STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Janet T. Mills
GOVERNOR

Dale F. Doughty
COMMISSIONER

May 1, 2026
Subject: Creation of a New Breakwater, Boat Launch & Parking Lot
WIN:026824.00
Location: Lubec
Amendment No. 4

Dear Sir/Ms.:

Make the Following changes to the Bid Book:

Remove Page Three Hundred and Six through Four hundred and Forty Five titled Environmental Package sheet dated 12/9/2024 and **Replace** with the attached Environmental Package dated 4/15/2026.

The following questions have been received:

Question: Will disturbance beyond the toe limit be allowed in order to provide access for rock sockets and pipe pile installation/drilling (i.e. construct temporary pads south of the breakwater toe from approx. 103+00 to 104+00 for the purpose of drilling access for the 36" Diameter pipe piles.)?

Response: No, unless the contractor acquires the proper permitting. Current project permits do not include this suggested work.

Question: This project requires item 501.236 - Protected Species Observer. Within the special provisions, it indicates that two observers will be required. Should our hourly rate price for the 2,920 hours be for one observer or for the required 2 observers?

Response: The hourly rate provided should be for one observer.

Question: Can you clarify the location and size of the existing foundation to be removed per item 202.1221 lump sum?

Response: The foundation structures are of unknown sizes. Mainly along the proposed driveway area. See attached photos.

Question: Would a combination of hand and excavator operated rtk-dgps survey be acceptable in lieu of the specified multi beam echo sounder instrument/crane deployed sounding ball system? Traditional hand held gps rovers would be used to record all survey data points above low tide. GPS outfitted equipment such as excavators would be used for the portion located below low tide. (Reference addendum 1 WIN 026824.00 Jan. 6, 2025)

Response: A combination of hand-held RTK-DGPS rover surveys and RTK-instrumented construction equipment (e.g., excavator) may be accepted as an alternative to the specified multibeam echo sounder survey where water depths, access, and project objectives warrant. Hand-held RTK-DGPS rovers shall be used to collect all survey data above Mean Low Water (MLW), and RTK-instrumented equipment may be used to collect data below MLW. The Contractor shall demonstrate that the proposed approach achieves accuracy, coverage, and data density suitable for the intended breakwater construction and shall document all calibration, control, and quality-assurance procedures.

Question: Please confirm that automated scales on an excavator or loader would be acceptable for determining mass distribution on heavy gradings. Quarry locations may not be equipped with scales without adding substantial costs to the project? (Reference addendum 1 WIN 026824.00 Jan. 6, 2025)

Response: Automated onboard scales installed on excavators or loaders may be used to estimate material quantities and mass distribution for heavy grading and stone placement operations. This method is acceptable where quarry or source facilities are not equipped with fixed scales and where installation of scales would impose substantial additional cost. Onboard weighing systems shall be properly calibrated, operated in accordance with manufacturer recommendations, and documented to demonstrate reasonable accuracy for construction quantity control purposes.

Question: Please confirm that heavy rip rap and armor stone will be the only materials subject to mass distribution grading as outlined in circa c683. It is assumed that grading of plain rip rap will be visual as is customary on MDOT projects. (Reference addendum 1 WIN 026824.00 Jan. 6, 2025)

Response: This is correct.

Question: Please confirm the onsite inspection team and contractor will work together at the quarry location to confirm grading requirements of armor stone, heavy rip rap, and plain rip rap? Transportation of such gradings to the AL (authorized laboratory) is not practical. (Reference addendum 1 WIN 026824.00 Jan. 6, 2025)

Response: The Contractor and onsite inspection team can coordinate at the quarry location to verify grading requirements for armor stone, heavy riprap, and plain riprap. Grading verification can be performed through quarry inspection, visual assessment, representative stone measurements, and review of quarry handling practices.

Question: Does the pay quantity of rock include the estimated settlement quantity shown on S-118 or should these quantities be considered additional or incidental? (Reference addendum 2 WIN 026824.00 Jan. 13, 2025)

Response: The estimated settlement quantities shall be considered incidental.

Question: In order to drive the required piles with the most cost-effective equipment, it will be necessary to temporarily fill an area adjacent to the piles to provide a platform to support the equipment and to also support the temporary sleeves. The intent would be to construct this fill with the same stone material required for the Breakwater Construction. This material would then be removed and placed in the final breakwater design location. Is temporarily filling the area of the piles an acceptable method?

Response: No fill may be placed beyond the proposed impacts (toe of slope) shown in the design.

Consider these changes and information prior to submitting your bid on **May 6, 2026.**

Sincerely,

George M. A. Macdougall P.E.
Contracts & Specifications Engineer

Environmental Summary Sheet

WIN: 26824.00 **Date Submitted: 4/15/2026**
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 - Off site stormwater design included in plans

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*

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	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. Pile driving by impact hammer must utilize sound absorption cushions. 5. 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. USACE (Rachel Antieau, rachel.h.antieau@usace.army.mil) and Service staff (Roosevelt Mesa, roosevelt.mesa@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
(Marine Mammal Protection Requirements)

Marine Mammals are protected class of species and requires avoidance and minimization measures to prevent harassment or injury to those species. The selected contractor will be responsible for ensuring compliance with all requirements provided in this special provision.

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 requirements during the period of pile driving activities.
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 at least one 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.

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 1 PSO will be on duty during pile installation. Following NOAA Fisheries standards, the PSO will work in shifts. A 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 a zone that is southwest of a line drawn from the project location to a point located at 44.85928, -67.011185 for marine mammals. This is the defined monitoring zone. Monitoring is required 30 minutes before, during, and 30 minutes after all pile installation activities . Monitoring zones 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 monitoring zone as described above before, during, and after pile installation activities. This may require monitoring from boats, barges, docks, and/or land.
    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 in an observation log or summary memo.
   (4) A summary memo or copies of daily observation logs will be provided to MaineDOT when requested.

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

II. Pile Installation Requirements

A. Rubble mound must be installed higher than the high tide elevation prior to beginning pile driving activities.

B. Pre-start clearance monitoring of the defined zone will be conducted during periods of visibility sufficient for the PSO to determine the shutdown zones clear of marine mammals. Pile installation will not begin until the visibility determination is made.

C. The Contractor will coordinate with the PSO to implement the shutdown zone for marine mammals observed approaching or within the monitoring zone as defined above, pile installation activity will be delayed or halted and can resume as soon as the PSO indicates 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 or the monitoring zone as defined above, 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 PSO the following occurs: observation of any marine mammals in the zones described above.

B. If a marine mammal is sighted within monitoring zone as described above prior to start of pile driving 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 beyond the defined monitoring 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 monitoring 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. .

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. Marine Mammal Monitoring Plan
B. PSO Qualifications

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

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,

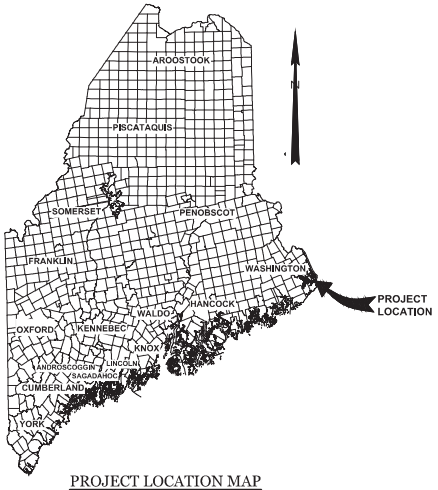
SHAWN B. MAHANEY

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

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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 GONNEAU 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

TITLE SHEET AND DRAWING LIST

SHEET NUMBER

G-001

1 OF 97

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	E. ROSENSTEIN	SIGNATURE	
PROJECT MANAGER	C. MAGUIRE	P.E. NUMBER	
DESIGNER	JACOBS		
CONSULTANT		DATE	
PROJECT RESIDENT			
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

GENERAL NOTES - 1

SHEET NUMBER
G-002
2 OF 97

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:

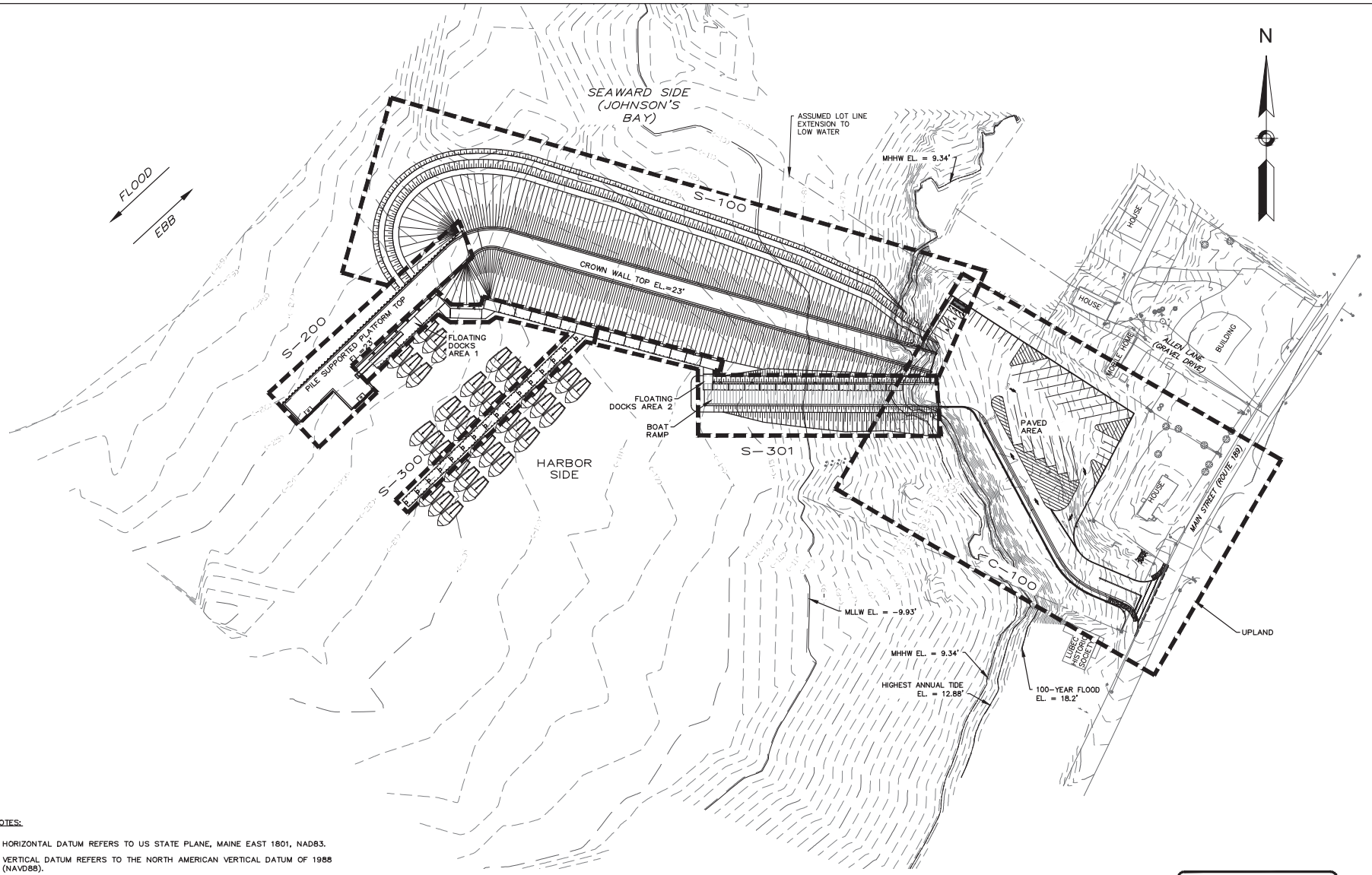
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, II		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

