In the event that it is not clear whether or not the USA Standard is relevant, the final decision is to be made by the Department.

For rock supply (including quarrying), testing, transport and stockpiling, all works shall be carried out in accordance with accepted methods, Codes of Practice and International Recommendations, and shall adhere to the latest validated Standards denoted in these Specifications.

Unless otherwise specified, all laboratory testing shall be carried out according to the appropriate Maine DOT Standard. If such a Standard does not exist, the appropriate International Standard, as stated in these Specifications and/or instructed by the Department, shall apply.

The Contractor shall maintain an electronic format-pdf extension of each adopted Code of Practice, International Recommendation or Standard (latest versions). All copies shall be provided at the site for use by the Department and Contractor. The Contractor shall submit updates and revisions of those Standards, etc., if and when applicable, during the Contract period. The copies for use by the Department shall remain their property after Take-Over/Hand-Over of the Project.

By presenting their bid, the Contractor acknowledges that they are familiar with all Codes and Standards that are referred to in this Specification, and that they have the know-how and the ability to carry out the work. The attention of the Contractor is particularly drawn to CIRIA C683 as providing a primary source of guidance for the works.

Whenever approval is mentioned throughout this Specification, this shall be understood to mean approval by the Department. Such approval by the Department will not relieve the Contractor of any of their responsibilities under the Contract.

Section 610.02 Materials:
Materials shall meet the requirements of the following Sections of Division 700 – Materials:

Boat ramp Core	703.24
Gravel Bedding	703.10 Type B
Breakwater Core and Boat Ramp Slope Protection	703.26

Additionally, materials for different elements of the rubble-mound breakwater and boat ramp shall meet the requirements specified in the following sections.

Section 610.021 Boat Ramp core:
Stones for French drains described in section 703.24 shall be used to construct the core of the boat ramp. The stones shall adhere to properties specified in section 610.06 (called Class A1).

Section 610.022 Gravel Bedding:
Gravel bedding for crown wall and boat ramp surface planks shall have gradation and properties specified in section 703.10 Type B. They shall consist of sound durable stones that will not disintegrate by exposure to water or weather. Stone for gravel bedding shall be angular. Rounded, subrounded, or thin, flat stones will not be allowed. The stones shall adhere to properties specified in section 610.06 (called Class A3).

Section 610.023 Breakwater Core and Boat Ramp Slope Protection:
The stones used to construct the rubble-mound breakwater core and boat ramp slope protection shall adhere to the gradation and properties described in section 703.26 and shall be placed to the levels as shown in the design drawings. The stones shall also adhere to properties specified in section 610.06 (called Class A2).

Section 610.024 Breakwater Underlayer:

Stone for heavy riprap shall consist of sound durable rock that will not disintegrate by exposure to water or weather. Stone for heavy riprap shall be angular and rough. Rounded, subrounded, or thin, flat stones will not be allowed. The maximum allowable length to width ratio will be 3:1. The stones shall adhere to properties specified in section 610.05. The minimum stone size (130 lbs) shall have a minimum dimension of 11 inches. The maximum stone size (660 lbs) shall have a minimum dimension of 19 inches, and at least 50% of the stones by volume shall have an average dimension greater than 17 inches (440 lbs). Breakwater Underlayer stones shall adhere to the gradation requirements specified in section 610.05 (called as Class B).

Section 610.025 Armor Stone:
Stone for armor shall consist of sound durable rock that will not disintegrate by exposure to water or weather. Armor stones shall be angular and rough. Rounded, subrounded, or thin, flat stones will not be allowed. The maximum allowable length to width ratio will be 3:1. The stones shall adhere to properties specified in section 610.05. The minimum stone size (1,300 lbs) shall have a minimum dimension of 24 inches. The maximum stone size (4,200 lbs) shall have a minimum dimension of 35 inches, and at least 50% of the stones by volume shall have an average dimension greater than 31 inches (2,900 lbs). Breakwater Armor stones shall adhere to the gradation requirements specified in section 610.05 (called as Class C).

Section 610.033 Rock Dumping and Placing
Rock classes referred to in the following sections are described in Section 610.05.

Section 610.0331 Placing of Rock for Plain Riprap, Breakwater core, and boat ramp slope protection (Class A2): 10 lbs – 200 lbs Stone

Core stones and boat ramp slope protection stones shall be placed within the limits indicated on the drawings and in such a manner to ensure a tight core with no segregation of sizes. Based on geotechnical site investigation along the breakwater footprint, 2-4 ft thick organic material was found to exist on the seabed. During the core placement, this material will be subject to displacement towards the side, and stones will sink into this layer. Geotechnical analysis also revealed possible settlement of rocks over the course of construction of the breakwater (24 months). Contractor should take into account the loss of material as an additional quantity as per the tables below:

Section	**Additional Under Layer (130 – 660 lbs.) Volume (CY)**	**Additional Core (10 – 200 lbs.) Volume (CY)**
100+20 to 101+00	137	450
101+00 to 102+00	444	1040
102+00 to 104+00	712	2187
104+00 to 106+00	1214	4650
Roundhead	1028	1776

Section	**Additional Armor (10 – 200 lbs.) Volume (CY)**	**Additional Core (5 – 40 lbs.) Volume (CY)**
200+92.75 to 201+75.88	25	389
201+75.88 to 202+79.79	30	579
202+79.79 to 203+57.28	164	374

The core shall be built up in horizontal layers across the total width of the required section. An RTK-DGPS system (2 inches system accuracy) shall be used to ensure the correct position for dumping and/or placing.

Section 610.0332 Placing of Rock for Heavy Riprap, Breakwater Underlayer (Class B): 130 lbs – 660 lbs Stone

Class B rocks shall be dumped and/or placed by means proposed by the Contractor and approved by the Department. The material shall be deposited within the limits indicated on the drawings and in such a manner to ensure a tight core with no segregation of sizes.

The underlayer shall be built up in horizontal layers across the total width of the required section. No new layer shall be developed until the underlying layer has been fully completed. An RTK-DGPS system (2 inches system accuracy) shall be used to ensure the correct position for dumping and/or placing.

The Department will examine and review the Contractor's Method Statement and at their sole and absolute discretion, issue an approval, including instructions concerning required additional quality control procedures and tests.

Section 610.0333 Placing of Armor Stone (Class C): 1, 300 lbs – 4, 200 lbs Stone

Class C rocks shall be placed by trays or one-by-one, by an approved method, and tested at the test section. The rock layers shall have a rough surface with staggered joints in parallel and perpendicular to the main axes of each structure. In addition, rock units shall be placed in such a manner as to have the largest principal dimension approximately at right angles to the final slope of the structure. Placing of subsequent horizontal layers shall also be staggered.

All rock layers shall have a rough surface. Rock units shown on the drawings are to be understood as pictorial only, without derogating from any of the requirements set forth in these Specifications. Dumping of this class of rock will not be permitted, unless specifically approved by the Department.

The Department may approve placing of rock by hydraulic excavator, subject to the Contractor submitting a Method Statement, ensuring that the target packing density of the layer is achieved and full compliance with the specified profile tolerances is achieved. The Method Statement shall include the Contractor's proposed procedure for measuring the packing density.

The rock shall be placed at the lowest elevation first, working up toward the higher elevations. It shall be laid in horizontal layers building up toward the final slope limit in a perpendicular direction; placing individual layers parallel to the final slope of the structure shall not be permitted. The crane/excavator shall be equipped with a Crane Monitoring System based on RTK DGPS (2 inches system accuracy). This system shall enable the operator to view the design and the location of the bucket of the machine in real time on a screen in the cabin.

Section 610.034 Packing and Placement Tolerances
Section 610.0341 Packing Densities – Class B and C

The placing grid for rock Classes B shall be so determined as to ensure a packing density complying with the following:

$N_{packing\ density}=n \times A \times kt \times (1-n_v) / D_{n50}^2$ (implicit porosity: 37%) (CIRIA C683, page 253)

where, n is the number of layers,

A is the unit area on the armored slope.

k_t is the layer thickness coefficient (=1).

n_v is the porosity

D_{n50} is the median drain size diameter (m)

$N_{packing\ density} = 1.26 / D_{n50}^2$ for Rock Class B.

Rock Class C shall be placed as two layers and its placing grid is given as:

$N_{packing\ density} = 1.24 / D_{n50}^2$ rocks per linear meter (implicit porosity: 38%)

The actual packing density shall be deemed to comply with the requirements within a tolerance of +/- 5% (five percent) of the $N_{packing\ density}$, calculated as specified above, along a length of structure of 60 ft. Tolerances shall not be used cumulatively and each and every 60 ft long section shall comply with the requirements above. For the Class C rock, packing density obtained from survey shall be verified with dynamometer measurements of the weight of individual rocks.

In the event that density has not been achieved, even if the layer profile complies with that denoted in the drawings, the Department may instruct the Contractor to remove the rock in question and reconstruct it, until the required packing density has been achieved, all at Contractor's own expense.

Section 610.0342 Transition Sections

The transition of rock layers shall be accomplished within the limits and classes (i.e., sizes) of rock shown on the drawings. The transition sections stretch between station 105+50 and station 107+00. The transitions shall be made along uniformly varying slopes which follow the lines and grade on the plans and shall present a uniform appearance in the completed structure. The thickness of the underlayer shall be varied in such a manner as to permit establishment of a uniform outside slope and minimum thickness observed of the underlying layers. No abrupt changes in outside slopes or widths shall be permitted. The change from one class of rock to another class shall be approved by the Department.

Prior to carrying out any work, the Contractor shall prepare at their own account and submit for approval, detailed dumping and/or placing drawings at 25 ft intervals, including placing grids.

Section 610.0343 Tolerances

The tolerances tabulated below are to be applied to the sections they denote and are not to be used cumulatively. Rock classes denoted below have been described in section 610.05.

Subsequent layers at any section shall compensate each other regarding the amount of tolerance used in building each section, as necessary, so that the completed structure will be built within the total tolerances shown on the drawings.

The placing shall be performed in full compliance with the following tolerances indicated in the table below, except where specifically indicated otherwise on the Drawings. Tolerances are measured perpendicular to the surface denoted on the Drawings. Placed material not meeting this intent shall be removed and/or reworked, as directed by the Department.

Placement Tolerances (Tolerances are Measured Perpendicular to the Crest and Slope, inches)		
		Design profile to actual mean profile (based on average differences over each 60 ft along the structure's axis)
Class A1	Dry (i.e. above water)	-8 to +8
	Below water	N/A
Class A2	Dry (i.e. above water)	-8 to +8
	Below water	-12 to +19
Class A3	Dry (i.e. above water)	-2 to +2
	Below water	-2 to +2
Class B	Dry (i.e. above water)	-5 to +5
	Below water	-8 to +8
Class C	Dry (i.e. above water)	-10 to +10
	Below water	-16 to +16

Notwithstanding the above tolerances, the following criteria shall apply to the armor layer:

- The tolerances on two consecutive mean actual profiles shall not be negative.
- Notwithstanding any accumulation of positive tolerances on underlayer, the thickness of the layer shall not be less than 80% of the nominal thickness when calculated using mean actual profiles.

Section 610.035 Construction Method

The Contractor shall submit a detailed Method Statement including relevant shop drawings of cross sections and plan layout of the rubble-mound breakwater and boat ramp, after the award of work. The Method Statement shall be confirmed, and more details shall be submitted for the Department's approval.

All marine-based activities/movements by the Contractor shall be done in strict coordination with the Harbor Master.

The Contractor shall construct a 50-ft test section of the Lubec Breakwater Trunk from Station 100+50 to 101+00. This will provide the Department the option of changing rock type/location, and placement of rock.

Placing of rock materials is subjected to inspection by the Department. Any material placed when the Department is not present and later deemed not to be suitable is subject to removal, as directed by the Department, at the Contractor's expense. In addition, rock placed in excess of the limits indicated on the Drawings or misplaced outside these limits or dislodged due to storms, regardless of location, shall be removed by the Contractor at their expense. Simultaneous transportation of different classes of rock on one marine craft and/or barge compartment and/or truck shall not be permitted.

The Contractor shall submit to the Department, a two-weeks working plan updated weekly, including the location of dumping and/or placing rock, based on cross sections at 60 ft interval, drawn to a scale agreed with the Department, and the equipment involved in the operations. The limiting slopes and elevations of the different sections, as indicated on the drawings, are interpreted as irregular surfaces with their limits not exceeding the tolerances set on the drawings for each layer and class of rock.

Loss of quarry run rock, as well as any other class of rock, due to weather or any other reason, shall be replaced prior to placement of additional protective quarry rock layers. Any changes in construction procedures and sequences shall be approved by the Department. The Contractor shall consider the water

depth and associated influence of waves, and the season of the year, in planning their placement methods and procedures.

No subsequent layer shall be placed until the levels, dimensions, and slope of the previous layers have been checked and approved by the Department. Should the Contractor continue placing subsequent layers without having obtained an approval, then the Department shall have the right to instruct the Contractor to remove, at their own expense, part or all of the subsequent layer or layers and to check that the underlying layer complies with the Specifications.

If, during the course of construction, any rock already in place becomes covered with sand or other materials, to such an extent that, in the opinion of the Department, would impair the stability of the structure, the Contractor shall be required to remove the sand or other materials before placing any additional rock. If such covering by sand or other materials is the result of delays or other faults of the Contractor, its removal shall be performed by the Contractor at their own expense. The finished slope above water level shall be free of objectionable clusters or pockets and shall present a uniform rough appearance.

If the Contractor, accidentally or otherwise, deposits during construction or during sea transportation, rock outside its specified position in the structure, they shall immediately notify the Department and mark the position of misplaced rock by proper navigation warning-markers. The Contractor shall proceed without delay, if required by the Department, remove the obstructing and/or misplaced and/or dislodged rock at their expense. Notwithstanding the above, should any rock fall in the offshore of Lubec Breakwater, the Contractor shall remove it at the earliest opportunity and coordinate with the Harbor Master.

Should the rocks approved by the Department be dislodged or damaged by waves, storms or other causes, the Contractor shall at the earliest opportunity perform all the necessary operations to restore the section to the design profile and to remove any rock displaced outside the section, all at their own expense.

Section 610.036 Protection of Uncompleted Work

Protection of uncompleted work is solely the Contractor's responsibility. Any rocks which became dislodged prior to final acceptance of the work, whether due to weather conditions or otherwise, shall be repaired/restored as directed by the Department, at no additional cost to the Department.

The Contractor shall submit for the Department's approval a detailed program concerning the temporary protective works they intend to execute. This program shall also include the activities the Contractor intends to carry out during the winter season, i.e., November through March.

The Contractor shall make all arrangements for receiving daily weather forecasts from an internationally well-known and experienced Meteorological Office and submit a copy to the Department. In the event of imminent bad weather, or should the work be suspended for any cause whatsoever, the Contractor shall protect the exposed uncompleted work.

The Contractor shall also make all arrangements for receiving wave data from the NOAA buoy in at Eastport, ME (Station ID: 8410140).

The Department's approval of the construction method and temporary protection of the construction shall not relieve the Contractor from their responsibility for the works.
It is therefore pointed out that:

a.) Any stoppage in the construction works due to weather conditions, will neither be compensated nor be a reason to delay the completion of the works. These decisions shall not be considered as reasons for claims and/or delays of work.

b.) Before resumption of the works, the Contractor shall remove rock placed as temporary armor, at their expense.

Section 610.037 Inspection and Approval

Notwithstanding the schedule requirements, all deliveries of rock to the site will be visually inspected, and subject to approval by the Department prior to unloading for stockpiling. The Contractor has full responsibility to unload rock to stockpiles. However, the Department has the right to approve and /or disapprove loading of rock whether based on test results, visual inspection or any other cause. The Contractor will be responsible for immediately removing from site any rock considered unsatisfactory or unacceptable by the Department.

In addition, the Contractor shall submit for the Department's approval a cumulative mass distribution curve on a monthly basis. The Department shall examine this curve, and should the cumulative grading not be in accordance with the Specification, the Department shall issue written instructions to the Contractor, describing corrective measures to be implemented by the Contractor. All corrective measures shall be to the Contractor's own account. In the case that the cumulative distribution at the end of any one calendar month does not comply with the Specifications, the Department may instruct the Contractor to supply rock within a particular mass range, so that the cumulative distribution is corrected. All expenses incurred by the Contractor in correcting the mass distribution of rock supply, as described above but not exclusively, shall be to their own account.

In the case that the rock is found not to meet the requirements of the grading noted on the dispatch note but is found to suit the requirements of another grading, it shall be reclassified according to the Department 's directive. All expenses incurred in handling, transferring and unloading, etc., shall be to the Contractor's own account. The necessity for grading reclassification of rock delivered to the Site shall apply to specific and exceptional cases only. Should the Department find that the Contractor is placing the onus of classification on him, they shall have the right to reject outright all rocks delivered to the Site which do not conform to the grading denoted on the dispatch note.

Rock supplied and found unsuitable in respect of grading and/ or rock properties shall be disposed of immediately from the Works area on the Contractor's account. However, the Department may permit that the rock found unsuitable be unloaded in a separate area, away from the approved stockpiles for sorting and reclassification by the Contractor at their own expense.

After sorting, reclassification and acceptance, the rock shall be unloaded in its respective stockpile on the Contractor's account. Rock residues or any rejected rocks shall be transported out from the site to the source quarry. Rejected and/or surplus rocks shall not be allowed to accumulate on the site but must be removed to authorized disposal locations at once.

Section 610.04 Submittals

Section 610.0411 Method Statement

The Contractor shall submit a detailed Method Statement for carrying out the work. The Method Statement shall include the Contractor's proposed procedure for stockpiling, supplying, testing, quality control, transporting, and placing/dumping rock of each type at station location, including transition sections. The Method Statement shall include the procedure of stockpiling, testing, loading, transporting, and handling rocks of all types at the quarries and storage sites, as well as disposal of unsuitable rocks. The contractor shall also provide a detailed staging plan showing the locations of the equipment and barges, if proposed, throughout the construction process. No work shall commence prior to the Department's approval of the Method Statement and the Staging Plan.

Section 610.0412 Rock Sources

The Contractor shall provide details of proposed quarries (or other sources) to be used for supplying rock. The Contractor shall be responsible for confirming rock properties and grading, and supplying rates and amounts to ensure compliance with the Contract requirements.

Section 610.0413 Quality Control Test Results

Quality control tests to be performed on rock samples, the frequency, and the required number of samples have been described in Sections 610.06 and 610.07. The Contractor shall submit to the Department all specified QC records performed by the Contractor's Laboratory (CL) at the frequencies prescribed herein. In addition, the Contractor shall be responsible for collecting and submitting samples to the Authorized Laboratory (AL). The Contractor shall provide all necessary equipment, tools and manpower for sampling and testing performed by the AL.

In case the Contractor intends to open additional areas in an already approved quarry, the Contractor should arrange inspection of the face and an indication of its quality by an authorized geologist. The contractor shall also provide a state of Maine licensed geologist(s) to identify and characterize each rock source. The use of the licensed geologist shall be as specified herein and as further requested by the department. There will be no additional payment for providing a Maine licensed geologist for this work.

Section 610.0414 Transportation

The Contractor shall submit details of their proposed transportation means including equipment, plant, and vehicles (and indicate whether owned or sub-contracted), as well as the proposed transportation routes including traffic movements and any permissions or restrictions required for such routes and movements as established by communication with the MaineDOT and other appropriate Local Authorities. In doing so, the Contractor should provide an outline transportation plan indicating potential number of traffic movements (day and night) and routes to be utilized during the course of the work. The Contractor is responsible for providing weighbridge certificates for every consignment arriving at the site.

Section 610.042 Rock Supply

Section 610.0421 General

All supplied rock shall be naturally occurring, dense, sound material quarried from an approved source. It shall be free from weathering, mechanical weakness and chemical decomposition, and of such character that it will resist disintegration and erosion by the action of air, water (fresh or seawater), wetting and drying, extremes of temperature and impact due to wave action or any other natural or climatic factors. It shall be free from dirt, unsuitable soil material, clay, organic matter (or any over-burden) and shall not contain any holes drilled for blasting purposes (with the exception of partial scars on outer faces and sampling drills). It shall be capable of being handled and placed without fracture or damage. The rock shall not contain visually observable or chemically detectable impurities or foreign matters in such quantities that these are damaging for the constructive application of the rock or for the environment in which the rock is to be placed.

Section 610.0422 Rock Sources

The Contractor shall submit after award, the following details regarding the rock sources they propose to use in order to supply the quantities of rock required:

a.) The geographical location and name of each source.

b.) The areas authorized for sourcing, their respective geological descriptions and the total reserves of each source based on preliminary geological survey.

c.) Evidence of documentation granting quarrying rights in the proposed areas.

d.) Evidence of rock selection quality control procedures in operation at the source.

e.) The estimated quantities and supply rates from each source, for each grading, with associated rock shape and other properties (based on test results for mass density, water absorption and other tests as detailed in this Specification. The tests results shall be obtained by the Contractor's Laboratory (CL). These test results must be verified by the Authorized Laboratory (AL) following the award, in order for the Department to approve the use of the rock.

Section 610.0424 Approval of Sources

All sources of rock must be approved by all the relevant authorities. Prior to commencing rock supply, the Contractor shall submit the required test results, as performed by the Contractor's Laboratories (CL). Before the Contractor can commence supply of rock of any grading, they shall be required to show positive proof (in the form of a detailed quarry evaluation following guidance in CIRIA C683 including detailed geological (petrographic) report, which shall be signed by an authorized geologist, and proposed quarrying plan for the various types of rocks based on 3-Dimensional analysis of the existing layers) that the rock to be supplied exists in the required overall quantities and is of the prescribed properties, fully complying with the Specifications. Such survey should provide information assessing the statistical evaluation of the variation of properties of quarried rocks (relating to layer thickness, longitudinal & transversal slopes etc.). The Contractor shall prepare at source, samples of rock taken from an already selected stockpile, as indicated by the Department. These samples will be visually inspected by the Department who will instruct the Contractor to deliver samples for testing by the AL, in order to check compliance with the requirements of the Specifications.

Prior to commencement of delivery of bulk quantities of rock to the site, the Contractor shall:

a.) Provide test results by the CL on a minimum of one sample (or more if directed by the Department) for each source proposed and for each required grading to confirm that the rock complies with the specified properties.

b.) Submit to the Department for approval the methods to be used to quarry, select, grade, handle, load, transport and place the rock and the quality control procedures to be adopted at the source, during delivery and on site.

c.) At each quarry location, the contractor shall determine a method of stockpiling each gradation of rock required for the project. The method for stockpiling shall be approved by the Department and shall be consistent throughout quarrying at each location.

The Department, to their sole discretion, shall have the right to require additional tests, at no extra cost to the Department, in order to award the final approval of these new faces in the quarry.

Only upon completion of the above requirements and testing having shown that the rock meets all specified properties, to the sole satisfaction of the Department, will the Department inform the Contractor that the source is approved and they may commence supply of rock from that source.

Section 610.043 Special Requirements

Section 610.0431 Turbidity Curtains

The contractor shall be required to provide a turbidity curtain around the footprint of the rubble-mound breakwater during the construction activity. Contractor shall provide all labor, materials, tools, and equipment required for the completion of the following Work, as shown on the Contract Drawings and specified herein:

1. Furnish turbidity curtains in an equivalent product description as defined by the ELASTEC Type III Ruffwater Screen Turbidity Control Curtain BBC-030. The silt curtain shall extend the full depth of the water body
2. Install/Uninstall curtain(s) and anchoring system along the length of work being demolished. Curtains to be uninstalled and moved to new section of work to be demolished after settlement of sediment.
3. Follow climate conditions that the curtain(s) is considered workable. If climate conditions are exceeded, curtain(s) must be uninstalled and un-anchored not to cause damage. The below conditions are considered operational conditions. Any conditions that are greater than that outlined below, or any incoming storms, shall orchestrate the removal of the curtain(s) and anchoring system.

   Wave Height: 1.0 to 2.0 ft
   Current Speed: 2 to 2.5 knots
   Wind Speed: 40 miles per hour

Section 610.0432 Quality Control

Contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. The contractor shall be responsible for QC as detailed in Sections 610.06 and 610.07 in addition to the restrictions previously specified in this section. Maine DOT shall be responsible for Quality Assurance of all works.

Section 610.0433 Products

The fabric skirt of the curtain, tension cable, ballast, section connector, anchor points, and reefing system shall be ELASTEC Type III Ruffwater Screen Turbidity Control Curtain BBC-030 or approved equal. Products shall be capable of working in the below defined operational conditions:

Wave Height: 2ft
Current Speed: 2 knots
Water Depth: -10 ft NAVD88 or deeper
Wind Speed: 40 miles per hour

Section 610.0434 Execution

The Contractor shall notify and obtain approval from the U.S. Coast Guard for the installation of the turbidity curtains to ensure that it will not affect navigation on the waterway. The Contractor shall maintain a perimeter control for soil disturbance activities. During demolition and installation of the breakwater, a turbidity curtain shall be installed and maintained to protect the "in water" work area. For work upland of the shoreline, a silt fence shall be installed to protect work areas with active soil disturbance. As the Contractor transitions from "in water" work to upland work, the turbidity curtain shall be removed, and a silt fence shall be installed at the top of revetment. The silt fence shall be maintained during construction and left in place at the end of construction.

Section 610.05 Rock Gradings

Standard rock gradings to be used are 703.24 (Stone for French Drains) designated as Class A1 for boat ramp core, 703.26 (Plain and Hand Laid Riprap) designated as Class A2 for breakwater core and boat ramp armor, and 703.10 Type B (Aggregate for Untreated Surface Course and Leveling Course) designated as Class A3 for crown wall and boat ramp surface plank bedding. Breakwater Underlayer and Armor layers

use non-standard heavy gradings detailed in the table below. Class B rocks shall be used in the Underlayer and Class C rocks shall be used to construct the Armor layer of the Rubble-Mound Breakwater. Rock shall be supplied in the gradings (mass distributions) shown in the table below based on CIRIA C683, and special gradings in accordance with the quantities prescribed in the Bill of Quantities.

Non-Standard Rock Gradings (Mass Distributions)

Grading (lbs)	Class	ELL 0%<y<5% (lbs)	NLL 0%<y<10% (lbs)	NUL 70%<y<100% (lbs)	EUL 97%<y<100% (lbs)	Average mass (M_{em}) (lbs)	Type
130 - 660	B	90	130	660	1,000	290-420	Non-Standard heavy grading
1,300 – 4,200	C	900	1,300	4,200	6,300	2,300-2,800	Non-Standard heavy grading

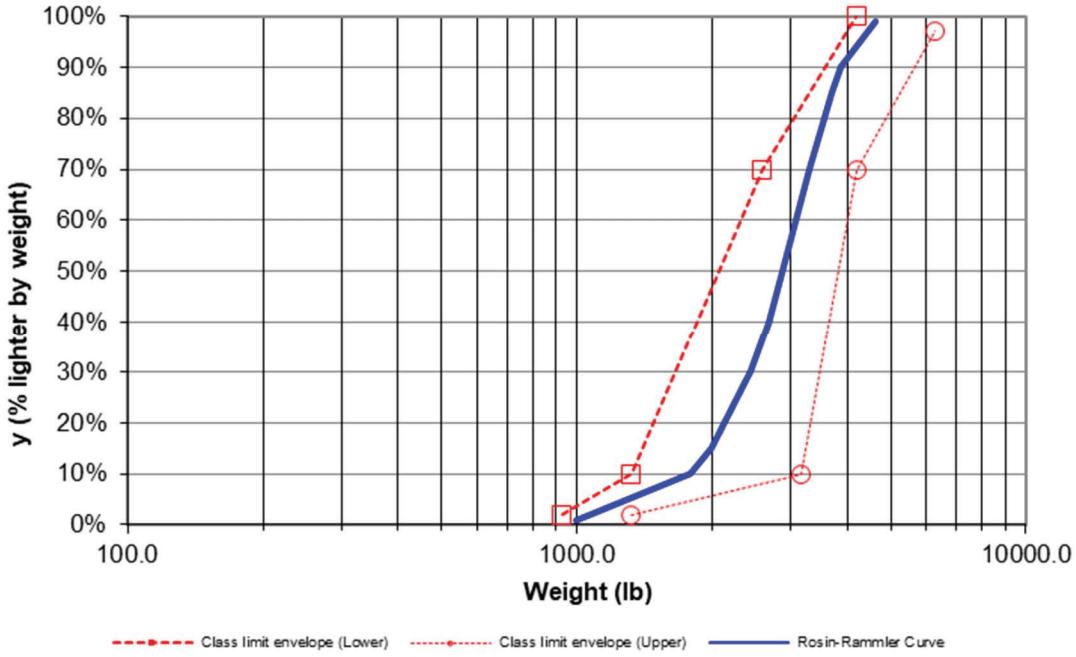
Where the mass distribution limit definitions are shown below:

a.) ELL (Extreme Lower Limit).
b.) NLL (Nominal Lower Limit).
c.) NUL (Nominal Upper Limit).
d.) EUL (Extreme Upper Limit).
e.) MEM is defined as effective mean mass.

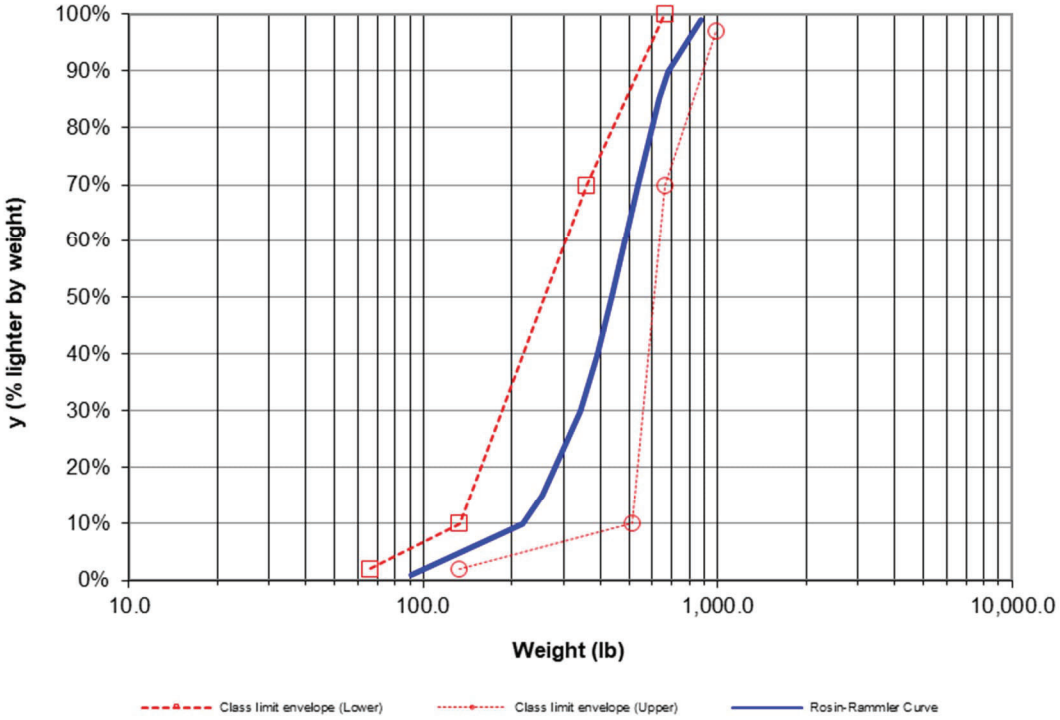
Further guidance on the determination of mass distribution can be found in CIRIA C683.

Heavy grading refers to large units, normally handled by individual units, based on limit values with an associated percentage passing by mass. The associated limits are Extreme Lower Limit (ELL), Nominal Lower Limit (NLL), Nominal Upper Limit (NUL) and Extreme Upper (EUL). The mass distribution graphs of rock classes B and C are described below:

Mass Distribution for Armor Stones (1,300 lbs – 4,200 lbs)



Mass Distribution for Underlayer Stones (130 lbs – 660 lbs)



Section 610.06 Rock Properties for Quality Control:

Section 610.061 Geological (Petrographic) Description

If petrological test results on hand from the quarry is older than 1 year from the commencement of construction, the Contractor shall provide detailed petrological descriptions of all rock types and shall submit to the Department, for approval, test results from the proposed source, demonstrating compliance with the following criteria. The petrographic description shall include rock, constituent, rock type, grain sizes, texture, anisotropy, color, state of alteration, and weathering. Testing to the following criteria shall be carried out throughout the Contract, for each rock source and for each rock grading, at the frequencies indicated in these Specifications or otherwise directed by the Department.

Section 610.062 Rock Shape

The sample to be tested for all shape criteria will be that used for mass determination. For the heavy gradings, the key dimensions (X, Y, Z, l, d) of each piece shall be measured using custom calipers and reported along with the blockiness (BLc), and individual mass (M), which shall be marked on two opposite faces of each rock with a durable (red or other suitable color) paint to nearest 0.1 ton. The paint shall be applied to a cleaned surface in approximately 30 cm high figures.

Rock in heavy gradings shall be angular blocks with equant and/ or irregular shape. Rounded rocks without clear edges and corners shall not be accepted. In addition, all rock in heavy gradings shall not contain more than 15% by mass of stone with length to thickness ratio (LT) greater than 3 and no more than 50% with LT greater than 2.

Rock in quarry run gradings shall not contain more than 15% by mass of stone with LT greater than 3. The percentage of pieces of stone with a length to thickness ratio greater than 3 shall be determined in accordance with CIRIA C683.

For all rock gradings and sources, the proportion of crushed or broken surfaces ratio (RO) shall be determined by visual inspection and counting pieces of stone. The percentage of stones having crushed or broken surfaces shall be less than 5% by mass (RO5).

Section 610.063 Mass Distribution (Grading/Gradation)

The mass distribution shall be determined in accordance with CIRIA C683. Sample size and frequency of testing shall be as prescribed in the quality control schedule.

The Contractor shall record the mass of each individual stone of the sample and present the results of the mass distribution (grading) tests in tabulated format for shape parameters and on semi-log graphs for the mass distribution, further guidance can be found in CIRIA C683. The mass distribution intervals shall be 1 lbs for boat ramp core rock, 100 lbs for rubble-mound breakwater core rocks, 100 lbs for Class B rock, 1,000 lbs for Class C rock. The Contractor shall also note the requirement to plot weekly cumulative mass distribution curves as described under inspection and approval.

Section 610.064 Bulk Specific Gravity

The Contractor shall submit test results for each rock source proposed and for all required gradings to confirm bulk specific gravity (ssd) (saturated surface-dry condition), except for rock being dismantled and re-used.

The specific gravity shall be determined in accordance with ASTM C97-90. The minimum average mass density shall be greater than 152.8 lbs/ft^3 for classes A1, A2, and A3 and greater than 159 lbs/ft^3 for underlayer (Class B) and main armor gradings (Class C).

Section 610.065 Water Absorption

The water absorption (WA) shall be determined in accordance with ASTM C97, clause 8. The average water absorption shall be not more than 2% for heavy gradings (Classes B and C), and not more than 4% for core rock gradings (Classes A1, A2, and A3).

Section 610.066 Resistance to Breakage

The resistance to breakage shall be determined by testing compressive strength (CS) in accordance with ASTM C170. Each specimen shall be prepared from a separate piece of rock and the mean compressive strength of 9 specimens (after striking out the lowest value from 10 specimens) shall be greater than 80 MPa for heavy gradings(Classes B and C), and greater than 60 MPa for core gradings (Classes A1, A2, and A3). In addition, no more than 2 specimens (out of 10) shall have a compressive strength of less than 60 MPa for heavy gradings, and less than 40 MPa for quarry run gradings. No specimen shall have a compressive strength of less than 50 MPa for heavy gradings or 30 MPa for quarry run gradings.

In addition, and to ensure block integrity, rock should be free from incipient fractures or discontinuities such as cracks, veins, stylolite (irregular discontinuity) seams, laminations, foliation planes, cleavage planes, unit contacts or other such flaws due to stress relief, rough handling, over-blasting or other causes, which could lead to breakage during loading, unloading and/or placing. For all gradings, greater than 90% of stockpiled rock should be free from flaws while set-aside in stockpile. Assessment shall be determined by visual means.

Section 610.067 Drop Test

For each rock source and for all heavy grading, the Drop Test Breakage Index (IM50) shall be less than 5% when sampled, tested, and reported in accordance with Section 3.8.5 CIRIA C6. A minimum of 50 rocks from each source shall be tested. The Contractor shall prepare the required bed blocks and provide all equipment, plant, and manpower for the execution of the tests, which will be directed and reported by the AL.

Section 610.068 Resistance to Wear

The Contractor shall submit test results for each rock source proposed and for each required grading to confirm resistance to wear (by abrasion) by means of the Los Angeles test. The resistance to wear by Los Angeles test shall be determined in accordance with ASTM C535-03. The percentage loss shall be less than 25% for heavy gradings and less than 30% for quarry run gradings.

Section 610.07 Quality Control Schedule

The Contractor shall be responsible for ensuring that all the following QC requirements and procedures are implemented and adhered to, and that clear records are produced, maintained, and communicated to the Department.

a.) Quality Dependence of Rock Supply

Should the results show that the rocks are not complying with the requirements of the Specification, the Contractor shall immediately stop supplying rocks from the Collection Area and activate the Quality Control (QC) measures necessary to rectify the situation. Re-commencement of supply from the Collection Area shall be accompanied by the necessary QC measures, as approved by the Department.

b.) Testing Schedule and Methods

Table below provides an outline schedule for the frequency of QC sampling and testing.

Rock Properties	Method	Frequency*	Sample size
Geological description (Petrographic report)	CIRIA C683	Initial only	NA
Shape, X, Y, Z, l, d, BLc, , M, LT, RO	CIRIA C683	15,000 US tons + continuous visual	Heavy grading (100 no.)
Quarry run gradings mass distribution	CIRIA C683	15,000 US tons + continuous visual; report by Resident Engineer monthly	Minimum 55 US tons
Heavy grading mass distribution, *HM*	CIRIA C683	15,000 US tons + continuous visual; report by Resident Engineer monthly	100 no.
Bulk specific gravity (SSD)	ASTM C97	15,000 US tons	5 pieces
Water absorption, *WA*	ASTM C97	15,000 US tons	5 pieces
Compressive strength, *CS*	ASTM C170	25,000 US tons	10 pieces
Drop test breakage index, I_{M50} (heavy grading only)	CIRIA C683	25,000 US tons (heavy gradings only)	30 pieces
Los Angeles % loss	ASTM C535-03	15,000 US tons	3 samples

* All tests are also to be performed at the commencement of supply from each new rock source.

The Contractor shall be responsible for providing all necessary equipment, plant, and manpower to collect test samples and perform the aforementioned quality control tests at the CL. If the tests are performed at the CL, the contractor must provide the AL with further test samples to corroborate their test results. Contractor may also choose to submit the test samples directly to the AL to be tested by the Department. Additional or more frequent testing may be instructed by the Department if the material varies or the source is worked inconsistently. The Contractor shall make further allowance for additional testing instructed at the discretion of the Department, at no additional cost to the Department. The Contractor shall confirm in their bid the timetable for submission of samples, testing, receipt, and communication of results.

Section 610.08 Surveys

Section 610.081 Interim Surveys

Surveys of each class of rock dumped and/or placed shall be made after completion of the respective layer and before commencement of placing the ensuing layer, and shall be as described below Under “Final Survey”.

Section 610.082 Final Survey

Section 610.0821 General

The aim of the survey is to determine a representative profile of the rock layers on each structure’s outer and inner slopes upon their full completion.

The principle of the survey is to measure and record levels on the slopes over a pre-selected grid system. Survey of the structure above the water level and up to a water depth of approximately 25 ft (depending on tide level during the survey and except for Class C rock, as described below) shall be carried out using a sounding ball. An RTK-DGPS system (2 inches system accuracy) shall be used to ensure the correct position of the ball. Survey of the underwater profile (below a depth of 10 ft) shall be carried out using the multi beam echo sounder instrument (Teledyne Odom Hydrographic MB1, or approved equivalent). The level soundings at the intersections of the grid lines are determined with the aid of a suitably sized ball/cage. The profile shall be measured normal to the axis of each structure.

The measurement accuracy of the underwater survey with the multi-beam echo sounder shall be within 2 inches (horizontal and vertical) for the core and filter layers (CIRIA C683, page 1172). The horizontal

spacing of the sounding points on each survey line shall be 2 ft along the perpendicular to the longitudinal axis, thus the survey shall cover the structure with a number of 5 x 2 ft grids spaced at 60 ft.

Section 610.0822 Dimension of Ball and Grid Sizes for the Survey of Structure above the Water Level

The sounding ball shall have a diameter of 9 inches for Rock Class B, and 32 inches for Rock Class C.

The main survey lines shall be placed at a 60 ft spacing along the structures, with additional lines 5 ft to either side of the main survey lines. At each sounding point on the grid, the readings of the level shall be repeated three times. In the final analyses of the survey, all the readings on the main survey line and the two additional lines, one either side of the main one, which were taken at the same distance from the main line, shall be averaged, and the average of all readings for each 60 ft long section shall then be accepted as the representative level of a point on the profile along the main axis. (See Drawings for the locations of the survey lines on the Breakwater). At the Roundheads, the main survey lines shall be radial at 22.5°, with two additional lines at 11.2° intervals on either side.

Section 610.0823 Method of Survey of Structure above the Water Level

The contractor shall follow the following methodology for surveying the structure above water, or present an equivalent survey methodology which may be used with the Department's approval.

a.) Preparation
The positions of the survey lines shall be referred to the longitudinal axis of each structure. Additional marks shall be made on the rocks on the slope to facilitate the alignment of the lines at right angle to the axis.

b.) Equipment:
One mobile crane capable of maneuvering on the structure crest or mounted on a stable marine craft with spuds, and lifting about 1,100 lbs at a radius equivalent to the maximum extent of each survey line.
One calibrated staff/pipe of sufficient length to measure the expected minimum elevation below the level of the crest, equipped with a surveying prism.
The two different sizes of sounding balls, as identified in paragraph 610.0822, manufactured from stainless steel and attached to a measuring rod in the middle of the ball.

c.) The survey
The crane is maneuvered into a position such that the boom center of rotation is exactly in line with the required profile line. The survey ball with the staff and prism are attached to the hook and the boom turned at 90° to the longitudinal axis of the structure.

The survey is then commenced by maneuvering the boom while keeping the survey ball at crest level till the maximum extent of the survey line is reached. The survey ball is then lowered till it "settles" on the slope. The slack appearing in the suspending cable determines the instant of ball "settlement". The level of the ball is then determined from the crest by the surveyor, reading the prism mounted on the staff attached to the sounding ball. The ball is raised and lowered three times, the level of the "settlement point" being recorded each time.

This procedure is followed until all the points on the profile line are recorded, where the crane is maneuvered to their next survey line and the profiling procedure repeated. The Contractor could propose their method in an RFI for the Department's approval if they want to do the same survey differently.

d.) Visual inspection

Underlayers and main armor shall be inspected visually by underwater diving inspection and by visual inspection above water. This shall be carried out by the contractor in the presence of the Department. Appropriate reports are to be submitted by the Contractor before placing the next layer. This is a required condition to start placing armor for each layer.

Section 610.0824 Method of Survey of Underwater Section of Structure

The contractor shall follow the following methodology for surveying the structure above water, or present an equivalent survey methodology which may be used with the Department's approval.

a.) Equipment:

i. Multi beam echo sounder (Teledyne Odom Hydrographic MB1 or equivalent)

ii. Workboat with outboard engine

b.) Equipment Setup

i. The multi beam echo sounder shall be mounted in the hull of the boat or on a lever arm which is bolted to the side of the boat. The former can be used for flat surfaces, but the latter shall be used to survey side slopes on the breakwaters and revetments. The elevation of the transducer is set level to the water line. Placement of the transducer at this location avoids interference from the boat engine.

c.) Survey Procedure

i. Prior to starting the survey, at intervals during the survey and at the conclusion of the survey, the water level is calculated by measuring from the fixed point on the structure crest to the water. This provides the elevation of the transducer as it sits level with the water.

ii. A boat operator positions the boat per surveyor directions along the survey line to begin the survey.

iii. The boat then moves along predefined survey lines to record soundings on the structure. For the survey design the main considerations are line spacing and line direction. The surveyor shall plan the survey carefully, with thought to overlap between adjacent lines and the direction that those lines will run. The survey line layout shall be designed so that there is 150% overlap in coverage between adjacent lines parallel to the structure's longitudinal axis. Such a large overlap in swath coverage is required due to various factors. One prime factor is roll. As the boat rolls the swath coverage will vary in relation to this roll. If the boat rolls to port side, the swath coverage on the port side will lessen whereas swath coverage on the starboard side will increase. The Contractor shall ensure that there is enough overlap in swath coverage between adjacent lines of survey to compensate for possible gaps due to roll motion. The multi beam survey shall extend up to Elevation -10 ft NAVD88, so that there will be sufficient overlap between the ball survey and multi-beam bathymetric survey.

iv. Depth readings shall be taken at 5 ft intervals and converted to elevations using the water elevation at the time of survey.

The Contractor could propose their method in an RFI for the Department's approval if they want to do the same survey differently.

Section 610.0825 Underlayer and Core Stone

Survey of underlayer and core shall be carried out by profiles spaced at 5 ft intervals perpendicular to the longitudinal axis of each structure.

The core shall be surveyed by means of a properly equipped survey boat with a multi beam echo sounder for the underwater portion. For the area above the water level, a survey ball shall be used. The surveyor shall plan the survey carefully, so as to provide a minimum 5 ft overlap between the underwater multi-beam survey and the ball survey.

The profiles spaced at 5 ft interval, shall be determined by the average of two survey boat paths, positioned 4 ft on each side of the section in question. In addition, the Contractor shall survey three longitudinal paths, across the structure section.

The Contractor shall submit to the Department for approval, survey paths including measured water depth and cross sections drawn to an undistorted scale for each profile measured. The scale is to be agreed with the Department. Partial measurement surveys shall follow the same requirements as for the final profile surveys except for the additional measurement each side of the relevant station. All cross sections shall be computerized, and the Contractor shall deliver to the Department drawings and their information in MicroStation compatible format, not later than seventy-two (72) hours after the completion of the respective survey.

On the cross sections the measured and theoretical profile shall be denoted by lines, including levels at 4 ft horizontal intervals, as well as the specified tolerance lines. All cross sections shall be computerized, and the Contractor shall deliver to the Department drawings and their information in MicroStation compatible format, not later than seventy-two (72) hours after completion of the respective survey.

Section 610.0826 Armor Stone

Armor Stone shall be surveyed over its full profile by means of a survey ball for the final survey. Underwater Armor Stone layers shall be surveyed by means of a properly equipped survey boat and multi beam echo sounder. Spacing between profiles shall be 5 ft, perpendicular to the longitudinal axis of the structure. The part of this layer above Elevation -10 ft NAVD88, shall be surveyed by means of a survey ball for the final survey. The surveyor shall plan the survey carefully, so as to provide a minimum 5 ft overlap between the underwater multi-beam survey and the ball survey.

The Contractor shall submit to the Department the measured cross sections, superimposed on the underlying rock class profile. Partial measurement surveys shall follow the same requirements as for the final profile surveys except for the additional measurement each side of the relevant station. All cross sections shall be computerized, and the Contractor shall deliver to the Department drawings and their information in MicroStation compatible format, not later than seventy-two (72)hours after completion of the respective survey.

On the cross sections the measured and theoretical profile shall be denoted by lines, including levels at 2 ft horizontal intervals, as well as the specified tolerance lines. All cross sections shall be computerized, and the Contractor shall deliver to the Department drawings and their information in MicroStation compatible format, not later than seventy-two (72)hours after completion of the respective survey.

Section 610.09 “As Made” Drawings

The Contractor shall prepare and submit for approval, “As Made” drawings of all layers.

The drawings shall be based on the profile surveys done by the Contractor and approved by the Department. The Contractor shall prepare trunk cross sections at 60 ft intervals (± 5 ft), respectively, and to an undistorted scale of 1 in 100. The elevation of each section shall be the average of three surveys: at the section and ± 3 ft from that section. All layers shall be drawn both theoretical and actually built, as well as the tolerances margins. All layers, as described above, shall be superimposed so as to obtain one single cross section, fully describing the actually built structure.

For the transition sections, the Contractor shall prepare cross sections according to the cross sections shown on the drawings.

"As Made" drawings shall be submitted for approval to the Department.

Upon examination, the Department shall issue written instructions concerning the additions and/or corrections to be incorporated in the drawings.

The Contractor shall issue a final version of the approved "As Made" drawings.

Section 610.10 Method of Measurement

Replace section 610.05 in the Maine DOT standard specifications with the following:

Riprap and Stone satisfactorily placed and accepted will be measured by the cubic yard in accordance with the dimensions shown on the Plans. Quantities lost due to displacement of existing materials shall not be measured or paid for directly. An estimation of this quantity is provided based on geotechnical information for the contractor's use only.

Section 610.11 Basis of Payment

Riprap and Stone will be paid for at the Contract cubic yard price which shall be full compensation for all labor, materials, stockpiling, shipping, staging, equipment and all related items necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Item		Pay Unit
610.08	Plain Riprap (Breakwater and Stone Slope Protection)	Cubic Yard
610.16	Armor Stone (Breakwater)	Cubic Yard
610.17	Heavy Riprap (Breakwater)	Cubic Yard
610.18	French Drain Stone	Cubic Yard

END OF SECTION

SPECIAL PROVISION
SECTION 615
UNDERDRAIN SOIL FILTER

615.01 Description. This work shall consist of constructing an Underdrain Soil Filter to provide stormwater quality treatment. The location of the Underdrain Soil Filter is at the Town of Lubec gravel pit off of Rte. 189 in Lubec, all work beyond that edge shall generally be considered part of the Underdrain Soil Filter pay item. The layout, grading, drainage, seeding and related details for the Underdrain Soil Filters are indicated on the Contract Drawings.

Third Party Inspector (TPI). Required for installation of Underdrain Soil Filter. TPI qualifications will meet or exceed Department of Environmental Protection (DEP) Special Condition for Third Party Inspector Program Section 3.0 (DEPLW078-B2001 November 2008). TPI will be responsible for timely submittals and communication as described in project plans as well as those listed in this Special Provision.

615.02 Materials. Materials for the Underdrain Soil Filters shall meet the requirements of the following sections of the Standard Specifications except as provided below:

Loam	615.02
Seeding (Method Number 2)	618.14
Fine Aggregate for Concrete	703.01
Granular Borrow	703.19
Underdrain Backfill Material – Type B	703.22
PVC Pipe	706.08
PVC Perforated Pipe	706.09
Erosion Control Blanket	717.061
Erosion Control Geotextile	722.02
Soil Filter Media	See Below
Impervious Liner	See Below
Outlet Valve	See Below
Special Riprap	See Below

Seeding – The Underdrain Soil Filter side slopes and bottom shall be seeded according to Section 618 Seeding with the following seed mix.

Seed	Rate
Creeping Red Fescue	20 lbs./acre
Tall Fescue	20 lbs./acre
Birdsfoot Treefoil	8 lbs./acre

The seeding shall be completed between April 1st and June 15th or between August 15th and

September 15th to ensure adequate time for the grass to become established.

Fine Aggregate for Concrete – Only the first paragraph and gradation table in Specification 703.01 apply. The remaining paragraphs do not apply.

Granular Borrow – Modified to have 100% passing the 6" sieve.

PVC Pipe – In addition to Specification 706.08, PVC Pipe shall be unperforated.

Impervious Liner – Impervious Liner shall consist of linear low-density polyethylene (LLDP) or PVC with a minimum thickness of 30 mil.

Outlet Valve – Outlet valve shall be installed as shown on the Contract Drawings. Once installed, valve shall remain fully open until the Flooding Test. Valve wrench and handle extension shall be provided to the Town upon completion of the USF.

615.04 Construction Requirements. The Underdrain Soil Filter shall be constructed according to the location, layout, grading, drainage, and seeding indicated on the Contract Drawings. The Contractor shall have a preconstruction site walk with the Resident/Design Engineer, third party inspector, and a representative from the MaineDOT Environmental Office Surface Water Resources Unit to review the proposed locations and to answer questions regarding layout and construction. Any modifications to the elevation, location, and components of the Underdrain Soil Filters shall be at the direction of and approved by the Resident/Design Engineer.

The footprint for embankment shall be cleared of trash/debris and any rocks greater than 6 inches, be free of any standing water, be graded to be no steeper than 1:1, be scarified prior to embankment fill placement, and be inspected and approved by the Resident before fill placement. Compact fill to 95% of Modified Proctor.

The following shall be observed during the construction of the Underdrain Soil Filter:

Surface and Tributary flows must remain diverted from the Underdrain Soil Filter until the Resident/Design Engineer and Third Party Inspector confirm that contributing drainage area has reached final stabilization consistent with Best Professional Judgement (typically 90% vegetation cover or paved).

Elevations in the Underdrained Soil Filter Special Detail shall be surveyed as-built and recorded by the Resident/Design Engineer or Third Party Inspector.

The Impervious Liner and Drainage Geotextile shall be installed on all sides and bottom as shown in the Contract Drawings. The Impervious Liner shall not be placed during the presence of excessive winds as directed by the Resident/Design Engineer. The Impervious Liner shall be laid in one continuous piece with all components internal to the USF placed on top of the liner. Unplanned punctures in the Impervious Liner shall be repaired in accordance with the

manufacturer's specifications and approved by the Resident. Punctures in the Impervious Liner that are necessary according to the Contract Drawings shall be sealed to minimize the infiltration of water into the USF basin and approved by the Resident/Design Engineer. All punctures to the Impervious Liner will be photographed once repaired/sealed. The Impervious Liner shall be anchored to the sidewalls of the excavation using a method approved by the Resident/Design Engineer. All photographs and the method of anchoring shall be submitted to the Environmental Office before the installation of the Soil Filter Media.

The Underdrain Backfill Material -Type B (703.22) and the PVC pipes (706.08 and 706.09) shall be installed as indicated on the Contract Drawings. A PVC underdrain cleanout shall be located at the upstream end of each segment of underdrain.

Install the 18-inch layer of Soil Filter Media in 6-inch lifts to prevent pockets of loose media. The Underdrain Backfill Material and Soil Filter Media shall be compacted to between 90 and 92% standard proctor (AASHTO T180). Over-compaction of the Soil Filter Media shall be avoided.

Upon completion of the installation of the Soil Filter Media and the establishment of a 90% catch of grass over the Filter Media, the Contractor shall perform a Flooding Test to obtain a 24-hour to 32-hour release time. Results of the Flooding Test shall be submitted to the Environmental Office.

Loam shall be placed around Underdrain Soil Filter ponds as indicated on the Contract Drawings. The interior side slopes and floor of the basins shall be seeded according to Section 618 Seeding with the seed mix specified above. The seeding shall be completed between April 1st and June 15th or between August 15th and September 15th. Loam and seed to be placed south/west of the parking lot around the Underdrained Soil Filter shall be included in item 615.27. Areas where loam and seed are required to the north/east of the pay limit line for Item 615.27 will be measured for payment separately. The Erosion Control Blanket shall be installed over all seeded areas prior to the end of each Working Day. Special Riprap shall be installed as shown on the Contract Drawings.

615.041 General. Inspection of the Underdrain Soil Filters shall be provided for each phase of construction as detailed in Construction Oversight section of Grassed Underdrain Filter Plan and Details sheet by the Design Engineer/third part inspector with required reporting and submittals to the MaineDOT Environmental Office Surface Water Resources Unit.

615.042 Submittals. The following submittals are required in addition to those listed in 615.041:

- Method for anchoring of the impervious liner to the excavation walls.
- Photographs of all corrected punctures to the Impervious Liner.
- Records of surveyed as-built elevations for all pipe inverts, berms, outfalls, spillways, or other features as per those listed in the Grassed Underdrain Filter Plan and Details.
- Records of final Outlet Valve position and release time achieved by Flooding Test.

615.043 Testing.

- Laboratory Testing - The Contractor's material testing firm shall conduct a sieve analysis conforming to AASHTO T88 on each of the Soil Filter Media components, the resulting Soil Filter Media, and Underdrain Bedding Stone. The material testing laboratory shall test the organic content of the resulting Soil Filter Media and its components, the testing shall conform to AASHTO T267. The resulting engineered soil mix shall have 8% to 12% by weight passing the #200 sieve, a clay content of less than 2% and have 5-10% dry weight of organic matter.

- Permeability Testing – The Contractor's material testing firm shall perform a permeability test by constant-head method on the Soil Filter Media conforming to AASHTO T215. One test per sub-basin of the Underdrain Soil Filter.

- Flooding Test – Flood the vegetated Underdrained Soil Filter with clean water to the channel protection elevation indicated on the Contract Drawings and adjust the Outlet Valve to obtain a 24-hour to 32-hour release time. Approximately 40,000 to 45,0000 gallons of water will need to be used during this test.

615.05 Method of Measurement. Underdrain Soil Filters will be measured for payment by the Lump Sum.

615.06 Basis of Payment. Underdrain Soil Filters will be paid for at the contract unit price as specified complete, in place, and accepted. All construction materials, labor, and incidentals required for construction of berms, sediment forebays, and riprap spillway are included as part of the Underdrain Soil Filter lump sum.

Payment shall be full compensation for furnishing and placing all PVC pipe, elbows, wyes & fittings, cleanouts, outlet valve, underdrain backfill, soil filter media, impervious liner, loam, seeding, special riprap, erosion control geotextile, erosion control blanket, all equipment and labor, and all other incidentals to complete the work shown at the Town Gravel Pit.

Excavation, common or granular borrow, and all grading to establish final grade of the Underdrain Soil Filter embankments and floor elevation will be considered incidental.

Payment will be made under:

Pay Item		Pay Unit
615.27	Underdrain Soil Filter	Lump Sum

SPECIAL PROVISION
SECTION 620
GEOTEXTILES
(EROSION CONTROL GEOTEXTILE)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 620, Geotextiles, with the following modifications. The geotextile material to be used on the Rubble-mound breakwater and boat ramp shall meet the property requirements specified in MaineDOT specifications for separation geotextile elaborated in section 722.04. The special provisions provided herein supplements section 620:

620.01 Description

ADD THE FOLLOWING:

Contractor shall provide all labor, material, and equipment and perform all operations necessary for the complete and satisfactory installation of the geotextile. The work shall include, but not be limited to, placement of geotextile, material and associated equipment and operation used in laps or extra length; and associated material, equipment, and operations; and material and associated equipment and operations used to provide cushioning layer of sand or gravel or both to permit increase in allowable drop height of stone.

Contractor shall complete the following work:

- Prepare all labor, tools, materials, and equipment.
- Prepare the areas as required.
- Provide all submittals and testing as required.
- Furnish and install geotextile as required.

The contractor performing this work shall have at least five years of minimum experience. Contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work specified in this section.

620.01.01 References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM INTERNATIONAL

ASTM D 123	Terminology Relating to Textiles
ASTM D 3786/D 3786M	Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method
ASTM D 4354	Sampling of Geosynthetics for Testing
ASTM D 4355	Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4491	Water Permeability of Geotextiles by Permittivity
ASTM D 4533	Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	Determining Apparent Opening Size of a Geotextile
ASTM D 4833	Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

ASTM D 4873	Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D 4886	Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper/Sliding Block Method)
ASTM D 5034	Breaking Strength and Elongation of Textile Fabrics (Grab Test)

620.01.02 Submittals

Submit the following in accordance with the pertinent submittal procedures.

Samples

Submit geotextile samples for testing, if requested, to determine compliance with the requirements in this specification, a minimum of 60 days prior to the beginning of installation of the same textile. Upon delivery of the geotextile, submit duplicate copies of the written certificate of compliance signed by a legally authorized official of the manufacturer. The certificate shall state that the geotextile shipped to the site meets the chemical requirements and exceeds the minimum average roll value listed in Table 1. Upon request, supply quality control and quality assurance tests for the geotextile. Provide all samples from the same production lot as will be supplied for the contract, of the full manufactured width of the geotextile by at least 10 feet long, except that samples for seam strength may be a full width sample folded over and the edges stitched for a length of at least 5 feet. Samples submitted for testing shall be identified by manufacturer's lot designation. For needle punched geotextile, the manufacturer shall certify that the geotextile has been inspected using permanent on-line metal detectors and does not contain any needles.

620.01.03 Delivery, Storage and Handling

Deliver only approved geotextile rolls to the project site. All geotextile shall be labeled, shipped, stored, and handled in accordance with ASTM D4873. No hooks, tongs, or other sharp instruments shall be used for handling geotextile. Geotextiles shall be protected at all times against physical or chemical damage. Geotextiles shall be kept in the wrappings provided by the manufacturer until required for use in the works. The rolls of geotextile shall be stored on level ground and stacked not more than five rolls high and no other materials shall be stacked on top of the geotextile. Geotextile shall not be exposed to direct sunlight for longer than thirty days.

620.02 Materials

Add to the first paragraph:

Add stabilizers and/or inhibitors to the base polymer, if necessary to make the filaments resistant to deterioration caused by ultraviolet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. Finish the edges of the geotextile to prevent the outer fiber from pulling away from the geotextile.

Add:

620.02.01 General

Geotextile fabric used for the rubble-mound breakwater structure and the boat ramp shall meet or exceed the strength properties corresponding to Class 1+ geotextile summarized in Table 7 of section 722.04.

620.02.04 Inspections, Verifications and Testing

620.02.04.01 Manufacturing and Sampling

Randomly sample geotextiles in accordance with ASTM D 4354 (Procedure Method A).

620.02.02 Site Verification and Testing

Collect samples at approved locations upon delivery to the site in accordance with ASTM D 4354 (Procedure Method B). Test samples to verify that the geotextile meets the requirements specified in Table 1. Identify samples by manufacturer's name, type of geotextile, lot number, roll number, and machine direction. Perform testing at an approved laboratory. Submit test results from the lot under review for approval prior to deployment of that lot of geotextile. Rolls which are sampled shall be immediately rewrapped in their protective covering.

620.03.01 Installation of the Geotextile

620.03.01.01 General

At the time of installation, reject the geotextile if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage.

Geotextile shall be placed at the locations shown on the Drawings.

620.03.01.02 Placement

Place the geotextile with the long dimension perpendicular to the shoreline and laid smooth and free of tension, stress, folds, wrinkles, or creases. Place the strips to provide a minimum width of 3 feet of overlap for each joint. The placement procedure requires that the geotextile's length be about 10 percent greater than the slope length. Adjust the actual length of the geotextile used based on initial installation experience.

620.03.02 Protection

Protect the geotextile during construction from surface runoff; remove any so contaminated geotextile and replace it with uncontaminated geotextile. Replace any geotextile damaged during its installation or during placement of stone or other materials: cost of replacement shall be borne by the contractor. Schedule the work so that the covering of the geotextile with a layer of the specified material is accomplished within 7 calendar days after placement of the geotextile. Failure to comply shall require replacement of geotextile. Protect the geotextile from damage prior to and during the placement of stone or other materials. Before placement of stone or other materials, demonstrate that the placement technique will not cause damage to the geotextile. In no case should any type of equipment be allowed on unprotected geotextile.

Section 620.04 Overlap

Replace with:

Adjacent fabric lengths shall be joined by overlapping at least 36 inches. Appropriate measures shall be taken to ensure required overlap exists after cushion placement.

When fabric is placed, the fabric rolls shall be chosen so that there will be a minimum number of overlaps of parallel rolls. The total area of surface covered is summarized in the bill of quantities.

620.05 Seams

Seams are not permitted.

Section 620.10 Basis of Payment

Add the following:

Payment will be made under:

Pay Item		Pay Unit
620.58	Erosion Control Geotextile (Non-Woven, Upland)	Square Yard
620.60	Separation Geotextile (Non-Woven, Rubble Mound & Boat Ramp)	Square Yard

END OF SECTION

SPECIAL PROVISION
SECTION 626
FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS
(Precast Concrete Junction Box)
(Non-Metallic Conduit)
(Supporting Devices)
(Secondary Wiring)
(Service Metering)
(Service Grounding)
(Panelboards)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 626 – FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS, with the following additions:

626.01 Description

This work shall consist of furnishing and installing the following in accordance with these specifications and plans.

Make all necessary arrangements with *Versant Power* to provide new utility service as follows:

Secondary electrical service by *Versant Power* to serve a new service entrance panelboard near the intersection of Main and South Streets. This will provide power to the site lighting and fish hoists. This service account will be transferred to the Town of Lubec after project completion. The general contractor shall coordinate with Maine DOT, *Versant Power*, and the Town of Lubec to ensure this account is transferred in coordinated with the construction schedule.

Provide all underground conduits and in-ground precast junction boxes for new service utilities being provided by *Versant Power*.

Provide an underground electrical 277/480 volt, 3-phase secondary service (conduit and wire) between the new Lubec Breakwater service transformer and the service/distribution equipment being provided under this contract.

Provide new electrical service/distribution equipment for the Lubec Breakwater site.

Provide new underground electrical 277 volt circuits (conduit and wire) to serve the new site lighting.

Provide new underground 480/277 volt, 3-phase feeder (conduit and wire) to pile-supported platform mounted sub-panelboard.

Provide new underground 480 volt, 3-phase circuits (conduit and wire) to serve two new fish hoists.

Provide new Fiber Reinforced Epoxy/Plastic (FRE/FRP) conduit.

626.02 General

Installation of service conduit and wiring methods for the new underground electrical 277/480 volt, 3-phase utility service shall be approved by *Versant Power*.

Service grounding is incidental per the standard MaineDOT specifications. It shall include the complete furnishing and installation of all grounding including ground conductors, fittings, ground rods, excavation, labor, equipment and incidentals necessary to complete the work.

Supporting devices are incidental to the project. It shall include the complete furnishing and installation of support framing including framing materials, labor and incidentals necessary to complete the work.

626.0331 Conduit

Above-ground conduit shall be fiberglass reinforced epoxy/plastic.

Above-ground box and equipment connections at exterior locations (where necessary use of FRE conduit is not practical) shall be made with liquid-tight flexible steel conduit comprised of single strip, continuous, flexible interlocked, stainless steel core, galvanized inside and outside; forming smooth internal wiring channel; with liquid-tight jacket of flexible polyvinyl chloride (PVC), and with liquid-tight connectors.

Underground conduit shall be Schedule 40 or greater polyvinyl chloride (PVC). Concrete-encased, as noted on the Contract Drawings.

Provide corrosion-resistant stainless steel strut members as manufactured by *Unistrut*, series P1001 SS, or approved equal for conduit support where exposed on concrete piers. Provide stainless steel hardware and stainless steel conduit clamps for all exposed conduit mounting applications.

626.110 Exterior Precast Composite Junction Boxes

Precast composite junction boxes shall be rated and specified per the standard detail in the drawings.

Electrical Precast Junction Boxes: 13” W x 24” L x 18” D (outside)

626.385 Electrical Meter Enclosure

The Lubec Breakwater utility service shall be 277/480 volt, 3 wire, as received from a new *Versant Power* service transformer. The new electrical service shall be separately metered by *Versant.*

626.420 Bonding and Grounding

A separate, continuous, green insulated ground conductor shall be provided to extend from the Lubec Breakwater power distribution panelboard; all site lighting poles; and all branch circuits. Service grounding shall be made to 3/4 inch by 10 feet long copper-clad steel ground rods.

626.740 Panelboards

Panelboard MDP:

The power service/distribution panelboard “MDP” shall be *Square D* Type NF or approved equal. The panelboard shall be rated for 480/277 volt, 3-phase, 4-wire service, and shall be provided with a NEMA 3R steel enclosure with a hinged, locking front cover. Locks shall be cylindrical tumbler type with larger enclosures requiring sliding vault locks with 3-point latching. All lock assemblies shall be keyed alike. One (1) key shall be provided with each lock. A clear plastic directory cardholder shall be mounted on the inside of the door. The UL listed short circuit current rating (SCCR) shall be equal to 18K or greater. The panelboard shall be suitable for use as Service Equipment. Panelboard shall be

mounted within an Nvent Hoffman 3-point latch type NEMA 4X, 60”Wx48”Hx12”D, 316 stainless steel enclosure with Rittal enclosure heater (with hygrostat), or approved equal.

Panelboard “MDP” shall be furnished with one (1) 2-position, key operated switch for control of site lighting circuits MDP-#8, MDP-#10, and MDP-#12,. The switch shall be installed in a NEMA 4X stainless steel enclosure and shall be surface mounted on the side of Panelboard MDP’s enclosure.

Support for the conduit up to the pole mounted transformer.
Strut channel mounting rack for meter socket and MDP enclosure.
Hazard sign mounting hardware/rack, as applicable.

Molded case circuit breakers shall have an over center, trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication. Circuit breaker escutcheon shall be clearly marked ON and OFF in addition to providing International I/O markings.

Panelboard MDP:
Location: Outside at Equipment Rack (adjacent to Main St.)
480/277 Volts, 3-Phase, 4-Wire
125 Ampere Bus
AIC Rating: 18K
Surface Cabinet – NEMA 4X Stainless Steel
Main Circuit Breaker: 125A/3P
Distribution Circuit Breakers: Refer to panel schedule on Contract Drawing.

Transformer TR-CR1 shall be *Larson* Model # MT-DOE16-FP-1P-277V-2.5KVA-120V-N3R, or approved equal. The transformer shall conform to NEMA Standard TP-1 and shall be provided with a NEMA 3R steel enclosure.

Transformer TR-CR1:
Primary Rating: 480 volts, single phase
Secondary Rating: 120 volts, single phase
kVA Rating: 2.5

Panelboard DP:

The branch circuit panelboard “DP shall be *Square D* Type NF, or approved equal. The panelboard shall be rated for 480/277 volt, 3-phase, 4-wire service. Panel DP shall be provided with a NEMA 3R steel enclosure with a hinged, locking front cover. Locks shall be cylindrical tumbler type with larger enclosures requiring sliding vault locks with 3-point latching. All lock assemblies shall be keyed alike. One (1) key shall be provided with each lock. A clear plastic directory cardholder shall be mounted on the inside of the door. The UL listed short circuit current rating (SCCR) shall be equal to 10K or greater. Panelboard shall be mounted within an Nvent Hoffman 3-point latch type NEMA 4X, 60”Wx48”Hx12”D, 316 stainless steel enclosure with Rittal enclosure heater (with hygrostat), or approved equal.

Combination reduced voltage soft starter disconnect switch (non-fusible) shall be NEMA 4X rated, Eaton model # ECS97R9CAA, or approved equal.

Mounting hardware/rack for DP enclosure.
Support for flex conduit to the fish hoists.
Hazard sign mounting hardware/rack, as applicable.

Molded case circuit breakers shall have an over center, trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication. Circuit breaker escutcheon shall be clearly marked ON and OFF in addition to providing International I/O markings.

Panelboard DP:
Location: On Pile-Supported Platform (adjacent to turnaround)
480/277 Volts, 3-Phase, 4-Wire
125 Ampere Bus
AIC Rating: 18K
Surface Cabinet – NEMA 4X Stainless Steel
Panelboard P1 (continued):
Main Circuit Breaker: 100A/3P
Branch Circuit Breakers: Refer to panel schedule on Contract Drawing.

Transformer TR-CR2 shall be *Larson* Model # MT-DOE16-FP-1P-277V-2.5KVA-120V-N3R, or approved equal. The transformer shall conform to NEMA Standard TP-1 and shall be provided with a NEMA 3R steel enclosure.

Transformer TR-CR2:
Primary Rating: 480 volts, single phase
Secondary Rating: 120 volts, single phase
kVA Rating: 2.5

626.04 Method of Measurement

Precast composite junction boxes and meter enclosure will be measured by the single unit. Metallic conduit, non-metallic conduit, secondary wiring, service metering, and panelboards will each be measured by lump sum.

Measurement for the installation of Fiberglass Reinforced Epoxy/Plastic conduit as shown on the Plan drawings and described herein will be per linear foot actually furnished, installed, and accepted at the Contract price per linear foot.

Measurement for the installation of concrete-encased PVC conduit as shown on the Plan drawings and described herein will be per linear foot actually furnished, installed, and accepted at the Contract price per linear foot.

626.05 Basis of Payment

The accepted quantity of pre-cast concrete junction boxes will be paid for at the contract unit price for each box. Payment shall be full compensation for the complete installed box, including boxes, excavation, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of meter enclosure at the contract per each price. Payment shall be full compensation for the complete furnishing and installation of service metering including meter sockets, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of panelboards at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of panelboards, transformers,

enclosure, channel strut support, lighting control switches, combination motor starter disconnects, fittings, labor, equipment and incidentals necessary to complete the work.

Payment for the accepted quantity of Fiberglass Reinforced Epoxy/Plastic as shown on the Plan drawings and described herein will be per linear foot actually furnished, installed, and accepted at the Contract price per linear foot. This price shall include the cost of: furnishing and installing the conduit; pull string, fittings, grounding and bonding connections, test cleaning interiors of conduits and all materials, labor, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Description	Pay Unit
626.112	Precast Composite Junction Box	Each
626.221	Non-metallic conduit concrete encase	Linear Foot
626.222	FRP Conduit (1")	Linear Foot
626.222	FRP Conduit (2 1/2”	Linear Foot
626.385	Meter Enclosure	Each
626.91	Power Distribution Panelboard and (MDP)	Lump Sum
626.74	Panelboard (DP)	Lump Sum

SPECIAL PROVISION
SECTION 634
HIGHWAY LIGHTING

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, SECTION 634 – HIGHWAY LIGHTING with the following additions:

634.01 Description

This work shall consist of furnishing and installing the following in accordance with these specifications and plans.

1. Provision of new lighting poles and luminaires.
2. Provision of NEMA 4X stainless steel wiring boxes.
3. Provision of flexible PVC coated stainless steel conduit.
4. Provision of wiring conductors to serve lighting luminaires.
5. Ground of new electrical systems.
6. Removals of existing wiring boxes, conduit, and wiring conductors.

634.02 General

Where the Contract documents permit the selection from several product options, and where it becomes necessary to authorize a substitution, the Contractor shall not proceed with purchases until coordination of all interface requirements has been checked and satisfactorily established. All product substitutions subject to approval by the Department and the engineer of record.

634.022 Equipment List and Drawings

Provide scale drawings and details for anchor bolt installation methods.

634.03 General

Coordinate conduit locations with existing conditions and other utilities. Where conflicts are found make all practical efforts to install new work to produce a minimum impact on existing conditions.

634.04 Cable Installation

Provide factory-fabricated wire of the size, rating, material and type as required for each branch circuit. Wire in conduit shall be 600 volt class Type XHHW-2, as manufactured by *Southwire* or approved equal. Conductors shall be rated 90º C with moisture and heat-resistant thermoset cross-linked polyethylene insulation.

634.041 Conduit

Above-ground conduit shall be fiberglass reinforced epoxy/plastic, per Section 626.

Above-ground box and equipment connections at exterior locations (where necessary use of FRE conduit is not practical) shall be made with liquid-tight flexible steel conduit comprised of single strip, continuous, flexible interlocked, stainless steel core, galvanized inside and outside; forming smooth internal wiring channel; with liquid-tight jacket of flexible polyvinyl chloride (PVC), and with liquid-tight connectors.

Provide corrosion-resistant stainless steel strut members as manufactured by *Unistrut*, series P1001 SS, or approved equal for conduit support where exposed on concrete piers. Provide stainless steel hardware and stainless steel conduit clamps for all exposed conduit mounting applications.

634.044 Pull Boxes:

Exterior pull boxes installed exposed at roadway light pole locations in the parapet wall shall be UL listed NEMA 4X 316 stainless steel with stainless steel hardware. Provide size per NEC for the given number of entrance/exit conduits, but shall not be smaller in size than 18" x 18" x 8".

634.055 New Lighting Poles:

The Contractor shall provide lighting poles with attached luminaires. The Contractor will be required to:

a. Provide 29-foot 6-inch tall, 4-inch round, aluminum lighting poles with bronze anodized finish. Provide anchor bolts in sizes as recommended by the pole manufacturer. Lighting poles shall be provided in conformance with EPA and weight ratings for luminaires as specified in the MDOT Standard Specifications. Light poles with two luminaires (Type R2) shall include the twin bullhorn 180 degree floodlight bracket. Lighting poles shall be as manufactured by *Valmont,* or approved equal.

b. Provide one or two luminaires per each lighting pole, as indicated on plans. Luminaires shall utilize LED lamp sources, with 4000K color temperature. Luminaire optical distribution pattern shall be IESNA Type 3 or Oval 30ºx115º, as indicated on the drawings. Luminaires shall be UL listed for wet locations with an IP66 rating, and shall have been tested according to IESNA LM-79 and IESNA LM-80. Luminaires shall be provided with a die-cast aluminum housing with bronze finish color. Provide an integral non-dimming universal voltage LED driver rated for 120-277 volts. Luminaires shall be as manufactured by *Nemalux Lighting*, model # XR8-40-T3-GY-GN-AC-XR-SFY OR XR8-40-OC-GY-GN-AC-XR-SFY, or approved equal (as indicated on the drawings).

634.056 New Lighting Fixtures

Type A Light Standard refers to Types R1 and P1 light fixtures, as indicated on the drawings.

Type B Light Standard refers to Type R2 light fixtures, as indicated on the drawings.

634.066 Solar Dock Lights:

The Contractor shall provide solar dock lights (Type D1). The Contractor will be required to provide and install surface-mounted solar dock lights with white light color, stainless steel mounting screws. Marine grade, IP68-rated, with built-in reflector. Luminaires shall be as manufactured by *Lake Lite,* model # LL-SDL-DECK-W, or approved equal.

634.081 Grounding and Bonding:

Add the following:

No grounding conductor shall be smaller than 12 AWG wire unless it is a part of an acceptable cable assembly.

634.092 Method of Measurement:

Measurement for work associated with the provision of new lighting poles as shown on the Plan drawings and described herein will be per each item.

Measurement for work associated all work associated with the provision of new NEMA 4X wiring boxes as shown on the Plan drawings and described herein will be per each item.

Measurement for the installation of the wire as described herein will be per foot, to the nearest 1 foot interval per run.

Measurement for the installation of PVC conduit as shown on the Plan drawings and described herein will be per linear foot actually furnished, installed, and accepted at the Contract price per linear foot.

Measurement for installing the Liquid Tight Metallic Flexible Conduit as shown on the Plan drawings and described herein will be per foot actually furnished, installed, and accepted at the Contract price per linear foot.

Measurement for work associated all work associated with removals of existing electrical boxes, conduit, and wiring as shown on the Plan drawings and described herein will be made as lump sum.

634.093 Basis of Payment:

Payment for the accepted quantity of Liquid Tight Flexible Metallic Conduit as shown on the Plan drawings and described herein will be per linear foot actually furnished, installed, and accepted at the Contract price per linear foot. This price shall include the cost of: furnishing and installing the conduit; and fittings; grounding and bonding connections, and all materials, labor, equipment and incidentals necessary to complete the work.

Payment for the accepted quantity of new lighting poles will be paid per each item. This payment shall include the installation of the new lighting pole, installation of the new luminaire, grounding and bonding connections, and all materials, labor, equipment and incidentals necessary to complete the work.

Payment for installing the NEMA 4X wiring pull boxes as shown on the Plan drawings and described herein will be per each item. It shall include the furnishing, installation, mounting of the boxes, and the drilling of holes into the box for conduits, grounding and bonding connections, and all materials, labor, equipment and incidentals necessary to complete the work.

Payment for the accepted quantity of wire as described herein will be per foot. It shall include the furnishing, installation, routing, termination, splices and connection of the wire per the wiring schedule, and all materials, labor, equipment and incidentals necessary to complete the work.

Payment for work associated with system grounding as shown on the Plan drawings and described herein will be per lump sum. It shall include grounding connections for conduit, boxes, lighting poles, and all materials, labor, equipment and incidentals necessary to complete the work.

Payments will be made under:

Pay Item	Description	Pay Unit
634.1812	1” Liquid Tight Flexible Conduit	Linear Foot
634.1931	1” PVC Conduit	Linear Foot
634.1944	2” Schedule 40 PVC Conduit	Linear Foot
634.1949	2 1/2" Schedule 40 PVC Conduit	Linear Foot
634.2042	LED Luminaries (Type T3 (R1 & R2))	Each
634.2042	LED Luminaries ((Type OC (P1))	Each
634.2042	LED Luminaries (Type D1 Solar Dock Light)	Each
634.2101	Type A Light Standard	Each
634.2102	Type B Light Standard	Each
634.2311	Stainless Steel Exterior Pull Box	Each
634.312	# 2 AWG Copper Wiring	Linear Foot
634.313	# 4/0 AWG Copper Wiring	Linear Foot
634.314	#6 AWG Copper Wire	Linear Foot
634.316	#10 AWG Copper Wire	Linear Foot
634.3161	#12 AWG Copper Wiring	Linear Foot

SPECIAL PROVISION
SECTION 731
MARINE MATERIALS

731.01 Ethylene Propylene Dimonomer (EPDM)

The elastomer material (rubber) shall be Ethylene Propylene Dimonomer (EPDM), as specified in ASTM D 2000, with the following properties:

1. Minimum Tensile Strength (original) — 2000 psi
   (ASTM D 412)
2. Shore Hardness (Durometer) — 60 +/- 5 Shore A
   (ASTM D 412)
3. Modulus at 400 Percent Elongation — 900 psi
   (ASTM D 412)
4. Maximum Compression Set — 25 Percent (max.)
   (ASTM D 395 Method B, Maximum Percent 22 Hr. at 158 Degrees F)
5. Tear Resistance — 4,800 lb/ft (min.)
   (ASTM D 624; DIE B Min. 150 lb/in)
6. Minimum Elongation — 350 Percent (min.)
   (ASTM D 412, Die C)
7. Ozone Resistance — No Cracks
   (ASTM D 1171 Exposure Method B; 70h Bent Loop at 100 Degrees F; 50pphm)
8. Water Absorption — 5 % (max.)
   (ASTM D 471 Method B; 70h at 212 Degrees F.; Volume Change +5 Percent)
9. Heat Resistance
   (ASTM D 573; 96 hours at 212 Degrees F)

Change in Hardness	+10 (max.)
Change in Tensile Strength	25% reduction (max)
Change in Ultimate Elongation	25% reduction (max)

10. Color — Black

731.02 Ultra High Molecular Weight - Polyethylene (UHMW-PE)

UHMW-PE shall be made of 100% virgin material and black in color. UHMW-PE shall be 2.5% UV stabilized and meet the minimum standards as outlined in Table 1:

TABLE 1

Property	**Test Method**	**English Value**	**English Unit**
Density	ASTM D-792	57-59	lbs/ft^3
Molecular Weight	Viscosimetric	4,200,000	g/mol
Yield Strength	ASTM D-638	3050	psi
Ultimate Strength	ASTM D-638	5800	psi
Elongation at Break	ASTM D-638	250	%
Hardness	ASTM D-2240	63-68	Type D
IZOD Impact Strength	ASTM D-4020	34	$ft\text{-}lbs/in^2$
Tensile Impact	DIN 53448	1050	$ft\text{-}lbs/in^2$
Sand Wheel Wear	ASTM G-65	90	AR-01
Static Friction	ASTM D-1894	0.15	Unitless
Dynamic Friction	ASTM D-184	0.12	Unitless
Coefficient of Thermal Exp.	ASTM D-696	0.00011	$°F^{-1}$
Melting Point	ASTM D-3417	278-289	°F
Water Absorption	ASTM D-570	0	%

SPECIAL PROVISION
SECTION 815
BUILDINGS
(Privy Building)

815.01 Description

The work shall consist of providing and installing a precast concrete transportable Privy Building in accordance with these specifications and as shown on the Plans.

815.02 General

The Privy Building will be designed by a professional engineer licensed in the State of Maine and shall be designed to the wind and snow loads prevalent in the Lubec, Maine region in accordance with the latest edition of the International Building Code.

815.03 Standards and References

A. ACI 318-19: Building Code Requirements for Structural Concrete and Commentary
B. ASCE/SEI 7-22: Minimum Design Loads for Buildings and Other Structures
C. IBC 2015: International Building Code
D. PCI Design Handbook, 7th Edition
E. CRSI, Manual of Standard Practice
F. UL-752 (Test Method level 5) for bullet resistance certified by a military approved laboratory.
G. Current ADA Standards for Accessible Design
H. International Plumbing Code (IPC)
I. National Electrical Code (NEC)
J. USDA Forest Service Publication: In-depth Design and Maintenance Manual for Vault Toilets (Incorporating FAN™ Natural Ventilation System)

815.04 Design Requirements

A. Design case to be selected to correspond to the design criteria indicated in the aforementioned codes for the geographical location of the project or as specified.
    a. Case 1: Typical
        i. Seismic Design Category ‘C’, Risk Design Category II
        ii. Roof Live Load (Snow) – 30 PSF
        iii. Floor Live Load – 150 PSF
        iv. Wind Loading* – 130 MPH
            1. *Design loads relate to precast components only, not accessories (i.e. doors, windows, vents, etc.)
    b. Case 2: Heavy
        i. Seismic Design Category ‘D’, Risk Design Category III
        ii. Roof Live Load (Snow) – 150 PSF
        iii. Floor Live Load – 150 PSF
        iv. Standard Wind Loading* – 165 MPH
            1. *Design loads relate to precast components only, not accessories (i.e. doors, windows, vents, etc.)
B. Roof: Gabled style roof, and Flat Pitched roof panels shall overhang on all sides to prevent water intrusion. On Gable roof, the pitch of the roof shall be 3/12. The roof finish standard is Fine Broom finish.

C. Roof , floor, and wall panels must each be produced as single component monolithic panels. No floor or vertical wall joints will be allowed, except at perimeter interfaces, corners, and partitions. Wall panels shall be set on top of floor panel.
D. Wall-to-Floor interior surface joints along the perimeter of each restroom and partitions (if precast) must contain the locked-in, easy clean-out radius coving. The 3/8" (recessed) x 2" cove must be continuous around the interior of the restroom and along the sides of any precast partitions. Apply 5,000 PSI (minimum) non-shrink, non-metallic grout to the cove, finishing the grout to form a flush 1" minimum radius.
E. Building Dimensions: Exterior: 11'-11" x 13'-9" x 9'-5 ½" (tallest point) Interior: 6'-10" x 13'-3" x height (varies)

815.05 Materials

A. Concrete: Steel-reinforced, 5000 PSI minimum 28-day compressive strength, air- entrained per ASTM C260.
B. Reinforcing Steel: ASTM A615, grade 60 unless otherwise specified. Welded wire fabric: ASTM 185, Grade 65
C. Post-tensioning: Roof and floor panels shall be post-tensioned if required by design.
D. Sealant: All joints between panels shall be caulked along the exterior and interior surface of the joints. Exterior caulk reveals to be 3/8"x 3/4" deep so that sides of the joint are parallel for proper caulk adhesion. Back of the joint to be taped with bond breaking tape to ensure adhesion of caulk to parallel sides of joint and not the back.
E. Panel Connections: All panels shall be securely fastened together utilizing cast-in steel embeds and welding. All welding shall be done in conformance with AWS, Structural Welding Code latest revision. Steel is to be of structural quality, hot-rolled carbon complying with ASTM A304. No floating-in of connection plates shall be allowed.
F. Stain and Paint:
    a. Interior concrete surfaces (toilet rooms):
        i. Interior floors will be a two component, water based polyamide epoxy floor coating (gray, unless otherwise specified).
        ii. Interior walls and ceilings will be a pre-catalyzed water based epoxy.
    b. Exterior concrete surfaces
        i. Exterior slab top surface will be a two component, polyamide epoxy floor coating (gray, unless otherwise specified).
        ii. Exterior walls and roof will be a water-based acrylic, water-repellent penetrating stain.
        iii. Clear Acrylic anti-graffiti sealer.

815.06 Accessories and Fixtures

A. Doors and Frames: Shall comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI-100) and as herein specified. All door and frame galvanizing shall be in accordance with ASTM A924 and A653, minimum coating thickness shall be A60.
    a. The buildings shall be equipped with 3'-0" x 6'-8" x 1-3/4" (restroom entry doors) thick insulated, 18 gauge, metal doors with 16-gauge frames (to meet wall thickness). Doors shall have a flush top cap. Doors and frames shall be factory bonderized and painted with one coat of rust-inhibitive primer and one finish-coat of enamel paint.
    b. Doors and frames shall meet SDI standard Level 2, 1¾" heavy duty.
B. Door Hardware:
    a. Cylindrical Lock: Commercial grade, shall meet requirements of ANSI A156.2, series 4000, UL listed and ADA approved. Zinc dichromate chassis with cast solid zinc levers to resist

corrosion. Furnish locks with 6-pin solid brass keyway. Exterior locks and unlocks by key, interior push button lock, released when lever is turned. Manufacturer shall provide a limited lifetime warranty on this product.

b. Hinges: Self-Closing (spring) Hinges. Shall comply with ANSI A156.17 Grade 1 self closing hinges (3 per door). Hinges shall be Stainless Steel Grade 304 (ANSI K81071F) US32D brushed satin finish. Manufacturer shall provide a lifetime limited warranty.
c. Door Sweep: Nylon brush door sweep, ANSI/BHMA certified. Sweeps shall have an integral drip edge to repel water from base of door. Sweeps shall be approved for UL 10C positive pressure and suitable for use with fire doors up to three hours.
d. Drip Cap: Aluminum drip cap with minimum projection of 2 ½" shall be furnished.

C. Door Stop: ANSI 156.16 approved wall mounted door stop with keeper constructed of a corrosion resistant cast brass material. Finish US26D (626) brushed chrome finish. Wall Vent: Wall vents will be extruded aluminum, minimum thickness of .125", 6063-T5 alloy. Vents to be supplied with aluminum mesh insect screen and 204-R1 clear anodized finish.
D. Signs: Signs to have braille, characters, and pictograms to meet ADA requirements.
E. Windows: Frames shall be constructed from stainless steel. Window glazing will be ¼" translucent Lexan.
F. Grab Bars: Stainless steel tubing, 18 gauge, type 304 stainless steel, mounted 1-1/2 inches from wall.
G. Toilet Paper Dispenser: Dispenser will be constructed of 3/16" to 1/4" thick 304 stainless steel. Dispenser will be capable of holding three (3) standard rolls of toilet paper.
H. Plumbing: Waterless Toilet: ADA compliant, 18 gauge type 304 stainless steel riser with seat cover.
I. Vault Cleanout Cover: Aluminum hatch, rated for a 300 psf pedestrian load. Cover to be hinged with a staple for padlock and a hold open arm to prevent closing. A gasket will be provided around the perimeter of the lid to provide an airtight seal.
J. Vent Stack: Vent stack(s) to be 12" (nominal) diameter High-Density Polyethylene Pipe.
K. Vault Liner: Inside of vault tank(s) to be lined with a water based acrylic coating (Conseal CS-55) or equal, applied per manufacturers specifications.

815.07 Finishes

A. Interior of Building: Smooth form finish on all interior panel surfaces unless exterior finish is produced using a form liner, then smooth hand-troweled finish.
B. Exterior of Building (standard): Fine broom finish, painted.
C. Exterior of Building (Option #1): Formliner precast concrete brick finish:
D. Exterior of Building (Option #2): Additional finishes for walls and roof are available can vary by local producer.

815.08 Site Preparation

A. Stone for the base of the building shall be 3/8" or smaller and have a minimum 4" thickness on top of subgrade that has a minimum bearing capacity of 1,500 pounds per square foot. A course of fines is to be placed ontop of the stone for final grading and compaction purposes as needed. Elevations and levelness of the prepared stone base shall be within ¼" in all directions.
B. Provide positive drainage around the building.
C. Provide Butyl Sealant between the vault and building floor.
D. Provide a level, unobstructed area large enough for a crane and a tractor-trailer to park adjacent to the building location. Crane must be able to place outriggers within 5'-0" of edge of building location; truck and crane must be able to get side-by-side under their own power. No overhead lines may be within 75' radius of center of the building location. Firm roadbed with turns that allow 65' lowbed

tractor-trailer must be provided directly to site. No building shall be placed closer than 2'-0" to an existing structure unless specifically permitted.

E. Comply with all applicable OSHA standards for excavation. No excavation will be left open without proper shielding of fencing.
F. Excavate for the placement and installation of the toilet vault tank(s) to a depth that will allow the structure site to be free draining. After installation is complete, the depth of the tank excavation should allow for the stone base and leveling course beneath the toilet vault. Backfill around the structure(s). Use excavated material suitable for backfilling or stone fill. Rocks or stone larger than 6 inches in maximum dimension shall be discarded from excavated material if used for backfilling.
G. Lift thickness for backfill material – loose lifts of 8 inches and 6 inches for vibratory and static compaction respectively.
H. Use compaction equipment suited to achieve specified compaction for subgrade, stone base, and backfill (drum rollers – static and vibratory, rammer, plate tamper – static and vibratory, etc.). Vibrating equipment is used for compaction of course materials.
I. Intended final grade is flush with the top of the front floor slab. Allow for placement of topsoil to reach that grade (if required). Grade backfill away from structure for positive drainage.
J. Finish floor elevation will be 4-6 inches above natural grade measured at the front (entrance) of the exterior slab unless otherwise approved by the customer.

815.09 Submittals

A. Engineering calculations and drawings prepared and sealed by a professional engineer, licensed to practice in the state where the project is located, shall be submitted for approval.
B. Manufacturers' product literature shall be provided for all plumbing, electrical and miscellaneous installed fixtures demonstrating compliance with these specifications.

815.10 Method of Measurement

Privy Building will be measured by the lump sum.

815.11 Basis of Payment

Privy Building will be paid for at the Contract lump sum price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item	Pay Unit
815.50 Privy Building	Lump Sum

SPECIAL PROVISION
SECTION 832
SURVEYING AND MONITORING
(Survey Monitoring Point)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following modifications:

Add the following:

832.01 Description

This work shall consist of the installation and use of settlement plates required for monitoring the settlement of the rubble mound breakwater starting from the completion of the construction of the rubble mound breakwater stone layers up to the installation of the concrete roadway. The purpose for installing and monitoring the settlement plates on a regular basis as the fill (rock) is placed is to observe the settlement of the underlying compressible soils, compare actual to prior predictions, and to determine when sufficient settlement of the native soils has occurred so that the roadway base may can be installed. The rate of settlement as well as the total settlement are key issues being monitored to assist with permitting the continuation of embankment placement and facilitate construction.

The location of each settlement plate shall constitute a survey monitoring point for the rubble mound breakwater.

Preconstruction surveys, movement monitoring, and postconstruction surveys shall be performed by the Contractor. The settlement plates shall be installed at the locations indicated on the Contract Drawings.

832.02 Contractor Responsibilities

The Contractor is responsible for the following work:

1. Install, maintain, and subsequently abandon settlement plates as indicated on the Contract Documents.
2. Obtain a base line reading as the embankment construction is on-going and settlement points installed.
3. Periodically monitor settlement plates during and following placement of embankment materials and provide monitoring data to the Resident Engineer. Monitor until settlement has stabilized. Roadway base may proceed after settlement has stabilized, as determined by the Resident Engineer.

832.03 References

The following reference standards apply:

1. American Society for Testing Materials (ASTM)
    a. ASTM A36 Carbon Structural Steel
    b. ASTM A53 Pipe, Steel, Black and Hot-Dipped, Galvanized Welded and Seamless
    c. ASTM C109 Compressive Strength of Hydraulic Cement Mortars Using 2 in Cube Specimens
    d. ASTM C131 Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

e. ASTM C827 Early Volume Change of Cementitious Mixtures
f. ASTM D1785 Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120

832.04 Quality Control

The work shall be performed in compliance with the following:

1. Pre-construction, construction phase, and post-construction condition surveys shall be conducted by a Professional Surveyor registered in the State of Maine obtained by the Contractor.
2. The Contractor shall engage qualified technicians with at least 5 years of previous experience in the installation of settlement plates. Include a qualified Geotechnical Engineer, registered in the State of Maine, with at least 3 years of direct field experience in the installation and monitoring of settlement plates to supervise and be responsible for the installation. Provide the Resident Engineer with a description of the applicable experience of such personnel. Approval of the personnel must be received before commencing with the installation.
3. Responsibilities of the Contractor's Geotechnical Engineer include, but are not limited to, the following: prepare detailed step-by-step procedures and installation schedules for the settlement plates; review and sign all data submittals; be on site and supervise at least the first 2 installations of settlement plates; and conduct at least the first 2 activities of each of the following tasks for settlement plates; pre-installation acceptance test, post-installation acceptance tests, initial reading data collection, reduction, processing, plotting, and reporting.
4. The contractor shall include a qualified person who will be full time on-site during the installation and initial readings of the geotechnical instrumentation program. The superintendent must have at least 5 years of direct field experience in installation and monitoring of the settlement plate installation and have supervised instrumentation programs of similar magnitude and in similar subsurface conditions. The superintendent must supervise all settlement plate installations, pre-installation acceptance tests, post-installation acceptance tests, initial readings and data collection, reduction, processing, plotting, and reporting after the Geotechnical Instrumentation Engineer has performed the first of these 2 tasks as specified above.
5. Notify the Resident Engineer at least 24 hours before installing the settlement plates.
6. Provide and install all settlement plates as shown on the Contract Drawings or as directed by the Resident Engineer. Read installed settlement plates at defined time intervals and calculate elevations, changes from initial elevations, lateral displacements, and vertical displacements.
7. Show survey benchmarks on all plan submittals and baselines in all data submittals. Determine proposed location of benchmarks to permit surveying with sight distances less than 200 feet. Provide survey control consisting of precise field measurements as specified, by the professional land surveyor.
8. Before the start of construction establish benchmarks for use during construction. Establish the elevation of benchmarks by running level circuits started and closed at the specified existing benchmarks. Establish turning points on solid objects during leveling so that foresight and back-sight distances are approximately equal. Use well defined surface points of solid objects or masonry nails driven into concrete or pavement for turning points. Do not exceed sight distances of 200 feet.
9. Establish an error of closure less than 0.1 inch for level circuit closures. If an error of closure greater than 0.1 inch is achieved for a level circuit, resurvey the circuit.
10. Check elevations of bench marks every month or when directed by the Resident Engineer. Install deep benchmarks as required based on the results of monitoring. Prove the established elevations of benchmarks by obtaining consistent results on at least 3 separate and completed

level circuits. If an inconsistent elevation for a benchmark results, resurvey the level circuit until correct and repeatable elevations are obtained.

11. Establish the initial elevation of settlement platforms to 0.1 inch. Establish the initial coordinates of the settlement plate installation to 0.1 inch.
12. When the materials for the monitoring system are received at the site, perform pre-installation acceptance inspections to ensure the materials are adequate before installation. Include the following relevant items in the pre-installation acceptance tests:
    a. By comparing with procurement document, check that the dimensions, materials, etc. are correct.
    b. Verify all components fit together in the correct configuration.
    c. Check all components for signs of damage in transit.
    d. Check that quantities received correspond to quantities ordered.

832.05 Materials

Each settlement plate device shall consist of the following:

a. A 0.25-inch-thick steel plate, 36-inch x 36-inch square in size, placed upon a minimum of 6 inch thick smoothly graded and compacted crushed stone leveling course, and with a 1-1/2 diameter, schedule 40, steel riser pipe that is welded in position perpendicular to the plate at its center.
b. Sections of 1-1/2-inch diameter standard threaded galvanized steel riser pipe welded to the base plate and extended progressively upward at a vertical plumbness as rock is placed. A 1-1/2-inch standard galvanized steel cap shall be attached to the threaded inner riser pipe as a survey reference member, and progressively removed and extended upward as each new section of riser pipe and protective floating casing are added due to rock placement.
c. Sections of 3-½ inch diameter steel pipe sleeve extending minimum 2 feet, with coupled or flush-threaded joints. Total length as required.

832.06 Submittals

The Contractor shall submit the following submittals:

1. Detailed step-by-step procedure and installation schedule for the settlement plates prepared by the Contractor's Geotechnical Engineer.
2. As-built location plan of the surveyed settlement plate locations.
3. At least 1 week before construction activities, submit to the Resident Engineer for review, pre-construction inspection reports and surveys.
4. Report the results of the settlement plate monitoring data to the Resident Engineer within 24 hours after those results are obtained.
5. Reviewed and signed data submittals by the Contractor's Geotechnical Engineer.
6. Manufacturer's certifications, material specifications, installation, and maintenance instructions, working drawings, catalog cuts, and other data pertinent to the work of this section.
7. The contractor shall have a plan in place for replacement of damaged monitoring equipment, such that any damaged component can be replaced immediately.

832.07 Installation and Monitoring

The Contractor shall perform the work for the monitoring system as follows:

1. During pre-installation acceptance testing of the settlement plates complete a pre-installation acceptance test record form.
2. Perform and report the results of pre-installation and post-installation acceptance tests to the Resident Engineer. Make initial readings of all installed settlement plate monitoring systems. Take all initial readings jointly with the Resident Engineer. Take additional readings if the Resident Engineer feels the instrumentation is not indicating results correctly.
3. Maintain access to the settlement plate monitoring systems. Temporary storage or interruption of certain portions of the work may be required to enable access to monitor and take readings. Perform such monitoring and measurement in a manner not to delay the work unnecessarily. Include time for such monitoring and measuring in the schedule.
4. Maintain all settlement plates in place except those that may be removed or abandoned, as directed by the Resident Engineer, because of interference with construction. When directed by the Resident Engineer, remove and dispose of those portions of settlement plates including terminal boxes and covers that are readily accessible. Grout all remaining open portions of the casings and restore areas to the Resident Engineer's satisfaction. Provide cement grout consisting of Type III Portland cement and water. Do not demolish, abandon, remove, or dispose of instrumentation without prior approval of the Resident Engineer.
5. Maintain instrumentation throughout the Contract. This includes, but is not limited to, the raising and lowering of settlement plates risers as required to enable access to and measurement of the monitoring instruments from the top of the fill (rock) or from the side/toe of the embankment. Barricade and clearly flag locations where settlement platform risers protrude through the fill or extend out beyond the toe of the fill with a color flag using 2-inch by 4-inch wood risers and horizontals or other methods approved by the Resident Engineer. Place the barricades all around and at least 2 feet from the settlement platform risers.
6. Within 2 days of installing each settlement plate submit an installation record sheet including appropriate items from the following list:
    a. Project name
    b. Contract name and number
    c. Settlement plate location number
    d. Planned location in horizontal position and elevation
    e. Planned orientation
    f. Planned lengths and volumes of backfill (rock)
    g. Personnel responsible for installation
    h. Plant and equipment used including diameter and depth of any casing used
    i. Date and time of start and completion
    j. Spaces on record sheet for necessary measurements or readings required at hold points during installation to ensure all previous steps have been followed correctly including instrument readings made during installation.
    k. As-built location in horizontal position, top elevation, and bottom elevation
    l. As-built orientation
    m. As-built lengths and volumes of various backfill materials placed in the instrumentation boreholes
    n. Result of post-installation acceptance test
    o. Weather conditions at the time of installation
    p. Notes of importance on the installation including problems encountered, delays, unusual features of the installation, and details of events that may have a bearing on instrument behavior.
7. Obtain initial readings for all settlement plates before the embankment fill placement is performed and submit reports within a week after each instrument's installation. Provide initial

readings by conducting at least 3 separate and complete sets of readings on each settlement plate that yield consistent results.

8. Protect from damage due to construction operations, weather, traffic, and vandalism, survey reference and control points, instruments and appurtenances fixtures, instrument leads, connections, and other components of the instrumentation system. Replace all monitoring units that are damaged or, in the opinion of the Resident Engineer, are not functioning properly or consistently. Replace such equipment at no additional cost to the Department.
9. Protect and maintain instrument systems. Drain or flush protective roadway boxes or standpipes, repair damaged or missing components of systems, and raise and lower instrumentation, as necessary, during general excavation and fill placement and removal. Repair or replace damaged or missing instrumentation within 72 hours at no additional cost to the Department when notified by the Resident Engineer.
10. Restore all surfaces affected by the installation of instruments to the original condition before completion of the work.

Assembly requirements for the settlement plates are as follows:

1. Settlement plates shall be furnished and installed by the Contractor at locations indicated in the Contract Drawings.
2. Benchmarks registering their coordinate locations to the nearest feet and elevations to the nearest foot with two decimal points elevation shall be established in near proximity before the settlement plates are installed.
3. Benchmarks shall be located sufficiently outside of the zone of stress-settlement influence from embankment fill, and other on-going construction activities.
4. The method of determining alignments and elevations, along with the method of preserving control points will be subject to review and approval by the Resident Engineer.
5. Approval shall not relieve the Contractor from the responsibility for the correctness of the survey work by their subconsultant licensed surveyor.
6. Contract Drawing cross-sections shall not be permitted as a means to establishing benchmarks or initial plate elevation readings for vertical or horizontal control.
7. Settlement plates shall be approved by the Resident Engineer.
8. Plate Construction: The first section of the 1-1/2-inch threaded riser pipe shall be firmly welded to the flat settlement plate.
9. A 1-1/2-inch galvanized steel cap shall be placed on the top of the riser pipe, and subsequently transferred to each new riser section as progressive increments of pipe are attached to accommodate increased embankment fill.
10. The distance from the top of plate to the top of pipe shall be accurately measured and recorded by the Contractor’s surveyor.

The settlement plates shall be installed as follows:

1. Initially install settlement plates prior to the placement of the breakwater underlayer and armor rock.
2. Prior to placement of the underlayer and armor layers, place a minimum 6-inch-thick crushed stone leveling course upon the core material.
3. Place the 0.25-inch-thick steel plate upon the leveling crushed stone.
4. Ensure that the leveling course extends a minimum of 3-inches in all directions beyond the edges of the 36-inch by 36-inch square steel settlement plate.

5. Position and weld the initial 1-1/2-inch diameter threaded galvanized steel riser pipe perpendicular to the steel settlement plate with a fillet weld as indicated.
6. Place end cap, consisting of 1-1/2-inch standard galvanized steel, at the top of the riser pipe for purposes as a survey reference point.
7. Obtain the first measured readings of the settlement plate and end cap.
8. Place core material as indicated, followed by the underlayer and armor.
9. As soon as breakwater rock depths achieve 2 feet of cover over the steel settlement plate, position a 3-1/2-inch diameter steel sleeve loosely around the smaller diameter riser pipe to isolate and protect the inner pipe for subsequent readings.
10. Fill the inner annulus between steel pipes with sufficient lubricant grease to prevent rust from occurring and resulting in binding of the protective floating casing to the outer sleeve.
11. Progressively add both inner riser pipe and protective floating casing in section increments of 5.0 feet (or other calibrated and measured increments) as rock is continued to be placed, always transferring the end cap to the newest riser pipe top, and always obtaining new elevation readings at each time of extension addition.
12. The Contractor shall notify the Resident Engineer a minimum of one day in advance of installations and immediately upon completing each installation.
13. Provide updated elevation readings at the end of each day's activities to the Resident Engineer.
14. No breakwater underlayer and armor shall be placed around settlement plates until the elevation of the top of the new riser section has been determined by the Contractor's surveyor.
15. The Contractor shall at all times take precautions to prevent damage to settlement plates. In the event settlement plates become damaged or blocked by material entering the hole through failure on the part of the Contractor to use care in his operations, the settlement plates shall be replaced, cleaned out, or reset as required, without additional cost to the Department.
16. Construction Operations:
    a. The Contractor shall observe precautions necessary for protection of settlement plates.
    b. After settlement plate installation has begun, the Contractor shall replace, at their cost, any settlement plate equipment that is damaged or becomes unreliable as a result of their operations. If an instrument is damaged or inoperative due to inadequate protection by the Contractor, repair or replace the damaged or inoperative instrument within 72 hours at no additional cost to the Department. Notify the Resident Engineer at least 24 hours before repairing or replacing a damaged or inoperative instrument. The Resident Engineer will be the sole judge of whether repair or replacement is required. The Resident Engineer may impose a work stoppage in the vicinity of the damaged or inoperative settlement plate until it is again operational at no additional cost to the Department.

Settlement readings shall be taken as follows:

1. Once each settlement plate is installed at its specific location, Contractor shall prepare a location-specific predicted time-rate of settlement curve based upon the actual breakwater at each settlement plate location.
2. Contractor's surveyor shall obtain settlement readings twice each week during rock placement of the breakwater, and twice weekly thereafter.
3. Contractor's surveyor may adjust frequency to obtain settlement readings after all embankment components have achieved finish grade elevation, once approved by the resident.
4. The Resident Engineer will evaluate the settlement readings as they are taken to compare to the site-specific predicted settlement curves in order to determine whether the settlement rate

has slowed to an acceptable rate such that post-construction settlement would be within predicted and tolerable limits.

5. Readings shall continue at this frequency until the Resident Engineer advises Contractor that sufficient time has occurred for settlement compared to settlement curves, and further roadway construction may proceed.
6. At completion of the expected settlement and prior to roadway construction, movement of any settlement plate that is observed shall be less than total settlement threshold level shown in Table 2. is to immediately trigger a mandatory evaluation by the Contractor and the Engineer of the current construction methodology.
7. The Contractor shall plan for a minimum construction delay as indicated following completion of fill being placed to finished grade elevation for the rate of settlement to dissipate.
8. Once the determination is made that the rate of settlement has decreased, then the Contractor will be advised that installation of the roadway pavements may commence.
9. Settlement readings at settlement plates shall subsequently continue at a frequency of once every month for a period of six additional months, or until advised by the Resident Engineer to suspend.
10. The Resident Engineer will confirm when settlement readings may be discontinued, and specific settlement plates may be respectively abandoned.
11. Breakwater settlement points shall be monitored twice weekly during pile installation operations. It is expected that pile installation will be conducted simultaneously with construction of the breakwater.

Table 1: Minimum Monitoring Frequency

	During Subgrade Preparation	During Construction of the Breakwater and Roadway	Post Roadway Construction	During Pile Installation within 100 ft Radius of SP
Settlement Plates (SP)	N/A	Twice weekly until Conditions Stabilize	Monthly for 6 Months	Twice weekly until Conditions Stabilize

Note: N/A= Not Applicable

Table 2: Response Levels for Settlement Plate Monitoring

	Alert Threshold Values	Upset Limiting Levels
Settlement Plates (other than settlement of the breakwater during construction)	1”	1.5”

Settlement plates shall be abandoned upon completion of monitoring as follows:

1. Upon completion of monitoring, which are at settlement values lower than the values indicated in Table 2 and when advised by the Resident Engineer, abandon all settlement plates in-place. Cut off and remove all steel pipe to a minimum of 3 feet below finished grade and then fill with a cement-based grout into both the inner steel riser pipe and the outer steel protective sleeve until completely filled.
2. For post roadway construction, settlement monitoring may be transferred to markers on the roadway.

832.08 Method of Measurement

Survey Monitoring Point (settlement plates) installed as prescribed by this specification will be measured by each settlement plate complete and installed in place.

832.09 Basis of Payment

Payment will be full compensation at the contract unit price for all labor, materials, and equipment required to install the Survey Monitoring Points (settlement plates). This shall include installation of the settlement plate unit including the leveling base, steel plate, flanges, interior steel pipe, couplings, steel casing, and cap. Grouting upon completion of monitoring shall not be paid for separately but rather shall be incidental in the unit price per installed settlement plate.

Payment for performing the actual surveying/monitoring as prescribed herein shall not be paid for under this Pay Item, but rather shall be incidental to the Contract.

Payment will be made under:

Pay Item		Pay Unit
832.05	Survey Monitoring Point	Each

SPECIAL PROVISION
SECTION 853
MARITIME
(Boat Ramp)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following modifications:

853.01 Description

The work shall consist of providing, delivering, and installing precast concrete boat ramp planks and toe at the shoreline of the Lubec Breakwater project site in accordance with the Plans, Specifications, these Special Provisions or as directed by the Resident.

853.02 General

The precast boat ramp planks will comprise the boat launch that extends into Johnson Bay from an upland elevation above the Mean Higher High Water mark (MHHW) to a few feet below the Mean Lower Low Water mark (MLLW) as illustrated in elevations presented in the drawing set.

This work shall comply with MaineDOT Standard Specification, Section 534, Precast Structural Concrete, for materials, fabrication, handling, and installation of precast concrete products.

853.03 Materials

Precast elements shall meet the requirements of the following Standard Specification Subsection, except as noted otherwise in this specification:

Structural Precast Concrete Units	712.061

All concrete required to construct the boat ramp shall meet the requirements of Class LP concrete according to the Standard Specifications testing Method C. All reinforcing steel shall be epoxy coated ASTM A615 grade 60. All steel hardware shall be ASTM A36 plain steel that is galvanized per ASTM 153.

The planks shall be connected using ASTM A307 ½” diameter galvanized bolts with hex nut and two washers. All hardware shall be galvanized.

853.04 Drawings

Prepare shop detail, erection and other necessary Working Drawings in accordance with Standard Specification Section 105.7, Working Drawings. The Department will review the drawings in accordance with the applicable requirements of Section 105.7, Working Drawings. Changes and revisions to the reviewed Working Drawings shall include the following minimum details:

Fully dimensioned views showing the geometry of the units, including all projections, recesses, notches, openings, block outs, keyways and chamfers.

Details and bending schedules of reinforcing steel including the size, spacing, and location. Reinforcing provided under lifting devices shall be shown in detail.

Details and locations of all items to be embedded.

Total weight of each unit.

Concrete mix designs shall be part of the Working Drawing submittal. Include aggregate specific gravity, absorption, percent fracture, fineness modulus and gradation as part of the mix design. Provide the mix design calculations demonstrating how the batch weights, water-cement ratio and admixture dosage rate were determined.

The Contractor shall submit the following items for review by the Department, at least ten Working Days prior to production:

A. The name and location of the manufacturer
B. Method of manufacture and material certificates
C. Description of method of handling, storing, transporting, and erecting the units

853.08 Method of Measurement

Boat Ramp will be measured by the lump sum and shall include the fabrication, delivery, on-site storage, and installation in accordance with the Contract documents.

853.09 Basis of Payment

Boat Ramp will be paid for at the Contract lump sum price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item	Pay Unit
853.15 Boat Ramp	Lump Sum

SPECIAL PROVISION
SECTION 853
MARITIME
(Life Rings)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, March 2020, with the following modifications:

853.01 Description

The work shall consist of providing and installing manufactured Life Ring Assemblies complete with their stanchions and brackets as shown on the plans. Each Life Ring Assembly will be anchored to the concrete curbs as shown on the drawings.

853.02 General

The Life Ring Assemblies with their associated stanchions and brackets shall have the following characteristics:

Life Rings:

Color: Orange with white reflective bands (four bands, minimum)
Size: 28 to 30-inch outside diameter; 18 to 20-inch inside diameter.
Thickness: 4 inches
Material: High Density Polyurethane hard shell, filled w/ high density polyurethane closed-cell foam
Rope: Nylon material of 3/8-inch diameter; white in color; of 100-ft length.

Brackets:

Material: Stainless steel brackets which secure the life ring in place.

Stanchions:

Material: Stainless steel stanchions with anchor plates that contain pre-drilled holes for anchor rods and attachment to the concrete curbs. Anchor rods shall be stainless steel and epoxied in place with a polyurethane construction adhesive.

853.03 Submittals

The Contractor shall submit manufacturer's cut sheets for review and approval.

853.08 Method of Measurement

Life Ring Assemblies will be measured by each unit installed and accepted.

853.09 Basis of Payment

Life Ring Assemblies will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. The unit price reflects purchase of the life ring assembly and installation of the stanchion anchorage via anchor rods into the concrete curb.

Payment will be made under:

Pay Item		Pay Unit
853.50	Life Ring Assemblies	Each

November 07, 2024
Supersedes January 19, 2024

2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
http://maine.gov/mdot/contractors/publications/standarddetail/

Detail #	Description	Revision Date
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing 3-Bar	2/11/2021
507(23)	Steel Approach Railing 3-Bar	2/11/2021
507(27)	Steel Approach Railing	2/11/2021
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021
526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	3/17/2023
526(38)	Concrete Transition Barrier	3/17/2023
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023

603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Standard Bridge Transition – Type “1A”	2/11/2021
608(02)	Detectable Warnings	6/10/2021
609(09)	Precast Concrete Vertical Curb	2/11/2021
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022
643(11)	ATCC Cabinet	12/14/2020
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(26)	Blended Transition	1/19/2024
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017
802(05)	Roadway Culvert End Slope Treatment	11/01/2024

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2020)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Construction Easement revise this definition by removing it in its entirety and replace with; **"A right acquired by the Department for a specific use of private property outside of the established Right-of-Way. Examples include but are not limited to Drainage Easements, Construction and Maintenance Easements, and Slope Easements. Construction Easement areas, including Temporary Construction Limits and Temporary Road Limits, outside of the Right-of-Way remain private property. No use other than to access and perform the specified work activity is permitted without written permission of the owner."**

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding "**Juneteenth**" between 'Memorial Day' and 'Independence Day'.

Plans Revise this paragraph by removing "**Standard Details, Supplemental Standard Details**" from the first sentence.

Project Limits Revise this definition by removing it in its entirety and replacing it with: **"Areas within the Right-of-Way, Construction Easements, or Temporary Construction Limits shown on the Plans or otherwise indicated in the Contract. If no Project Limits are indicated in the Contract, the Project Limits shall be determined by the Department. For a related Maine statute, see 23 MRSA § 653. "**

Right-Of-Way Revise this definition by removing it in its entirety and replacing it with: **"The area of land, property, or interest therein, acquired for or devoted to the Project or other purposes. Portions of the Right-of-Way may be used for storage of materials and equipment and the location of engineering facilities, subject to written approval by the Department."**

Amend this Section by adding the following two definitions (that replace Construction Limit Line);

Temporary Construction Limits The area within which the Contractor may access and perform the Physical Work and outside of which Work may not be performed without written authorization by the property owner.

Temporary Road Limits The area within which the Contractor may construct and maintain a temporary detour for maintenance of traffic.

SECTION 102
BIDDING

102.11 Bid Responsiveness Revise the paragraph that states
"The Bid is not signed by a duly authorized representative of the Bidder." So that it reads:

"**The Bid is not signed by a duly authorized representative of the Bidder.**
- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form**."

SECTION 103
AWARD AND CONTRACTING

103.3.1 Qualification Requirement for Award Revise this subsection so that it reads:

"**103.3.1 Qualification Requirement for Award If the Notice to Contractors lists a Prequalification requirement, the Apparent Successful Bidder must successfully complete the Prequalification process as a condition of Award. The Apparent Successful Bidder who does not already hold an Annual Prequalification shall have 21 days to provide the Department with their Prequal documents or the Department may move on to the next low bidder."**

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise this subsection by removing it in its entirety and replace with the new subsection:

"104.2.1 Furnishing of Property Rights The Department will secure all necessary rights to real property within the Project Limits shown on the Right-of-Way Plans that are provided with the Bid Documents. For related provisions, see Sections 104.3.2 – Furnishing of Other Property Rights, Licenses and Permits and 105.4.5 - Maintenance of Existing Structures. For related definitions, see Construction Easements and Right-of-Way."

104.3.2 Furnishing of Other Property Rights, Licenses and Permits Revise this subsection by replacing "104.2.1 Furnishing of Right-of-Way" with "**104.2.1 Furnishing of Property Rights".**

SECTION 105
GENERAL SCOPE OF WORK

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word "handicap" in two places with the word "disability" so it now reads:

"2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability."

SECTION 106
QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with "Acceptance of Hot Mix Asphalt Pavement will be based" with:

"Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item."

Revise Subsection "B" by removing it and replacing it with:

"B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.

The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D."

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

"Method B: PF = [70 + (Quality Level * 0.33)] * 0.01"

106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

"**For a related provision regarding obligations regarding plantings, see section 621.36 – Maintenance Period.** "

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding "**Juneteenth**" between 'Patriot's Day' and 'the Friday after Thanksgiving'.

SECTION 108
PAYMENT

108.2.3 Mobilization Payments Replace Standard Specification 108.2.3 – Mobilization Payments with the following:

"**108.2.3 Mobilization Payments "Mobilization" includes the mobilization and demobilization of all resources as many times as necessary during the Work.**

Percent Mobilization Bid will be determined by taking the amount Bid for Mobilization and dividing by the Total Contract Amount less Mobilization. Mob/(Total Contract – Mob).

Payment will be made at the following intervals:

% Mobilization Bid	% Mobilization Paid at Contract Award	% Mobilization Paid after the Department determines 50% of the work is Complete	% Mobilization Paid at Final Acceptance
10% or less	50%	50%	
More than 10% to 15%	33%	33%	34%
More than15% to 20%	25%	25%	50%
More than 20% to 30%	15%	15%	70%
Greater than 30%	10%	10%	80%

108.3 Retainage Revise the third paragraph of this section so that it reads:

"Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or $100,000, whichever is less, as it deems desirable and prudent."

108.4.1 Price Adjustment for Hot Mix Asphalt Revise this section by removing it in its entirety and replacing it with the following:

"108.4.1 Price Adjustment for Hot Mix Asphalt: For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.

Item 403.102	**Hot Mix Asphalt – Special Areas**
Item 403.207	**Hot Mix Asphalt - 19 mm**
Item 403.2071	**Hot Mix Asphalt - 19 mm (Polymer Modified)**
Item 403.2072	**Hot Mix Asphalt - 19 mm (Asphalt Rich Base)**
Item 403.208	**Hot Mix Asphalt - 12.5 mm**
Item 403.2081	**Hot Mix Asphalt - 12.5 mm (Polymer Modified)**
Item 403.2084	**Hot Mix Asphalt - 12.5 mm (Highly Modified HiMAP)**
Item 403.209	**Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)**
Item 403.210	**Hot Mix Asphalt - 9.5 mm**
Item 403.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 403.2104	**Hot Mix Asphalt - 9.5 mm (Thin Lift Surface Treatment)**
Item 403.21041	**Hot Mix Asphalt - 9.5 mm (Polymer Modified Thin Lift Surface Treatment)**
Item 403.211	**Hot Mix Asphalt – Shim**
Item 403.2111	**Hot Mix Asphalt – Shim (Polymer Modified)**
Item 403.212	**Hot Mix Asphalt - 4.75 mm (Shim)**
Item 403.213	**Hot Mix Asphalt - 12.5 mm (base and intermediate course)**
Item 403.2131	**Hot Mix Asphalt - 12.5 mm (base and intermediate course Polymer Modified)**
Item 403.2132	**Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)**
Item 403.301	**Hot Mix Asphalt (Asphalt Rubber Gap-Graded)**
Item 461.13	**Light Capital Pavement**
Item 461.210	**9.5 mm HMA - Paver Placed Surface**
Item 461.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 461.216	**Hot Mix Asphalt (Shim)**
Item 462.30	**Ultra-Thin Bonded Wearing Course**
Item 462.301	**Polymer Modified Ultra-Thin Bonded Wearing Course**

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.102–6.2%
Item 403.207–5.2%
Item 403.2071–5.2%
Item 403.2072–5.8%
Item 403.208–5.6%
Item 403.2081–5.6%
Item 403.2084 – 6.2%
Item 403.209–6.2%
Item 403.210–6.2%
Item 403.2101–6.2%
Item 403.2104–6.2%
Item 403.21041–6.2%
Item 403.211–6.2%
Item 403.2111–6.2%
Item 403.212–6.8%
Item 403.213–5.6%
Item 403.2131–5.6%
Item 403.2132–6.2%
Item 403.301–6.2%
Item 461.13–6.7%
Item 461.210 – 6.4%
Item 461.2101 – 6.4%
Item 461.216 – 6.7%
Item 462.30–0.0021 tons/SY
Item 462.301–0.0021 tons/SY"

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

110.3.9 Administrative & General Provisions Amend this subsection by adding "**Automobile Liability**" under letter A) Additional Insured to the list of exceptions.

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SECTION 206
STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with "**shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits**."

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with "….provided the maximum allowable…"And replace with: **"….in accordance with the following limits:"**

- **Vertical pay limits:**
  - **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
  - **Below the excavation limits shown in the Bid Documents; whichever is greater.**

- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401
HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:
"Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403."

SECTION 501
FOUNDATION PILES

501.05 Method of Measurement
c. Piles in Place Revise the third paragraph by replacing the "10" with "20" so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor's construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

SECTION 502
STRUCTURAL CONCRETE

502.09 Forms and Falsework Amend this subsection by adding the subsection title "**502.10 Placing Concrete**" after section "D" Removal of Forms and False work" and after the paragraph beginning with "2. Forms and False work, including blocking…". So that a new subsection starts and reads:

"**502.10 Placing Concrete**

A. **General Concrete shall not be placed until forms** …."

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

"**502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of $350, or bid value per cubic yard, whichever is less, shall be used.**

502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: "

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS *

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T-27 & T-11	Stockpile	One set per proposed grading before production. One set every 100 yd^3 (Min. 1 set per month)
Organic Impurities	AASHTO T-21	Stockpile	**Once per fine aggregate per year ****
% Absorption	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T-255	Stockpile	One set per day's production

Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T-152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T-22	On Project	One set per sublot
Compressive Strength	AASHTO T-22 @ 7days	On Project	One set per sublot

* Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.

**** If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month.**

502.18, Method of Measurement, Revise Subsection 'F' by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum**."

502.19, Basis of Payment, Revise the third paragraph by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work."**
(Also see 535.24 and 535.25 for related changes)

SECTION 503
REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
	Bar Size								
Bar Type	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

"**The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.**

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**
- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
  - **Low-carbon Chromium = 100 ksi**
  - **Stainless = 75 ksi**
  - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordancewith the current edition of the AASHTO LRFD Bridge Design Specifications**

When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3."

SECTION 506
SHOP APPLIED PROTECTIVE COATING – STEEL

506.13 Surface Preparation Amend this section by adding this paragraph to the end:

"**Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation**."

SECTION 523
BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with "Anchor rods shall be galvanized…" and replacing with:

"**Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel."**

523.22 Fabrication Amend this subsection by adding the following: "**Elastomeric Bearings shall be fabricated in accordance with AASHTO M251."**

SECTION 526
CONCRETE BARRIER

Amend this section by deleting it in its entirety and replacing it with:

"**526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.**

The types of concrete barrier are designated as follows:

Portable Concrete Barrier Type I Double faced removable barrier in accordance with the Standard Details.

Permanent Concrete Barrier Type II Double faced barrier as shown on the Plans.

Permanent Concrete Barrier Type IIIa Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.
Permanent Concrete Barrier Type IIIb Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Transition Barrier Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.

Permanent Texas Classic Rail Barrier Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.

526.02 Materials

a. Concrete Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. Reinforcing Steel Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.

c. Structural Steel Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel

d. Bolts Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. Connecting Pins for Portable Concrete Barrier Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.

f. Anchor Pins for Portable Concrete Barrier Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.

g. Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.

Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.

526.03 Construction Requirements

Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.

Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.

Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.

Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.

Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.

Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.

Permissible dimensional tolerances for all concrete barriers shall be as follows:

a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.

b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.

c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.

d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.

e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.

<u>526.04 Method of Measurement</u> Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

526.05 Basis of Payment The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	Pay Item	Pay Unit
526.301	Portable Concrete Barrier, Type I	Lump Sum
526.304	Portable Concrete Barrier, Anchored Type I	Lump Sum
526.312	Permanent Concrete Barrier Type II	Lump Sum
526.321	Permanent Concrete Barrier Type IIIa	Lump Sum
526.323	Texas Classic Rail	Lump Sum
526.331	Permanent Concrete Barrier Type IIIb	Lump Sum
526.34	Permanent Concrete Transition Barrier	Each
526.502	Precast Concrete Median Barrier	Lump Sum”

SECTION 527
ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Work Zone Crash Cushions shall be selected from the Department's Qualified Products List of Crash Cushions/Impact Attenuators or approved equal."

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:
"**Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance.**"

535.24 Installation of Slabs, Beams, and Girders Revise the 5th paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2nd paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31" W-Beam Guardrail - Mid-Way Splice
Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts
Thrie Beam
Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be "U" channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker's flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department's Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all "w" beam guardrail and shall be either the "butterfly" type or linear delineation system panels. "Butterfly" or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

"Butterfly" reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer's instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the "butterfly" type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department's Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department's Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer's installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors ("butterfly" type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail ("butterfly"-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.
Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer's installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer's name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorages to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors (“butterfly” type and the linear delineation panels) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors (either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
606.1301	31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302	31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303	31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304	31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305	31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306	31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each
606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot

606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

Section 608.022Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with "Concrete…" and replacing it with "**Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department's Qualified Products List (QPL).**"

SECTION 609
CURB

Remove this section in its entirety and replace with the following:

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

Type 1 - Stone curbing of quarried granite stone
Type 2 – Concrete Curbing
Type 3 - Bituminous curbing
Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Portland Cement and Portland Pozzolan Cement	701.01
Water	701.02
Air Entraining Chemical Admixture	701.03
Fine Aggregate for Concrete	703.01
Coarse Aggregate for Concrete	703.02
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Hot Mix Asphalt Curbing	712.36
Structural Precast Concrete Units (Concrete Curb)	712.061

The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, for the uses specified below or in accordance with the Contract Documents.

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the Plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

Concrete for Slipform Concrete Curb shall meet the requirements below:

a. Class A, with the exception that permeability requirements shall be waived.
b. Entrained air content of Slipform Concrete Curb shall be 4.0% to 7.0%
c. Concrete temperature, prior to discharge, shall not exceed 90 F.
d. Proposed mix designs may contain polypropylene fibers.
e. Partially discharged loads may be retempered with water provided the maximum water to cement ratio is not exceeded.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least ¼ inch and no greater than ⅝ inch.

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 8 inches in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Departments Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guidelines. The foundation shall be uniformly painted with tack coat at a rate of 0.04 to 0.14 gal/yd^2.

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

c. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

d. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

e. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	0.25 inches ± 0.005
Average Diameter	0.0008 inches ± 0.0001
Specific Gravity	1.32-1.40
Melting Temperature	480 °F Minimum

609.05 Slipform Concrete Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. The Contractor shall not place Slipform Concrete Curb on a wet or frozen foundation. The foundation (HMA or concrete) may be in a Saturated Surface Dry condition, but no standing water shall be allowed. String or chalk lines shall be positioned on the prepared foundation to provide guidelines. Prior to placing the curb, the foundation shall be uniformly coated with an epoxy resin adhesive that meets the requirements of AASHTO M 235, Type I, II, III, IV or V and has been tested by AASHTO Product Evaluation & Audit Solutions. The Contractor shall submit the epoxy resin adhesive that they propose to utilize with the concrete mix design. The epoxy resin adhesive must be approved prior to placement and used in accordance with manufacturer's recommendations.

b. Placing Concrete shall be placed with an approved Slipform machine that will produce a finished product according to the design specified in the Plans. For cold weather slip forming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform foundation, shall conform to the section profile specified in the Plans, and shall match the appropriate grade. Expansion joints shall be placed in the curb where it meets rigid structures such as but not limited to building foundations, catch basin headers or fire hydrants. Contraction joints will be placed at 10-foot intervals using sawing methods, which shall cut 1 to 3 inches into the concrete. Contraction joints shall be cut between 1 and 7 days after placement of the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable.

c. Curing and Sealing Proper curing shall be provided using either a combination curing/sealing compound spray that meets ASTM 1315 Type 1-Class A, or a curing compound spray that meets ASTM 309 Type 1-D – Class A. Curing may also be accomplished by the methods specified in Standard Specification Section 502.14, Curing Concrete.

If a combination curing/sealing compound spray is not used, a separate sealing compound from the MaineDOT Qualified Products List for a Type 1c sealer shall be applied after the concrete has cured.

d. Protection Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curbing shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any placement of Slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices as necessary.

e. Marking When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed unless a combination curing/sealing compound is used.

f. Acceptance Curb shall be accepted or rejected based on finish, alignment, entrained air content, and compressive strength. Concrete Quality Control and Acceptance

shall be done in accordance with Standard Specification Section 502, Method C. All damaged curb shall be removed and replaced at the Contractor's expense.

609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Slope The edging shall be set on a slope as shown on the Plans or as directed.

b. Joints Joints shall be open and not greater than 1½ inch in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be ½ inch in width plus or minus ⅛ inch. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 1½ inch, before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 1½ inch before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the Plans or designated for resetting. Curb damaged or destroyed, because of the Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition sections and terminal curb will be included in the measurement for resetting curb.

Concrete Slipform Curb and terminal ends will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per linear foot for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per linear foot for the type of curb installed.

Vertical Curb Type 1 is required to have a radius of 60 feet or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 30 feet or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for concrete fill, mortar, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items. Loam, as directed, will be paid under 615 – Loam.

Payment will be made under:

	Pay Item	Pay Unit
609.11	Vertical Curb Type 1	Linear Foot
609.12	Vertical Curb Type 1 - Circular	Linear Foot
609.13	Vertical Bridge Curb Type 1	Linear Foot
609.131	Vertical Bridge Curb Type 1A	Linear Foot
609.132	Vertical Bridge Curb Type 1B	Linear Foot
609.142	Vertical Bridge Curb Type 1B - Circular	Linear Foot
609.15	Sloped Curb Type 1	Linear Foot
609.151	Sloped Curb Type 1 - Circular	Linear Foot
609.161	Concrete Slipform Curb – Vertical Type 2	Linear Foot
609.21	Concrete Slipform Curb Type 2	Linear Foot

609.219	Concrete Slipform Terminal End Type 2	Linear Foot
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 4 foot	Each
609.237	Terminal Curb Type 1 - 7 foot	Each
609.2371	Terminal Curb Type 1 - 7 foot – Circular	Each
609.238	Terminal Curb Type 1 - 8 foot	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	Linear Foot
609.34	Curb Type 5	Linear Foot
609.35	Curb-Type 5 - Circular	Linear Foot
609.38	Reset Curb Type 1	Linear Foot
609.39	Reset Curb Type 2	Linear Foot
609.40	Reset Curb Type 5	Linear Foot

SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:
"**Stone Ditch Protection 703.29"**

SECTION 618
SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: "Mulch for Seeding Method Number 1 shall only be cellulous fiber mulch Section 619.04 **(b)** or straw mulch Section 619.04 (**a**)."

SECTION 619
MULCH

619.03 General Amend this Section by adding the following sentence to the end: **"Straw mulch shall be used in all wetland areas."**

SECTION 626
FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with " All Concrete for concrete encasement…" and replace it with "**All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL).**"

Section 626.031Conduit Revise the fifth paragraph beginning with "After the trench has been…" by removing the last sentence beginning with "Where concrete encasement…" and replacing it with **"Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL)."**

626.034 Concrete Foundations Revise this Section by changing '626.037' to '**626.036**' in the Second Paragraph which begins with "Foundations shall consist of cast-in-place…".

Revise the 10th paragraph beginning with "Before placing concrete, the required elbows…" by removing "…**in accordance with Standard Specification 633**."

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: "**Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061**."

SECTION 627
PAVEMENT MARKINGS

627.02 Materials Amend this section by adding the following to the existing Specification:

"When pavement marking paint must be applied on pavement with an air temperature between 35 ºF and 50 ºF, a low temperature waterborne paint may be used upon the Department's approval as noted below.

The Contractor shall submit the following information for Department review and approval at least 10 calendar days prior to application:

The manufacturer and product name of the low temperature waterborne paint

The manufacturer's technical product data sheets

The product's SDS sheets

All required and recommended application specifications for the product

The manufacturer's requirements for temperature, surface preparation, paint thickness and the bead application shall be followed. No additional payment will be made for the use of low temperature waterborne paint. "

627.06 Application Revise this subsection by replacing the paragraph beginning with " On other final pavement markings…" with the following:
"On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

Painted lines and markings shall be applied in accordance with the manufacturer's published recommendations. These recommendations will be supplied to the Resident prior to installation."

Revise this subsection by replacing the paragraph beginning with " If the final reflectivety values are less…" with the following:

The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department.

SECTION 637
DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643
TRAFFIC SIGNALS

643.021 Materials Amend this subsection by adding the following at the end:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

"**Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO "LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals".**

643.09 Service Connection Revise this subsection by removing the paragraph that begins with "Traffic signal services shall have…".

And by removing the paragraphs beginning with " A service ground rod shall be installed…" and "A total of 4, 10' service…" and replace them with "**A total of 4, 10' service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet**".

SECTION 645
HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter "c.", revise the fifth paragraph beginning with "In addition to the required details…" by removing the words "**and foundation**" from the 5th sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with "Bridge-type, cantilever and…" by removing the words "**including the foundation**" .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with "The accepted bridge-type, cantilever and…" by removing the word "**foundation**" from the second sentence. Add the following sentence to the end of the paragraph "**Conduits, Junction Boxes, and Foundations will be paid for under Section 626.**"

SECTION 652
MAINTENANCE OF TRAFFIC

652.2.5 Portable Changeable Message Sign Revise the fifth paragraph so it reads:

"The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Messages must be changeable with either a portable electronic device like a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The cabinet shall be locked at all times that the Contractor is not actively changing the message. The Contractor shall change the password for the controller prior to stationing the PCMS and shall provide the password to the Resident. The password shall be unique per PCMS and secure and shall not be written anywhere in, on, around, or stored in the PCMS."

Amend this Section by adding the following new subsection:

"**652.2.6 Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance if causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

652.3.3 Submittal of Traffic Control Plan Amend this section by adding:

"n. A security plan for any PCMS shall be included. The Contractor shall provide a plan for secure access to the PCMS and protection from unauthorized users. The plan shall have details on securing the cabinets via a lock and password from unauthorized users, password changing protocols, and where the access information will be kept so it can be used in the event of emergency. The Contractor shall not Identify or store passwords in the TCP."

652.4 Flaggers Revise the first paragraph of this section so that it reads:

"The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer."

SECTION 681
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

681.08 Basis of Payment Amend this section by adding the Item Number "**681.10**' in front of the item "Precast Aggregate-Filled Concrete Block Gravity Wall" at the end of the section.

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding "**or Type 1L Portland Limestone cement**" so that it reads:
"**A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed**."

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.
Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the ⅜ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves			
Grading	A	AA	S	LATEX
Aggregate Size	1 inch	¾ inch	1½ inch	½ inch
2 inch			100	
1½ inch	100		95-100	
1 inch	95-100	100	-	
¾ inch	-	90-100	35-70	100
½ inch	25-60	-	-	90-100
⅜ inch	-	20-55	10-30	40-70
No. 4	0-10	0-10	0-5	0-15
No. 8	0-5	0-5	-	0-5
No. 16	-	-	-	-
No. 50	-	-	-	-
No. 200	0 - 1.5	0 - 1.5	0 - 1.5	0 - 1.5

703.0201 Alkali Silica Reactive Aggregates All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

a. Class F Coal Fly Ash meeting the requirements of AASHTO M 295
b. Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
c. Densified Silica Fume meeting the requirements of AASHTO M 307
d. Lithium-based admixtures
e. Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro- Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the ½ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.
The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
½ inch	45-70	35-75
¼ inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½" square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve standard deviation	Percent passing 0.075 mm sieve / asphalt content ratio	Residual aggregate M-D loss value
Class III	**10%**	**≤ 1.0**	**N/A**	**≤ 4.0**	**≤ 18**
Class II	**20%**	**≤ 0.5**	**≤ 1.0**	**≤ 2.8**	
Class I	**30%**	**≤ 0.3**	**≤ 0.5**	**≤ 1.8**	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

SECTION 709
REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with "Low-Carbon, Chromium,…" and replace with the following:

" Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. "

SECTION 710
FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

"Wood posts shall be of cedar, white oak, or tamarack or other AWPA approved species, of the diameter or section and length shown on the plans."

Remove the fourth paragraph which starts " That portion of wood posts…".

Revise the paragraph beginning with "Braces shall be of spruce, eastern hemlock … so that it now reads:

"Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPA approved species, or spruce, cedar, tamarack or other AWPA approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts. "

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

"a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWPA approved species."

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing "**AASHTO M 298**" with "**ASTM B695**"

SECTION 711
MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:
"Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A."

SECTION 712
MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

"Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions."

Revise this section by changing the letter "b" of ASTM C1611 of the Concrete Testing subsection so that it reads:

"**b. Air content shall be 5.0% to 8.0%**."

SECTION 713
STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.02 High Strength Bolts
Revise the second sentence of this subsection so that it reads "**Nuts shall meet the requirement ofASTM A563**". Revise the third sentence of this subsection so that it reads "**Circular and beveled washers shall conform to the requirement of ASTM F436**".

SECTION 718
TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with "All trunions, brackets and…" by adding "**For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.**" to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with LED light panels…" on or about page 7-66 with "**The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet.**

A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors."

Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with a generator panel …" on or about page 7-68 with:

"The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36" above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. "

Revise this subsection by removing the following from the paragraph beginning with "The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch …" on or about page 7-69: **"(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)".**

Revise this subsection by replacing the following in the paragraph beginning with "The Contractor shall reconfigure the default user name…" on or around page 7-70; "MaineDOT IT" with "**MaineDOT Traffic Division**".

In the paragraph beginning with "Tests shall be conducted by the contractor…" on or around page 7-73, amend this subsection by removing **"in the state of Maine and"** after "The facility shall be".

Amend this Section by adding the following subsection:

718.13 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT's cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.

2. The FMU shall conform to the following requirements:
   - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
   - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
   - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
   - 2.4 The FMU shall be wired directly to the ATC cabinet.
   - 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
     - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
   - 2.6 The FMU shall incorporate an integrated GPS and cell modem.
   - 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.

2.8 The FMU shall be powered via a standard 120V input power.

2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.

2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.

2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.16 The FMU shall include weather proof antennas.

3. **Map Display FMU Management Software**

3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.

3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.

3.4 The icons shall change to be able to clearly indicate if an intersection is offline.

3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.

3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.

3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. **Intersection Detail Display FMU Management Software**

4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:

4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).

4.1.2 The time since the last communication with the device

4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)

4.1.3.1 The AC mains voltage (value)

4.1.3.2 The battery back-up voltage (value)

4.1.3.3 The cabinet temperature (value)

4.1.3.4 The cabinet humidity (value)

4.1.3.5 The presence of AC power (OK or Fail)

4.1.3.6 The flashing status of the intersection (OK or Flashing)

4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

5. **Diagnostics and Log Display FMU Management Software**

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. **Alarms FMU Management Software**

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. **Alerts FMU Management Software**

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.

7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.

7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. **Hosting and Connectivity and Service FMU / FMU Management Software**

8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

8.1.1 Cellular Connectivity

8.1.2 No cellular overage charges

8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement

8.1.4 Over-the-air software updates

8.1.5 Over-the-air security updates

8.1.6 Future Connected Vehicles Service

SECTION 720
STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.12 Wood Sign Posts Revise the first sentence so that it reads:

Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPA approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot.

Revise the third paragraph that starts with “When pressure treated…” so that it reads:

All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPA Standard U1, UC4A, Commodity Specification A: Sawn Products.

The United States Department of Transportation (USDOT)

Standard Title VI / Nondiscrimination Assurances

DOT Order No. 1050.2A

The ***Maine Department of Transportation*** (herein referred to as the "Recipient") **HEREBY AGREES THAT**, as a condition of receiving any Federal financial assistance from the U.S. Department of Transportation (USDOT) through the ***Federal Highway Administration (FHWA)***, is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. §2000d *et seq.*, 78 stat. 252), which prohibits discrimination based on race, color, national origin;
- 49 C.F.R. Part 21 (entitled *Non-discrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of The Civil Rights Act of 1964*);
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations" respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to assure that:

> *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from DOT, including the **FHWA**."*

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other non-discrimination requirements (the Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973) by restoring the broad, institutional-wide scope and coverage of these non-discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its federally assisted ***Highway Program***:

1. The Recipient agrees that each "activity," "facility," or "program," as defined in §§ 21.23 (b) and 21.23 (e) of 49 C.F.R. § 21 will be (regarding an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all

requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all ***Federal Aid Highway Program activities*** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

   *"The **Maine Department of Transportation**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively assure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. **The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.**

4. The Recipient will insert the clauses of Appendix C of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix B and Appendix D of this Assurance, as a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

   a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
   b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:

   a. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or

b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement regarding any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, the ***Maine Department of Transportation*** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the ***FHWA*** and ***USDOT*** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the ***FHWA*** and ***USDOT***. You must keep records, reports, and submit the material for review upon request to the ***FHWA*** and ***USDOT***, or its designee, in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

The ***Maine Department of Transportation*** gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the ***Federal Aid Highway Program***. This ASSURANCE is binding on the State of Maine, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors', transferees, successors in interest, and any other participants in the ***Federal Aid Highway Program***. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

Maine Department of Transportation

By _____

Bruce A. Van Note, Commissioner

Dated 9/19/23

Encl.: Appendices A, B, C, D and E

APPENDIX A

Performance Requirements

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, ***Federal Highway Administration (FHWA)***, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the ***FHWA*** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the ***FHWA***, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the ***FHWA*** may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto, the contractor will take action with respect to any subcontract or procurement as the Recipient or the ***FHWA*** may direct as

a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the ***Maine Department of Transportation*** will accept title to the lands and maintain the project constructed thereon in accordance with ***49 U.S.* Code §5334**, the Regulations for the Administration of the ***Federal Aid Highway Program***, and the policies and procedures prescribed by the ***FHWA*** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the ***Maine Department of Transportation*** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto ***Maine Department of Transportation*** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the ***Maine Department of Transportation***, its successors and assigns.

The ***Maine Department of Transportation***, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the ***Maine Department of Transportation*** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, US. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [i and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the ***Maine Department of Transportation*** pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, ***Maine Department of Transportation*** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the ***Maine Department of Transportation*** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the ***Maine Department of Transportation*** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the ***Maine Department of Transportation*** pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non-discrimination covenants, the ***Maine Department of Transportation*** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. *

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the ***Maine Department of Transportation*** will there upon revert to and vest in and become the absolute property of the ***Maine Department of Transportation*** and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause IS necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 5 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 - 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*).

FEDERAL HIGHWAY ADMINISTRATION CIVIL RIGHTS ASSURANCE

The **Maine Department of Transportation** HEREBY CERTIFIES THAT, as a condition of receiving Federal financial assistance under the Civil Rights Act of 1964, as amended, it will ensure that:

1. No person on the basis of race, color or national origin will be subjected to discrimination in the level and quality of transportation services and transportation-related benefits.

2. The Maine Department of Transportation will compile, maintain, and submit in a timely manner Title VI information required in compliance with the Department of Transportation's Title VI regulation, 49 CFR Part 21.9.

3. The Maine Department of Transportation will make it known to the public that those person or persons alleging discrimination on the basis of race, color or national origin as it relates to the provision of transportation services and transportation-related benefits may file a complaint with the Federal Highway Administration and/or the U.S. Department of Transportation.

The person or persons whose signature appears below is authorized to sign this assurance on behalf of the grant applicant or recipient.

DATE: 9/19/23

Bruce A. Van Note, Commissioner
Maine Department of Transportation

MAINE DEPARTMENT OF TRANSPORTATION
NONDISCRIMINATION POLICY STATEMENT

TITLE VI (FHWA)

The Maine Department of Transportation is committed to ensuring that the fundamental principles of equal opportunity are upheld in all decisions involving our employees and contractors/consultants, and to ensuring that the public-at-large is afforded access to our programs and services.

In accordance with Title VI of the Civil Rights Act of 1964, no person shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any Maine Department of Transportation program or activity on the grounds of race, color, or national origin. The Maine Department of Transportation assures all its programs and activities will be free from discrimination, whether those programs or activities are federally assisted or not.

The Maine Department of Transportation conducts its Title VI/Environmental Justice Program in a team approach involving personnel from all program areas, with guidance from within the Civil Rights Office to serve as the Title VI/Environmental Justice Specialist, to ensure the Maine Department of Transportation's compliance with Title VI/Environmental Justice implementing regulations.

Inquiries concerning the Maine Department of Transportation's policies, investigations, complaints, compliance with applicable laws and regulations, and concerns regarding compliance with Title VI/Environmental Justice may be directed to:

Sherry Y. Tompkins, Director, Civil Rights Office
Maine Department of Transportation
16 State House Station
Augusta, ME 04333-0016
Telephone (207) 624-3066
TTY 888-516-9364
sherry.tompkins@maine.gov

This Policy Statement must be circulated throughout the Maine Department of Transportation and be included by reference in all contracts, agreements, programs and services administered by the Department of Transportation.

Dated: 9/19/23

Bruce A. Van Note, Commissioner
Maine Department of Transportation

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

December 9, 2024

Regulatory Division
File No. NAE-2020-01783-M1

Suzette Francis, Town Administrator
Town of Lubec
40 School Street
Lubec, Maine 04652

Dear Ms. Francis:

This responds to your recent request to modify your Department of the Army authorization, file number NAE-2020-01783, which authorized the placement of up to approximately 3.29 acres of fill below the High Tide Line (HTL) of Johnson Bay at Lubec, Maine in conjunction with the relocation of the existing Town marina to provide a safe harbor for the existing fishing fleet and recreational & transient boaters. The authorization is hereby modified to authorize 3.1 acres of fill below HTL as shown on the enclosed plans titled “Maine Department of Transportation, Lubec Breakwater, Lubec, ME, Washington County” in ninety-seven (97) sheets, and dated ”July 19, 2024”.

This also responds to your recent request to modify the expiration date of your Department of the same Army permit authorization above. Your authorization is hereby extended from December 31, 2026 to December 31, 2028.

The following Permit Special Conditions Resulting From the Endangered Species Act Section 7 under the NOAA-NLLA Programmatic Consultation dated “11/03/2020” are to be replace with the following:

Permit Special Conditions Resulting From the Endangered Species Act Section 7 under the NOAA-NLLA Programmatic Consultation dated “11/20/2024”

1. The permittee shall use a bubble curtain during the installation of piles for the pile-supported wave fence and floating dock sections.

2. The permittee shall use a turbidity curtain during the placement of stone fill.

3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed, and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed

upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

4. Work involving pile installation/removal shall adhere to the following conditions:

   a) If impact or vibratory hammers are used, equipment shall be limited to one hammer and <20 piles installed/day.

   b) The contractor shall ensure that a wood cushion is used between the impact hammer and steel piles.

   c) A "soft-start" technique will be used at the beginning of pile driving operations to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. Soft starts require an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period between subsequent three-strike sets. The soft-start procedure will be conducted any time hammering ceases for more than 30 minutes. Drilled piles will be exempt from "soft start" methodologies.

   d) Marine mammal observers will be utilized to monitor zones of injury for species that are likely to be present. The number of observers and size of zones to be monitored will be determined as part of the IHA application process and are not yet established.

All other terms and conditions of the original permit remain in full force and effect.

We continually strive to improve our customer service. To better serve you, please complete our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Shawn Mahaney, of my staff, at our Augusta, Maine Project Office at (978) 318-8492 or shawn.b.mahaney@usace.army.mil if you have any questions.

Sincerely,

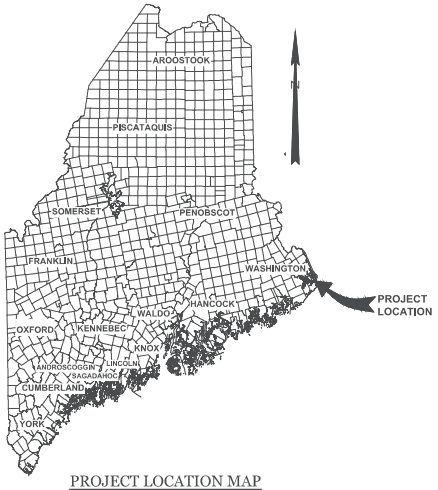
SHAWN B. MAHANEY

Digitally signed by SHAWN B. MAHANEY
Date: 2024.12.09 10:10:09 -05'00'

For: Peter D. Olmstead
Chief, Maine Section
Regulatory Division

Enclosure

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



PROJECT LOCATION MAP

TOWN OF LUBEC, MAINE
WASHINGTON COUNTY
LUBEC BREAKWATER
WIN 026824.00

SITE LOCATION MAP

INDEX OF DRAWINGS

SEQ.	SHEET NO.	TITLE
1	G-001	TITLE SHEET AND LIST OF DRAWINGS
2	G-002	GENERAL NOTES - 1
3	G-003	GENERAL NOTES -2
4	G-100	OVERALL SITE PLAN
5	G-101	PROJECT WORKING POINTS AND LAYOUT
6	B-100	BORING LOCATION PLAN
7	B-101	TEST PIT LOCATION PLAN
8	B-110	BORING LOGS - WB-1
9	B-111	BORING LOGS - WB-2
10	B-112	BORING LOGS - WB-3
11	B-113	BORING LOGS - WB-4
12	B-114	BORING LOGS - WB-5
13	B-115	BORING LOGS - WB-6 (SHEET 1 OF 2)
14	B-116	BORING LOGS - WB-6 (SHEET 2 OF 2)
15	B-117	BORING LOGS - WB-101
16	B-118	BORING LOGS - WB-102
17	B-119	BORING LOGS - WB-103
18	B-120	BORING LOGS - WB-104
19	B-121	BORING LOGS - WB-105
20	B-122	BORING LOGS - WB-106
21	B-123	BORING LOGS - WB-107
22	B-124	BORING LOGS - WB-108
23	B-130	BREAKWATER PROFILE - 1
24	B-131	BREAKWATER PROFILE - 2
25	B-132	BREAKWATER PROFILE - 3
26	B-133	BREAKWATER PROFILE - 4
27	B-134	BREAKWATER PROFILE - 5
28	MN-100	RUBBLE-MOUND MONITORING PLAN
29	MN-120	RUBBLE-MOUND MONITORING SECTIONS AND DETAILS
30	C-100	UPLAND LAYOUT PLAN
31	C-200	UPLAND GRADING PLAN
32	C-300	UPLAND ALIGNMENT PLAN
33	C-310	DRIVEWAY & BREAKWATER PROFILE PLAN
34	C-311	BOAT RAMP PROFILE PLAN
35	C-400	UPLAND DETAILS SHEET

SEQ.	SHEET NO.	TITLE
36	U-100	PRIVACY BUILDING PLAN
37	S-001	BREAKWATER PLAN
38	S-100	RUBBLE-MOUND PLAN
39	S-101	RUBBLE-MOUND BREAKWATER UTILITY ARRANGEMENT PLAN
40	S-110	RUBBLE-MOUND BREAKWATER SECTIONS - 1
41	S-111	RUBBLE-MOUND BREAKWATER SECTIONS - 2
42	S-112	RUBBLE-MOUND BREAKWATER SECTIONS - 3
43	S-113	RUBBLE-MOUND BREAKWATER SECTIONS - 4
44	S-114	RUBBLE-MOUND BREAKWATER SECTIONS - 5
45	S-115	RUBBLE-MOUND BREAKWATER SECTIONS - 6
46	S-116	RUBBLE-MOUND BREAKWATER SECTIONS - 7
47	S-117	RUBBLE-MOUND BREAKWATER SURVEY LOCATIONS
48	S-118	RUBBLE-MOUND BREAKWATER CONSTRUCTION SEQUENCE
49	S-121	RUBBLE-MOUND TO UPLAND TRANSITION DETAILS
50	S-122	RUBBLE-MOUND TO PILE SUPPORTED PLATFORM TRANSITION DETAILS
51	S-130	RUBBLE-MOUND CIP ROADWAY REINFORCING SECTIONS AND DETAILS
52	S-200	PILE SUPPORTED PLATFORM ARRANGEMENT PLAN
53	S-201	PILE SUPPORTED PLATFORM PILE PLAN
54	S-202	PILE SUPPORTED PLATFORM PILE CAP PLAN
55	S-203	PILE SUPPORTED PLATFORM PRECAST PLANK PLAN
56	S-204	PILE SUPPORTED PLATFORM DECK REINFOREMENT PLAN
57	S-210	PILE SUPPORTED PLATFORM SECTION - 1
58	S-211	PILE SUPPORTED PLATFORM SECTION - 2
59	S-220	PILE SUPPORTED PLATFORM PILE DETAILS
60	S-221	PILE SUPPORTED PLATFORM PRECAST PILE CAP PC-01 DETAILS
61	S-222	PILE SUPPORTED PLATFORM PRECAST PILE CAP PC-02 DETAILS
62	S-223	PILE SUPPORTED PLATFORM PRECAST PILE CAP PC-03 DETAILS
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64	S-225	PILE SUPPORTED PLATFORM PRECAST PILE CAP PC-05 DETAILS
65	S-226	PILE SUPPORTED PLATFORM PRECAST PILE CAP SECTIONS
66	S-227	PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 1
67	S-228	PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 2
68	S-229	PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 3
69	S-230	PILE SUPPORTED PLATFORM PILE SCHEDULE
70	S-240	PILE SUPPORTED PLATFORM PRECAST PLANK DETAILS - 1

SEQ.	SHEET NO.	TITLE
71	S-241	PILE SUPPORTED PLATFORM PRECAST PLANK DETAILS - 2
72	S-260	PILE SUPPORTED PLATFORM HOIST AREA ELEVATION AND DETAILS
73	S-270	PILE SUPPORTED PLATFORM WAVE SCREEN PROFILE
74	S-271	PILE SUPPORTED PLATFORM WAVE SCREEN DETAILS
75	S-300	FLOATING DOCK GENERAL ARRANGEMENT PLAN - 1
76	S-301	FLOATING DOCK GENERAL ARRANGEMENT PLAN - 2
77	S-302	FLOATING DOCK PILE PLAN - 1
78	S-303	FLOATING DOCK PILE PLAN - 2
79	S-304	FLOATING DOCK GANGWAY PLAN
80	S-305	FLOATING DOCK GANGWAY SECTIONS
81	S-310	FLOATING DOCK SECTION
82	S-320	FLOATING DOCK GUIDE PILE DETAILS - 1
83	S-321	FLOATING DOCK GUIDE PILE DETAILS - 2
84	S-322	FLOATING DOCK GANGWAY DETAILS
85	S-323	FLOATING DOCK CLEAT DETAILS
86	S-325	BOAT RAMP SECTION AND DETAILS -1
87	S-326	BOAT RAMP SECTION AND DETAILS -2
88	S-330	FLOATING DOCK GUIDE PILE SCHEDULE
89	S-340	PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM ELEVATIONS
90	S-341	PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM SECTIONS
91	S-342	PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM DETAILS
92	E-100	OVERALL UTILITY PLAN
93	E-101	PILE SUPPORTED PLATFORM UTILITY PART PLAN
94	E-102	RUBBLE-MOUND UTILITY PART PLAN
95	E-103	PARKING LOT UTILITY PART PLAN
96	E-110	ELECTRICAL ONE LINE DIAGRAM AND PANEL SCHEDULES
97	E-120	UTILITY DETAILS

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

TITLE SHEET AND DRAWING LIST

SHEET NUMBER

G-001

1 OF 97

File: C:\Users\MagurcOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\01-G-001 (Title Sheet) - Plotted: 7/19/2024 6:08 PM by: MAGURE, CASEY - Saved: 7/19/2024 4:13 PM by: MAGURC

DESIGN CODES

1. GENERAL MARINE DESIGN
   CIRIA – C683 – THE USE OF ROCK IN HYDRAULIC ENGINEERING
   UFC 4–152–07 – SMALL BOAT BERTHING FACILITIES UNIFIED FACILITIES CODE: DESIGN OF PIERS AND WHARVES (UFC 4–152–01), 2017
2. STRUCTURAL DESIGN
   AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) – STEEL CONSTRUCTION MANUAL MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, 2016 (ASCE 7–16) STRUCTURAL WELDING CODE (AWS D1.1–2020) AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY (ACI 318–19) MAINE UNIFORM BUILDING AND ENERGY CODE (MUBEC)
3. WAVE OVERTOPPING
   EUROTOP 2018 – MANUAL ON WAVE OVERTOPPING OF SEA DEFENCES AND RELATED STRUCTURES

PROJECT DATUM

HORIZONTAL: NORTH AMERICAN DATUM OF 1983 (NAD83)
VERTICAL: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

DATUM	DESCRIPTION	ELEVATION (FT NAVD88)
HIGHEST OBSERVED TIDE	HISTORIC HIGHEST WATER LEVEL OBSERVED (04/10/2020 08:54)	14.440
MHHW	MEAN HIGHER–HIGH WATER	9.340
MHW	MEAN HIGH WATER	8.860
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988	0.000
MSL	MEAN SEA LEVEL	–0.230
MLW	MEAN LOWER WATER	–9.490
MLLW	MEAN LOWER–LOW WATER	–9.930
LOWEST OBSERVED TIDE	HISTORIC LOWEST WATER LEVEL OBSERVED (–8/09/1972 00:00)	–14.610

PROJECT TOLERANCES

		DESIGN PROFILE TO ACTUAL MEAN PROFILE (BASED ON AVERAGE DIFFERENCES OVER EACH 50 FT ALONG THE STRUCTURES AXIS)
CLASS A	DRY (I.E. ABOVE WATER)	–0.7 TO +0.7
	BELOW WATER	N/A
CLASS A1	DRY (I.E. ABOVE WATER)	–0.7 TO +0.7
	BELOW WATER	–1.0 TO +1.6
CLASS B	DRY (I.E. ABOVE WATER)	–0.4 TO +0.4
	BELOW WATER	–0.7 TO +0.7
CLASS C	DRY (I.E. ABOVE WATER)	–0.8 TO +0.8
	BELOW WATER	–1.3 TO +1.3

MATERIALS

1. CONCRETE
   ALL CONCRETE SHALL BE NORMAL WEIGHT (150 PCF).
   CAST–IN–PLACE CONCRETE AND PRECAST NON–PRESTRESSED CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS. PRECAST PRESTRESSED CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AT 28 DAYS. REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 EPOXY COATED PER ASTM A775. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416, GRADE 270 LOW RELAXATION. CAST–IN–PLACE CONCRETE COVER SHALL BE 3" MINIMUM, UNLESS NOTED OTHERWISE. PRECAST CONCRETE COVER SHALL BE 2" MINIMUM, UNLESS NOTED OTHERWISE. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE STRUCTURES WITH 45 DEGREE 1" CHAMFER, UNLESS NOTED OTHERWISE.
2. STEEL PIPE PILES
   ALL STEEL PIPE PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A252, GRADE 3 (MOD). WITH MINIMUM YIELD STRENGTH OF 50 KSI.
3. STEEL SHEET PILING
   ALL STEEL SHEET PILES, CONNECTORS/CORNER PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GRADE 50. SPLICING OF SHEET PILES/CONNECTORS/CORNER PILES SHALL NOT BE PERMITTED.
4. STRUCTURAL STEEL AND MISCELLANEOUS STEEL
   ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN. FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS. ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES. ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1. STRUCTURAL STEEL SHAPES:
   WIDE FLANGE SHAPES – ASTM A992
   HP, CHANNEL AND ANGLE SHAPES – ASTM A572, GRADE 50
   MISCELLANEOUS PLATES, BARS AND SHAPES, UNLESS OTHERWISE NOTED, SHALL BE GALVANIZED PER ASTM A123.
   ALL BOLTS SHALL BE PER ASTM F3125 GRADE A325 AND GALVANIZED PER ASTM A153 (UON).
   ALL BOLTS, ANCHOR RODS, NUTS AND WASHERS SHALL BE GALVANIZED PER ASTM A153 (UON).
   HEADED SHEAR STUDS SHALL BE MADE FROM COLD DRAWN STEEL GRADE C–1010 THROUGH C–1020 PER ASTM A108 AND SHALL BE WELDED PER THE MANUFACTURER'S SPECIFICATIONS. FIELD TREAT DAMAGED GALVANIZED FINISH WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT, COLD GALVANIZING COMPOUNDS, OR APPROVED EQUAL CONFORMING TO THE REQUIREMENTS OF ASTM A780. IN ADDITION, ALL EXPOSED THREADED SURFACES SHALL BE PAINTED WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT AFTER INSALLATION OF UNIT.
5. TIMBER, TIMBER PILES AND HARDWARE
   ALL TIMBER PILES SHALL BE 12" INCH MINIMUM DIAMETER AS MEASURED 3 FEET FROM THE BUTT END.
   ALL TIMBER PILES, TIMBER WALES AND TIMBER CHOCKS SHALL BE GREENHEART WOOD CONFORMING TO THE REQUIREMENTS OF "GUYANA TIMBER GRADING RULES FOR HARDWOODS," GUYANA FORESTRY COMMISSION, 2002.
   THE TIMBER FACING MEMBERS SHALL BE SOUTHERN PINE OR APPROVED EQUAL, PRESSURE–TREATED IN ACCORDANCE WITH AWPA USE CATEGORY SYSTEM CLASSIFICATION UC5A.
   THE TIMBER FACING MEMBERS SHALL HAVE A MINIMUM ALLOWABLE BENDING STRESS OF 1,500 PSI.
   HARDWARE: ALL THREADED RODS SHALL BE PER ASTM F1554, GRADE 55. HARDWARE SHALL BE HOT–DIP GALVANIZED PER ASTM A153. ALL THREADED RODS SHALL INCLUDE OGEE WASHERS AND HEX NUTS.
   PROVIDE COUNTERSINK HARDWARE FOR CHOCKS, TIMBER FACING AND OUTBOARD PILE FACES.
   COUNTERSUNK HOLES SHALL BE FILLED WITH AN APPROVED BITUMASTIC PASTE AFTER ANCHOR ROD INSTALLATION.

DELEGATED DESIGN

THE TIMBER FLOATING DOCK, PILE GUIDES, MOORING HARDWARE, AND ALUMINUM GANGWAY ARE DELEGATED DESIGN TO BE PERFORMED BY THE APPROVED MANUFACTURER AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MAINE.

DESIGN CRITERIA

1. DEAD LOAD:
   SELF–WEIGHT OF STRUCTURAL ELEMENTS BASED ON FOLLOWING DENSITIES:
   CONCRETE: 150 PCF
   STEEL: 490 PCF
2. LIVE LOADS:
   LIVE LOAD ON TIMBER FLOATS = 50 PSF UNIFORMLY DISTRIBUTED
   LIVE LOAD ON GANGWAY = 60 PSF UNIFORMLY DISTRIBUTED
   LIVE LOAD ON PILE SUPPORTED PLATFORM AND RUBBLE MOUND ROADWAY = 250 PSF UNIFORMLY DISTRIBUTED
   VEHICLE LOAD = H20 BOX TRUCK, FRONT AXLE 8 KIPS. REAR AXLE 32 KIPS
3. SNOW:
   GROUND SNOW LOAD = 50 PSF
4. WAVE
   100–YEAR RETURN PERIOD WAVE EVENTS, RUBBLE–MOUND BREAKWATER:

H_{MO} (FT)	T_P (s)	MWD (°N)
6.8	4.7	7.3

   1–YEAR RETURN PERIOD WAVE EVENTS, RUBBLE–MOUND BREAKWATER:

H_{MO} (FT)	T_P (s)	MWD (°N)
3.0	3.7	25.0

   WAVE LOADS ON WAVESCREEN AS CALCULATED BY DETAILED WAVE ANALYSIS DESIGN WAVE:

H_{MO} (FT)	T_P (s)	MWD (°N)
7.4	4.7	17.8

   WAVE PRESSURE FORCES:

PEAK WAVE PRESSURE (KIPS/SQFT)	PEAK WAVE FORCE (KIPS/FT)
0.52	15.11

5. WIND
   BASIC WIND SPEED (3–SECOND GUST), V = 108 MPH
   BUILDING RISK CATEGORY = II
   FORCE COEFFICIENT = 0.7
   IMPORTANCE FACTOR = 1.0
   GUST FACTOR = 0.85
6. CURRENT
   SERVICE CURRENT SPEED = 0.15 FPS
   EXTREME CURRENT SPEED = 0.45 FPS
7. ARMOR STABILITY IS DESIGNED FOR NO DAMAGE S_d = 2
8. DESIGN VESSEL
   40 FT LOA
   16 FT MAXIMUM BEAM
   4.1 FT DRAFT
   MAXIMUM BERTHING ENERGY = 1.8 KIP–FT
   NORMAL BERTHING ENERGY = 1.0 KIP–FT
9. MEAN OVERTOPPING DISCHARGE TO BE <0.01 $FT^3/S/FT$ FOR PEDESTRIANS AND 0.8 $FT^3/S/FT$ FOR VEHICLES FOR A 100 YEAR STORM RETURN PERIOD EVENT AT CREST LEVEL +25 NAVD88. MEAN OVERTOPPING DISCHARGE TO BE <0.1–0.2 $FT^3/S/FT$ FOR PEDESTRIANS AND 0.8 $FT^3/S/FT$ FOR VEHICLES FOR A 1 YEAR STORM RETURN PERIOD.

CRITERIA FOR A "GOOD" WAVE CLIMATE IN SMALL CRAFT HARBORS (UFC4–152–07)		
DIRECTION AND PEAK PERIOD OF SIGNIFICANT WAVE	SIGNIFICANT WAVE HEIGHT EXCEEDANCE	
	50 YEARS	1 YEAR
HEAD SEAS LESS THAN 2S	CONDITIONS NOT LIKELY TO OCCUR DURING THIS EVENT	< 1 FT
HEAD SEAS GREATER THAN 2S	< 2 FT	< 1 FT
BEAM SEAS LESS THAN 2S	CONDITIONS NOT LIKELY TO OCCUR DURING THIS EVENT	< 0.5 FT
BEAM SEAS GREATER THAN 2S	< 0.8 FT	< 0.5 FT

CRITERIA FOR A "MODERATE" WAVE CLIMATE IN LUBEC BREAKWATER BERTHING AREAS		
DIRECTION AND PEAK PERIOD OF SIGNIFICANT WAVE	SIGNIFICANT WAVE HEIGHT EXCEEDANCE	
	50 YEARS	1 YEAR
HEAD SEAS LESS THAN 2S	CONDITIONS NOT LIKELY TO OCCUR DURING THIS EVENT	< 1.25 FT
HEAD SEAS GREATER THAN 2S	< 2.5 FT	< 1.25 FT
BEAM SEAS LESS THAN 2S	CONDITIONS NOT LIKELY TO OCCUR DURING THIS EVENT	< 0.63 FT
BEAM SEAS GREATER THAN 2S	< 1.0 FT	< 0.63 FT

GENERAL NOTES

1. CLEARING LIMITS SHALL BE 10' BEYOND AND PARALLEL TO THE CONSTRUCTION SLOPE LINES OR AS SHOWN ON THE PLANS UNLESS OTHERWISE AUTHORIZED BY THE RESIDENT.
2. STUMPS HAVE BEEN ESTIMATED TO BE REMOVED UNDER ITEM 201.24 REMOVE STUMP. HOWEVER, WHERE DIRECTED BY THE RESIDENT, ITEM 631.20 STUMP CHIPPER (INCLUDING OPERATOR) MAY BE USED TO REMOVE STUMPS.
3. GRUBBING LIMITS ARE APPROXIMATE AND HAVE BEEN USED FOR ESTIMATING PURPOSES ONLY. ACTUAL GRUBBING LIMITS MAY VARY BASED ON FIELD CONDITIONS AS DIRECTED BY THE RESIDENT.
4. ALL INSLOPE AND DITCHES IN CUT AREAS SHALL BE GRADED AS SHOWN ON THE PLANS OR FLATTER, OR AS DIRECTED BY THE RESIDENT.
5. DRIVEWAY FILL SLOPES SHALL BE THE SAME AS THE NON–GUARDRAIL FILL SLOPES UNLESS OTHERWISE NOTED ON THE PLANS.
6. ALL WASTE MATERIAL NOT USED ON THE PROJECT SHALL BE DISPOSED OF OFF THE PROJECT IN ACCEPTABLE WASTE AREAS REVIEWED BY THE RESIDENT. GRADING, SEEDING AND MULCHING OF WASTE AREAS SHALL BE CONSIDERED INCIDENTAL.
7. ANY NECESSARY CLEARING OF EXISTING PAVEMENT PRIOR TO PAVING SHALL BE INCIDENTAL TO THE RELATED PAVING ITEMS.THIS INCLUDES KILLING AND REMOVAL OF ALL VEGETATIVE MATTER.
8. GUARDRAIL END TREATMENTS SHALL BE INSTALLED CONCURRENTLY WITH THE PLACEMENT OF EACH SECTION OF BEAM GUARDRAIL.
9. TWO REFLECTORIZED FLEXIBLE GUARDRAIL MARKERS (ITEM 606.353) WILL BE INSTALLED AT EACH GUARDRAIL END.
10. ANY BASE PAVEMENT NOT SURFACED BEFORE WINTER WILL REQUIRE TEMPORARY PAVEMENT MARKINGS OF PAINT, BOTH YELLOW CENTERLINE AND WHITE EDGE LINES AND WILL BE CONSIDERED PART OF ITEM 627.733.
11. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ALL EXISTING MAILBOXES TO ENSURE THAT THE MAIL WILL BE DELIVERABLE. PAYMENT FOR THIS WORK WILL BE MADE UNDER THE APPROPRIATE RENTAL ITEMS.
12. AREAS REQUIRING FILL ON THE PROJECT WILL COME FROM SUITABLE EXCAVATION FROM EXCAVATION.
13. ESTIMATED QUANTITIES FOR REQUIRED EXCAVATION AND MINOR STRUCTURES ARE INFORMATIONAL ONLY AND REPRESENT THE APPROXIMATE MINIMUM QUANTITY REQUIRED. ADDITIONAL EXCAVATION FOR THE CONTRACTOR'S CONVENIENCE OR TO COMPLY WITH BACKSLOPING REQUIREMENTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED INCIDENTAL TO THE RELATED ITEMS.
14. NO SEPARATE PAYMENT FOR SUPERINTENDENT OR FOREMAN WILL BE MADE FOR THE SUPERVISION OF EQUIPMENT AND LAYOUT OF WORK PAID FOR UNDER THE EQUIPMENT RENTAL ITEMS.
15. "UNDETERMINED LOCATIONS" SHALL BE DETERMINED BY THE RESIDENT.
16. FINAL STRIPING AND MARKING FOR THE PROJECT SHALL BE DONE BY THE CONTRACTOR PER THE LAYOUT PLAN. ACTUAL MARKING LOCATIONS SHALL BE DETERMINED BY THE REGIONAL TRAFFIC ENGINEER. PAYMENT SHALL BE MADE UNDER APPROPRIATE PAY ITEMS.
17. GEOTECHNICAL INFORMATION FURNISHED ORE REFERRED TO IN THE DOCUMENTS IS FOR THE USE OF THE BIDDERS. NO ASSURANCE GIVEN THAT THE INFORMATION OR INTERPRETATIONS WILL BE REPRESENTATIVE OF THE ACTUAL SUBSURFACE CONDITIONS THROUGHOUT THE CONSTRUCTION SITE. MAINEDOT WILL NOT BE RESPONSIBLE FOR ANY INTERPRETATIONS OR CONCLUSIONS DRAWN FROM THE GEOTECHNICAL INFORMATION. THE TEST PITS PROVIDED IN THE DOCUMENTS PRESENT FACTUAL AND INTERPRETIVE SUBSURFACE INFORMATION COLLECTED AT THE SPECIFIED LOCATIONS. DATA PROVIDED MAY NOT BE REPRESENTATIVE OF THE SUBSURFACE CONDITIONS BETWEEN TEST PIT LOCATIONS.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM		SIGNATURE	
PROJECT MANAGER	E. ROSENSTEIN		
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

GENERAL NOTES - 1

SHEET NUMBER
G-002
2 OF 97

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ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AT	AMPERE TRIP
AUX	AUXILIARY
AX	AMPERE RATING PLUG
AWG	AMERICAN WIRE GAUGE
AFF	ABOVE FINISHED FLOOR
AS	AMPERE SWITCH SIZE
BATT	BATTERY
BC	BARE COPPER
BD	BUS DUCT
BCKP	BACKUP
BKR	BREAKER
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CFG	CONFIGURATION
CKT	CIRCUIT
CLOS	CLOSET
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONVENIENCE RECEPTACLE
CT	CURRENT TRANSFORMER, CABLE TRAY
D	DIGITAL
DC	DIRECT CURRENT, DATA COPPER
DEMO	DEMOLITION
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DP	DISTRIBUTION PANEL
DWG	DRAWING
DS	DISCONNECT SWITCH
EHH	ELECTRICAL HANDHOLE
ELEC	ELECTRIC
EMERG	EMERGENCY
EMH	ELECTRICAL MANHOLE
EPO	EMERGENCY POWER OFF SWITCH
ER	EXISTING TO BE RELOCATED
EQ	EQUIPMENT
EX	EXISTING TO REMAIN
FDR	FEEDER
FLA	FULL LOAD AMPERES
FT	FEET
GND	GROUND
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
HH	HAND HOLE
HOA	HAND–OFF–AUTOMATIC
HZ	HERTZ
J	JUNCTION BOX
KA	KILOAMPERES
KCMIL	THOUSAND CIRCULAR MILLS
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES–REACTIVE
KW	KILOWATT
LF	LINEAR FOOT
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTION
MCS	MOLDED CASE SWITCH
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MVA	MEGAVOLT AMPERE
MTR	MOTOR
N	NEUTRAL
NEC	NATIONAL ELECTRIC CODE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
QTY	QUANTITY
P	POLE
PB	PULL BOX
PDU	POWER DISTRIBUTION UNIT
PF	POWER FACTOR
PH	PHASE
PNL	PANELBOARD
PR	PAIR
PT	POTENTIAL TRANSFORMER
PWR	POWER
REC	RECEPTACLE
SW	SWITCH
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TR	TRANSFORMER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
U/G	UNDERGROUND
V	VOLT, VOLTAGE, VOICE
VA	VOLT AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
Y	WYE
Z	IMPEDANCE

LEGEND

LIGHTING FIXTURES

- LIGHT POLE
- R2: INDICATES FIXTURE TYPE
- 12: INDICATES CIRCUIT NUMBER
- N: INDICATES NORTHING COORDINATE; E: INDICATES EASTING COORDINATE
- DOCK LIGHT

WIRING DEVICES

- JB — ELECTRIC JUNCTION BOX
- P — ELECTRIC PULLBOX
- EHH — ELECTRICAL HANDHOLE
- T — TRANSFORMER

RACEWAYS AND WIRES

- PVC CONDUIT U.O.N. (REFER TO NOTE "D" ON PLAN DRAWINGS).
- EXISTING CONDUIT UNDERGROUND
- CONDUIT UP
- CONDUIT DOWN
- MDP–1 — HOMERUN, "MDP" DENOTES PANELBOARD DESIGNATION, "1" DENOTES BRANCH CIRCUIT NUMBERS. PROVIDE MINIMUM (2) #12 AWG + #12 AWG GROUND FOR EACH BRANCH CIRCUIT INDICATED. INCREASE BRANCH CIRCUIT CONDUCTOR WIRE AND CONDUIT SIZE AS REQUIRED FOR CIRCUIT LENGTH. MINIMUM CONDUIT SIZE SHALL BE 1/2".
- a — SWITCH LEG CONNECTED TO SWITCH "a"

DISTRIBUTION EQUIPMENT

- PANELBOARD

EQUIPMENT CONTROLS

- COMBINATION REDUCED VOLTAGE SOFT STARTER DISCONNECT SWITCH (NON–FUSIBLE)

MISCELLANEOUS

- HEAVY LINE WEIGHT INDICATES NEW WORK
- LIGHT LINE WEIGHT INDICATES EXISTING TO REMAIN
- 1 — SHEET NOTE. (SEE NOTE ON DRAWING)
- ELECTRICAL SHOCK HAZARD SIGNAGE. REFER TO NEC ARTICLE 555.10 FOR REQUIREMENTS.