GENERAL UTILITY NOTES

SHEET NUMBER

G-003



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

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

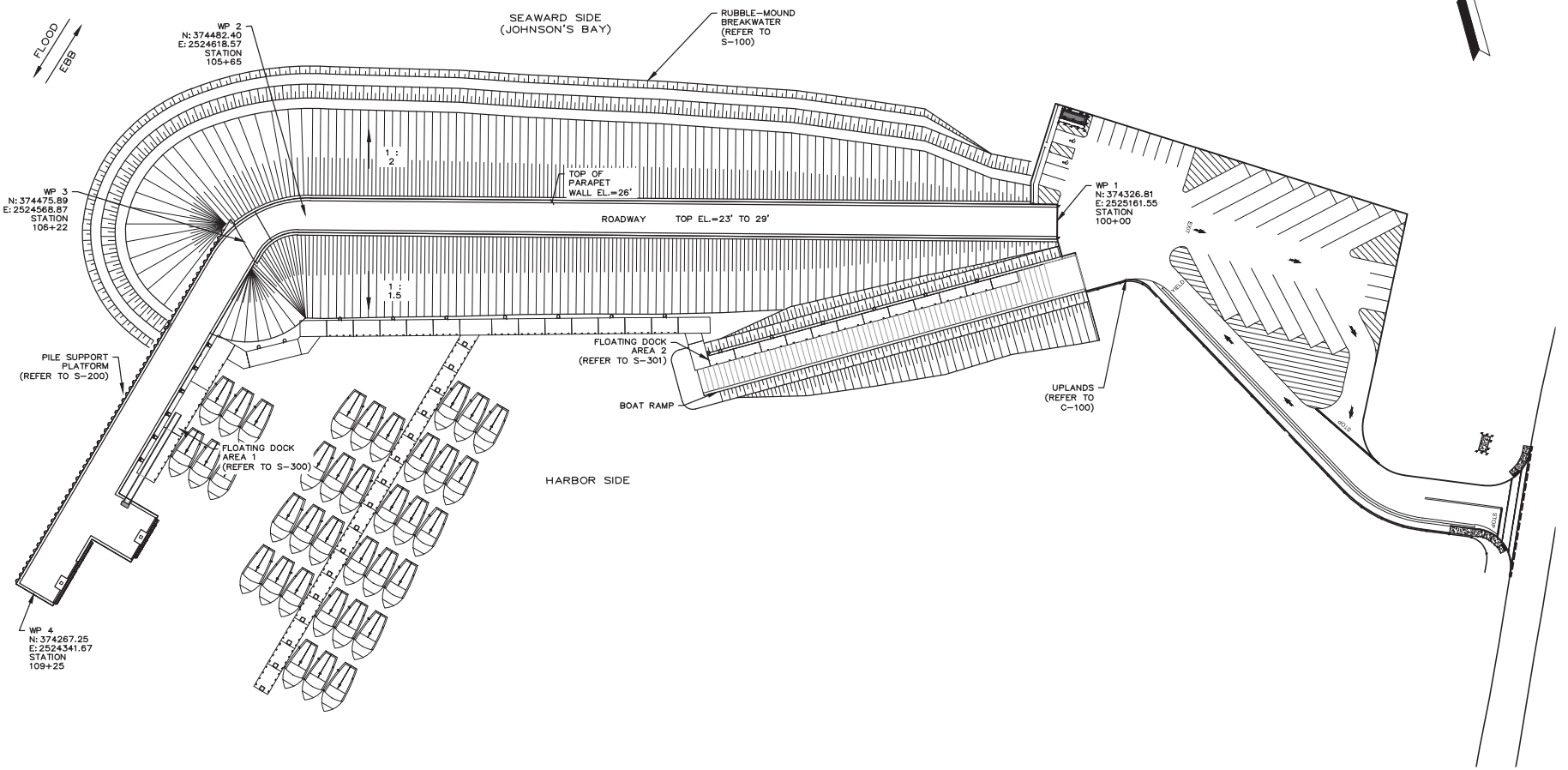
PROJECT INFORMATION			
PROGRAM	E. ROSENSTEIN	SIGNATURE	
PROJECT MANAGER	C. MAGUIRE	P.E. NUMBER	
DESIGNER	JACOBS		
CONSULTANT		DATE	
PROJECT RESIDENT			
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

OVERALL SITE PLAN

SHEET NUMBER

G-100



PLAN
1"=15'-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.

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			

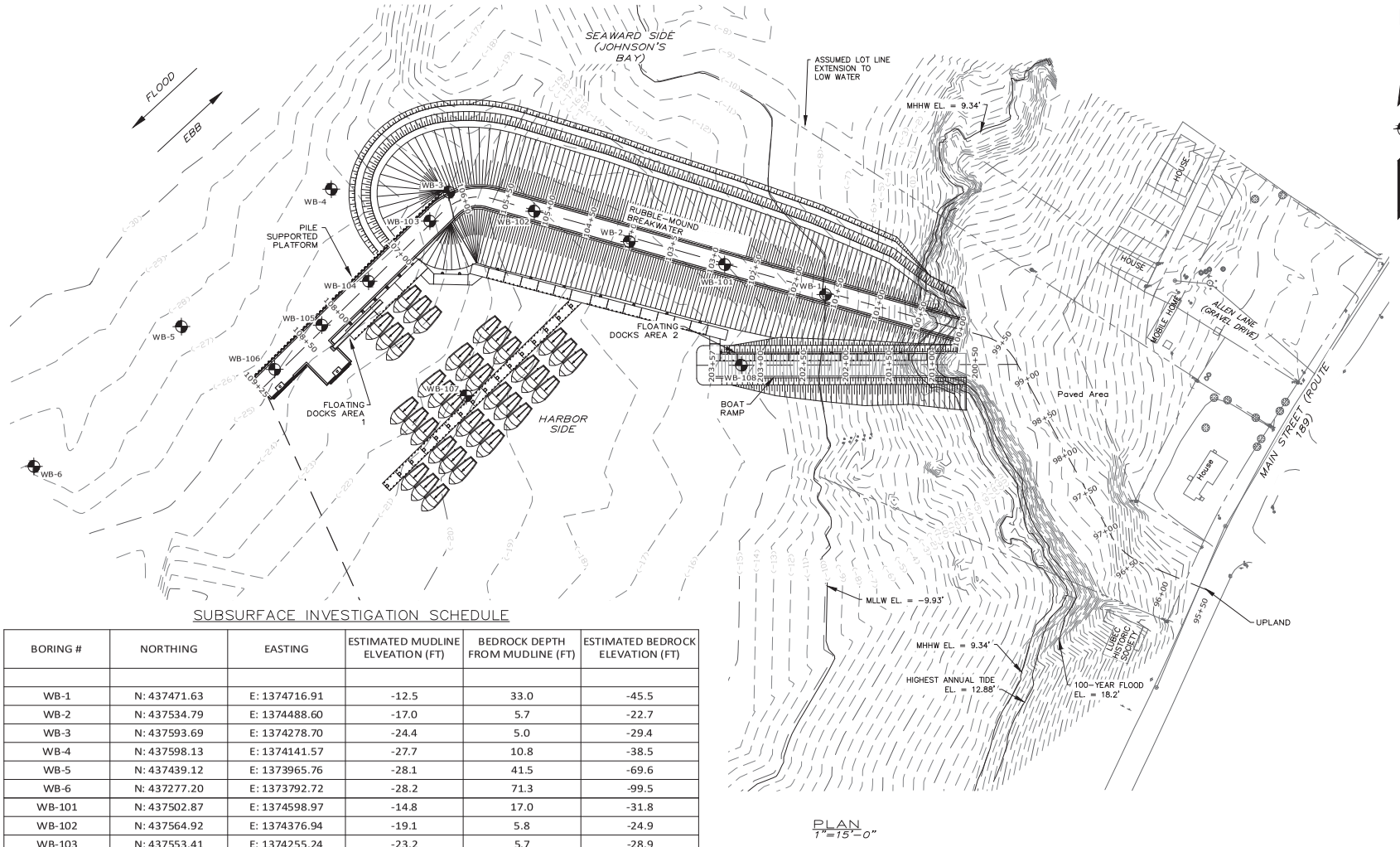
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PROJECT WORKING POINTS AND LAYOUT

SHEET NUMBER

G-101

5 OF 97



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'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

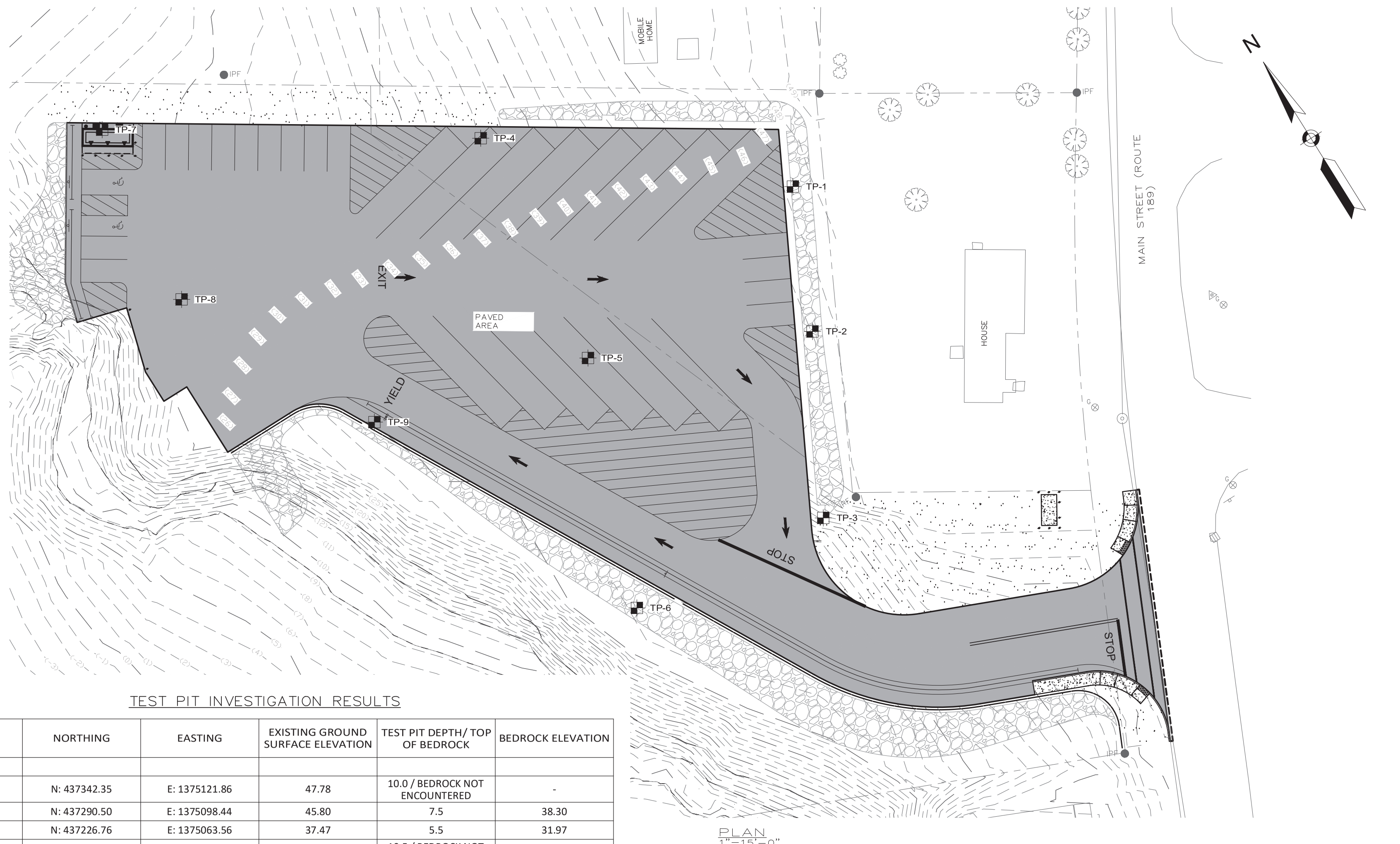
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN	P.E. NUMBER	
CONSULTANT	JACOBS		
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