GENERAL NOTES

1. ALL WORK, INCLUDING BUT NOT LIMITED TO WIRING METHODS, MOUNTING HEIGHTS, GROUND FAULT PROTECTION, SIGNAGE AND BONDING SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS, DRAWINGS, LATEST EDITION OF THE MAINE ELECTRICAL CODE, NATIONAL ELECTRIC CODE (NFPA 70) INCLUDING THE SPECIFIC REQUIREMENTS OF ARTICLE 555, NATIONAL ELECTRIC SAFETY CODE (NESC), AND THE REGULATIONS OF OTHER AUTHORITIES HAVING JURISDICTION.
2. ALL ELECTRICAL WORK MUST BE DONE ON DE–ENERGIZED ELECTRICAL EQUIPMENT UNLESS ABSOLUTELY NECESSARY.
3. APPROVED EQUALS FOR SPECIFIED PRODUCTS WILL BE EVALUATED BY MAINE DOT AND THE ENGINEER.
4. PROVIDE AND LOCATE OUTLETS, WIRING, AND CONTROLS, AS INDICATED OR REQUIRED FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS OR PER EQUIPMENT SUPPLIER'S REQUIREMENT. MAKE ALL NECESSARY CONNECTIONS TO EQUIPMENT AND ASSOCIATED CONTROLS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. VERIFY EQUIPMENT LOCATION, AND ELECTRICAL CHARACTERISTICS TO BE FURNISHED AND/OR INSTALLED. REFER TO THE EQUIPMENT OR SYSTEM SPECIFICATIONS AND PLAN DRAWINGS TO DETERMINE THE SCOPE OF WORK REQUIRED.
5. DIMENSIONS MUST NOT BE SCALED FROM THE DRAWING. DIMENSIONS SHOWN ON THE DRAWINGS MUST BE VERIFIED BY ACTUAL FIELD MEASUREMENTS. ANY DISCREPANCIES BETWEEN THE DRAWINGS, SPECIFICATIONS AND THE FIELD CONDITIONS MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PERFORMING WORK.
6. FINAL TESTING OF THE BREAKER SETTINGS, GROUNDING SYSTEM, GROUND RODS, AND NEW WIRING SHALL BE PERFORMED BY A THIRD PARTY TESTING AGENCY.
7. ELECTRICAL CONTRACTOR SHALL HAVE A MINIMUM OF 5 YEARS EXPERIENCE WITH FRE INSTALLATIONS AND SUBMIT A LIST OF RELEVANT PROJECTS.
8. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLANS, PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
9. THE LOCATION OF EXISTING POLES, GUY WIRES, SPAN WIRES OR OTHER ABOVE GRADE AND UNDERGROUND UTILITIES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1–888–344–7233) 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.
10. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL ABOVE GRADE AND UNDERGROUND UTILITIES.
11. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION		SIGNATURE	
PROGRAM	MULTIMODAL		
PROJECT MANAGER	A. GORNEAU, II	P.E. NUMBER	
DESIGNER	R. BEIKES		
CONSULTANT	JACOBS	DATE	
PROJECT RESIDENT			
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

GENERAL UTILITY NOTES

SHEET NUMBER

G-003

3 OF 97

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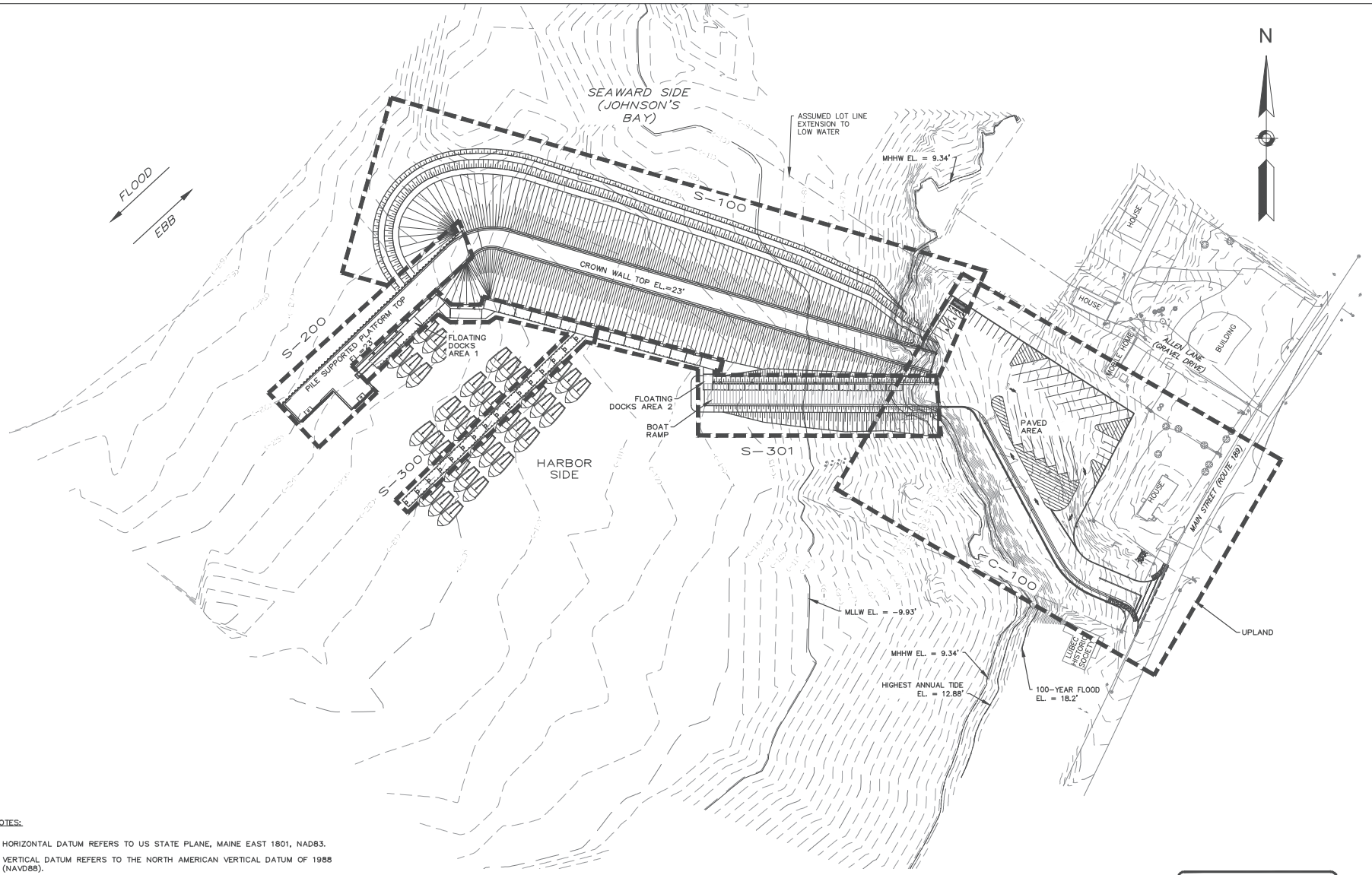

NOTES:

1. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.
2. VERTICAL DATUM REFERS TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON EVIDENCE VISIBLE AT GROUND LEVEL. THIS MAPPING DOES NOT SUPPORT TO SHOW ALL UNDERGROUND UTILITIES ON SITE AND IS SUBJECT TO VERIFICATION BY EXCAVATION.
4. INFORMATION SHOWN HEREON IS FROM A FIELD SURVEY CONDUCTED BY DOW TO EARTH PROFESSIONAL LAND SERVICES INC ON SEPTEMBER 1, 2020.
5. DESIGN VESSELS ARE SHOWN SCHEMATICALLY AND ARE INTENDED TO ILLUSTRATE MARITIME PRACTICES ONLY. DESIGN VESSEL IS AHOWN AS 40 FT. LOA.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

OVERALL SITE PLAN

SHEET NUMBER

G-100

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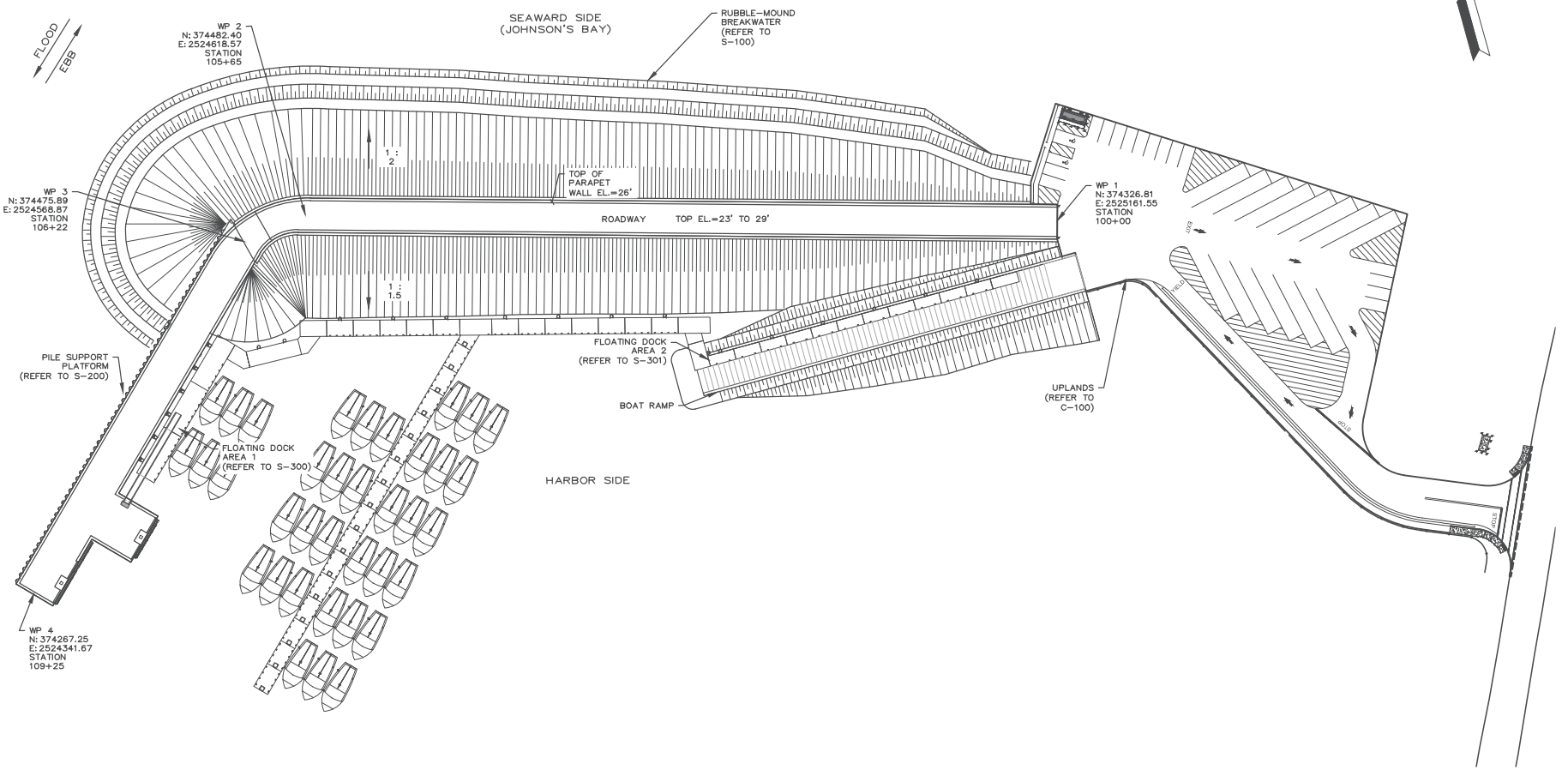

PLAN
1"=15'-0"

0 40 80 FT.
1"=40'

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SEE GUIDE PILE SCHEDULE AND DETAILS S-310 THROUGH S-320.

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SUBMITTED DATE: JULY 19, 2024

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

PROJECT WORKING POINTS AND LAYOUT

SHEET NUMBER

G-101

5 OF 97

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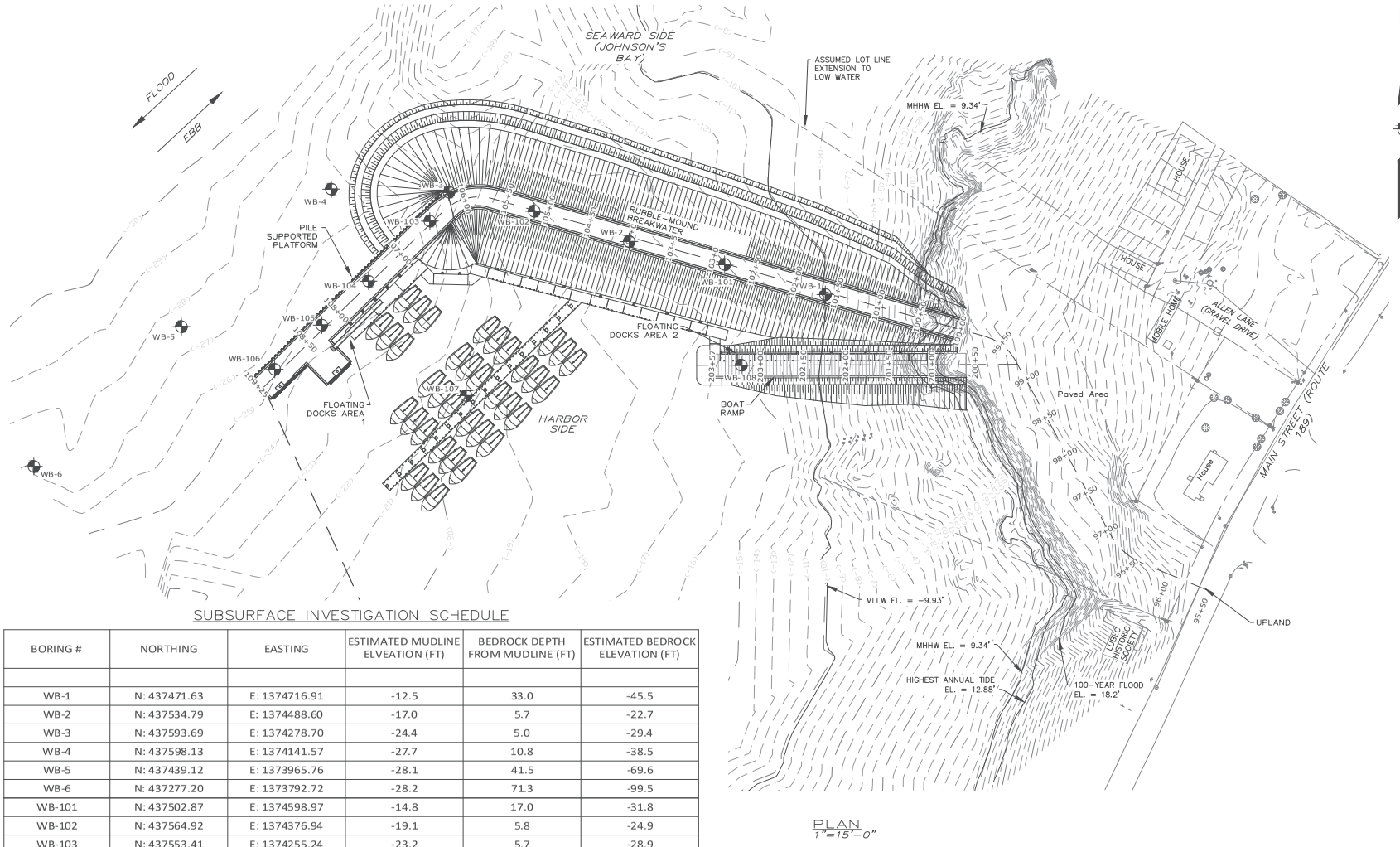

PLAN
1"=15'-0"

SUBSURFACE INVESTIGATION SCHEDULE

BORING #	NORTHING	EASTING	ESTIMATED MUDLINE ELVEATION (FT)	BEDROCK DEPTH FROM MUDLINE (FT)	ESTIMATED BEDROCK ELEVATION (FT)
WB-1	N: 437471.63	E: 1374716.91	-12.5	33.0	-45.5
WB-2	N: 437534.79	E: 1374488.60	-17.0	5.7	-22.7
WB-3	N: 437593.69	E: 1374278.70	-24.4	5.0	-29.4
WB-4	N: 437598.13	E: 1374141.57	-27.7	10.8	-38.5
WB-5	N: 437439.12	E: 1373965.76	-28.1	41.5	-69.6
WB-6	N: 437277.20	E: 1373792.72	-28.2	71.3	-99.5
WB-101	N: 437502.87	E: 1374598.97	-14.8	17.0	-31.8
WB-102	N: 437564.92	E: 1374376.94	-19.1	5.8	-24.9
WB-103	N: 437553.41	E: 1374255.24	-23.2	5.7	-28.9
WB-104	N: 437483.34	E: 1374183.77	-24.8	9.5	-34.3
WB-105	N: 437432.25	E: 1374129.25	-24.8	8.0	-32.8
WB-106	N: 437380.63	E: 1374074.35	-25.3	13.5	-38.8
WB-107	N: 437349.97	E: 1374297.60	-20.5	18.5	-39.0
WB-108	N: 437385.50	E: 1374618.51	-15.3	29.0	-44.3

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83

LEGEND

WB-# WATER BORING LOCATION

0 60 120 FT.
1"=60'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOCATION PLAN

SHEET NUMBER
B-100
6 OF 97

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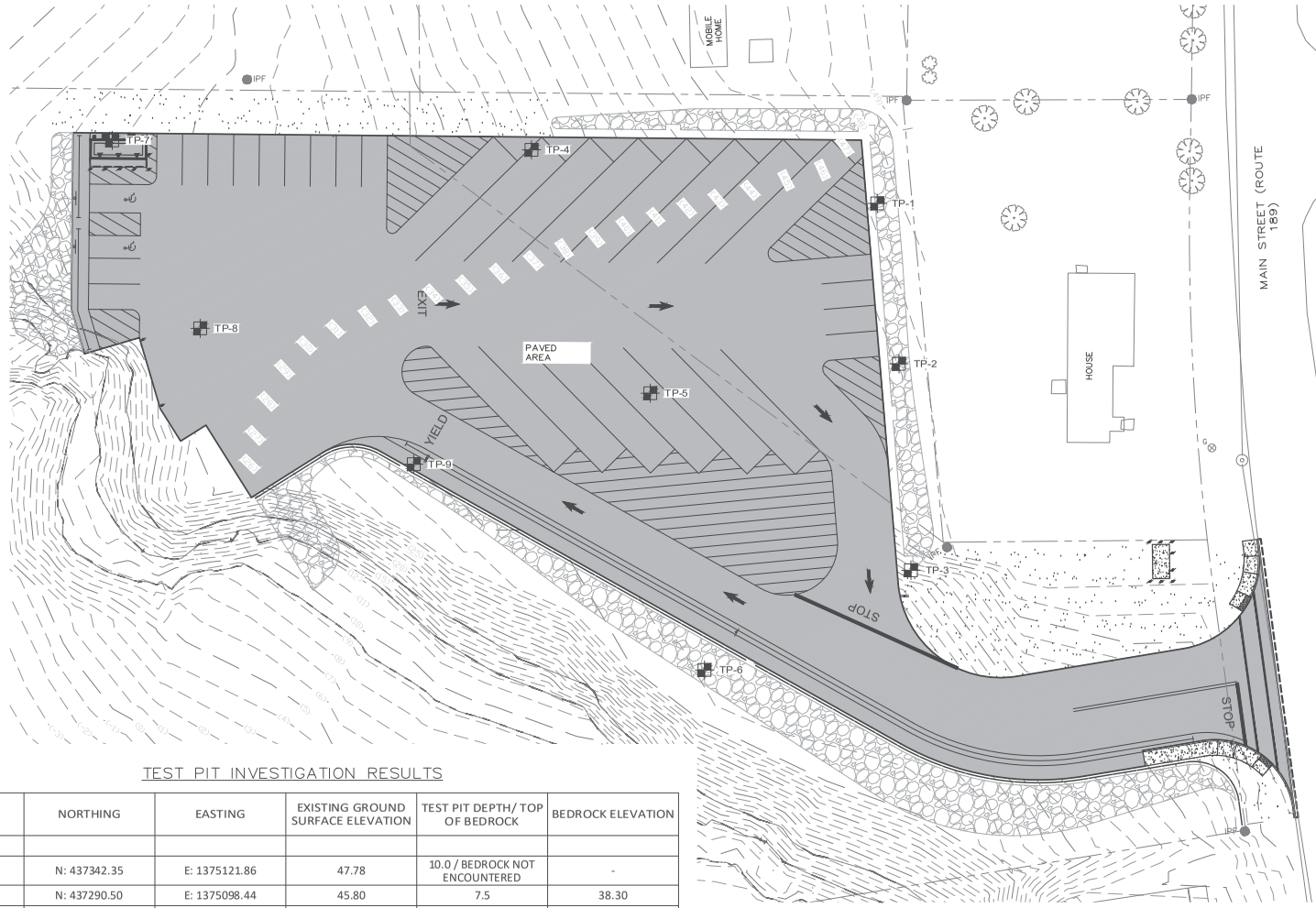

PLAN
1"=15'-0"

TEST PIT INVESTIGATION RESULTS

TEST PIT #	NORTHING	EASTING	EXISTING GROUND SURFACE ELEVATION	TEST PIT DEPTH/ TOP OF BEDROCK	BEDROCK ELEVATION
TP-1	N: 437342.35	E: 1375121.86	47.78	10.0 / BEDROCK NOT ENCOUNTERED	-
TP-2	N: 437290.50	E: 1375098.44	45.80	7.5	38.30
TP-3	N: 437226.76	E: 1375063.56	37.47	5.5	31.97
TP-4	N: 437422.68	E: 1375028.80	38.91	10.5 / BEDROCK NOT ENCOUNTERED	-
TP-5	N: 437328.04	E: 1375018.88	37.21	10.0	27.21
TP-6	N: 437235.48	E: 1374983.51	31.97	10.0	21.97
TP-7	N: 437503.54	E: 1374905.65	29.64	8.0	21.64
TP-8	N: 437431.17	E: 1374896.87	26.03	9.5	16.53
TP-9	N: 437350.92	E: 1374935.19	29.66	6.0-9.0	23.66

NOTES:
1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83

LEGEND
TP-# TEST PIT LOCATION

0 20 40 FT.
1"=20'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

TEST PIT LOCATION PLAN

SHEET NUMBER
B-101
7 OF 97

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LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-1
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	~12.5
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratostar5	DATUM	MAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto	GRID N	437471.63
40.3	Terminated					COORD E	1374716.91
						DATE START	7/14/23
						DATE END	7/17/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		7 5 1/12"	6	S-1	0 ~ 2	24/4		OH	S-1: Wet, medium stiff, 5Y 3/1 very dark gray, ORGANIC SILT, trace fine to coarse Sand, trace Shells, strong organics odor (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		3 3 4 6	7	S-2	2 ~ 4	24/6			S-2: Wet, medium soft, 5Y 3/1 very dark gray, Silty CLAY, little fine to coarse Sand, trace fine subangular to subrounded Gravel (CL); PP: 0.0 kg/cm2; TV: 0.0 kg/cm2	
		3 3 3 2	6	S-3	4 ~ 6	24/8			S-3: Wet, medium soft, 2.5Y 5/1 gray, CLAY, trace fine Sand (CL); PP: 2.0 kg/cm2; TV: 0.15 kg/cm2	
				U-1	6 ~ 8	24/24			U-1: Wet 5Y 4/1 dark gray, CLAY (CL)	
		3 5 6 7	10	S-4	8 ~ 10	24/24		CL	S-4: Wet, stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.4 kg/cm2	
		3 5 6 7	11	S-5	10 ~ 12	24/24			S-5A (Top 22"): Wet, stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), trace fine subangular to subrounded Gravel, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.15 kg/cm2	
									S-5B (Bottom 2"): Wet, 5Y 4/1 dark gray, CLAY, some fine to coarse Sand, some fine subangular to subrounded Gravel (CL); Till-like	
		WOH WOH WOH 4	0	S-6	15 ~ 17	24/24			S-6: Wet, very soft, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown, bottom 9" exclusively 5Y 3/1 very dark gray (CL); PP: 2.25 kg/cm2; TV: 0.2 kg/cm2	
									18.5	
		15 11 13 13	24	S-7	20 ~ 22	24/11			S-7: Wet, medium dense, 7.5YR 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some fine to coarse Sand, some Silty Clay (GC)	2
		10 18 34 45	52	S-8	25 ~ 27	24/3		TILL	S-8: Wet, very dense, 7.5YR 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
		65 45 30 40	75	S-9	30 ~ 32	24/8			S-9: Wet, very dense, 7.5YR 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
									33	

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/17/23, 8hour Water Column Depth measured at 15.1 feet. All sample depths feet below mudline
2. Top of Glacial Till at 18.50 ft; Clay and fine subangular to subrounded Gravel observed in return water

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-1
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		54 100/5"	> 100	S-10	35 ~ 35.9	11/11		BR	S-10: Wet, very dense, N3 dark gray, completely weathered SHALE, decomposed or disintegrated to a soil with discernible rock fabric [QUODDY FORMATION]	3
		100/4"	> 100	S-11	40 ~ 40.33	4/4			40.33 S-11: Wet, very dense, N3 dark gray, highly weathered SHALE, greater than half of the rock is decomposed or disintegrated to a soil with discernible rock fabric, fresh rock present at cornerstones [QUODDY FORMATION] Bottom of Borehole at 40.33 feet.	

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

3. Top of Weathered Bedrock at 35.0 feet below mudline

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-1

SHEET NUMBER

B-110

8 OF 97

File: C:\Users\ajlaz007482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\05-B-110 (Boring Logs-1).rvt Plotted: 7/19/2024 4:39 PM by SAIYADPAR, HASTI Saved: 7/19/2024 4:11 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-2
LOCATION	Johnson Bay		SHEET 1 OF 1
OWNER	Maine DOT		
JOB NUMBER	E2X95900		
INSPECTOR: Don Melcher	CONTRACTOR: New England Boring	DRILLER: Sam Cooley	ELEVATION: ~17
METHOD OF DRILLING	GROUNDWATER READINGS	DRILL RIG: GefcoStratastar5	DATUM: NAVD 88
0.0 Wash Boring w/Casing	DATE/TIME / DEPTH(ft) / REMARKS	SPT HAMMER: 140 lb Auto	GRID N: 437534.79
7.0 NX Rock Core			COORD E: 1374488.6
12.0 Wash Boring ~ Open Hole			DATE START: 7/17/23
			DATE END: 7/17/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 ~ 2	24/20		S-1: Wet, very soft, 5Y 3/1 very dark gray, ORGANIC SILT, some Shells (OH); Pocket Penetrometer: 0.0 kg/cm2; Torvane: 0.0 kg/cm2	1
		WOR 3 2 7	5	S-2	2 ~ 4	24/24		S-2A (Top 4"): Wet, very soft, 5Y 3/1 very dark gray, ORGANIC SILT, some Shells (OH); PP: 0.0 kg/cm2; TV: 0.0 kg/cm2	
		1 7 30 100/2"	37	S-3	4 ~ 5.7	20/9		S-2B (Middle 18"): Wet, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.1 kg/cm2	2
				C-1	7 ~ 8.7	20/20		S-2C (Bottom 2"): Wet, 7.5YR 5/1 gray, fine to coarse subangular to subrounded GRAVEL and Silty Clay, little fine to coarse Sand (GC)	3
		RQD=0		C-2	8.7 ~ 12	40/40		S-3: Wet, 10YR 5/1 gray, fine to coarse subangular to SUBROUNDED GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
		RQD=11						C-1: 7.0~8.7 ft, SHALE, N4 medium dark gray, silt to fine sand, moderately hard, medium strong, slightly weathered, very thinly to thinly bedded, moderately to steeply dipping bedding, steeply dipping to vertical quartz and calcite veining to 9 mm; very closely to closely spaced, steeply dipping bedding plane separations with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 8.5 ~ 4/8"	
								C-2: 8.7~12.0 ft, Siliceous SHALE, N4 medium dark gray, silt to fine sand, moderately hard, medium strong, slightly weathered, very thinly to thinly bedded, moderately to steeply dipping bedding, prominant horizontal to vertical quartz veining to > 50 mm; extremely closely to closely spaced, moderately to steeply dipping bedding plane separations with patchy quartz, calcite, and pyrite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3/4" ~ 8 ~ 8 ~ 7	
								Bottom of Borehole at 12 feet.	

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. All depths approx feet below mudline
2. Top of Bedrock at 5.7 feet below mudline
3. Core lowered likely due to high angle bedding plane separations

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AUBREE.GOODREAU
DESIGNER	PHIL.LUMBERS@N
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-2

SHEET NUMBER

B-111

9 OF 97

File: C:\Users\ss037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\09-B-111 (Boring Logs-2).; Plotted: 7/19/2024 4:39 PM by SAYADPAR, HASTI; Saved: 7/19/2024 4:13 PM by ARELAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-3
LOCATION	Johnson Bay		SHEET 1 OF 1
OWNER	Maine DOT		
JOB NUMBER	E2X95900		
INSPECTOR: Don Melcher	CONTRACTOR: New England Boring	DRILLER: Sam Cooley	ELEVATION: -24.4
METHOD OF DRILLING	GROUNDWATER READINGS	DRILL RIG: GefcoStratastar5	DATUM: NAVD 88
0.0 Wash Boring w/Casing	DATE/TIME / DEPTH(ft) / REMARKS	SPT HAMMER: 140 lb Auto	GRID N: 437593.69
5.0 NX Rock Core			COORD E: 1374278.7
10.0 Terminated			DATE START: 7/14/23
			DATE END: 7/14/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	SOIL AND ROCK DESCRIPTION	NOTES
-25	0	WOR WOR WOR WOR	0	S-1	0 ~ 2	24/10		S-1: Wet, very soft, 5Y 3/1 very dark gray, ORGANIC SILT, little Shells (OH); Pocket Penetrometer: 0.0 kg/cm2; Torvane: 0.0 kg/cm2	1
		6 7 100/0"	> 100	S-2	2 ~ 3	12/12		S-2: Wet, hard, 2.5Y 4/1 dark gray, CLAY, some fine subangular to subrounded Gravel (CL) 3.0-5.0 ft: Angular fragments of gray and red rock	2
-30	5	RQD=40		C-1	5 ~ 7.9	35/31		C-1: 5.0-7.9 ft, SANDSTONE, N5 medium gray, fine to medium sand, moderately hard, strong, slightly weathered, massive, steeply dipping bedding, horizontal to vertical quartz and calcite veining to 8 mm; closely to moderately spaced, steeply dipping bedding plane separations with patchy quartz and calcite, very closely to moderately spaced, shallow to moderately dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 6.5 ~ 6.5 ~ 8.5	3
-35	10	RQD=64		C-2	7.9 ~ 10	25/25		C-2: 7.9-10.0 ft, SANDSTONE, N5 medium gray, fine to medium sand, moderately hard, strong, slightly weathered, massive, steeply dipping bedding, horizontal to vertical quartz and calcite veining to 10 mm, steeply dipping contact with ARGILLITE at 9.6-10.0 ft; closely to moderately spaced, steeply dipping bedding plane separations with patchy quartz and calcite, closely spaced, shallow dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 9 ~ 8.5 Bottom of Borehole at 10 feet.	
-40	15								
-45	20								
-50	25								
-55	30								
-35	35								

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/14/23, static water column depth measured at 23.75 feet. At completion depths feet below mudline.
2. Roller bit advancement
3. Top of bedrock at 5.0 ft below mudline

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

NOT FOR CONSTRUCTION

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-3

SHEET NUMBER

B-112

10 OF 97

File: C:\Users\ds037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\10-B-112 (Boring Logs-3).; Plotted: 7/19/2024 4:39 PM by SAYADPAR, HASTI; Saved: 7/19/2024 4:14 PM by AREIAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-4
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring Contractors	DRILLER	Sam Cooley	ELEVATION	-27.7
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GefcoStratastar5	DATUM	MAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto	GRID N	437588.13
13.5	NX Rock Core					COORD E	1374141.57
44.0	Terminated					DATE START	7/10/23
						DATE END	7/11/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 ~ 2	24/22		OH	S-1: Wet, very soft, 5Y 3/1 very dark gray, ORGANIC SILT, some Shells (OH); Pocket Penetrometer (PP): 1.5 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		WOR WOR WOR 3	0	S-2	5 ~ 7	24/24			S-2: Wet, very soft, 2.5Y 3/1 very dark gray, CLAY, little Shells (CL); PP: 4.75 kg/cm2; TV: 0.15 kg/cm2	
				U-1	7 ~ 8	12/3		CL	U-1: Wet, 2.5Y 3/1 very dark gray, CLAY and fine to coarse rounded Stone Gravel (CL)	2
		1 6 7 14	13	S-3	8 ~ 10	24/24			S-3A (Top 21"): Wet, 2.5Y 3/1 very dark gray, CLAY, trace fine rounded Gravel (CL); PP: > 4.5 kg/cm2; TV: 0.175 kg/cm2	
		5 100/3"	> 100	S-4	10 ~ 10.75	9/9		8.75 GC	S-3B (Bottom 3"): Wet, 10YR 4/1 dark gray, CLAY, some fine to coarse rounded Gravel, some fine to coarse Sand (CL)	3
									S-4: Wet, very dense, 10YR 4/1 very dark gray, fine to coarse rounded GRAVEL, some Clay, some fine to coarse Sand (GC)	4
									10.75 ~ 13.5 ft: Angular fragments of grey rock [QUODDY FORMATION]	
				C-1	13.5 ~ 18.5	60/57			C-1: 13.5-18.25 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, moderately to steeply dipping calcite veining to 1 mm, irregular calcite spherules to 5 mm; extremely closely to moderately spaced, moderately to steeply dipping joints with patchy calcite to 0.15 mm and partial epidote coatings to 0.1 mm thick [QUODDY FORMATION]; Drilling Rate (min/ft): 11.5 ~ 5 ~ 5 ~ 3.75 ~ 6	
		RQD=78							18.25-18.5 ft, NO RECOVERY	
				C-2	18.5 ~ 23.5	60/60			C-2: 18.5-23.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, shallow to steeply dipping calcite veining to 7 mm, irregular calcite spherules to 6 mm; very closely to closely spaced, moderately to steeply dipping joints with patchy calcite to 0.15 mm and partial epidote coatings to 0.1 mm thick [QUODDY FORMATION]; Drilling Rate (min/ft): 4.5 ~ 5 ~ 5 ~ 5 ~ 5	
		RQD=43								
		RQD=0		C-3	23.5 ~ 24.5	12/8			C-3: 23.5-24.15 ft, TUFF, N5 medium gray to 5B 7/1 light bluish gray, coarse tuff to lapilli tuff, very soft to moderately hard, extremely weak to medium strong, highly to slightly weathered, massive, moderately dipping calcite veining to 3 mm; extremely closely to closely spaced, moderately to steeply dipping joints with patchy calcite to 0.1 mm [QUODDY FORMATION]; Drilling Rate (min/ft): 5	5
				C-4	24.5 ~ 29.5	60/55.5			24.15-24.50 ft, NO RECOVERY	
		RQD=56						BR	C-4: 24.5-29.1 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, steeply dipping calcite veining to 1 mm, irregular calcite spherules to 5 mm; very closely to moderately spaced, moderately dipping joints with patchy calcite to 2 mm and partial epidote coatings to 0.1 mm thick [QUODDY ORMATION]; Drilling Rate (min/ft): 4.5 ~ 4.5 ~ 4.5 ~ 5 ~ 6	
				C-5	29.5 ~ 33.5	48/48			29.1-29.5 ft, NO RECOVERY	6
		RQD=60							C-5: 29.5-33.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, shallow to steeply dipping calcite veining to 3 mm, irregular calcite spherules to 5 mm; very closely to closely spaced, moderately to steeply dipping joints with patchy calcite to 0.1 mm [QUODDY FORMATION]; Drilling	
				C-6	33.5 ~ 38.2	56/56				

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 17/19/23, 17#SS WOH/ sinkage depth 24.9 feet, high frac mt sapropel samples from below mudline
2. Piston sampler did not fire/engage; 12" penetrated; 5" recovered and placed in jar for characterization
3. Top of BEDROCK at 10.75 feet below mudline
4. Refer bft correspondence
5. Core jammed at 24.5 ft
6. Bottom 4 inches recovered in C-8 core run

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-4
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		RQD=63							Rate (min/ft): 3 ~ 4.25 ~ 5.75 ~ 6	
				C-7	38.2 ~ 41.95	45/45			C-6: 33.5-38.2 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, moderately dipping calcite veining to 6 mm, irregular calcite spherules to 4 mm; very closely to moderately spaced, moderately to steeply dipping joints with patchy calcite to 0.1 mm [QUODDY FORMATION]; Drilling Rate (min/ft): 5 ~ 25 ~ 5.5 ~ 6 ~ 6/8"	
		RQD=84							C-7: 38.2-41.95 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, moderately dipping quartz veining to 15 mm, irregular calcite spherules to 5 mm; very closely to moderately spaced, steeply dipping to vertical joints with calcite coatings to 3 mm thick [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5 ~ 3.5 ~ 3.5 ~ 3.5 ~ 2.5	
				C-8	41.95 ~ 43.95	24/24			C-8: 41.95-43.95 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, moderately to steeply dipping calcite veining to 8 mm, steeply dipping quartz veining to 15 mm; closely to moderately spaced, steeply dipping joints with partial epidote coatings to 0.1 mm thick [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5 ~ 2.5	
		RQD=92							Bottom of Borehole at 43.95 feet.	

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	PHIL LANERGAN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-4

SHEET NUMBER

B-113

11 OF 97

File: C:\Projects\D0748\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\11-B-113 (Boring Logs-4).rtf Plotted: 7/19/2024 4:39 PM by SAVADPAR, HASTI Saved: 7/19/2024 4:15 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater
LOCATION	Johnson Bay
OWNER	Maine DOT
JOB NUMBER	E2X95900

BORING NO. WB-5

SHEET 1 OF 3

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-28.09
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceShirasiaor5	DATUM	NAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto	GRID N	437439.12
45.0	NX Rock Core					COORD E	1373965.76
75.0	Terminated					DATE START	7/11/23
						DATE END	7/12/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER LINE	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR	0	S-1	0 ~ 2	24/15		OH	S-1: Wet, very loose, 5Y 3/2 dark olive gray, ORGANIC SILT, some Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
-30		4 3 4 8	7	S-2	2 ~ 4	24/22			S-2A (Top 15"): Wet, 5Y 3/2 dark olive gray, ORGANIC SILT, some Shells (OH); PP: 0.0 kg/cm2; TV: 0.0 kg/cm2	
	-5			U-1	4 ~ 4.85	10/10		5.25	S-2B (Bottom 7"): Wet, 10YR 5/2 grayish brown, CLAY (CL); PP: 4.5 kg/cm2; TV: 0.75 kg/cm2	2
		8 9 16 21	25	S-3	5 ~ 7	24/24			U-1: Wet, 5Y 3/2 dark olive gray, CLAY (CL); PP: > 4.5 kg/cm2; TV: 0.75 kg/cm2 S-3: Wet, very stiff, 10YR 5/2 grayish brown, CLAY, trace Shells (CL); PP: > 4.5 kg/cm2; TV: 0.35 kg/cm2	
-35		3 7 10 13	17	S-4	7 ~ 9	24/24			S-4: Wet, very stiff, 5Y 5/1 gray, CLAY, trace fine Sand (fine sand lenses to 0.1 mm thick) (CL); PP: > 4.5 kg/cm2; TV: 0.15 kg/cm2	
	-10	8 8 11 10	19	S-5	9 ~ 11	24/24			S-5: Wet, very stiff, CLAY, trace fine Sand (fine sand lenses to 0.1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.15 kg/cm2	
-40		5 9 10 14	19	S-6	11 ~ 13	24/24			S-6: Wet, very stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.75 kg/cm2	
	-15	10 10 9 10	19	S-7	13 ~ 15	24/24			S-7: Wet, very stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.30 kg/cm2	
-45										
	-20	WOH 3 4 7	7	S-8	18 ~ 20	24/24			S-8: Wet, medium soft, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.1 kg/cm2	
-50								CL		
	-25	2 4 5 7	9	S-9	23 ~ 25	24/24			S-9: Wet, stiff, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 4.5 kg/cm2; TV: 0.15 kg/cm2	
-55										
	-30	WOH 2 3 4	5	S-10	28 ~ 30	24/24			S-10: Wet, medium stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 4.5 kg/cm2; TV: 0.65 kg/cm2	
-60										
	-35	WOH WOH 5	5	S-11	33 ~ 35	24/24			S-11: Wet, medium soft, CLAY, trace fine Sand (fine sand lenses to 3 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 3.5 kg/cm2; TV: 0.2 kg/cm2	

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/11/23, 09:00: Water column depth 30.1 feet. All depths depths feet below mudline
2. Insufficient volume for testing

LOG OF TEST BORING

PROJECT	Lubec Breakwater
LOCATION	Johnson Bay
OWNER	Maine DOT
JOB NUMBER	E2X95900

BORING NO. WB-5

SHEET 2 OF 3

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER LINE	SOIL AND ROCK DESCRIPTION	NOTES
		4								
	-40	2 2 2 3	4	S-12	38 ~ 40	24/24			S-12: Wet, medium soft, CLAY, little fine Sand (fine sand lenses to 40 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 4.25 kg/cm2; TV: 0.25 kg/cm2	
	-70								41.5	
		100/3"	>100	S-13	43 ~ 43.25	3/0			41.5 ~ 43.0 ft: Angular fragments of gray rock; Glacial Till or Bedrock S-13: NO RECOVERY 43.25 ~ 45.0 ft: Angular fragments of gray rock [QUODDY FORMATION]	3 4
	-45			C-1	45 ~ 47	24/24			C-1: 45.0~47.0 ft, SHALE, N3 dark gray, clay to silt, laminated to very thinly bedded, steeply dipping to vertical bedding, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 6.5 ~ 9.5	5
	-75	RQD=0		C-2	47 ~ 48	12/12			C-2: 47.0~48.0 ft, SHALE, N3 dark gray, clay to silt, laminated to very thinly bedded, vertical bedding, extremely fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 7	5
		RQD=0		C-3	48 ~ 49.85	22/22			C-3: 48.0~49.85 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, very thinly bedded, steeply dipping bedding, moderately dipping quartz and calcite veining to 1 mm; extremely closely to closely spaced, steeply dipping bedding plane separations with patchy quartz and calcite, closely spaced, moderately dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 7 ~ 9/10"	5
	-50	RQD=23		C-4	49.85 ~ 50.85	12/12			C-4: 49.85~50.85 ft, SHALE, N3 dark gray, clay to silt, laminated, vertical bedding, extremely fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 10	5
		RQD=0		C-5	50.85 ~ 51.85	12/12			C-5: 50.85~51.85 ft, SHALE, N3 dark gray, clay to silt, laminated, vertical bedding, extremely fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 8	5
	-80	RQD=0		C-6	51.85 ~ 54.85	36/36			C-6: 51.85~54.85 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, very thinly bedded, steeply dipping bedding, moderately dipping healed fractures with quartz and calcite infilling to < 1 mm with bedding displacement to 2 mm; closely spaced, steeply dipping bedding plane separations with patchy quartz and calcite, closely spaced, moderately dipping joints with patchy quartz and calcite, extremely fractured at 53.2~54.85 ft [QUODDY FORMATION]; Drilling Rate (min/ft): 6 ~ 6 ~ 5.5	5
		RQD=0		C-7	54.85 ~ 56.85	24/24			C-7: 54.85~56.85 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping bedding, moderately dipping to vertical quartz veining to 30 mm, pyrite inclusions to 25 mm; closely to moderately spaced, steeply dipping bedding plane separations with patchy quartz [QUODDY FORMATION]; Drilling Rate (min/ft): 5.5 ~ 13	5
	-55	RQD=67		C-8	56.85 ~ 58.85	24/24			C-8: 56.85~58.85 ft, SHALE, N3 dark gray, clay to silt, laminated to very thinly bedded, steeply dipping bedding, moderately dipping to vertical quartz veining to > 50 mm throughout; extremely closely to moderately spaced, steeply dipping bedding plane separations with fresh surfaces [QUODDY FORMATION]; Drilling Rate (min/ft): 4.5 ~ 4.5 ~ 5.75 ~ 6.5 ~ 6.5	5
		RQD=19		C-9	58.85 ~ 63.85	60/60		BR	C-9: 58.85~63.85 ft, SHALE, N3 dark gray, clay to silt, hard, strong, fresh, laminated to very thinly bedded, steeply dipping bedding, prominant quartz veining to > 50 mm throughout; extremely closely to moderately spaced, steeply dipping bedding plane separations with fresh surfaces [QUODDY FORMATION]; Drilling Rate (min/ft): 7.25 ~ 12.5	
	-85	RQD=93		C-10	63.85 ~ 68.4	60/55.5			C-10: 63.85~68.4 ft, Siliceous SHALE, N3 dark gray, clay to silt, hard, strong, fresh, laminated to very thinly bedded, steeply dipping bedding, moderately dipping to vertical quartz veining to > 50 mm; very closely to moderately spaced, moderately to steeply dipping bedding plane separations with patchy quartz and calcite [QUODDY FORMATION];	
	-60	RQD=67		C-11	68.85 ~ 70.85	24/24				5
	-90	RQD=19		C-12	70.85 ~ 72.85	24/24				
		RQD=42		C-13	72.85 ~ 75	26/26				
	-65	RQD=88								

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

3. Top of bedrock likely at 41.5 feet below mudline; Roller bit advancement
4. Roller bit advancement
5. Core jammed likely due to high angle bedding plane separations

LOG OF TEST BORING

PROJECT	Lubec Breakwater
LOCATION	Johnson Bay
OWNER	Maine DOT
JOB NUMBER	E2X95900

BORING NO. WB-5

SHEET 3 OF 3

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER LINE	SOIL AND ROCK DESCRIPTION	NOTES
	-75							75	Drilling Rate (min/ft): 6 ~ 6 ~ 5.5 ~ 6.5 ~ 6.5 68.4~68.85 ft, NO RECOVERY C-11: 66.85~70.85 ft, SHALE, N3 dark gray, clay to silt, laminated to very thinly bedded, steeply dipping to vertical bedding, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 8 ~ 8 C-12: 70.85~72.85 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated to very thinly bedded, steeply dipping to vertical bedding; extremely closely to moderately spaced, steeply dipping to vertical bedding plane separations with fresh surfaces, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 8.25 ~ 8.5 C-13: 72.85~75.0 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated to very thinly bedded, steeply dipping to vertical bedding, horizontal to shallow dipping quartz veining to 1 mm; closely spaced, steeply dipping bedding plane separations with fresh surfaces, closely spaced, moderately dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 9 ~ 9.5 ~ 2/2" Bottom of Borehole at 75 feet.	
	-105									
	-80									
	-110									
	-85									
	-115									
	-90									
	-120									
	-95									
	-125									
	-100									
	-130									
	-105									
	-135									
	-110									
	-140									

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-5

SHEET NUMBER

B-114

12 OF 97

283

File: C:\Users\ss037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\12-B-114 (Boring Logs-5).rtf Plotted: 7/19/2024 4:39 PM by SAVADPAR, HASTI. Saved: 7/19/2024 4:24 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-6
LOCATION	Johnson Bay		SHEET 1 OF 4
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Melcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-28.2
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceShratastor5	DATUM	NAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER	140 lb Auto	GRID N 437277.2
73.0	NX Rock Core						COORD E 1373782.72
105.0	Terminated						DATE START 7/12/23
							DATE END 7/13/23

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER LINE	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOH	0	S-1	0 ~ 2	24/13			S-1: Wet, very loose, 5Y 3/2 dark olive gray, ORGANIC SILT (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.05 kg/cm2	1
-30		WOH WOH WOH 2	0	S-2	2 ~ 4	24/24		OH	S-2A (Top 18"): Wet, 5Y 3/2 dark olive gray, some Shells, ORGANIC SILT (OH); PP: 1.25 kg/cm2; TV: 0.05 kg/cm2	
	5			U-1	4 ~ 6	24/24		3.5	S-2B (Bottom 6"): Wet, 5Y gray, CLAY (CL); PP: 4.25 kg/cm2; TV: 0.15 kg/cm2	
									U-1: Wet, 5Y 5/1 gray, CLAY (CL)	
-35		3 4 4 7	8	S-3	6 ~ 8	24/24			S-3: Wet, medium soft, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.15 kg/cm2	
		3 6 7 8	13	S-4	8 ~ 10	24/24			S-4: Wet, stiff, CLAY, little fine rounded Gravel, little Shells, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.20 kg/cm2	
	10	4 4 2 5	6	S-5	10 ~ 12	24/24			S-5: Wet, medium soft, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 3.75 kg/cm2; TV: 0.20 kg/cm2	
-40										
		1 2 3 4	5	S-6	15 ~ 17	24/24			S-6: Wet, medium soft, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.20 kg/cm2	
-45	15									
		WOH 3 4 6	7	S-7	20 ~ 22	24/24		CL	S-7: Wet, medium soft, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.10 kg/cm2	
-50	20									
		WOH 3 5 6	8	S-8	25 ~ 27	24/24			S-8: Wet, stiff, CLAY, horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: 4.5 kg/cm2; TV: 0.175 kg/cm2	
-55	25									
		WOH 3 5 5	8	S-9	30 ~ 32	24/24			S-9: Wet, stiff, CLAY, trace fine Sand (fine sand lenses to 1 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.30 kg/cm2	
-60	30									
	35									

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/12/23, 1200: Water elevation depth 29.7 feet, Low tide; All samples depths feet below mudline

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-6
LOCATION	Johnson Bay		SHEET 2 OF 4
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	BR NAME	SOIL AND ROCK DESCRIPTION	NOTES
		1 3 6 9	9	S-10	35 ~ 37	24/24			S-10: Wet, stiff, CLAY, little fine Sand (fine sand lenses to 20 mm thick), horizons of 5Y 4/1 dark gray, 5Y 3/1 very dark gray, and 7.5YR 5/2 brown (CL); PP: > 4.5 kg/cm2; TV: 0.25 kg/cm2	
-65										
	40	4 13 22 19	35	S-11	40 ~ 42	24/10		40.25	S-11A (Top 3"): Wet, 5Y 4/1 dark gray, CLAY (CL)	2
-70									S-11B (Bottom 7"): Wet, 5YR 5/1 gray, fine to coarse subangular to rounded GRAVEL, some fine to coarse Sand, some Silty Clay (GC)	
	45	18 22 26 23	48	S-12	45 ~ 47	24/6			S-12: Wet, dense, 5YR 5/1 gray, fine to coarse subangular to rounded GRAVEL, some fine to coarse Sand, little Silty Clay (GC)	
-75										
	50	22 22 33 33	55	S-13	50 ~ 52	24/6			S-13: Wet, dense, 7.5YR 5/1 gray, fine to coarse subangular to rounded GRAVEL, some fine to coarse Sand, some Silty Clay (GC)	
-80										
	55	41 28 20 34	48	S-14	55 ~ 57	24/0		TILL	S-14: NO RECOVERY	
-85										
	60	19 17 10 18	27	S-15	60 ~ 62	24/3			S-15: Wet, dense, 5YR 3/1 very dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
-90										
	65	7 5 4 4	9	S-16	65 ~ 67	24/2.5			S-16: Wet, loose, 5YR 3/1 very dark gray, fine to coarse subangular GRAVEL, some fine to coarse Sand, some Silty Clay (GC)	
-95										
	70	100/5"	100/5"	S-17	70 ~ 70.4	5/5		71.25	S-17A (Top 3"): Wet, dense, 5YR 3/1 very dark gray, fine to coarse subangular GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	3
-100									S-17B (Bottom 3"): SHALE, N1 black, highly weathered, discernible rock fabric [QUODDY FORMATION]	
		RQD=0		C-1	73 ~ 74.25	15/15			C-1: 73.0~74.25 ft, SHALE, N3 dark gray, clay to silt, extremely to moderately fractured, steeply dipping to vertical bedding plane	4

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

2. Top of Glacial Till at 40.25 ft
3. Top of bedrock at 71.25 feet below mudline
4. Core jammed likely due to high angle bedding plane separations

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-6
LOCATION	Johnson Bay		SHEET 3 OF 4
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	BR NAME	SOIL AND ROCK DESCRIPTION	NOTES
-75		RQD=35		C-2	74.25 ~ 76.15	23/23			separations [QUODDY FORMATION]; Drilling Rate (min/ft): 5.5 ~ 4.5/9"	4
-105				C-3	76.15 ~ 79.65	42/42			C-2: 74.25~76.15 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, laminated to thinly bedded, steeply dipping to vertical bedding, steeply dipping epidote veining to 0.1 mm; very closely to closely spaced, steeply dipping to vertical bedding plane separations with patchy epidote [QUODDY FORMATION]; Drilling Rate (min/ft): 5/3" ~ 8 ~ 3/2"	4
		RQD=24							C-3: 76.15~79.65 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping to vertical bedding, shallow to steeply dipping quartz and calcite veining to 6 mm, steeply dipping epidote veining to 1 mm; very closely to moderately spaced, steeply dipping to vertical bedding plane separations with patchy quartz, calcite, and epidote, very closely to closely spaced, moderately dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 3.5/8" ~ 5 ~ 6 ~ 5	
-80				C-4	79.65 ~ 84	52/52			C-4: 79.65~84.0 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated, moderately to steeply dipping bedding, steeply dipping quartz and calcite veining to 3 mm; extremely closely to moderately spaced, moderately to steeply dipping bedding plane separations with fresh surfaces [QUODDY FORMATION]; Drilling Rate (min/ft): 2/4" ~ 5 ~ 5 ~ 5	4
-110		RQD=58							C-5: 84.0~89.0 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated, moderately dipping to vertical bedding, shallow to moderately dipping quartz and calcite veining to 1 mm; closely to moderately spaced, moderately dipping to vertical bedding plane separations with fresh surfaces [QUODDY FORMATION]; Drilling Rate (min/ft): 6 ~ 6 ~ 6 ~ 5	
				C-5	84 ~ 89	60/60			C-6: 89.0~90.75 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated, steeply dipping to vertical bedding, steeply dipping quartz and calcite veining to 2 mm; extremely closely to closely spaced, steeply dipping to vertical bedding plane separations with fresh surfaces, closely spaced, moderately dipping joints with patchy calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 5.5 ~ 5/9"	
-85		RQD=82							C-7: 90.75~94.6 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, laminated, steeply dipping to vertical bedding, shallow dipping to vertical dipping quartz and calcite veining to 6 mm; extremely closely to widely spaced, steeply dipping to vertical bedding plane separations with fresh surfaces, moderately spaced, shallow to moderately dipping joints with iron oxide staining and patchy calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 3/3" ~ 7 ~ 7 ~ 6.75/7"	
				C-6	89 ~ 90.75	21/21		BR		4
-115		RQD=29		C-7	90.75 ~ 94.6	46/46				4
		RQD=76							C-8: 94.6~97.5 ft, Siliceous SHALE, N3 dark gray, clay to fine sand, hard, strong, slightly weathered, laminated to very thinly bedded, steeply dipping to vertical bedding, horizontal to shallow dipping quartz, calcite, and pyrite veining to 1 mm, prominent vertical quartz veining to > 50 mm; very closely to closely spaced, horizontal to shallow dripping joints with partial calcite coatings to 0.1 mm thick, closely spaced, steeply dipping to vertical bedding plane separations with patchy pyrite and calcite, extremely fractured at 97.25~97.50 ft [QUODDY FORMATION]; Drilling Rate (min/ft): 2.25/5" ~ 7.25 ~ 5.25 ~ 4.5/6"	
-90				C-8	94.6 ~ 97.5	35/35				4
		RQD=49		C-9	97.5 ~ 100	30/30			C-9: 97.5~100.0 ft, SHALE, N3 black, clay to silt, laminated, extremely to moderately fractured, steeply dipping to vertical bedding plane separations with fresh surfaces [QUODDY FORMATION]; Drilling Rate (min/ft): 4.75/5" ~ 6.75 ~ 5	4
-120		RQD=0							C-10: 100.0~102.0 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, fresh, laminated, vertical bedding, shallow dipping to vertical quartz and calcite veining to 1 mm; extremely closely to moderately spaced, vertical bedding plane separations with fresh surfaces, very closely to closely spaced, shallow to moderately dipping joints with patchy quartz and calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 6.75 ~ 15	
				C-10	100 ~ 102	24/24				4
-125		RQD=42							C-11: 102.0~103.0 ft, SHALE, N3 dark gray, clay to silt, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, vertical bedding, shallow to moderately dipping quartz and calcite veining to 1 mm; extremely closely to closely spaced, vertical bedding	
		RQD=42		C-11	102 ~ 103	12/12				
-130		RQD=71		C-12	103 ~ 105	24/24	105			
-105										
-135										
-110										
-140										

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

4. Core jammed likely due to high angle bedding plane separations

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	PHIL LANERGAN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-6 (SEET 1 OF 2)

SHEET NUMBER

B-115

13 OF 97

284

File: C:\Projects\07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\13-B-115 (Boring Logs-64) - Plotted: 7/19/2024 4:39 PM by SAYADYAR, HASTI - Saved: 7/19/2024 4:39 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-6
LOCATION	Johnson Bay		SHEET 4 OF 4
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (m)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (m)	PEN/REC (in)/(in)	PID (ppm)	RQD %	SOIL AND ROCK DESCRIPTION	NOTES
-115									plane separations with patchy calcite, very closely to closely spaced, moderately dipping joints with patchy calcite and quartz [QUODDY FORMATION]; Drilling Rate (min/ft): 9 C-12: 103.0-105.0 ft, SHALE, N5 dark gray, clay to fine sand, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping to vertical bedding, steeply dipping quartz, calcite, and pyrite veining to 1 mm; closely to moderately spaced, shallow to moderately dipping joints with patchy calcite, vertical bedding plane separations with fresh surface at 104.15 ft [QUODDY FORMATION]; Drilling Rate (min/ft): 8.25 - 8.25 Bottom of Borehole at 105 feet.	
-145										
-120										
-150										
-125										
-155										
-130										
-160										
-135										
-165										
-140										
-170										
-145										
-175										
-150										
-180										

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-6 (SEET 2 OF 2)

SHEET NUMBER

B-116

File: C:\Users\ajs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\14-B-116 (Boring Logs-6B) - Plotted: 7/19/2024 4:39 PM by SAYADFAR, HASTI - Saved: 7/19/2024 4:32 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-101
LOCATION	Johnson Bay		SHEET 1 OF 1
OWNER	Maine DOT		
JOB NUMBER	E2X95900		
INSPECTOR	Don Melcher	CONTRACTOR	New England Boring
METHOD OF DRILLING		GROUNDWATER READINGS	
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)
17.0	NX Rock Core		
21.6	Terminated		

DRILLER	Sam Cooley	ELEVATION	~14.8
DRILL RIG	GefcoStratastar5	DATUM	NAVD 88
REMARKS	SPT HAMMER 140 lb Auto	GRID N	437502.87
		COORD E	1374598.97
		DATE START	2/22/24
		DATE END	2/22/24

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	SOIL USCS	SOIL AND ROCK DESCRIPTION	NOTES
~15		WOR WOR WOR	0	S-1	0 ~ 2	24/15		OH	S-1A (Top 13"): Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, some Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		WOR WOR 6	6	S-2	2 ~ 4	24/17		CL	S-1B (Bottom 2"): Wet, very soft, 5Y 3/2 dark olive, gray, CLAY (CL)	
		3 2 7 8	9	S-3	4 ~ 6	24/7			S-2A (Top 13"): Wet, 5Y 3/2 dark olive gray, CLAY, trace fine to coarse Sand (CL); Pocket Penetrometer (PP): 4.5 kg/cm2; Torvane (TV): 0.05 kg/cm2	
~-20	5	4 5 6 10	11	S-4	6 ~ 8	24/7			S-2B (Bottom 4"): Wet, 2.5Y 3/1 dark gray, fine to coarse subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
		14 15 9 7	24	S-5	8 ~ 10	24/5		TILL	S-3: Wet, loose, 5Y 3/2 dark greyish brown, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
~-25	10	8 12 16 40	28	S-6	10 ~ 12	24/9			S-4: Wet, stiff, 2.5Y 4/2 dark greyish brown, SILTY CLAY, little fine to coarse subangular to subrounded Gravel, little fine to coarse Sand (CL)	
									S-5: Wet, medium dense, 2.5Y 4/2 dark greyish brown, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
									S-6: Wet, medium dense, 2.5Y 4/2 dark greyish brown, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand (GC)	
~-30	15	19 100/0"	>100	S-7	14 ~ 14.5	6/3			S-7: Wet, very dense, 2.5Y 4/2 dark greyish brown and 2.5Y 3/1 dark gray, fine to coarse subangular to subrounded GRAVEL, little Silty Clay, little fine to coarse Sand (GC)	2
								W/R	14.5 ~ 17.0 ft, weathered gray SHALE [QUODDY FORMATION]	
				C-1	17 ~ 18.6	19/19		BEDROCK	C-1: 17.0-18.6 ft, SHALE, M3 dark gray, clay to very fine sand, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping bedding, plane separations with patchy calcite and pyrite; closely spaced, shallow to moderately dipping joints with patchy calcite and pyrite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 4.5 ~ 3.5/7"	3
		RQD=0		C-2	18.6 ~ 20	17/17			C-2: 18.6-20.0 ft, SHALE, M3 dark gray, clay to very fine sand, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping bedding, steeply dipping calcite fracture infilling to 1 mm; closely spaced, steeply dipping bedding plane separation with oxide staining, and patchy calcite; closely spaced vertical joints with patchy calcite and pyrite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3/5" ~ 4	4
~-35	20	RQD=29		C-3	20 ~ 21.6	19/19			C-3: 20.0-21.6 ft, SHALE, M3 dark gray, clay to very fine sand, moderately hard, medium strong, slightly weathered, laminated to very thinly bedded, steeply dipping bedding, very closely to closely spaced, moderately dipping joints with patchy calcite, very closely spaced healed fractures parallel to joint set, extremely fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 4.5 ~ 4/7"	5
		RQD=0							Bottom of Borehole at 21.6 feet.	
~-40	25									
~-45	30									
~-35	35									

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 23' 2" water column measured at Bz40 on 02/22/2024.
2. Angular fragments of gray weathered bedrock observed in return water.
3. Top of bedrock at 17.0 ft below mudline.
4. Core jammed likely due to high angle bedding.
5. Borehole total depth 21.6 ft.

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-101

SHEET NUMBER

B-117

15 OF 97

File: C:\Users\ds07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\15-B-117 (Boring Logs-101).rtf, Plotted: 7/19/2024 4:39 PM by SAYADYAR, HASTI , Saved: 7/19/2024 4:32 PM by AREAD

LOG OF TEST BORING

	PROJECT	Lubec Breakwater	BORING NO.	WB-102	
	LOCATION	Johnson Bay		SHEET 1 OF 1	
	OWNER	Maine DOT			
	JOB NUMBER	E2X95900			
INSPECTOR: Don Melcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION: ~19.1
METHOD OF DRILLING	GROUNDWATER READINGS		DRILL RIG	GefcoStratastar5	DATUM: NAVD 88
0.0 Wash Boring w/Casing	DATE/TIME	DEPTH(ft) REMARKS	SPT HAMMER	140 lb Auto	GRID N 437564.92
6.0 NX Rock Core					COORD E 1374576.94
11.0 Terminated					DATE START 2/22/24
					DATE END 2/23/24

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	GRAPHIC LOG	SOIL AND ROCK DESCRIPTION	NOTES
~20	5	WOR WOR WOR WOR	0	S-1	0 ~ 2	24/15		OH	S-1: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, trace Shells (OH); Pocket Penetrometer (PP): 1.0 kg/cm2; Torvane (TV): 0.05 kg/cm2	1
		WOH WOH WOH WOH	0	S-2	2 ~ 4	24/15			S-2: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	
				U-1	4 ~ 5.1	13/0			U-1: No recovery.	2
~25		WOH/2" 100/3"	>100	S-3	5.1 ~ 5.91	10/10		SC/CL	S-3A (Top 5"): Wet, 5Y 3/1 dark gray, SILTY CLAY (CL); Pocket Penetrometer (PP): 4.5 kg/cm2; Torvane (TV): 0.3 kg/cm2 S-3B (Bottom 5"): Wet, 5Y 3/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, little fine to coarse Sand (GC)	3 4
		RQD=72		C-1	6 ~ 11	60/57.5		BEDROCK	S-3: 5.1'-5.3' FT, gray SHALE [QUODDY FORMATION] C-1: 6~10.8 ft, SHALE, N5 medium gray, siliceous, silt to fine sand, moderately hard to hard, medium strong to strong, fresh, laminated to thinly bedded, steeply dipping to vertical bedding, steeply dipping to vertical quartz veining to 10 mm parallel to bedding; closely to moderately spaced, steeply dipping bedding plane separations with patchy calcite, vertical bedding plane separation with patchy calcite at 10.2 ft, very closely to moderately spaced, shallow to moderately dipping joints with patchy calcite and partial calcite coating to 0.1 mm, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3~3.5~3.5~5.5 Bottom of Borehole at 11 feet.	
~30	10									
~35	15									
~40	20									
~45	25									
~50	30									
	35									

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 11' 10" water column measured at 15:30 on 02/22/2024.
2. Shelby Tube refusal at 5.1', Shelby Tube head during advancement.
3. Angular fragments of gray bedrock observed in return water; top of bedrock at 5.8 ft below mudline.
4. 10.8~11.0 ft No recovery. Borehole total depth 11.0 ft.

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-102

SHEET NUMBER

B-118

16 OF 97

File: C:\Users\ksd07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\16-B-118 (Boring Logs-102).rtf Plotted: 7/19/2024 4:39 PM by SAYADYAR, HASTI Saved: 7/19/2024 4:33 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-103
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratastar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
5.7	Rollerbit				
6.5	MX Rock Core				
37.0	Terminated				

ELEVATION	-23.2		
DATUM	MAVD 88		
GRID	N	437553.41	
COORD	E	1374255.24	
DATE START	2/26/24		
DATE END	2/26/24		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS/ BEDROCK	SOIL AND ROCK DESCRIPTION	NOTES
-25		WOR WOR WOR WOR	0	S-1	0 - 2	24/24		OH	S-1: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, little Shells (OH); Pocket Penetrometer (PP): 0.5 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		WOR WOR WOR WOR 2	0	S-2	2 - 4	24/24			S-2A (Top 20"): Wet, 5Y 3/1 dark gray, ORGANIC SILT, little Shells (OH); Pocket Penetrometer (PP): 1.5 kg/cm2; Torvane (TV): 0.15 kg/cm2;	
				U-1	4 - 5.6	19/16.5			S-2B (Bottom 4"): Wet, 5Y 3/1 dark gray, SILTY CLAY (CL)	
-5								3.67	U-1: Wet, 5Y 3/1 dark gray, SILTY CLAY (CL)	
		100/1"	>100	S-4	5.6 - 5.7	1/1		CL		
-30				C-1	6.5 - 9.1	31/31		5.7	S-3: Wet, very dense, 5Y 3/2 dark olive gray, fine to coarse angular GRAVEL, some Silty Clay (GC)	2 3
		RQD=40							5.7-6.5 ft: Weathered gray TUFF [QUODDY FORMATION]	
									C-1: 6.5-9.1 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, hard to moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 7 mm, very closely to closely spaced, shallow to steeply dipping joints with partial calcite coatings to 0.5 mm thick, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3.5-5-6/7"	
-10				C-2	9.1 - 13.2	49/49			C-2: 9.1-13.2 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 10 mm, very closely to moderately spaced, shallow to steeply dipping joints with patchy calcite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5-3.5-3-3/13"	
-35		RQD=67								
				C-3	13.2 - 18.2	60/60			C-3: 13.2-18.2 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard to hard, medium strong to strong, slightly weathered, massive, prominant steeply dipping to vertical quartz and calcite veining to 30 mm, closely to widely spaced, moderately to steeply dipping joints with patchy calcite, moderately fractured to sound [QUODDY FORMATION]; Drilling Rate (min/ft): 1-3.5-4-3-3.5	
-15		RQD=100								
-40				C-4	18.2 - 23	58/58			C-4: 18.2-23.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 10 mm, elongated calcite spherules ranging 5-10 mm in length, very closely to moderately spaced, shallow to moderately dipping joints with calcite coating to 0.2 mm thick, moderately to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3-2.5-2.5-3.5-3	4
-20		RQD=80								
-45				C-5	23 - 28	60/57			C-5: 23.0-28.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 5 mm, elongated calcite spherules to 7 mm in length, closely to moderately spaced, shallow to moderately dipping joints with calcite coating to 0.1 mm thick [QUODDY FORMATION]; Drilling Rate (min/ft): 1.5-3-3-3-3	5
-25		RQD=89								
-50				C-6	28 - 33	60/60			C-6: 28.0-33.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 5 mm, extremely closely to moderately spaced, shallow to steeply dipping joints with patchy calcite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2.5-2-3-3	
-30		RQD=58								
-55										
				C-7	33 - 37	48/48			C-7: 33.0-37.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 10 mm, very closely to moderately	6
-35										

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 23' 9" water column measured at 0205 on 02/26/2024.
2. Top of bedrock at 5.7 ft below mudline.
3. Angular fragments of grey rock observed to return water during rollerbit advancement.
4. 22.8-23.0 ft: No recovery.
5. 27.75-28.0 ft: No recovery.
6. Borehole terminated at 37.0 ft.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-103
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS/ BEDROCK	SOIL AND ROCK DESCRIPTION	NOTES
-60		RQD=82							spaced, shallow to moderately dipping joints with partial calcite coating to 2 mm thick, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5-2.5-2.5-2.5	
	40							57	Bottom of Borehole at 37 feet.	
-65										
	45									
-70										
	50									
-75										
	55									
-80										
	60									
-85										
	65									
-90										
	70									
-95										

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE | P.E. NUMBER | DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-103

SHEET NUMBER

B-119

17 OF 97

File: C:\Users\ajo0074\OneDrive - Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\17-B-119 (Boring Logs-103).rvt Plotted: 7/19/2024 4:43 PM by SAYADYAR, HASTI Saved: 7/19/2024 4:34 PM by AREAD

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB–104
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratostar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
9.5	NX Rock Core				
39.5	Terminated				

ELEVATION	–24.8		
DATUM	MAVD 88		
GRID	N	437483.34	
COORD	E	1374183.77	
DATE START	3/4/24		
DATE END	3/5/24		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
–25		WOR WOR WOR WOR	0	S–1	0 ~ 2	24/19		OH	S–1: Wet, very soft, 2.5Y 3/1 dark gray, ORGANIC SILT, little Shells (OH); Pocket Penetrometer (PP): 1.25 kg/cm2; Torvane (TV): 0.05 kg/cm2	1
		WOR WOR WOR WOR	0	S–2	2 ~ 4	24/19			S–2A (Top 14"): Wet, 2.5Y 3/1 dark gray, ORGANIC SILT (OH); Pocket Penetrometer (PP): 1.25 kg/cm2; Torvane (TV): 0.05 kg/cm2	
								3.29	S–2B (Bottom 5"): Wet, 2.5Y 3/1 dark gray, SILTY CLAY, little fine to coarse Sand, little fine to coarse rounded Gravel, little shells (CL)	
–30	5	WOR WOR 2 5	2	S–3	4 ~ 6	24/14		CL	S–3: Wet, 10YR 4/1 dark gray, SILTY CLAY, some fine to coarse Sand, little fine rounded Gravel (CL)	
		4 3 7 100/3"	10	S–4	6 ~ 7.75	21/7		TILL	S–4A (Top 5"): Wet, 10YR 4/1 dark gray, SILTY CLAY and fine to coarse subrounded GRAVEL, trace fine to coarse Sand (CL)	2
								WTH 8.5	S–4B (Bottom 2"): Wet, gley 5/1 greenish gray, Weathered TUFF, rock fabric discernible	
–35	10	RQD=0		C–1	9.5 ~ 12.4	34/32		BEDROCK	C–1: 9.5–12.4 ft, TUFF, N6 medium light gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, highly weathered at 11.8–11.9 ft, massive, shallow to vertical quartz and calcite veining to 3 mm, extremely closely to closely spaced, shallow to vertical joints with partial calcite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3–3–3/10"	3
		RQD=92		C–2	12.4 ~ 14.5	26/26			C–2: 12.4–14.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, vertical quartz and calcite veining to 20 mm, irregular quartz and calcite spherules to 5 mm, very closely to moderately spaced, steeply dipping joints with banded appearance patchy calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 1/2"–3–3.5	
–40	15			C–3	14.5 ~ 19.5	60/60			C–3: 14.5–19.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, steeply dipping to vertical quartz and calcite veining to 30 mm, irregular calcite spherules to 5 mm, extremely closely to moderately spaced, moderately dipping to vertical joints with patchy calcite to partial calcite coatings to 3 mm thick, extremely to slightly fractured, extremely fractured at 18.8–19.5 ft with banded appearance [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2–3–3	
		RQD=60								
–45	20			C–4	19.5 ~ 24.5	60/60			C–4: 19.5–24.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, moderately soft to moderately hard, weak to medium strong, moderately to slightly weathered, massive, steeply dipping to vertical quartz and calcite veining to 20 mm, irregular calcite spherules to 10 mm, extremely closely to moderately spaced, steeply dipping to vertical joints with patchy calcite and disintegrated rock to 3 mm thick, extremely to slightly fractured with banded appearance [QUODDY FORMATION]; Drilling Rate (min/ft): 2–2–3–3–3	
		RQD=42								
–50	25	RQD=0		C–5	24.5 ~ 27	30/30			C–5: 24.5–27.0 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, soft to moderately hard, weak to medium strong, moderately to slightly weathered, massive, moderately dipping to vertical quartz and calcite veining to 7 mm, irregular calcite spherules to 4 mm, steeping dipping joint with banded appearance at 26.0–26.6 ft partially broken/pulverized into particals ranging 1–25 mm; extremely closely to closely spaced, steeply dipping to vertical joints with patchy calcite [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–3–2/6"	4
				C–6	27 ~ 29.5	30/30			C–6: 27.0–29.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, soft to moderately hard, weak to medium strong, moderately to slightly weathered, massive, steeply dipping to vertical quartz and calcite veining to 10 mm, closely to moderately spaced, steeply dipping joints with partial calcite coating to 1 mm thick, moderately to slightly fractured with banded appearance [QUODDY	
		RQD=20								
–55	30			C–7	29.5 ~ 34.5	60/60				
		RQD=73								
–35										

Page 1: 0–35 feet. Each subsequent page displays 40 feet.

NOTES

1. 26" 8" water column measured at 14:55 on 3/4/2024, 31" 11" 8" water column measured at 8:20 on 3/5/2024.
2. 7.6–8.3 ft Weathered Bedrock.
3. Top of bedrock at 8.5 ft below mudline.
4. Core jammed at 27 ft.
5. Borehole terminated at 39.5 ft.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB–104
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
–60				C–8	34.5 ~ 39.5	60/60			FORMATION]; Drilling Rate (min/ft): 2/6"–2–2.5	5
		RQD=95							C–7: 29.5–34.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, soft to moderately hard, weak to medium strong, moderately to slightly weathered, massive, steeply dipping to vertical quartz and calcite veining to 40 mm, closely to moderately spaced, steeply dipping joints and disintegraded rock to 1 mm thick, moderately to slightly fractured with banded appearance [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2.5–2.5–2.5	
–65	40								C–8: 34.5–39.5 ft, TUFF, N4 medium dark gray and 5G 6/1 greenish gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, steeply dipping to vertical quartz and calcite veining to 10 mm, irregular calcite spherules to 5 mm, closely to moderately spaced, steeply dipping joints with patchy calcite, widely spaced, vertical joints with patchy calcite to disintegraded rock to 5 mm thick, moderately to slightly fractured with banded appearance [QUODDY FORMATION]; Drilling Rate (min/ft): 2–2–2–3–3	
								39.5	Bottom of Borehole at 39.5 feet.	
–70	45									
–75	50									
–80	55									
–85	60									
–90	65									
–95	70									

Page 1: 0–35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B–100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-104

SHEET NUMBER

B-120

18 OF 97

File: C:\Users\ajo07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\18-B-120 (Boring Logs-104) ; Plotted: 7/19/2024 4:43 PM by: SAYADYAR, HASTI ; Saved: 7/19/2024 4:42 PM by: HS07482

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB–105
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratastar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
7.9	Rollerbit				
10.0	MX Rock Core				
41.0	Terminated				

ELEVATION	–24.8
DATUM	MAVD 88
GRID N	437432.25
COORD E	1374129.25
DATE START	2/27/24
DATE END	2/27/24

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS CLASS NAME	SOIL AND ROCK DESCRIPTION	NOTES
–25		WOR WOR WOR WOR	0	S–1	0 – 2	24/14		OH	S–1: Wet, very soft, 2.5Y 4/1 dark gray, ORGANIC SILT, trace Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		WOR WOR WOR WOR	0	S–2	2 – 4	24/12			S–2: Wet, very soft, 2.5Y 4/1 dark gray, ORGANIC SILT, trace Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	
–30	5	WOH WOH 1 3	1	S–3	4 – 6	24/17		CL	S–3: Wet, very soft, 5Y 3/1 dark gray and 7.5YR 5/2 brown CLAY, trace fine Sand (Sand lenses to 2 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2; Torvane (TV): 0.4 kg/cm2	
				U–1	6 – 7.6	19/18			U–1: Wet, 5Y 3/1 dark gray, CLAY (CL)	
		100/3"	>100	S–4	7.6 – 7.85	3/3		W/R	S–4: Wet, very dense, 5Y 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, some fine to coarse Sand, weathered Tuff [QUODDY FORMATION] (GC)	2 3
–35	10			C–1	10 – 15	60/60		BEDROCK	C–1: 10.0–15.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, irregular calcite spherules to 5 mm; very closely to closely spaced, moderately to steeply dipping joints with patchy calcite, extremely to moderately fractured, shallow to moderately dipping quartz and calcite veining to 1 mm, 13.8–15.0 ft recovered in C–2 core run [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2–2–2.5	
		RQD=72								
–40	15			C–2	15 – 19.6	55/55			C–2: 15.0–19.6 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 4 mm, irregular calcite spherules to 10 mm, very closely to moderately spaced, shallow to steeply dipping joints with patchy calcite, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2–3.5–3–2–2/7"	
		RQD=59								
–45	20			C–3	19.6 – 23	41/41			C–3: 19.6–23.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, moderately dipping to vertical quartz and calcite veining to 15 mm, very closely to moderately spaced, shallow to steeply dipping joints with patchy calcite to calcite coating to 1 mm, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2.5–2–4/4"	4
		RQD=79		C–4	23 – 28	60/57			C–4: 23.0–28.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to moderately dipping quartz and calcite veining to 10 mm, very closely to moderately spaced, shallow to steeply dipping joints with patchy calcite coating to 1 mm thick, irregular calcite to spherules to 5 mm, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2.5–2–4/4"	
–50	25	RQD=95								
–55	30			C–5	28 – 33	60/60			C–5: 28.0–33.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, moderately to steeply dipping quartz and calcite veining to 6 mm, irregular calcite spherules to 5 mm, very closely to moderately spaced, shallow to steeply dipping joints with fresh surface to patchy calcite, extremely to moderately fractured [QUODDY FORMATION]	
		RQD=88								
				C–6	33 – 38	60/60			C–6: 33.0–38.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, prominent moderately dipping quartz and calcite at 33.2 ft and 37.25 ft; very closely to	
–35										

Page 1: 0–35 feet. Each subsequent page displays 40 feet.

NOTES

1. 16' 3" water column measured at 7:05 on 2/27/2024.
2. Top of bedrock likely at 8.0 ft below mudline.
3. 7.6–10.0 ft Angular fragments of gray TUFF [QUODDY FORMATION]
4. Core jammed at 28.0 ft.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB–105
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS CLASS NAME	SOIL AND ROCK DESCRIPTION	NOTES
–60		RQD=93							moderately spaced, shallow to moderately steeply dipping joints with partial calcite to 1 mm thick, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2–2.5–2.5–2.5	
	40			C–7	38 – 41	36/36			C–7: 38.0–41.0 ft, TUFF, N4 medium dark gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, prominent moderately dipping quartz and calcite veining at 37.9–38.45 ft; shallow dipping joint with patchy calcite at 40.8 ft, sound [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5–2.5–2.5	6
–65		RQD=82								
									Bottom of Borehole at 41 feet.	
–70	45									
–75	50									
–80	55									
–85	60									
–90	65									
–95	70									

Page 1: 0–35 feet. Each subsequent page displays 40 feet.

NOTES

6. Borehole terminated at 41.0 ft.

NOTE:

1. REFER TO DRAWING B–100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-105

SHEET NUMBER

B-121

19 OF 97

File: C:\Projects\07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\19-B-121 (Boring Logs-105).rvt Plotted: 7/19/2024 4:43 PM by: SAYADYAR, HASTI Saved: 7/19/2024 4:42 PM by: HS037482

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-106
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Melcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GefcoStratastar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
14.0	NX Rock Core				
41.0	Terminated				

ELEVATION	-25.5		
DATUM	MAVD 88		
GRID	N	437380.63	
COORD	E	1374074.55	
DATE START	2/27/24		
DATE END	3/4/24		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS SYMBOL	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 ~ 2	24/24			S-1: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, trace fine rounded Gravel, trace Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	1
		WOR WOR WOR WOR	0	S-2	2 ~ 4	24/14		OH	S-2: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, trace fine subangular to subrounded Gravel, trace Shells (OH); Pocket Penetrometer (PP): 0.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	
-30	-5			U-1	4 ~ 5.92	22/22			U-1: Wet, 5Y 3/1 dark gray, ORGANIC SILT to CLAY, trace Shells, trace fine subrounded Gravel (OH/CL)	
		8 8 12 14	20	S-3	6 ~ 8	24/24		6 CL	S-3: Wet, very stiff, 5Y 3/1 dark gray, and 7.5 YR 5/2 brown, CLAY, little fine sand (fine Sand lenses to 10 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2; Torvane (TV): 0.1 kg/cm2	
				U-2	8 ~ 10	24/24			U-2: Wet, 5Y 4/1 dark gray, CLAY, trace fine subrounded Gravel (CL)	
-35	-10	6 8 13 24	21	S-4	10 ~ 12	24/15			S-4A (Top 5"): Wet, 5Y 3/1 dark gray, and 7.5 YR 5/2 brown, CLAY, little fine Sand (fine Sand lenses to 10 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2; Torvane (TV): 0.1 kg/cm2	2
								12	S-4B (Bottom 10"): Wet, 5Y 3/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, little fine to coarse Sand (GC)	
								13.5		
-40	-15			C-1	14 ~ 19	60/60		14	13.5-14.0 ft: Weathered gray TUFF [QUODDY FORMATION]	3
		RQD=95							C-1: 14.0-19.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard to hard, strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 5 mm, irregular calcite spherules to 13 mm; extremely closely to moderately spaced, dipping joints with patchy calcite and coating to 0.1 mm thick, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 4-3.5-3-2.5-4	
-45	-20			C-2	19 ~ 24	60/60			C-2: 19.0-24.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard to hard, strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 15 mm, irregular calcite spherules to 10 mm; closely to moderately spaced, shallow to steeply dipping joints with patchy calcite to partial calcite coating to 2 mm thick, moderately to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3-3-3-2.5-2	
		RQD=85								
-50	-25			C-3	24 ~ 29	60/60			C-3: 24.0-29.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, strong, fresh, massive, shallow to moderately dipping quartz and calcite veining to 25 mm, irregular calcite spherules to 10 mm; very closely to moderately spaced, shallow to steeply dipping joints with partial calcite coatings to 1 mm thick, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2.5-3-3-2.5	
		RQD=83								
-55	-30			C-4	29 ~ 34	60/60		BEDROCK	C-4: 29.0-34.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, shallow to steeply dipping quartz and calcite veining to 55 mm, irregular calcite spherules to 20 mm; extremely closely to moderately spaced, shallow to steeply dipping joints with partial calcite coatings to 1 mm thick, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2.5-2.5-2.5-2.5	
		RQD=73								
-60	-35			C-5	34 ~ 39	60/60			C-5: 34.0-39.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff,	4

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 34' 2" water column measured at 13.20 on 02/27/2024.
2. 4" casing refusal at 13.5 ft.
3. Top bedrock likely at 13.5 ft below mudline, angular fragments of gray TUFF observed in return water advancing roller bit at 13.5-14.0 ft.
4. 35.0-39.0 ft recovered in C-5 core run.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-106
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS SYMBOL	SOIL AND ROCK DESCRIPTION	NOTES
		RQD=80							moderately hard, medium strong, slightly weathered, massive, shallow to vertical quartz and calcite veining to 60 mm, irregular calcite spherules to 5 mm, subrounded 10 YR 5/4 moderate yellowish brown clasts (weathered spherules) to 15 mm; extremely closely to moderately spaced, shallow to steeply dipping joints with patchy calcite and iron oxide staining, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 3-2.5-3-3-2.5	
-65	-40			C-6	39 ~ 44	60/60			C-6: 39.0-44.0 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, slightly weathered, massive, shallow to vertical quartz and calcite veining to 15 mm, irregular calcite spherules to 10 mm, subrounded 10 YR 5/4 moderate yellowish brown clasts (weathered spherules) to 10 mm; extremely closely to moderately spaced, shallow to steeply dipping joints with patchy calcite, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2-2-2.5-2.5	5
		RQD=80								
-70	-45									
								44	Bottom of Borehole at 44 feet.	
-75	-50									
-80	-55									
-85	-60									
-90	-65									
-95	-70									
-100										

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

5. Borehole terminated at 44.0 ft.

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-106

SHEET NUMBER

B-122

20 OF 97

File: C:\Projects\07482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\20-B-122 (Boring Logs-106) ; Plotted: 7/19/2024 4:43 PM by SAYADYAR, HASTI ; Saved: 7/19/2024 4:42 PM by HSO37482

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-107
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-20.5
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratastar5	DATUM	MAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto	GRID N	437349.97
18.5	NX Rock Core					COORD E	1374297.6
41.0	Terminated					DATE START	3/6/24
						DATE END	3/6/24

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 ~ 2	24/20			S-1: Wet, very soft, 5Y 4/1 dark gray, ORGANIC SILT, trace Shells (OH); Pocket Penetrometer (PP): 0.75 kg/cm2; Torvane (TV): 0.05 kg/cm2	1
		WOR WOR WOR WOR	0	S-2	2 ~ 4	24/19		OH	S-2: Wet, very soft, 5Y 4/1 dark gray, ORGANIC SILT, trace Shells (OH); Pocket Penetrometer (PP): 1.25 kg/cm2; Torvane (TV): 0.10 kg/cm2	
-25	5	WOR WOR WOR WOR	0	S-3	4 ~ 6	24/19			S-3: Wet, very soft, 5Y 4/1 dark gray, ORGANIC SILT, little Shells, trace fine to coarse subrounded Gravel (OH); Pocket Penetrometer (PP): 0.5 kg/cm2; Torvane (TV): 0.025 kg/cm2	
		WOR WOR WOR WOH	0	S-4	6 ~ 8	24/9			S-4: Wet, very soft, 5Y 3/1 dark gray, and 7.5 YR 5/2 brown, SILTY CLAY, trace fine Sand (fine Sand lenses to 1 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2; Torvane (TV): 0.4 kg/cm2	
				U-1	8 ~ 9.83	20/16		CL	U-1: Wet, 5Y 4/1 dark gray, SILTY CLAY, trace Gravel (CL)	
-30	10	5 5 4 6	9	S-5	10 ~ 12	24/23		10.5	S-5A (Top 5"): Wet, 5Y 4/1 dark gray, SILTY CLAY, some fine to coarse subangular to subrounded Gravel (CL) S-5B (Bottom 18"): Wet, 7.5YR 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, and SILTY CLAY, little fine to coarse Sand (GC)	2
-35	15	5 4 6 7	10	S-6	14 ~ 16	24/18		TILL	S-6: Wet, medium dense, 7.5YR 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, and SILTY CLAY, little fine to coarse Sand (GC)	
								16		
-40	20	RQD=38		C-1	18.5 ~ 23.5	60/60			C-1: 18.5-23.5 ft, TUFF, 5G 4/1 dark greenish gray, coarse tuff to lapilli tuff, moderately hard, weak to medium strong, fresh, massive, moderately to steeply dipping quartz and calcite veining to 10 mm; extremely closely to closely spaced, shallow to steeply dipping joints with partial calcite coating to 2 mm, extremely to moderately fractured [QUODDY FORMATION]; breaks easily when handled, Drilling Rate (min/ft): 2-1.5-1.5-2.5-2.5	3
-45	25	RQD=53		C-2	23.5 ~ 28.5	60/60			C-2: 23.5-28.5 ft, TUFF, 6Y 4/1 dark greenish gray, coarse tuff to lapilli tuff, moderately hard, weak to medium strong, fresh, massive, moderately dipping to vertical quartz and calcite veining to 10 mm; extremely closely to moderately spaced, shallow to steeply dipping joints with patchy calcite to partial calcite coating to 1 mm thick, extremely to moderately fractured [QUODDY FORMATION]; breaks easily when handled, Drilling Rate (min/ft): 2-2-2-2-2	
-50	30	RQD=68		C-3	28.5 ~ 33.5	60/60			C-3: 28.5-33.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, weak to medium strong, fresh, massive, shallow to steeply dipping quartz and calcite veining to 25 mm; extremely closely to moderately spaced, moderately to steeply dipping joints with patchy calcite to calcite coatings to 3 mm thick, extremely to moderately fractured [QUODDY FORMATION]; breaks easily when handled, Drilling Rate (min/ft): 2-1.5-2-2.5-2.5	
-55	35			C-4	33.5 ~ 38.5	60/60		BEDROCK	C-4: 33.5-38.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, weak to medium strong, fresh, massive, shallow to	

NOTES

1. Depth to oeotlaor measured at 29.75' from water surface on 3/6/2024 at 8:25.
2. Shelby tube retural at 9.7', bottom of Shelby tube damaged during penetration.
3. Top of bedrock at 18.5 ft below mudline.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-107
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		RQD=71							vertical quartz and calcite veining to 25 mm; extremely closely to moderately spaced, moderately to steeply dipping joints with patchy calcite, extremely to slightly fractured [QUODDY FORMATION]; breaks easily when handled, Drilling Rate (min/ft): 1.5-2-2-2-2	
-60	40			C-5	38.5 ~ 43.5	60/60			C-5: 38.5-43.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 10 mm; very closely to moderately spaced, shallow to steeply dipping joints with patchy calcite to calcite coatings to 1 mm thick, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2-2.5-2-2.5	
		RQD=76								
-65	45			C-6	43.5 ~ 48.5	60/60			C-6: 43.5-48.5 ft, TUFF, N5 medium gray, coarse tuff to lapilli tuff, moderately hard, medium strong, fresh, massive, shallow to vertical quartz and calcite veining to 10 mm; extremely closely to moderately spaced, shallow to steeply dipping joints with patchy calcite to calcite coating to 1 mm, extremely to slightly fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 2-2.5-2.5-3-2.5	4
		RQD=83								
-70	50									
-75	55									
-80	60									
-85	65									
-90	70									
-95										
					48.5				Bottom of Borehole at 48.5 feet.	

NOTES

4. Borehole terminated at 48.5 ft.

Notes

1. *Refer to Drawing B-100 for Boring Locations.*

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	PHIL LANERGAN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-107

SHEET NUMBER

B-123

21 OF 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawing_60% Submission\20-B-123 (Boring Logs-107) Plotted: 7/19/2024 4:43 PM by SAYADFAR, HASTI Saved: 3/29/2024 9:03 AM by SAMMONR

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-108
LOCATION	Johnson Bay		SHEET 1 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Meicher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratostar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
29.0	NX Rock Core				
34.5	Terminated				

ELEVATION	-15.3		
DATUM	MAVD 88		
GRID	N	437385.5	
COORD	E	1374618.51	
DATE START	3/5/24		
DATE END	3/5/24		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 - 2	24/8		OH	S-1: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, little Shells (OH); Pocket Penetrometer (PP): 0.50 kg/cm2 Torvane (TV): 0.05 kg/cm2	1
		WOR WOR WOR WOR	0	S-2	2 - 4	24/12			S-2: Wet, very soft, 5Y 3/1 dark gray, ORGANIC SILT, some Shells (OH); Pocket Penetrometer (PP): 1.0 kg/cm2; Torvane (TV): 0.0 kg/cm2	
-20	-5			U-1	4 - 6	24/24			U-1: Wet, 5Y 3/1 dark gray, SILTY CLAY (CL); Pocket Penetrometer (PP): 4.5 kg/cm2; Torvane (TV): 0.4 kg/cm2	
		2 3 3 5	6	S-3	6 - 8	24/24			S-3: Wet, medium stiff, 5Y 3/1 dark gray and 7.5YR 5/2 little brown, SILTY CLAY, trace fine to coarse subangular to subrounded Gravel, trace Shells (CL); Pocket Penetrometer (PP): >4.5 kg/cm2; Torvane (TV): 0.4 kg/cm2	
				U-2	8 - 10	24/24			U-2: Wet, 5Y 3/1 dark gray, SILTY CLAY (CL)	
-25	-10	1 3 4 5	7	S-4	10 - 12	24/24			S-4: Wet, medium stiff, 5Y 3/1 dark gray and 7.5YR 5/2 brown, SILTY CLAY, trace fine Sand (fine Sand lenses to 1 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2, Torvane (TV): 0.35 kg/cm2	
-30	-15	WOH 3 3 3	6	S-5	14 - 16	24/24		CL	S-5: Wet, medium stiff, 5Y 3/1 dark gray and 7.5YR 5/2 brown, SILTY CLAY, trace fine Sand (fine Sand lenses to 10 mm thick) (CL); Pocket Penetrometer (PP): >4.5 kg/cm2, Torvane (TV): 0.35 kg/cm2	
-35	-20	WOH 2 3 4	5	S-6	19 - 21	24/24			S-6: Wet, medium stiff, 5Y 3/1 dark gray and 7.5YR 5/2 brown, SILTY CLAY, some fine Sand (fine Sand lenses to 10 mm thick), trace fine subrounded Gravel (CL); Pocket Penetrometer (PP): >4.5 kg/cm2, Torvane (TV): 0.3 kg/cm2	
-40	-25	6 4 8 11	12	S-7	24 - 26	24/19		25 TILL 27 W/R	S-7A (Top 11"): Wet, 5Y 3/1 dark gray and 7.5YR 5/2 brown, SILTY CLAY, little fine Sand (fine Sand lenses to 10 mm thick), (CL); Pocket Penetrometer (PP): >4.5 kg/cm2, Torvane (TV): 0.15 kg/cm2 S-7B (Bottom 8"): Wet, 5Y 4/1 dark gray, fine to coarse subangular to subrounded GRAVEL, some Silty Clay, little fine to coarse Sand (GC) 27-29 ft: Weathered gray TUFF (QUODDY FORMATION)	
-45	-30	RQD=52		C-1	29 - 31.9	34/34		BEDROCK	C-1: 29.0-31.9 ft, TUFF, H4 medium dark gray, fine tuff to coarse tuff, moderately hard, medium strong, fresh, massive, shallow to moderately dipping quartz and calcite veining to 1 mm; very closely to closely spaced, shallow to steeply dipping joints with partial calcite coating to 1 mm thick, extremely to moderately fractured (QUODDY FORMATION); Drilling Rate (min/ft): 3-3-3/10"	2
		RQD=42		C-2	31.9 - 34.5	31/31			C-2: 31.9-34.5 ft, TUFF, H4 medium dark gray, fine tuff to coarse tuff, moderately hard, medium strong, fresh, massive, shallow to moderately dipping quartz and calcite veining to 5 mm; very closely to moderately	3
-50	-35							34.5		

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 8" 8" water columns measured at 12:35 on 3/5/2024.
2. Top of bedrock at 29 ft below mudline.
3. Borehole terminated at 34.5 ft.

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-108
LOCATION	Johnson Bay		SHEET 2 OF 2
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	USCS MARK	SOIL AND ROCK DESCRIPTION	NOTES
									spaced, shallow to steeply dipping joints with partial calcite coating to 1 mm thick, extremely to moderately fractured (QUODDY FORMATION); Drilling Rate (min/ft): 3-3-2/7" Bottom of Borehole at 34.5 feet.	
-55	-40									
-60	-45									
-65	-50									
-70	-55									
-75	-60									
-80	-65									
-85	-70									
-90										

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BORING LOGS - WB-108

SHEET NUMBER

B-124

22 OF 97

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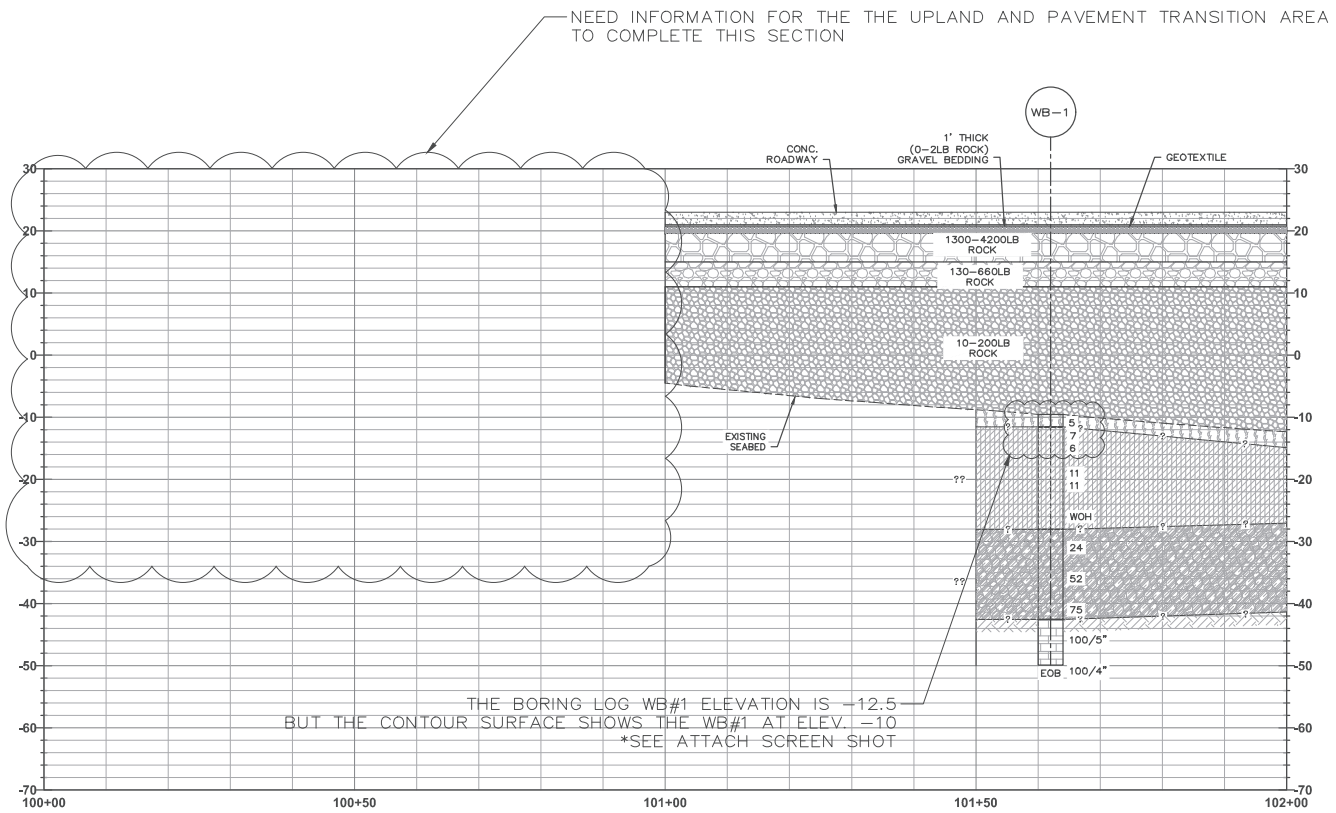
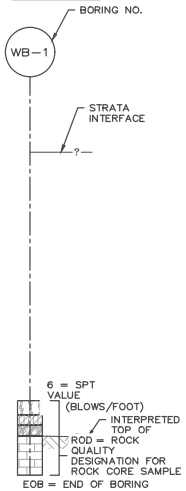


PROFILE–1
1"=10'–0"

INTERPRETIVE SUBSURFACE PROFILE LEGEND



LEGEND

- ORGANIC SILT
- CLAY AND SILT
- GLACIAL TILL
- BEDROCK
- 1300–4200LB ROCK
- 130–660LB ROCK
- 10–200LB ROCK

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. THIS GENERALIZED INTERPRETIVE SOIL PROFILE IS INTENDED TO CONVEY TRENDS IN SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN STRATA ARE APPROXIMATE AND IDEALIZED, AND HAVE BEEN DEVELOPED BY INTERPRETATIONS OF WIDELY SPACED BORING EXPLORATIONS AND SAMPLES. ACTUAL SOIL AND BEDROCK TRANSITIONS MAY VARY IN THE FIELD AND MAY BE MORE ERRATIC. FOR SPECIFIC INFORMATION REFER TO THE BORING LOGS ON DRAWINGS B–110 THRU B–122.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PROFILE-1

SHEET NUMBER
B-130
23 OF 97

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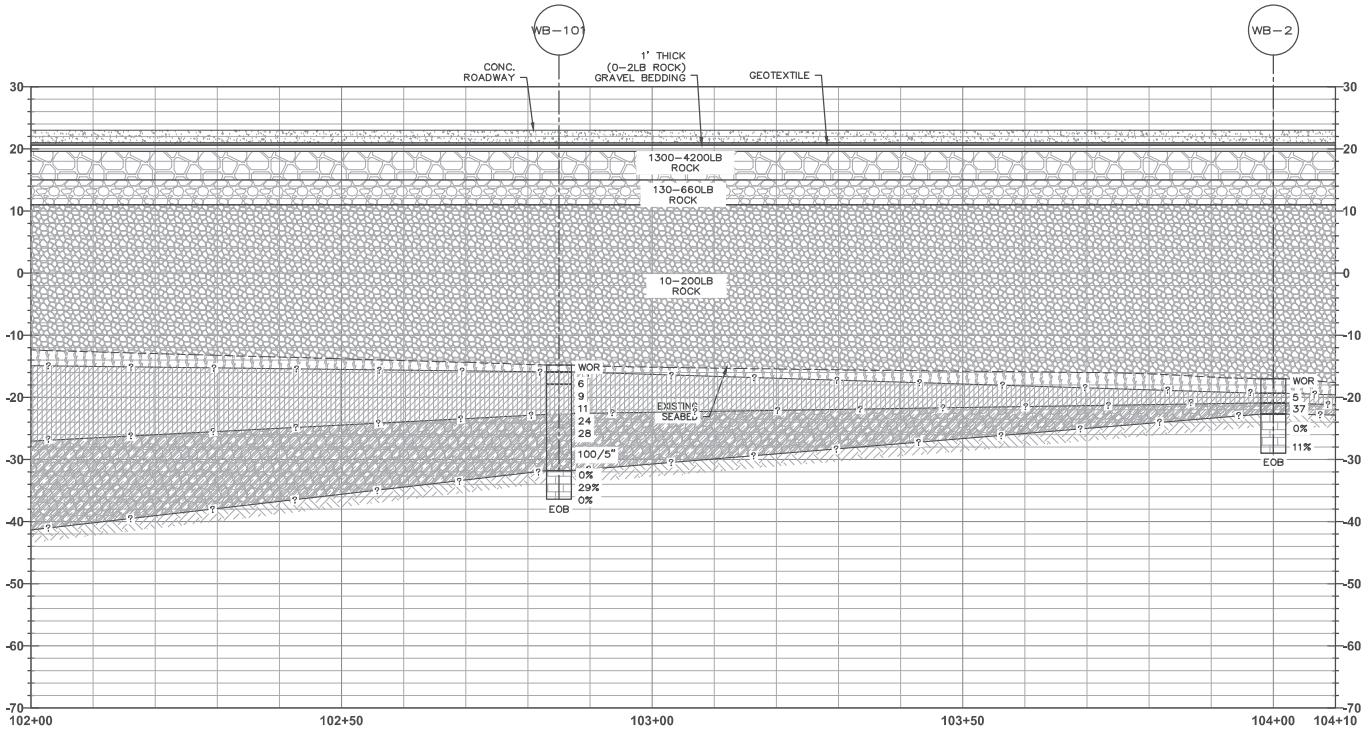
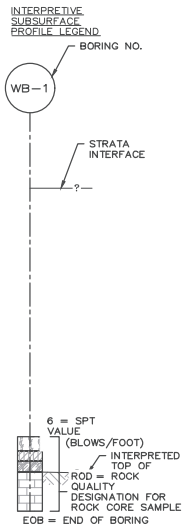


PROFILE—2
1"=10'-0"

INTERPRETIVE SUBSURFACE PROFILE LEGEND



LEGEND

- ORGANIC SILT
- CLAY AND SILT
- GLACIAL TILL
- BEDROCK
- 1300—4200LB ROCK
- 130—660LB ROCK
- 10—200LB ROCK

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. THIS GENERALIZED INTERPRETIVE SOIL PROFILE IS INTENDED TO CONVEY TRENDS IN SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN STRATA ARE APPROXIMATE AND IDEALIZED, AND HAVE BEEN DEVELOPED BY INTERPRETATIONS OF WIDELY SPACED BORING EXPLORATIONS AND SAMPLES. ACTUAL SOIL AND BEDROCK TRANSITIONS MAY VARY IN THE FIELD AND MAY BE MORE ERRATIC. FOR SPECIFIC INFORMATION REFER TO THE BORING LOGS ON DRAWINGS B-110 THRU B-122.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PROFILE-2

SHEET NUMBER
B-131
24 OF 97

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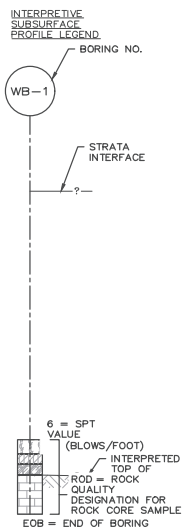
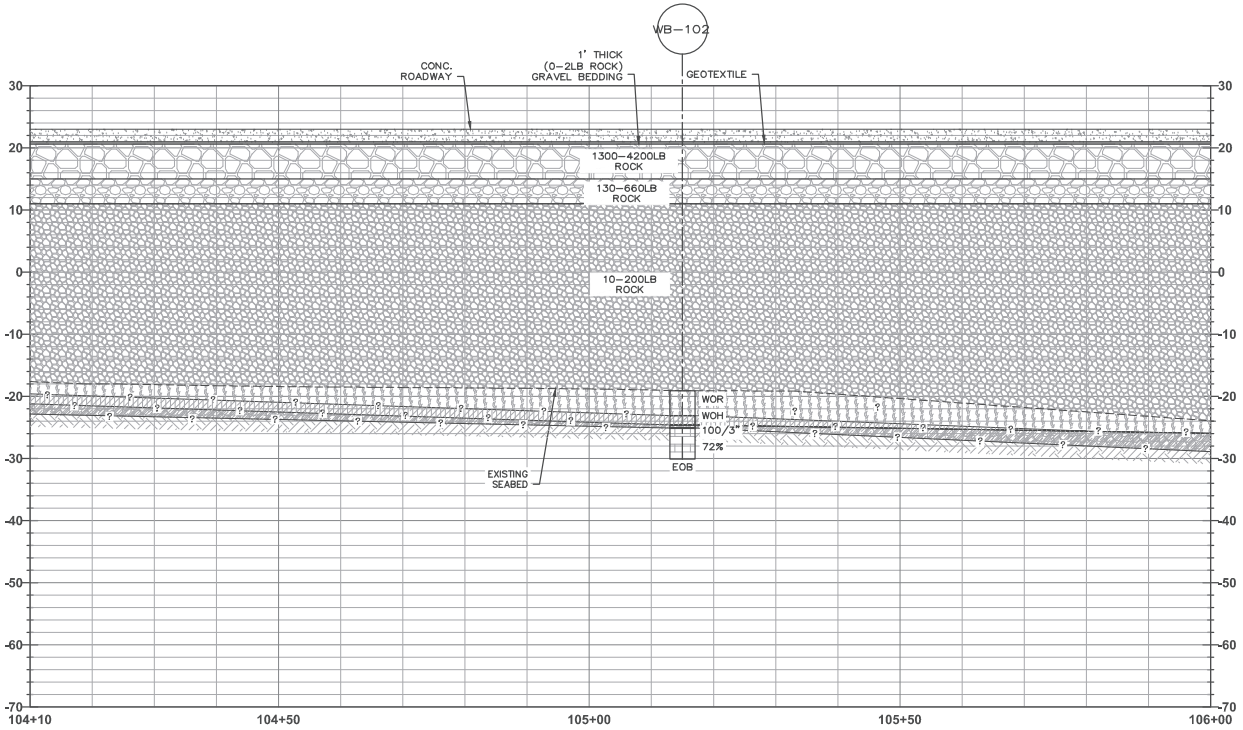


LEGEND

- ORGANIC SILT
- CLAY AND SILT
- GLACIAL TILL
- BEDROCK
- 1300–4200LB ROCK
- 130–660LB ROCK
- 10–200LB ROCK



PROFILE–3
1"=10'–0"

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. THIS GENERALIZED INTERPRETIVE SOIL PROFILE IS INTENDED TO CONVEY TRENDS IN SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN STRATA ARE APPROXIMATE AND IDEALIZED, AND HAVE BEEN DEVELOPED BY INTERPRETATIONS OF WIDELY SPACED BORING EXPLORATIONS AND SAMPLES. ACTUAL SOIL AND BEDROCK TRANSITIONS MAY VARY IN THE FIELD AND MAY BE MORE ERRATIC. FOR SPECIFIC INFORMATION REFER TO THE BORING LOGS ON DRAWINGS B–110 THRU B–122.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PROFILE-3

SHEET NUMBER
B-132
25 OF 97

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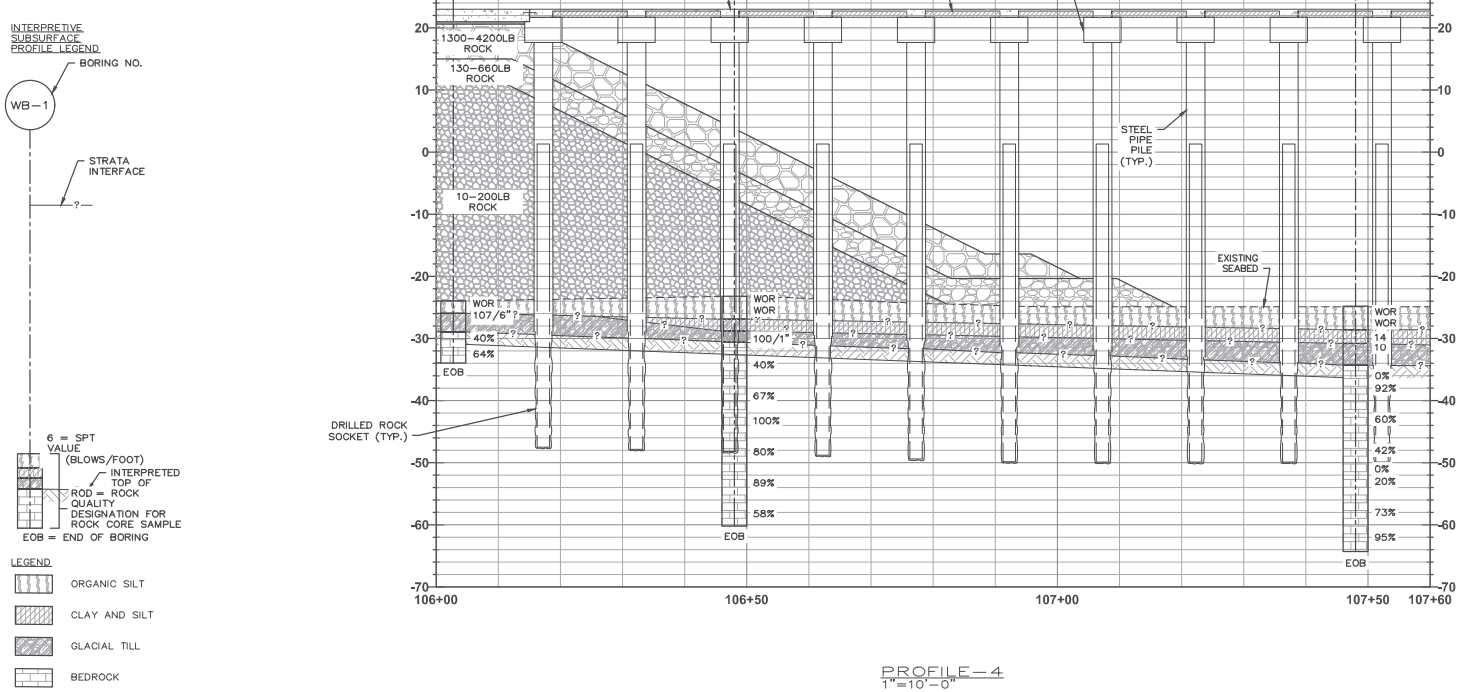

PROFILE—4
1"=10'-0"

INTERPRETIVE SUBSURFACE PROFILE LEGEND

LEGEND

- ORGANIC SILT
- CLAY AND SILT
- GLACIAL TILL
- BEDROCK
- 1300–4200LB ROCK
- 130–660LB ROCK
- 10–200LB ROCK

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. THIS GENERALIZED INTERPRETIVE SOIL PROFILE IS INTENDED TO CONVEY TRENDS IN SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN STRATA ARE APPROXIMATE AND IDEALIZED, AND HAVE BEEN DEVELOPED BY INTERPRETATIONS OF WIDELY SPACED BORING EXPLORATIONS AND SAMPLES. ACTUAL SOIL AND BEDROCK TRANSITIONS MAY VARY IN THE FIELD AND MAY BE MORE ERRATIC. FOR SPECIFIC INFORMATION REFER TO THE BORING LOGS ON DRAWINGS B-110 THRU B-122.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PROFILE-4

SHEET NUMBER
B-133
26 OF 97

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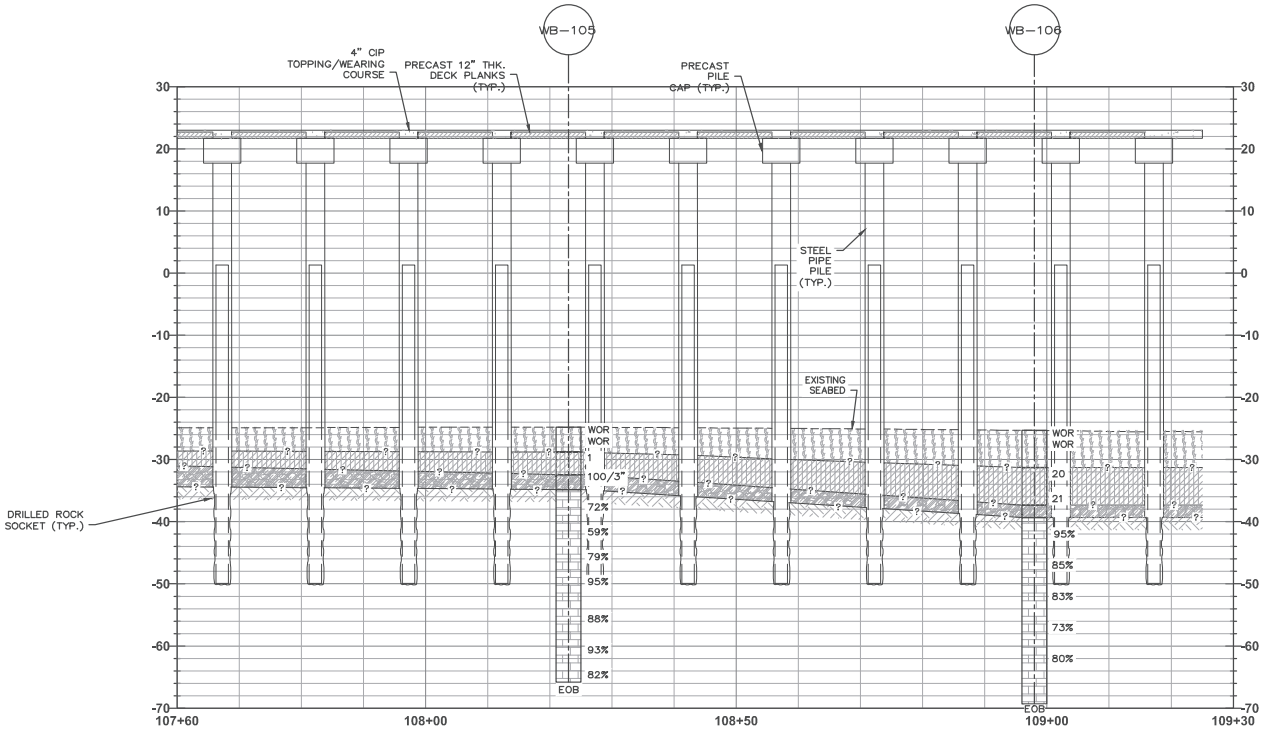
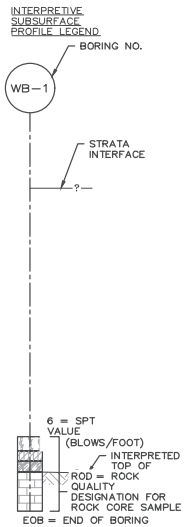


PROFILE–5
1"=10'–0"

INTERPRETIVE SUBSURFACE PROFILE LEGEND



LEGEND

- ORGANIC SILT
- CLAY AND SILT
- GLACIAL TILL
- BEDROCK
- 1300–4200LB ROCK
- 130–660LB ROCK
- 10–200LB ROCK

NOTES:

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. THIS GENERALIZED INTERPRETIVE SOIL PROFILE IS INTENDED TO CONVEY TRENDS IN SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN STRATA ARE APPROXIMATE AND IDEALIZED, AND HAVE BEEN DEVELOPED BY INTERPRETATIONS OF WIDELY SPACED BORING EXPLORATIONS AND SAMPLES. ACTUAL SOIL AND BEDROCK TRANSITIONS MAY VARY IN THE FIELD AND MAY BE MORE ERRATIC. FOR SPECIFIC INFORMATION REFER TO THE BORING LOGS ON DRAWINGS B–110 THRU B–122.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

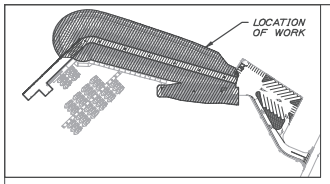
PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

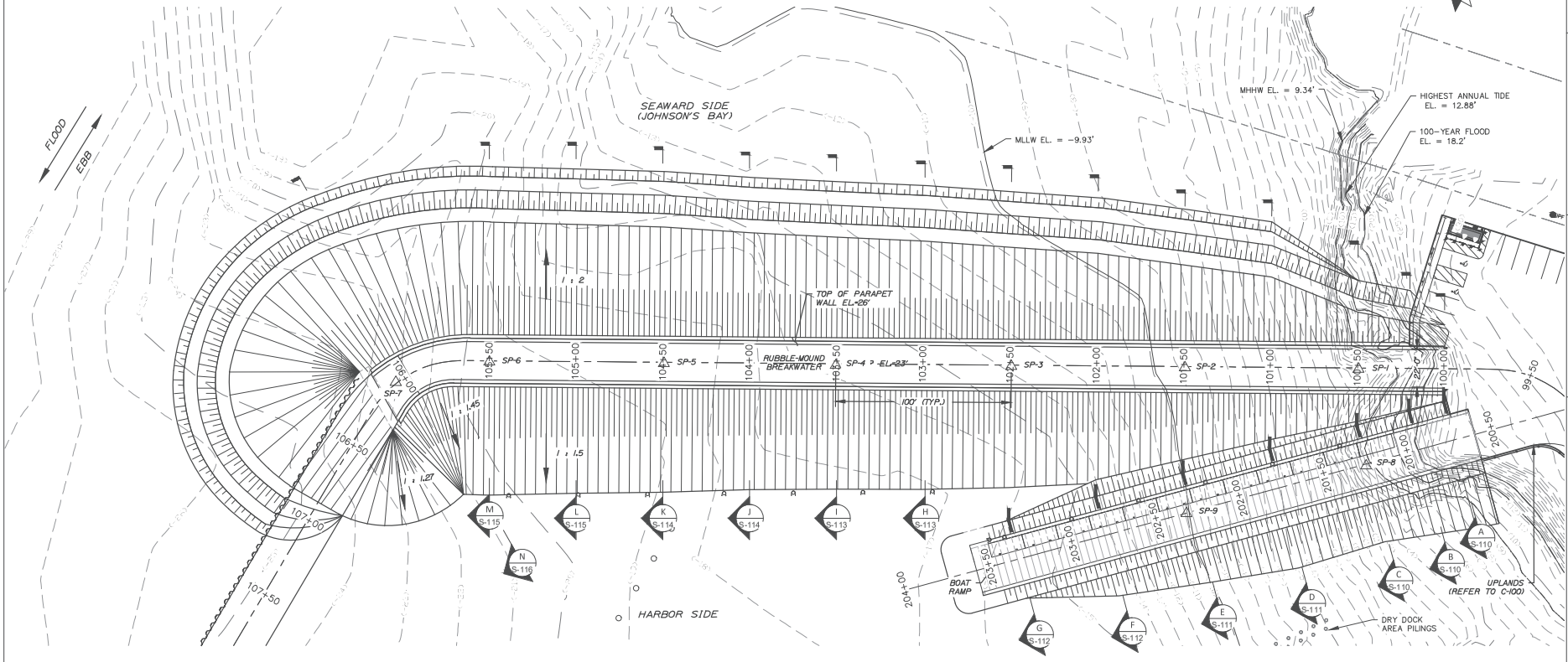
BREAKWATER PROFILE-5

SHEET NUMBER
B-134
27 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\23-27-B-130_B-134 (Profile).dwg, Plotted: 7/19/2024 9:36 AM by MAGUIRE, CASEY, Saved: 7/17/2024 11:14 AM by MAGUIRC



KEY PLAN
1"=240'-0"



PLAN
1"=30'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SEE GUIDE PILE SCHEDULE AND DETAILS S-310 THROUGH S-320.
4. SETTLEMENT PLATES SHALL BE INSTALLED WITHIN RUBBLE-MOUND CORE LAYER AND AT LEAST 10 FT BELOW TOP OF FINISHED GRADE FOR THE RUBBLE MOUND AS SHOWN ON THE CONTRACT DRAWINGS AND PLACED AT A SPACING OF 100 FT, UNLESS OTHERWISE NOTED.
5. THE SETTLEMENT PLATES SHALL BE MONITORED TWICE WEEKLY, OR MORE FREQUENTLY AS NEEDED, UNTIL THE START OF CONSTRUCTION OF THE CONCRETE ROADWAY.

LEGEND:

△ SP-1 SETTLEMENT PLATE LOCATION AND NUMBER

0 30 60 FT.
1"=30'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

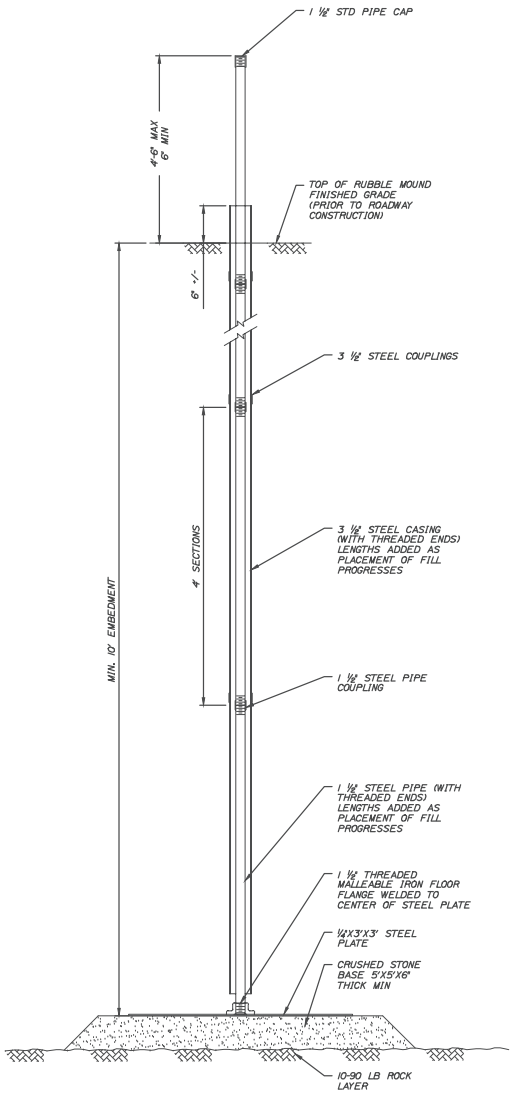
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

RUBBLE-MOUND MONITORING PLAN

SHEET NUMBER
MN-100
28 OF 97

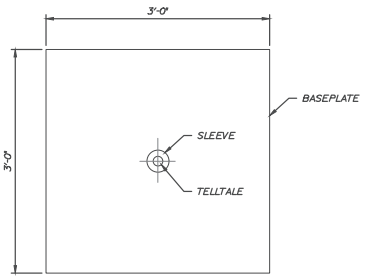
File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\XX-MN-100 (Rubble-Mound Breakwater Plan).rvt Plotted: 7/18/2024 3:30 PM by MAGUIRE, CASEY Saved: 7/15/2024 1:52 PM by PWKOWS



ELEVATION

SETTLEMENT PLATE INSTALLATION NOTES

1. INSTALL THE SETTLEMENT MONITORING PLATES AS SHOWN ON THE CONTRACT DRAWINGS.
2. THE SETTLEMENT PLATES SHALL BE MONITORED TWICE WEEKLY, OR MORE FREQUENTLY AS NEEDED, UNTIL THE START OF CONSTRUCTION OF THE CONCRETE ROADWAYS. THE SETTLEMENT READINGS SHALL BE SUBMITTED TO THE RESIDENT FOR ANALYSIS.
3. MONITORING FREQUENCY MAY BE INCREASED DEPENDING UPON ASSESSMENT OF THE RATE OF CONSOLIDATION BY THE RESIDENT ENGINEER.
4. INSTALL SETTLEMENT PLATES AND OBTAIN BASE LINE READINGS PRIOR TO INSTALLING THE RUBBLE-MOUND BREAKWATER UNDERLAYER. EXTEND THE OUTER CASING AS NEEDED WHILE CONSTRUCTING THE RUBBLE-MOUND UNDERLAYER AND ARMOR LAYER.
5. ADDITIONAL BREAKWATER ROCK PLACEMENT MAY BE REQUIRED DEPENDING ON FIELD SETTLEMENT DATA ANALYSIS AND AS DIRECTED BY THE RESIDENT ENGINEER.
6. UPON REACHING THE ANTICIPATED SETTLEMENT VALUES LISTED IN THE GEOTECHNICAL REPORT, NOTIFY THE RESIDENT ENGINEER BEFORE FURTHER ACTION.



PLAN

SETTLEMENT PLATE DETAIL (SP)
1"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

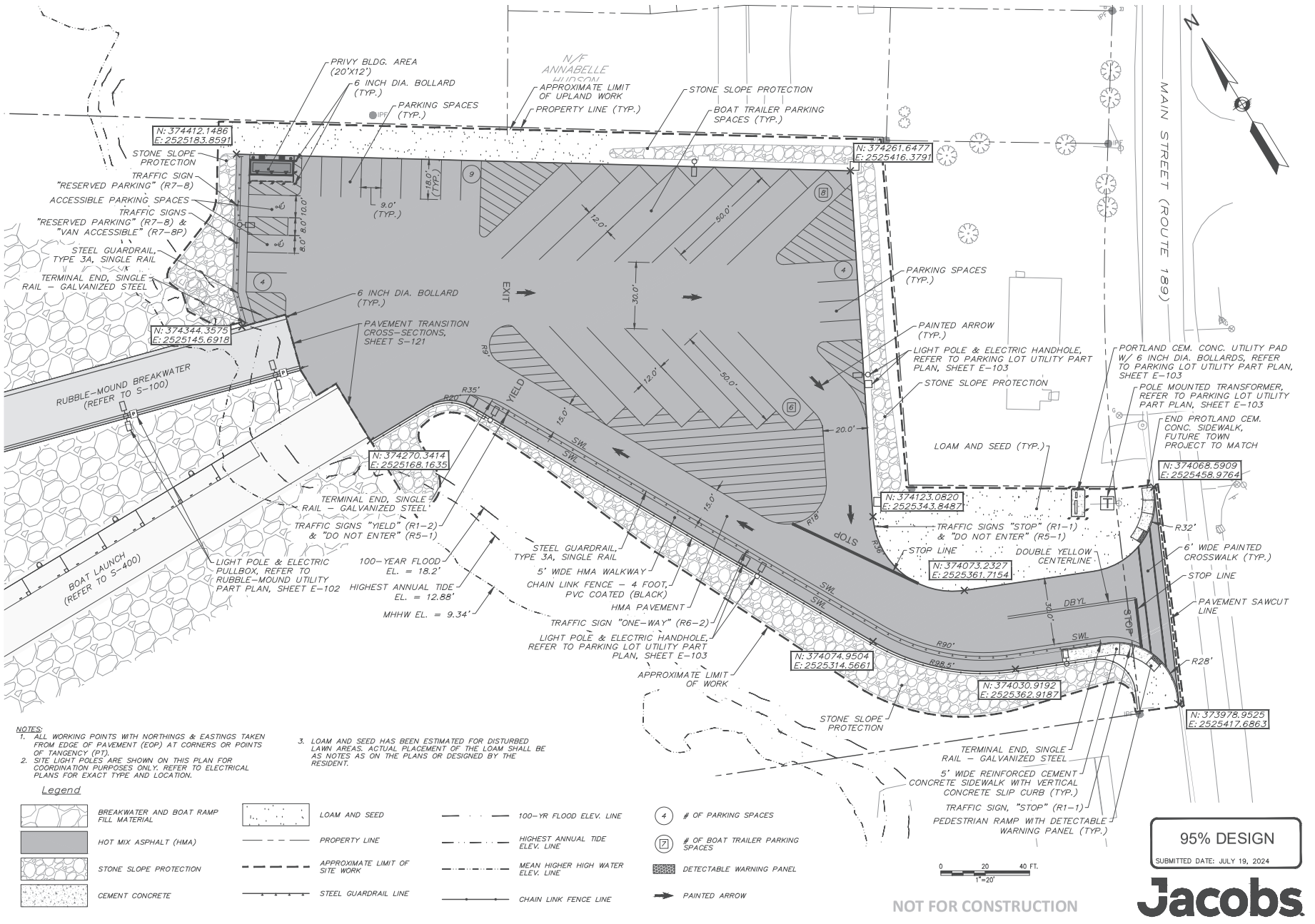
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND MONITORING SECTIONS AND DETAILS

SHEET NUMBER

MN-120

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\XX-MN-120 (Rubble-Mound Monitoring Sections and Details 1) - Plotted: 7/19/2024 3:32 PM by MAGUIRE, CASEY - Saved: 7/19/2024 1:52 PM by PINKOWS



NOTES:
1. ALL WORKING POINTS WITH NORTHINGS & EASTINGS TAKEN FROM EDGE OF PAVEMENT (EOP) AT CORNERS OR POINTS OF TANGENCY (PT).
2. SITE LIGHT POLES ARE SHOWN ON THIS PLAN FOR COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL PLANS FOR EXACT TYPE AND LOCATION.
3. LOAM AND SEED HAS BEEN ESTIMATED FOR DISTURBED LAWN AREAS. ACTUAL PLACEMENT OF THE LOAM SHALL BE AS NOTES AS ON THE PLANS OR DESIGNED BY THE RESIDENT.

Legend

- BREAKWATER AND BOAT RAMP FILL MATERIAL
- HOT MIX ASPHALT (HMA)
- STONE SLOPE PROTECTION
- CEMENT CONCRETE
- LOAM AND SEED
- PROPERTY LINE
- APPROXIMATE LIMIT OF SITE WORK
- STEEL GUARDRAIL LINE
- 100-YR FLOOD ELEV. LINE
- HIGHEST ANNUAL TIDE ELEV. LINE
- MEAN HIGHER HIGH WATER ELEV. LINE
- CHAIN LINK FENCE LINE
- (4) # OF PARKING SPACES
- (7) # OF BOAT TRAILER PARKING SPACES
- DETECTABLE WARNING PANEL
- PAINTED ARROW

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	Multimodal	SIGNATURE	
PROJECT MANAGER	Aurele Gorneau II		
DESIGNER	Craig Morin	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

UPLAND LAYOUT PLAN

SHEET NUMBER
C-100
30 OF 97

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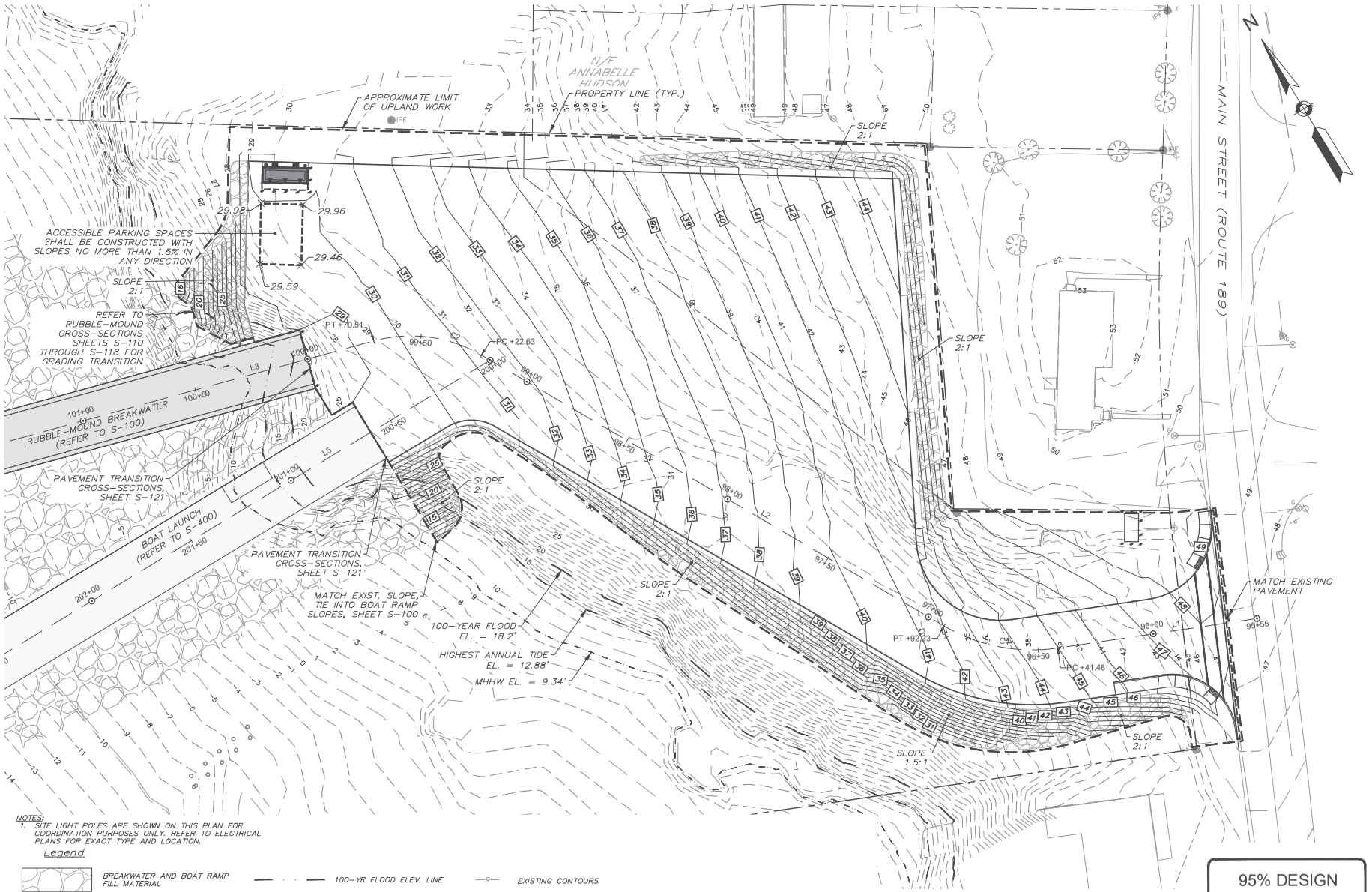

NOTES:
1. SITE LIGHT POLES ARE SHOWN ON THIS PLAN FOR COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL PLANS FOR EXACT TYPE AND LOCATION.

Legend

- BREAKWATER AND BOAT RAMP FILL MATERIAL
- PROPERTY LINE
- APPROXIMATE LIMIT OF SITE WORK
- 100-YR FLOOD ELEV. LINE
- HIGHEST ANNUAL TIDE ELEV. LINE
- MEAN HIGHER HIGH WATER ELEV. LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- 29.57 PROPOSED SPOT GRADE

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE	
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

UPLAND GRADING PLAN

SHEET NUMBER

C-200

31 OF 97

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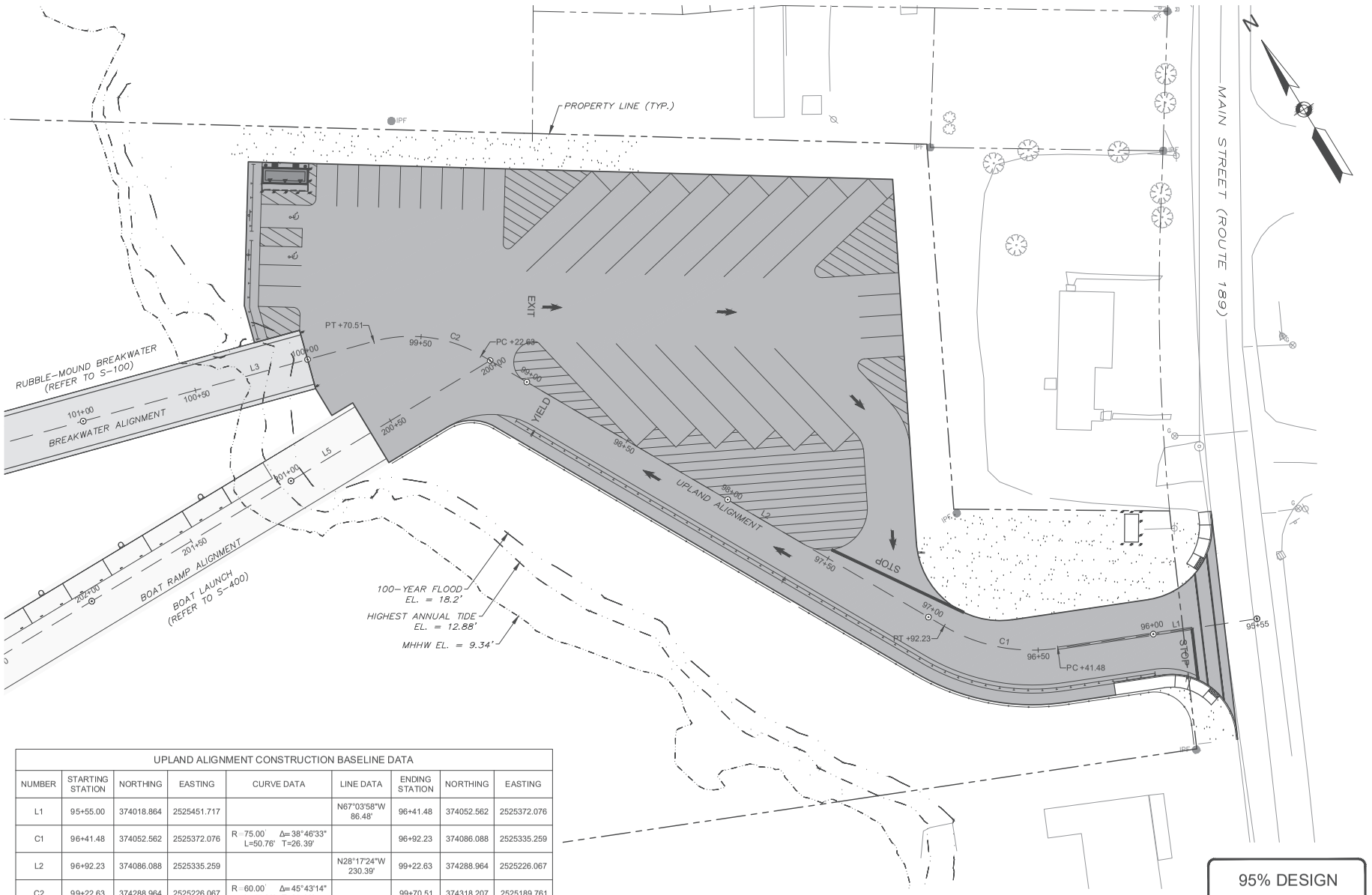


UPLAND ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	95+55.00	374018.864	2525451.717		N67°03'58"W 86.48'	96+41.48	374052.562	2525372.076
C1	96+41.48	374052.562	2525372.076	R=75.00' Δ=38°46'33" L=50.76' T=26.39'		96+92.23	374086.088	2525335.259
L2	96+92.23	374086.088	2525335.259		N28°17'24"W 230.39'	99+22.63	374288.964	2525226.067
C2	99+22.63	374288.964	2525226.067	R=60.00' Δ=45°43'14" L=47.88' T=25.30'		99+70.51	374318.207	2525189.761
L3	99+70.51	374318.207	2525189.761		N74°00'39"W 595.20'	105+65.71	374482.159	2524617.586

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	Multimodal		
PROJECT MANAGER	Aurele Gorneau II	SIGNATURE	
DESIGNER	Craig Morin	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

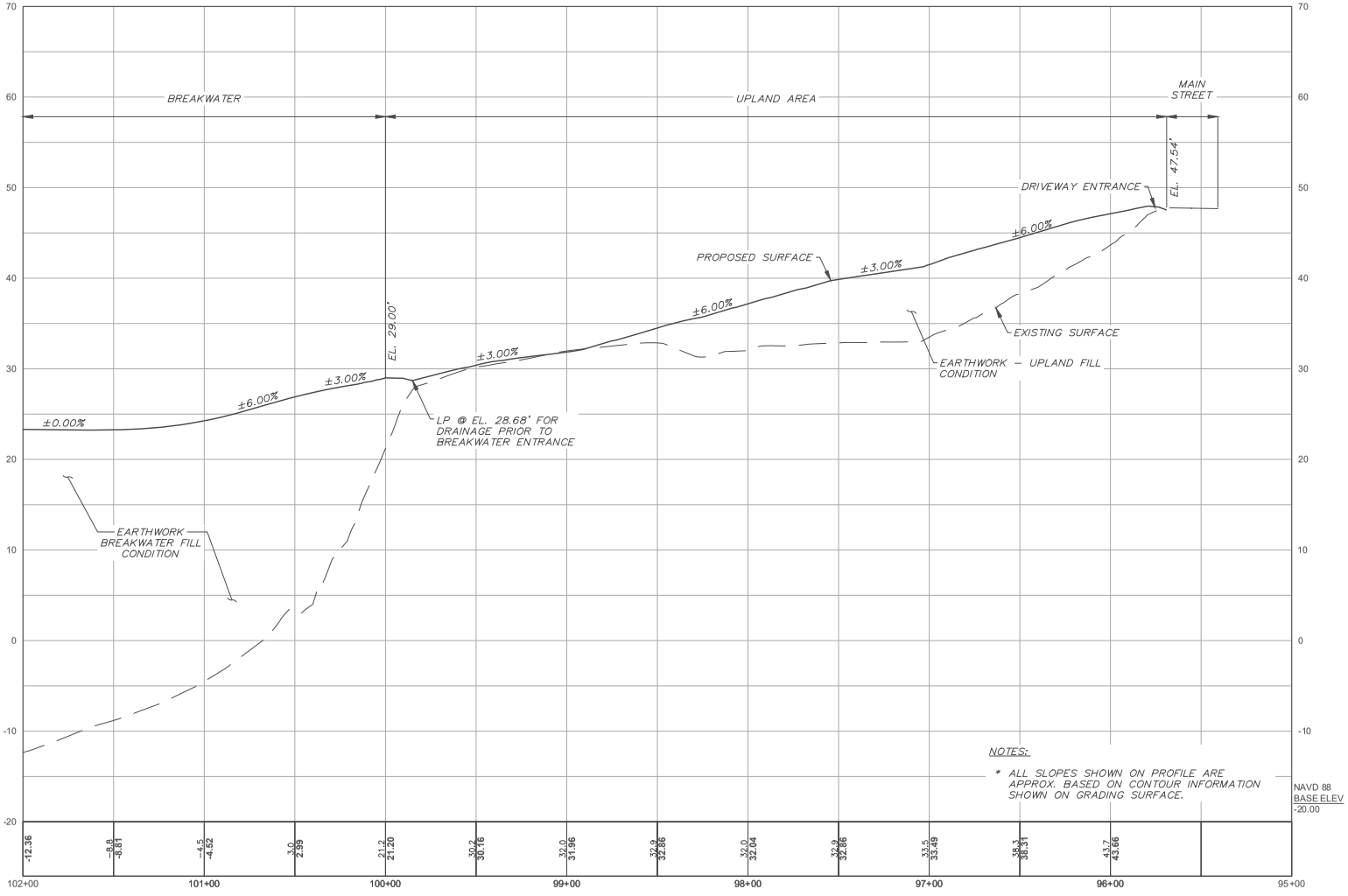
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON COUNTY
LUBEC, ME

UPLAND ALIGNMENT PLAN

SHEET NUMBER
C-300
32 0F 97

File: C:\Users\mrizek\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\32-C-300 (Upland Alignment Plan).rvt | Plotted: 7/19/2024 5:00 PM by DRIZK, EKATERINA | Saved: 7/19/2024 5:56 AM by MAGUIRC

DRIVEWAY & BREAKWATER PROFILE



0 30 60 FT.
1"=30'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	Multimodal		
PROJECT MANAGER	Aurele Gorneau II	SIGNATURE	
DESIGNER	Craig Morin	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

DRIVEWAY & BREAKWATER PROFILE PLAN

SHEET NUMBER
C-310
33 0F 97

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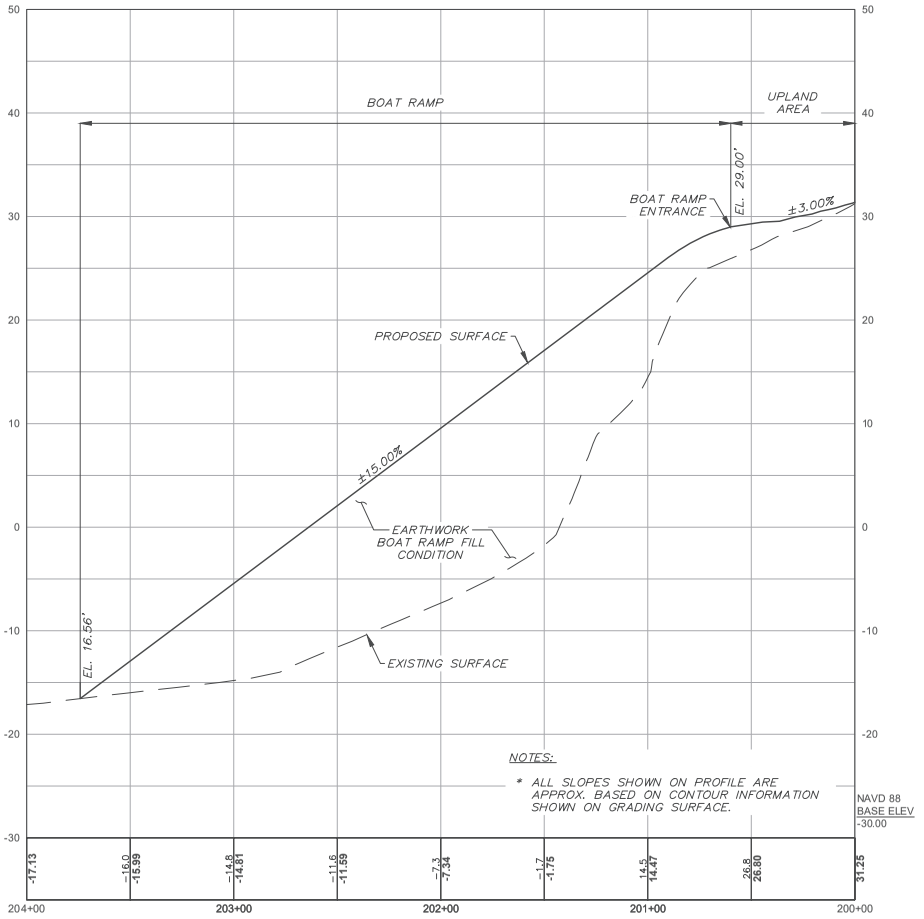
BOAT RAMP PROFILE



0 30 60 FT.
1"=30'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	Multimodal		
PROJECT MANAGER	Aurele Gorneau II	SIGNATURE	
DESIGNER	Craig Morin	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

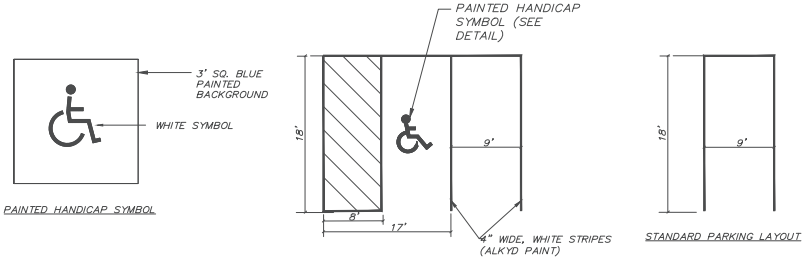
BOAT RAMP PROFILE PLAN

SHEET NUMBER
C-311
34 OF 97

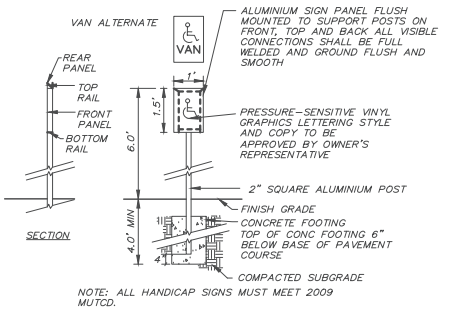
File: C:\Users\mlacke\OneDrive - Jacobs\ProjectDocuments\30 WIP\Drawings\Drawings_95% Submission\34-C-311 (Boat Ramp Profile Plan) - Plotted: 7/19/2024 4:57 PM by DRIZIN, EKATERINA - Saved: 7/19/2024 9:02 AM by MAGUIRC

EARTHWORK TABLE

ITEM	QUANTITY (CY)	TOTAL (CY)
CUT CONDITION		
GRUBBING	1146±CY	
COMMON EXCAVATION	4889±CY	
TOTAL CUT		6035±CY
FILL CONDITION		
COMMON FILL	1861±CY	
TOTAL FILL		1861±CY
NET CONDITION		
TOTAL AVAILABLE NON-ROCK EXCAVATION	4174±CY	
BORROW REQUIRED	3883±CY	
TOTAL SURPLUS MATERIAL		291±CY



TYPICAL PARKING STALL STRIPING AND PAINTED HANDICAL SYMBOL
N.T.S.



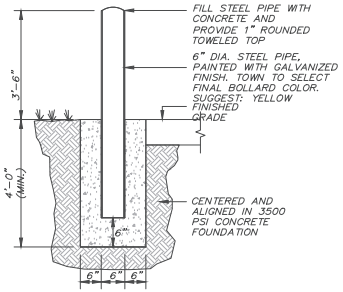
NOTE: ALL HANDICAP SIGNS MUST MEET 2009 MUTCD.

HANDICAP SIGN
N.T.S.

MAINE DOT – STANDARD DETAILS

606(03–06) – GUARDRAIL
606(10) – GUARDRAIL AND CURB PLACEMENT
607(01–03 & 06–08) – FENCING
608(01) – REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK
608(02) – DETECTABLE WARNINGS
609(08) – PRECAST CONCRETE TRANSITION CURB
609(10) – CONCRETE SLIPFORM CURB
610(02) – STONE SCOUR PROTECTION
620(04–05) – GEOTEXTILE PLACEMENT FOR PROTECTION OF SLOPES ADJACENT TO STREAMS & TIDAL AREAS
627(01–03 & 05) – PAVEMENT MARKING
645(04–05,09) – HIGHWAY SIGNING, (TYPE II)
801(01) – ENTRANCES ON SIDEWALK SECTIONS
801(11) – PEDESTRIAN RAMP NOTES
801(12) – PEDESTRIAN RAMP REQUIREMENTS

LOAM AND SEED
N.T.S.



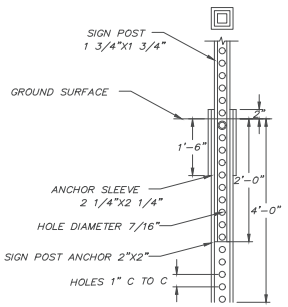
BOLLARD DETAIL
N.T.S.

TRAFFIC SIGN SUMMARY

SIGN ID NUMBER	SIZE WIDTH (IN)	SIZE HEIGHT (IN)	MESSAGE	DIMENSIONS (IN) LETTER HEIGHT	DIMENSIONS (IN) VERTICAL SPACING	DIMENSIONS (IN) ARROW RTE. MKR.	NUMBER REQUIRED	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	TOTAL AREA (S.F.)
R1-1	30	30	STOP	(1)	(1)	(1)	2	RED	WHITE	WHITE	P5 1 REQ'D	6.25	12.50
R1-2	30	30	YIELD	(1)	(1)	(1)	1	RED	WHITE	WHITE	P5 1 REQ'D	6.25	6.25
R5-1	30	30	DO NOT ENTER	(1)	(1)	(1)	2	RED	WHITE	WHITE	P5 1 REQ'D	6.25	12.50
R6-2	24	30	ONE WAY	(1)	(1)	(1)	1	WHITE	BLACK	WHITE	P5 1 REQ'D	5.00	5.00
R7-8	12	24	RESERVED PARKING	(1)	(1)	(1)	2	WHITE	GREEN	GREEN	P5 1 REQ'D	2.00	4.00
R7-8P	12	6	VAN ACCESSIBLE	(1)	(1)	(1)	1	WHITE	GREEN	GREEN	PAIR W/ ABOVE SIGN	0.50	0.50

SIGN SUMMARY NOTES:

1. HIGH INTENSITY ENCAPSULATED LENS REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" 11TH EDITION SHALL GOVERN.
2. 1 SEE MUTCD 11TH EDITION.

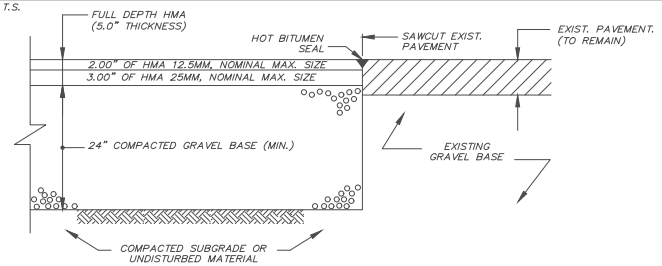


METHOD OF INSTALLATION:
1. DRIVE SIGN POST ANCHOR TO WITHIN 3 OR 4' OF SURFACE.
2. PRE-CUT ANCHOR SLEEVE SO THAT THE HOLES WILL MATCH AND STILL BE FLUSH WITH TOP OF SIGN POST ANCHOR, DRIVE ANCHOR SLEEVE UNTIL HOLES MATCH AS NOTED ABOVE, THEN DRIVE BOTH THE SIGN POST ANCHOR AND ANCHOR SLEEVE UNTIL ONE HOLE IS EXPOSED ABOVE GROUND FOR BOLT CONNECTION.
3. INSERT SIGN POST AND BOLT IN PLACE.

NOTE : DRIVING CAPS MUST BE USED TO DRIVE POSTS. RETAIN 4'-0" DEPTH TO REACH THEORETICAL FROST LINE.

GENERAL NOTES:
1. BREAKAWAY SIGN SUPPORTS SHALL BE FABRICATED FROM GALVANIZED STEEL AND SHALL CONFORM TO THE BREAKAWAY DESIGN SHOWN ON THIS SHEET OR "GROUND MOUNTED SIGN SUPPORTS BREAKAWAY DESIGN FOR SIGNS WITH AREA 20 SQ. FT. AND BELOW" AND THE MASS. DEPT. OF PUBLIC WORKS "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES".
2. THE STEEL POSTS SHALL CONFORM TO ASTM-A366. THE CROSS SECTION OF THE POST SHALL BE SQUARE TUBE FORMED OF 12 GAUGE (.105" U.S.S. GAUGE) COLD-ROLLED CARBON STEEL SHEETS WHICH HAVE BEEN ZINC COATED (1.25 OZ.) CONFORMING TO ASTM-A525, CAREFULLY ROLLED TO SIZE AND WELDED DIRECTLY IN THE CORNER BY HIGH FREQUENCY RESISTANCE WELDING OR EQUAL AND EXTERNALLY SCARFED TO AGREE WITH CORNER RADII.
3. STANDARD OUTSIDE CORNER CORNER RADIUS SHALL BE 5/32" PLUS OR MINUS 1/64".
4. ALL BOLTS SHALL CONFORM TO ASTM-A307 CLASS A.
5. ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AS PER ASTM-A153.

BREAKAWAY SIGN POST (GROUND INSTALLATION)
N.T.S.



HOT MIX ASPHALT (HMA) PAVEMENT SECTION DETAIL
N.T.S.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM			SIGNATURE
PROJECT MANAGER	E. ROSENSTEIN		
DESIGNER	C. MAGUIRE	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

UPLAND DETAILS SHEET

SHEET NUMBER
C-400
35 OF 97

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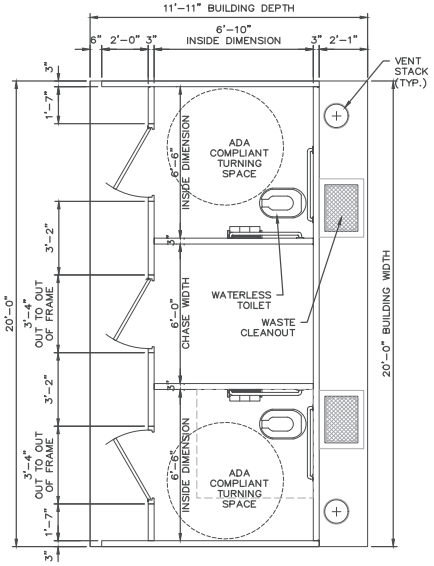
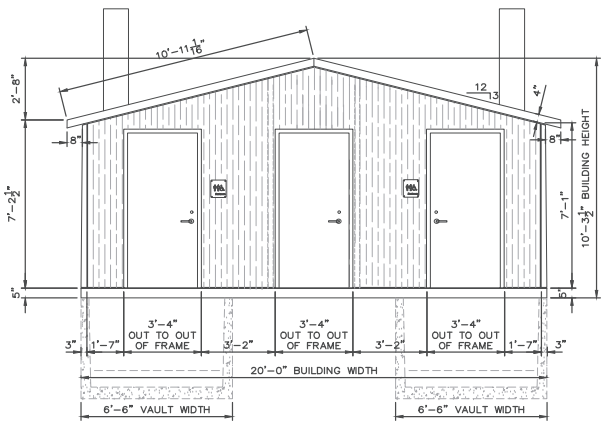
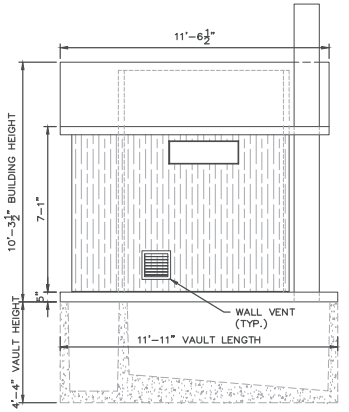


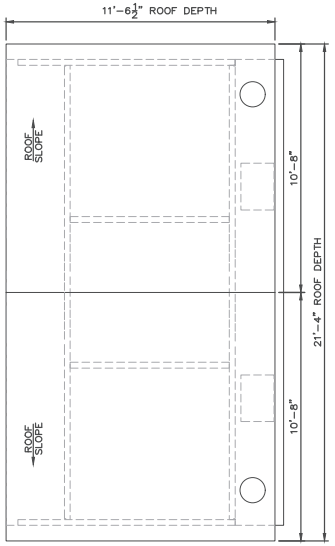
FLOOR PLAN
3/8" = 1'–0"



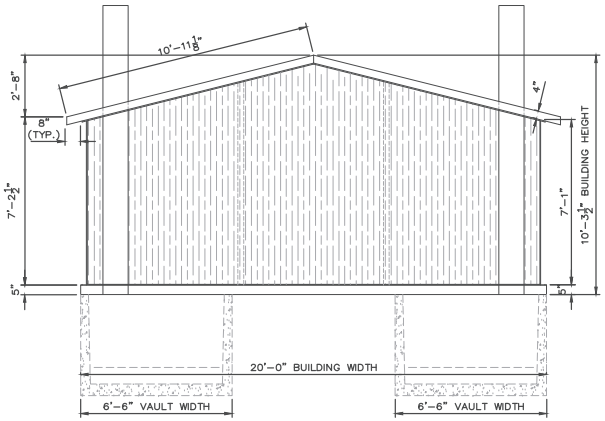
FRONT ELEVATION
3/8" = 1'–0"



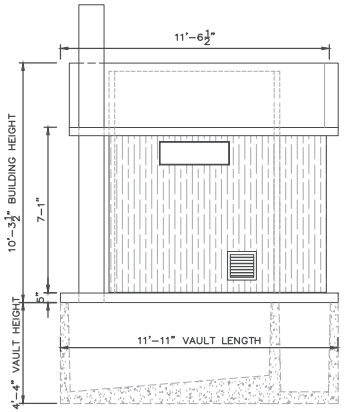
RIGHT ELEVATION
3/8" = 1'–0"



ROOF PLAN
3/8" = 1'–0"



REAR ELEVATION
3/8" = 1'–0"



LEFT ELEVATION
3/8" = 1'–0"

NOTES

1. ALL REQUIRED OPENINGS FOR ELECTRIC, MECHANICAL, LOUVERS, ETC. MUST BE SIZED AND LOCATED BY BUYER ON THIS DRAWING (OPENING SIZES AND LOCATION MAY HAVE TO BE ALTERED IF THEY INTERFERE WITH CONNECTIONS OR REINFORCING.
2. ALL VIEWS ARE FROM EXTERIOR.
3. A SIGNED COPY MUST BE RETURNED BEFORE BUILDING CAN BE RELEASED FOR PRODUCTION.

0 1 5 FT.
3/8"=1'–0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

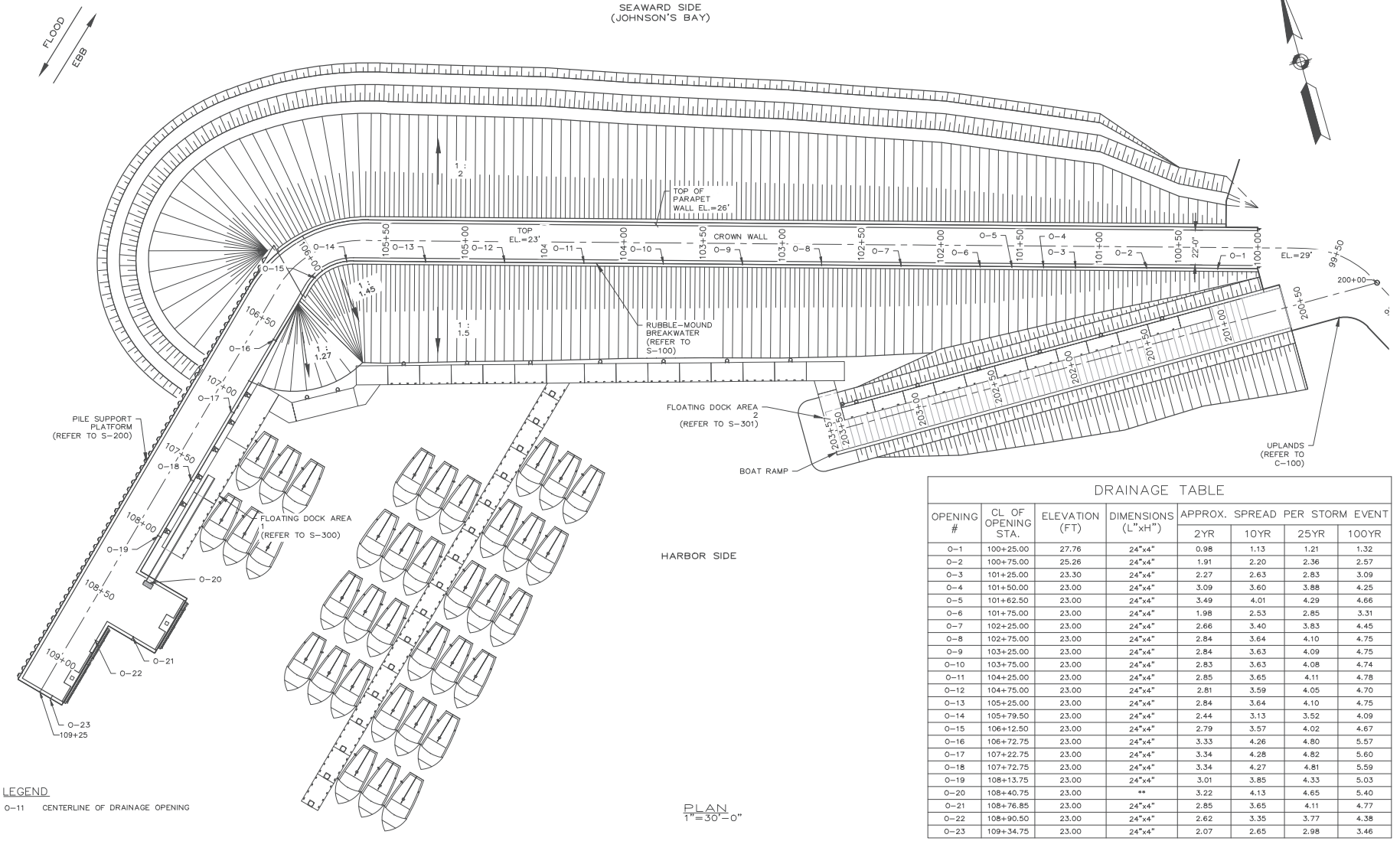
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PRIVY BUILDING PLAN

SHEET NUMBER
U-100
36 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\3E-U-100 (Privy Building Plan).rvt Plotted: 7/19/2024 4:27 PM by: SAYADFAR, HASTI Saved: 7/19/2024 4:23 PM by: HS037482



PLAN
1"=30'-0"

LEGEND

0-11 CENTERLINE OF DRAINAGE OPENING

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SEE GUIDE PILE SCHEDULE AND DETAILS S-310 THROUGH S-320.

DRAINAGE TABLE

OPENING #	CL OF OPENING STA.	ELEVATION (FT)	DIMENSIONS (L"xH")	APPROX. SPREAD PER STORM EVENT			
				2YR	10YR	25YR	100YR
0-1	100+25.00	27.76	24"x4"	0.98	1.13	1.21	1.32
0-2	100+75.00	25.26	24"x4"	1.91	2.20	2.36	2.57
0-3	101+25.00	23.30	24"x4"	2.27	2.63	2.83	3.09
0-4	101+50.00	23.00	24"x4"	3.09	3.60	3.88	4.25
0-5	101+62.50	23.00	24"x4"	3.49	4.01	4.29	4.66
0-6	101+75.00	23.00	24"x4"	1.98	2.53	2.85	3.31
0-7	102+25.00	23.00	24"x4"	2.66	3.40	3.83	4.45
0-8	102+75.00	23.00	24"x4"	2.84	3.64	4.10	4.75
0-9	103+25.00	23.00	24"x4"	2.84	3.63	4.09	4.75
0-10	103+75.00	23.00	24"x4"	2.83	3.63	4.08	4.74
0-11	104+25.00	23.00	24"x4"	2.85	3.65	4.11	4.78
0-12	104+75.00	23.00	24"x4"	2.81	3.59	4.05	4.70
0-13	105+25.00	23.00	24"x4"	2.84	3.64	4.10	4.75
0-14	105+79.50	23.00	24"x4"	2.44	3.13	3.52	4.09
0-15	106+12.50	23.00	24"x4"	2.79	3.57	4.02	4.67
0-16	106+72.75	23.00	24"x4"	3.33	4.26	4.80	5.57
0-17	107+22.75	23.00	24"x4"	3.34	4.28	4.82	5.60
0-18	107+72.75	23.00	24"x4"	3.34	4.27	4.81	5.59
0-19	108+13.75	23.00	24"x4"	3.01	3.85	4.33	5.03
0-20	108+40.75	23.00	**	3.22	4.13	4.65	5.40
0-21	108+76.85	23.00	24"x4"	2.85	3.65	4.11	4.77
0-22	108+90.50	23.00	24"x4"	2.62	3.35	3.77	4.38
0-23	109+34.75	23.00	24"x4"	2.07	2.65	2.98	3.46

** OPENING IS EQUIVALENT TO THE WIDTH OF THE BREAK IN THE PARAPET WALL FOR GANGWAY RAMP CONNECTIVITY.

0 30 60 FT.
1"=30'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

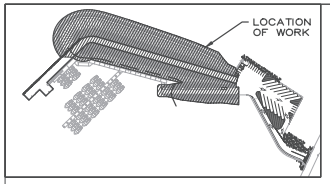
BREAKWATER PLAN

SHEET NUMBER

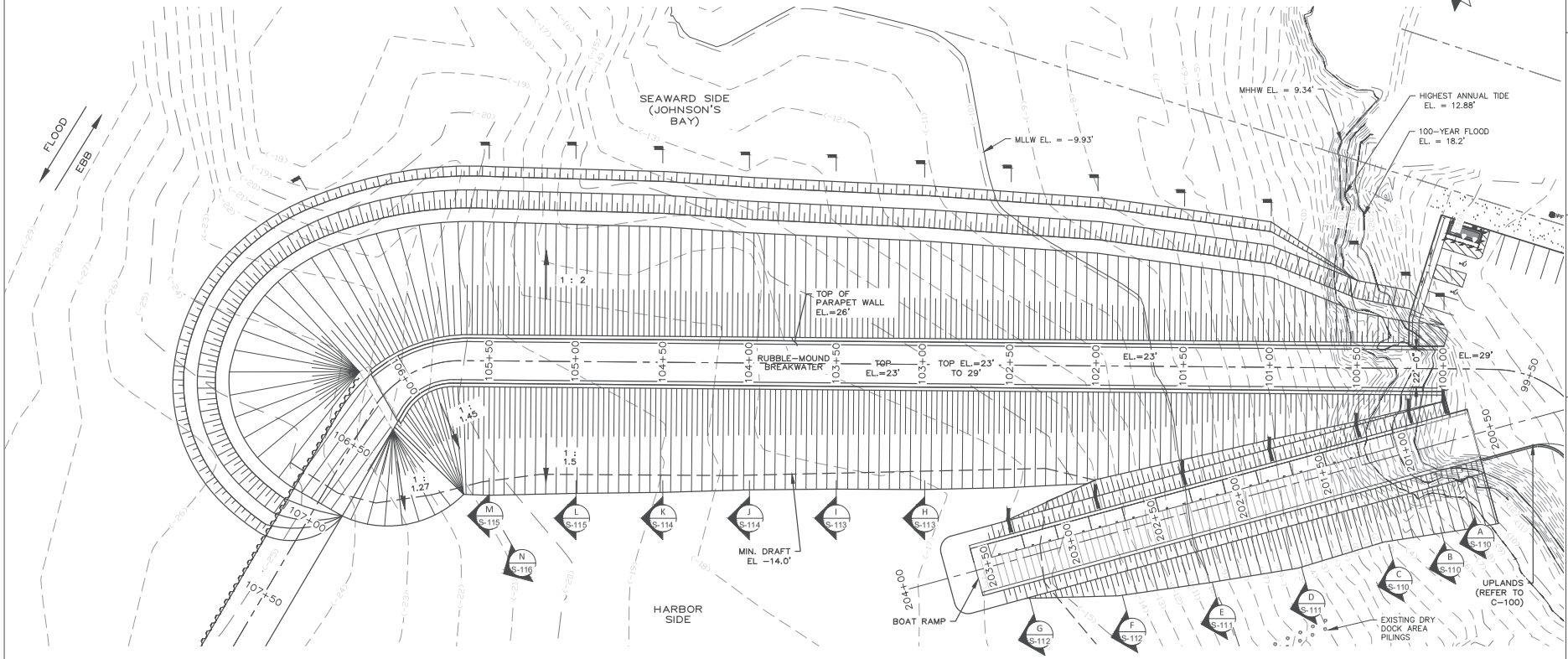
S-001

37 OF 97

File: C:\Users\MagurcOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S-S-001 (Breakwater Plan).rvt Plotted: 7/19/2024 8:31 AM by MAGURE, CASEY; Saved: 7/17/2024 3:23 PM by DRIZKE



KEY PLAN
1"=240'-0"



PLAN
1"=30'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 30 60 FT.
1"=30'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

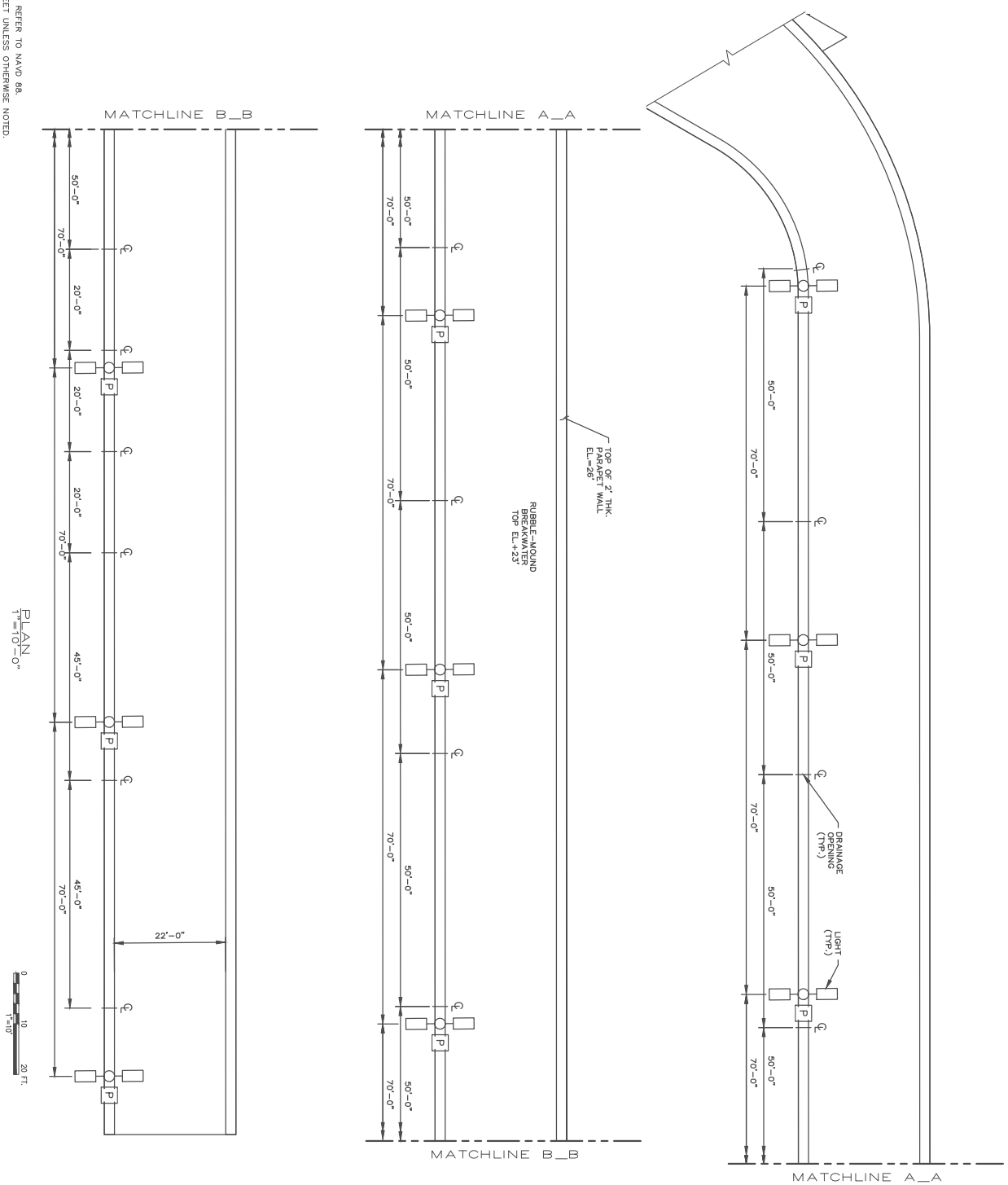
RUBBLE-MOUND PLAN

SHEET NUMBER
S-100
38 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\36-S-100 (Rubble-Mound Breakwater Plan).rvt Plotted: 7/19/2024 4:27 PM by SAYADPAR, HASTI Saved: 7/19/2024 4:23 PM by HS037482

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\37-S-101 (Rubble-Mound Arrangement Plan) ; Plotted: 7/19/2024 4:27 PM by SAYADFAR, HASTI ; Saved: 7/19/2024 4:26 PM by HS037482

NOTES:
1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.



NOT FOR CONSTRUCTION

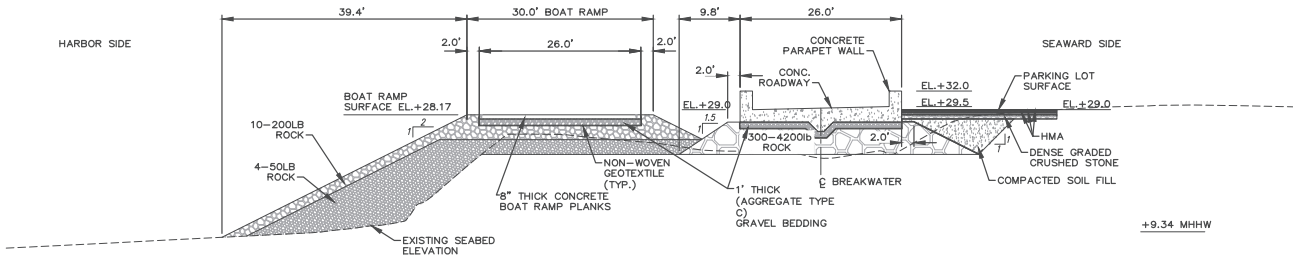
95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

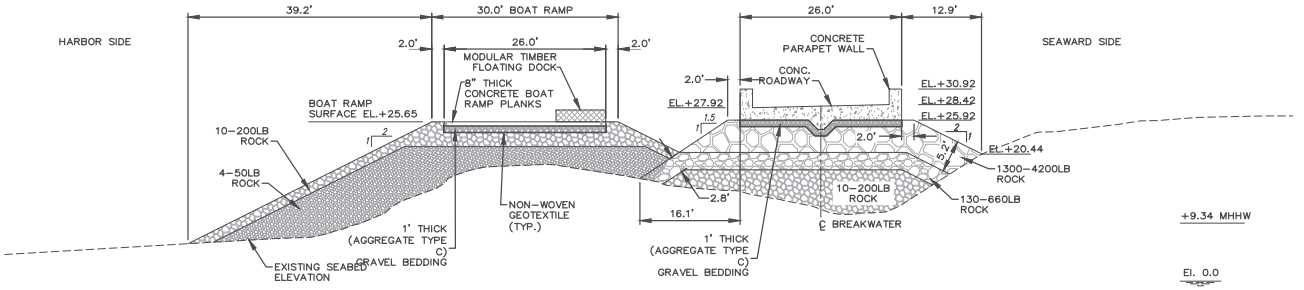
SHEET NUMBER S-101 39 OF 97	MAINE DEPARTMENT OF TRANSPORTATION LUBEC BREAKWATER LUBEC, ME WASHINGTON, COUNTY RUBBLE-MOUND BREAKWATER UTILITY ARRANGEMENT PLAN	PROJECT INFORMATION PROGRAM: MULTIMODAL PROJECT MANAGER: AURELE GORNEAU II DESIGNER: CRAIG MORIN CONSULTANT: JACOBS PROJECT RESIDENT: CONTRACTOR: PROJECT COMPLETION DATE:	SIGNATURE P.E. NUMBER DATE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

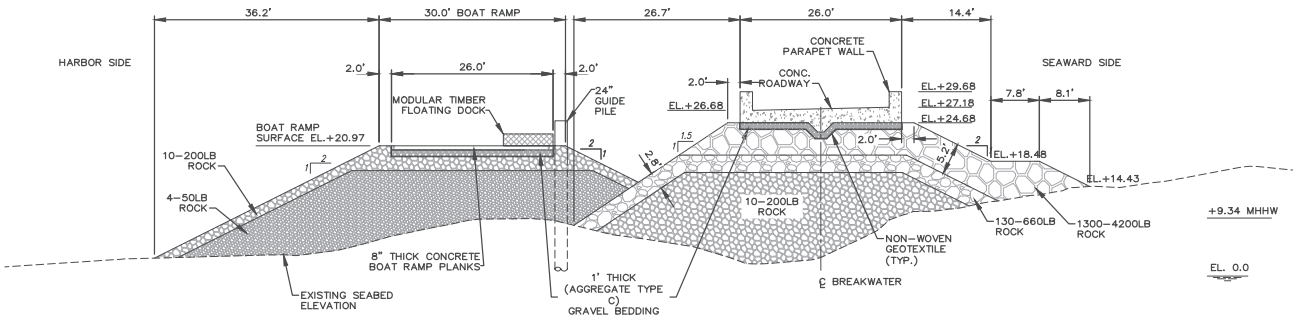
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	



STA. 100+00
A SECTION
SCALE: 1"=10'-0"
S-100



STA. 100+20
B SECTION
SCALE: 1"=10'-0"
S-100



STA. 100+50
C SECTION
SCALE: 1"=10'-0"
S-100

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.
1"=10'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

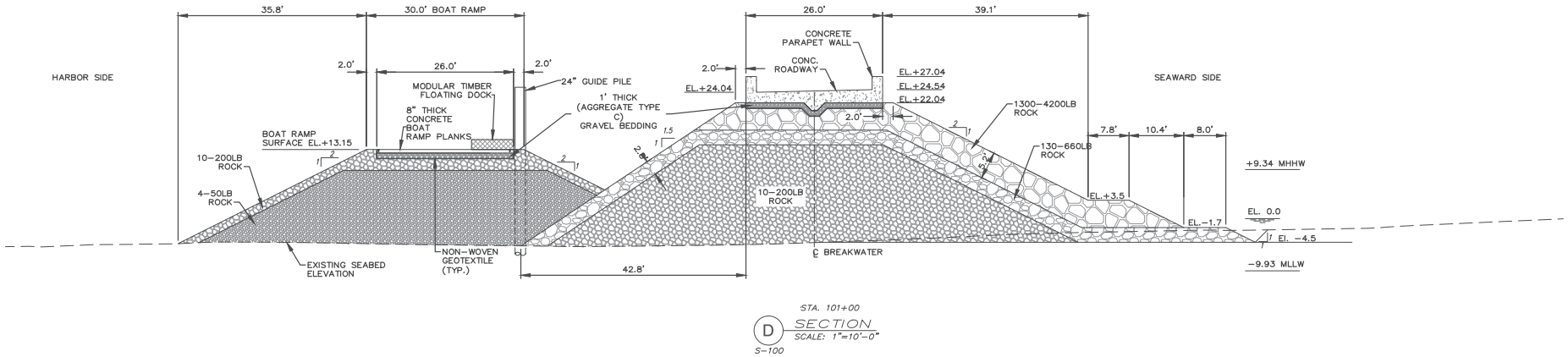
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND BREAKWATER SECTIONS - 1

SHEET NUMBER
S-110
40 OF 97

File: C:\Users\ds037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\38-S-110 (Rubble-Mound Sections-1).rvt Plotted: 7/19/2024 4:27 PM by SAIYADFAR, HASITI Saved: 7/19/2024 4:23 PM by HS037482

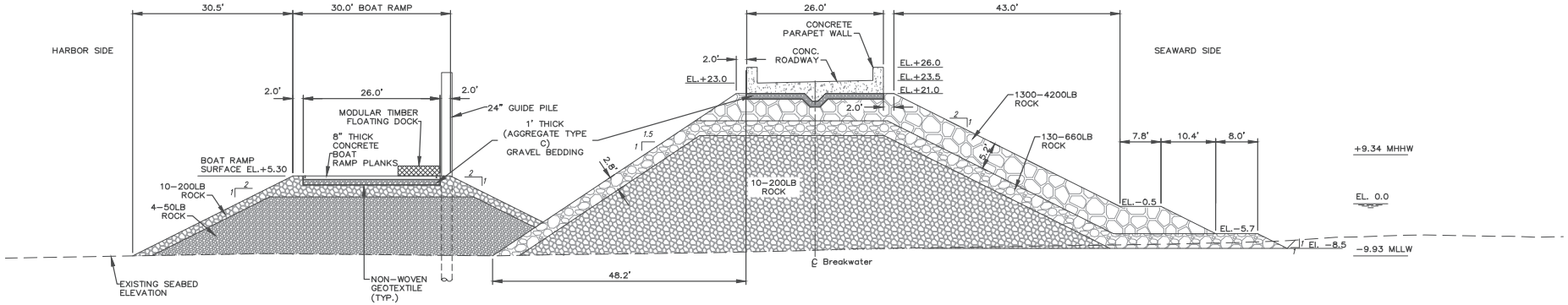


STA. 101+00

D SECTION

SCALE: 1"=10'–0"

S–100



STA. 101+50

E SECTION

SCALE: 1"=10'–0"

S–100

CREST ELEVATION DOES NOT INCLUDE 2.04 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.