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	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

TEST PIT LOCATION PLAN

SHEET NUMBER
B-101

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-1
LOCATION	Johnson Bay		
OWNER	Maine DOT		
JOB NUMBER	E2X95900		SHEET 1 OF 2

INSPECTOR	Don Melcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-12.5
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	437471.63
40.3	Terminated					COORD E	1374716.91
						DATE START	7/14/23
						DATE END	7/17/23

SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER NAME	SOIL AND ROCK DESCRIPTION	NOTES
7, 5, 1/12"	6	S-1	0 - 2	24/4		OH (2)	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		CL	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		CL	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		CL	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		CL	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		CL (18.5)	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	
15, 11, 13, 13	24	S-7	20 - 22	24/11		TILL	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		TILL (33)	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)	

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/17/23, 1020: Water Column Depth measured at 18.1 feet; All sample depths feet below mudline
2. Top of Glacial Til 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		
OWNER	Maine DOT		
JOB NUMBER	E2X95900		SHEET 2 OF 2

SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER NAME	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 corestones [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 33.0 feet below mudline

NOTE:

1. REFER TO DRAWING B-100 FOR BORING LOCATIONS.

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

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-1

SHEET NUMBER
B-110
8 OF 97

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 5 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, prominent 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 shown are 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	SIGNATURE	
DESIGNER	PHIL.LUMBERS@N		
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-2

SHEET NUMBER

B-111

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-3
LOCATION	Johnson Bay		
OWNER	Maine DOT		
JOB NUMBER	E2X95900		SHEET 1 OF 1

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)	LAYER NAME	SOIL AND ROCK DESCRIPTION	NOTES
-25	0	WOR WOR WOR WOR	0	S-1	0 - 2	24/10		OH	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
	2	6 7 100/0"	> 100	S-2	2 - 3	12/12		TILL	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		BR	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
		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.	
-35	10									
-40	15									
-45	20									
-50	25									
-55	30									
	35									

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/14/23, 0620: Water column depth measured at 23.75 feet; All samples 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.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

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		

BORING LOGS - WB-3

SHEET NUMBER
B-112

LOG OF TEST BORING

PROJECT	Lubec Breakwater
LOCATION	Johnson Bay
OWNER	Maine DOT
JOB NUMBER	E2X95900
BORING NO.	WB-4
	SHEET 1 OF 2

INSPECTOR	Don Melcher	CONTRACTOR	New England Boring Contractors	DRILLER	Sam Cooley	ELEVATION		-27.7
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	437598.13
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)	LAYER NAME	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
-30								2		
	5	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	
-35				U-1	7 - 8	12/3		CL	U-1: Wet, 2.5Y 3/1 very dark gray, CLAY and fine to coarse rounded Shale 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	
	10	5 100/3"	> 100	S-4	10 - 10.75	9/9		9.75 / T / 10.75	S-3B (Bottom 3"): Wet, 10YR 4/1 dark gray, CLAY, some fine to coarse rounded Gravel, some fine to coarse Sand (CL)	3
-40									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 gray rock [QUODDY FORMATION]	
	15	RQD=78		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 18.25–18.5 ft, NO RECOVERY	
-45	20	RQD=43		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	
-50		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 24.15–24.50 ft, NO RECOVERY	5
	25	RQD=56		C-4	24.5 - 29.5	60/55.5		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 29.1–29.5 ft, NO RECOVERY	
-55	30	RQD=60		C-5	29.5 - 33.5	48/48			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 5 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	6
-60	35			C-6	33.5 - 38.2	56/56				

Page 1: 0–35 feet. Each subsequent page displays 40 feet.

NOTES

1. 07/10/23, 1740: Water column depth 36.9 feet, High Tide; All sample depths feet below mudline
2. Piston sampler did not fire/engage; 12" penetrated; 3" recovered and placed in jar for characterization
3. Top of BEDROCK at 10.75 feet below mudline
4. Roller bit advancement
5. Core jammed at 24.5 ft
6. Bottom 4 inches recovered in C-6 core run

LOG OF TEST BORING

PROJECT	Lubec Breakwater
LOCATION	Johnson Bay
OWNER	Maine DOT
JOB NUMBER	E2X95900
BORING NO.	WB-4
	SHEET 2 OF 2

ELEV. (ft)	DEPTH (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER NAME	SOIL AND ROCK DESCRIPTION	NOTES
-65		RQD=63							Rate (min/ft): 3 - 4.25 - 5.75 - 6 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"	
	40	RQD=84		C-7	38.2 - 41.95	45/45			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	
-70		RQD=92		C-8	41.95 - 43.95	24/24		43.95	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 dippling 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 Bottom of Borehole at 43.95 feet.	
	45									
-75	50									
-80	55									
-85	60									
-90	65									
-95	70									
-100										

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	
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-4

SHEET NUMBER
B-113

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-5
LOCATION	Johnson Bay		SHEET 1 OF 3
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

INSPECTOR	Don Melcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-28.09
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	437439.12
45.0	NX Rock Core					COORD E	1373965.76
75.0	Terminated					DATE START	7/11/23
						DATE END	7/12/23

SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER NAME	SOIL AND ROCK DESCRIPTION	NOTES
WOR 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
4 3 4 8	7	S-2	2 - 4	24/22		3.25	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 S-2B (Bottom 7"): Wet, 10YR 5/2 grayish brown, CLAY (CL); PP: 4.5 kg/cm2; TV: 0.75 kg/cm2	
		U-1	4 - 4.85	10/10		CL	U-1: Wet, 5Y 3/2 dark olive gray, CLAY (CL); PP: > 4.5 kg/cm2; TV: 0.75 kg/cm2	2
8 9 16 21	25	S-3	5 - 7	24/24			S-3: Wet, very stiff, 10YR 5/2 grayish brown, CLAY, trace Shells (CL); PP: > 4.5 kg/cm2; TV: 0.35 kg/cm2	
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	
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	
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	
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	
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	
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	
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	
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, 0925: Water column depth 30.1 feet; All sample depths feet below mudline
2. Insufficient volume for testing

LOG OF TEST BORING

PROJECT	Lubec Breakwater	BORING NO.	WB-5
LOCATION	Johnson Bay		SHEET 2 OF 3
OWNER	Maine DOT		
JOB NUMBER	E2X95900		

SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	LAYER NAME	NOTES
4 (cont.) 2 2 2 3	4	S-12	38 - 40	24/24		CL	
						41.5	3
100/3"	>100	S-13	43 - 43.25	3/0		BR	4
RQD=0		C-1	45 - 47	24/24			5
RQD=0		C-2	47 - 48	12/12			5
RQD=23		C-3	48 - 49.85	22/22			5
RQD=0		C-4	49.85 - 50.85	12/12			5
RQD=0		C-5	50.85 - 51.85	12/12			5
RQD=0		C-6	51.85 - 54.85	36/36			5
RQD=67		C-7	54.85 - 56.85	24/24			5
RQD=19		C-8	56.85 - 58.85	24/24			5
RQD=93		C-9	58.85 - 63.85	60/60			
RQD=67		C-10	63.85 - 68.4	60/55.5			
RQD=19		C-11	68.85 - 70.85	24/24			5
RQD=42		C-12	70.85 - 72.85	24/24			
RQD=88		C-13	72.85 - 75	26/26			

SOIL AND ROCK DESCRIPTION

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

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]

C-1: 45.0–47.0 ft, SHALE, N3 dark gray, clay to silt, laminated to very thinly bedded, steeply dippling to vertical bedding, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 6.5 – 9.5
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
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"
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
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
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
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
C-8: 56.85–58.85 ft, SHALE, N3 dark gray, clay to silt, laminated to vey thinly bedded, steeply dipping to vertical bedding, extremely to moderately fractured [QUODDY FORMATION]; Drilling Rate (min/ft): 7.25 – 12.5
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): 4.5 – 4.5 – 5.75 – 6.5 – 6.5
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];

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	BORING NO.	WB-5
LOCATION	Johnson Bay		SHEET 3 OF 3
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)	LAYER NAME	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.	

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

Jacobs

NOT FOR CONSTRUCTION

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-5

SHEET NUMBER
B-114
12 OF 97

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 Metcher	CONTRACTOR	New England Boring	DRILLER	Sam Cooley	ELEVATION	-28.2
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceShretzelor5	DATUM	NAVD 88
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	SPT HAMMER	140 lb Auto	GRID N	457277.2
73.0	NX Rock Core	REMARKS				COORD E	1373792.72
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 WOR	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	
				U-1	4 ~ 6	24/24			S-2B (Bottom 6"): Wet, 5Y gray, CLAY (CL); PP: 4.25 kg/cm2; TV: 0.15 kg/cm2	
-5	5							3.5	U-1: Wet, 5Y 5/1 gray, CLAY (CL)	
		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	
-35		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 elevation 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)	BOR HOLE	SOIL AND ROCK DESCRIPTION	NOTES
		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 Silty Clay, some fine to coarse Sand (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)	BOR HOLE	SOIL AND ROCK DESCRIPTION	NOTES
		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								
-80				C-4	79.65 ~ 84	52/52			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	4
		RQD=58								
-110				C-5	84 ~ 89	60/60			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): 6 ~ 6 ~ 6 ~ 6 ~ 5	
		RQD=82								
-85				C-6	89 ~ 90.75	21/21			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 ~ 6 ~ 5	4
		RQD=29		C-7	90.75 ~ 94.6	46/46			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"	4
-120										
		RQD=76								
-90				C-8	94.6 ~ 97.5	35/35			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 ~ 7 ~ 6.75/7"	4
		RQD=49								
-125				C-9	97.5 ~ 100	30/30			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"	4
		RQD=0								
-100				C-10	100 ~ 102	24/24			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
		RQD=42		C-11	102 ~ 103	12/12			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	
		RQD=42		C-12	103 ~ 105	24/24			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	
-105		RQD=71						105		
-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
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-6 (SEET 1 OF 2)

SHEET NUMBER

B-115

13 OF 97

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 (ft)	SAMPLE DATA	N-VALUE	SAMPLE NO.	DEPTH INTERVAL (ft)	PEN/REC (in)/(in)	PID (ppm)	BLOWS PER 6 INCHES	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, SMALE, M3 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.	
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										
-160										
-165										
-170										
-175										
-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
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-6 (SEET 2 OF 2)

SHEET NUMBER

B-116

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	DRILLER: Sam Cooley	ELEVATION: ~14.8
METHOD OF DRILLING	GROUNDWATER READINGS	DRILL RIG: GeforoStratastar5	DATUM: NAVD 88
0.0 Wash Boring w/Casing	DATE/TIME / DEPTH(ft) / REMARKS	SPT HAMMER: 140 lb Auto	GRID N: 437502.87
17.0 NX Rock Core			COORD E: 1374598.97
21.6 Terminated			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 OR ROCK SYMBOL	SOIL AND ROCK DESCRIPTION	NOTES
~15		WOR WOR WOR	0	S-1	0 ~ 2	24/15		FILL	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			S-3: Wet, loose, 5Y 3/2 dark grayish 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 grayish 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 grayish 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 grayish 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		14.5 W/R	S-7: Wet, very dense, 2.5Y 4/2 dark grayish 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
								17	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, N3 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, N3 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, N3 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						21.6	Bottom of Borehole at 21.6 feet.	
~-40	25									
~-45	30									
	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.