1"=10'

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

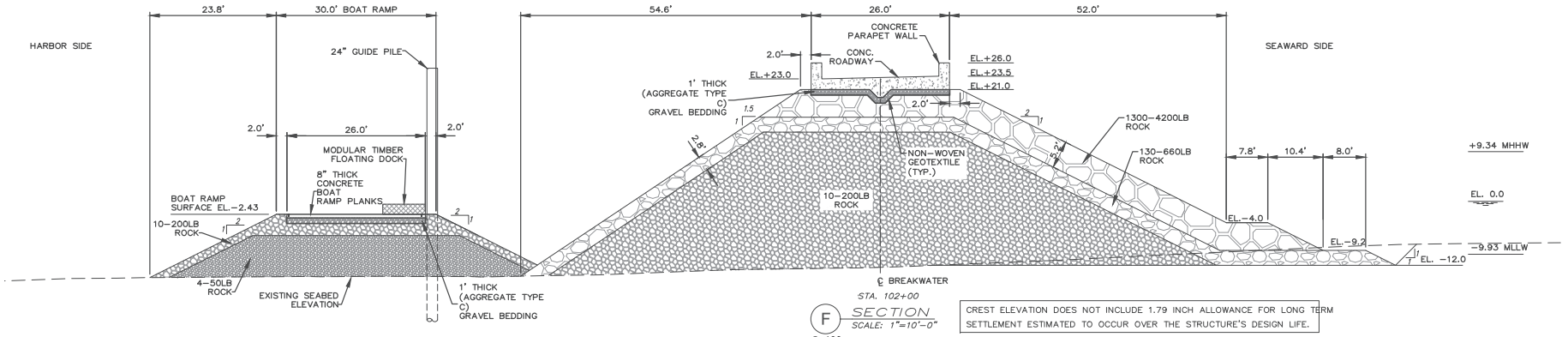
RUBBLE-MOUND BREAKWATER SECTIONS - 2

SHEET NUMBER

S-111

41 OF 97

File: C:\Users\ts037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\39-S-111 (Rubble-Mound Sections-2) . Plotted: 7/19/2024 4:27 PM by SAIYADFAR, HASITI . Saved: 7/19/2024 4:24 PM by HS037482



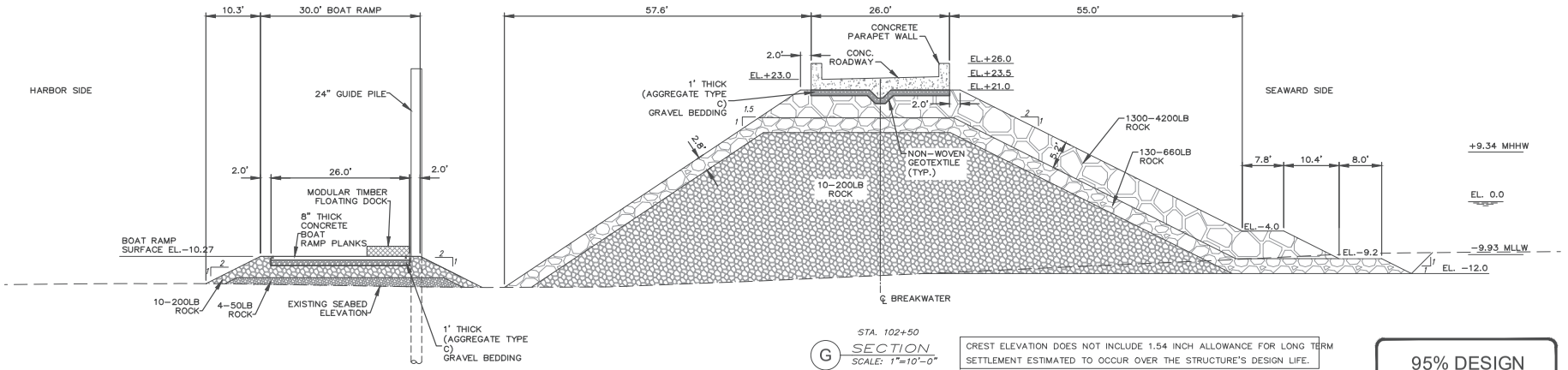
STA. 102+00

F SECTION

SCALE: 1"=10'-0"

S-100

CREST ELEVATION DOES NOT INCLUDE 1.79 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.



STA. 102+50

G SECTION

SCALE: 1"=10'-0"

S-100

CREST ELEVATION DOES NOT INCLUDE 1.54 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.

1"=10'

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

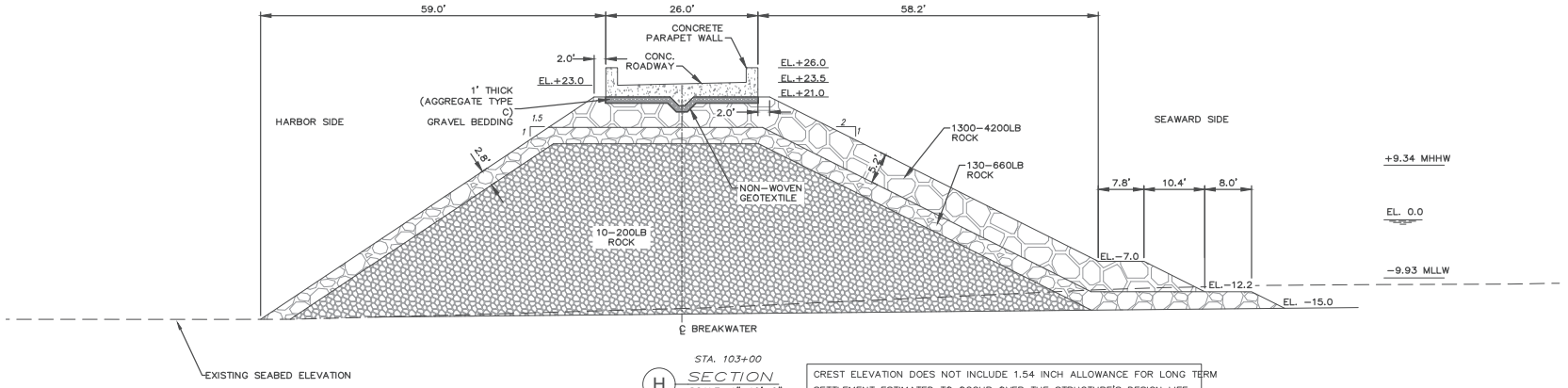
RUBBLE-MOUND BREAKWATER SECTIONS - 3

SHEET NUMBER

S-112

42 OF 97

File: C:\Users\ts037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\40-S-112 (Rubble-Mound Sections-3) - Plotted: 7/19/2024 4:27 PM by SAYADFAR, HASTI - Saved: 7/19/2024 4:24 PM by HS037482



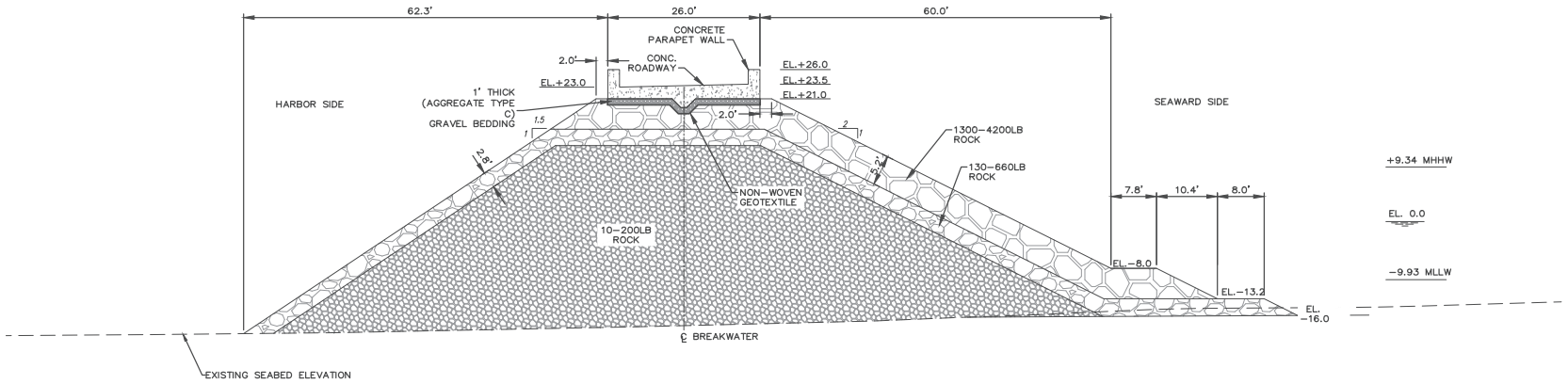
STA. 103+00

H SECTION

SCALE: 1"=10'–0"

S–100

CREST ELEVATION DOES NOT INCLUDE 1.54 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.



STA. 103+50

I SECTION

SCALE: 1"=10'–0"

S–100

CREST ELEVATION DOES NOT INCLUDE 1.53 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.

1"=10'

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

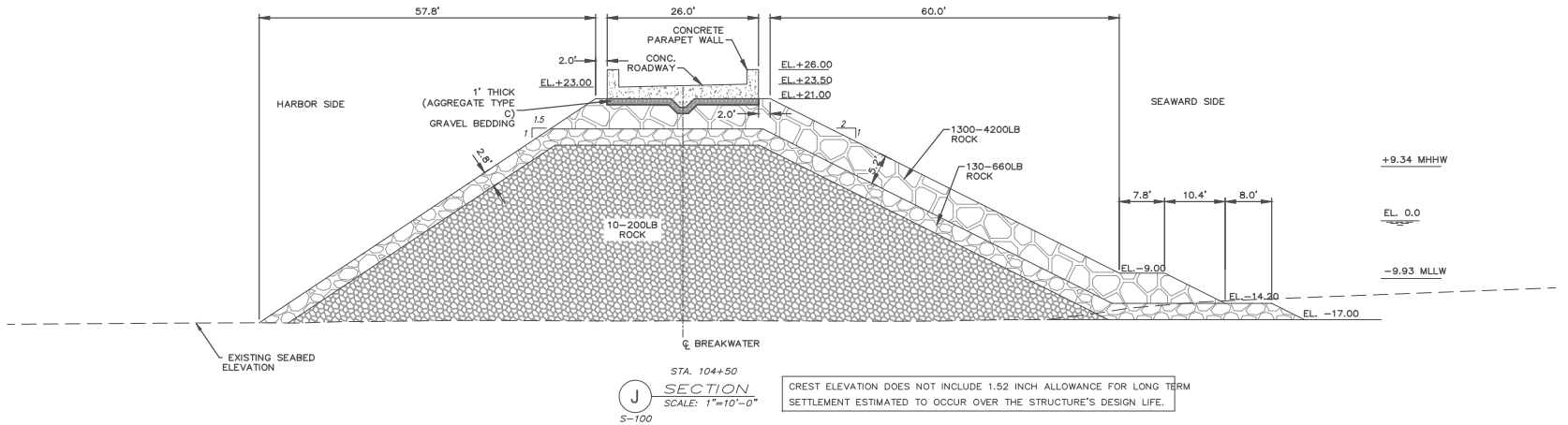
RUBBLE-MOUND BREAKWATER SECTIONS - 4

SHEET NUMBER

S-113

43 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\41-S-113 (Rubble-Mound Sections-4).dwg Plotted: 7/19/2024 4:27 PM by SAYADPAR, HASTI Saved: 7/19/2024 4:24 PM by HS037482



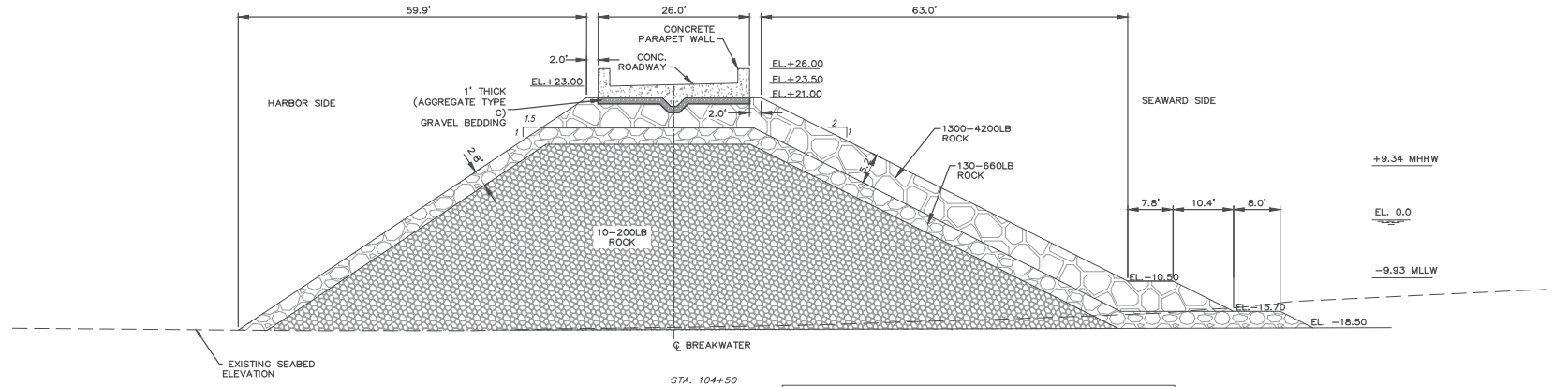
STA. 104+50

J SECTION

SCALE: 1"=10'-0"

S-100

CREST ELEVATION DOES NOT INCLUDE 1.52 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.



STA. 104+50

K SECTION

SCALE: 1"=10'-0"

S-100

CREST ELEVATION DOES NOT INCLUDE 1.52 INCH ALLOWANCE FOR LONG TERM SETTLEMENT ESTIMATED TO OCCUR OVER THE STRUCTURE'S DESIGN LIFE.

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.

1"=10'

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

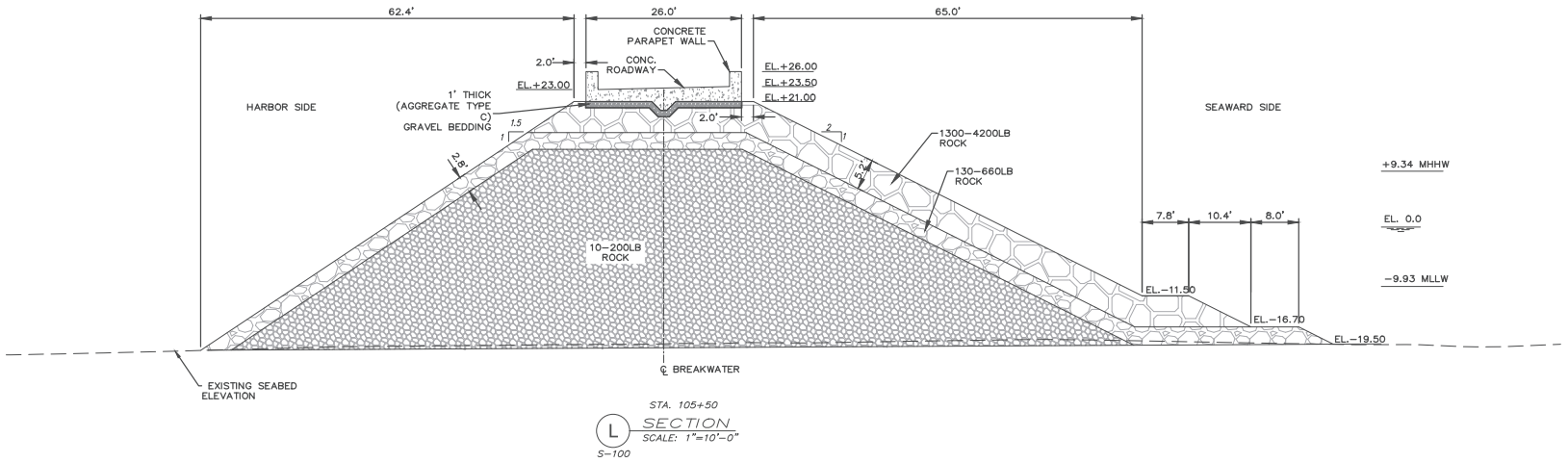
RUBBLE-MOUND BREAKWATER SECTIONS - 5

SHEET NUMBER

S-114

44 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\42-S-114 (Rubble-Mound Sections-5) - Plotted: 7/19/2024 4:27 PM by SAYADFAR, HASTI - Saved: 7/19/2024 4:24 PM by HS037482

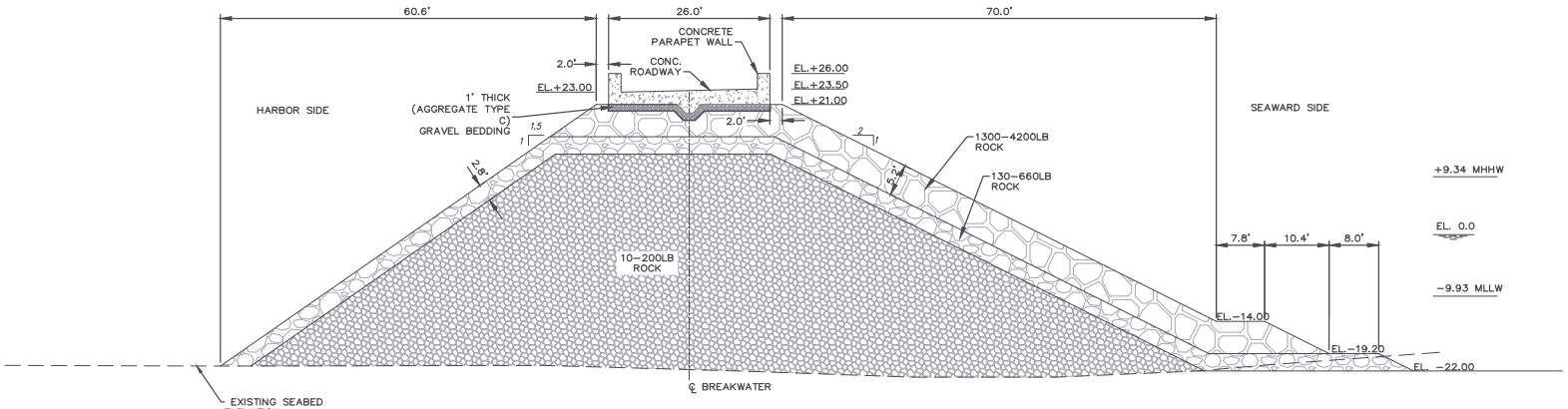


STA. 105+50

L SECTION

SCALE: 1"=10'-0"

S-100



STA. 106+00

M SECTION

SCALE: 1"=10'-0"

S-100

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.

1"=10'

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

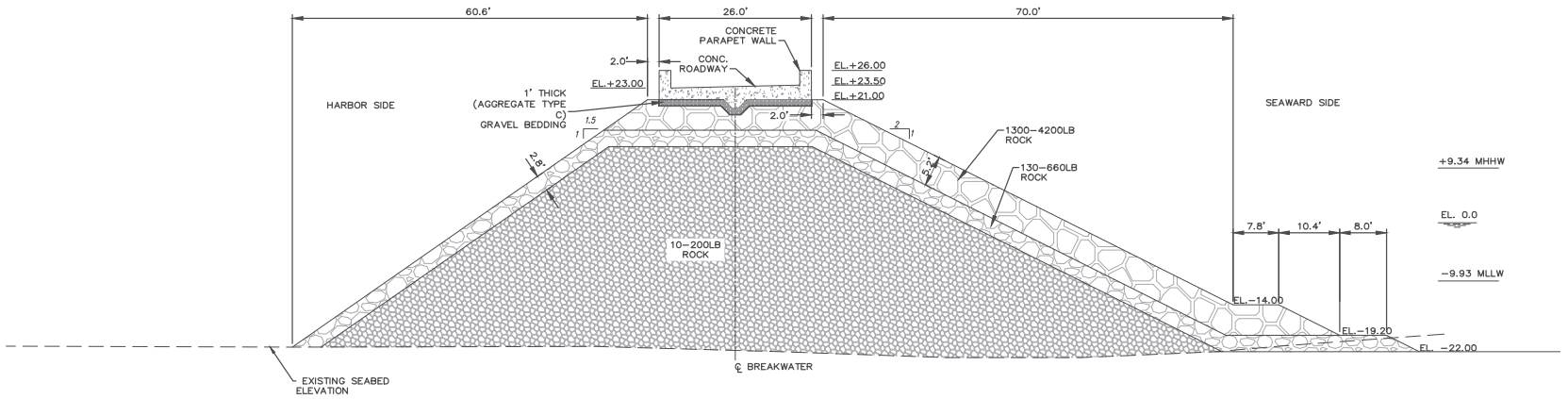
RUBBLE-MOUND BREAKWATER SECTIONS - 6

SHEET NUMBER

S-115

45 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\43-S-115 (Rubble-Mound Sections-6) - Plotted: 7/19/2024 4:27 PM by SAIYADFAR, HASITI - Saved: 7/19/2024 4:24 PM by HS037482



N SECTION
SCALE: 1"=10'-0"
S-100

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

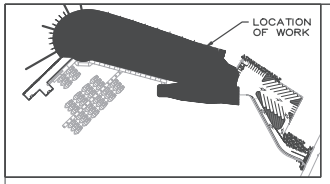
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

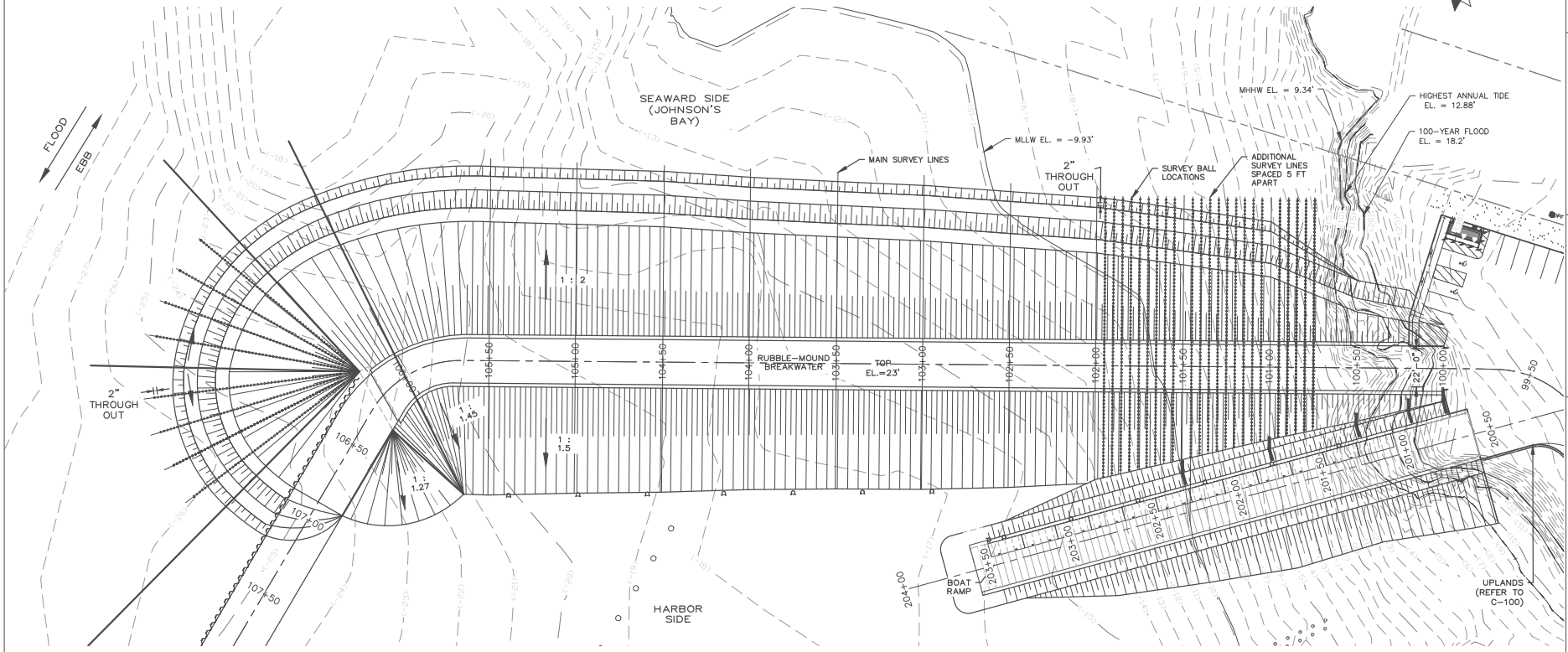
RUBBLE-MOUND BREAKWATER SECTIONS - 7

SHEET NUMBER
S-116
46 OF 97

File: C:\Users\s037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\44-S-116 (Rubble-Mound Sections-7).rvt Plotted: 7/19/2024 4:27 PM by SAYADFAR, HASTI Saved: 7/19/2024 4:25 PM by HS037482



KEY PLAN
1"=240'-0"



PLAN
1"=30'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SAME MEASUREMENT PATTERN SHOULD BE ADOPTED FOR ALL OTHER STATIONS INCLUDING THE ROUNDHEAD PORTION.
4. FOR THE REAR QUADRANT, ADOPT A SIMILAR MEASUREMENT PATTERN AS THE FRONT QUADRANT.

0 30 60 FT.
1"=30'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

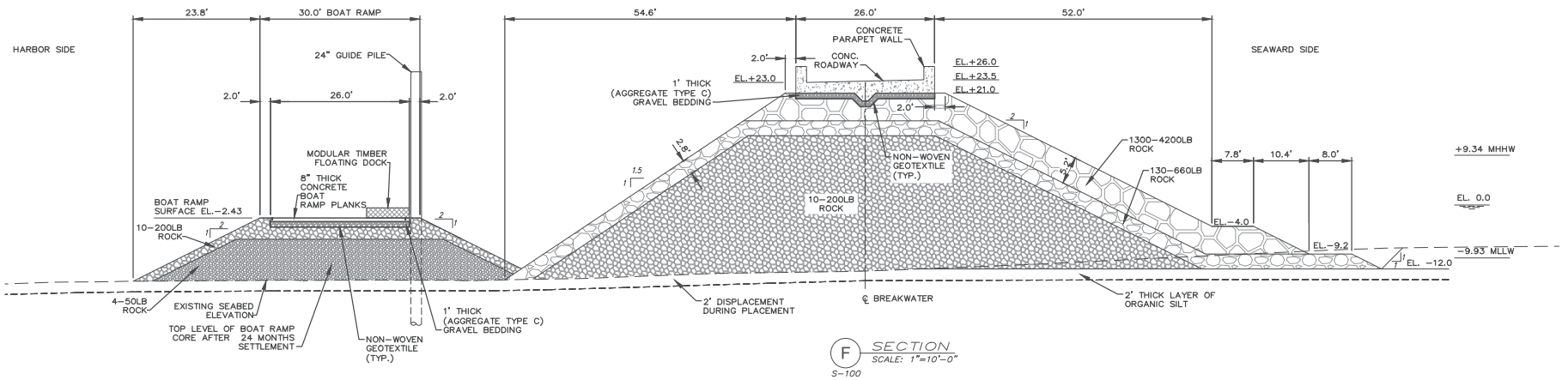
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND BREAKWATER SURVEY LOCATIONS

SHEET NUMBER
S-117
47 OF 97

File: C:\Users\s037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\44-S-117 (Rubble-Mound Breakwater Survey Lines) - Plotted: 7/19/2024 4:27 PM by SAYADFAR, HASTI - Saved: 7/19/2024 4:25 PM by HS037482



F SECTION
SCALE: 1"=10'-0"
S-100

RUBBLE-MOUND BREAKWATER				
SECTION	DISPLACEMENT DUE TO UPPER ORGANIC SILT		24 - MONTH SETTLEMENT	
	TOTAL ADDITIONAL UNDERLAYER (130-660 lbs.) VOLUME (CF)	ADDITIONAL CORE (10-200 lbs.) VOLUME (CF)	TOTAL ADDITIONAL UNDERLAYER (130-660 lbs.) VOLUME (CF)	ADDITIONAL CORE (10-200 lbs.) VOLUME (CF)
100+20 - 101+00	3680[4]	12140[4]	0	0
101+00 - 102+00	7760[4]	23335[4]	4230[1]	4745[1]
102+00 - 104+00	15525[4]	54685[4]	3695[2]	4345[2]
104+00 - 106+00	30905[5]	123350[5]	1855[3]	2190[3]
ROUND HEAD	25755[6]	47695[6]	1995[3]	255[3]
TOTAL (CY)	3100	9675	440	430

BOAT RAMP				
SECTION	DISPLACEMENT DUE TO UPPER ORGANIC SILT		24 - MONTH SETTLEMENT	
	TOTAL ADDITIONAL ARMOR (10-200 lbs.) VOLUME (CF)	TOTAL ADDITIONAL CORE (5-40 lbs.) VOLUME (CF)	TOTAL ADDITIONAL ARMOR (10-200 lbs.) VOLUME (CF)	TOTAL ADDITIONAL CORE (5-40 lbs.) VOLUME (CF)
200+92.75 - 201+75.88	670[4]	10480[4]	0	0
201+75.88 - 202+79.79	790[4]	12915[4]	0	2715[7]
202+79.79 - 203+57.28	4425[5]	9770[5]	0	315[8]
TOTAL (CY)	220	1230	0	115

NOTES:

(1) VOLUME BASED ON 17.5 INCHES OF SETTLEMENT.
(2) VOLUME BASED ON 7.7 INCHES OF SETTLEMENT.
(3) VOLUME BASED ON 3.8 INCHES OF SETTLEMENT.
(4) VOLUME BASED ON DISPLACED 2 FEET OF SOFT SEDIMENT.
(5) VOLUME BASED ON DISPLACED 4 FEET OF SOFT SEDIMENT.
(6) VOLUME BASED ON DISPLACED 3 FEET OF SOFT SEDIMENT.
(7) VOLUME BASED ON 5.7 TO 11 INCHES (AVERAGE 8 INCHES) OF SETTLEMENT.
(8) VOLUME BASED ON 0.9 TO 2.5 INCHES (AVERAGE 1.7 INCHES) OF SETTLEMENT.

CONSTRUCTION SEQUENCING NOTES:

1. PLACE RUBBLE-MOUND BREAKWATER CORE ROCK (10 -200 LBS.) STARTING FROM THE CENTERLINE OF THE BREAKWATER WORKING OUTWARD TO THE TWO SIDES OF THE BREAKWATER (I.E., SEAWARD SIDE AND HARBOR SIDE). SOFT ORGANIC SILTS PRESENT AT THE MUDLINE ARE EXPECTED TO DISPLACE OUTWARD DURING INSTALLATION OF THE CORE ROCK. DISPLACEMENTS ARE ESTIMATED AT 2 FT FOR THE MAJORITY OF THE BREAKWATER, INCREASING TO 3 FT AT THE START OF THE PLATFORM.
2. RUBBLE-MOUND BREAKWATER CORE SHALL BE OVERBUILT TO CORRECT FOR ESTIMATED SETTLEMENTS DOCUMENTED IN THE LUBEC BREAKWATER GEOTECHNICAL REPORT. LONG-TERM CONSOLIDATION SETTLEMENTS WERE ESTIMATED TO RANGE FROM 7 TO 17 INCHES AND ARE EXPECTED TO COMPLETE DURING THE CONSTRUCTION PERIOD. THESE SETTLEMENTS ARE ESTIMATED MOSTLY FOR THE AREA FROM STA 101+00 TO 104+00, WHERE HIGHER SETTLEMENTS ARE EXPECTED CLOSER TO THE SHORELINE.
3. ESTIMATED VOLUMES TO ACCOUNT FOR THE NOTED DISPLACED SOILS AND EXPECTED SETTLEMENTS ARE LISTED IN TABLE ON THIS DRAWING.
4. INSTALL SETTLEMENT MONITORING PLATES AS SHOWN ON DRAWINGS MN-100 AND MN-120.
5. FOLLOWING PLACEMENT OF CORE ROCK, PLACE UNDERLAYER ROCKS (130 -660 LBS.) ALONG THE SIDE SLOPES IN A 2.8 FT THICK LAYER, PLACED OVER THE RUBBLE-MOUND BREAKWATER CORE LAYER.
6. IF THE CONTRACTOR IS UNABLE TO LAY THE ARMOR ROCKS (1300 - 4200 LBS.) BEFORE STOPPING CONSTRUCTION FOR THE WINTER, THEY SHALL ADOPT WINTER PROTECTION MEASURES TO PREVENT ANY DAMAGE TO THE UNDERLAYER ROCK.
7. PLACE RUBBLE-MOUND BREAKWATER ARMOR ROCK IN A 5.2 FT THICK LAYER OVER THE RUBBLE-MOUND BREAKWATER UNDERLAYER.
8. CONSTRUCT CONCRETE ROADWAY ON TOP OF RUBBLE-MOUND AS SHOWN. CONSTRUCTION OF CONCRETE ROADWAY SHALL COMMENCE ONCE LONG-TERM SETTLEMENTS ARE NEAR COMPLETION BASED ON THE ONGOING MONITORING AND AS DETERMINED BY THE RESIDENT.
9. WAIT TIMES BETWEEN EACH STAGE MAY BE VARIED BASED ON MONITORING INSTRUMENTATION DATA RESULTS. SUCH DECISIONS WILL BE MADE BY RESIDENT.
10. RAMP CONSTRUCTION SHALL COMMENCE AFTER CONSTRUCTION OF THE INITIAL PORTION OF THE BREAKWATER, CONSISTING OF PLACEMENT OF THE CORE MATERIAL AND THE UNDERLAYER ON THE HARBOR SIDE.
11. ALONG THE BOAT RAMP AND ON T HE HARBOR SIDE OF THE BREAKWATER, PLACE STEEL CASINGS TO FACILITATE THE FUTURE INSTALLATION OF PIPE PILES TO ACT AS GUIDE PILES FOR FLOATING DOCKS.
12. AT THE TRANSITION TO THE PILE SUPPORTED PLATFORM, PLACE STEEL CASINGS TO FACILITATE THE FUTURE INSTALLATION OF PIPE PILES.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION

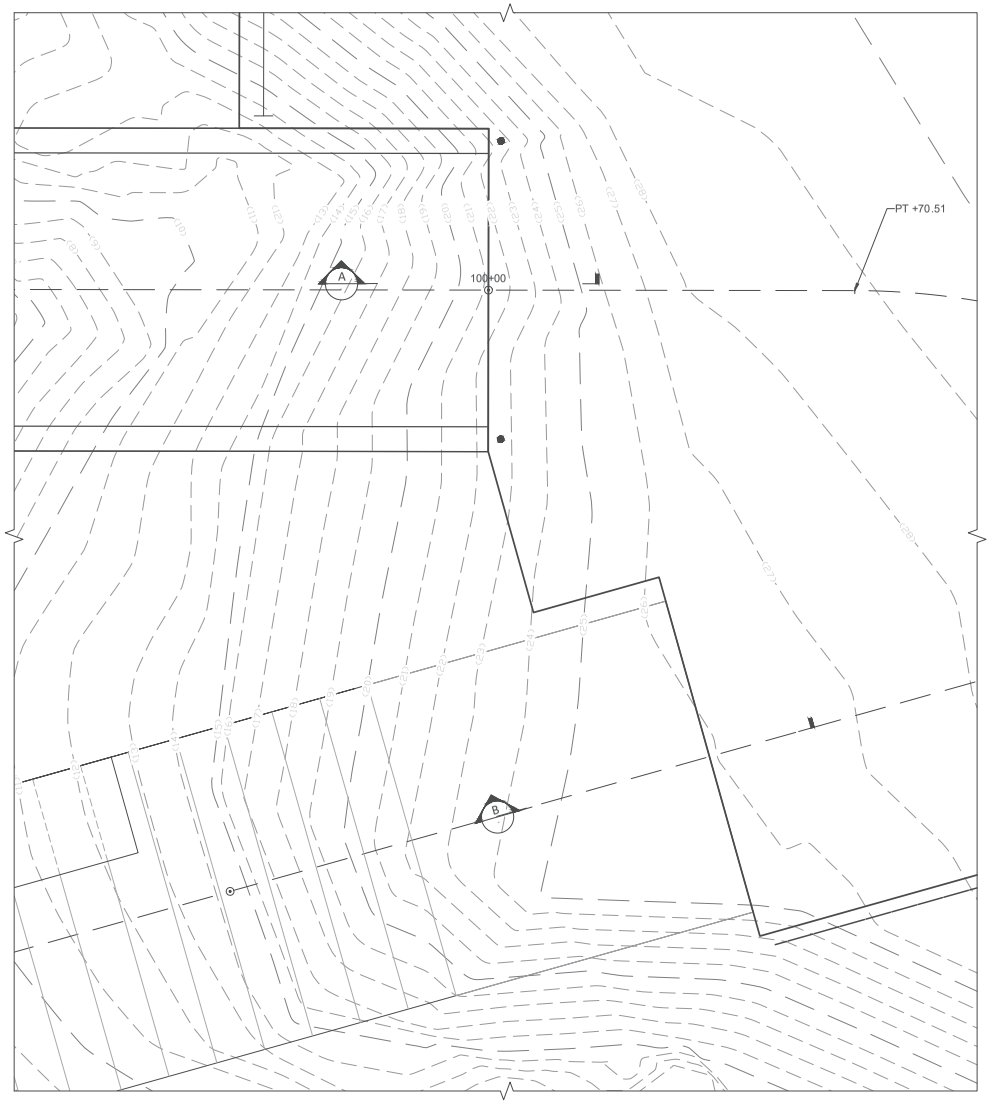
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

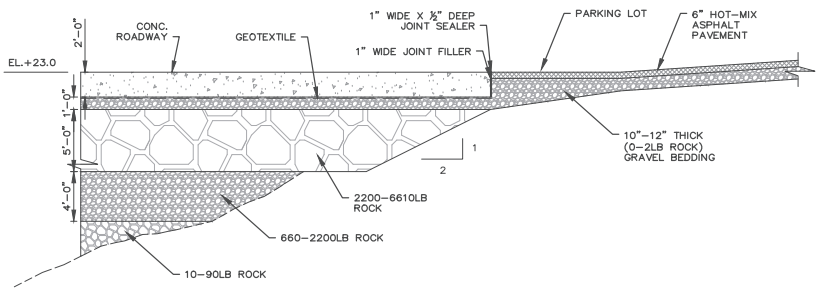
RUBBLE-MOUND BREAKWATER CONSTRUCTION SEQUENCE

SHEET NUMBER
S-118
48 OF 97

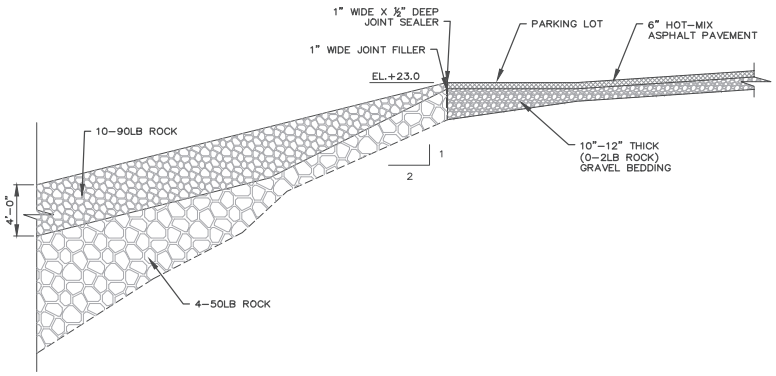
File: C:\Users\is037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\44-S-118 (Rubble-Mound Sections-8) - Plotted: 7/19/2024 4:27 PM by SAIYADFAR, HASITI - Saved: 7/19/2024 4:25 PM by HSIO37482



TRANSITION PLAN
1" = 5'-0"



A SECTION
1" = 5'-0"



B SECTION
1" = 5'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.

1"=5' 0 60 120 FT.
1"=60'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

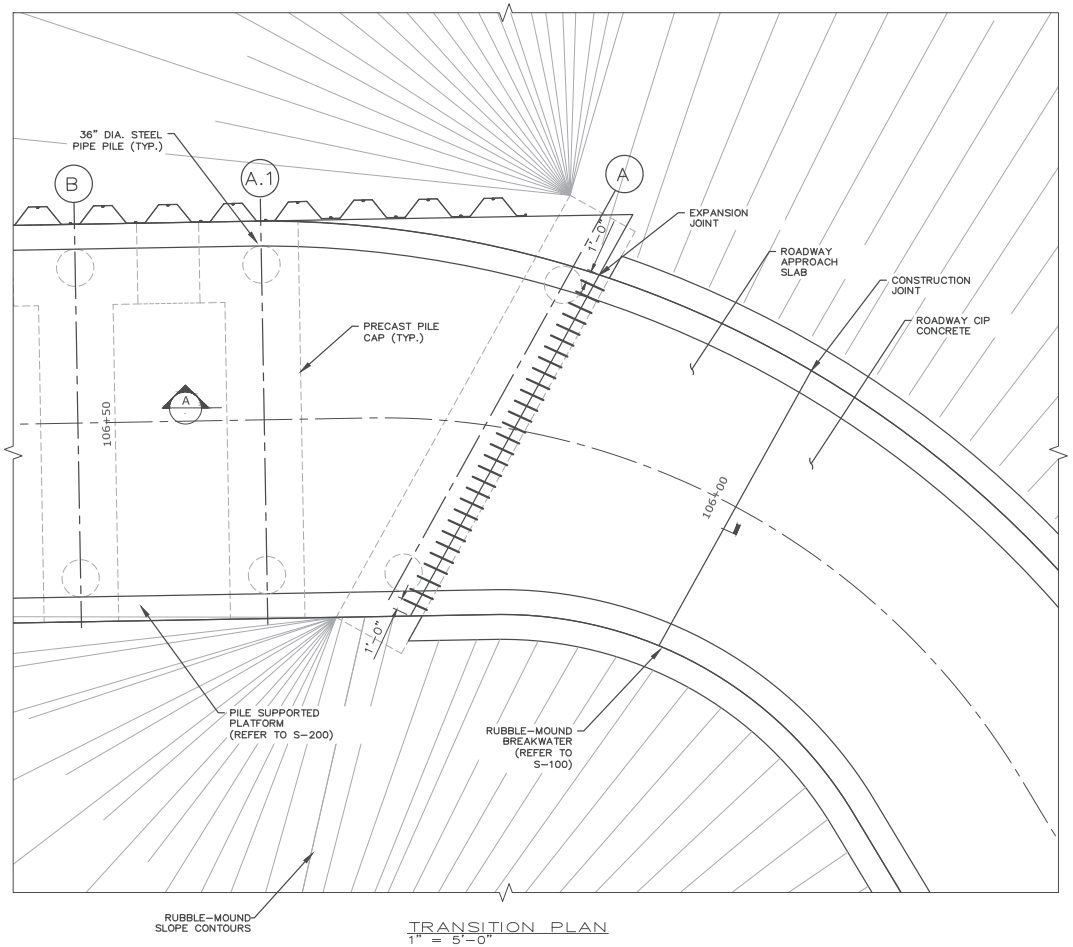
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

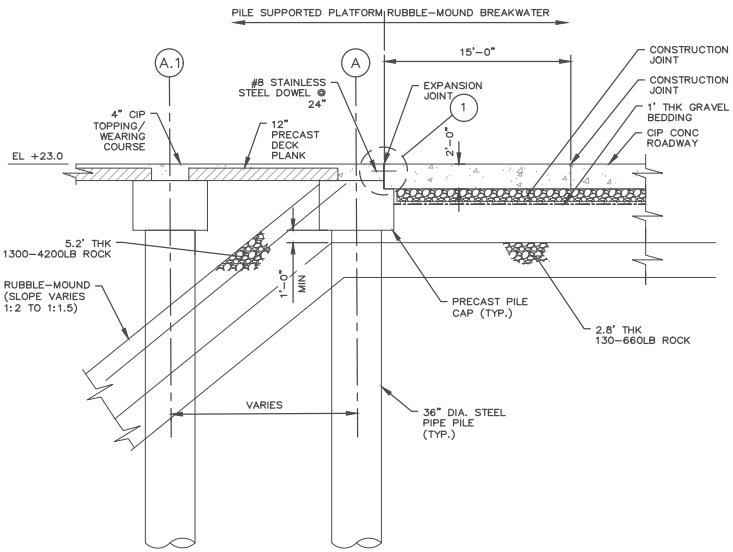
RUBBLE-MOUND TO UPLANDS TRANSITION DETAILS

SHEET NUMBER
S-121
49 OF 97

File: C:\Users\ds037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\47-S-121 (Rubble-Mound to Upland Transition Details).| Plotted: 7/19/2024 4:28 PM by SAVADPAR, HASTI. Saved: 7/19/2024 4:26 PM by HS037482

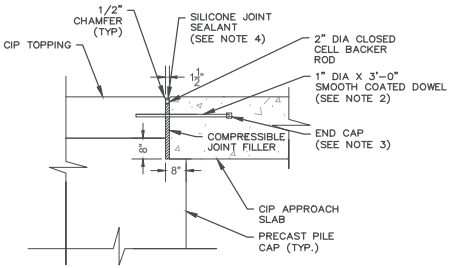


TRANSITION PLAN
1" = 5'-0"



A SECTION
1" = 5'-0"

NOTE: PROTECTIVE CASING FOR PIPE PILES NOT SHOWN FOR CLARITY.



1 EXPANSION JOINT DETAIL
1" = 2'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. 1" DIA SMOOTH STAINLESS STEEL BAR DOWELS TO BE LOCATED AT 1' FROM EACH END OF ROADWAY SLAB AND SPACED AT 2'-0".
3. 2" ID X 2" PLASTIC CAP WITH 1" POLYSTYRENE BETWEEN END OF DOWEL AND END CAP.
4. FILL RECESS WITH SILICONE JOINT SEALANT.
5. REFER TO DWG S-201 FOR THE PILE PLAN AND S-202 FOR THE PILE CAP PLAN.

1"=5' 0 5 10 FT.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

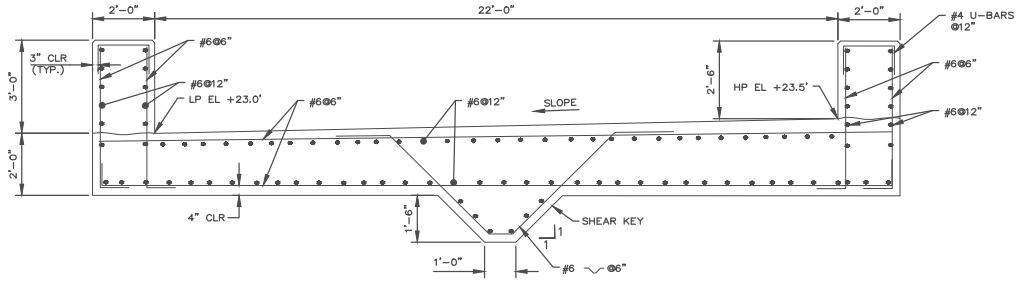
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

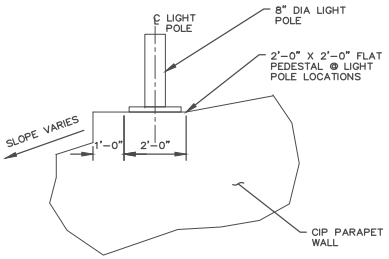
RUBBLE-MOUND TO PILE SUPPORTED PLATFORM TRANSITION DETAILS

SHEET NUMBER
S-122
50 OF 97

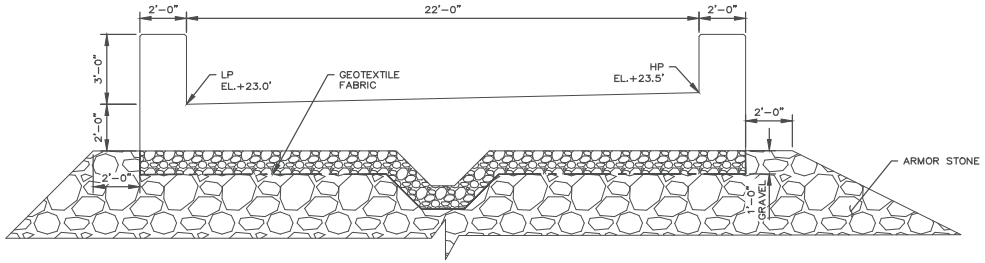
File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\48-S-122 (Rubble-Mound to Pile Supported Platform Transition Details).rvt Plotted: 7/19/2024 4:27 PM by: SAYADFAR, HASTI Saved: 7/19/2024 4:23 PM by: HS037482



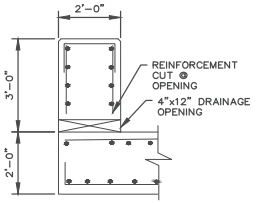
RUBBLE–MOUND ROADWAY REINFORCING SECTION
1/2" = 1'–0"



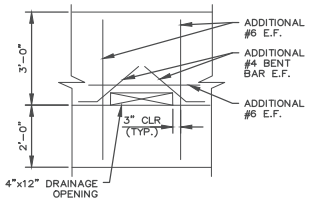
LIGHT POLE FOUNDATION @ SLOPED SECTION OF PARAPET WALL
1/2" = 1'–0"



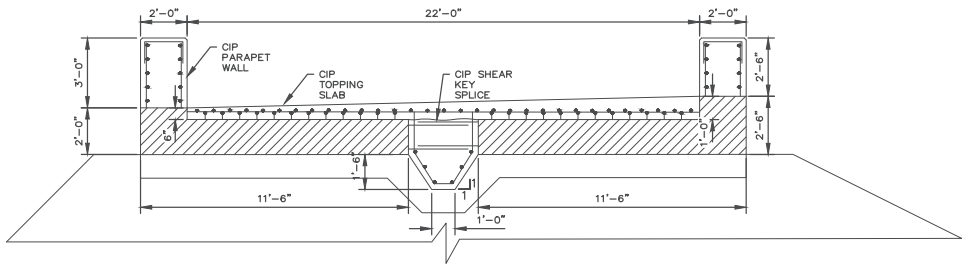
RUBBLE–MOUND ROADWAY BASE DETAIL
3/8" = 1'–0"



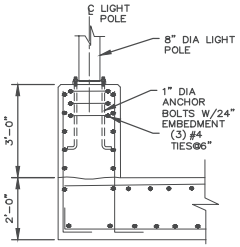
RUBBLE–MOUND ROADWAY PARAPET WALL @ DRAINAGE OPENING
1/2" = 1'–0"



RUBBLE–MOUND ROADWAY OPENING ADDITIONAL REINFORCEMENT – ELEVATION
1/2" = 1'–0"



ALTERNATIVE RUBBLE–MOUND ROADWAY PRECAST REINFORCING SECTION
3/8" = 1'–0"



RUBBLE–MOUND ROADWAY PARAPET WALL @ LIGHT POLE FOUNDATION
1/2" = 1'–0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

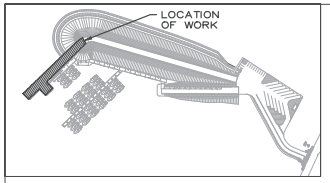
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

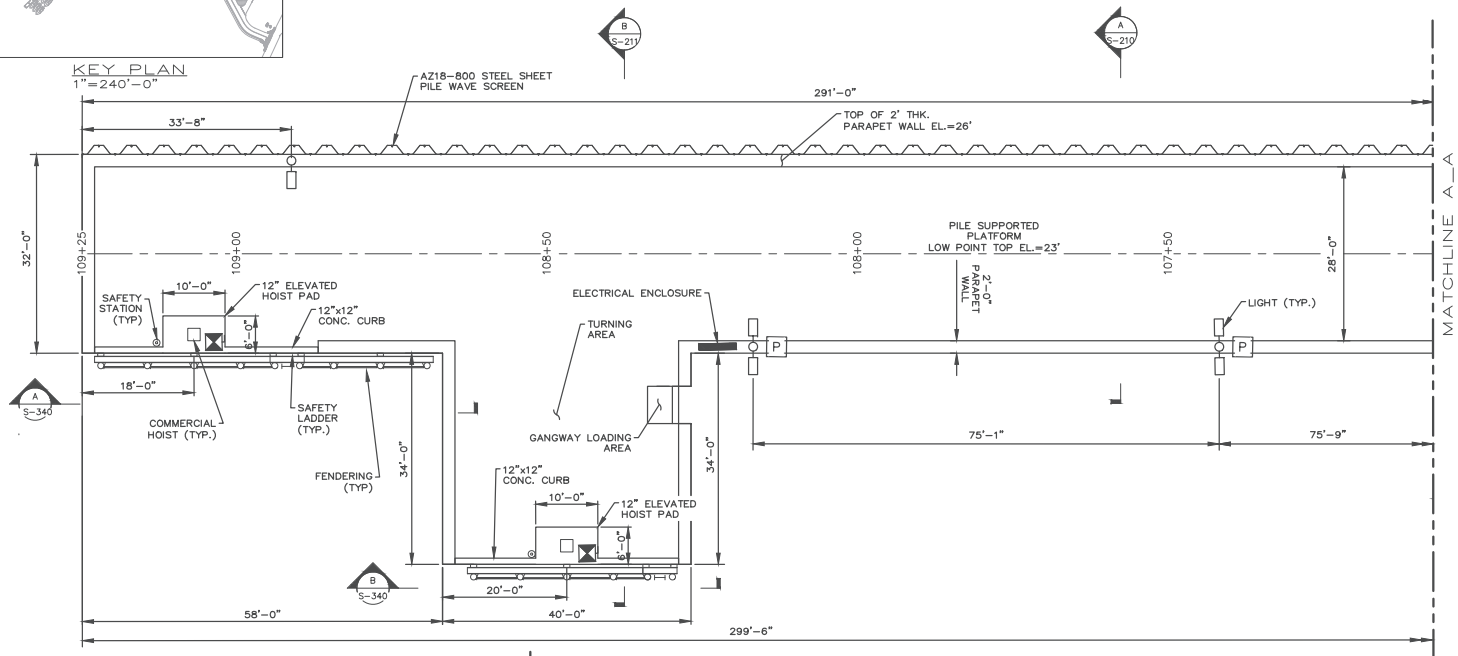
RUBBLE MOUND ROADWAY REINFORCING SECTIONS AND DETAILS

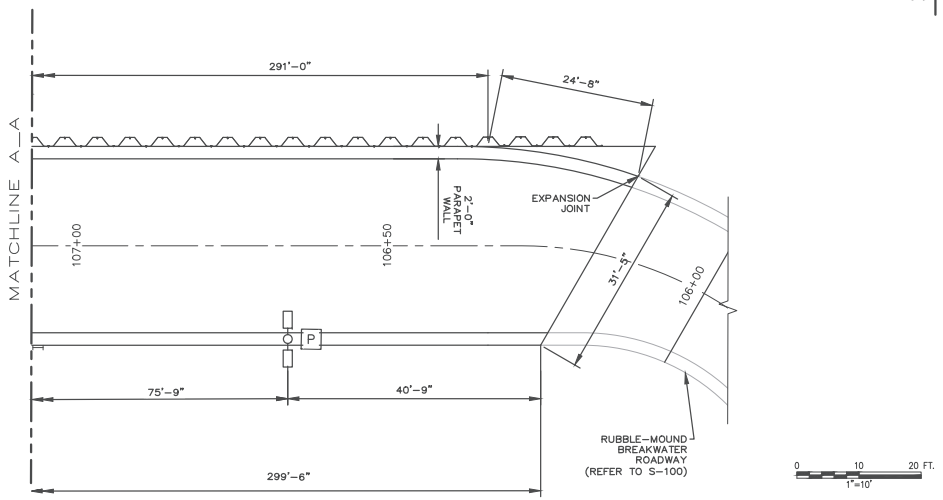
SHEET NUMBER
S-130
51 OF 97

File: C:\Projects\337482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\45-S-130 (RUBBLE MOUND ROADWAY REINFORCING SECTIONS AND DETAILS).rtf Plotted: 7/19/2024 4:26 PM by: SAYADFAR, HASTI , Saved: 7/19/2024 4:27 PM by: HS037482



KEY PLAN
1"=240'-0"





PLAN
1"=10'-0"

0 10 20 FT.
1"=10'

NOTE: FLOATING DOCKS NOT SHOWN FOR CLARITY

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. WAVE SCREEN, FLOATING DOCKS AND ASSOCIATED GUIDE PILES, GANGWAYS AND HARDWARE NOT SHOWN FOR CLARITY.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

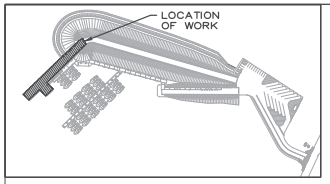
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM ARRANGEMENT PLAN

SHEET NUMBER
S-200
52 OF 97

File: C:\Users\PINKOWSI\OneDrive - Jacobs\Drawings_95% Submission\S0-S-200 (Pile Supported Platform Arrangement Plan) - Plotted: 7/19/2024 1:59 PM by PINKOWSKY, SARAH; Saved: 7/19/2024 1:54 PM by PINKOWS



KEY PLAN
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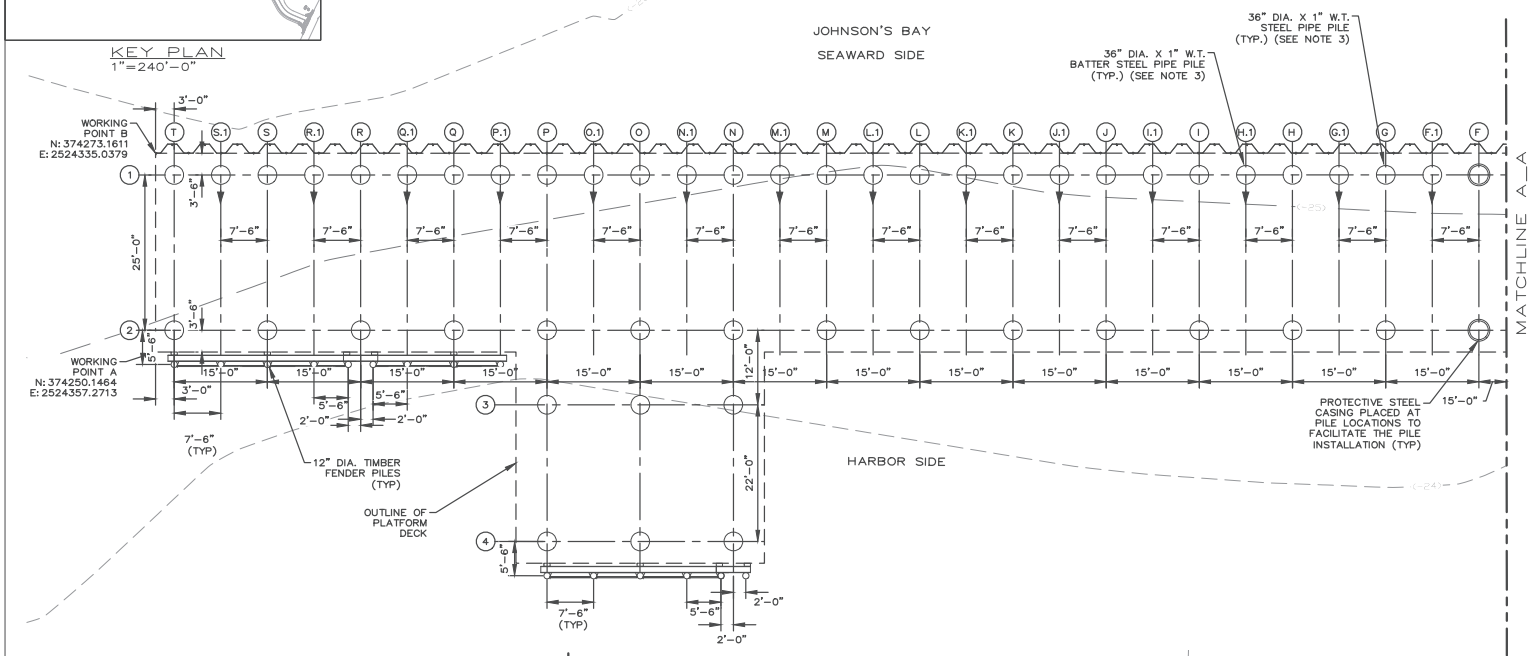
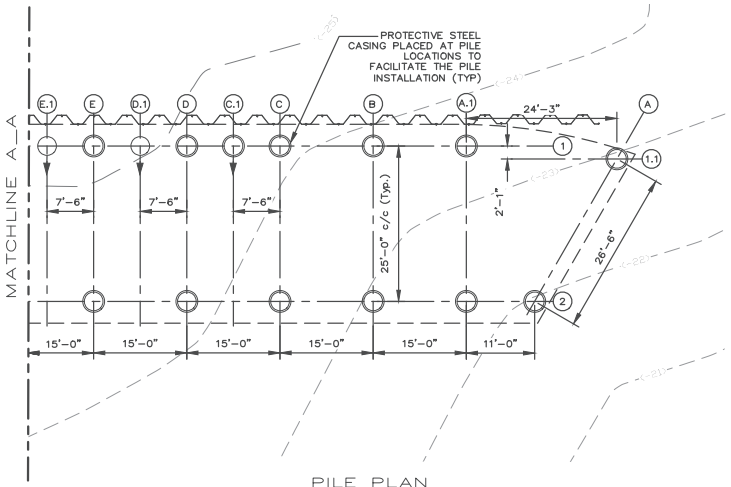




PILE PLAN
1"=10'-0"

LEGEND

- PLUMB STEEL PIPE PILE
- BATTER STEEL PIPE PILE
- EXISTING BATHYMETRIC CONTOURS
- STEEL PIPE PILES WITH PROTECTIVE CASINGS (SEE NOTE 5 & 6)

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. FLOATING DOCK GUIDE PILES NOT SHOWN FOR CLARITY.
4. REFER TO DRAWING S-230 FOR THE PIPE PILE SCHEDULE.
5. PROTECTIVE CASINGS ARE PROPOSED AT PILE LOCATIONS TO ASSURE SUCCESSFUL PILE INSTALLATION AND NO OBSTRUCTIONS CAUSED BY THE PLACEMENT OF THE BREAKWATER/BOAT RAMP ROCKFILL. PROTECTIVE CASINGS MAY BE 42" DIA. STEEL CASING, OR A SUITABLE DIAMETER PROPOSED BY THE CONTRACTOR.
6. PROTECTIVE CASINGS ARE REQUIRED FOR PILES A-1.1, A-2, A.1-1, A.1-2, B-1, B-2, C-1 AND C-2.
7. PROTECTIVE CASINGS CALLED FOR AT C.1-1, D-1, D-2, E-1, E-2, F-1 AND F-2 ARE OPTIONAL AND CONTRACTOR TO DECIDE IF HIS OPERATIONS REQUIRES THE PROTECTIVE CASINGS.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

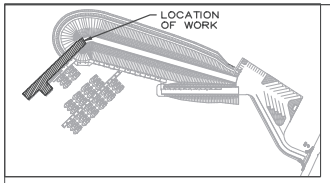
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

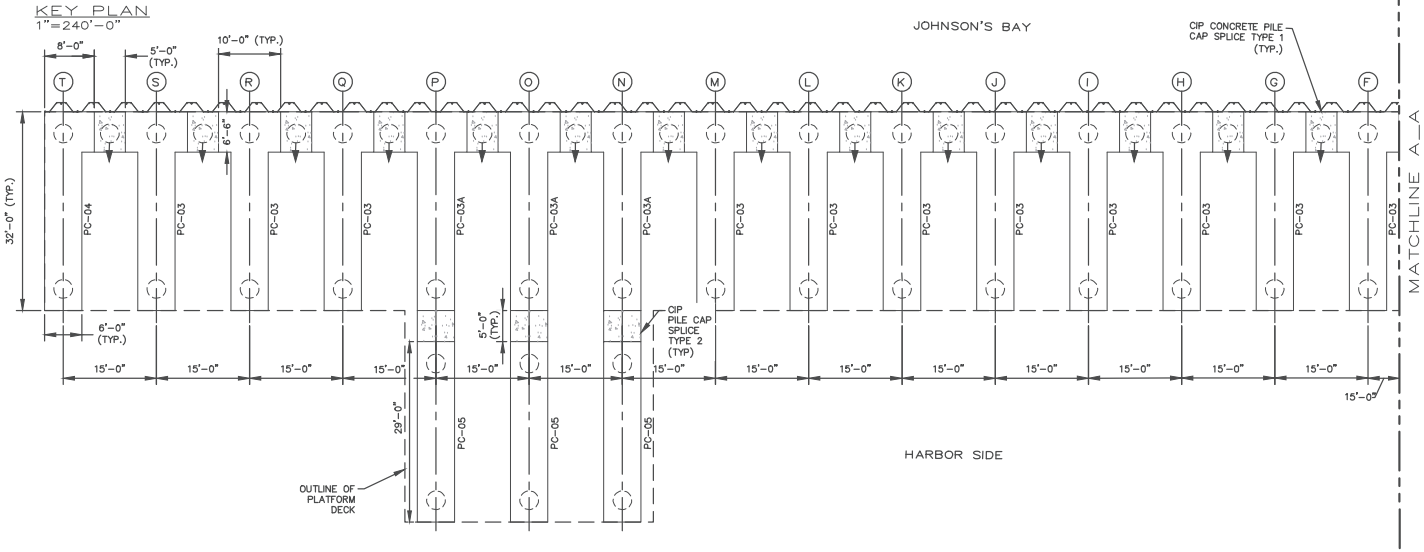
PILE SUPPORTED PLATFORM
PILE PLAN

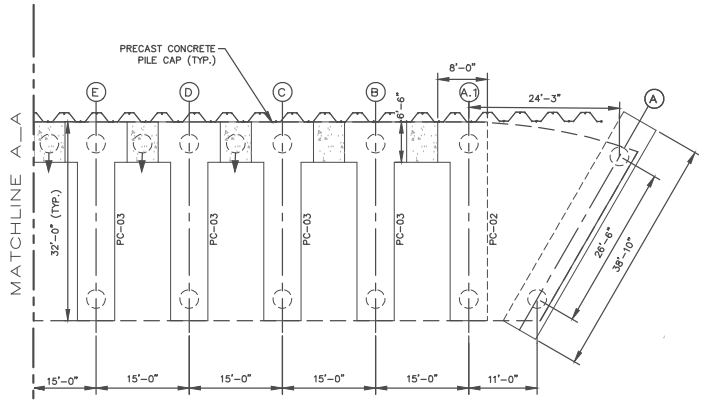
SHEET NUMBER
S-201
53 OF 97

File: C:\Users\PINKOWSKI\OneDrive - Jacobs\Drawings_95% Submission\S1-S-201 (Pile Supported Platform Pile Plan).rvt Plotted: 7/19/2024 12:51 PM by PINKOWSKY, SARAH Saved: 7/19/2024 12:49 PM by PINKOWS



KEY PLAN
1"=240'-0"





PILE CAP PLAN
1"=10'-0"

NOTES:

1. REFER TO DWGS S-221 THROUGH S-226 FOR PRECAST PILE CAP DETAILS.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

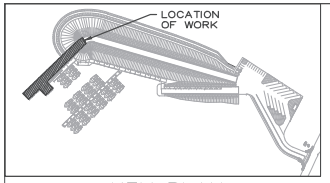
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

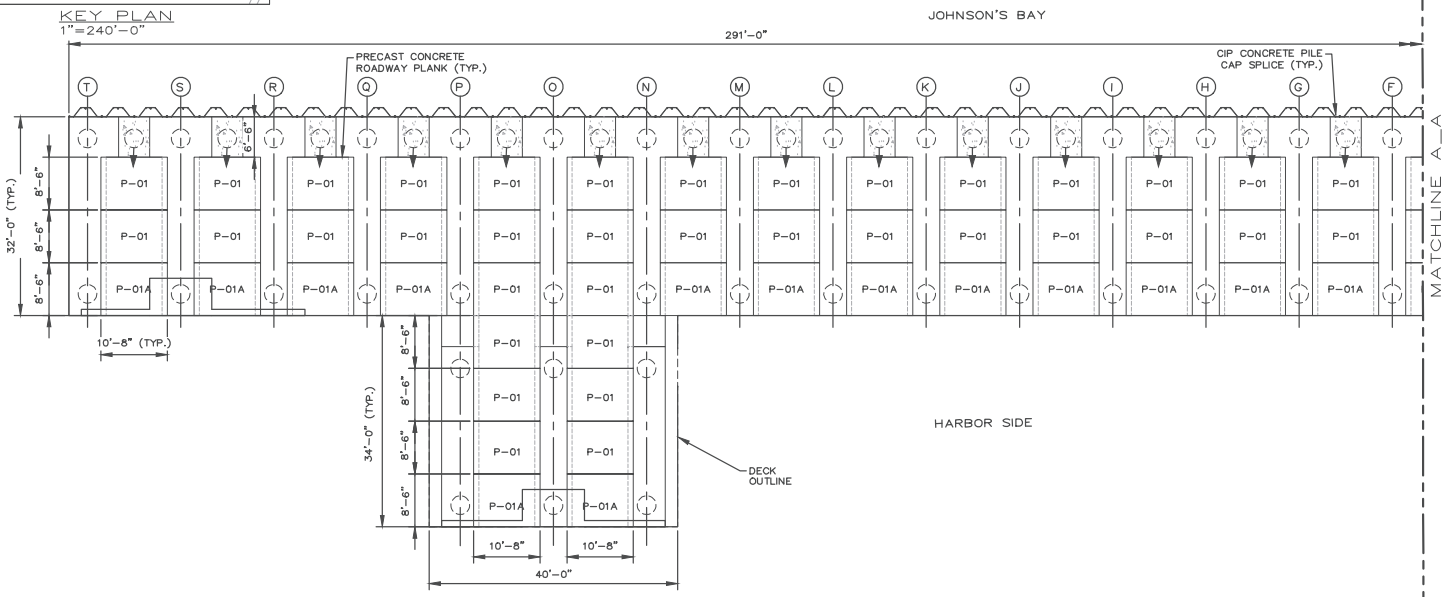
PILE SUPPORTED PLATFORM
PILE CAP PLAN

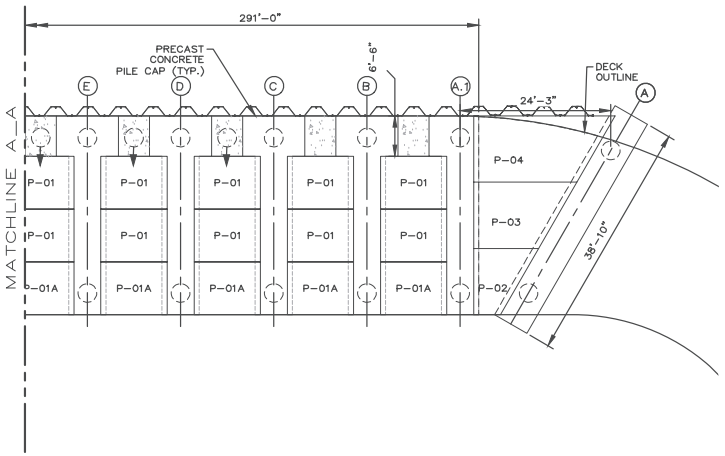
SHEET NUMBER
S-202
54 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S2-S-202 (Pile Supported Platform Pile Cap Plan).; Plotted: 7/18/2024 11:50 AM by MAGUIRE, CASEY; Saved: 7/18/2024 11:45 AM by MAGUIRC



KEY PLAN
1"=240'-0"





PRECAST DECK PLANK PLAN
1"=10'-0"

0 10 20 FT.
1"=10'

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

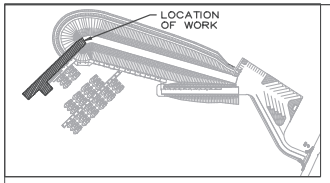
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

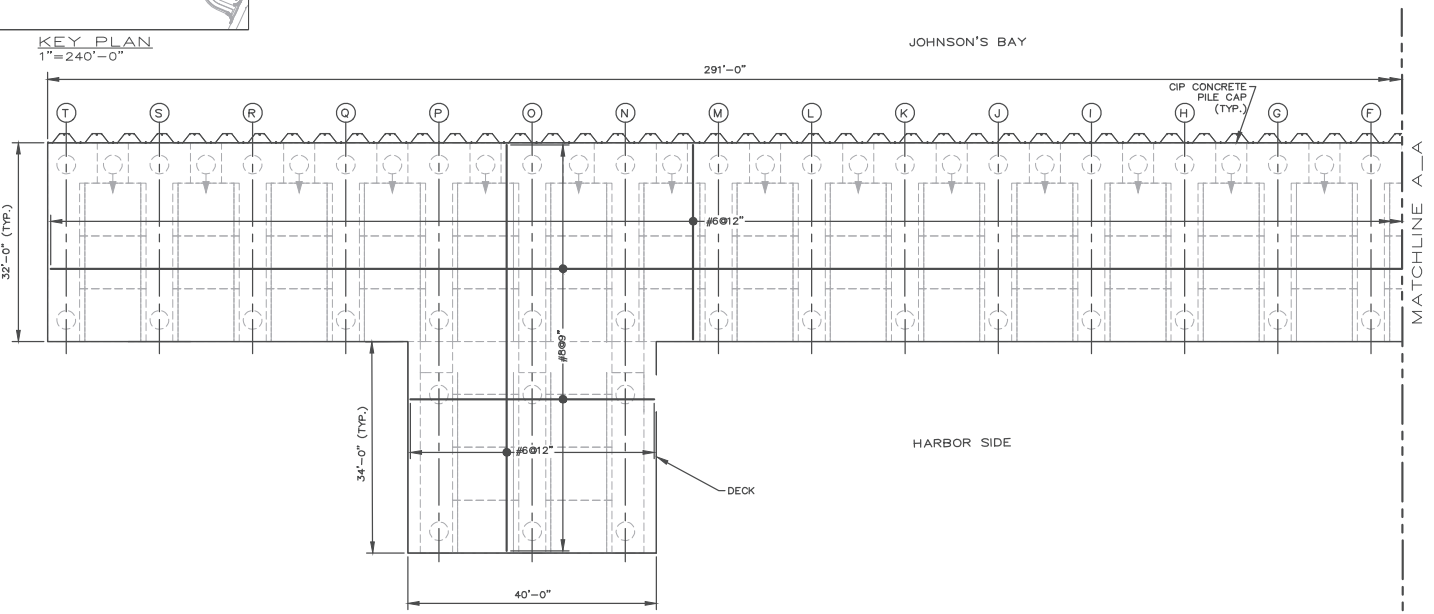
PILE SUPPORTED PLATFORM
PRECAST PLANK PLAN

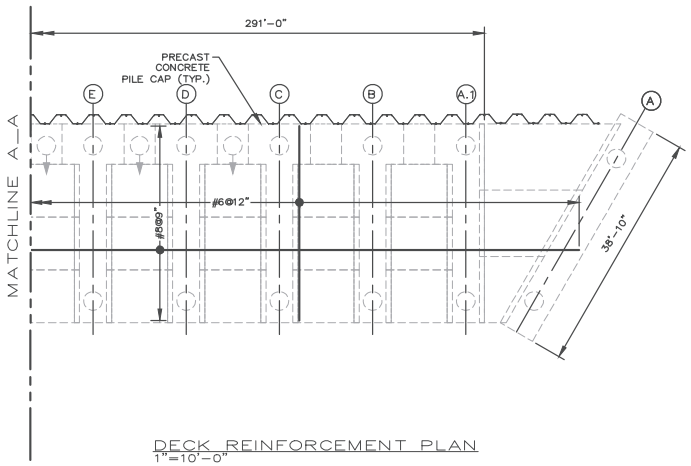
SHEET NUMBER
S-203
55 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S3-S-203 (Pile Supported Platform Plank Plan).rvt | Plotted: 7/19/2024 11:33 AM by MAGUIRE, CASEY | Saved: 7/19/2024 11:33 AM by MAGUIRC



KEY PLAN
1"=240'-0"





DECK REINFORCEMENT PLAN
1"=10'-0"

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

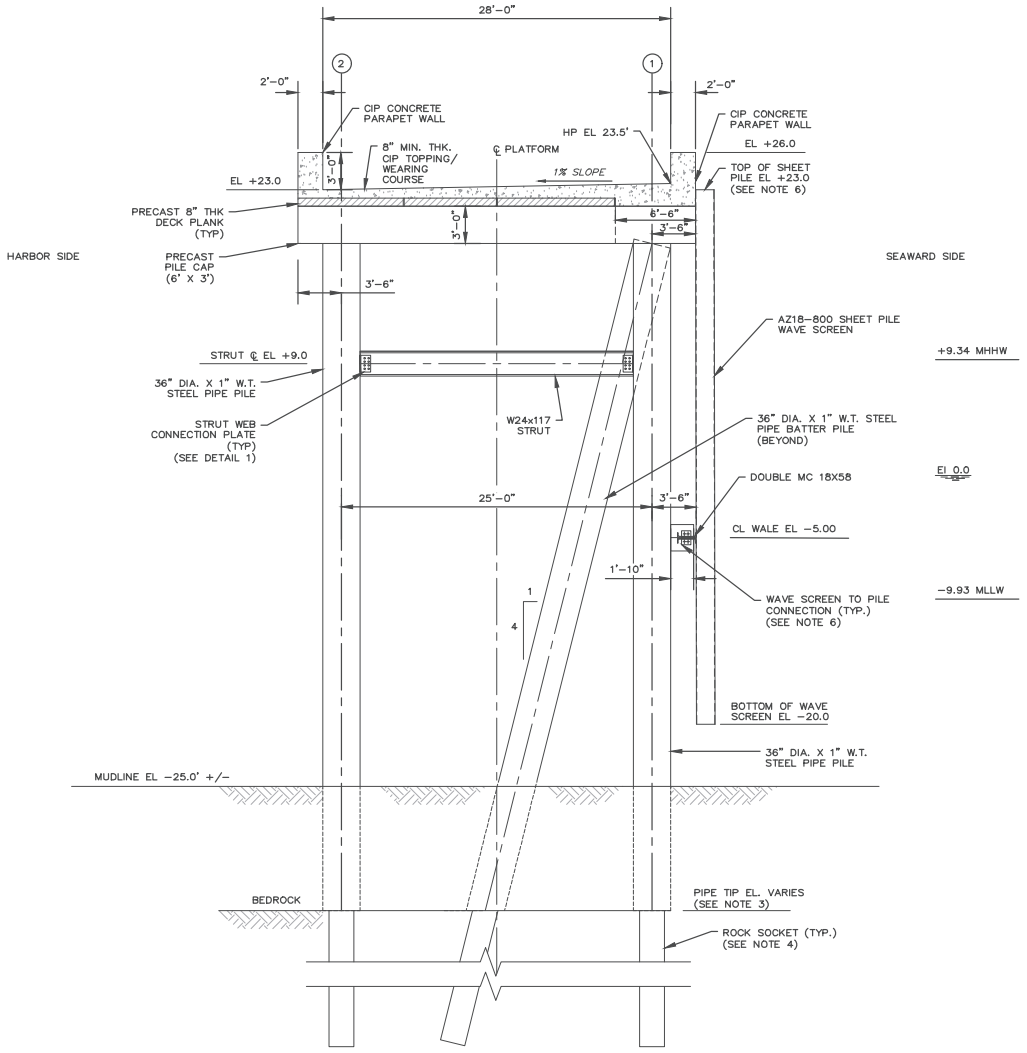
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

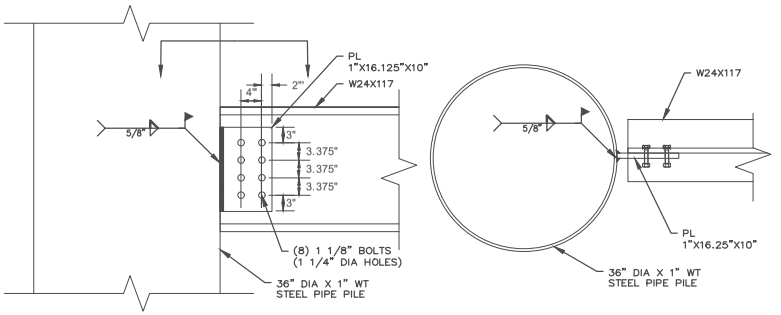
PILE SUPPORTED PLATFORM DECK REINFORCEMENT PLAN

SHEET NUMBER
S-204
56 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S4-S-204 (Pile Supported Deck Reinforcement Plan) ; Plotted: 7/19/2024 11:56 AM by MAGUIRE, CASEY ; Saved: 7/19/2024 11:41 AM by MAGUIRC



A SECTION
1" = 5'-0"
S-200



1 STRUCT CONNECTION DETAIL
1" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. REFER TO DRAWING S-230 FOR THE PILE SCHEDULE.
4. REFER TO DRAWING S-220 FOR THE PILE DETAILS.
5. GUIDE PILES AND FLOATING DOCKS NOT SHOWN FOR CLARITY.
6. REFER TO DRAWING S-271 FOR WAVE SCREEN TO PILE CONNECTION DETAILS AND WAVE SCREEN TO PLATFORM DETAILS.

0 10 20 FT.
1"=10'
1"=5' 0 5 10 FT.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

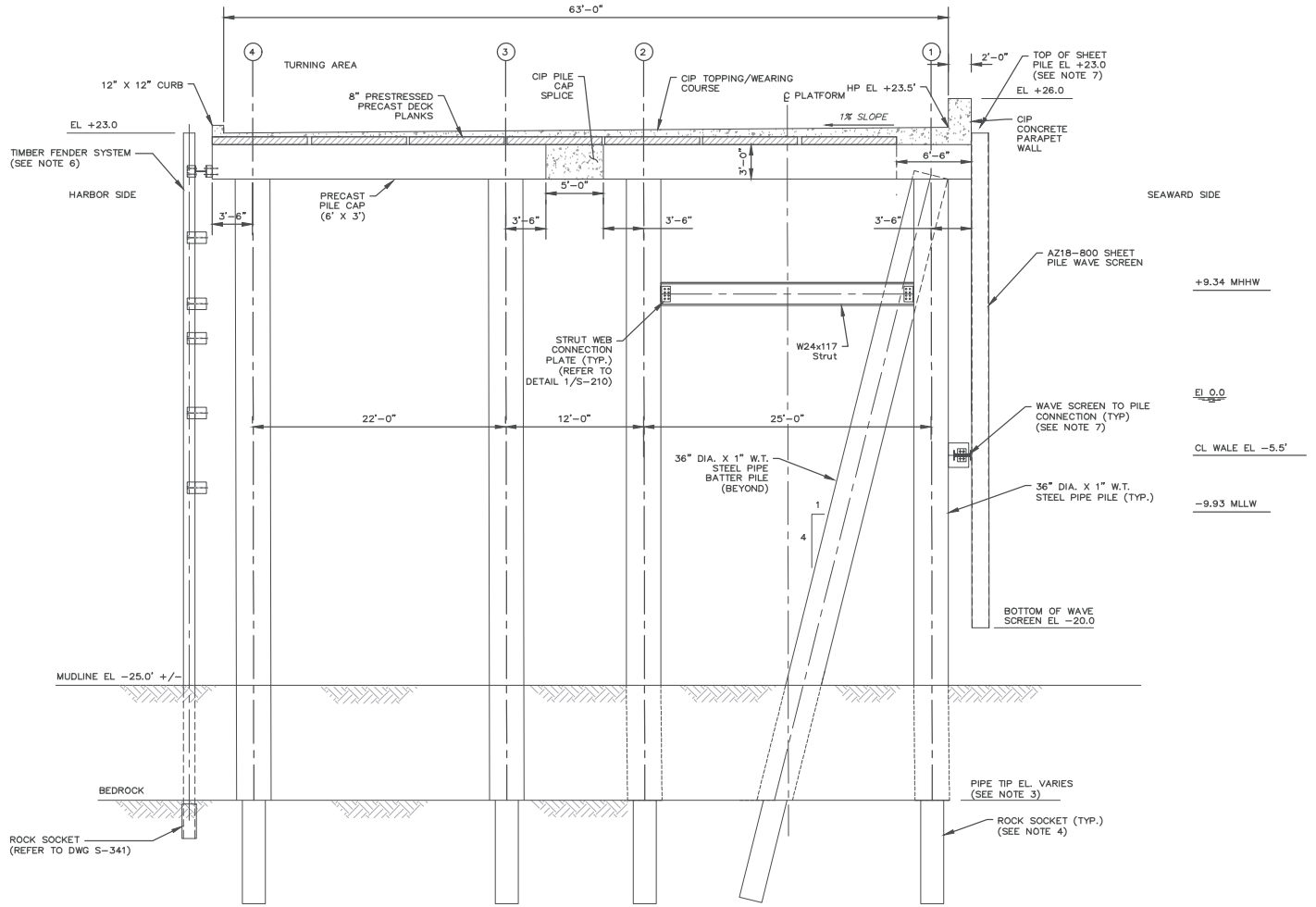
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM SECTION -1

SHEET NUMBER
S-210
57 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S-S-210 (Pile Supported Platform Section - 1).rtf Plotted: 7/19/2024 11:16 AM by MAGUIRE, CASEY; Saved: 7/19/2024 10:36 AM by AREAD



B SECTION
1" = 5'-0"
S-200

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. PIPE PILES SHALL BE DRIVEN OR DRILLED TO AND SEATED WITHIN BEDROCK. REFER TO DRAWING S-230 FOR THE PILE SCHEDULE.
4. REFER TO DRAWING S-220 FOR THE PILE AND ROCK SOCKET DETAILS.
5. GUIDE PILES AND FLOATING DOCKS NOT SHOWN FOR CLARITY.
6. REFER TO DRAWINGS S-340 – S-342 FOR TIMBER FENDER SYSTEM DETAILS.
7. REFER TO DRAWING S-271 FOR WAVE SCREEN TO PILE CONNECTION DETAILS AND WAVE SCREEN TO PLATFORM DETAILS.

1"=5' 0 5 10 FT.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

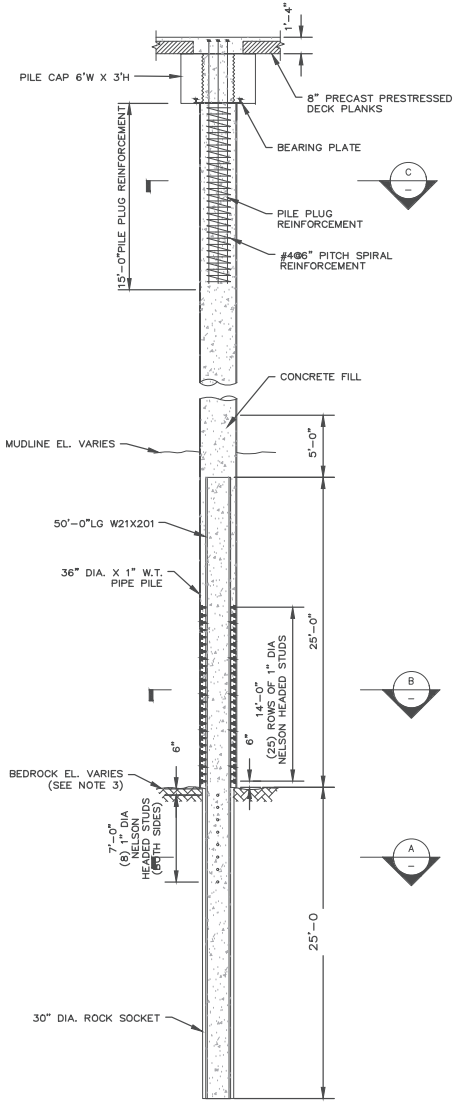
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

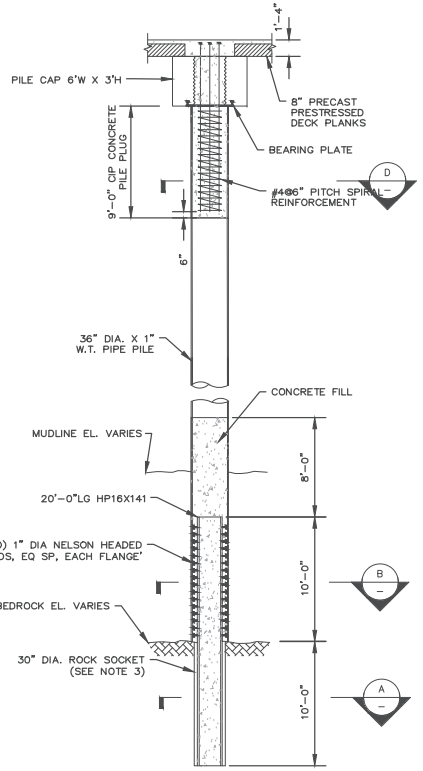
PILE SUPPORTED PLATFORM SECTION -2

SHEET NUMBER
S-211
58 OF 97

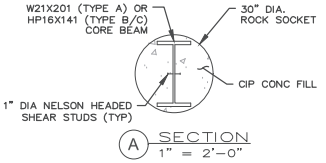
File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S-S-211 (Pile Supported Platform Section - 2).rtf, Plotted: 7/19/2024 11:26 AM by MAGUIRE, CASEY, Saved: 7/19/2024 11:19 AM by MAGUIRC



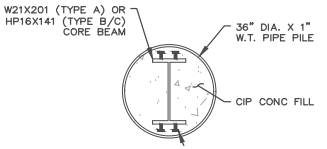
Pile–Supported Platform Pile Type A DETAIL
N.T.S.



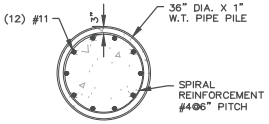
Pile–Supported Platform Pile Type B DETAIL
N.T.S.