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-101

SHEET NUMBER

B-117

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: GeforceStratastar5	DATUM: MAVD 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: 1374376.94
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)	SOIL OR ROCK SYMBOL	SOIL AND ROCK DESCRIPTION	NOTES
~20	0	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 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	
	5			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		GC	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	3
				C-1	6 ~ 11	60/57.5			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)	4
		RQD=72						BEDROCK	S.91~5.2 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): 3~5.5~3.5~5.5~5.5 Bottom of Borehole at 11 feet.	
~30	10									
~35										

Page 1: 0~35 feet. Each subsequent page displays 40 feet.

NOTES

1. 11' 10" water column measured at 15:20 on 02/22/2024.
2. Shelby Tube refusal at 5.1', Shelby Tube beat 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.

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	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-102

SHEET NUMBER

B-118

16 OF 97

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	GeforceStratostar5
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 MARK	SOIL AND ROCK DESCRIPTION	NOTES
		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
-25		WOR WOR WOR 2	0	S-2	2 – 4	24/24		OH	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		3.67	S-2B (Bottom 4"): Wet, 5Y 3/1 dark gray, SILTY CLAY (CL)	
	-5			U-1				CL	U-1: Wet, 5Y 3/1 dark gray, SILTY CLAY (CL)	
		100/1"	>100	S-4	5.6 – 5.7	1/1		5.7	S-3: Wet, very dense, 5Y 3/2 dark olive gray, fine to coarse angular GRAVEL, some Silty Clay (GC)	2 3
-30				C-1	6.5 – 9.1	31/31			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"	
		RQD=40								
	-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"	
		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	
-40	-15	RQD=100								
				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
-45	-20	RQD=80						BEDROCK		
				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
-50	-25	RQD=89								
				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	
-55	-30	RQD=58								
				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
-60	-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 gray 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 MARK	SOIL AND ROCK DESCRIPTION	NOTES
		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	
-60								37	Bottom of Borehole at 37 feet.	
	40									
-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

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 Melcher	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 SYMBOL	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	
		WOR WOR 2 5	2	S-3	4 ~ 6	24/14	3.78	CL	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	4 3 7 100/3"	10	S-4	6 ~ 7.75	21/7	6	TILL	S-3: Wet, 10YR 4/1 dark gray, SILTY CLAY, some fine to coarse Sand, little fine rounded Gravel (CL)	
								W/R 9.5	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
									S-4B (Bottom 2"): Wet, gray 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	RQD=60		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): 2.5-2-3-3-3	
				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							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 26.0-26.8 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"	
-45	20			C-5	24.5 ~ 27	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	4
		RQD=0								
				C-6	27 ~ 29.5	30/30				
-50	25	RQD=20								
				C-7	29.5 ~ 34.5	60/60				
-55	30	RQD=73								
-60	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. 7.6-9.5 ft Weathered Bedrock.
3. Top of bedrock at 9.5 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 SYMBOL	SOIL AND ROCK DESCRIPTION	NOTES
-60	40	RQD=95		C-8	34.5 ~ 39.5	60/60		BEDROCK	FORMATION]; Drilling Rate (min/ft): 2/6"-2-2.5 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): 2.5-2.5-2.5-2-2.5 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 Bottom of Borehole at 39.5 feet.	5
-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	SIGNATURE	
DESIGNER	PHIL LANERGAN	P.E. NUMBER	
CONSULTANT	JACOBS		
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

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	NX 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 SYMBOL	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 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		SW/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	RQD=72		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 to C-2 core run [QUODDY FORMATION]; Drilling Rate (min/ft): 2.5-2-2-2-2.5	
-40	15	RQD=59		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"	
-45	20	RQD=79		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
				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	RQD=88		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]	
				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	
-60	35									

Page 1: 0-35 feet. Each subsequent page displays 40 feet.

NOTES

1. 18' 3" water column measured at 7:05 on 2/27/2024.
2. Top of bedrock (Rock at 8.0 ft below mudline.
3. 7.8-10.0 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 SYMBOL	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): 2-2.5-2.5-2.5-2.5	
-65	40	RQD=82		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
-70	45								41 Bottom of Borehole at 41 feet.	
-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
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-105

SHEET NUMBER

B-121

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	NAVD 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 NAME	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		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
									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		BEDROCK	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 19 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			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 NAME	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

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
METHOD OF DRILLING		GROUNDWATER READINGS		DRILL RIG	GeforceStratastar5
0.0	Wash Boring w/Casing	DATE/TIME	DEPTH(ft)	REMARKS	SPT HAMMER 140 lb Auto
18.5	NX Rock Core				
41.0	Terminated				

ELEVATION	-20.5		
DATUM	MAVD 88		
GRID	N	437349.97	
COORD	E	1374297.6	
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)	2
								TILL	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)	
-35	15	5 4 6 7	10	S-6	14 ~ 16	24/18		16	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)	
				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
-40	20	RQD=38								
-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 seafloor measured at 29.75' from water surface on 3/6/2024 at 0125.
2. Shelby tube refusal 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	RQD=76		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	
-65	45	RQD=83		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
-70	50							48.5	Bottom of Borehole at 48.5 feet.	
-75	55									
-80	60									
-85	65									
-90	70									
-95										

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	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-107

SHEET NUMBER

B-123

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	NAVD 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 MAKE	SOIL AND ROCK DESCRIPTION	NOTES
		WOR WOR WOR WOR	0	S-1	0 ~ 2	24/8			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		OH	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	
				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	
-20	-5	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 WX	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)	
	-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. 5' 8" water column 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 MAKE	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:	

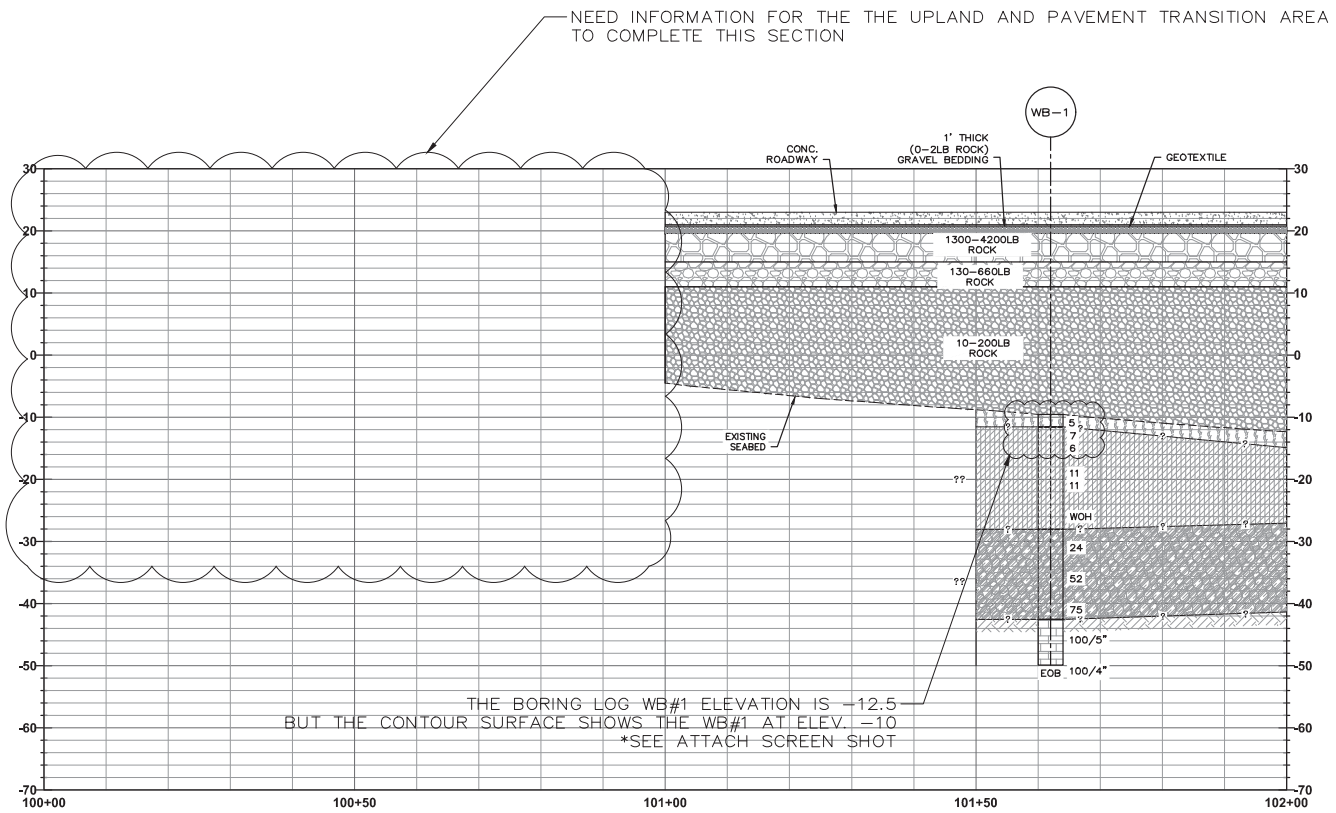
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	PHIL LANERGAN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BORING LOGS - WB-108