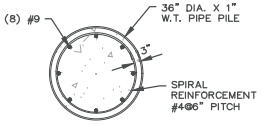
A SECTION
1" = 2'-0"



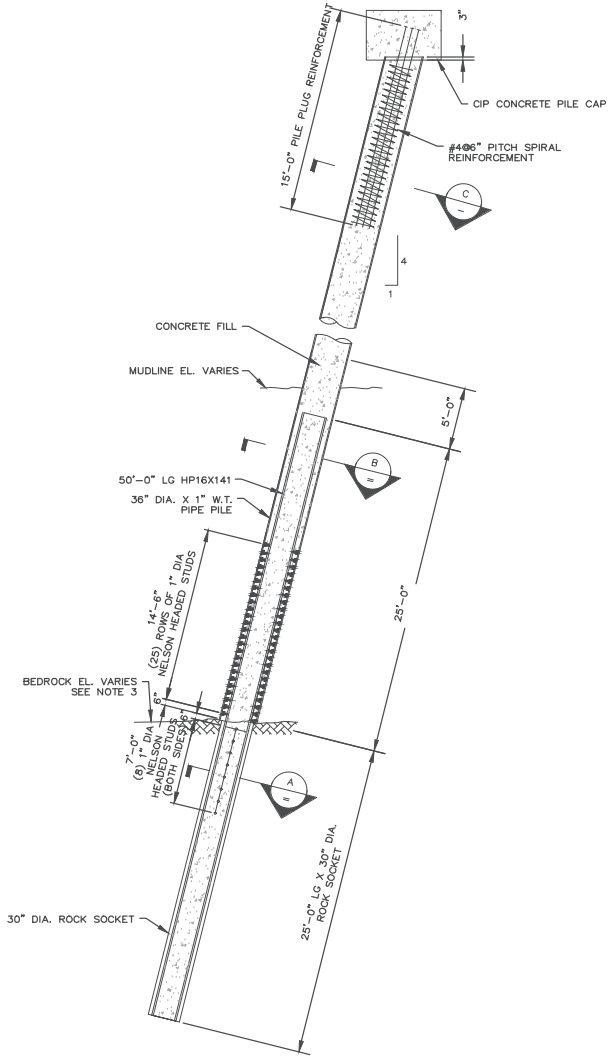
B SECTION
1" = 2'-0"



C SECTION
1" = 2'-0"



D SECTION
1" = 2'-0"



Pile–Supported Platform Pile Type C DETAIL
N.T.S.

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. ROCK SOCKET SHALL BE CONSTRUCTED WITHIN COMPETENT BEDROCK.

1"=2' 0 2 4 FT.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

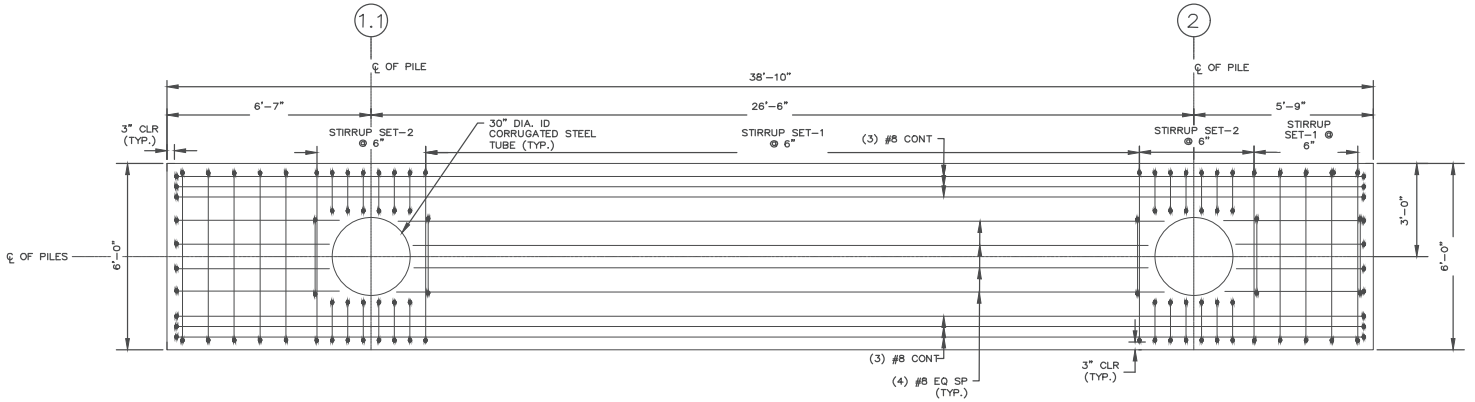
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

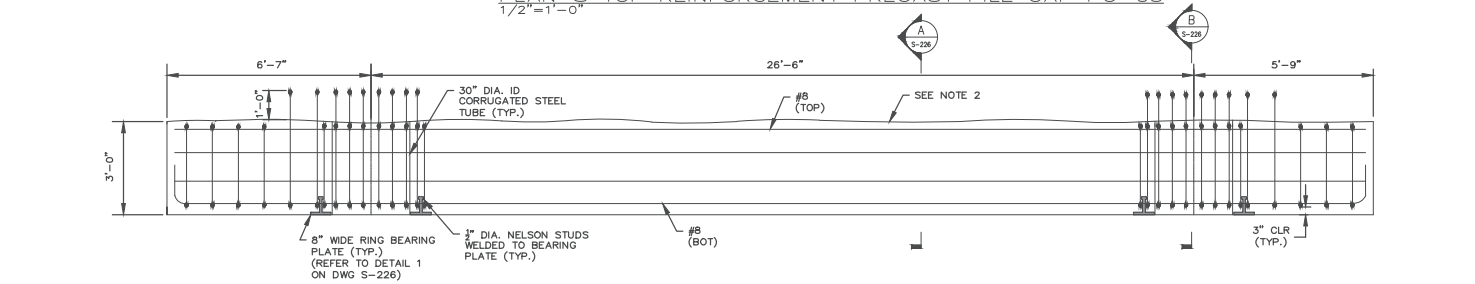
PILE-SUPPORTED PLATFORM PILE DETAILS

SHEET NUMBER
S-220
59 OF 97

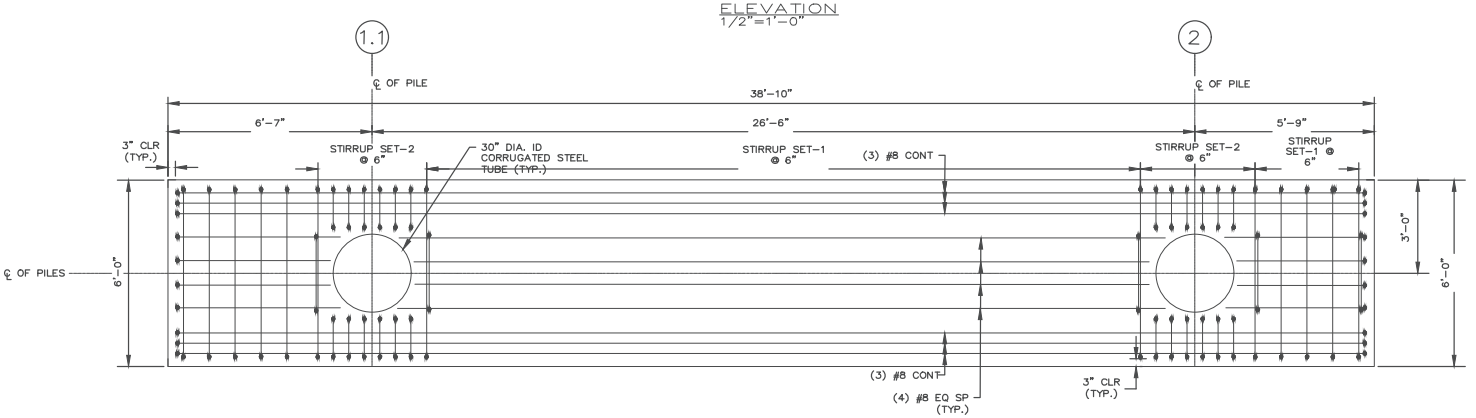
File: C:\Users\MagurcOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S7-S-220 (Pile Supported Platform Pile Details).rtf Plotted: 7/19/2024 1:13 PM by MAGURC, CASEY; Saved: 7/18/2024 11:55 AM by MAGURC



PLAN @ TOP REINFORCEMENT PRECAST PILE CAP PC-05
1/2"=1'-0"



ELEVATION
1/2"=1'-0"



PLAN @ BOTTOM REINFORCEMENT PRECAST PILE CAP PC-05
1/2"=1'-0"

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

0 1 4 FT.
1/2"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

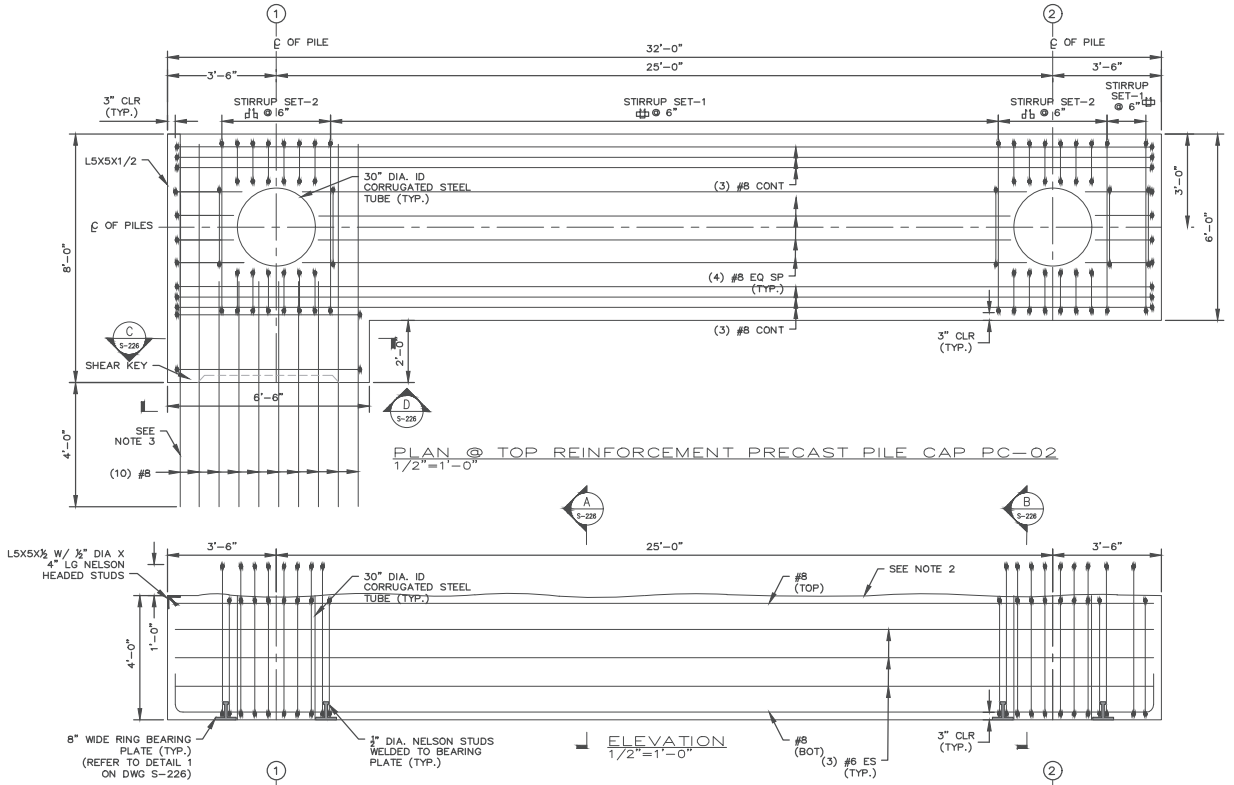
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-01 DETAILS

SHEET NUMBER
S-221
60 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S-221 (Pile Supported Platform Precast Pile Cap PC-01 Details).; Plotted: 7/19/2024 1:10 PM by MAGUIRE, CASEY; Saved: 7/18/2024 11:58 AM by MAGUIRC



NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

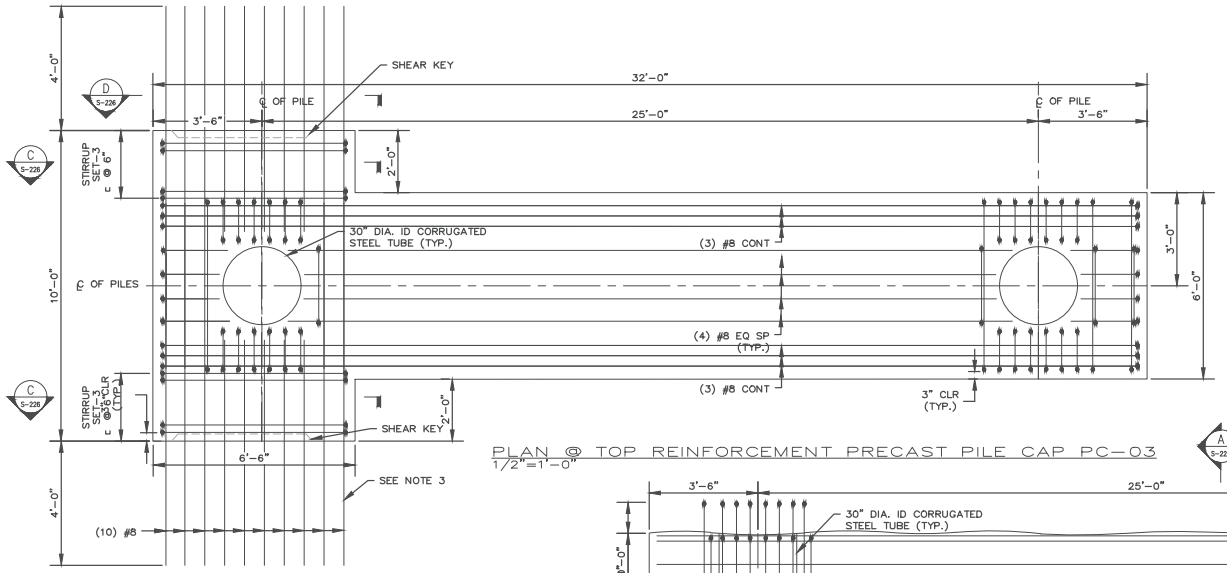
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		SIGNATURE
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

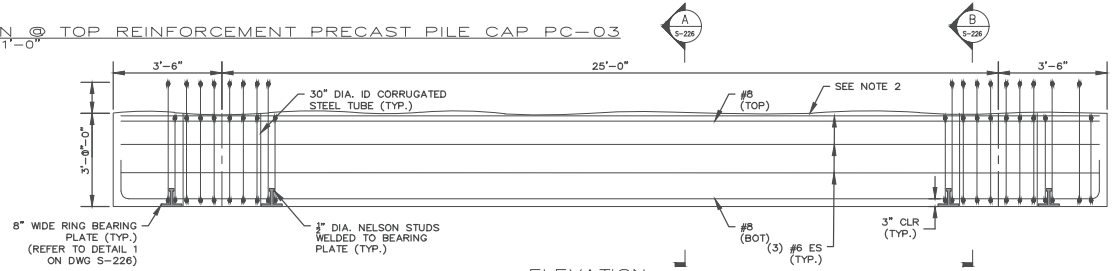
PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-02 DETAILS

SHEET NUMBER
S-222
61 OF 97

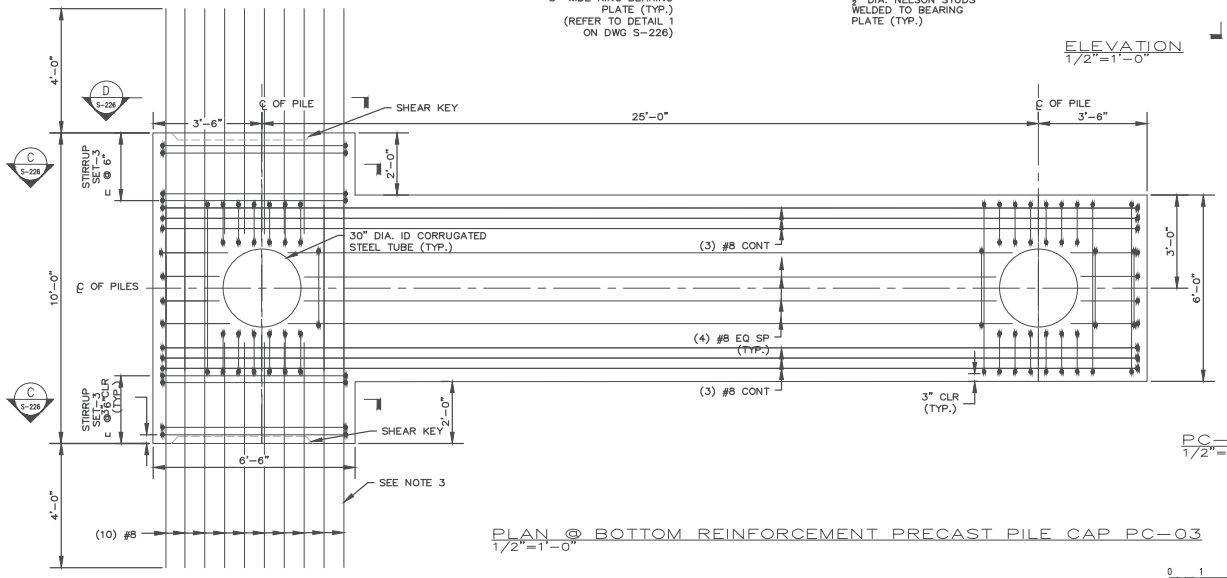
File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\S-222 (Pile Supported Platform Precast Pile Cap PC-02 Details).dwg | Plotted: 7/19/2024 1:08 PM by MAGUIRE, CASEY | Saved: 7/18/2024 12:01 PM by MAGUIRC



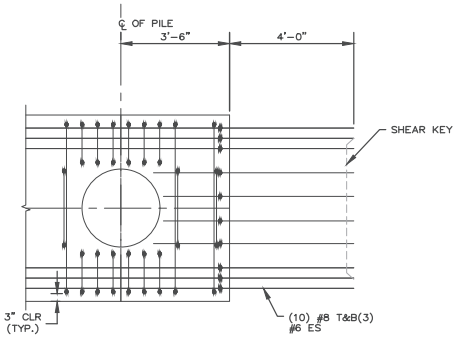
PLAN @ TOP REINFORCEMENT PRECAST PILE CAP PC–03
1/2"=1'-0"



ELEVATION
1/2"=1'-0"



PLAN @ BOTTOM REINFORCEMENT PRECAST PILE CAP PC–03
1/2"=1'-0"



PC–03A EXTENDED REINFORCEMENT DETAIL
1/2"=1'-0"

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

0 1 4 FT.
1/2"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

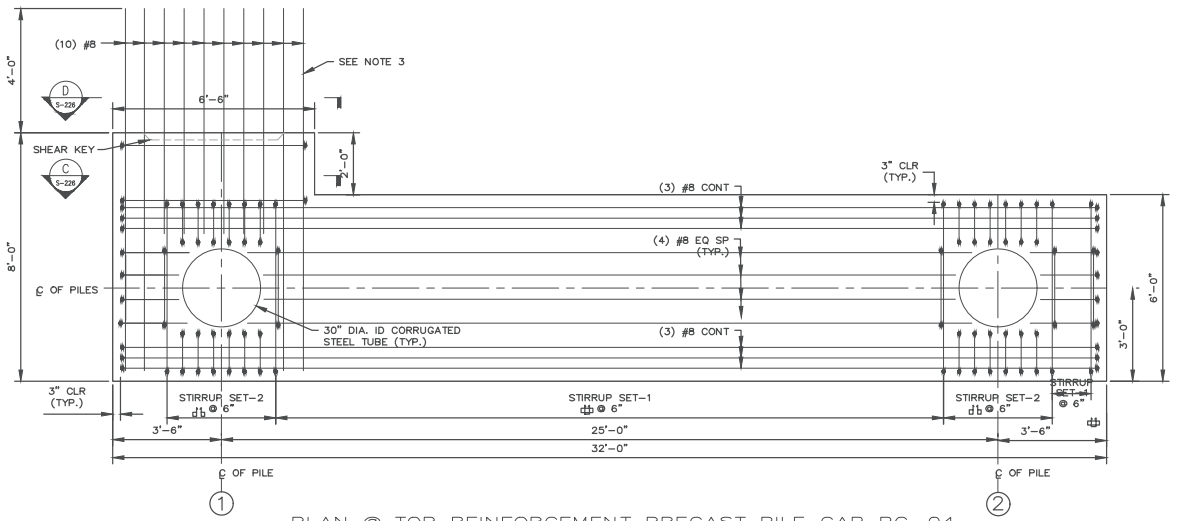
PROJECT INFORMATION			
PROGRAM	BRIDGE/PILE CAP	PC-03/03A DETAILS	
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

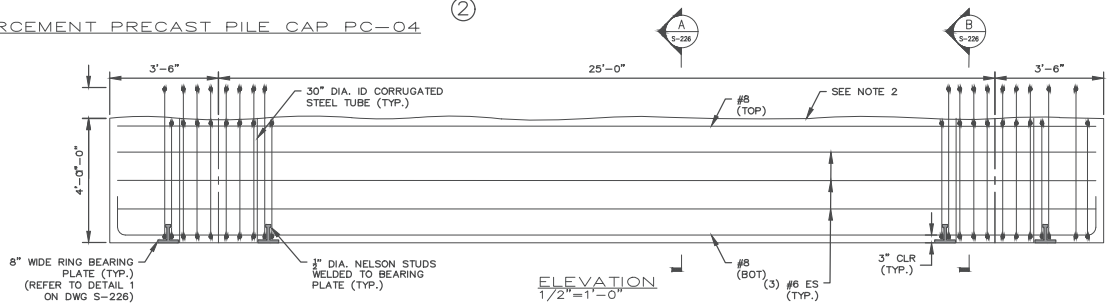
PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-03 DETAILS

SHEET NUMBER
S-223
62 OF 97

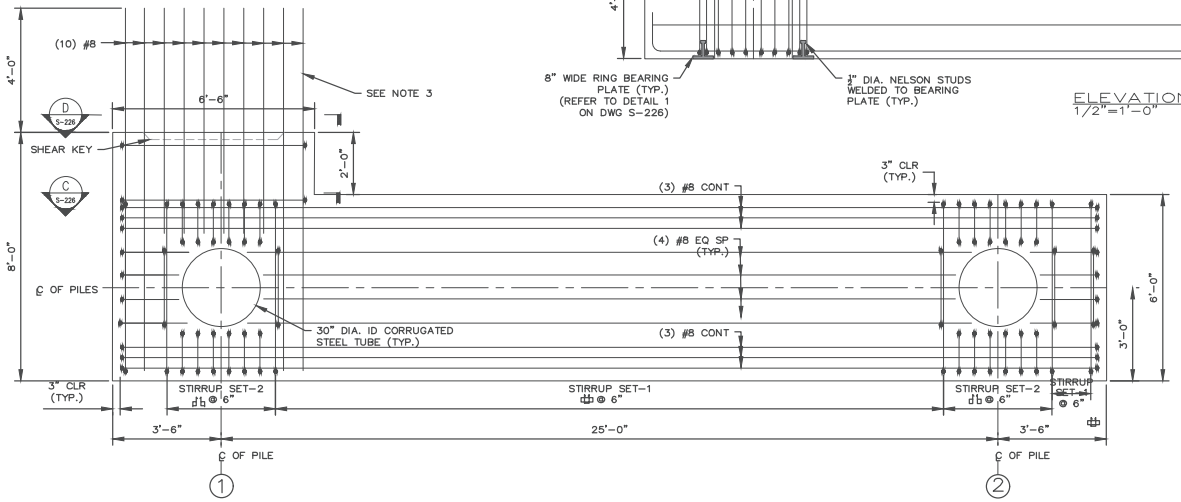
File: C:\Users\MaguircOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\60-S-223 (Pile Supported Platform Precast Pile Cap PC-03 Details).dwg; Plotted: 7/19/2024 1:05 PM by MAGUIRC CASEY; Saved: 7/18/2024 12:03 PM by MAGUIRC



PLAN @ TOP REINFORCEMENT PRECAST PILE CAP PC-04
1/2"=1'-0"



ELEVATION
1/2"=1'-0"



PLAN @ BOTTOM REINFORCEMENT PRECAST PILE CAP PC-04
1/2"=1'-0"

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

0 1 4 FT.
1/2"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

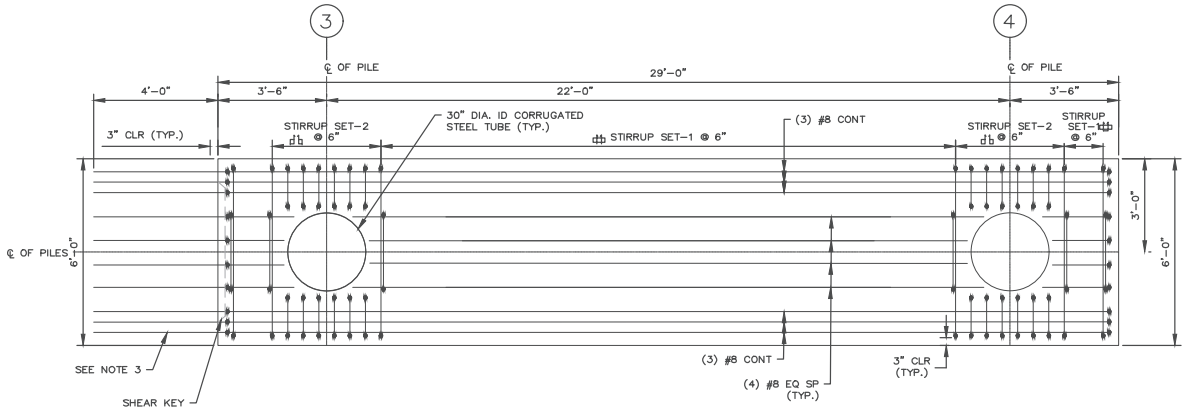
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

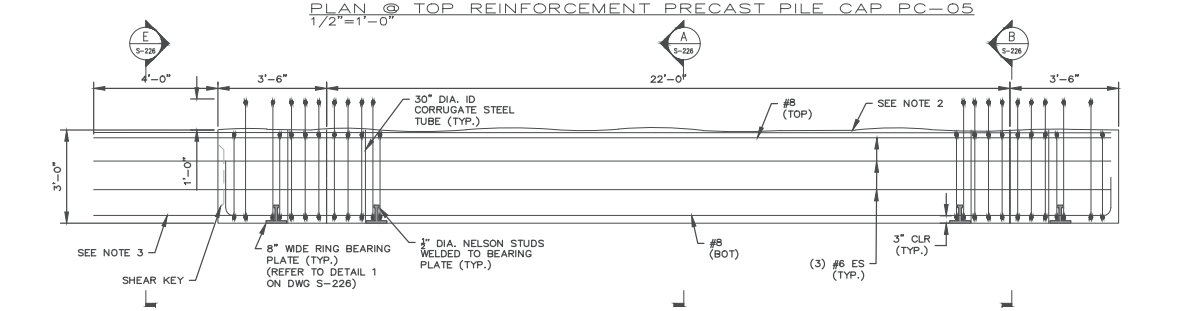
PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-04 DETAILS

SHEET NUMBER
S-224
63 OF 97

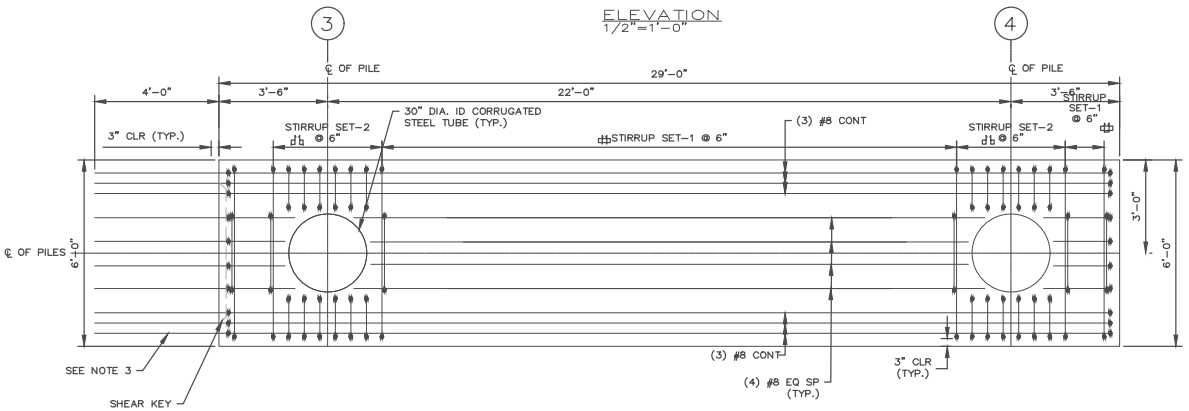
File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\01-S-224 (Pile Supported Platform Precast Pile Cap PC-04 Details).; Plotted: 7/19/2024 1:01 PM by: MAGUIRE, CASEY; Saved: 7/18/2024 12:06 PM by: MAGUIRC



PLAN @ TOP REINFORCEMENT PRECAST PILE CAP PC-05
1/2"=1'-0"



ELEVATION
1/2"=1'-0"



PLAN @ BOTTOM REINFORCEMENT PRECAST PILE CAP PC-05
1/2"=1'-0"

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

0 1 4 FT.
1/2"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

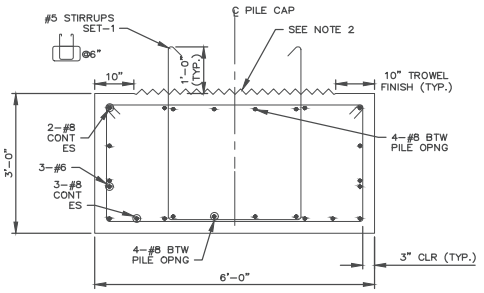
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

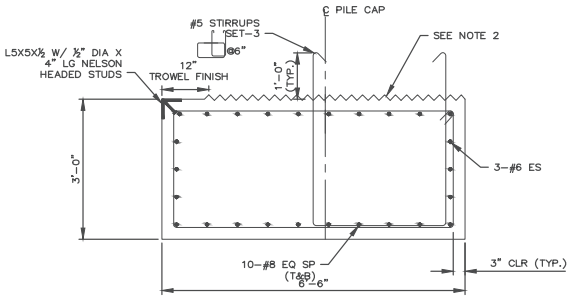
PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-05 DETAILS

SHEET NUMBER
S-225
64 OF 97

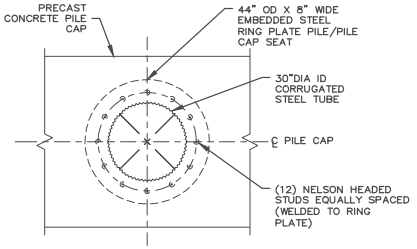
File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\02-S-225 (Pile Supported Platform Precast Pile Cap PC-05 Details).dwg | Plotted: 7/19/2024 12:58 PM by MAGUIRE, CASEY | Saved: 7/19/2024 12:58 PM by MAGUIRC



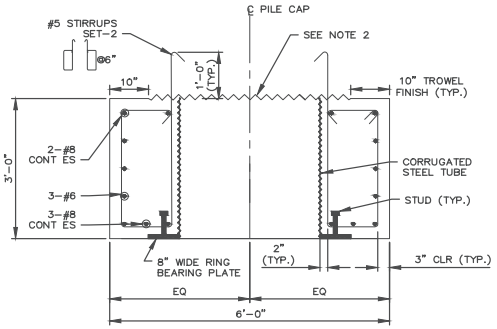
A SECTION
3/4"=1'-0"
S-221
S-222
S-223
S-224
S-225



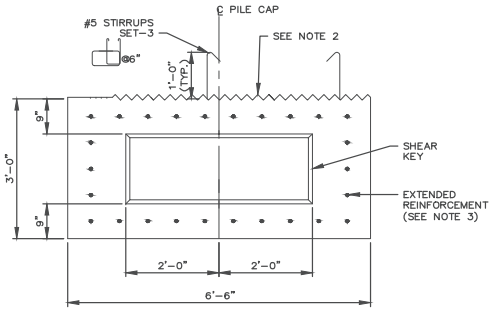
C SECTION
3/4"=1'-0"
S-222
S-223
S-224



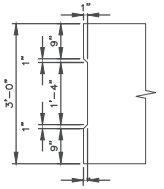
1 STEEL RING PLATE DETAIL
1/2"=1'-0"



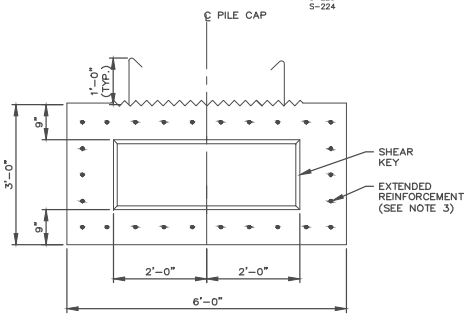
B SECTION
3/4"=1'-0"
S-221
S-222
S-223
S-224
S-225



D SECTION
3/4"=1'-0"
S-222
S-223
S-224



2 TYPICAL SHEAR KEY
3/4"=1'-0"
S-221
S-222
S-223
S-224
S-225



E SECTION
3/4"=1'-0"
S-225

PRECAST CONCRETE PILE CAP SCHEDULE				
MARK	WIDTH	HEIGHT	LENGTH	QTY
PC-01	6'-0"	3'-0"	38'-10"	1
PC-02	6'-0"	3'-0"	32'-0"	1
PC-03	6'-0"	3'-0"	32'-0"	15
PC-03A	6'-0"	3'-0"	32'-0"	3
PC-04	6'-0"	3'-0"	32'-0"	1
PC-05	6'-0"	3'-0"	29'-0"	3

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. ROUGHEN TOP SURFACE OF PRECAST PILE CAP TO ¼" MIN. AMPLITUDE.
3. PRECASTER SHALL STAGGER DOWEL BARS IN TWO ADJACENT PILE CAPS THAT ARE CONNECTED WITH A CIP SPLICE TO ENSURE PROPER INSTALLATION OF PILE CAPS.

0 1 4 FT.
1/2"=1'-0"
0 1 2 3 FT.
3/4"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION

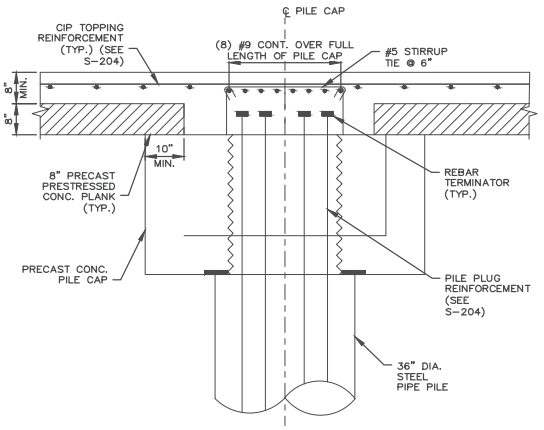
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

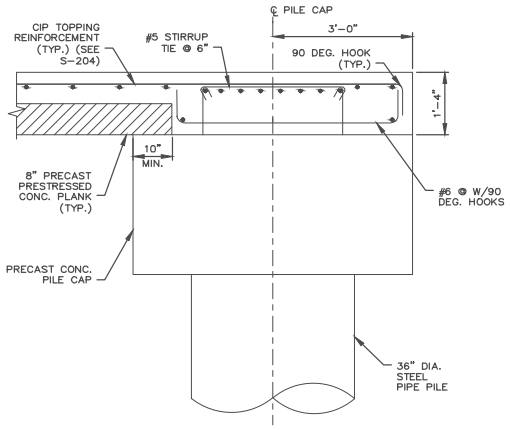
PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 1

SHEET NUMBER
S-226
65 OF 97

File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\03-S-226 (Pile Supported Platform Reinforcing Sections and Details - 1).rfa Plotted: 7/19/2024 12:55 PM by MAGUIRE, CASEY Saved: 7/19/2024 12:13 PM by MAGUIRE

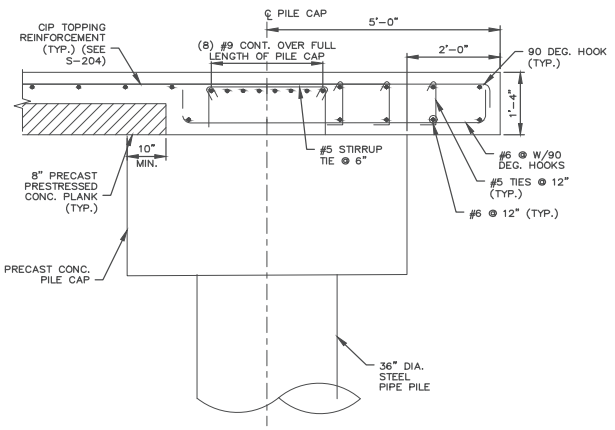


TYPICAL PILE CAP CLOSURE POUR AT PILE
3/4"=1'–0"



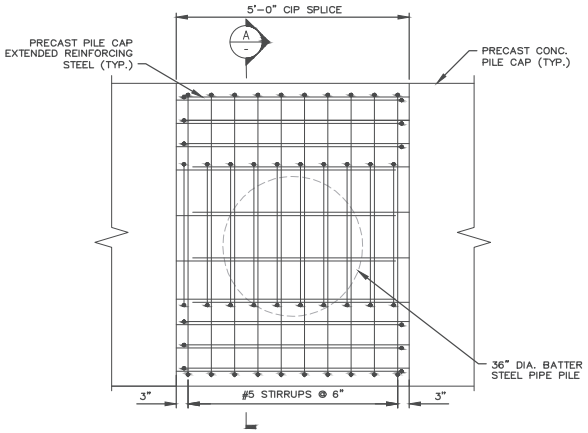
TYPICAL DECK REINFORCING AT PILE CAP ROW BENT T
3/4"=1'–0"

NOTE: CONCRETE PARAPET WALL/CURB NOT SHOWN FOR CLARITY.

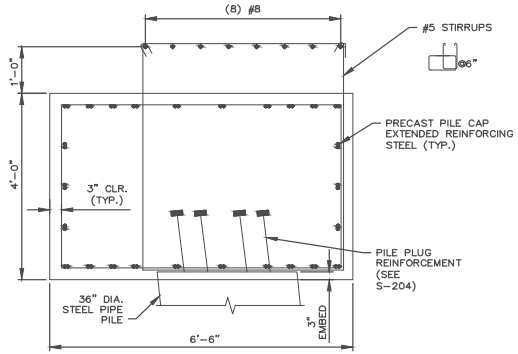


TYPICAL DECK REINFORCING AT PILE CAP ROW BENT N & P AT PLATFORM DECK
3/4"=1'–0"

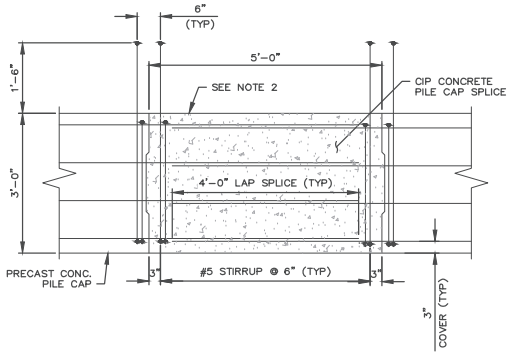
NOTE: CONCRETE PARAPET WALL/CURB NOT SHOWN FOR CLARITY.



PLAN — CIP PILE CAP SPLICE — TYPE 1
3/4"=1'–0"



A SECTION
3/4"=1'–0"



CIP PILE CAP SPLICE — TYPE 2
3/4"=1'–0"

NOTES:

1. REFER TO S–220 FOR PILE PLUG REINFORCEMENT.
2. ROUGHEN TOP SURFACE TO 1/4" AMPLITUDE EXCEPT 10" PLANK BEARING SURFACE ON BOTH ENDS.
3. REFER TO DWGS S–221 THROUGH S–226 FOR PRECAST PILE CAP DETAILS.
4. REFER TO DWGS S–240 AND S–241 FOR PRECAST PRESTRESSED PLANK DETAILS.

0 1 2 3 FT.
3/4"=1'–0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

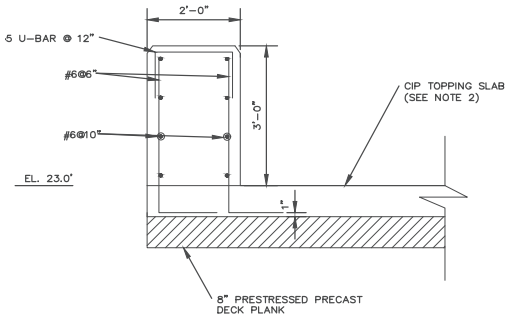
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

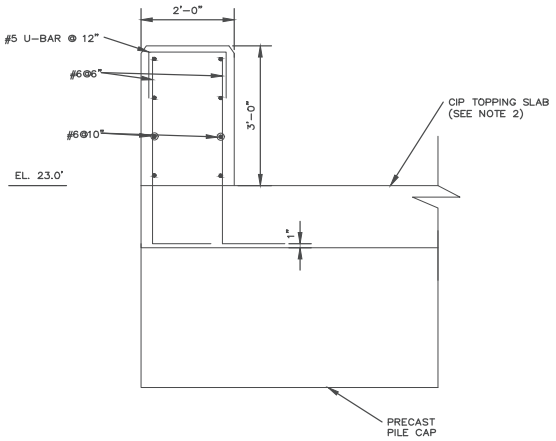
PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 2

SHEET NUMBER
S-227
66 OF 97

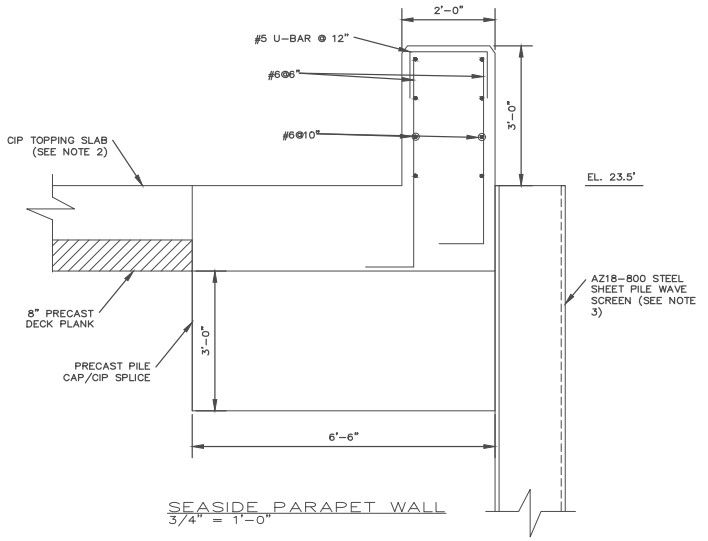
File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\bh-S-227 (Pile Supported Platform Reinforcing Sections and Details - 2).rtf Plotted: 7/19/2024 12:51 PM by MAGUIRE, CASEY Saved: 7/19/2024 12:36 PM by MAGUIRC



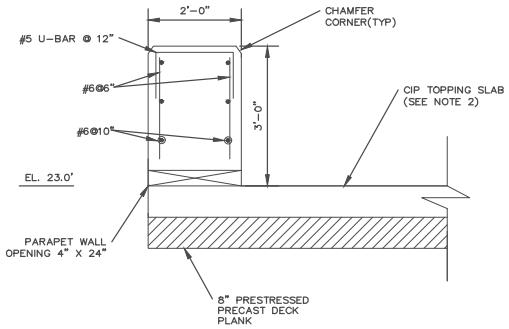
HARBORSIDE PARAPET WALL
@ PRECAST DECK PLANK
3/4" = 1'-0"



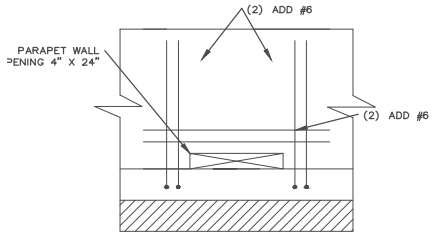
HARBOR SIDE PARAPET WALL
@ PRECAST PILE CAP
3/4" = 1'-0"



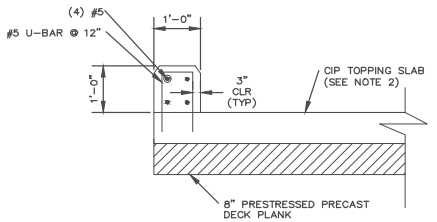
SEASIDE PARAPET WALL
3/4" = 1'-0"



HARBOR SIDE DRAINAGE OPENING DETAIL
3/4" = 1'-0"



HARBOR SIDE DRAINAGE
OPENING ELEVATION DETAIL
3/4" = 1'-0"



PILE SUPPORTED PLATFORM
CURB REINFORCING — SECTION
3/4" = 1'-0"

NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. SEE DWG S-204 FOR CIP TOPPING REINFORCEMENT.
3. REFER TO DWG S-271 FOR PLATFORM TO WAVE SCREEN CONNECTION DETAILS

0 1 2 3 FT.
3/4"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

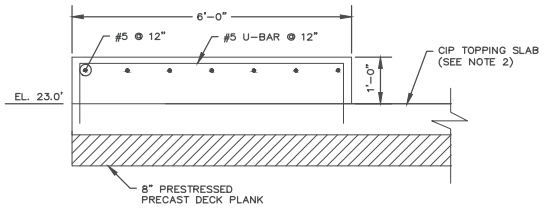
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

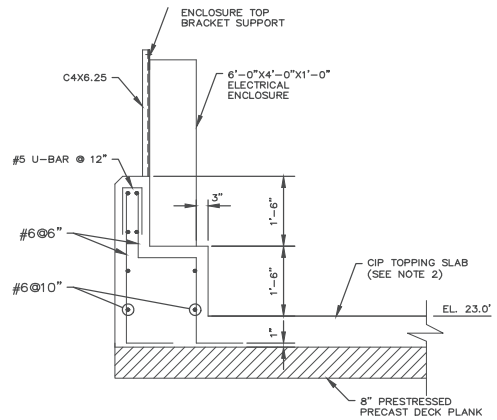
PILE SUPPORTED PLATFORM
REINFORCING SECTIONS AND DETAILS - 2

SHEET NUMBER
S-228
67 OF 97

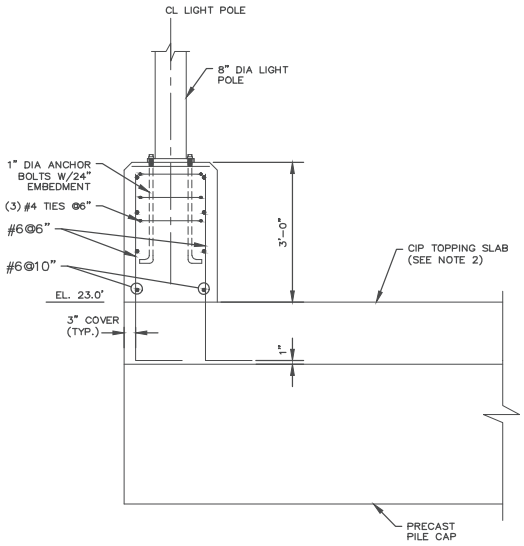
File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\65-S-228(PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 2).dwg, Plotted: 7/19/2024 1:16 PM by MAGUIRE, CASEY, Saved: 7/19/2024 12:47 PM by MAGUIRC



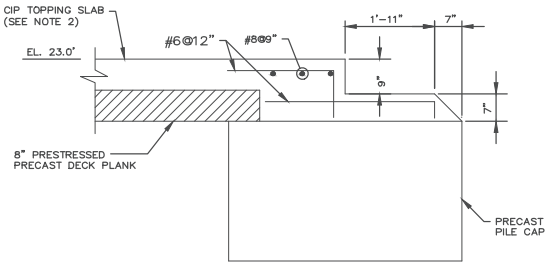
PILE SUPPORTED PLATFORM HOIST PLATFORM REINFORCING – SECTION
3/4" = 1'-0"



PILE SUPPORTED PLATFORM PARAPET REINFORCING AT ELECTRICAL ENCLOSURE
3/4" = 1'-0"



PILE SUPPORTED PLATFORM LIGHT POLE ANCHORAGE DETAIL
3/4" = 1'-0"



PILE SUPPORTED PLATFORM GANGWAY LANDING REINFORCING SECTION
3/4" = 1'-0"

NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" CHAMFER.
2. SEE DWG S–204 FOR CIP TOPPING REINFORCEMENT.

0 1 2 3 FT.
3/4"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 3

SHEET NUMBER
S-229
68 OF 97

File: C:\Users\MaguireCh\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\95-S-229 (PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 3). Plotted: 7/19/2024 11:43 AM by MAGUIRE, CASEY - Saved: 7/19/2024 3:40 PM by AREAID

PILE SUPPORTED PLATFORM PILE SCHEDULE						
PILE NO.	PILE SIZE	SERVICE LOAD COMP/TENSION (KIPS)	CUTOFF ELEVATION (FT)	TIP ELEVATION (FT)	PLUMB OR BATTER	PILE DETAIL TYPE
A-1.1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
A.2	36" DIA. X 1" W.T.	430 / 210	18.92	-35 ± (SEE NOTE 1)	PLUMB	A
A.1-1	36" DIA. X 1" W.T.	430 / 210	18.92	-35 ± (SEE NOTE 1)	PLUMB	A
A.1-2	36" DIA. X 1" W.T.	430 / 210	18.92	-35 ± (SEE NOTE 1)	PLUMB	A
B-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
B-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
C-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
C-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
C.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
D-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
D-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
D.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
E-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
E-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
E.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
F-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
F-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
F.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
G-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
G-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
G.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
H-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
H-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
H.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
I-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
I-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
I.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
J-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
J-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
J.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
K-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
K-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
K.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
L-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
L-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
L.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
M-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
M-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
M.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
N-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	A
N-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
N-3	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
N-4	36" DIA. X 1" W.T.	430 / 210	18.67	-35 ± (SEE NOTE 1)	PLUMB	B
N.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 ± (SEE NOTE 1)	1:4 BATTER	C
O-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
O-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
O-3	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
O-4	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B

PILE SUPPORTED PLATFORM PILE SCHEDULE						
PILE NO.	PILE SIZE	SERVICE LOAD COMP/TENSION (KIPS)	CUTOFF ELEVATION (FT)	TIP ELEVATION (FT)	PLUMB OR BATTER	PILE DETAIL TYPE
O.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 TO -40	1:4 BATTER	C
P-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
P-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
P-3	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
P-4	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
P.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 TO -40	1:4 BATTER	C
Q-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
Q-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
Q.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 TO -40	1:4 BATTER	C
R-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
R-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
R.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 TO -40	1:4 BATTER	C
S-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
S-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B
S.1-1	36" DIA. X 1" W.T.	375 / 225	18.92	-35 TO -40	1:4 BATTER	C
T-1	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	A
T-2	36" DIA. X 1" W.T.	430 / 210	18.67	-35 TO -40	PLUMB	B

NOTES

1. ALL PILES SHALL BE DRIVEN OR DRILLED TO BEDROCK LEVEL AND SEATED WITHIN THE BEDROCK. ROCK SOCKETS SHALL BE DRILLED WITHIN COMPETENT BEDROCK. BEDROCK ELEVATION VARIES.
2. REFER TO DRAWING B-100 FOR THE ESTIMATED BEDROCK ELEVATION.
3. REFER TO DRAWING S-220 FOR PILE TYPE DETAILS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM PILE SCHEDULE

SHEET NUMBER

S-230

69 OF 97

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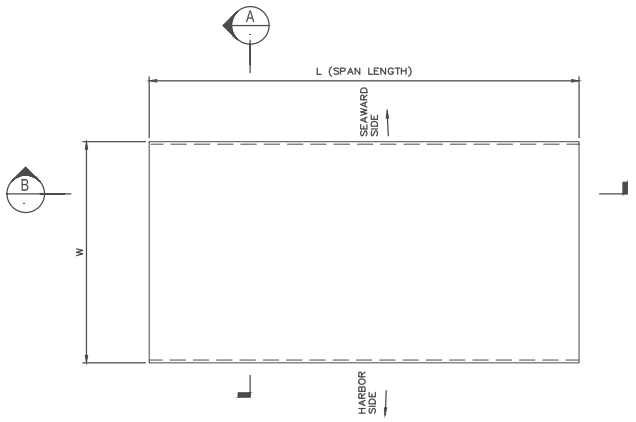
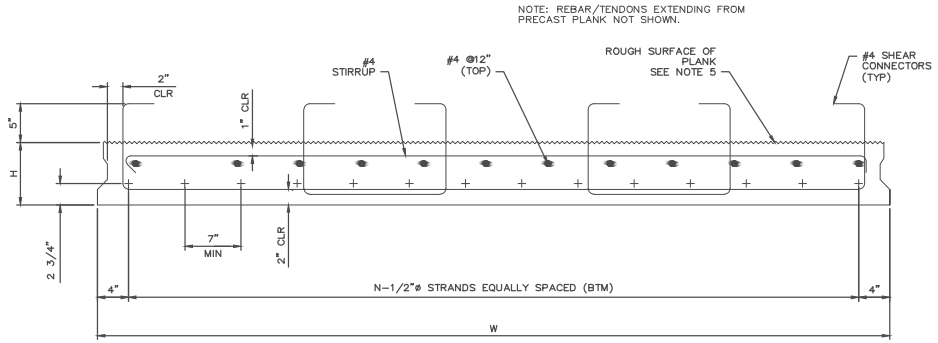
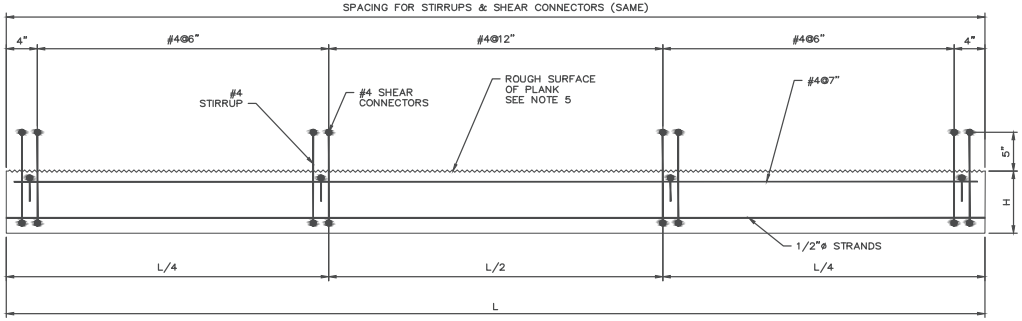


TYPICAL PRESTRESSED PRECAST CONCRETE PLANK
1/2"=1'-0"

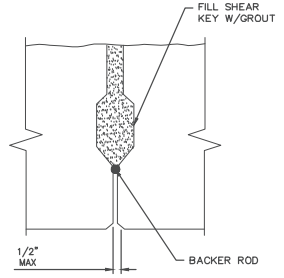
DECK PLANK SCHEDULE / NOMINAL DIMENSIONS						
MARK	W	L	H	N	REQUIRED NUMBER	SHEAR KEYS
P-01	8' - 6"	10'-8"	8"	14	46	HARBOR SIDE, SEAWARD SIDE
P-01A	8' - 6"	10'-8"	8"	14	19	SEAWARD SIDE
P-02	SEE S-241	SEE S-241	8"	MILD STEEL, SEE S-241	1	HARBOR SIDE, SEAWARD SIDE
P-03	SEE S-241	SEE S-241	8"	20	1	HARBOR SIDE, SEAWARD SIDE
P-04	SEE S-241	SEE S-241	8"	20	1	HARBOR SIDE



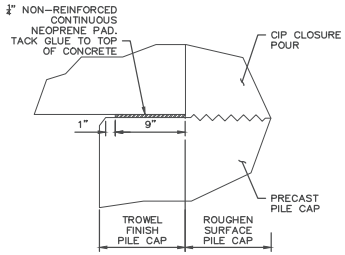
A TYPICAL FOR W>4' SECTION
1-1/2"=1'-0"



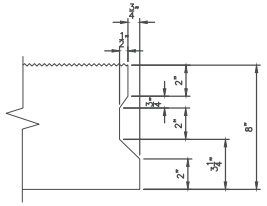
B SECTION
1-1/2"=1'-0"



TYPICAL PLANK JOINT DETAIL
3"=1'-0"



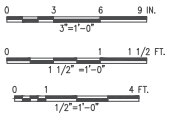
DECK PLANK BEARING DETAIL
1 1/2"=1'-0"



TYPICAL SHEAR KEY
3"=1'-0"

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF f'c=6,000 PSI.
3. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416, GRADE 270, UNCOATED, 7-WIRE, LOW RELAXATION.
4. THE SPACING OF STRANDS SHALL NOT BE LESS THAN 2".
5. PRIOR TO SHIPPING TO SITE, SAND BLAST TOP SURFACE OF PLANKS TO REMOVE ALL DIRT, DEBRIS, LAITANCE, CURING COMPOUND AND OTHER MATERIALS THAT MAY AFFECT BOND. PROVIDE INTENTIONALLY ROUGHENED SURFACE TO FULL AMPLITUDE OF APPROXIMATELY 1/4".
6. PLANK SURFACE SHALL BE IN A SURFACE SATURATED DRY (SSD) CONDITION IMMEDIATELY PRIOR TO DECK TOPPING CONCRETE PLACEMENT.
7. REFFER TO DRAWING S-203 FOR PRECAST PLANK PLAN.



95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM PRECAST PLANK DETAILS

SHEET NUMBER
S-240
70 OF 97

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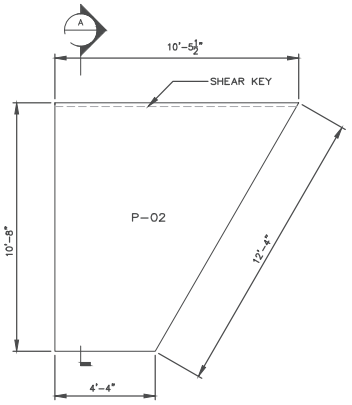
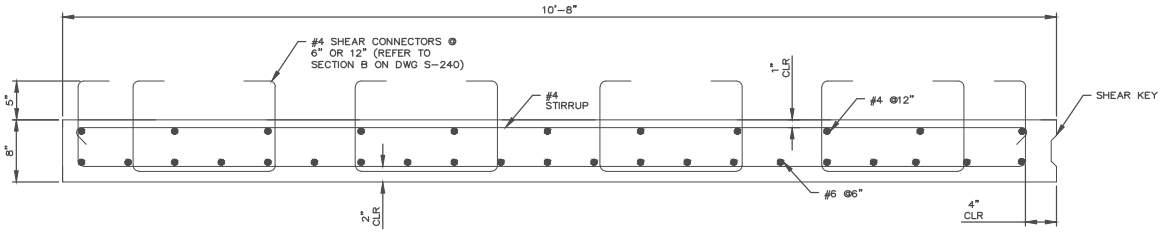
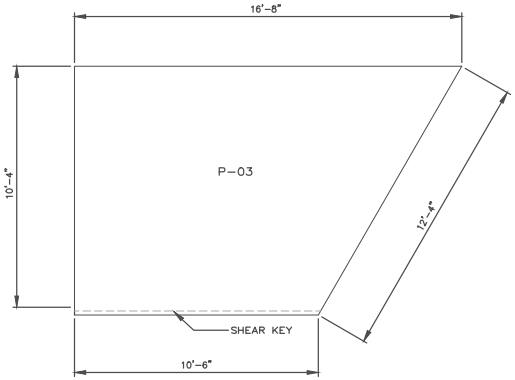


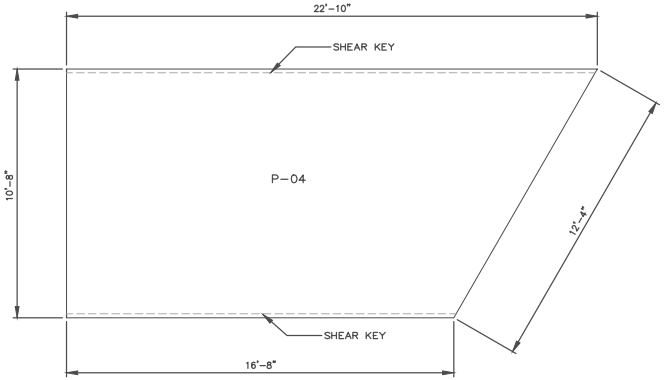
NOTE: SHEAR KEY ON SEAWARD SIDE



A P-02 SECTION — NON PRESTRESSED PLANK
1-1/2"=1'-0"



NOTE: SHEAR KEY ON HARBOR SIDE AND SEAWARD SIDE



NOTE: SHEAR KEY ON HARBOR SIDE

NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF f'c=6,000 PSI.
3. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416, GRADE 270, UNCOATED, 7-WIRE, LOW RELAXATION.
4. THE SPACING OF STRANDS SHALL NOT BE LESS THAN 2".
5. PRIOR TO SHIPPING TO SITE, SAND BLAST TOP SURFACE OF PLANKS TO REMOVE ALL DIRT, DEBRIS, LAITANCE, CURING COMPOUND AND OTHER MATERIALS THAT MAY AFFECT BOND. PROVIDE INTENTIONALLY ROUGHENED SURFACE TO FULL AMPLITUDE OF APPROXIMATELY 1/4".
6. PLANK SURFACE SHALL BE IN A SURFACE SATURATED DRY (SSD) CONDITION IMMEDIATELY PRIOR TO DECK TOPPING CONCRETE PLACEMENT.
7. REFFER TO DRAWING S-203 FOR PRECAST PLANK PLAN.

0 1 6 FT.
3/8"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM
PRECAST PLANK DETAILS - 2

SHEET NUMBER
S-241
71 OF 97

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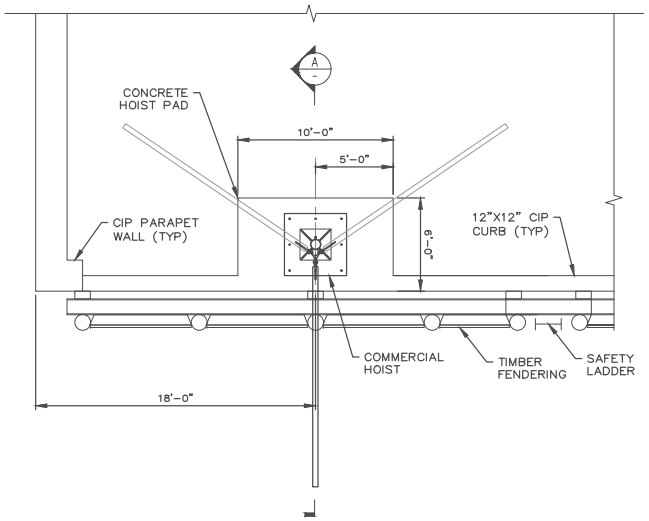
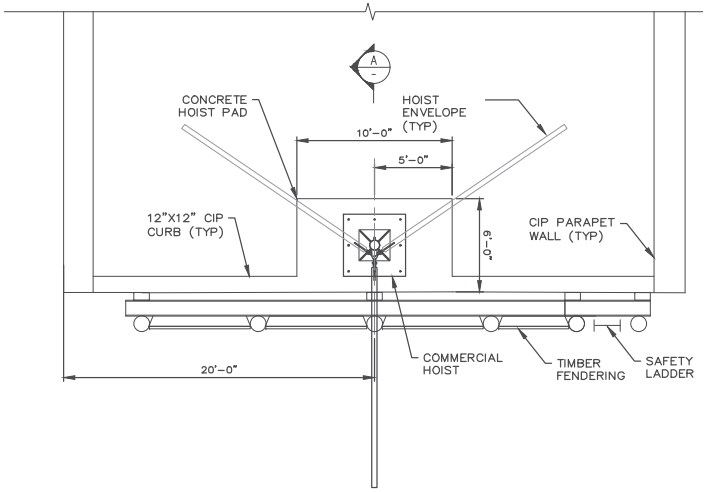
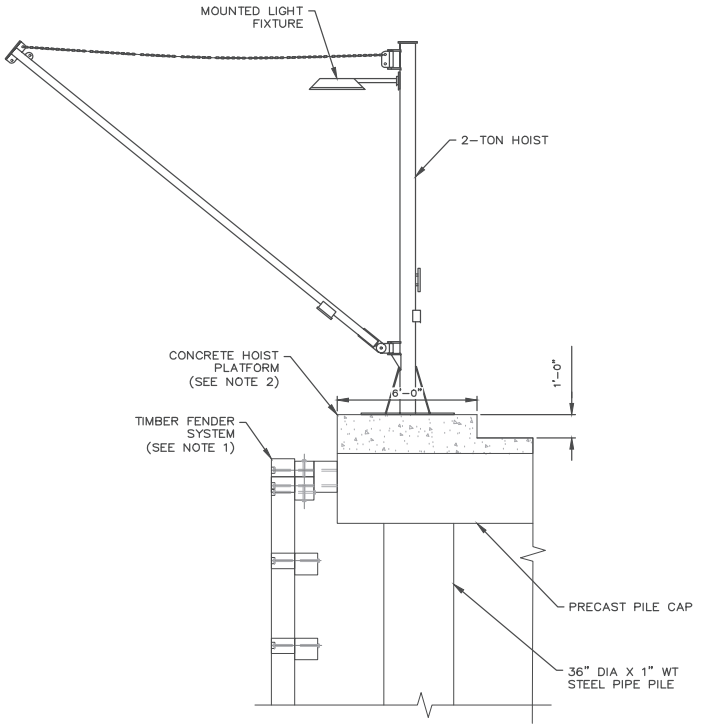


HOIST AREA 1 PLAN
1/4"=1'–0"



HOIST AREA 2 PLAN
1/4"=1'–0"



A SECTION
3/8"=1'–0"

NOTES

1. REFER TO DWGS S–340 AND S–341 FOR TIMBER FENDERING DETAILS.
2. REFER TO DWG S–228 FOR HOIST PAD REINFORCING DETAILS.

0 1 5 FT.
3/8"=1'–0"

0 4 8 FT.
1/4"=1'–0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
HOIST AREA ELEVATION & DETAILS

SHEET NUMBER
S-260

72 0F 97

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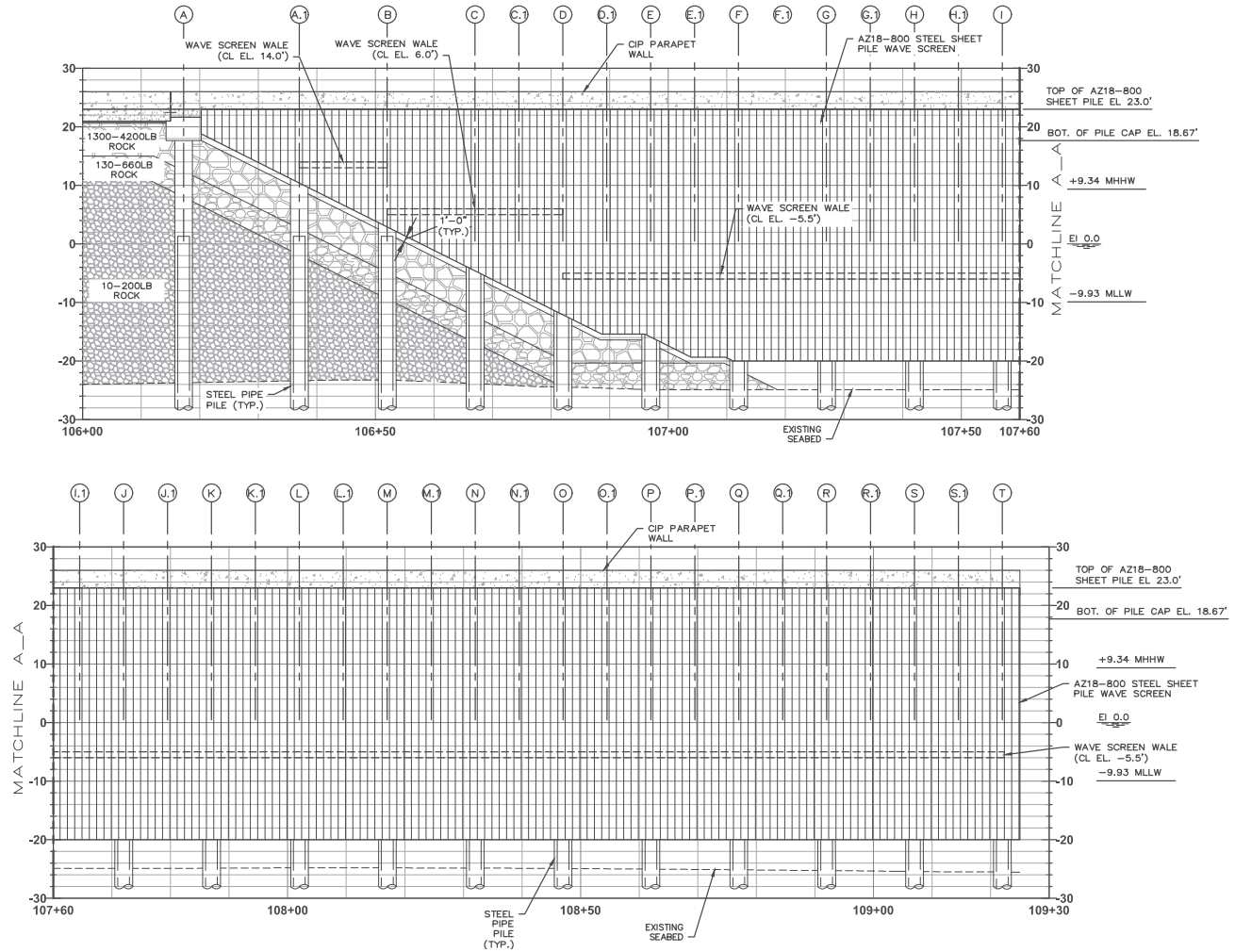

WAVE SCREEN PROFILE
1"=10'-0"

NOTES: BATTER PILES NOT SHOWN FOR CLARITY.

LEGEND

- 1300-4200LB ROCK
- 130-660LB ROCK
- 10-200LB ROCK

NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. REFER TO DWG S-271 FOR WAVE SCREEN CONNECTION DETAILS.

0 10 20 FT.
1"=10'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM WAVE SCREEN PROFILE

SHEET NUMBER

S-270

73 OF 97

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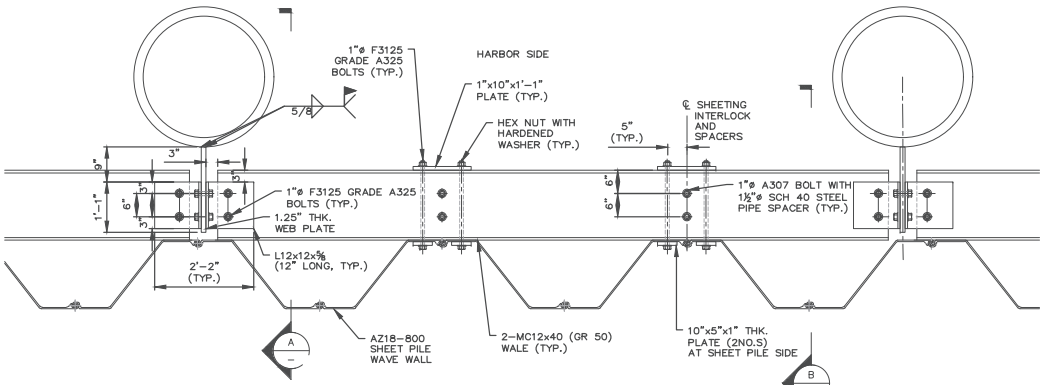
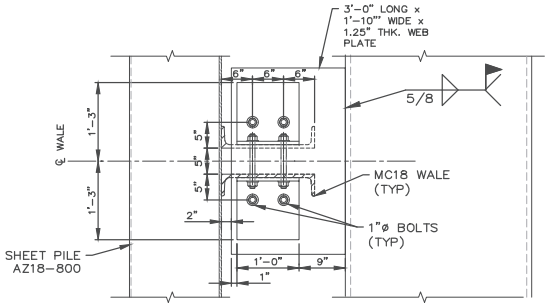
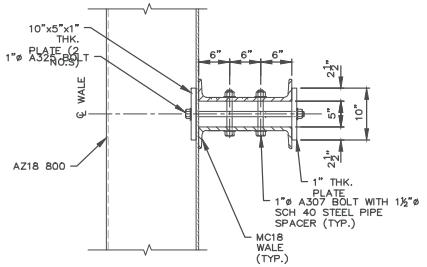


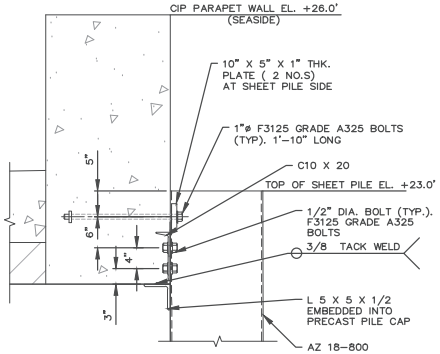
PARTIAL WALE PLAN AT WAVE WALL
3/4"=1'-0"



A SECTION
1" = 1'-0"



B SECTION
1" = 1'-0"



1 DETAIL
S-210
1" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 1 2 FT.
1"=1'-0"
0 1 2 3 FT.
3/4"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

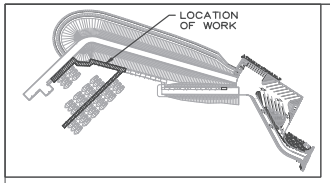
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

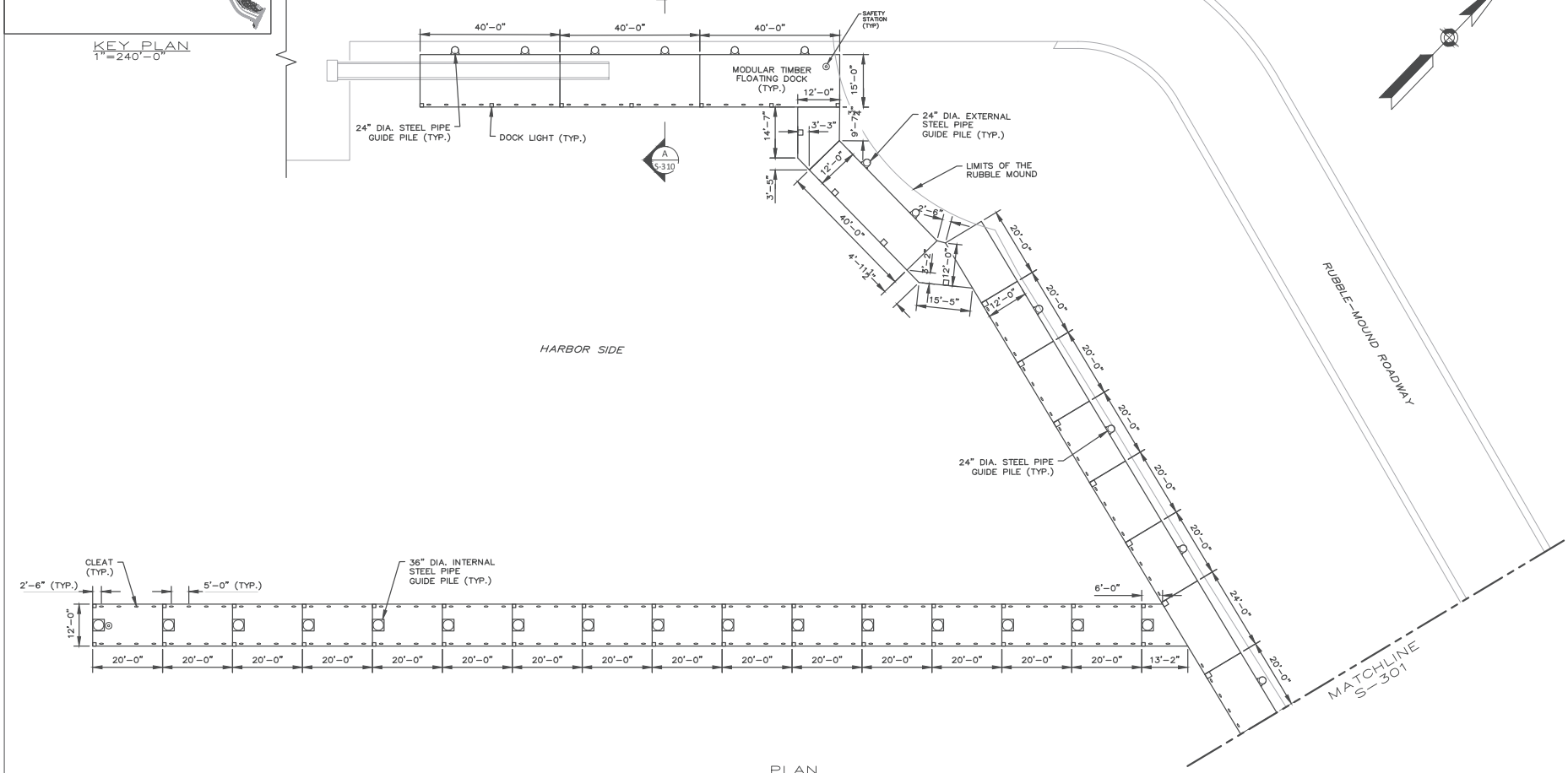
PILE SUPPORTED PLATFORM WAVE SCREEN DETAILS

SHEET NUMBER
S-271
74 OF 97

File: C:\Users\MaguireOneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\73-S-271 (Pile Supported Platform Wave Screen Details).rvt | Plotted: 7/19/2024 12:35 PM by MAGUIRE, CASEY | Saved: 7/19/2024 3:18 PM by MAGUIRC



KEY PLAN
1"=240'-0"



PLAN
1"=15'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL MAINTAIN A MINIMUM WATER DEPTH OF -14.03'.

0 15 30 FT.
1"=15'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

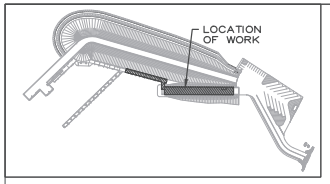
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

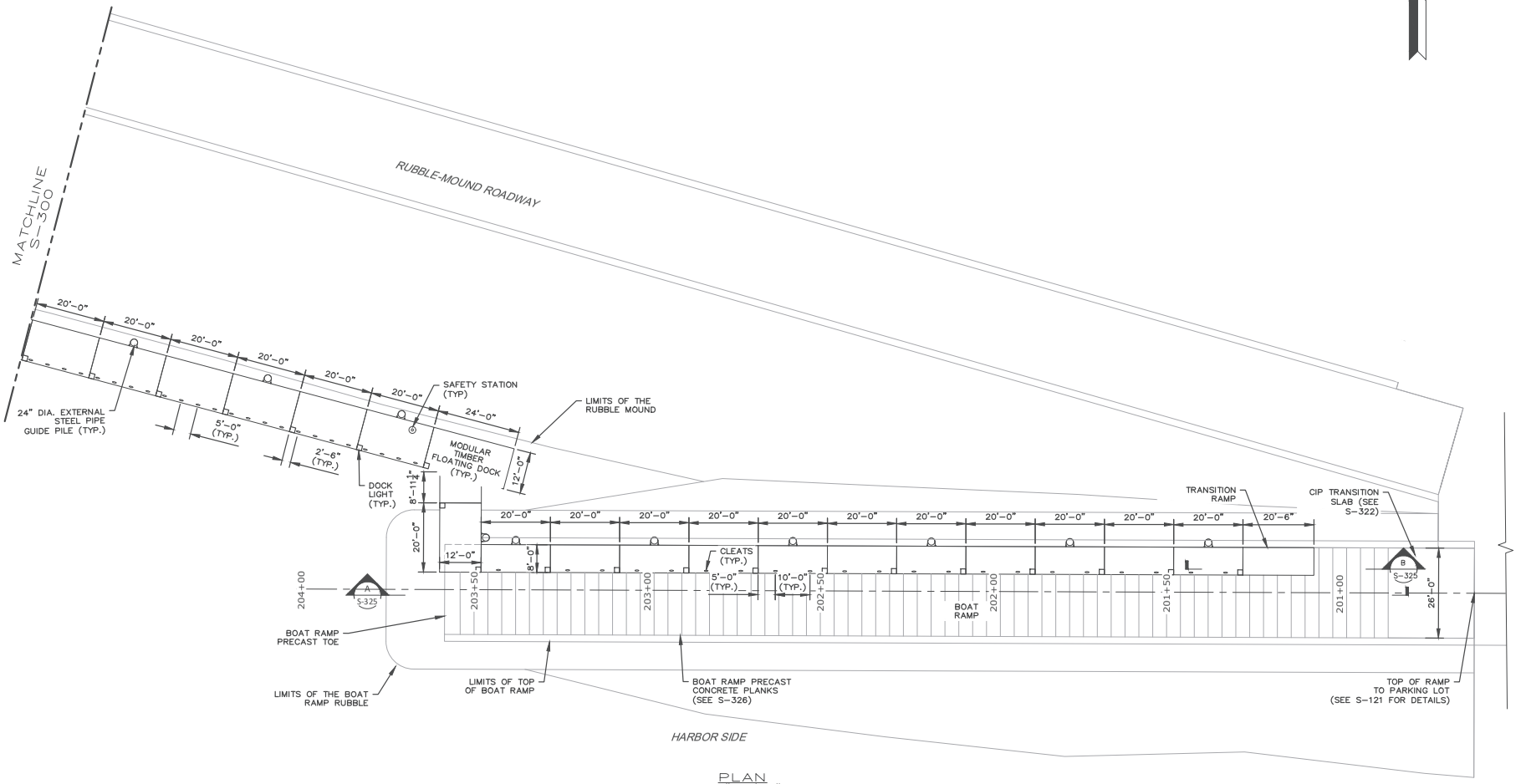
FLOATING DOCK
GENERAL ARRANGEMENT PLAN - 1

SHEET NUMBER
S-300
75 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\14-S-300 (Floating Dock Area 1 General Arrangement Plan) ; Plotted: 7/19/2024 4:57 PM by: SAYADFAR, HASTI ; Saved: 7/19/2024 4:49 PM by: HS037482



KEY PLAN
1"=240'-0"



PLAN
1"=15'-0"

N

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 10 20 FT.
1"=10'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

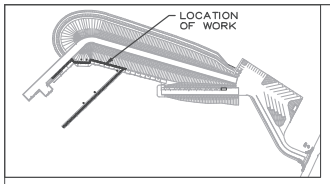
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

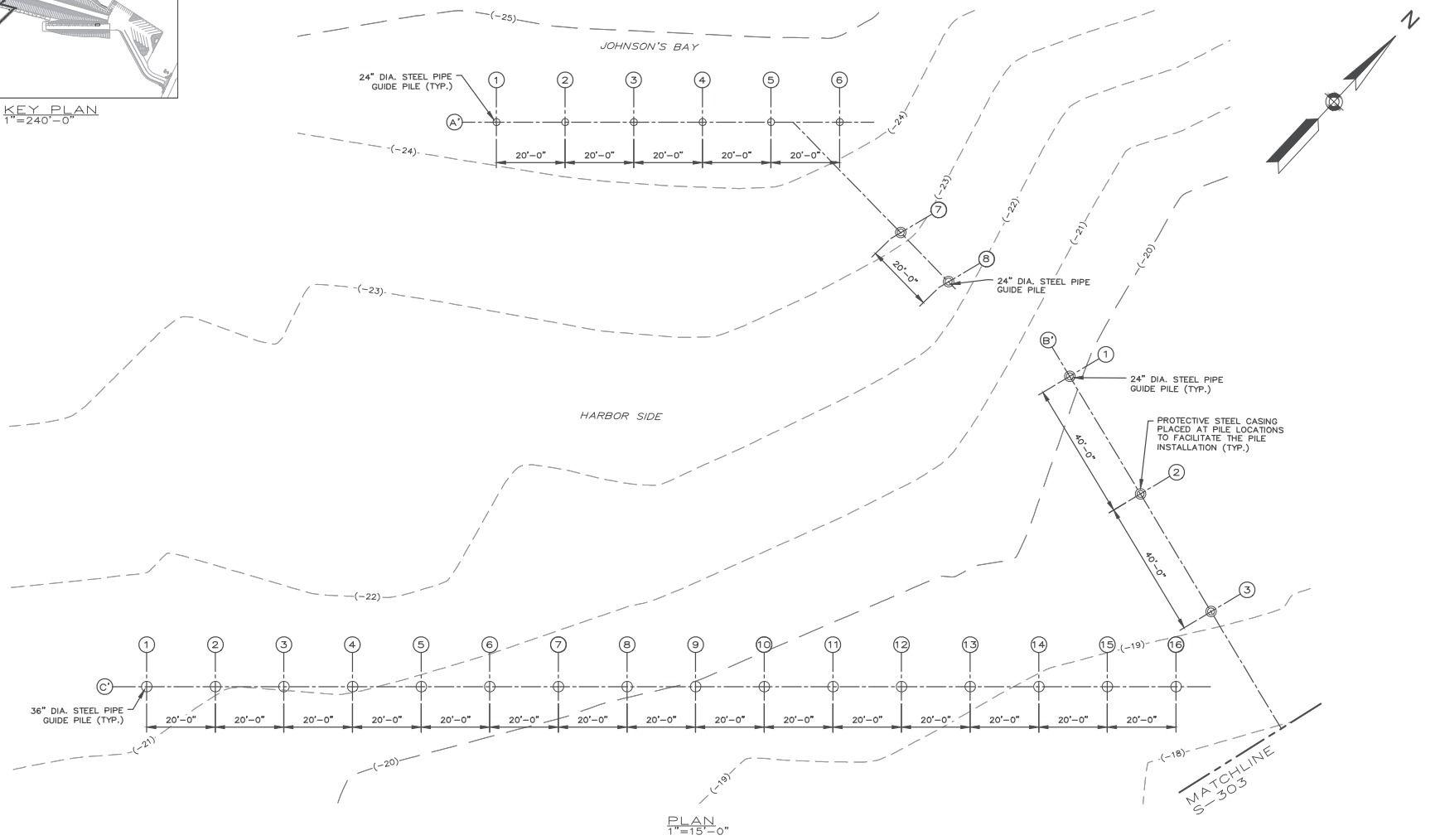
FLOATING DOCK
GENERAL ARRANGEMENT PLAN - 2

SHEET NUMBER
S-301
76 OF 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\75-S-301 (Floating Dock Area 2 General Arrangement Plan) | Plotted: 7/19/2024 4:57 PM by: SAYADFAR, HASTI | Saved: 7/19/2024 4:49 PM by: HS037482



KEY PLAN
1"=240'-0"



PLAN
1"=15'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SEE STEEL PIPE GUIDE PILE DETAILS ON DRAWINGS S-320 AND S-321.
4. SEE STEEL PIPE GUIDE PILE SCHEDULE ON DRAWING S-330.
5. PROTECTIVE CASINGS ARE PROPOSED AT PILE LOCATIONS TO ASSURE SUCCESSFUL PILE INSTALLATION AND NO OBSTRUCTIONS CAUSED BY THE PLACEMENT OF THE BREAKWATER/BOAT RAMP ROCKFILL. PROTECTIVE CASINGS MAY BE 30" DIA. STEEL CASING, OR A SUITABLE DIAMETER PROPOSED BY THE CONTRACTOR.
6. PROTECTIVE CASINGS CALLED FOR AT A'-7, A'-8, AND B'-1 THROUGH B'-7 ARE OPTIONAL, AND CONTRACTOR TO DECIDE IF HIS OPERATIONS REQUIRES THE PROTECTIVE CASINGS.

LEGEND

- PLUMB STEEL PIPE PILE
- EXISTING BATHYMETRIC CONTOURS
- STEEL PIPE PILES WITH PROTECTIVE CASINGS (SEE NOTE 5 & 6)

0 15 30 FT.
1"=15'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

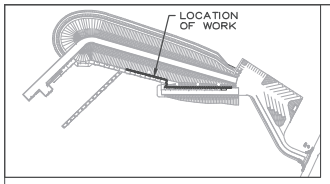
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

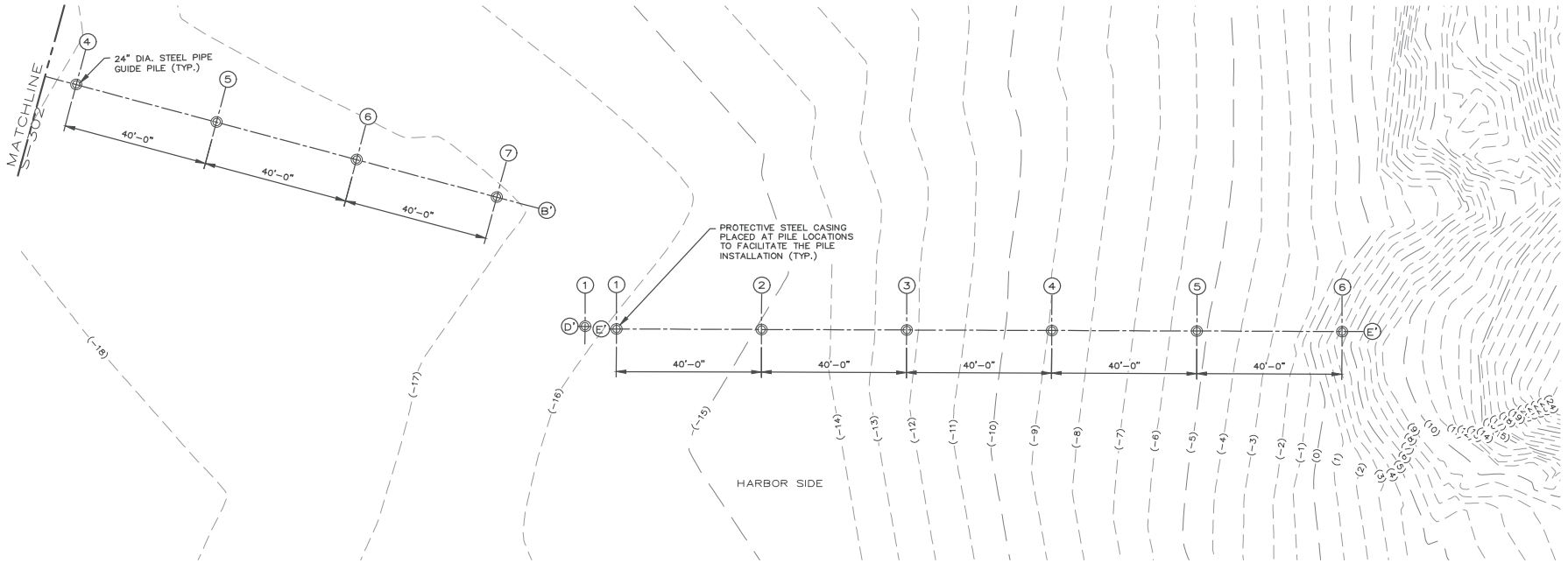
FLOATING DOCK PILE PLAN - 1

SHEET NUMBER
S-302
77 OF 97

File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\76-S-302 (Floating Dock Area 1 Pile Plan).rvt Plotted: 7/19/2024 6:18 PM by MAGUIRE, CASEY Saved: 7/19/2024 6:02 PM by MAGUIRC



KEY PLAN
1"=240'-0"



PLAN
1"=15'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. SEE STEEL PIPE GUIDE PILE DETAILS ON DRAWINGS S-320 AND S-321.
4. SEE STEEL PIPE GUIDE PILE SCHEDULE ON DRAWING S-330.
5. PROTECTIVE CASINGS ARE PROPOSED AT PILE LOCATIONS TO ASSURE SUCCESSFUL PILE INSTALLATION AND NO OBSTRUCTIONS CAUSED BY THE PLACEMENT OF THE BREAKWATER/BOAT RAMP ROCKFILL. PROTECTIVE CASINGS MAY BE 30" DIA. STEEL CASING, OR A SUITABLE DIAMETER PROPOSED BY THE CONTRACTOR.
6. PROTECTIVE CASINGS CALLED FOR AT A'-7, A'-8, AND B'-1 THROUGH B'-7 ARE OPTIONAL, AND CONTRACTOR TO DECIDE IF HIS OPERATIONS REQUIRES THE PROTECTIVE CASINGS.