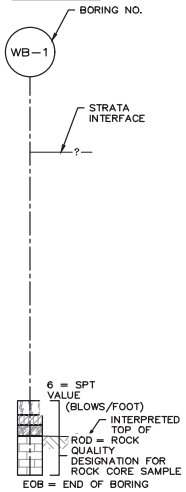
SHEET NUMBER

B-124



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

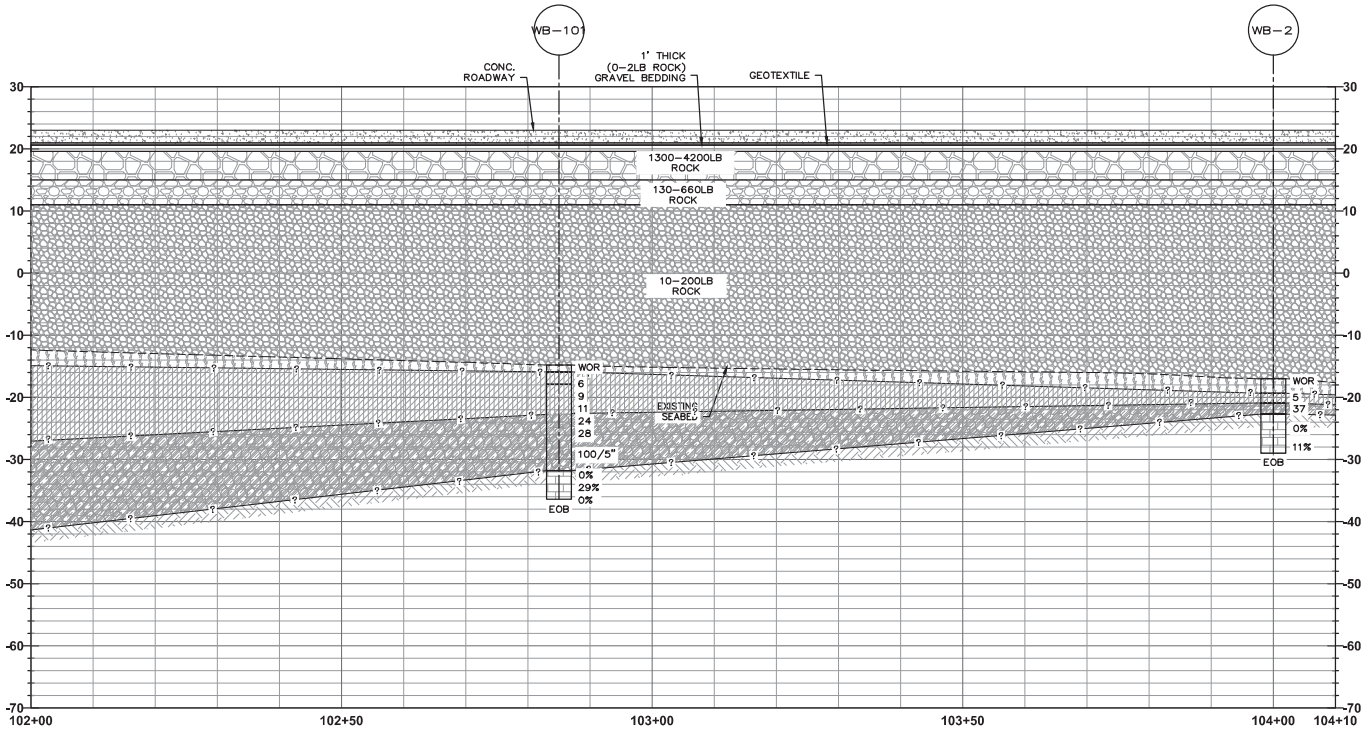
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM			SIGNATURE
PROJECT MANAGER	E. ROSENSTEIN		
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

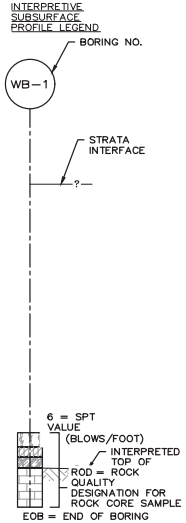
BREAKWATER PROFILE-1

SHEET NUMBER
B-130



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

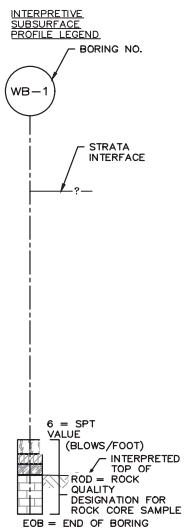
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	E. ROSENSTEIN	SIGNATURE	
PROJECT MANAGER	C. MAGUIRE	P.E. NUMBER	
DESIGNER	JACOBS		
CONSULTANT		DATE	
PROJECT RESIDENT			
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

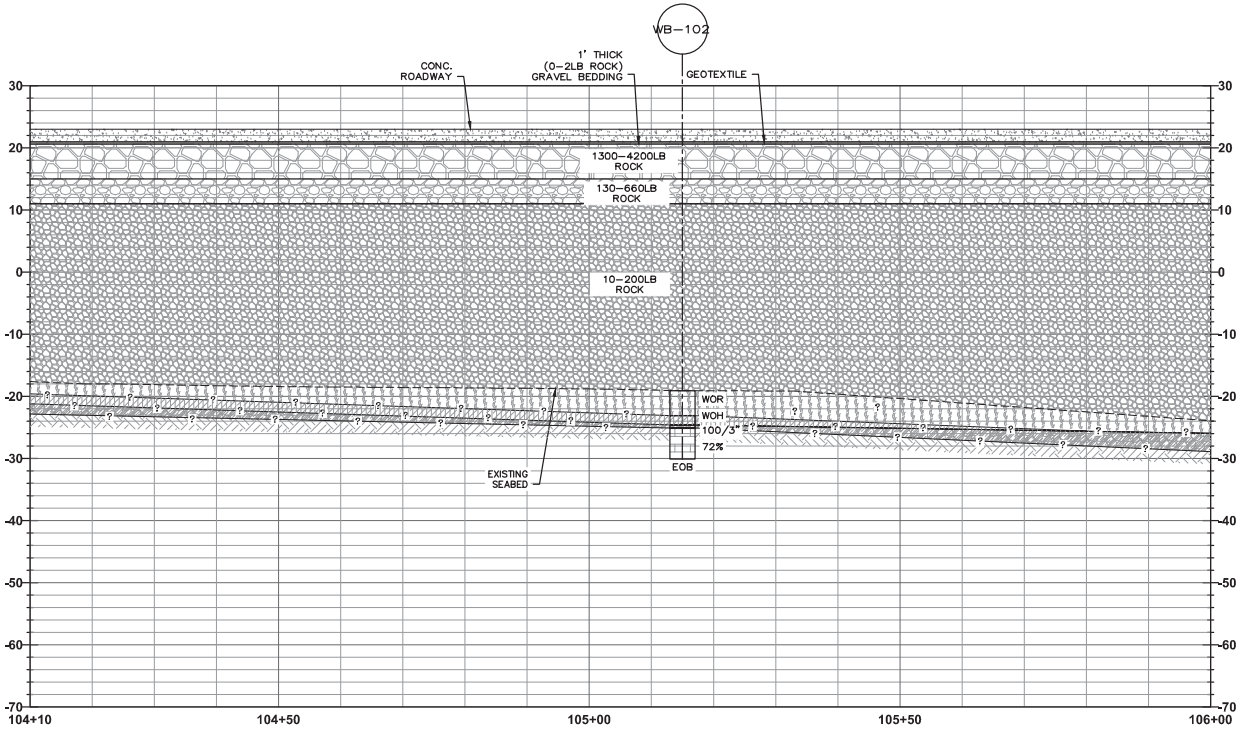
BREAKWATER PROFILE-2

SHEET NUMBER
B-131
24 OF 97



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

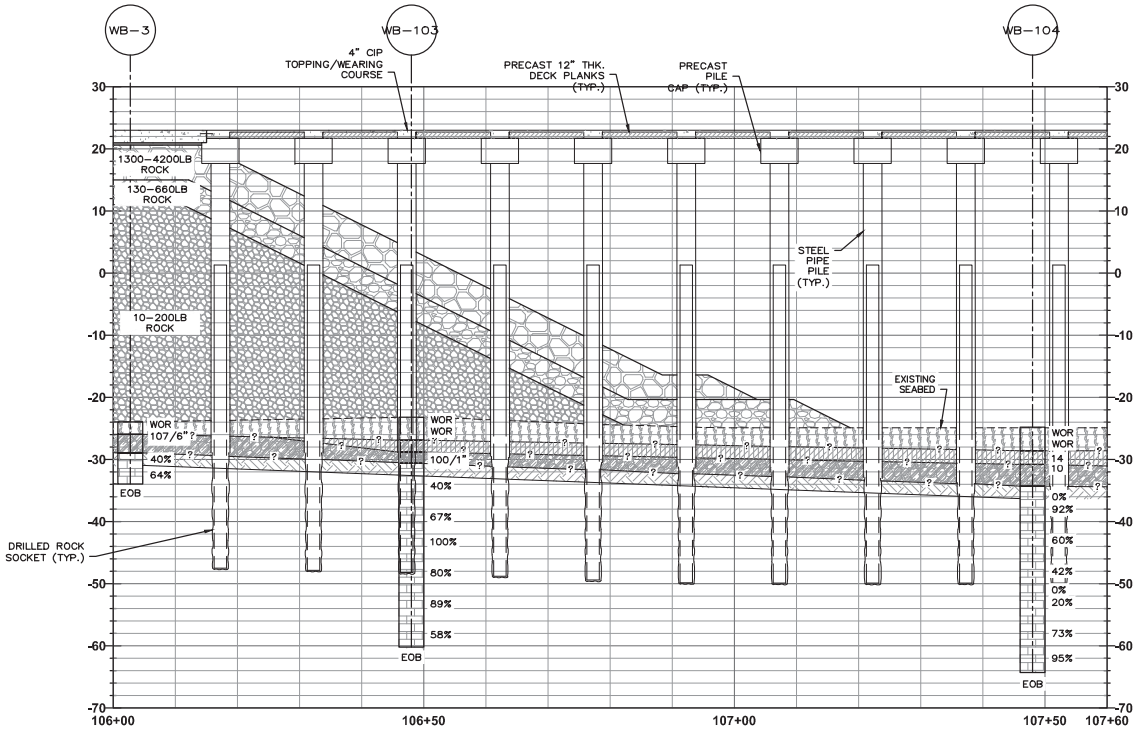
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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

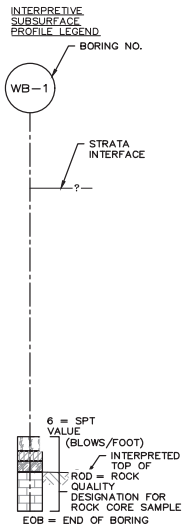
BREAKWATER PROFILE-3

SHEET NUMBER
B-132
25 OF 97



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

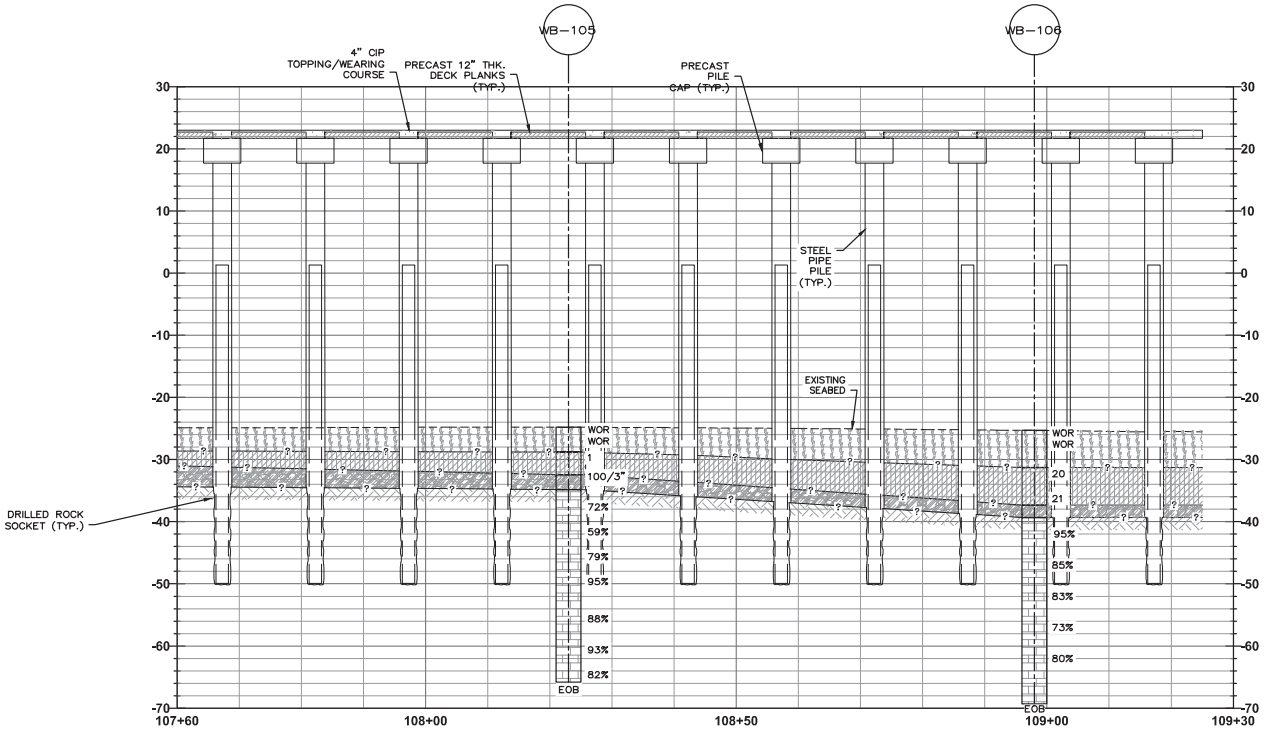
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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

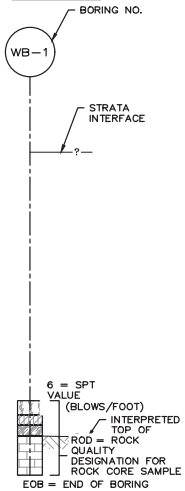
BREAKWATER PROFILE-4

SHEET NUMBER
B-133
26 OF 97



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

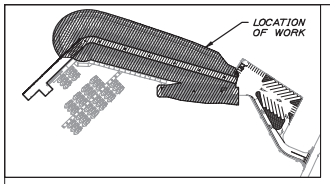
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	E. ROSENSTEIN	SIGNATURE	
PROJECT MANAGER	C. MAGUIRE	P.E. NUMBER	
DESIGNER	JACOBS		
CONSULTANT			
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

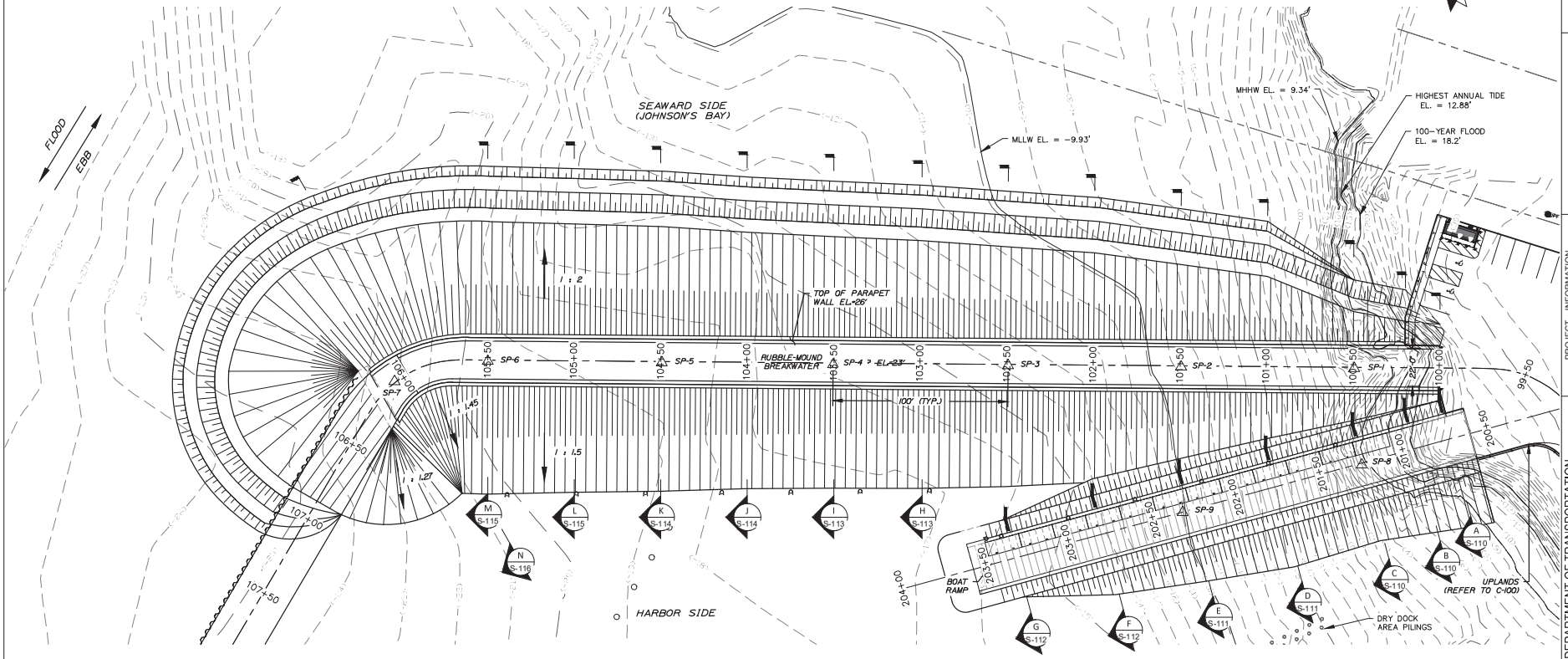
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PROFILE-5

SHEET NUMBER
B-134
27 OF 97



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

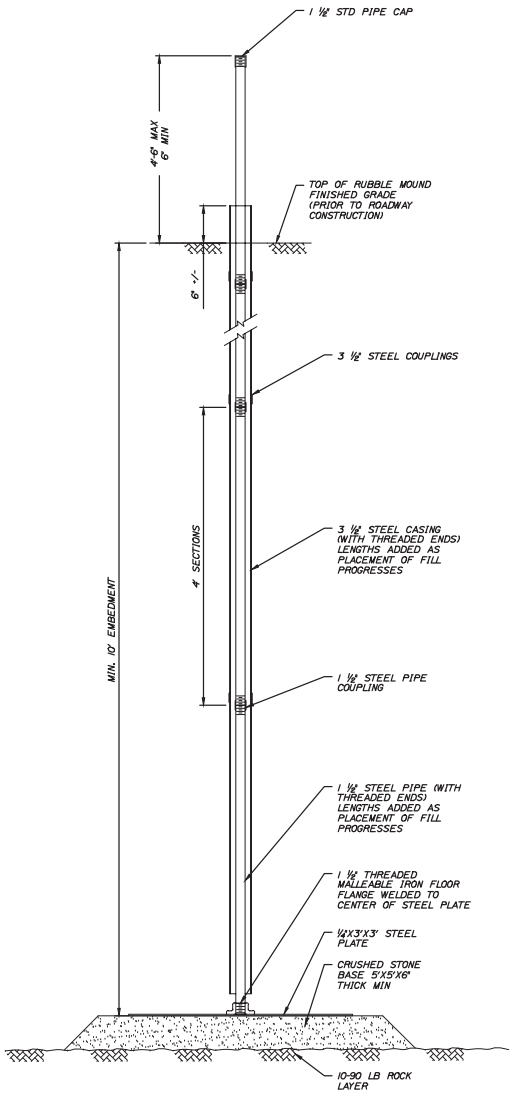
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND MONITORING PLAN

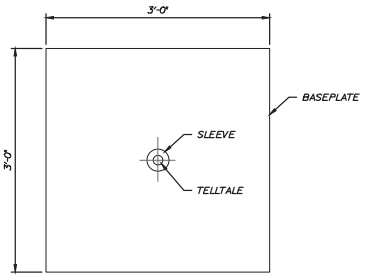
SHEET NUMBER
MN-100
28 OF 97



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:	

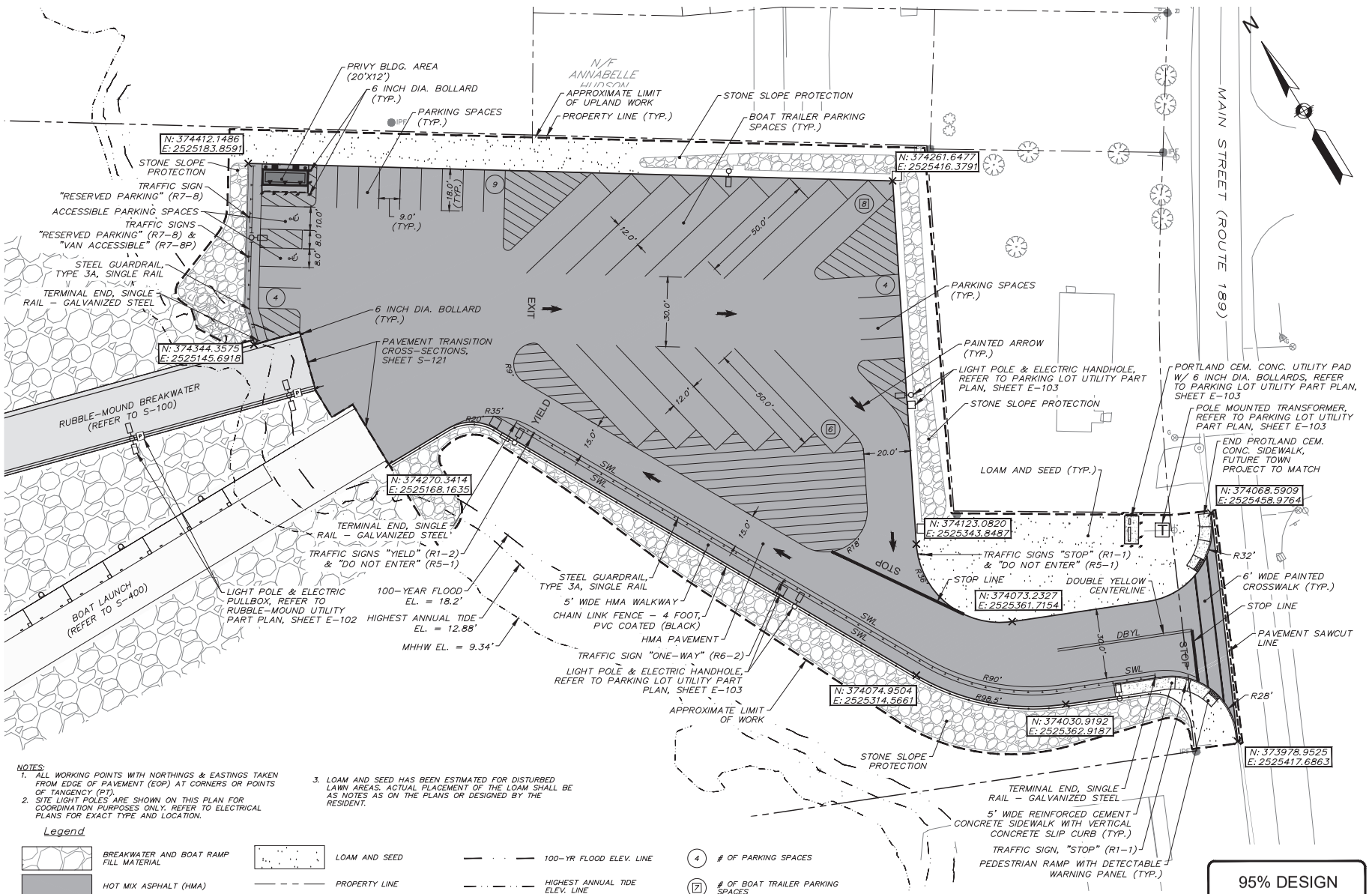
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND MONITORING SECTIONS AND DETAILS