LEGEND

- PLUMB STEEL PIPE PILE
- EXISTING BATHYMETRIC CONTOURS
- STEEL PIPE PILES WITH PROTECTIVE CASINGS (SEE NOTE 5 & 6)

0 10 20 FT.
1"=10'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

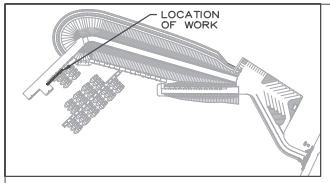
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

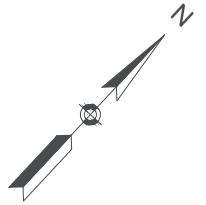
FLOATING DOCK PILE PLAN - 2

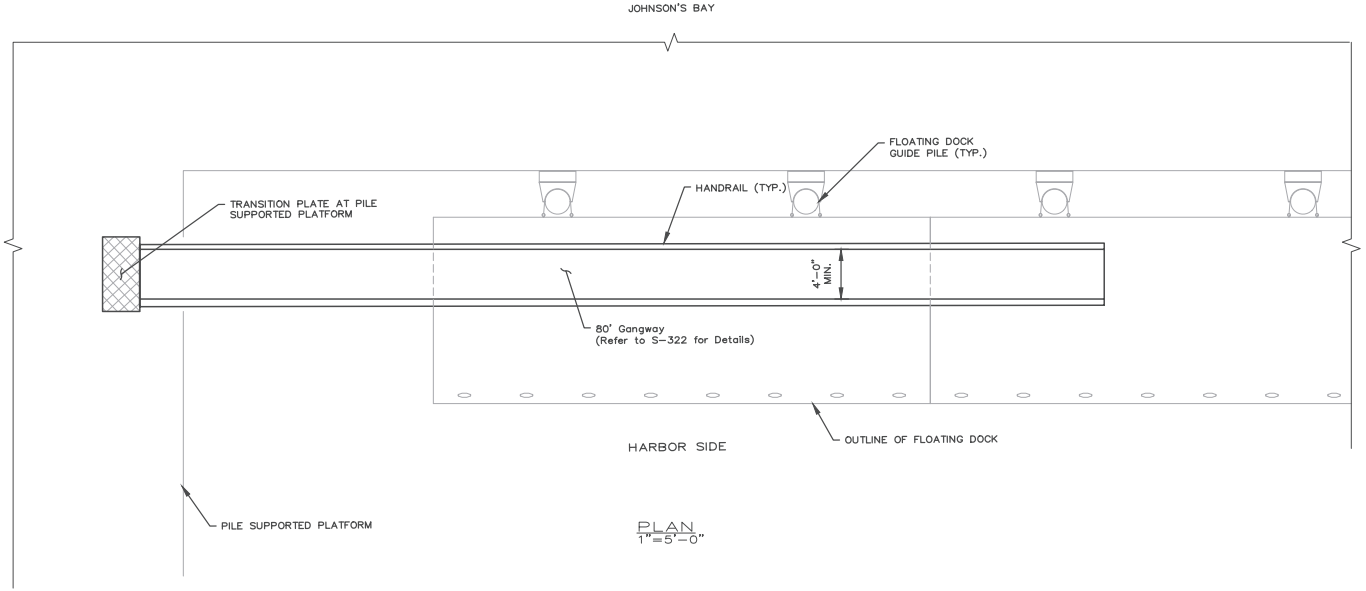
SHEET NUMBER
S-303
78 OF 97

File: C:\Users\MaguireC\OneDrive - Jacobs\Project Documents\30 WIP\Drawings\Drawings_95% Submission\17-S-303 (Floating Dock Area 2 Pile Plan).rvt Plotted: 7/19/2024 6:20 PM by MAGUIRE, CASEY Saved: 7/19/2024 6:02 PM by MAGUIRC



KEY PLAN
1"=240'-0"





PLAN
1"=5'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 5 10 FT.
1"=5'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION

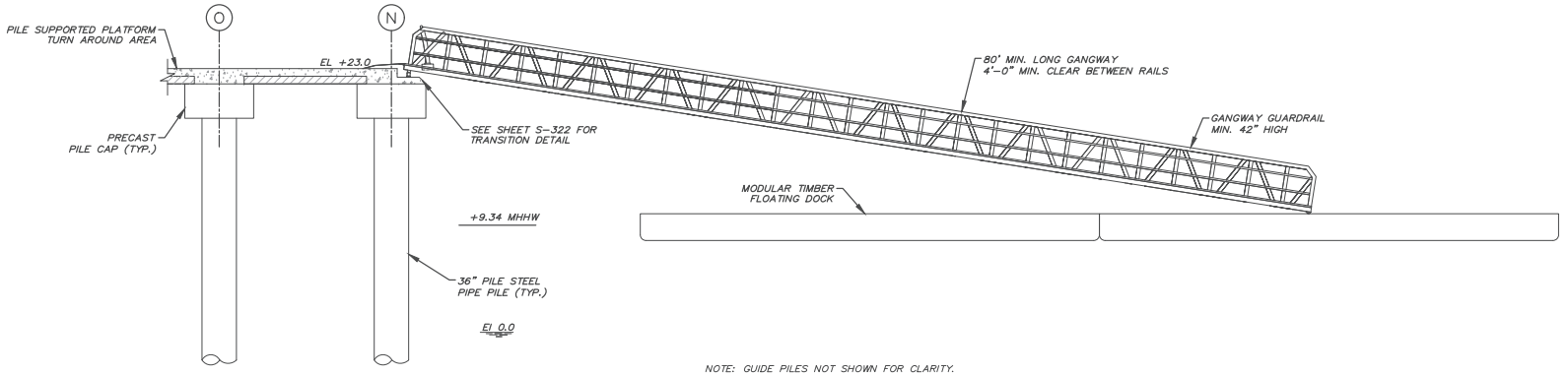
PROGRAM	MULTIMODAL	
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE
DESIGNER	CRAIG MORIN	
CONSULTANT	JACOBS	P.E. NUMBER
PROJECT RESIDENT		
CONTRACTOR		DATE
PROJECT COMPLETION DATE		

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK GANGWAY PLAN

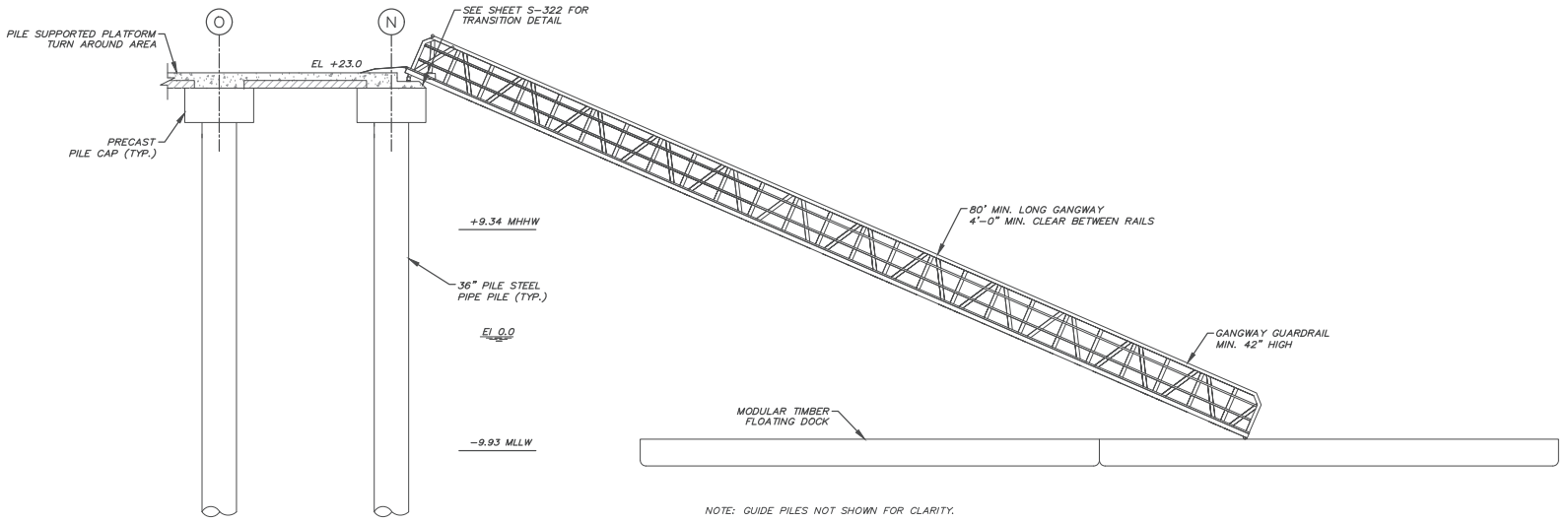
SHEET NUMBER
S-304
79 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\78-S-304 (Floating Dock Gangway Plan) - Plotted: 7/19/2024 4:57 PM by SAIYADPAR, HASTI - Saved: 7/19/2024 10:02 AM by HS037482



NOTE: GUIDE PILES NOT SHOWN FOR CLARITY.

GANGWAY – ELEVATION AT MHHW
3/16" = 1'-0"



NOTE: GUIDE PILES NOT SHOWN FOR CLARITY.

GANGWAY – ELEVATION AT MLLW
3/16" = 1'-0"

NOTES

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.
4. PARAPET WALL ON PILE SUPPORTED PLATFORM NOT SHOWN FOR CLARITY.
5. SEE GANGWAY DETAILS ON S-322.

0 5 10 FT.
3/16"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

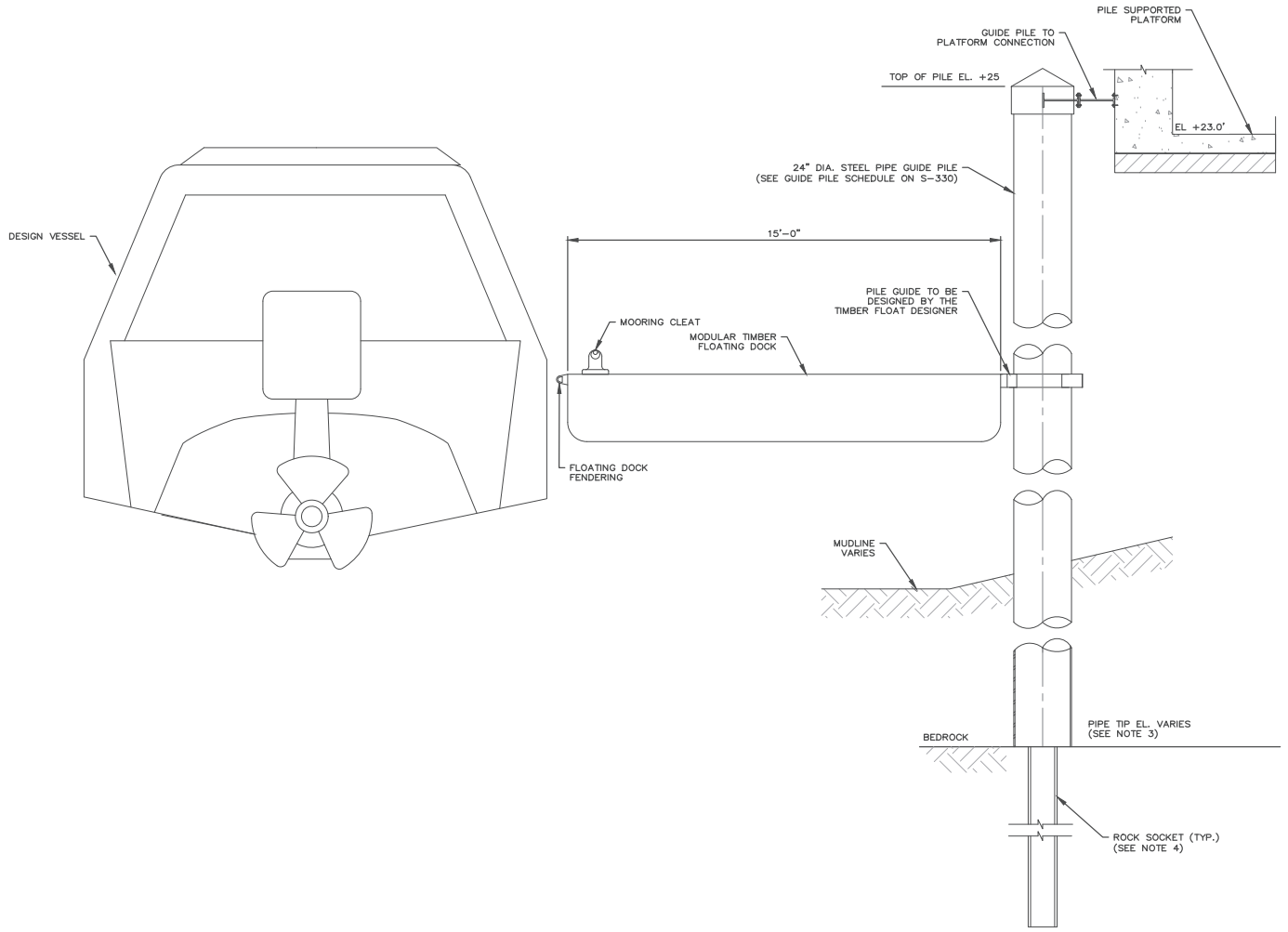
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

FLOATING DOCK GANGWAY SECTIONS

SHEET NUMBER
S-305

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\79-S-305 (Floating Dock Gangway Section).i Plotted: 7/19/2024 4:57 PM by SAYADFAR, HASTI. Saved: 7/19/2024 10:03 AM by HS037482



A SECTION
S-300 1/2" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. REFER TO S-330 FOR GUIDE PILE SCHEDULE.
4. REFER TO S-320 FOR GUIDE PILE DETAILS

0 1 4 FT.
1/2"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION

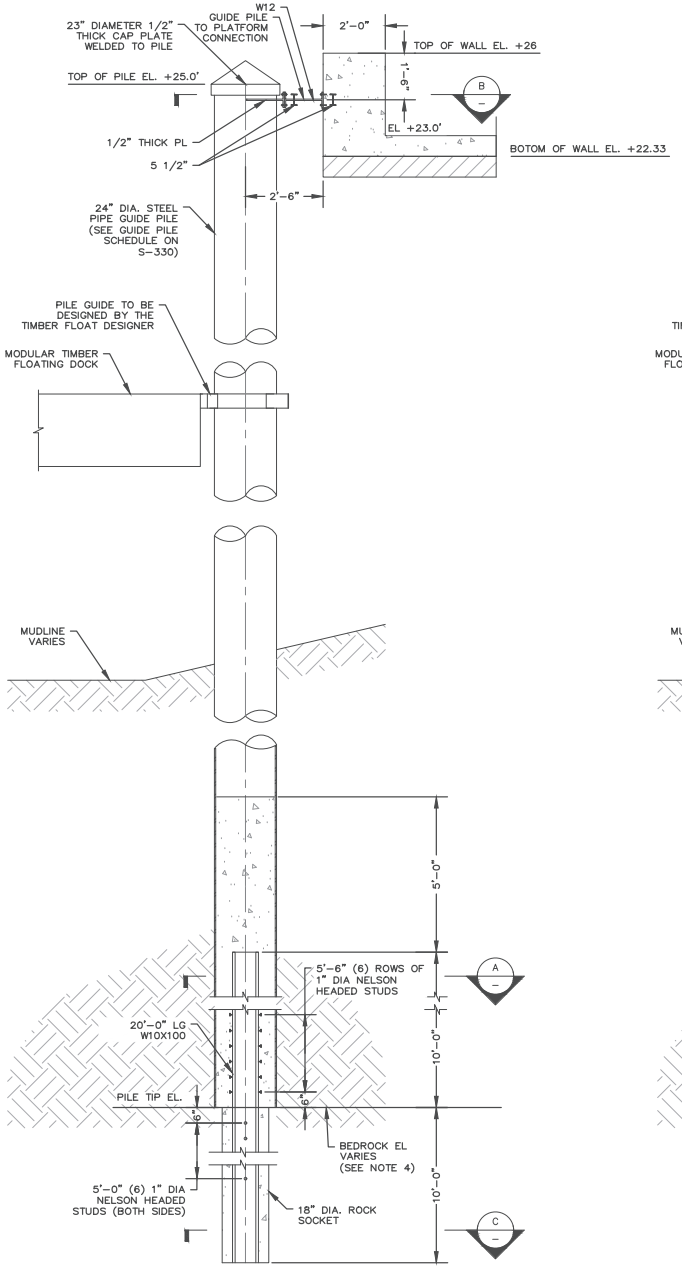
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

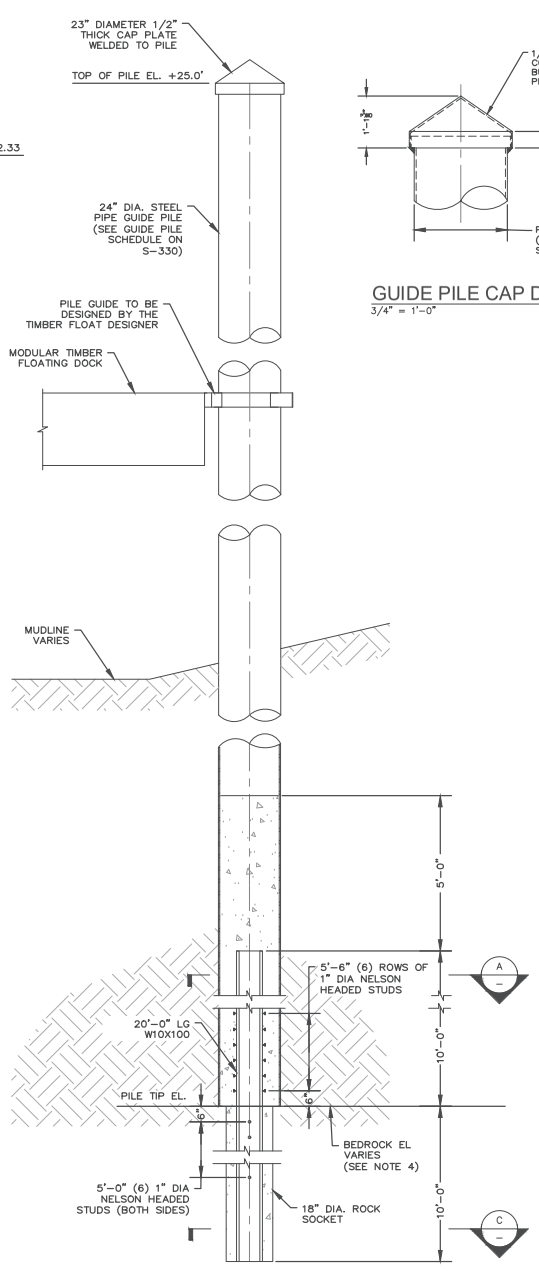
FLOATING DOCK SECTION

SHEET NUMBER
S-310
81 OF 97

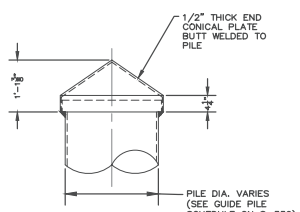
File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\80-S-310 (Floating Dock Section) - Plotted: 7/19/2024 4:57 PM by SAYADPAR, HASTI - Saved: 7/19/2024 4:50 PM by HS037482



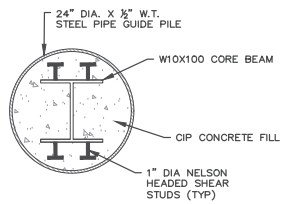
GUIDE PILE DETAIL TYPE A
1/2" = 1'-0"



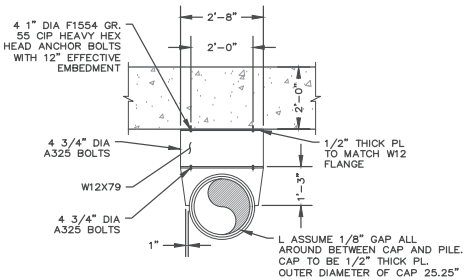
GUIDE PILE DETAIL TYPE B
1/2" = 1'-0"



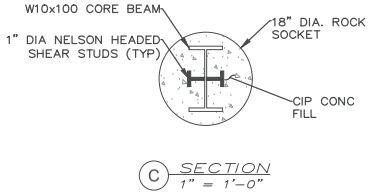
GUIDE PILE CAP DETAIL
3/4" = 1'-0"



A SECTION
1" = 1'-0"



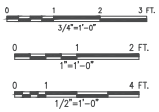
B SECTION
1/2" = 1'-0"



C SECTION
1" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.
4. ROCK SOCKET SHALL BE CONSTRUCTED WITHIN COMPETENT BEDROCK.



95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

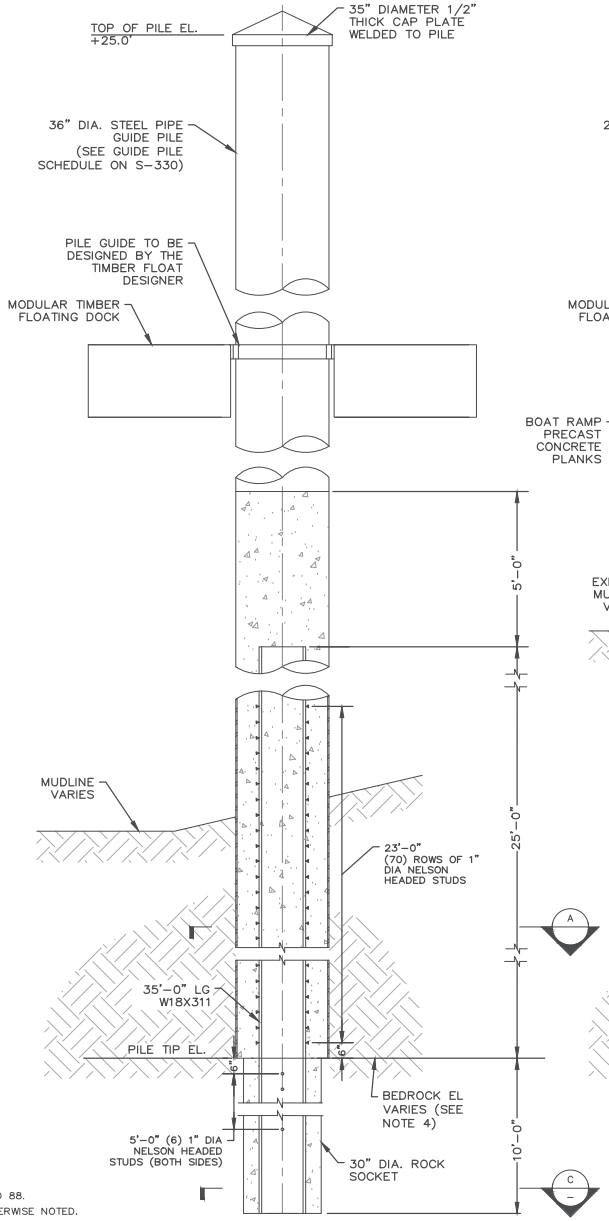
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

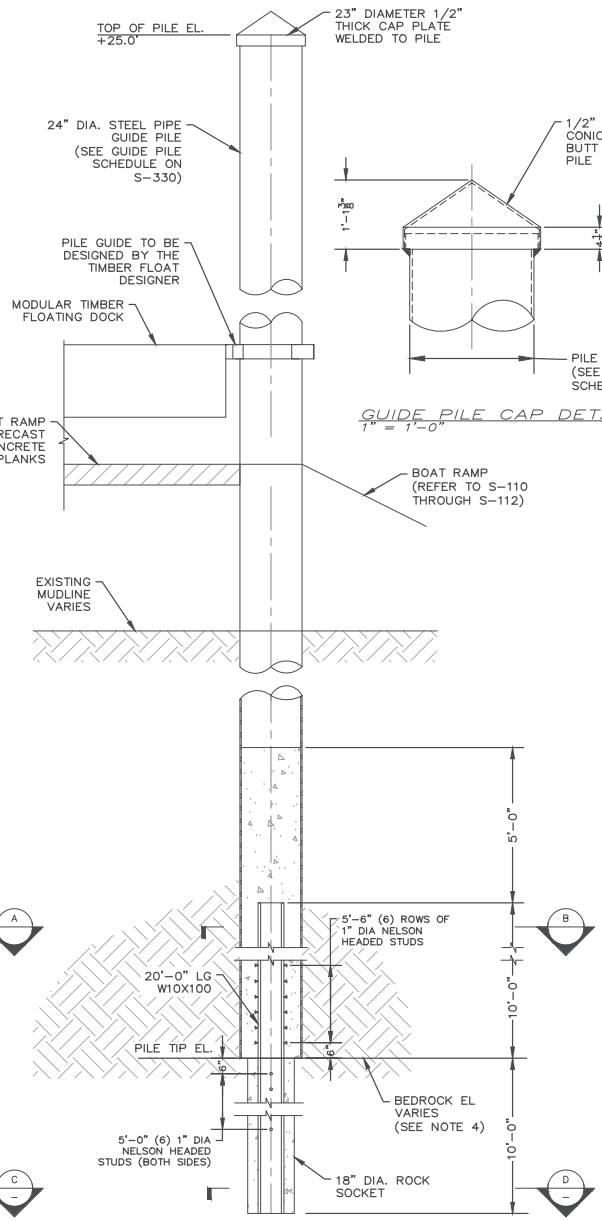
FLOATING DOCK GUIDE PILE DETAILS - 1

SHEET NUMBER
S-320

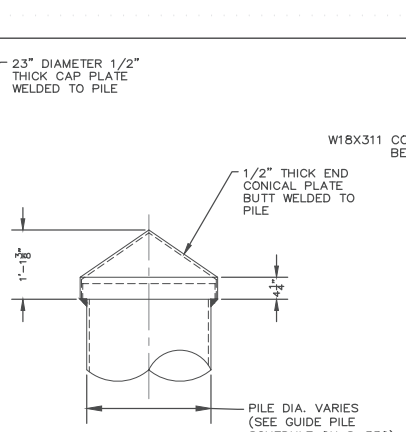
File: C:\Users\ks037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\01-S-320 (Floating Dock Guide Pile Details-1).rtf; Plotted: 7/19/2024 4:57 PM by: SAYADPAR, HASTI; Saved: 7/19/2024 4:50 PM by: KS037482



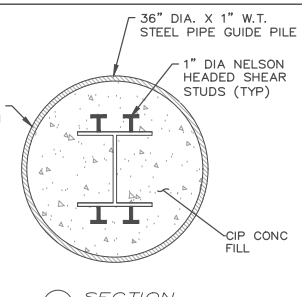
GUIDE PILE DETAIL C
1/2" = 1'-0"



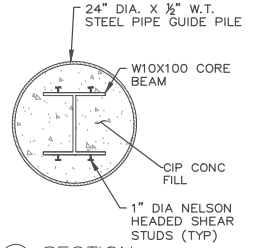
GUIDE PILE DETAIL D
1/2" = 1'-0"



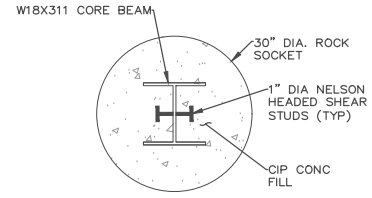
GUIDE PILE CAP DETAIL
1" = 1'-0"



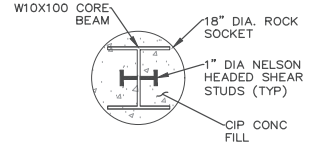
A SECTION
1" = 1'-0"



B SECTION
1/2" = 1'-0"



C SECTION
1" = 1'-0"



D SECTION
1" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.
4. ROCK SOCKET SHALL BE CONSTRUCTED WITHIN COMPETENT BEDROCK.

0 1 2 FT.
1"=1'-0"

0 1 4 FT.
1/2"=1'-0"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

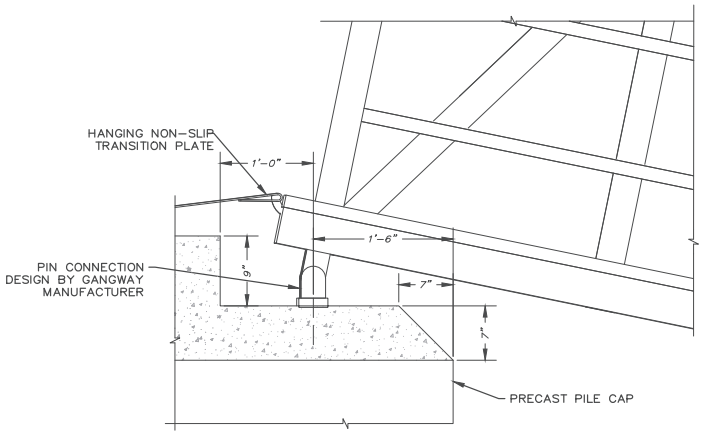
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

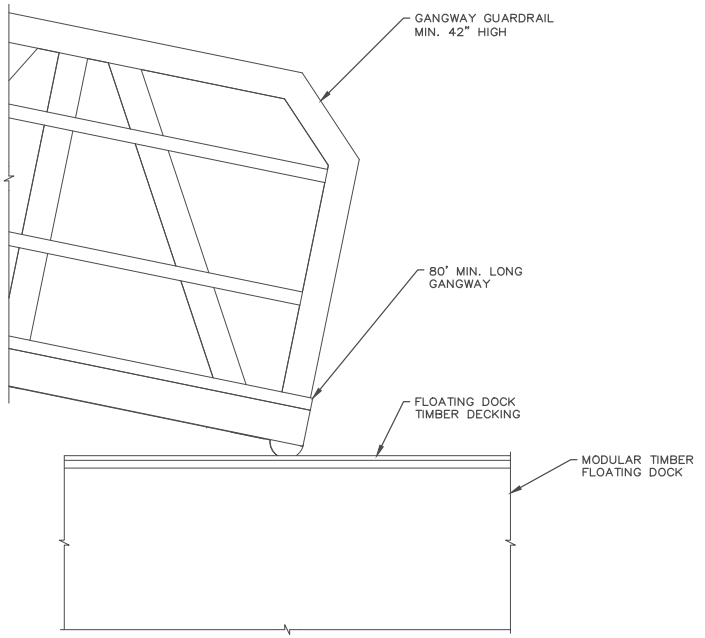
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

FLOATING DOCK GUIDE PILE DETAILS - 2

SHEET NUMBER
S-321

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\02-S-321 (Floating Dock Guide Pile Details-2).; Plotted: 7/19/2024 4:57 PM by: SAIYADPAR, HASTI.; Saved: 7/19/2024 4:51 PM by: HS037482





1 DETAIL
1 1/2" = 1'-0"

NOTES

1. ALL ELEVATION REFERS TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

0 1 1 1/2 FT.
1 1/2" =1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

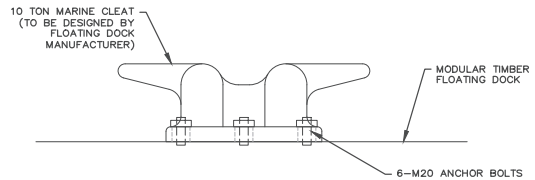
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

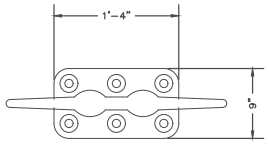
FLOATING DOCK GANGWAY DETAILS

SHEET NUMBER
S-322
84 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\83-S-322 (Floating Dock Gangway Details).rvt | Plotted: 7/19/2024 4:58 PM by SAYADYAR, HASTI | Saved: 7/19/2024 10:11 AM by HS037482



Mooring Cleat Elevation
1 1/2" = 1'–0"



Mooring Cleat Plan
1 1/2" = 1'–0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. HORIZONTAL DATUM REFERS TO US STATE PLANE, MAINE EAST 1801, NAD83.

0 60 120 FT.
1"=60'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

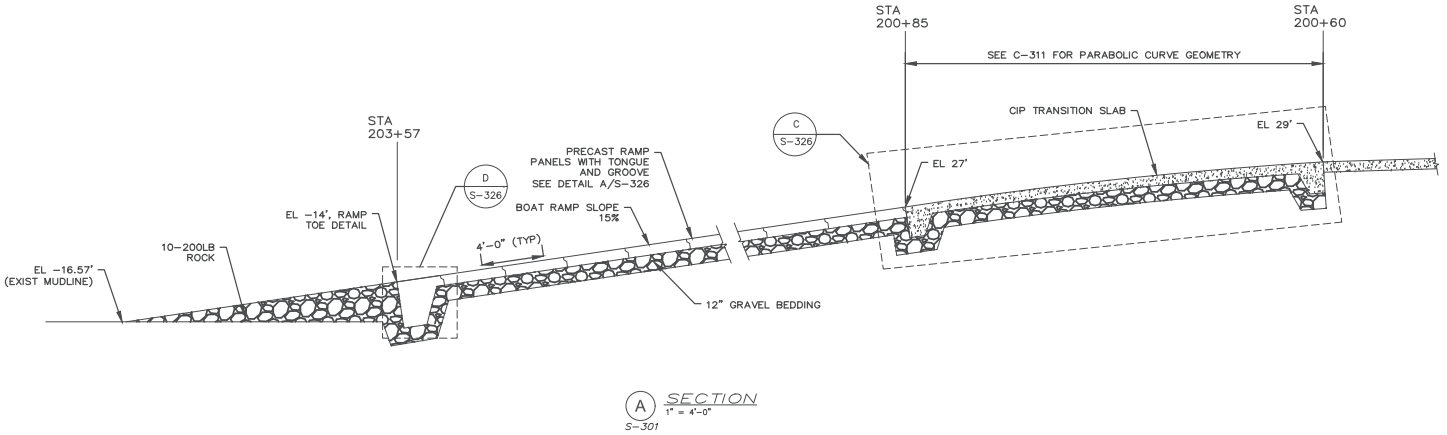
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

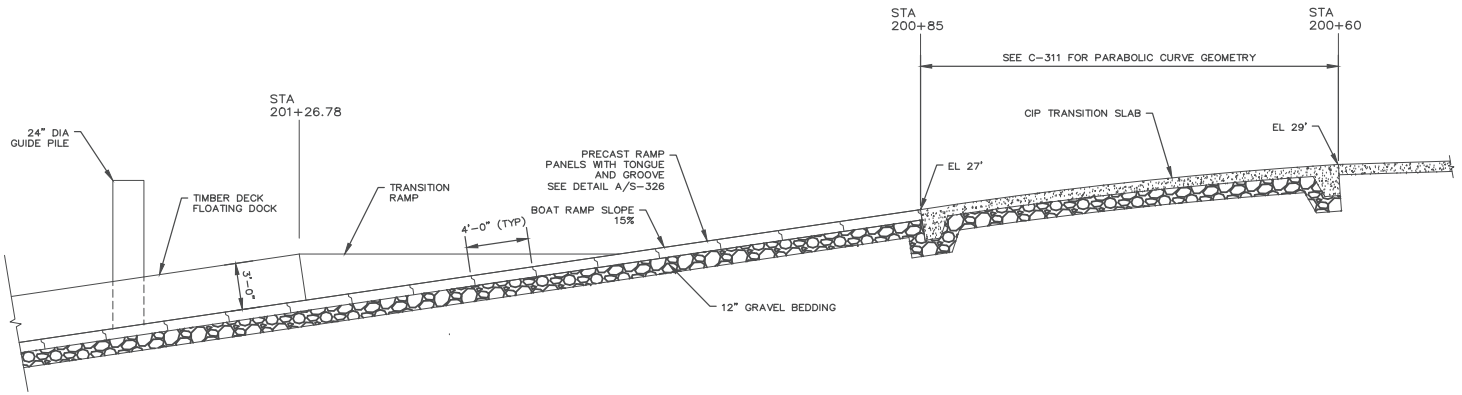
FLOATING DOCK CLEAT DETAILS

SHEET NUMBER
S-323
85 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\94-S-323 (Floating Dock Fender and Cleat Details).; Plotted: 7/19/2024 4:58 PM by SAYADPAR, HASTI; Saved: 7/19/2024 10:22 AM by HS037482



A SECTION
1" = 4'-0"
S-301



B SECTION
1" = 4'-0"
S-301

NOTES

1. PRECAST MANUFACTURER SHALL DETERMINE PICK POINTS FOR TRANSPORTATION DELIVERY & INSTALLATION. AFTER INSTALLATION, PICK POINT HARDWARE SHALL BE REMOVED AND GROUTED TO CREATE A LEVEL RAMP SURFACE.
2. PLACE BOAT RAMP PLANKS WITH TIGHT JOINTS BEGINNING AT BOTTOM END STOP AND WORKING UPSLOPE.

0 1 2 FT.
1"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

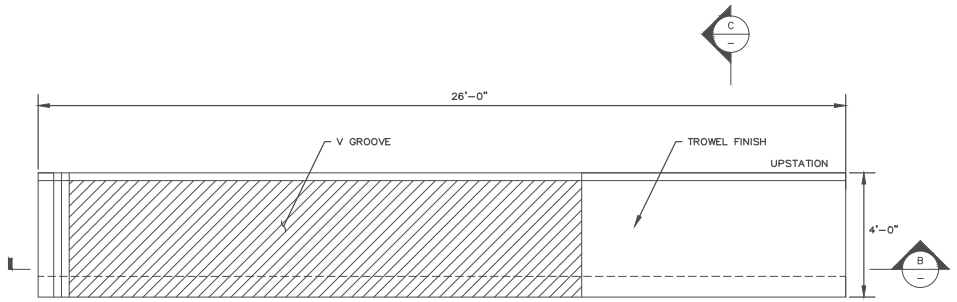
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU III		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

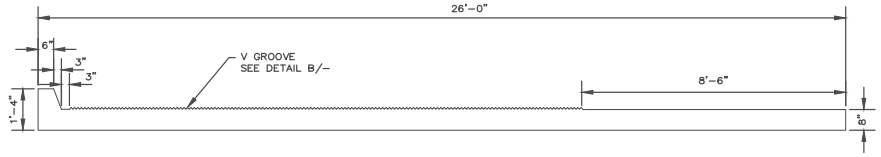
BOAT RAMP SECTION AND DETAILS

SHEET NUMBER
S-325
86 0F 97

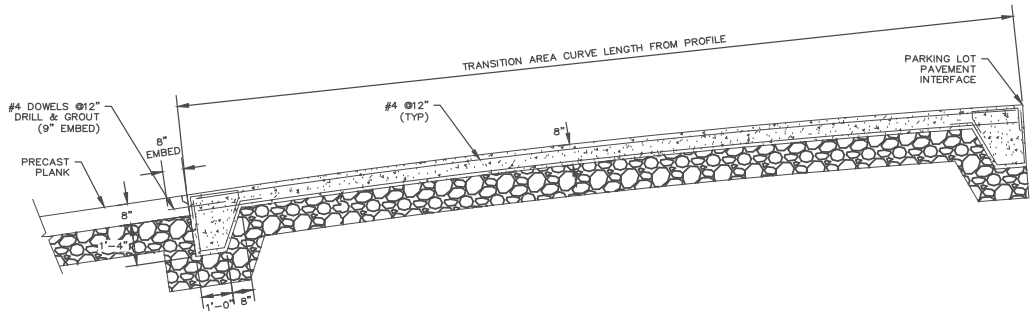
File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\05-S-325 (Boat Ramp Section and Details).rvt Plotted: 7/19/2024 4:59 PM by SAYADYAR, HASTI ; Saved: 7/19/2024 4:51 PM by HS037482



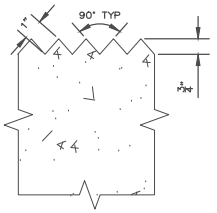
A S-325 BOAT RAMP PLANK DETAIL — PLAN
1"=2'-0"



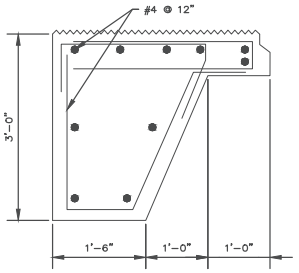
B SECTION
1" = 2'-0"



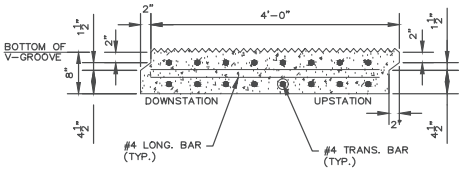
E S-325 DETAIL
1"=2'-0"



B DETAIL
4"=1'-0"



D S-325 DETAIL
1"=1'-0"



C DETAIL
1"=1'-0"

NOTES

1. PRECAST MANUFACTURER SHALL DETERMINE PICK POINTS FOR TRANSPORTATION DELIVERY & INSTALLATION. AFTER INSTALLATION, PICK POINT HARDWARE SHALL BE REMOVED AND GROUTED TO CREATE A LEVEL RAMP SURFACE.
2. PLACE BOAT RAMP PLANKS WITH TIGHT JOINTS BEGINNING AT BOTTOM END STOP AND WORKING UPSLOPE.

0 1 2 FT.
1"=1'-0"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BOAT RAMP SECTION AND DETAILS

SHEET NUMBER
S-326
87 0F 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\06-S-326 (Boat Ramp Section and Details).rvt Plotted: 7/19/2024 4:59 PM by SAYADYAR, HASTI Saved: 7/19/2024 4:51 PM by HS037482

GUIDE PILE SCHEDULE

PILE	PILE SIZE	CUTOFF ELEVATION (FT)	TIP ELEVATION (FT)	NORTHING	EASTING	PILE TYPE DETAIL
A'1	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374337.37	E: 2524451.16	A
A'2	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374351.26	E: 2524465.54	A
A'3	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374365.16	E: 2524479.93	A
A'4	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374379.06	E: 2524494.31	A
A'5	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374392.95	E: 2524508.69	A
A'6	24" DIA. X 0.5" W.T.	25'	-35 ±	N: 374406.85	E: 2524523.08	A
A'7	24" DIA. X 0.5" W.T.	25'	-37.5 ±	N: 374396.06	E: 2524558.22	B
A'8	24" DIA. X 0.5" W.T.	25'	-37.5 ±	N: 374395.46	E: 2524578.21	B
B'1	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374400.48	E: 2524622.82	B
B'2	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374390.13	E: 2524661.45	B
B'3	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374379.79	E: 2524700.09	B
B'4	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374368.41	E: 2524742.60	B
B'5	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374358.06	E: 2524781.24	B
B'6	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374347.72	E: 2524819.87	B
B'7	24" DIA. X 0.5" W.T.	25'	-40 ±	N: 374337.37	E: 2524858.51	B
C'1	36" DIA. X 1" W.T.	25'	-40 ±	N: 374148.22	E: 2524492.12	C
C'2	36" DIA. X 1" W.T.	25'	-40 ±	N: 374162.11	E: 2524506.50	C
C'3	36" DIA. X 1" W.T.	25'	-40 ±	N: 374176.10	E: 2524520.89	C
C'4	36" DIA. X 1" W.T.	25'	-40 ±	N: 374189.91	E: 2524535.27	C
C'5	36" DIA. X 1" W.T.	25'	-40 ±	N: 374203.80	E: 2524549.66	C
C'6	36" DIA. X 1" W.T.	25'	-40 ±	N: 374217.70	E: 2524564.04	C
C'7	36" DIA. X 1" W.T.	25'	-40 ±	N: 374231.59	E: 2524578.43	C
C'8	36" DIA. X 1" W.T.	25'	-40 ±	N: 374245.49	E: 2524592.81	C
C'9	36" DIA. X 1" W.T.	25'	-40 ±	N: 374259.38	E: 2524607.19	C
C'10	36" DIA. X 1" W.T.	25'	-40 ±	N: 374273.28	E: 2524621.58	C
C'11	36" DIA. X 1" W.T.	25'	-40 ±	N: 374287.18	E: 2524635.96	C
C'12	36" DIA. X 1" W.T.	25'	-40 ±	N: 374301.07	E: 2524650.35	C
C'13	36" DIA. X 1" W.T.	25'	-40 ±	N: 374314.97	E: 2524664.73	C
C'14	36" DIA. X 1" W.T.	25'	-40 ±	N: 374328.86	E: 2524679.11	C
C'15	36" DIA. X 1" W.T.	25'	-40 ±	N: 374342.76	E: 2524693.50	C
C'16	36" DIA. X 1" W.T.	25'	-40 ±	N: 374356.66	E: 2524707.89	C
D'1	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374301.40	E: 2524882.75	D
E'1	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374300.70	E: 2524891.41	D
E'2	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374300.56	E: 2524931.41	D
E'3	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374300.41	E: 2524971.41	D
E'4	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374300.26	E: 2525011.41	D
E'5	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374300.11	E: 2525051.41	D
E'6	24" DIA. X 0.5" W.T.	25'	-45 ±	N: 374299.96	E: 2525091.41	D

NOTES

1. ALL PILES SHALL BE DRIVEN OR DRILLED TO BEDROCK LEVEL AND SEATED WITHIN THE BEDROCK. ROCK SOCKETS SHALL BE DRILLED WITHIN COMPETENT BEDROCK. BEDROCK ELEVATION VARIES.
2. REFER TO S-320 AND S-321 FOR PILE DETAIL TYPE.
3. REFER TO B-100 FOR ESTIMATED BEDROCK ELEVATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

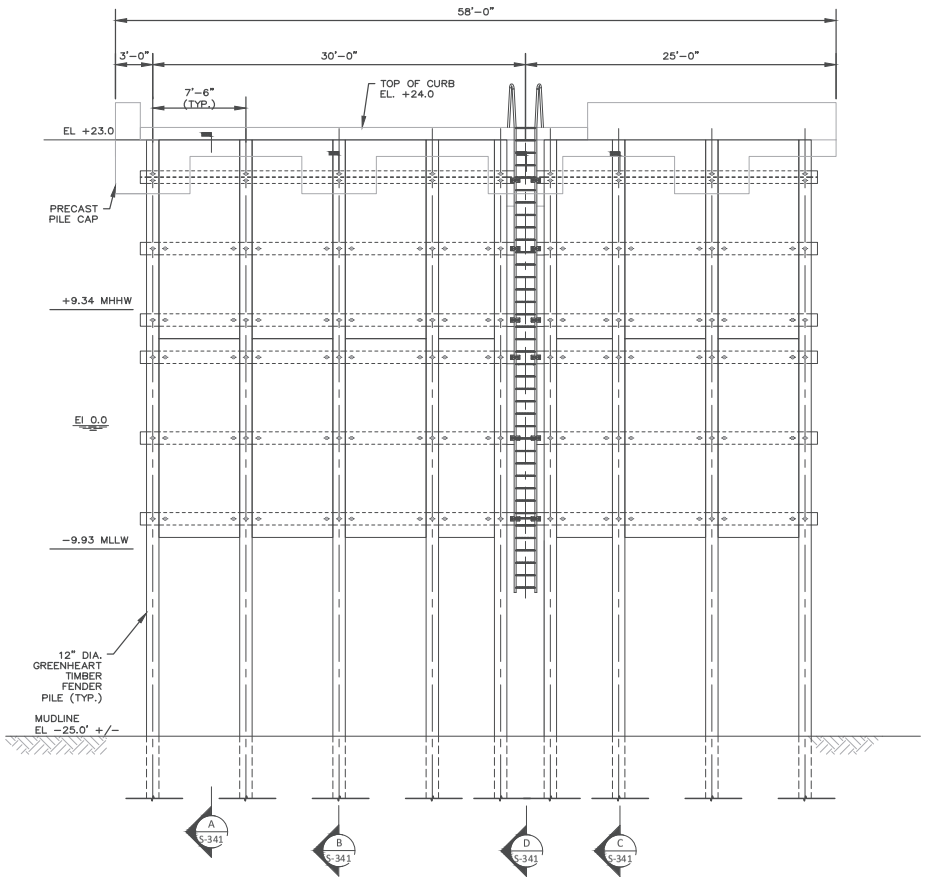
FLOATING DOCK GUIDE PILE SCHEDULE

SHEET NUMBER

S-330

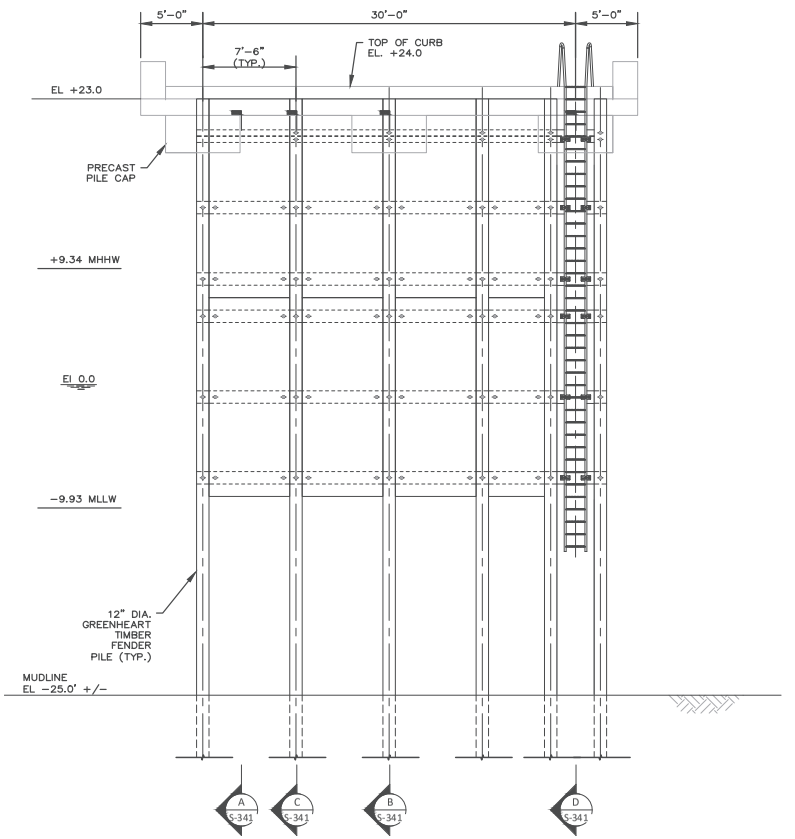
88 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\05-S-330 (Floating Dock Guide Pile Schedule).rvt Plotted: 7/19/2024 4:58 PM by: SAYADYAR, HASTI Saved: 7/19/2024 4:51 PM by: HS037482



NOTE: PILE SUPPORTED PLATFORM STEEL PIPE PILES NOT SHOWN FOR CLARITY.

A ELEVATION
1" = 5'-0"
S-200



NOTE: PILE SUPPORTED PLATFORM STEEL PIPE PILES NOT SHOWN FOR CLARITY.

B ELEVATION
1" = 5'-0"
S-200

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.
3. REFER TO DRAWING S-230 FOR THE PILE SCHEDULE.
4. REFER TO DRAWING S-220 FOR THE PILE DETAILS.
5. GUIDE PILES AND FLOATING DOCKS NOT SHOWN FOR CLARITY.
6. PILE SUPPORTED PLATFORM STEEL PIPE PILES NOT SHOWN FOR CLARITY.

1"=5' 0 5 10 FT.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

PROJECT INFORMATION

PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	CRAIG MORIN
CONSULTANT	JACOBS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SIGNATURE

P.E. NUMBER

DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

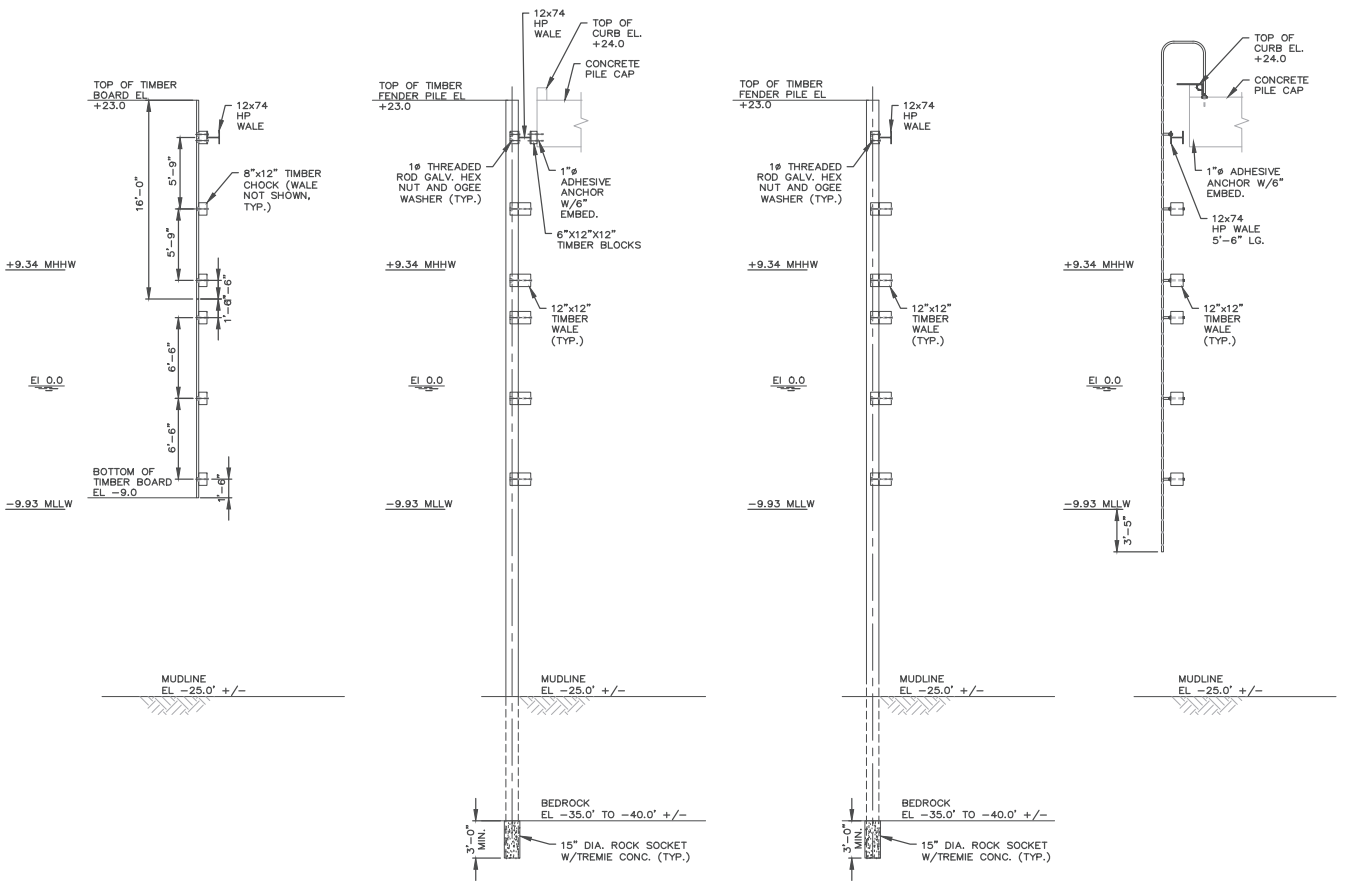
PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM ELEVATIONS

SHEET NUMBER

S-340

89 OF 97

File: C:\Users\hs037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\06-S-340 (Timber Fender System Elevations) | Plotted: 7/19/2024 4:58 PM by: SAYADFAR, HASTI | Saved: 7/19/2024 4:55 PM by: HS037482

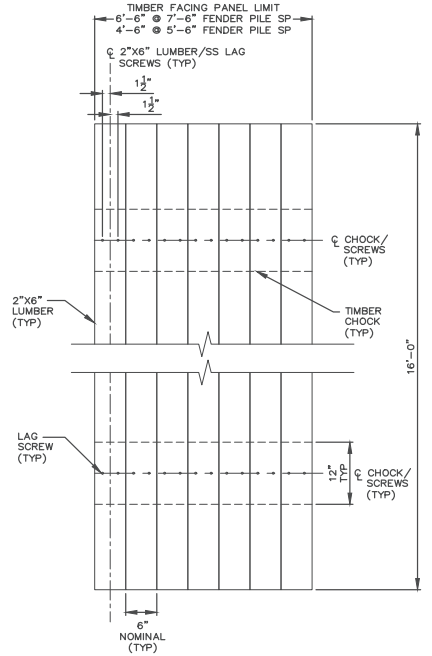


A SECTION
1" = 5'-0"
S-340

B SECTION
1" = 5'-0"
S-340

C SECTION
1" = 5'-0"
S-340

D SECTION
1" = 5'-0"
S-340



TIMBER FACING PANEL NOTES

1. EACH TIMBER FACING PANEL CONSISTS OF 2"X6" SOUTHERN PINE PRESSURE-TREATED LUMBERS.
2. THE LAG SCREWS SHALL BE 3/8" DIA X 4 1/2" LONG TYPE 316 SS.
3. REFER TO SECTION A ON S-341 FOR SIZE/LOCATION OF TIMBER CHOCKS.
4. FENDER PILES AND WALES BEYOND NOT SHOWN FOR CLARITY.
5. FIELD LOCATE THE THREADED ROD (CONNECTING CHOCK TO WALE) LOCATIONS PRIOR TO LAG SCREW INSTALLATION. IN CASE THE RODS INTERFERE WITH LAG SCREWS, MOVE SUBJECT SCREWS 1" ABOVE DESIGN ELEVATION.
6. CONTRACTOR TO PERFORM SCREW TEST INSTALLATION OFF-SITE TO ENSURE SCREW WILL NOT SPLIT THE FACING/CHOCK PER THE INSTALLATION METHOD.

TIMBER FACING PANEL DETAIL - PARTIAL ELEVATION
1" = 1'-0"

NOTES

1. ALL ELEVATIONS REFER TO NAVD 88.
2. ALL UNITS IN FEET UNLESS OTHERWISE NOTED.

1"=5' 0 5 10 FT.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

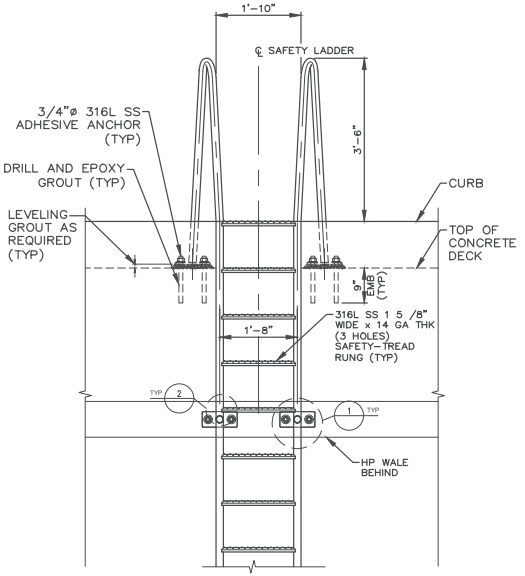
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
TIMBER FENDER SYSTEM SECTIONS

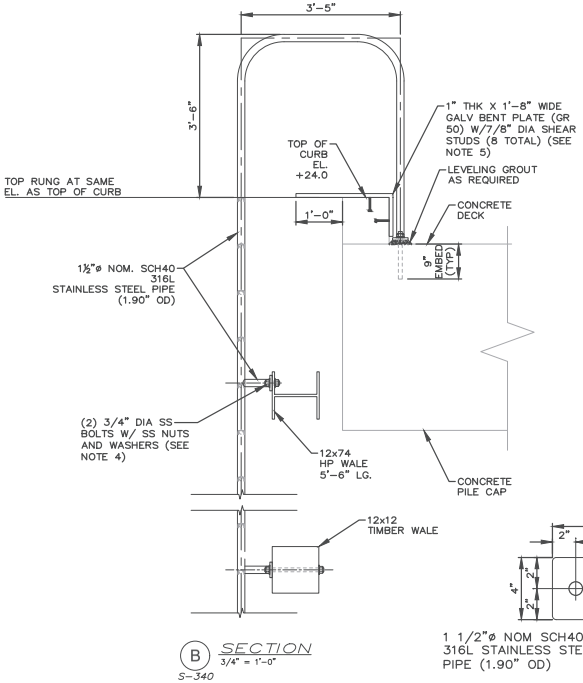
SHEET NUMBER
S-341
90 OF 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\S7-S-341 (Timber Fender System Sections).| Plotted: 7/19/2024 4:58 PM by SAYADFAR, HASTI | Saved: 7/19/2024 12:40 PM by MAGUIRC

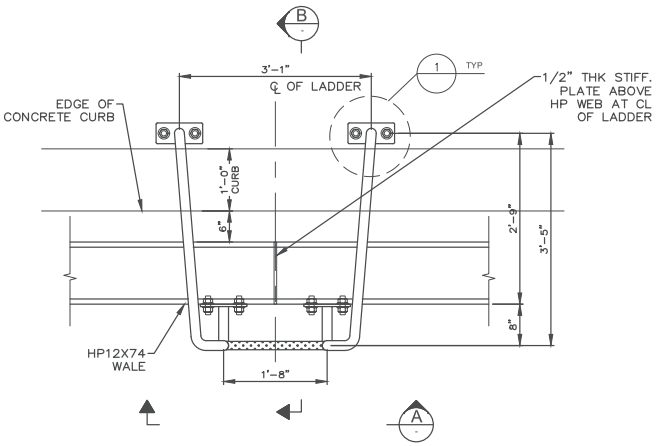


NOTE: BENT STEEL PLATE NOT SHOWN FOR CLARITY.

A ELEVATION
3/4" = 1'-0"
S-340

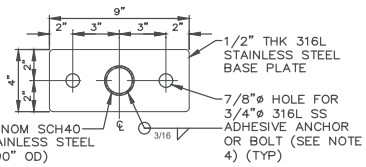


B SECTION
3/4" = 1'-0"
S-340

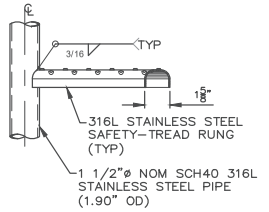


NOTE: BENT STEEL PLATE NOT SHOWN FOR CLARITY.

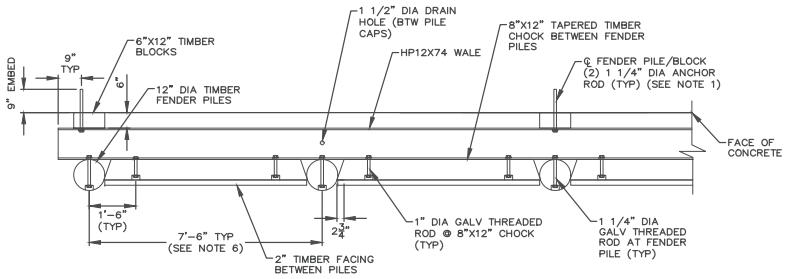
PARTIAL PLAN — TYPICAL SAFETY LADDER
1" = 1'-0"



1 MOUNTING PLATE DETAIL
3" = 1'-0"
S-340

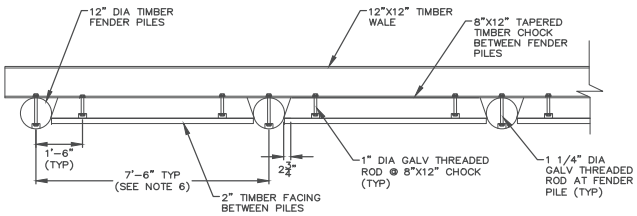


2 DETAIL
3" = 1'-0"
S-340



NOTE: TIMBER FACING DETAILS NOT SHOWN FOR CLARITY.

PLAN — UPPER TIMBER FENDER SYSTEM DETAIL
1/2" = 1'-0"

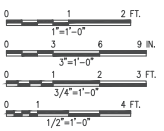


NOTE: TIMBER FACING DETAILS NOT SHOWN FOR CLARITY.

PLAN — LOWER TIMBER FENDER SYSTEM DETAIL
1/2" = 1'-0"

NOTES

1. DRILL HOLE AND INSTALL 1 1/4" DIA GALVANIZED THREADED ANCHOR ROD WITH HILTI HIT-RE500 V3 EPOXY ADHESIVE. ANCHOR RODS SHALL BE INSTALLED IN ACCORDANCE WITH EPOXY ADHESIVE MANUFACTURER'S SPECIFICATIONS. THE HOLE DRILLING METHOD/BIT SHALL BE APPLICABLE TO CRACKED CONCRETE CONDITION. THE CONCRETE SHALL BE DRY AT ANCHOR ROD LOCATION DURING ANCHOR ROD INSTALLATION.
2. FOR SAFETY LADDER LOCATIONS, SEE DWG S-200.
3. ALL BOLTS, NUTS AND WASHERS FOR LADDER SHALL BE TYPE 316 STAINLESS STEEL.
4. PROVIDE NEOPRENE ISOLATION PADS BETWEEN SS ELEMENTS (MOUNT PLATE/BOLTING) AND HP WALE.
5. STEEL PLATE SHALL HAVE ANTI-SLIP/DIAMOND PATTERN FINISH.
6. REFER TO S-201 FOR TIMBER FENDER PILE SPACING.



95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

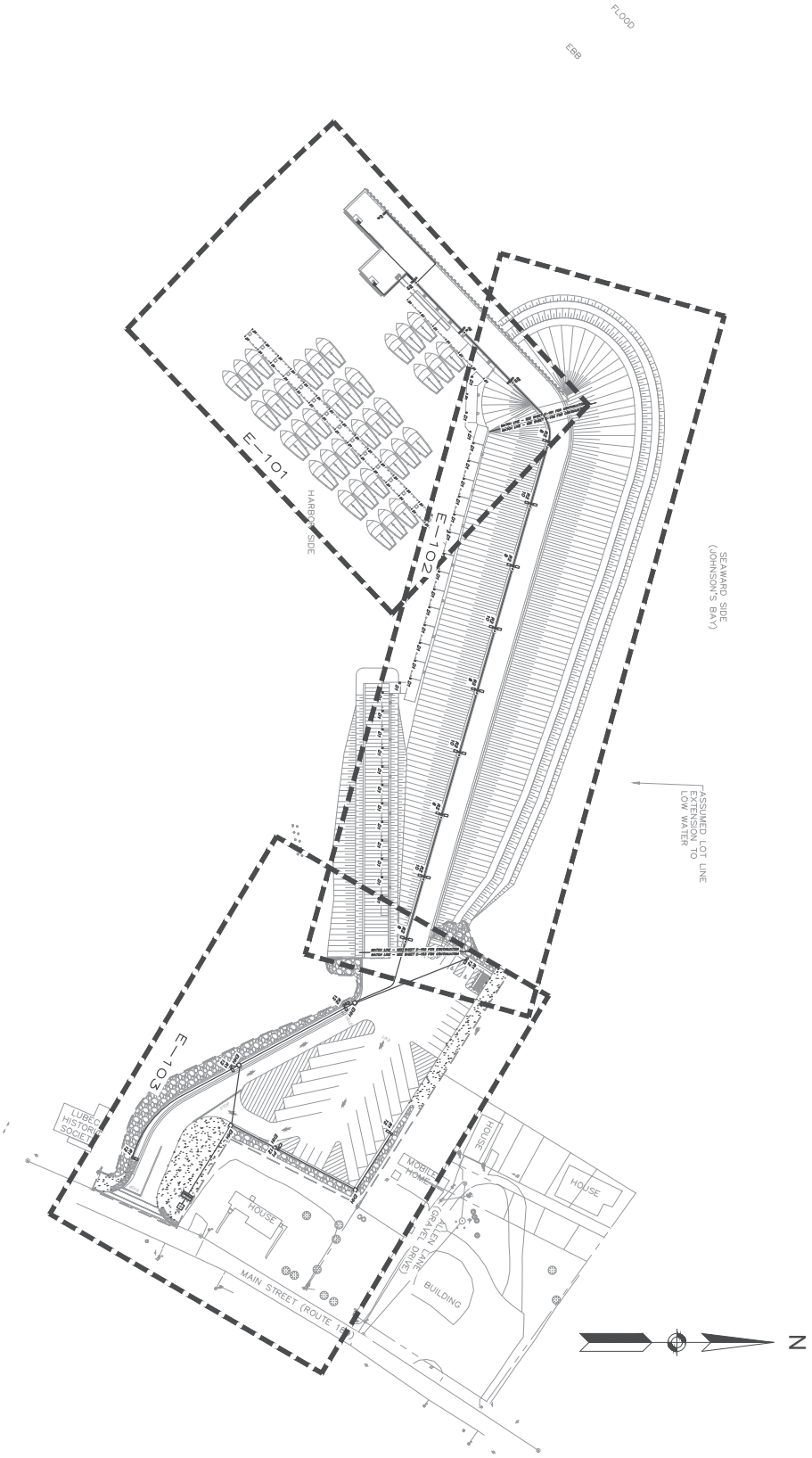
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM DETAILS

SHEET NUMBER
S-342
91 OF 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\08-S-342 (Timber Fender System Details).dwg | Plotted: 7/19/2024 4:56 PM by SAYADFAR, HASTI | Saved: 7/19/2024 4:56 PM by HS037482



NOT FOR CONSTRUCTION

0 60 120 FT.
1"=60'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

SHEET NUMBER E-100 92 of 97	MAINE DEPARTMENT OF TRANSPORTATION LUBEC BREAKWATER LUBEC, ME WASHINGTON, COUNTY OVERALL UTILITY PLAN	PROJECT INFORMATION PROGRAM: MULTIMODAL PROJECT MANAGER: A. GORNEAU, II DESIGNER: R. BEIKES CONSULTANT: JACOBS PROJECT RESIDENT: CONTRACTOR: PROJECT COMPLETION DATE:	SIGNATURE P.E. NUMBER DATE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

GENERAL NOTES

A. CONTRACTOR SHALL OBTAIN AVAILABLE SHORT CIRCUIT CURRENT AT CONNECTION POINT FROM VERSANT AND SHALL VERIFY THAT ALL EQUIPMENT BEING INSTALLED IS PROVIDED WITH ADEQUATE AIC RATING.

B. ALL EQUIPMENT IS NEW, UNLESS CALLED OUT AS EXISTING.

C. USE STAINLESS STEEL STRUT AND HARDWARE FOR ALL EQUIPMENT & CONDUIT SUPPORT.

D. USE EXTRA HEAVY WALL FIBERGLASS CONDUIT SYSTEM FOR ALL EXPOSED CONDUIT RUNS, UNLESS OTHERWISE NOTED. ALL CONDUIT FITTINGS SHALL BE LISTED FOR WET LOCATIONS.

E. ALL WIRING SHALL BE XHHW-2, UNLESS OTHERWISE NOTED. ALL TYPE G CABLE SHALL BE RATED FOR CONTINUOUS SUBMERSION IN WATER.

F. USE 316 STAINLESS STEEL (NEMA 4X GASKETED SCREW COVER) FOR PULLBOXES AND JUNCTION BOXES, UNLESS OTHERWISE NOTED.

G. FOR ALL EXPOSED CONDUITS, PROVIDE CONDUIT SUPPORT INTERVAL THAT IS 50% GREATER THAN NEC MINIMUM.

H. PROVIDE NEW UPDATED, TYPEWRITTEN PANEL SCHEDULE FOR PANEL "DP" (SEALED IN PLASTIC).

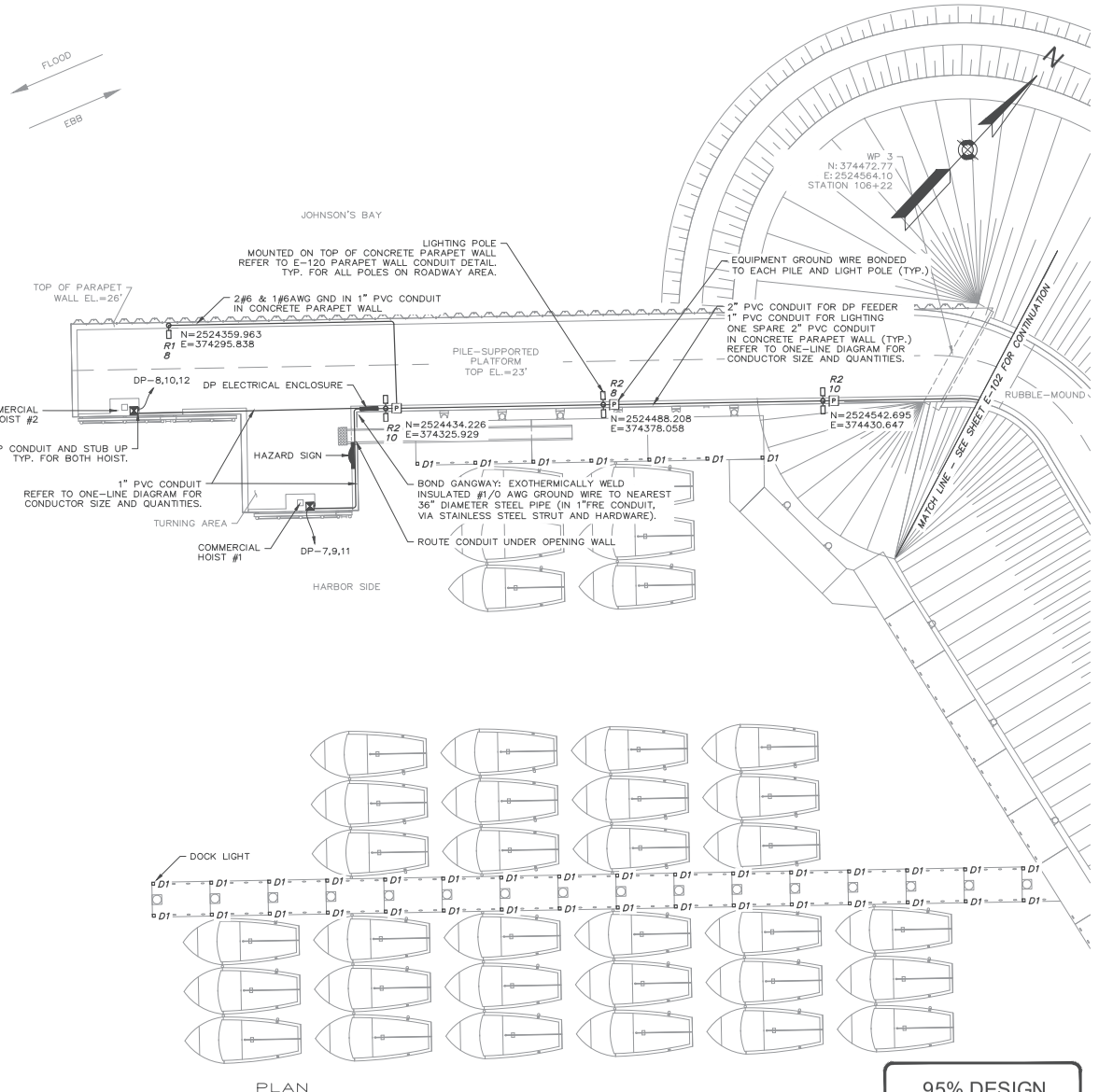
I. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

J. PROVIDE DEDICATED NEUTRAL AND EQUIPMENT GROUNDING CONDUCTORS FOR EACH BRANCH CIRCUIT INDICATED ON THE PLAN DRAWINGS.

K. FOR EACH CONDUIT THAT IS TO BE LEFT IN PLACE FOR FUTURE USE, INSTALL A PULLWIRE AND SECURELY CAP EACH END. PERMANENTLY MARK THE END OF EACH CONDUIT WITH THE LOCATION OF THE OPPOSITE END'S TERMINATION POINT.

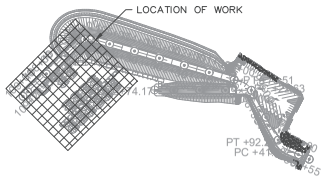
L. PROVIDE LABELS ON ALL RECEPTACLES, SWITCHES, ETC. INDICATING PANEL/CIRCUIT NUMBERS, AS APPLICABLE.

M. SPLICES MUST BE MADE ONLY AT OUTLETS, JUNCTION BOXES OR ACCESSIBLE RACEWAYS. SPLICING OF UNGROUNDED CONDUCTORS IN PANELBOARDS IS NOT PERMITTED. SPLICES MUST BE MADE WITH SOLDERLESS CONNECTORS CONFORMING TO UL 486A, UL 486C, AND UL 486E. INSULATED WIRE NUTS SHALL BE PRE-FILLED WITH SILICONE SEALANT AND MAY ONLY BE USED TO SPLICE CONDUCTORS SIZED NO.10 AWG AND SMALLER. COMPRESSION CONNECTORS MUST BE USED TO SPLICE CONDUCTORS NO.8 AWG AND LARGER. ALL SPLICES, INCLUDING THOSE MADE WITH INSULATED WIRE NUTS, MUST BE SUBMERSIBLE.



PLAN
1"=20'-0"

0 20 40 FT.
1"=20'



KEY PLAN

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, II		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE-SUPPORTED PLATFORM UTILITY PART PLAN

SHEET NUMBER
E-101
93 of 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\E-101 (Pile Supported Utility Plan) - Plotted: 7/19/2024 5:04 PM by SAYADFAR, KASTI - Saved: 7/19/2024 2:08 PM by PHUNGHM

GENERAL NOTES

A. CONTRACTOR SHALL OBTAIN AVAILABLE SHORT CIRCUIT CURRENT AT CONNECTION POINT FROM VERSANT AND SHALL VERIFY THAT ALL EQUIPMENT BEING INSTALLED IS PROVIDED WITH ADEQUATE AIC RATING.

B. ALL EQUIPMENT IS NEW, UNLESS CALLED OUT AS EXISTING.

C. USE STAINLESS STEEL STRUT AND HARDWARE FOR ALL EQUIPMENT & CONDUIT SUPPORT.

D. USE EXTRA HEAVY WALL FIBERGLASS CONDUIT SYSTEM FOR ALL EXPOSED CONDUIT RUNS, UNLESS OTHERWISE NOTED. ALL CONDUIT FITTINGS SHALL BE LISTED FOR WET LOCATIONS.

E. ALL WIRING SHALL BE XHHW-2, UNLESS OTHERWISE NOTED. ALL TYPE G CABLE SHALL BE RATED FOR CONTINUOUS SUBMERSION IN WATER.

F. USE 316 STAINLESS STEEL (NEMA 4X GASKETED SCREW COVER) FOR PULLBOXES AND JUNCTION BOXES, UNLESS OTHERWISE NOTED.

G. FOR ALL EXPOSED CONDUITS, PROVIDE CONDUIT SUPPORT INTERVAL THAT IS 50% GREATER THAN NEC MINIMUM.

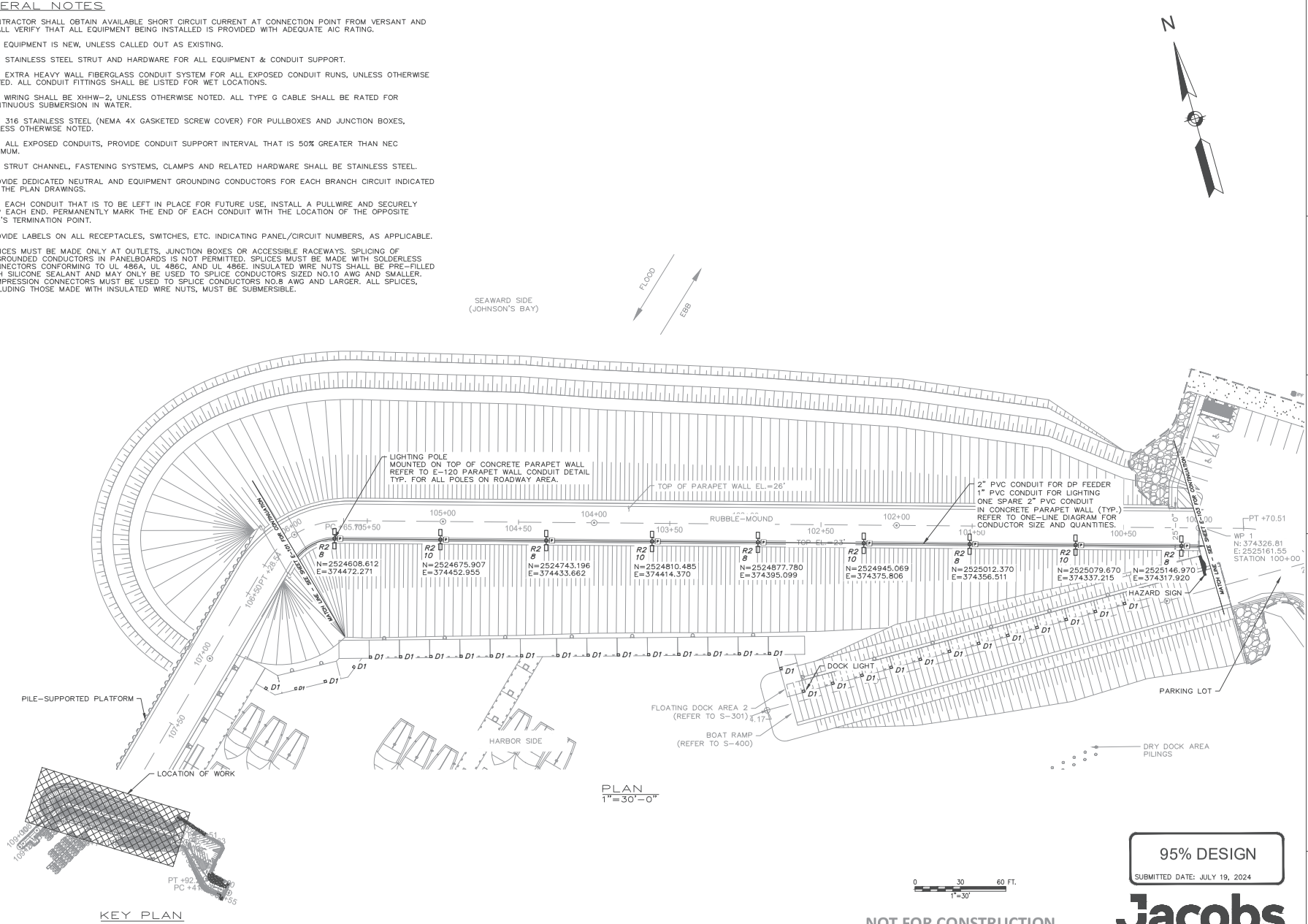
H. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

I. PROVIDE DEDICATED NEUTRAL AND EQUIPMENT GROUNDING CONDUCTORS FOR EACH BRANCH CIRCUIT INDICATED ON THE PLAN DRAWINGS.

J. FOR EACH CONDUIT THAT IS TO BE LEFT IN PLACE FOR FUTURE USE, INSTALL A PULLWIRE AND SECURELY CAP EACH END. PERMANENTLY MARK THE END OF EACH CONDUIT WITH THE LOCATION OF THE OPPOSITE END'S TERMINATION POINT.

K. PROVIDE LABELS ON ALL RECEPTACLES, SWITCHES, ETC. INDICATING PANEL/CIRCUIT NUMBERS, AS APPLICABLE.

L. SPLICES MUST BE MADE ONLY AT OUTLETS, JUNCTION BOXES OR ACCESSIBLE RACEWAYS. SPLICING OF UNGROUNDED CONDUCTORS IN PANELBOARDS IS NOT PERMITTED. SPLICES MUST BE MADE WITH SOLDERLESS CONNECTORS CONFORMING TO UL 486A, UL 486C, AND UL 486E. INSULATED WIRE NUTS SHALL BE PRE-FILLED WITH SILICONE SEALANT AND MAY ONLY BE USED TO SPLICE CONDUCTORS SIZED NO.10 AWG AND SMALLER. COMPRESSION CONNECTORS MUST BE USED TO SPLICE CONDUCTORS NO.8 AWG AND LARGER. ALL SPLICES, INCLUDING THOSE MADE WITH INSULATED WIRE NUTS, MUST BE SUBMERSIBLE.



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, II		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND UTILITY PART PLAN

SHEET NUMBER
E-102
94 of 97

File: C:\Projects\30748Z\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\94-E-102 (Rubble-Mound Utility Part Plan) | Plotted: 7/19/2024 2:05 PM by SAYADPAR, HASTI | Saved: 7/19/2024 2:05 PM by PHUNGHM

GENERAL NOTES

A. CONTRACTOR SHALL OBTAIN AVAILABLE SHORT CIRCUIT CURRENT AT CONNECTION POINT FROM VERSANT AND SHALL VERIFY THAT ALL EQUIPMENT BEING INSTALLED IS PROVIDED WITH ADEQUATE AIC RATING.

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E. ALL WIRING SHALL BE XHHW-2, UNLESS OTHERWISE NOTED. ALL TYPE G CABLE SHALL BE RATED FOR CONTINUOUS SUBMERSION IN WATER.

F. USE 316 STAINLESS STEEL (NEMA 4X GASKETED SCREW COVER) FOR PULLBOXES AND JUNCTION BOXES, UNLESS OTHERWISE NOTED.

G. FOR ALL EXPOSED CONDUITS, PROVIDE CONDUIT SUPPORT INTERVAL THAT IS 50% GREATER THAN NEC MINIMUM.

H. PROVIDE NEW UPDATED, TYPEWRITTEN PANEL SCHEDULE FOR PANEL "MDP" (SEALED IN PLASTIC).

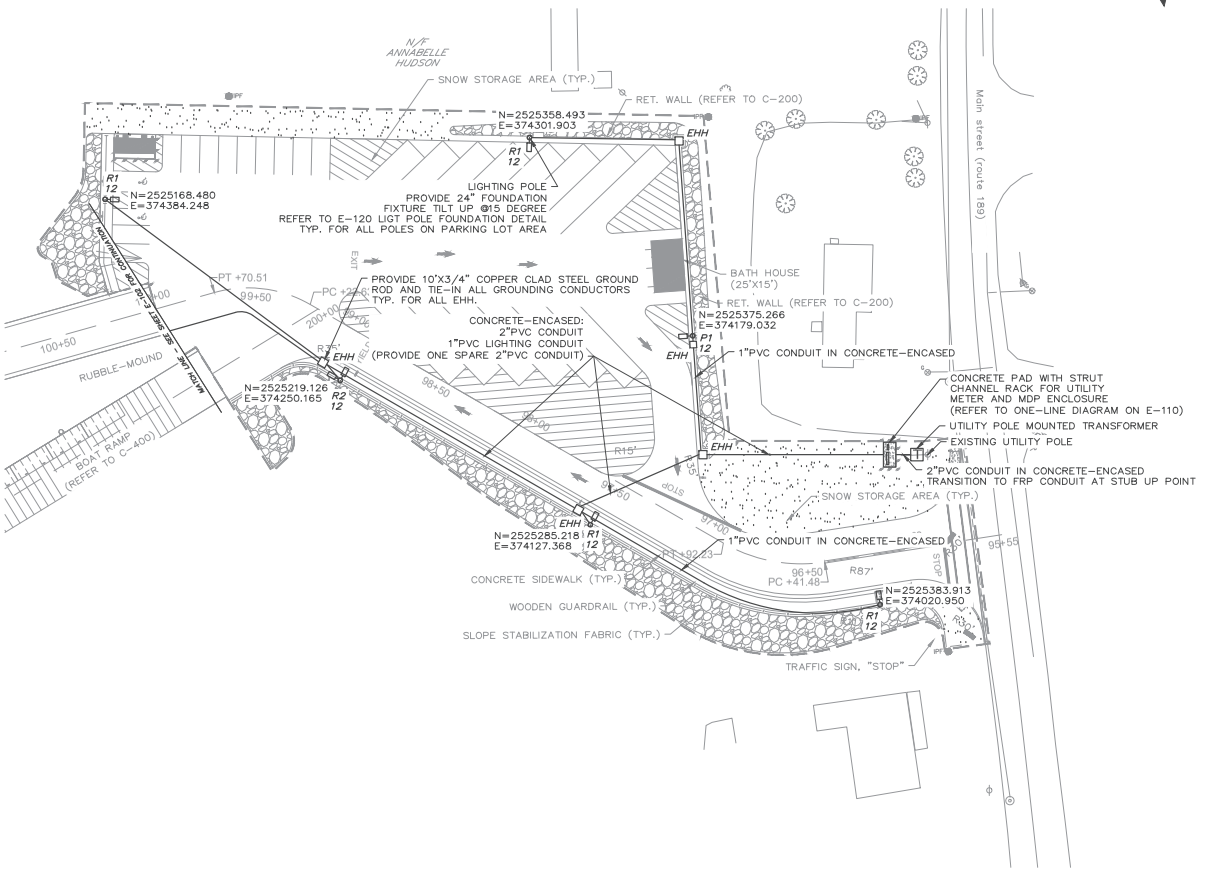
I. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

J. PROVIDE DEDICATED NEUTRAL AND EQUIPMENT GROUNDING CONDUCTORS FOR EACH BRANCH CIRCUIT INDICATED ON THE PLAN DRAWINGS.

K. FOR EACH CONDUIT THAT IS TO BE LEFT IN PLACE FOR FUTURE USE, INSTALL A PULLWIRE AND SECURELY CAP EACH END. PERMANENTLY MARK THE END OF EACH CONDUIT WITH THE LOCATION OF THE OPPOSITE END'S TERMINATION POINT.

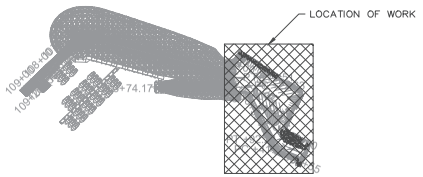
L. PROVIDE LABELS ON ALL RECEPTACLES, SWITCHES, ETC. INDICATING PANEL/CIRCUIT NUMBERS, AS APPLICABLE.

M. SPLICES MUST BE MADE ONLY AT OUTLETS, JUNCTION BOXES OR ACCESSIBLE RACEWAYS. SPLICING OF UNGROUNDED CONDUCTORS IN PANELBOARDS IS NOT PERMITTED. SPLICES MUST BE MADE WITH SOLDERLESS CONNECTORS CONFORMING TO UL 486A, UL 486C, AND UL 486E. INSULATED WIRE NUTS SHALL BE PRE-FILLED WITH SILICONE SEALANT AND MAY ONLY BE USED TO SPLICE CONDUCTORS SIZED NO.10 AWG AND SMALLER. COMPRESSION CONNECTORS MUST BE USED TO SPLICE CONDUCTORS NO.8 AWG AND LARGER. ALL SPLICES, INCLUDING THOSE MADE WITH INSULATED WIRE NUTS, MUST BE SUBMERSIBLE.