SHEET NUMBER

MN-120



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

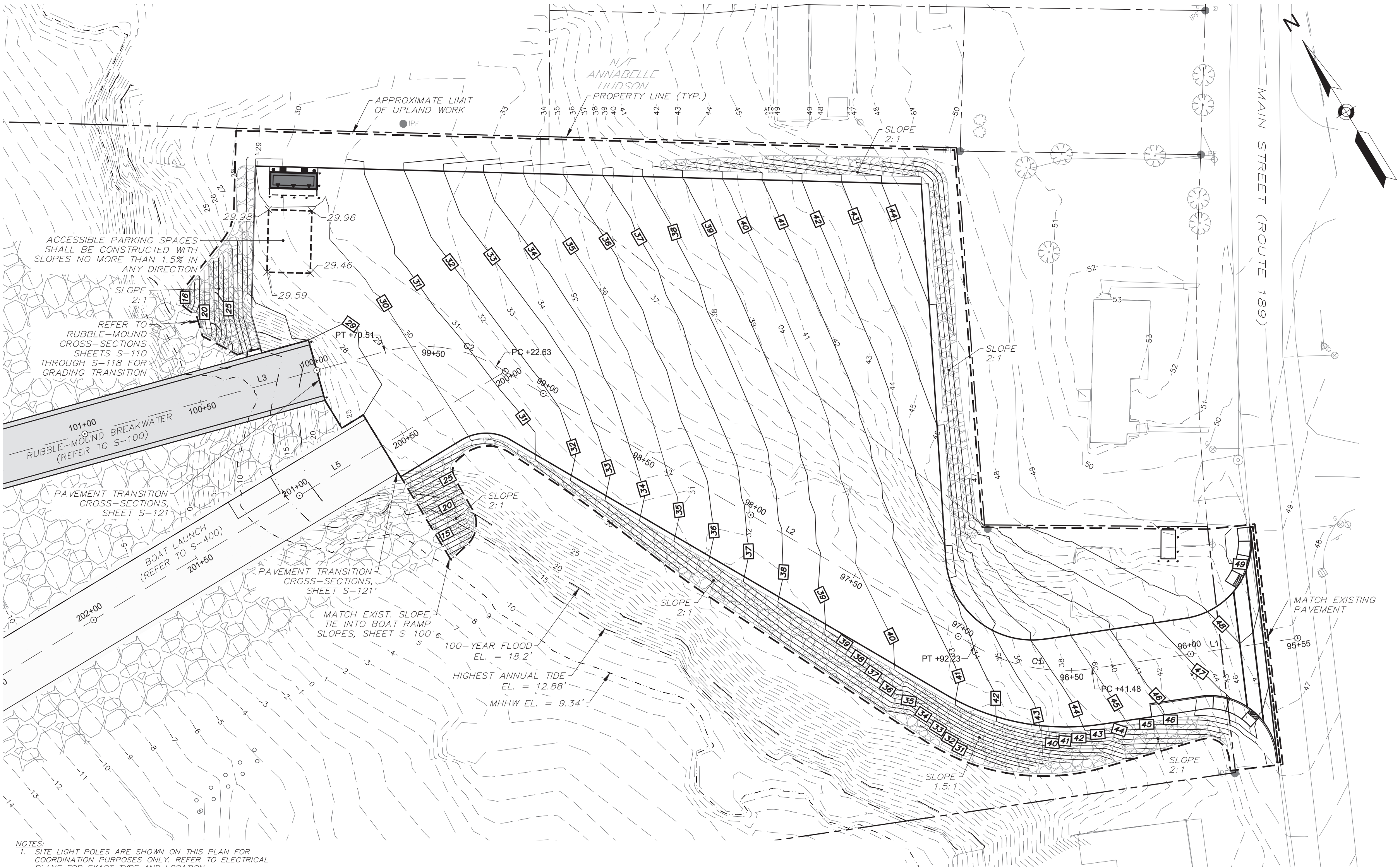
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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



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:	

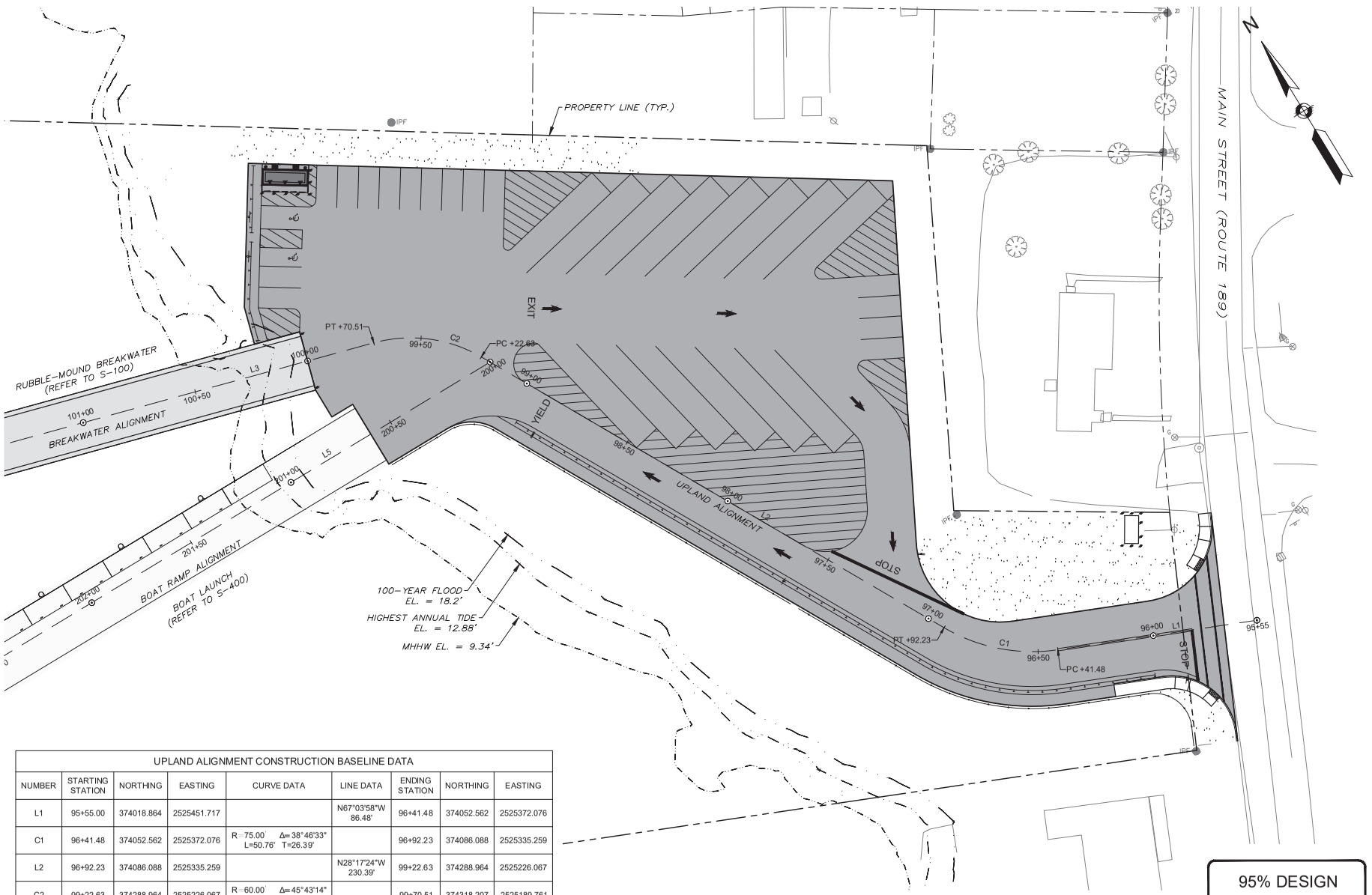
PROJECT INFORMATION

PROGRAM		SIGNATURE
PROJECT MANAGER	E. ROSENSTEIN	
DESIGNER	C. MAGUIRE	P.E. NUMBER
CONSULTANT	JACOBS	
PROJECT RESIDENT		DATE
CONTRACTOR		
PROJECT COMPLETION DATE		

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

UPLAND GRADING PLAN

SHEET NUMBER
C-200



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			

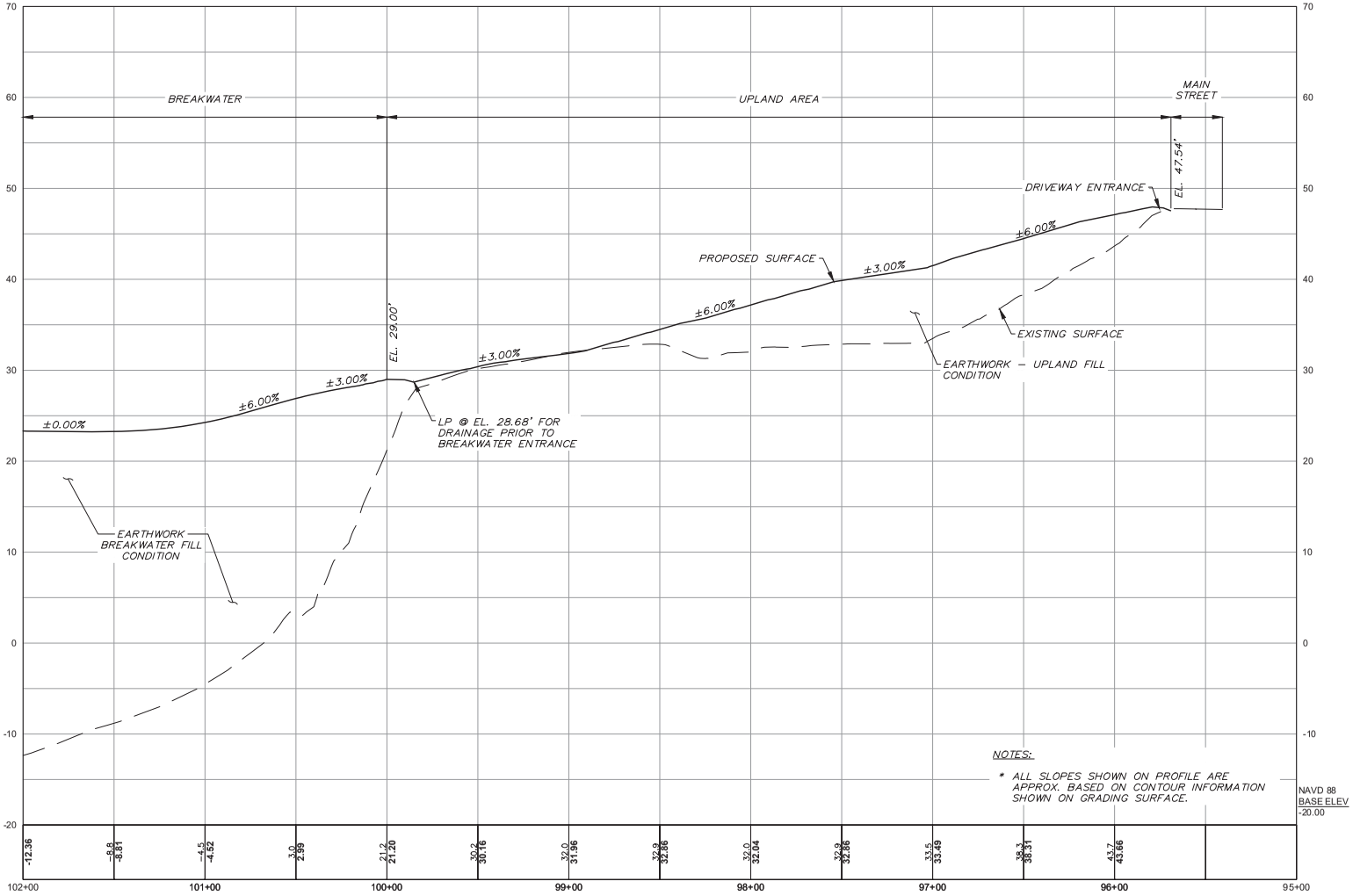
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