PLAN
1"=30'-0"

0 30 60 FT.
1"=30'



KEY PLAN

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

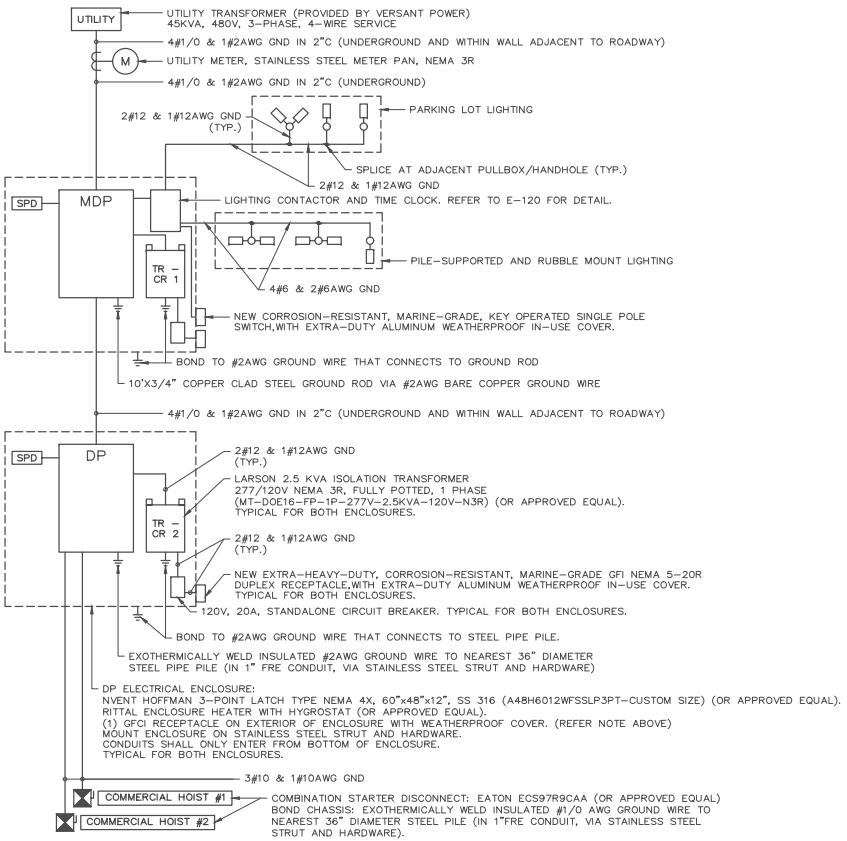
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, II		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PARKING LOT
UTILITY PART PLAN

SHEET NUMBER
E-103
95 of 97

File: C:\Projects\107482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\05-E-103 (Parking Lot Utility Part Plan) | Plotted: 7/19/2024 5:05 PM by SAYADFAR, HASTI | Saved: 7/19/2024 2:08 PM by PHUNGHM



SINGLE LINE DIAGRAM

LIGHT FIXTURE SCHEDULE

SYMBOL	TYPE	MANUFACTURE/CATALOG NO.	WATTS	MOUNTING	REMARK
	R1	SINGLE LIGHT POLE LUMINARIES: NEMALUX XR8-40-T3-GY-GN-AC-XR-SFY POLE: VALMONT R+290845805T4XX313 (OR APPROVED EQUAL)	LED 60W	POLE	MARINE GRADE, LIGHT WITH 30' ALUMINUM POLE. PROVIDE GROUNDING TO NEAREST PILE (ON PILE-SUPPORTED PLATFORM) OR NEW GROUND ROD (ELSEWHERE). ANY EQUIVALENT FIXTURE MUST COMPLY WITH BABA, BE DARK SKY, CLASS 1 DIV 2, MARINE-GRADE.
	R2	DOUBLE LIGHT POLE LUMINARIES: NEMALUX XR8-40-T3-GY-GN-AC-XR-SFY POLE: VALMONT R+290845805T4XX313 (OR APPROVED EQUAL)	LED 2x60W	POLE	MARINE GRADE, LIGHT WITH 30' ALUMINUM POLE. PROVIDE GROUNDING TO NEAREST PILE (ON PILE-SUPPORTED PLATFORM) OR NEW GROUND ROD (ELSEWHERE). ANY EQUIVALENT FIXTURE MUST COMPLY WITH BABA, BE DARK SKY, CLASS 1 DIV 2, MARINE-GRADE.
	P1	SINGLE LIGHT POLE LUMINARIES: NEMALUX XR8-40-OC-GY-GN-AC-XR-SFY POLE: VALMONT R+290845805T4XX313 (OR APPROVED EQUAL)	LED 60W	POLE	MARINE GRADE, LIGHT WITH 30' ALUMINUM POLE. PROVIDE GROUNDING TO NEAREST PILE (ON PILE-SUPPORTED PLATFORM) OR NEW GROUND ROD (ELSEWHERE). ANY EQUIVALENT FIXTURE MUST COMPLY WITH BABA, BE DARK SKY, CLASS 1 DIV 2, MARINE-GRADE.
	D1	DOCK LIGHT LAKE LITE LL-SDL-DECK-W (OR APPROVED EQUAL)	0.4W	FLAT SURFACE	WHITE LED, BUILT-IN PHOTOCELL, REPLACEABLE RECHARGEABLE BATTERY

PANEL CIRCUIT AND LOAD SCHEDULE

SERVICE: PANEL DP & LIGHTING
DESIGNATION: PANEL MDP
LOCATION: PARKING LOT

LOAD DESCRIPTION	UNIT V.A.	VA PER PHASE A	VA PER PHASE B	VA PER PHASE C	TRIP	POLES
MAIN BREAKER	–	–			70	3
			–			
				–		
(1)PANEL DP	–	14140			70	3
			12040			
				11640		
CR TRANSFORMER (TR-CR 1)	–	2500			20	1
ENCLOSURE HEATER	–		400		20	1
SPARE	–			–	20	1
SPARE	–	–			20	1
SPARE	–		–		20	1
SPACE	–			–	–	–
SPACE	–	–			–	–
SPACE	–		–		–	–
SPACE	–			–	–	–
VA SUBTOTAL LEFT		16640	12440	11640		

POLES	TRIP	VA PER PHASE A	VA PER PHASE B	VA PER PHASE C	UNIT V.A.	LOAD DESCRIPTION
		–				
3	40		–		–	SPD(2)
				–		
1	20	780			–	PILE & RUBBLE MOUNT LIGHTING
1	20		720		–	PILE & RUBBLE MOUNT LIGHTING
1	20			420	–	PARKING LOT LIGHTING
1	20	–			–	LIGHTING CONTACTOR
1	20		–		–	SPARE
1	20			–	–	SPARE
1	20	–			–	SPARE
1	20		–		–	SPARE
–	–			–	–	SPACE
–	–	–			–	SPACE
–	–		–		–	SPACE
–	–			–	–	SPACE
		780	720	420		VA SUBTOTAL RIGHT
		SUBTOTAL: 42640				TOTAL CONNECTED LOAD: 51.3 AMP

FEED FROM: UTILITY TRANS MAIN: MCB BUS: 125A AIC: 18 KA

NOTES: ALL BREAKERS SHALL BE GROUND FAULT (GFCI) TYPE, UNLESS OTHERWISE NOTED

NOTES: (1) 100MA GFPE (MAX RATING ALLOWED)
(2) GROUND FAULT PROTECTION NOT REQUIRED

VOLTAGE: 480Y/277V CYCLE: 60 Hz PHASE: 3 WIRES: 4

PANEL CIRCUIT AND LOAD SCHEDULE

SERVICE: PILE-SUPPORTED PLATFORM
DESIGNATION: PANEL DP
LOCATION: PILE-SUPPORTED PLATFORM

LOAD DESCRIPTION	UNIT V.A.	VA PER PHASE A	VA PER PHASE B	VA PER PHASE C	TRIP	POLES
MAIN BREAKER	–	–			70	3
			–			
				–		
(1)COMMERCIAL HOIST #1	–	5820			30	3
			5820			
				5820		
CR TRANSFORMER (TR-CR 2)	–	2500			20	1
ENCLOSURE HEATER	–		400		20	1
SPARE	–			–	20	1
SPARE	–	–			20	1
SPARE	–		–		20	1
SPACE	–			–	–	–
SPACE	–	–			–	–
SPACE	–		–		–	–
SPACE	–			–	–	–
VA SUBTOTAL LEFT		8320	6220	5820		

POLES	TRIP	VA PER PHASE A	VA PER PHASE B	VA PER PHASE C	UNIT V.A.	LOAD DESCRIPTION
		–				
3	40		–		–	SPD(2)
				–		
3	30	5820			–	COMMERCIAL HOIST #2(1)
			5820			
				5820		
1	20	–			–	SPARE
1	20		–		–	SPARE
1	20			–	–	SPARE
1	20	–			–	SPARE
1	20		–		–	SPARE
–	–			–	–	SPACE
–	–	–			–	SPACE
–	–		–		–	SPACE
–	–			–	–	SPACE
		5820	5820	5820		VA SUBTOTAL RIGHT
		SUBTOTAL: 37820				TOTAL CONNECTED LOAD: 45.5 AMP

FEED FROM: MDP MAIN: MCB BUS: 125A AIC: 18 KA

NOTES: ALL BREAKERS SHALL BE GROUND FAULT (GFCI) TYPE, UNLESS OTHERWISE NOTED

NOTES: (1) 100MA GFPE (MAX RATING ALLOWED)
(2) GROUND FAULT PROTECTION NOT REQUIRED

VOLTAGE: 480Y/277V CYCLE: 60 Hz PHASE: 3 WIRES: 4

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION
PROGRAM: MULTIMODAL
PROJECT MANAGER: A. GORNEAU, II
DESIGNER: R. BEIKES
CONSULTANT: JACOBS
PROJECT RESIDENT
CONTRACTOR
PROJECT COMPLETION DATE

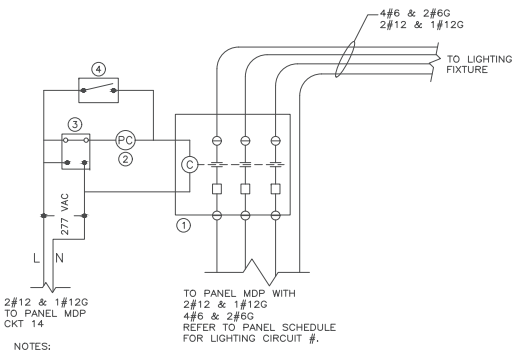
SIGNATURE
P.E. NUMBER
DATE

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

ELECTRICAL ONE LINE DIAGRAM AND PANEL SCHEDULES

SHEET NUMBER
E-110

File: C:\Users\ds037482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\06-E-110 (Electrical One Line Diagram and Panel Schedules).rvt Plotted: 7/19/2024 5:05 PM by SAYADFAR, HASTI Saved: 7/19/2024 2:08 PM by PHUNGHM



NOTES:

1. ALL CONTROL WIRING SHALL BE MINIMUM #12AWG XHHW.
2. ITEMS 1, 3 & 4 LOCATED IN MDP ELECTRICAL ENCLOSURE.
3. LIGHTING SCHEDULE: DUSK TO 10PM AND 4AM TO DAWN

LEGEND NOTES:

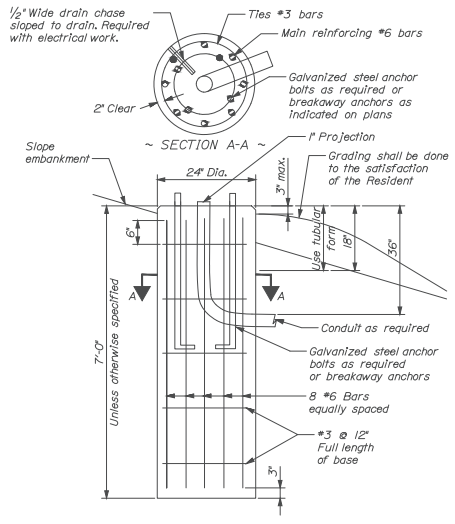
(1) MECHANICALLY HELD LIGHTING CONTACTOR – 277/480V, 20A, 3 POLE WITH 277V CONTROL COIL IN NEMA 3R BOX.

(2) PHOTOCELL (277V) OPERABLE WITH TURN ON RANGE OF .5 TP 2.5 FOOTCANDLES. LOCATION TO BE DETERMINE IN THE FIELD.

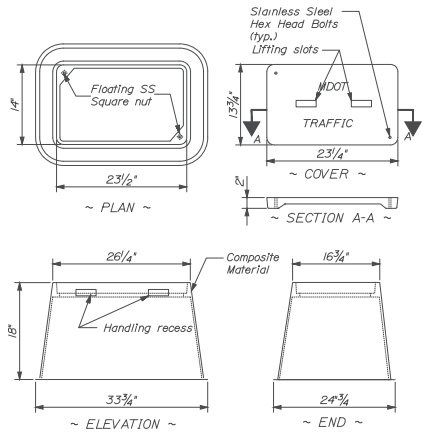
(3) TIME CLOCK – SHALL HAVE CONTACTS RATED FOR 20A, 277V. TIME CLOCK SHALL BE 7 DAY TYPE, ASTRONOMICAL, PROGRAMMABLE TYPE WITH OMITTING DAY CAPABILITY.

(4) LIGHT SWITCH (IN SINGLE GANG BOX – NEMA 3R WITH DEVICE PLATE) 20A, 277V RATED. LABEL "MANUAL SWITCH FOR LIGHT CIRCUITS".

LIGHTING CONTROL SCHEMATIC DIAGRAM
N.T.S.



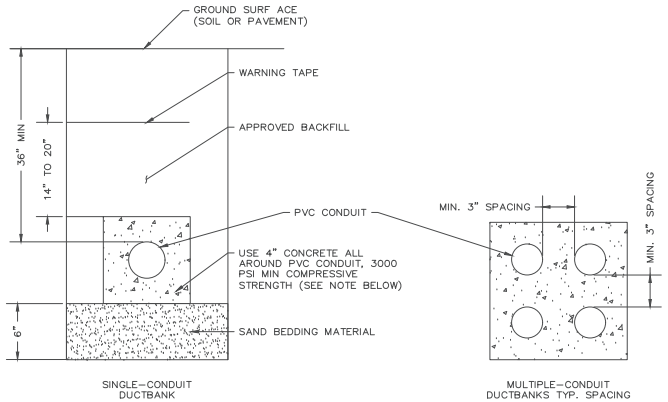
24" LIGHT POLE FOUNDATION DETAIL
N.T.S.



13" x 24" Flared Wall
JUNCTION BOX
ITEM NO. 626.11

NOTE:
The Junction Box shall be capable of supporting incidental traffic loads of 20,000 pounds without distortion or failure.
Junction Boxes shall be as listed on MaineDOT's Qualified Products List of Traffic Signal and Lighting Materials.
Dimensions show are representative and may have slightly different dimensions.

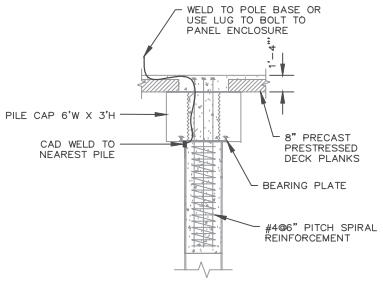
TYPICAL CONCRETE HANDHOLE DETAIL
N.T.S.



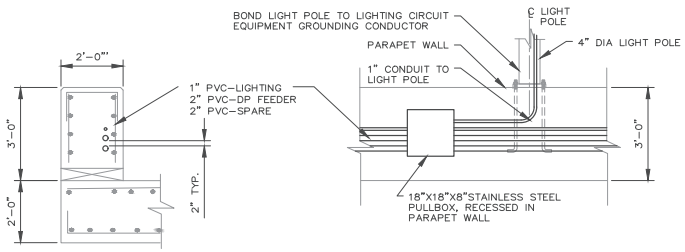
NOTE:

ALL PVC CONDUITS CONTAINING ELECTRICAL SUPPLY LINES FEEDING SECONDARY UTILITY POWER TO METER BREAKER PANELS OR DIRECTLY TO TRAFFIC SIGNALIZATION CONTROL CABINETS OR HIGHWAY LIGHTING BREAKER BOXES SHALL BE CONCRETE ENCASED.

TYPICAL CONCRETE DUCTBANK
N.T.S.



PILE SUPPORTED PLATFORM GROUNDING DETAIL
N.T.S.



PARAPET WALL – CONDUIT DETAIL
N.T.S.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, III		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

UTILITY DETAILS - 1

SHEET NUMBER
E-120
97 of 97

File: C:\Projects\307482\Jacobs\Maine DOT Lubec Breakwater - Drawings_95% Submission\97-E-120 (Utility Details).dwg | Plotted: 7/19/2024 5:04 PM by SAYADPAR, HAST1 | Saved: 7/19/2024 2:58 PM by PHUNGHM

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

August 9, 2021

Regulatory Division
File No. NAE-2020-1783

Carol Dennison, Board of Selectmen Chair
Town of Lubec
40 School Street
Lubec, Maine 04652

Dear Ms. Dennison**:**

Enclosed are two copies of a Department of the Army permit authorizing your project. **Please sign both copies of the permit and return one signed copy to this office at the address above or to shawn.b.mahaney@usace.army.mil.** The authorized work cannot start until we receive a complete, signed copy of the permit.

You are required to complete and return the enclosed forms to this office:

1. Preliminary Jurisdictional Determination Form to be submitted along with your signed copy of the permit.
2. Compliance Certification Form within one month following the completion of the authorized work.

This permit is a limited authorization containing a specific set of conditions. Please read the permit thoroughly to familiarize yourself with those conditions, **including any conditions contained on the enclosed state water quality certification.** If a contractor does the work for you, both you and the contractor are responsible for ensuring that the work is done in compliance with the permit's terms and conditions, as any violations could result in civil or criminal penalties.

A combined Notification of Administrative Appeal Options and Process (NAP) and Request for Appeal (RFA) form, and flow chart explaining the appeals process and your options, are enclosed. If you request to appeal this determination, you must submit a completed RFA form along with any supporting or clarifying information to naomi.j.handell@usace.army.mil or the following address:

Ms. Naomi Handell, Regulatory Program Manager
Operations and Regulatory Division
U.S. Army Corps of Engineers, North Atlantic Division - Fort Hamilton
301 General Lee Avenue - First Floor
Brooklyn, New York 11252-6700

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by October 8, 2021. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You may not appeal conditions contained in the State water quality certification or the CZM consistency determination under this program as they are automatically included in the Federal permit. This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey.

If you have any questions regarding this correspondence, please contact **Shawn B. Mahaney** at (978) 318-8492

Sincerely,

Chief, Permits and Enforcement Branch
Regulatory Division

Enclosures

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Permit Number: NAE-2020-1783

Project Manager Mahaney

Name of Permittee: Town of Lubec

Permit Issuance Date: 9 August 2021

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****

EMAIL TO: shawn.b.mahaney@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: Shawn B. Mahaney
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee	Date
Printed Name	Date of Work Completion
( ) Telephone Number	( ) Telephone Number

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 6 August 2021

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Carol Dennison, Board of Selectmen Chair, Town of Lubec, 40 School Street, Lubec, Maine 04652

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CENAE-RDC, Town of Lubec, NAE-2020-1783

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Route 189/Main Street, Lubec, Maine. Construct Safe Harbor Project.

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Maine County/parish/borough: Washington City: Lubec

Center coordinates of site (lat/long in degree decimal format):

Lat.: 44.856628°N Long.: -66.99365°W

Universal Transverse Mercator: Zone 19,658525.15m E, 4968981.90m N

Name of nearest waterbody: Johnson Bay

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): 7 JUL 2020 & 20 APR 2021

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Ocean	44.856628°N	-66.99365°W	3.29 acres	Non-wetland water	Section 10/404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Plans-"Lubec Safe Harbor, Route 189, Main Street, Lubec, Maine"-8 sheets dated "June 2019" and revised "June 2021".
☐ Data sheets prepared/submitted by or on behalf of the PJD requestor.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report. Rationale: _____.
☐ Data sheets prepared by the Corps: _____.
☒ Corps navigable waters' study: Lubec Harbor, Lubec, Maine-June 2004.
☐ U.S. Geological Survey Hydrologic Atlas: _____.
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 LUBEC, ME.
☒ Natural Resources Conservation Service Soil Survey. Citation: SoilWeb.
☒ National wetlands inventory map(s). Cite name: 1:24,000 LUBEC, ME.
☐ State/local wetland inventory map(s): _____.
☐ FEMA/FIRM maps: _____
☐ 100-year Floodplain Elevation is: ____. (National Geodetic Vertical Datum of 1929)
☒ Photographs:
☒ Aerial (Name & Date): Google Earth, 12/30/1985-9/28/2019.
☒ Other (Name & Date): MPO-7/7/2020 & 4/20/2021.
☐ Previous determination(s). File no. and date of response letter: _____.
☐ Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

SHAWN B. MAHANEY
Digitally signed by SHAWN B. MAHANEY
Date: 2021.08.06 12:51:06 -04'00'

Shawn B. Mahaney Date
Regulatory Project Manager
completing PJD

Carol Dennison Date
Board of Selectmen Chair
Town of Lubec
40 School Street
Lubec, ME 04652

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Town of Lubec, Maine	File Number: 2020-1783	Date: 9 Aug 2021
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/appeals.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

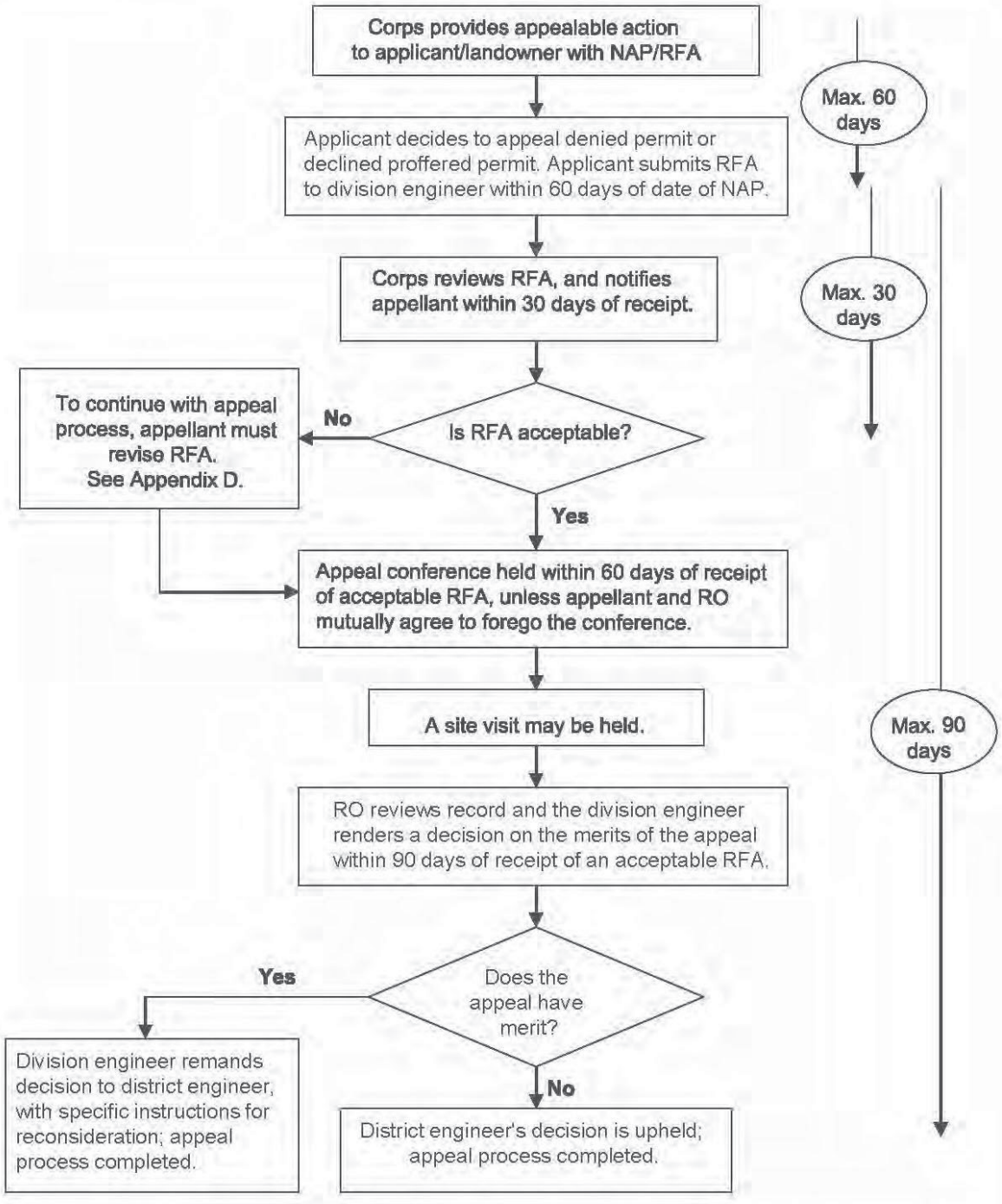
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact: Ms. Naomi Handell Regulatory Program Manager (CENAD-PD-OR) U.S. Army Corps of Engineers Fort Hamilton Military Community 301 General Lee Avenue Brooklyn, New York 11252-6700 Telephone number: 347-370-4650

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

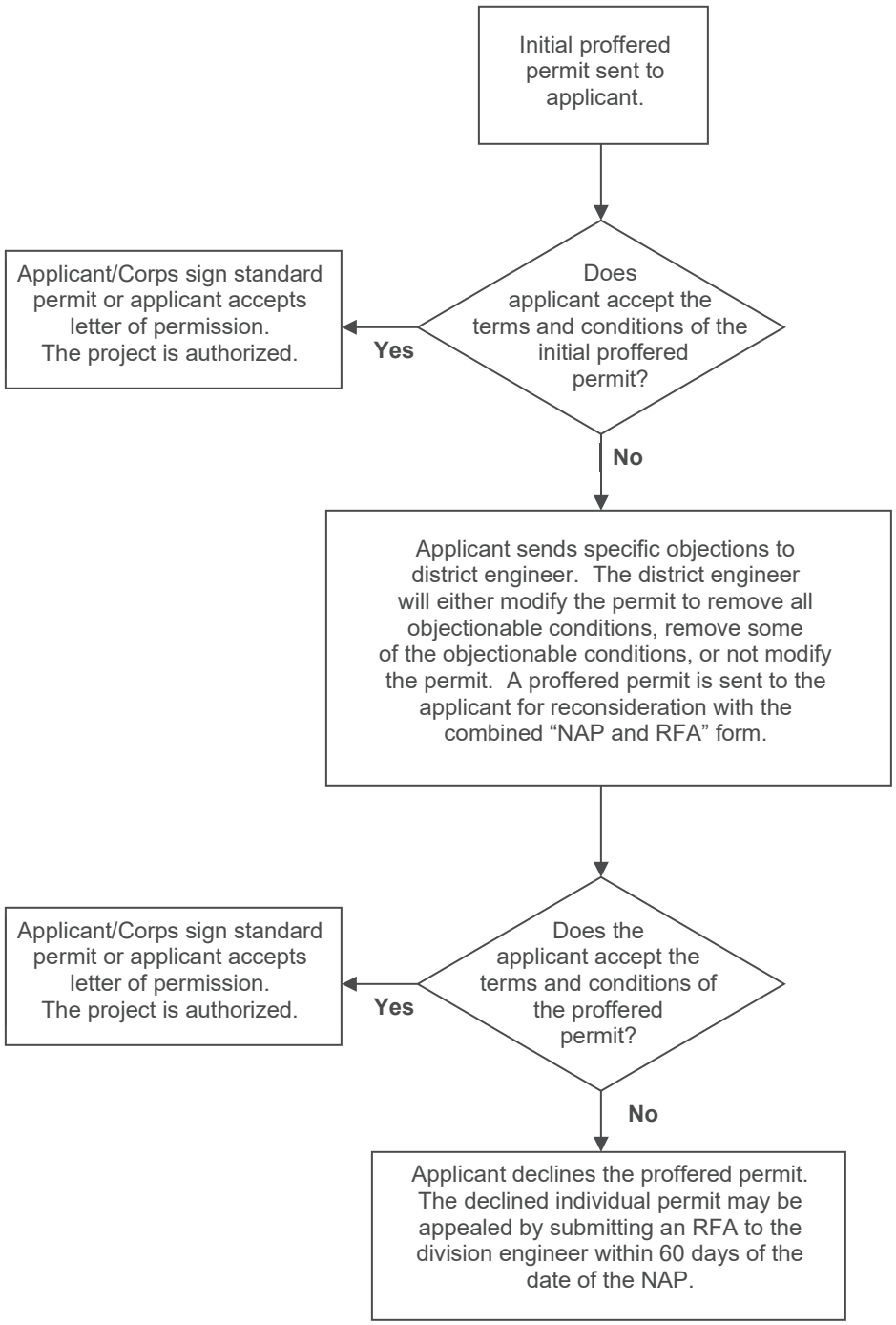
Administrative Appeal Process for Permit Denials and Proffered Permits



NOTE: If new information is provided to the Corps, the applicant will be asked if the applicant wishes to revise the project or record. If so, the appeal will be withdrawn and the case returned to the District for appropriate action. If not, then the Division Engineer will rule on the merits of the appeal based on the administrative record without consideration of the new information. However, the new information may cause the District Engineer to take action under 33 CFR 325.7, independent of the appeal process.

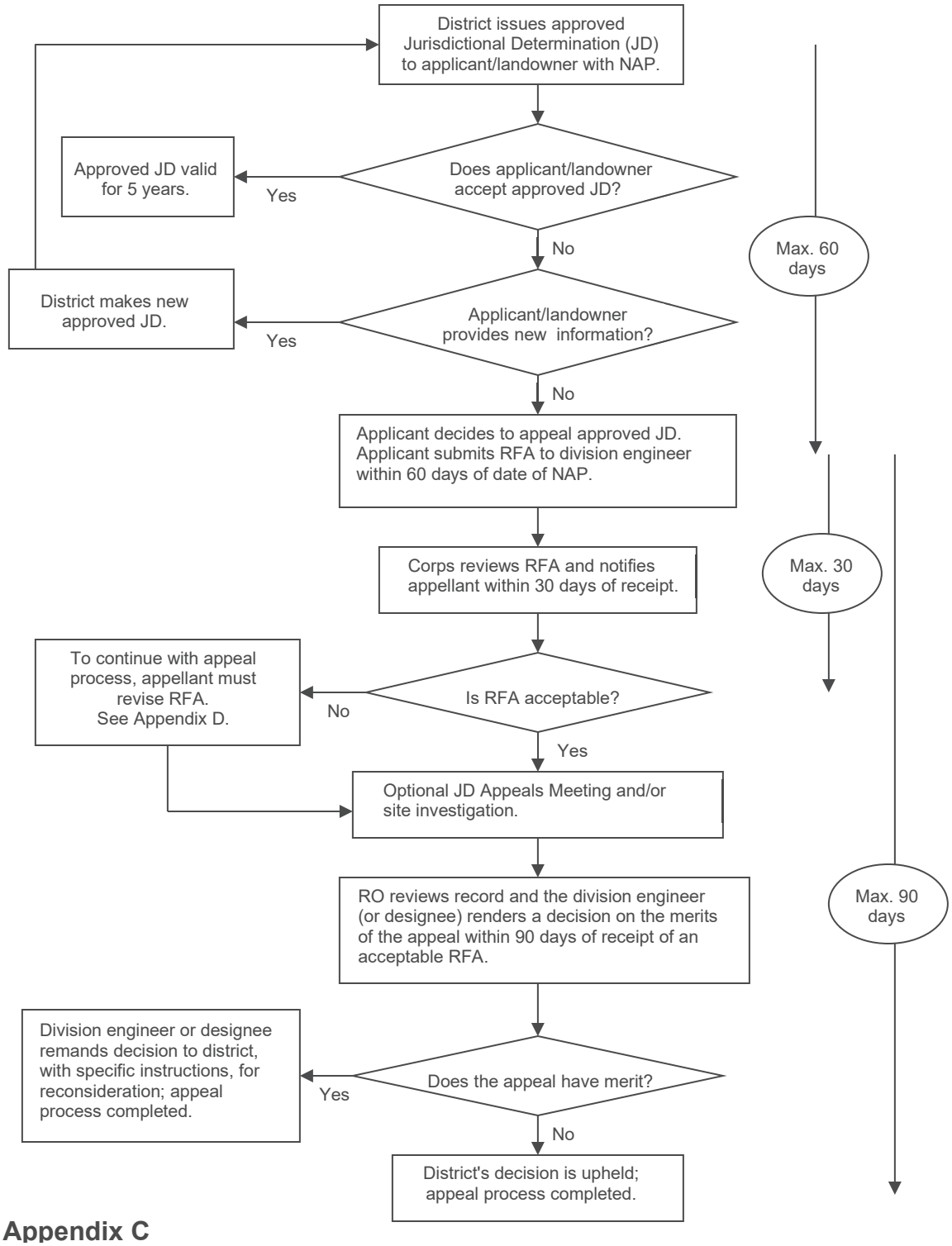
Appendix A

Applicant Options with Initial/Proffered Permit



Appendix B

Administrative Appeal Process for Approved Jurisdictional Determination



Appendix C

DEPARTMENT OF THE ARMY PERMIT

Permittee Carol Dennison, Board of Selectmen Chair, Town of Lubec, 40 School Street, Lubec, Maine 04652

Permit No. NAE-2020-01783

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

The work involves the placement of up to approximately 3.29 acres of fill below the High Tide Line of Johnson Bay at Lubec, Maine in order to provide a safe harbor for the existing fishing fleet and recreational & transient boaters.

The safe harbor project consists of a solid fill breakwater pier, boat ramp, pile supported pier and ramps and floats. The breakwater would be 1250 feet long. The first 760 feet of the breakwater will be constructed using rock fill. The remaining 500 feet of the breakwater will be constructed with 30-foot diameter filled circular sheet pilings. The boat ramp will be 15 feet wide by 260 feet long. A 6' x 105 pile supported pier with a 4' x 123' leading to (8) 8' x 20' pile secured floats. Also, a 6' x 80' ramp attached from the breakwater will lead to a line of floats consisting of (16) 8' x 20' pile secured floats.

The work is shown on the enclosed plans titled, "Lubec Safe Harbor, Route 189, Main Street, Lubec, Maine", on eight (8) sheets, and dated "June 2021".

Project Location: The project is located off Main Street/Route 189 in Johnson Bay at Lubec, Maine.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2026]. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. 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 General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site (and the project office) authorized by this permit whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this permit. This shall be achieved by including the entire permit in the specifications for work. The term “entire permit” means this permit (including its drawings, plans, appendices, and other attachments) and also includes permit modifications.

If the permit is issued after the construction specifications, but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee shall complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date.

3. The permittee shall complete and return the enclosed Compliance Certification Form to this office at least within one month following the completion of the authorized work.

4. No additional structures (such as but not limited to, ramps, floats, pier additions, buildings on the pier) are authorized without written approval from the Corps.

5. The permittee shall provide the Corps an as-built drawing of the completed breakwater and including the boat ramp, pier, ramps, floats and any additional fill or structures not shown on the original plans. The required information shall be sent to the U.S. Army Corps of Engineers at, cenae-r-me@usace.army.mil with the subject line “Permit No. NAE-2020-1783” within one year of project completion.

Permit Special Conditions Resulting From the Endangered Species Act Section 7 under the NOAA-NLLA Programmatic Consultation dated “11/03/2020”.

6. The installation of the sheet & timber piles shall occur between November 8 - April 8.

7. The permittee shall use a turbidity curtain during the placement of stone fill, boat ramp construction and the installation of the piles.

8. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland

9. Work involving pile installation/removal shall adhere to the following conditions:
a) If impact hammers are used, equipment shall be limited to one hammer and <50 piles installed/day.
b) The contractor shall insure that a wood cushion is used between the impact hammer and steel piles.
c) A "soft-start" technique will be used at the beginning of pile driving operations to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. Soft starts require an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period between subsequent three-strike sets. The soft-start procedure will be conducted any time hammering ceases for more than 30 minutes.

Mitigation required for impacts to Waters of the United States and Essential Fish Habitat.

10. Compensatory mitigation shall consist of purchasing 143,233SF credits from the Maine Natural Resource Conservation Fund. As of the date of this permit, the current cost to purchase these credits is $830,752.00. The permittee must send a cashier's check or bank draft for this amount, as calculated on the enclosed "In-Lieu Fee (ILF) Project Impact Worksheet" to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. The check must include the Corps file number NAE-2020-1783" and the statement: "For ILF account only." No impacts authorized by this permit shall begin until the Corps receives a copy of the letter from the Maine Department of Environmental Protection (ME DEP) to the permittee stating that the ME DEP has received the check and accepts responsibility for mitigation. The in-lieu fee amount is valid for one year from the date of this permit and is subject to change.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
( ) Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408).
(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d, This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from Natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any

corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interested decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Carol Dennison — 8/9/21

(Permittee) ***(Date)***

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Frank J Del Giudice — Digitally signed by Frank J Del Giudice Date: 2021.08.09 11:04:58 -04'00' — 9 AUG 2021

(District Engineer) Frank J. Del Giudice ***(Date)***
Chief, Permits & Enforcement Branch
Regulatory Division
For: District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(Transferee) ***(Date)***

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice # *Filled in by ILF Administrator in Augusta*

Project name: **Town of Lubec Safe Harbor Project**

Permittee(s): **Town of Lubec**

DEP/Corps permit #: **L-28159-4P-C-N /NAE-2020-1783** *Attach a copy of the permit*

DEP/Corps Project Manager: **Damon/Mahaney**

ILF Fee Amount: **$830,752.00 (($2.86+$0.04) x 2 x 143,233SF= $830,751.40)**

Check Date: *Filled in by ILF Administrator in Augusta*

Project address: **Off Main Street/Route 189 at Lubec, ME.** *Attach a locus map*

Biophysical region - Section: **Downeast**

Biophysical region - Subsection: **#12. Maine Eastern Coastal Subsection**

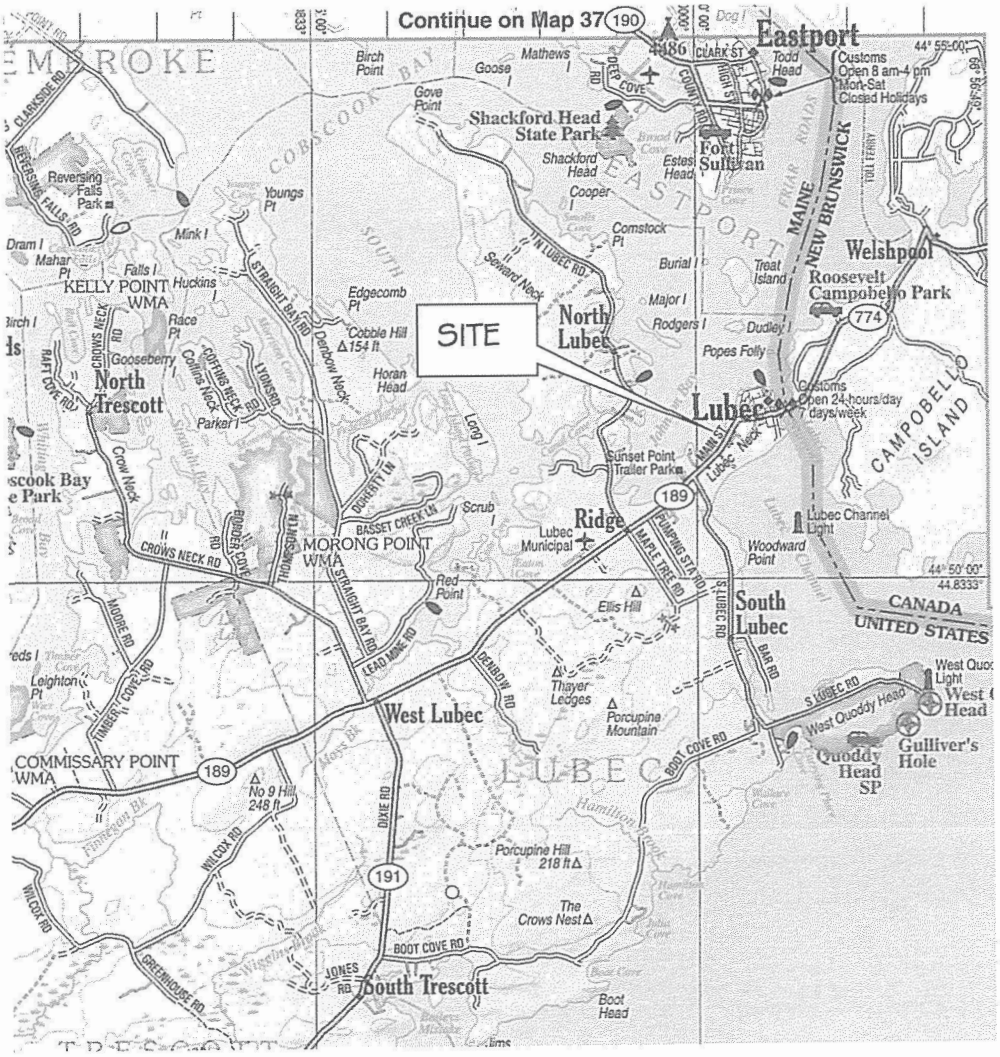
Total impact area subject to compensation: **143,233SF (3.29 acres)**

Resource(s) impacted:

Resource Types (list all that apply)	**Functions & Values** (for wetland impacts) (list all that apply, by resource type)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Linear FT of Streams Impacted (for Corps use)**
M1/M2	Primary: FSH/WH	Fill/Direct Impact	143,233SF	
		Total impacts:	143,233SF	

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc.), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)
Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)
Types of Impacts: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.

DOWN to EARTH
PROFESSIONAL LAND SERVICES, INC.
P.O. BOX 443
BRADLEY, MAINE 04411-0443
TEL. 207-827-6733



VICINITY MAP
NOT TO SCALE

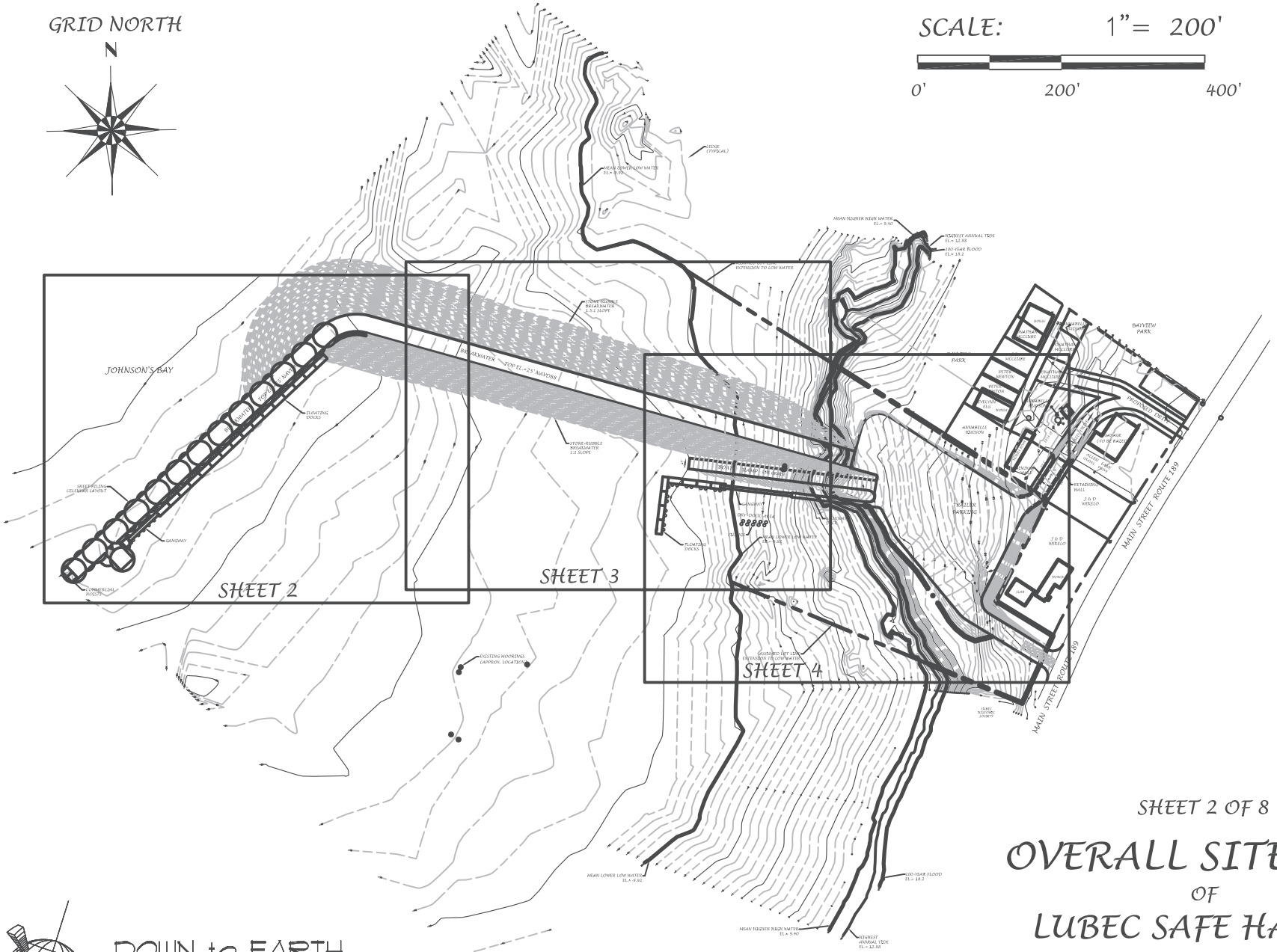
Sheet 1 of 8
Lubec Safe Harbor
Route 189, Main Street
Lubec, Maine
Date: June 2021

GRID NORTH

N

SCALE: 1"= 200'

0' 200' 400'



SHEET 2 OF 8

OVERALL SITE PLAN

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=200'

DOWN to EARTH

PROFESSIONAL LAND SERVICES, INC.

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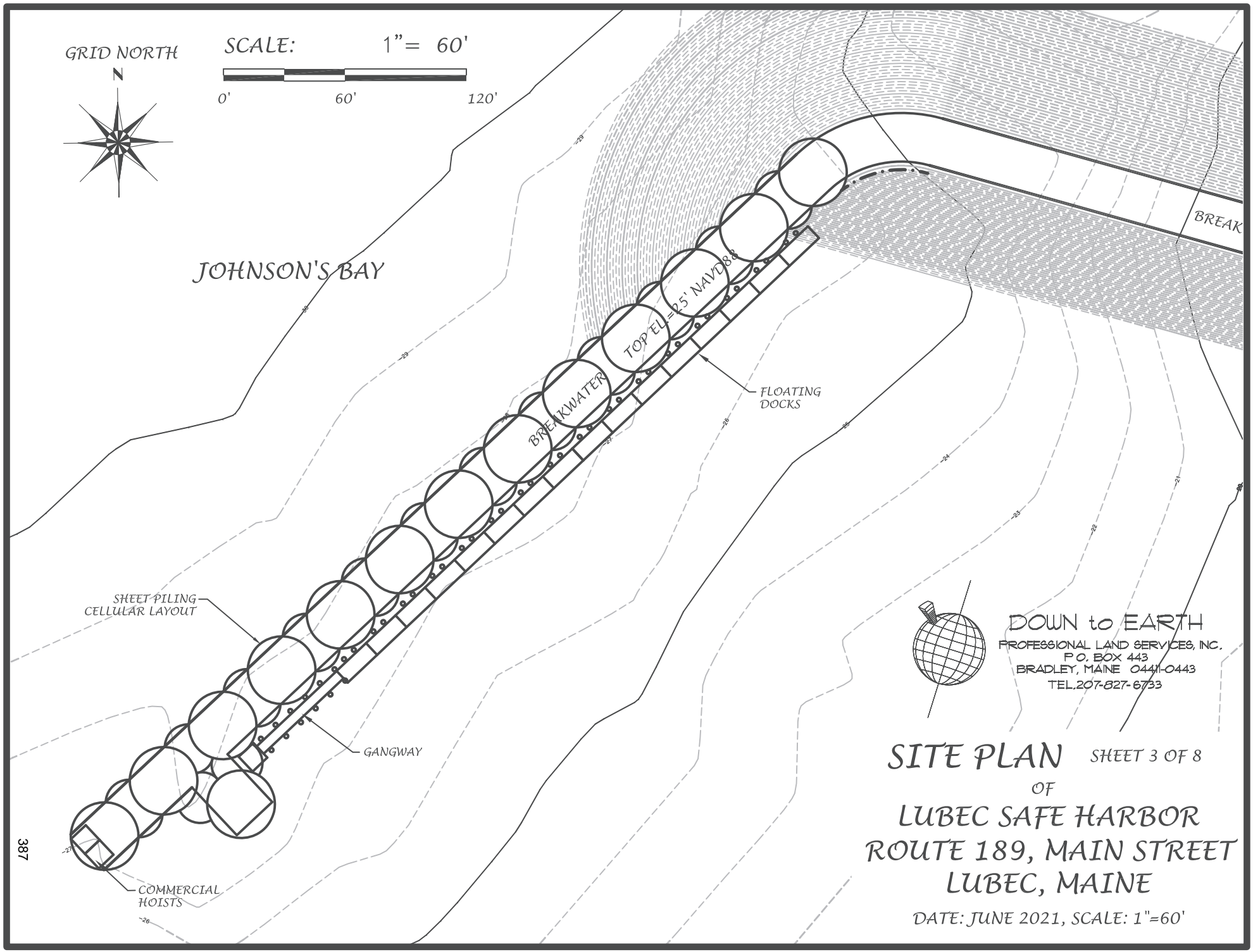
BRADLEY, MAINE 04411-0443

TEL.207-827-6733



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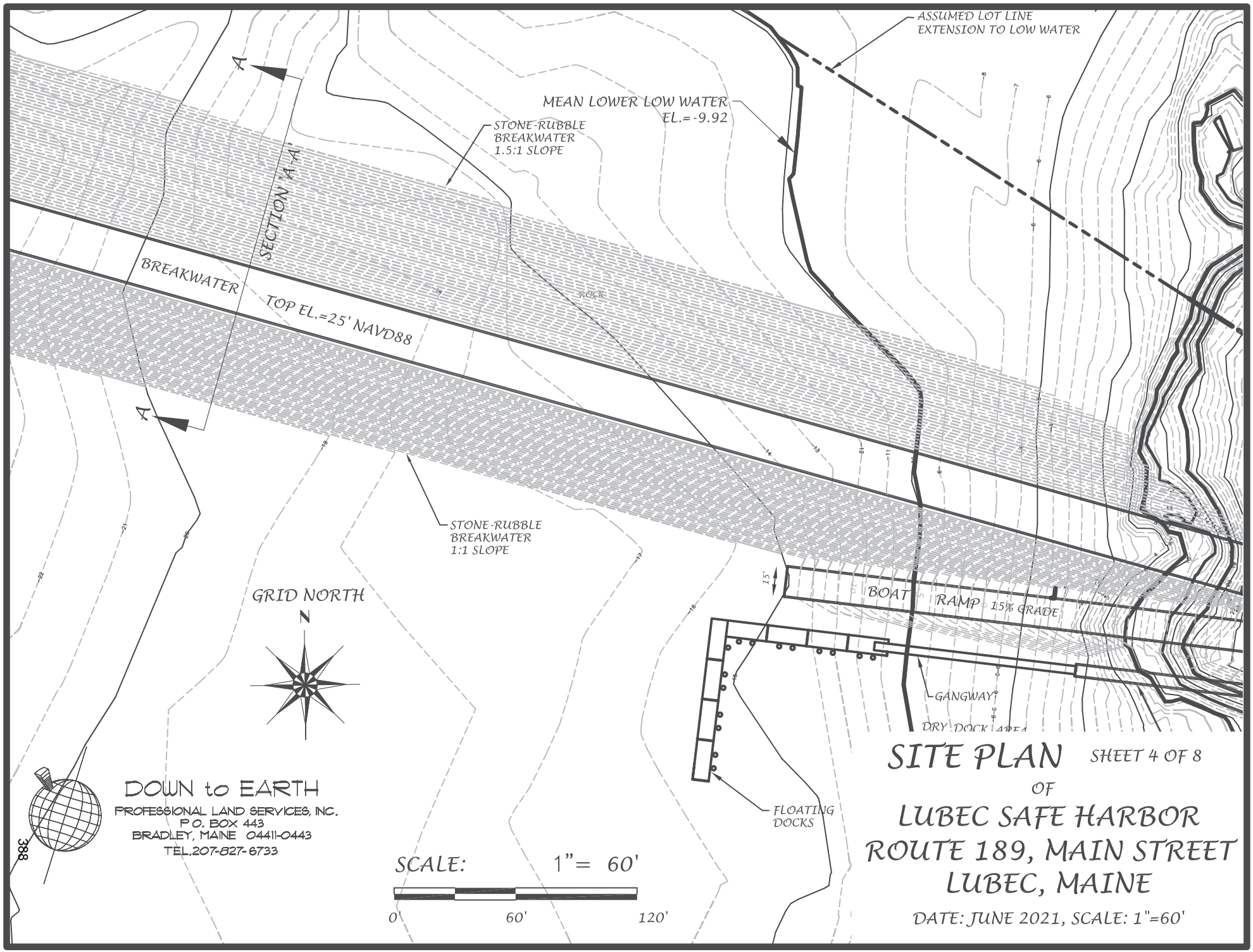
SITE PLAN

SHEET 3 OF 8

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=60'



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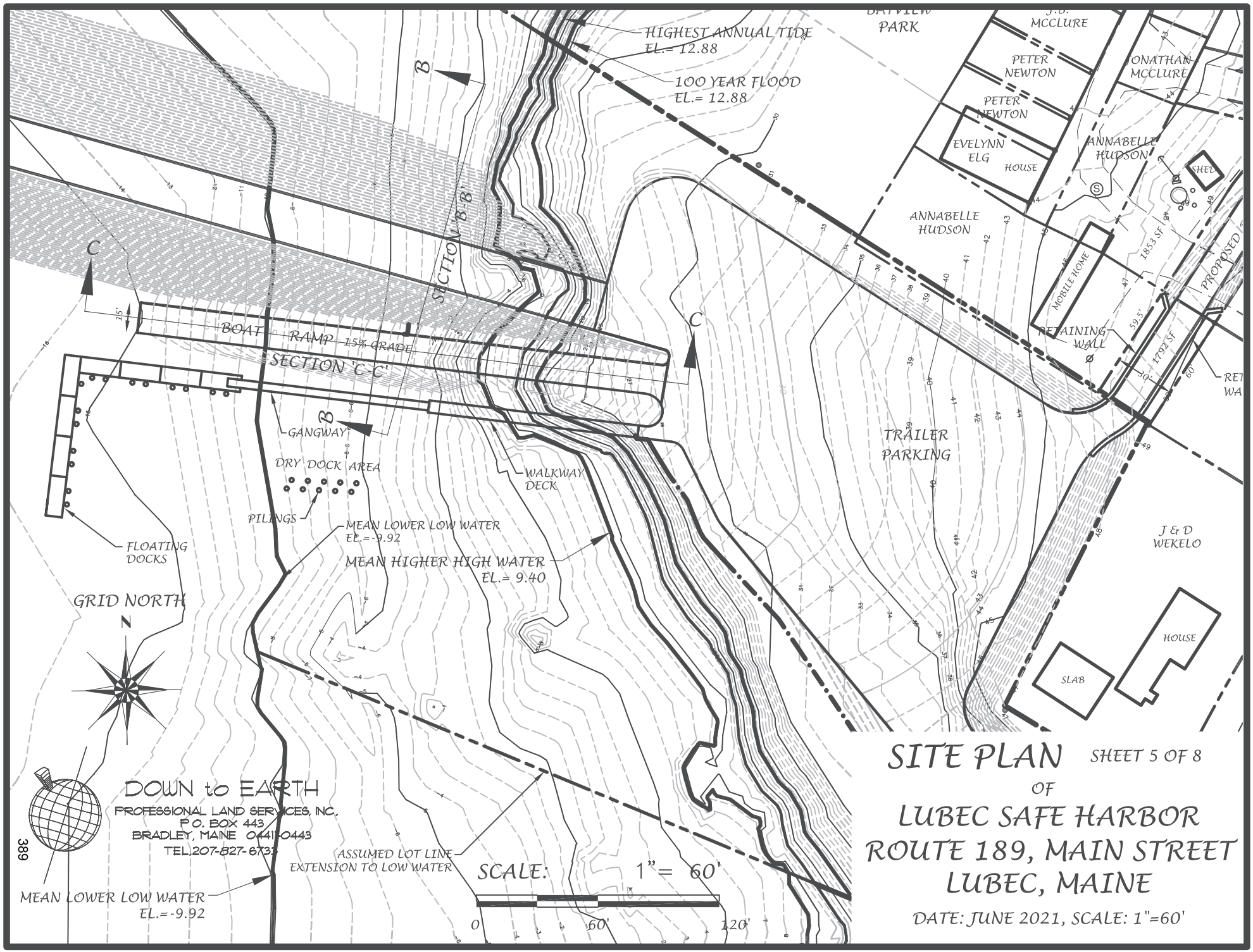
SITE PLAN

SHEET 4 OF 8

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=60'



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SITE PLAN

SHEET 5 OF 8

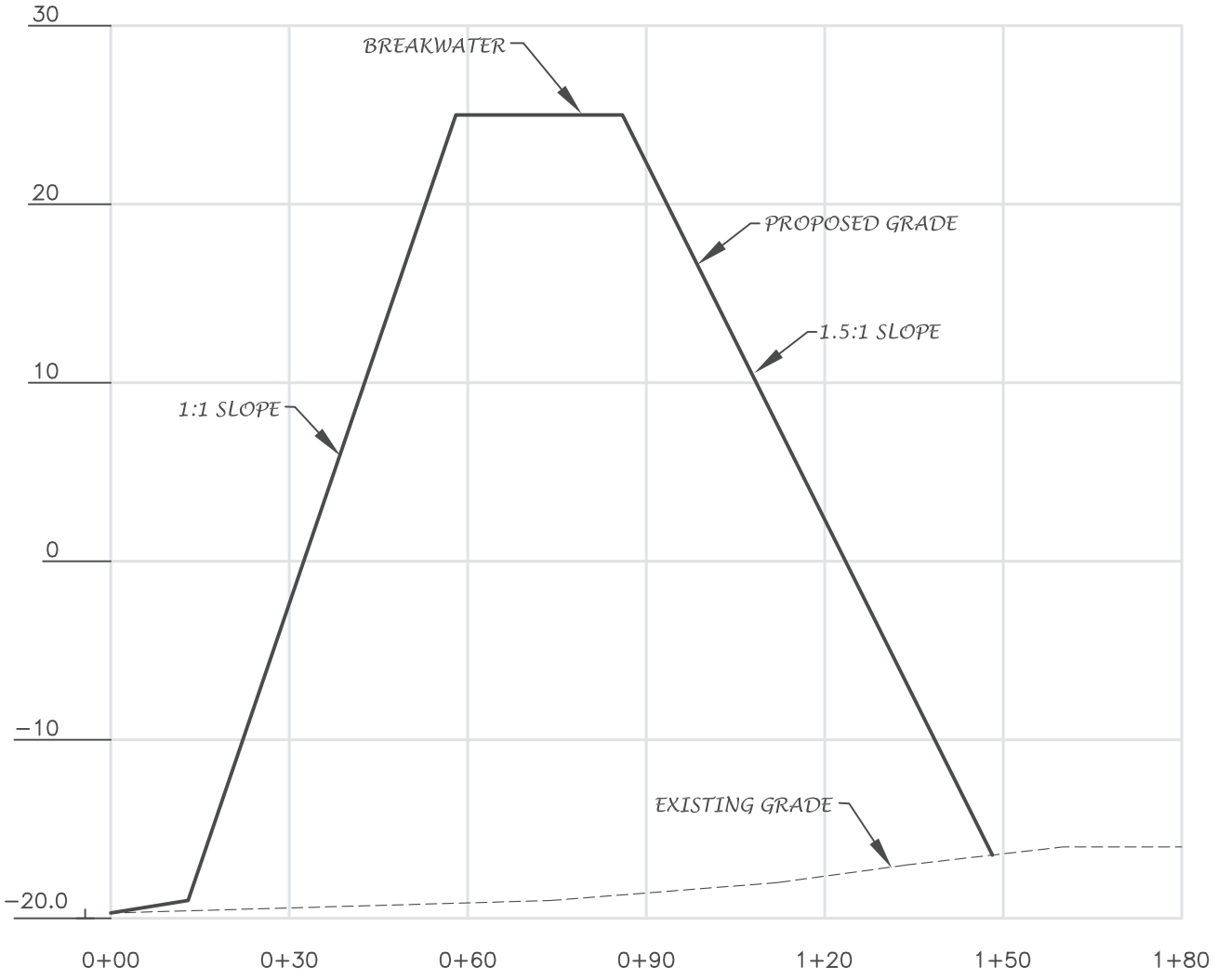
OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=60'

SCALE: 1"= 30'

0' 30' 60'



SCALE: 1"=30' HORIZONTAL
1"=10' VERTICAL

SHEET 6 OF 8

CROSS SECTION 'A-A'

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021

DOWN to EARTH
PROFESSIONAL LAND SERVICES, INC.
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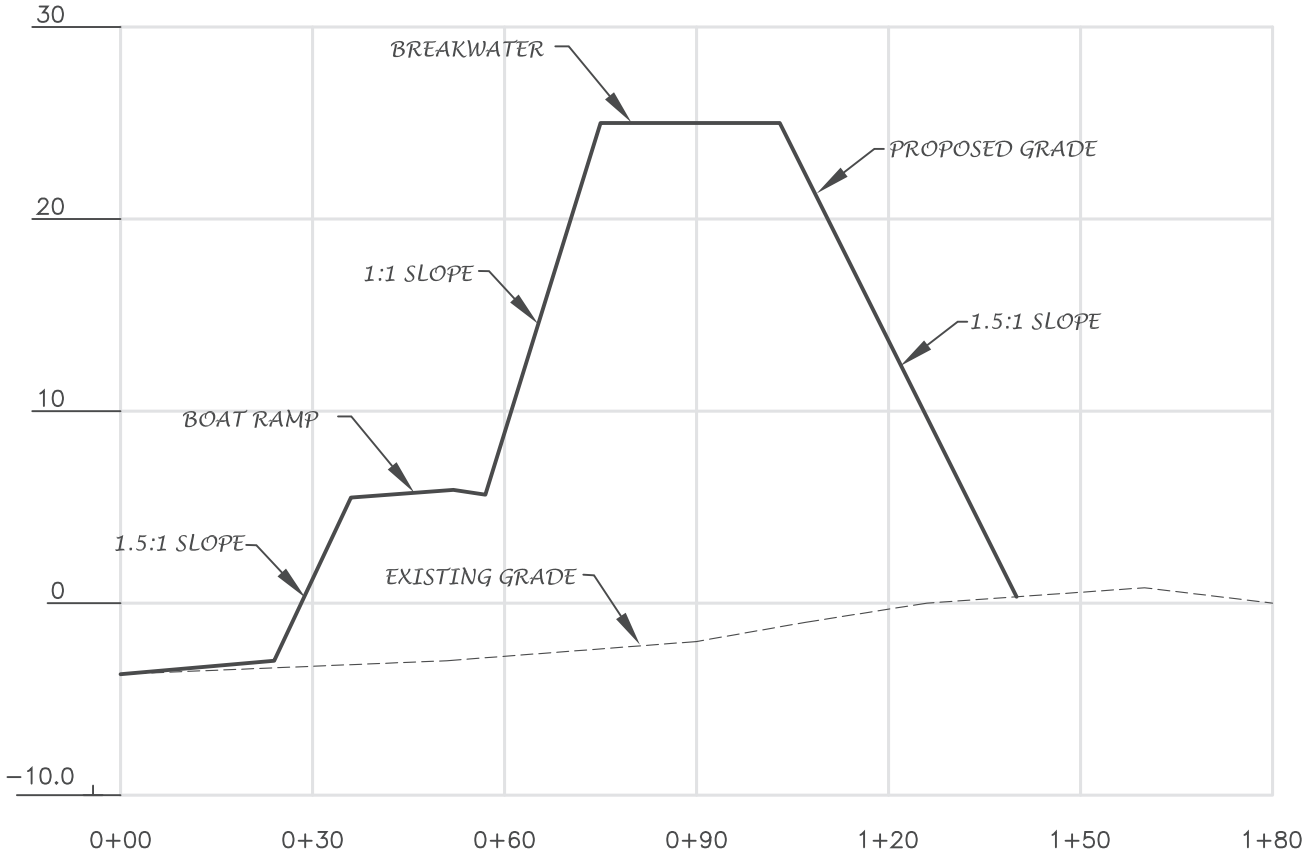
TEL.207-827-6733

SCALE: 1"= 30'

0' 30' 60'



SCALE: 1"=30' HORIZONTAL
1"=10' VERTICAL

SHEET 7 OF 8

CROSS SECTION 'B-B'

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021

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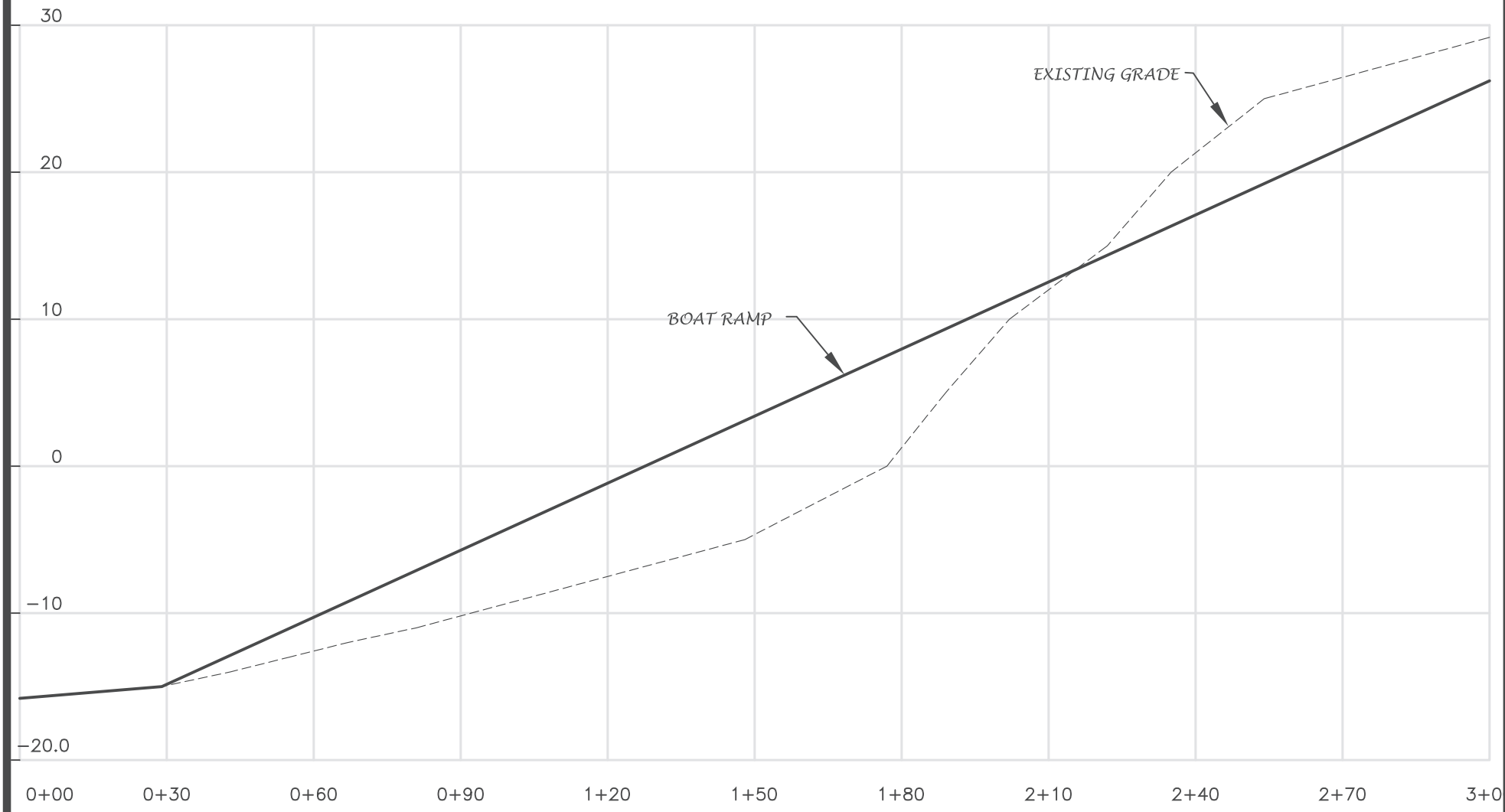
P.O. BOX 443
BRADLEY, MAINE 04411-0443
TEL.207-827-6733



SHEET 8 OF 8

CROSS SECTION 'C-C'

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021

SCALE: 1"=30' HORIZONTAL
1"=10' VERTICAL

SCALE: 1"= 30'

0' 30' 60'

DOWN to EARTH
PROFESSIONAL LAND SERVICES, INC.
P.O. BOX 443
BRADLEY, MAINE 04411-0443
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STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

TOWN OF LUBEC	) STORMWATER MANAGEMENT LAW
Lubec, Washington County	) NATURAL RESOURCES PROTECTION ACT
MARINA	) COASTAL WETLAND ALTERATION
L-28159-NJ-B-N (approval)	) WATER QUALITY CERTIFICATION
L-28159-4P-C-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, 38 M.R.S. § 420-D, Section 401 of the Federal Water Pollution Control Act (33 U. S. C. § 1341), and Chapters 310, 315 and 500 of Department rules, the Department of Environmental Protection has considered the application of TOWN OF LUBEC with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Summary: The applicant proposes to construct a stormwater management system for a proposed marina. The marina will include parking areas, a large breakwater, a boat ramp and a floating dock, as shown on a plan entitled "Stormwater Plan," prepared by Oscar Emerson, and dated February 22, 2020. The breakwater pier will be 1250 feet long. The first 760 feet of the breakwater will be constructed using rock fill. The remaining 500 feet of the breakwater will be constructed with 30-foot diameter circular sheet pilings. In addition, 70 log pilings will be set in place during construction of the project. The boat ramp will be 15 feet wide by 260 feet long. The floating dock will include a 123-foot by 4-foot ramp, and an L-shaped floating area approximately 88 feet by 8 feet and 80 feet by 8 feet. The total area of direct impact to coastal wetland will be 143,233 square feet and the indirect impacts will be 4,834 square feet due to shading. The project site is located off Route 189 in the Town of Lubec.

The applicant is seeking approval to impact 143,233 square feet of coastal wetlands under the Natural Resources Protection Act.

B. Current Use of the Site: The site of the proposed project is currently vacant fields and woodland. There are no structures on the property. The parcel is identified as Lot 17 on Map 18 of the Town of Lubec's tax maps.

2. STORMWATER STANDARDS:

The proposed project includes approximately 1.84 acres of developed area of which 1.84 acres is impervious area. It lies within the watershed of the Atlantic Ocean. The applicant submitted a stormwater management plan based on the Basic and General Standards contained in Department Rules, Chapter 500. The applicant is unable to treat stormwater at the proposed site and has found two comparable sites that are also owned by the Town. These sites are a municipal garage and a municipal gravel pit.

The proposed stormwater management system consists of a forested buffer (municipal garage site) and an underdrained soil filter (municipal gravel pit).

A. Basic Standards:

(1) Erosion and Sedimentation Control: The applicant submitted an Erosion and Sedimentation Control Plan that is based on the performance standards contained in Appendix A of Chapter 500 and the Best Management Practices outlined in the Maine Erosion and Sediment Control BMPs, which were developed by the Department. This plan and plan sheets containing erosion control details were reviewed by the Bureau of Land Resources (BLR).

Erosion control details will be included on the final construction plans and the erosion control narrative will be included in the project specifications to be provided to the construction contractor.

(2) Inspection and Maintenance: The applicant submitted a maintenance plan that addresses both short and long-term maintenance requirements. This plan was reviewed by, and revised in response to the comments of, BLR. The maintenance plan is based on the standards contained in Appendix B of Chapter 500. The applicant will be responsible for the maintenance of all common facilities including the stormwater management system.

(3) Housekeeping: The proposed project will comply with the performance standards outlined in Appendix C of Chapter 500.

Based on BLR's review of the erosion and sedimentation control plan and the maintenance plan, the Department finds that the proposed project meets the Basic Standards contained in Chapter 500, § 4(B).

B. General Standards:

The applicant is unable to treat at the project area. The applicant has proposed to treat an equal square footage of area at the municipal gravel pit and garage. The applicant's stormwater management plan includes general treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. The road and boat launch are considered linear and the parking area is considered non-linear. The mitigation treatment areas will treat comparable areas. This mitigation is being achieved by using Best Management Practices (BMPs) that will control runoff from no less than 95% of the impervious area and no less than 80% of the developed area. For the portion that meets the definition of "a linear portion of a project" in Chapter 500 and the applicant is proposing to provide runoff volume control to no less than 75% of the volume from the impervious area and no less than 50% of the developed area.

The municipal garage site proposes to treat stormwater runoff with a forested buffer. The forested, limited disturbance stormwater buffer will be protected from alteration through the execution of a deed restriction. The applicant proposes to use the deed restriction language contained in Appendix G of Chapter 500 and submitted a draft deed restriction that meets Department standards. Prior to the start of construction, the location of forested buffers on individual lots must be permanently marked on the ground. The deed for each lot that contains any portion of the designated buffer must contain deed restrictions relative to the buffer and have attached to it a plot plan for the lot, drawn to scale, that specifies the location of the buffer on the lot. The applicant shall execute and record all required deed restrictions, including the appropriate buffer deed restrictions, within 60 days of the date of this Order. The applicant shall submit a copy of the recorded deed restriction, including the plot plan, to the BLR within 60 days of its recording.

The stormwater management system proposed by the applicant was reviewed by, and revised in response to comments from, BLR. After a final review, BLR commented that the proposed stormwater management system is designed in accordance with the Chapter 500 General Standards, and recommended that the applicant's design engineer or other qualified professional oversee the construction of the underdrained soil filter to insure that it is installed in accordance with the details and notes specified on the approved plans. Within 30 days from completion of the filter, the applicant must submit a log of inspection reports to the BLR that contains a list of the items inspected, photographs taken, and other relevant information.

Based on the stormwater system's design and BLR's review, the Department finds that the applicant has made adequate provision to ensure that the proposed project will meet the Basic and General Standards contained in Chapter 500.

3. 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. Department staff visited the project site on August 21, 2019.

The proposed project is located in Johnson Bay, 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. The proposed project is located in a sheltered cove. There are several commercial piers located in Johnson Bay. In the winter and inclement weather, many boats shelter in Johnson Bay across from the proposed project.

The proposed project is compatible with the existing development and uses of the project vicinity.

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 and the site visit, 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) 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 coastal wetland.

4. 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.

The applicant submitted an erosion control plan with the application. All work will follow the Best Management Practices for erosion and sedimentation.

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.

5. 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 includes a lawn and sparse trees in the upland portion. In the immediate area of the project, the intertidal area and subtidal area consist of ledge, rockweed to mixed coarse and fine sediments in the subtidal.

According to the Department's Geographic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats located at the site.

The Department of Marine Resources (DMR) stated that the project as proposed would cause some alteration of intertidal and subtidal marine habitat within the footprint of the project. DMR recommended that the installation of piles should coincide with the ACOE Maine winter window from 8 November to 8 April. DMR also recommended the use of a turbidity curtain during placement of stone rubble fill and installation of pilings to minimize potential impacts.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that there are no Essential or Significant Wildlife Habitats at the project site

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 piles are installed between November 8th and April 8th and the applicant uses a turbidity curtain during placement of stone fill and the installation of pilings.

6. 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.

7. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to directly alter 143,233 square feet of coastal wetland and indirectly alter 4,834 square feet due to shading in order to construct the proposed marina. Coastal wetlands are considered wetlands of special significance.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended January 26, 2009), 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. The project is located in the coastal wetland which is considered a wetland of special significance. The proposed pier, ramp and breakwater are water dependent uses and the proposed construction is among the activities specifically provided for in Chapter 310, § 5(A)(1)(c). The applicant submitted an alternatives analysis for the proposed project completed by Oscar Emerson and dated June 19, 2019. The Town of Lubec needs a centralized safe sheltered harbor for the commercial fishermen to unload and load their vessels and maintain a safe municipal boat ramp. Currently, the commercial fishermen have no safe harbor during storms and are required to limit the days they can work on their boats. In 2004, the Army Corps of Engineers did a study to solve this issue and found seven potential sites for a safe harbor in Lubec. The Town of Lubec and the Safe Harbor Committee have used this report to find the right site for the safe harbor. This site was chosen based on land acquisition, central location, ledge outcroppings for underpinnings and proximity to the Lubec Historical Society. There is no way to meet the project goal without some impacts to the coastal wetland.

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. The Town and the Safe Harbor Committee have worked for two years to meet the project goal while also minimizing the size of the project. The following has been incorporated to minimize impacts:

- The breakwater riprap armament side slope on leeward side is 1:1
- The breakwater riprap armament side slope on seaward side is 1.5:1
- The boat ramp is positioned to minimize riprap
- 40% of the breakwater will be circular sheet piling shells to reduce the footprint

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 result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. The main functions of the project are were determined to be fish and shellfish habitat, wildlife habitat, sediment/shoreline stabilization and visual quality/aesthetics.

The applicant proposes to make a contribution into the In-Lieu Fee program of the Maine Natural Resource Conservation Program in the amount of $830,752. Prior to the start of construction, the applicant must submit a payment in the amount of $830,752, payable to "Treasurer, State of Maine", and directed to the attention of the In Lieu Fee Program Administrator at 17 State House Station, Augusta, Maine 04333.

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. § 420-D, and Chapters 500–502 of the Department's rules:

A. The applicant has made adequate provision to ensure that the proposed project will meet the Chapter 500 Basic Standards for: (1) erosion and sediment control; (2) inspection and maintenance; (3) housekeeping; and (4) grading and construction activity.

B. The applicant has made adequate provision to ensure that the proposed project will meet the Chapter 500 General Standards provided that the applicant meets the requirements outlined in Finding 2.

C. The applicant has made adequate provision to ensure that the proposed project will meet the Chapter 500 standards for: (1) easements and covenants; (2) management of stormwater discharges; (3) discharge to freshwater or coastal wetlands; (4) threatened or endangered species; and (5) discharges to public storm sewer systems.

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, Chapters 310 of the Department's rules and Section 401 of the Federal Water Pollution Control Act:

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 that the applicant meets the requirements outlined in Findings 5 and 7.

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 classification of the State's waters provided that the applicant meets the requirements outlined in Finding 6.

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 TOWN OF LUBEC to construct a stormwater management system for the marina as described in Finding 1, Maine, SUBJECT TO THE FOLLOWING CONDITIONS, and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.

2. In addition to any specific erosion control measures described in this or previous orders, the applicant shall take all necessary actions to ensure that their activities or those of their agents do not result in noticeable erosion of soils or fugitive dust emissions on the site during the construction and operation 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. The piles shall be installed between November 8th and April 8th and the applicant shall use a turbidity curtain during placement of stone fill and the installation of pilings.

5. The applicant’s design engineer or other qualified professional shall oversee the construction of the underdrained soil filter to ensure that it is installed in accordance with the details and notes specified on the approved plans. Within 30 days from completion of the filter, the applicant shall submit a log of inspection reports to the BLR that contains a list of the items inspected, photographs taken, and other relevant information.

6. The applicant shall execute and record all required deed restrictions, including the appropriate buffer deed restrictions, within 60 days of the date of this Order. The

applicant shall submit a copy of the recorded deed restriction, including the plot plan, to the BLR within 60 days of its recording.

7. 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.

8. Prior to the start of construction, the applicant shall submit a payment in the amount of $830,752, payable to "Treasurer, State of Maine", and directed to the attention of the In Lieu Fee Program Administrator at 17 State House Station, Augusta, Maine 04333.

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 24TH DAY OF JULY, 2020.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
For: Gerald D. Reid, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

jd/L28159bncn/ATS#85899/85817

FILED
July 24, 2020
State of Maine
Board of Environmental Protection

STORMWATER STANDARD CONDITIONS

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL

Standard conditions of approval. Unless otherwise specifically stated in the approval, a department approval is subject to the following standard conditions pursuant to Chapter 500 Stormwater Management Law.

(1) Approval of variations from plans. The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the permittee. Any variation from these plans, proposals, and supporting documents must be reviewed and approved by the department prior to implementation. Any variation undertaken without approval of the department is in violation of 38 M.R.S. §420-D(8) and is subject to penalties under 38 M.R.S.. §349.

(2) Compliance with all terms and conditions of approval. The applicant shall submit all reports and information requested by the department demonstrating that the applicant has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.

(3) Advertising. Advertising relating to matters included in this application may not refer to this approval unless it notes that the approval has been granted WITH CONDITIONS, and indicates where copies of those conditions may be obtained.

(4) Transfer of project. Unless otherwise provided in this approval, the applicant may not sell, lease, assign, or otherwise transfer the project or any portion thereof without written approval by the department where the purpose or consequence of the transfer is to transfer any of the obligations of the developer as incorporated in this approval. Such approval may only be granted if the applicant or transferee demonstrates to the department that the transferee agrees to comply with conditions of this approval and the proposals and plans contained in the application and supporting documents submitted by the applicant. Approval of a transfer of the permit must be applied for no later than two weeks after any transfer of property subject to the license.

(5) Time frame for approvals. If the construction or operation of the activity is not begun within four years, this approval shall lapse and the applicant shall reapply to the department for a new approval. The applicant may not begin construction or operation of the project until a new approval is granted. A reapplication for approval 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.

(6) Certification. Contracts must specify that "all work is to comply with the conditions of the Stormwater Permit." Work done by a contractor or subcontractor pursuant to this approval may not begin before the contractor and any subcontractors have been shown a copy of this approval with the conditions by the permittee, and the permittee and each contractor and subcontractor has certified, on a form provided by the department, that the approval and conditions have been received and read, and that the work will

be carried out in accordance with the approval and conditions. Completed certification forms must be forwarded to the department.

(7) Maintenance. The components of the stormwater management system must be adequately maintained to ensure that the system operates as designed, and as approved by the Department. If maintenance responsibility is to be transferred from the permittee to another entity, a transfer request must be filed with the Department which includes the name and contact information for the person or entity responsible for this maintenance. The form must be signed by the responsible person or agent of the responsible entity.

(8) Recertification requirement. Within three months of the expiration of each five-year interval from the date of issuance of the permit, the permittee shall certify the following to 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 are operating as approved, 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, as necessary.

(c) The stormwater maintenance plan for the site is being implemented as approved by the Department, and the maintenance log is being maintained.

(d) All proprietary systems have been maintained according to the manufacturer's recommendations. Where required by the Department, the permittee shall execute a 5-year maintenance contract with a qualified professional for the coming 5-year interval. The maintenance contract must include provisions for routine inspections, cleaning and general maintenance.

(e) The Department may waive some or all of these recertification requirements on a case-by-case basis for permittees subject to the Department's Multi-Sector General Permit ("MSGP") and/or Maine Pollutant Discharge Elimination System ("MEPDES") programs where it is demonstrated that these programs are providing stormwater control that is at least as effective as required pursuant to this Chapter.

(9) Transfer of property subject to the license. If any portion of the property subject to the license containing areas of flow or areas that are flooded are transferred to a new property owner, restrictive covenants protecting these areas must be included in any deeds or leases, and recorded at the appropriate county registry of deeds. Also, in all transfers of such areas and areas containing parts of the stormwater management system, deed restrictions must be included making the property transfer subject to all applicable terms and conditions of the permit. These terms and conditions must be incorporated by specific and prominent reference to the permit in the deed. All transfers must include in the restrictions the requirement that any subsequent transfer must specifically include the same restrictions unless their removal or modification is approved by the Department. These restrictions must be written to be enforceable by the Department, and must reference the permit number.

(10) Severability. The invalidity or unenforceability of any provision, or part thereof, of this permit shall not affect the remainder of the provision or any other provisions. This permit shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

November 16, 2005 (revised August 15, 2015)

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

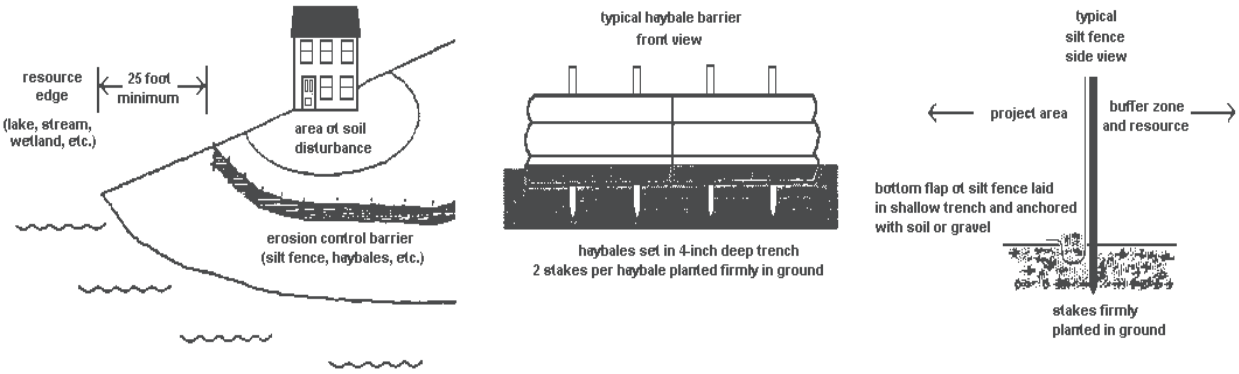
Before Construction

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 many other effects as well, which are all bad.

To Protect the Soil

It has taken thousands of years for our soil to develop. It 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

Appealing a Department Licensing Decision

Dated: November 2018 **Contact: (207) 287-2452**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S. § 3451(4)) or 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.

This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S. §§ 341-D(4) & 346; the *Maine Administrative Procedure Act*, 5 M.R.S. § 11001; and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 C.M.R. ch. 2.

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed more than 30 calendar days after the date on which the Commissioner's decision was filed with the Board will be dismissed unless notice of the Commissioner's license decision was required to be given to the person filing an appeal (appellant) and the notice was not given as required.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. An appeal may be submitted by fax or e-mail if it contains a scanned original signature. It is recommended that a faxed or e-mailed appeal be followed by the submittal of mailed original paper documents. The complete appeal, including any attachments, must be received at DEP's offices in Augusta on or before 5:00 PM on the due date; materials received after 5:00 pm are not considered received until the following day. The risk of material not being received in a timely manner is on the sender, regardless of the method used. The appellant must also send a copy of the appeal documents to the Commissioner of the DEP; the applicant (if the appellant is not the applicant in the license proceeding at issue); and if a hearing was held on the application, any intervenor in that hearing process. All of the information listed in the next section of this information sheet must be submitted at the time the appeal is filed.

INFORMATION APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time the appeal is submitted:

1. *Aggrieved Status*. The appeal must explain how the appellant has standing to maintain an appeal. This requires an explanation of how the appellant may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions, or conditions objected to or believed to be in error.* The appeal must identify the specific findings of fact, conclusions regarding compliance with the law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing requirements that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for public hearing must be filed as part of the notice of appeal, and must include an offer of proof in accordance with Chapter 2. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed evidence must be submitted with the appeal. The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered in an appeal only under very limited circumstances. The proposed evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; or (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Specific requirements for supplemental evidence are found in Chapter 2 § 24.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, and is made easily accessible by the DEP. Upon request, the DEP will make application materials available during normal working hours, provide space to review the file, and provide an opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer general questions regarding the appeal process.
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 stay of the decision is requested and granted, a license holder may proceed with a project pending the outcome of an appeal, but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, and will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, any materials submitted in response to the appeal, and relevant excerpts from the DEP's application review file will be sent to Board members with a recommended decision from DEP staff. The appellant, the license holder if different from the appellant, and any interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. The appellant and the license holder will have an opportunity to address the Board at the Board meeting. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court (see 38 M.R.S. § 346(1); 06-096 C.M.R. ch. 2; 5 M.R.S. § 11001; and M.R. Civ. P. 80C). A party's appeal 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 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).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452, or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

MaineDOT

Environmental Summary Sheet

WIN: 26824.00 **Date Submitted: 12/9/2024**
Town: Lubec
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Ryan Annis

NEPA Complete: USDOT Marine Administration FONSI: 7/30/2021, Re-evaluation: 8/24/2024

Section 106
Review Complete: SHPO Concurrence - No effect Approved 1/29/2024
Section 106 Resources: none

Section 4(f) and 6(f)

Section 4(f)	Section 6(f)
Review Complete - No use	Review Complete - No takes

Maine Department of Inland Fisheries and Wildlife
Not Applicable **Timing Window:** Not Applicable

Section 7
May affect, not likely to adversely affect:
Species of Concern: Northern long-eared bat, Roseate tern, Atlantic salmon DPS & CH, Atlantic & Shortnose sturgeon, Green, Kemp's ridley sea turtle, Loggerhead, and Leatherback sea turtles

Essential Fish Habitat
Adverse effect not substantial
Species of Concern: multi-species

Maine Department of Agriculture, Conservation, and Forestry
Public Lands, Submerged Land Lease: Complete - Completed by the Town.
Maine Land Use Planning Commission: Not Applicable

Maine Department of Environmental Protection
Individual Permit – NRPA Permit L-28159-NJ-B-N, -4P-C-N and as revised (*revision pending*)
**Applicable Standards and Permits are included with the contract*

Army Corps of Engineers: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.
Individual - Corps Permit #NAE-2020-01783 and as modified
-Work Start Notification form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
-Compliance Certification Form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
**Applicable Standards and Permits are included with the contract*

Stormwater Review
Chapter 500 - See SP 615 and off site stormwater design included in the contract

Hazardous Material Review
Review complete – no concerns

☒ **Special Provisions Required**

Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒
Special Provision 105-Environmental Requirements	N/A☐	Applicable☒
Special Provision 105-Marine Mammal Protection Requirements	N/A☐	Applicable☒
Special Provision 105-Underwater Noise Attenuation	N/A☐	Applicable☒
Special Provision 203-Dredge Spec	N/A☒	Applicable☐
General Note for Hazardous Waste	N/A☒	Applicable☐

**All permits and approvals based on plans/scope as of: 9/3/2024*