UPLAND ALIGNMENT PLAN

SHEET NUMBER

C-300

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:	

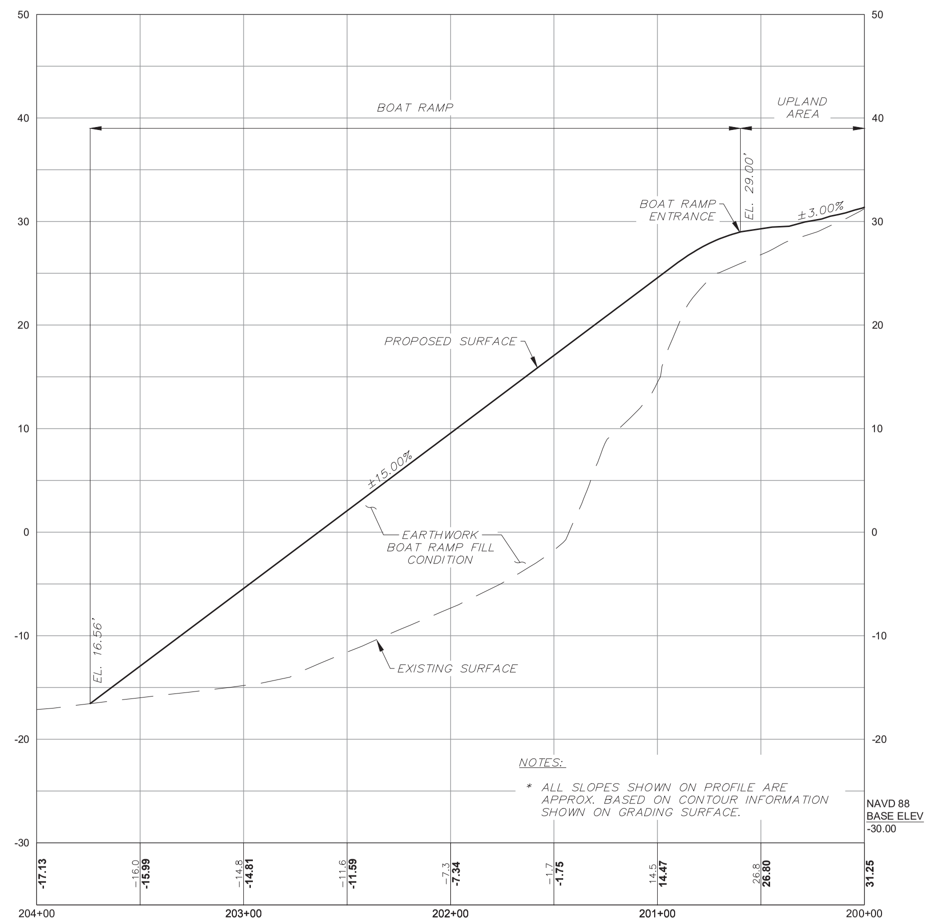
PROJECT INFORMATION			
PROGRAM	Multimodal		
PROJECT MANAGER	Aurele Gorneau II	SIGNATURE	
DESIGNER	Craig Morin	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

DRIVEWAY & BREAKWATER PROFILE PLAN

SHEET NUMBER
C-310
33 0F 97

BOAT RAMP PROFILE



NOTES:

* ALL SLOPES SHOWN ON PROFILE ARE APPROX. BASED ON CONTOUR INFORMATION SHOWN ON GRADING SURFACE.

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
WASHINGTON, COUNTY
LUBEC, ME

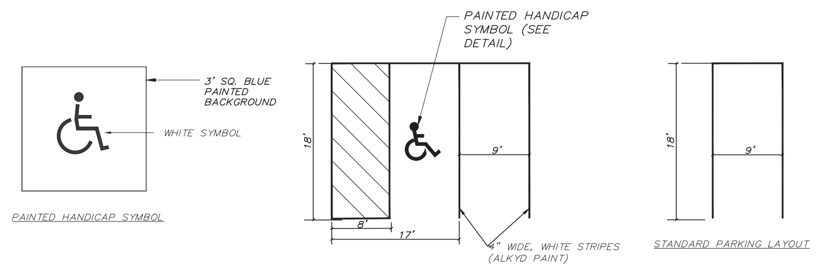
BOAT RAMP PROFILE PLAN

SHEET NUMBER
C-311
34 OF 97

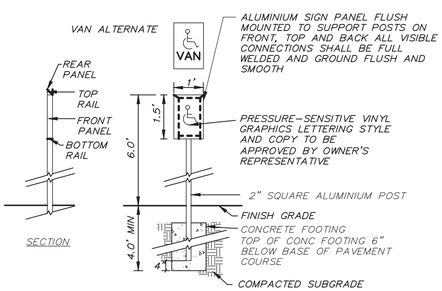
File: C:\Users\drizike\OneDrive - Jacobs\ProjectDocuments\30 WIP\Drawings\Drawings_95% Submission\34-C-311 (Boat Ramp Profile Plan) ; Plotted: 7/19/2024 4:57 PM by DRIZIK, EKATERINA ; Saved: 7/19/2024 9:02 AM by MAGUIRC

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.

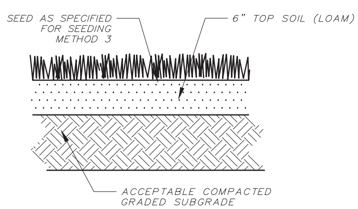


NOTE: ALL HANDICAP SIGNS MUST MEET 2009 MUTCD.

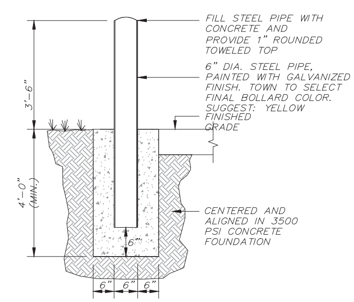
HANDICAP SIGN
N.T.S.

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.



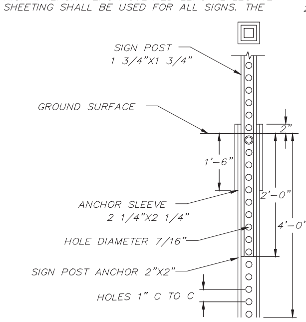
BOLLARD DETAIL
N.T.S.

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.

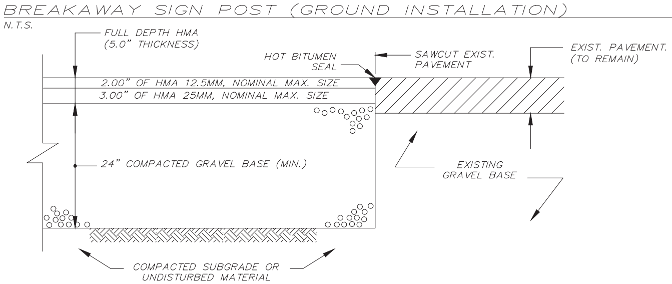


METHOD OF INSTALLATION:
1. DRIVE SIGN POST ANCHOR TO WITHIN 3 OR 4' OF SURFACE.
2. PRE-CUT ANCHOR SLEEVE SO THAT THE HOLES WILL MATCH AND STILL BE FLUSH WITH TOP OF SIGN POST ANCHOR, DRIVE ANCHOR SLEEVE UNTIL HOLES MATCH AS NOTED ABOVE, THEN DRIVE BOTH THE SIGN POST ANCHOR AND ANCHOR SLEEVE UNTIL ONE 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.

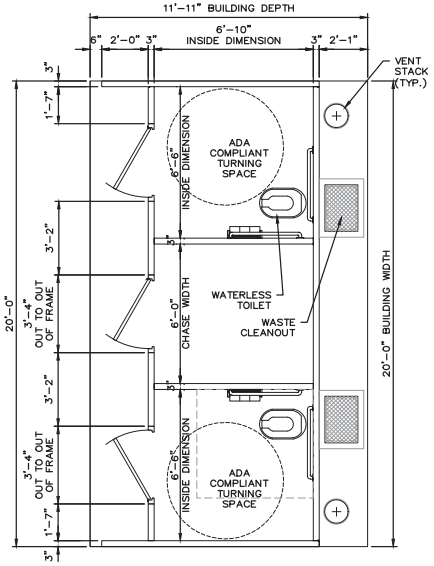
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

PROJECT INFORMATION		
PROGRAM		
PROJECT MANAGER	E. ROSENSTEIN	SIGNATURE
DESIGNER	C. MAGUIRE	
CONSULTANT	JACOBS	P.E. NUMBER
PROJECT RESIDENT		
CONTRACTOR		DATE
PROJECT COMPLETION DATE		

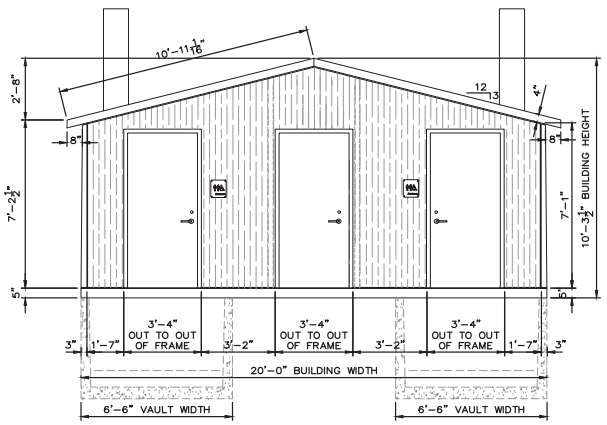
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

UPLAND DETAILS SHEET

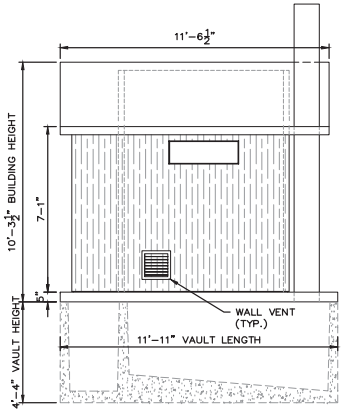
SHEET NUMBER
C-400



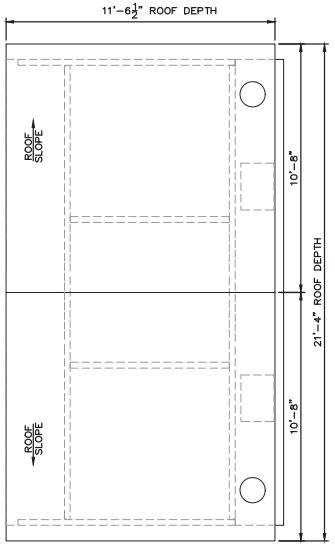
FLOOR PLAN
3/8" = 1'–0"



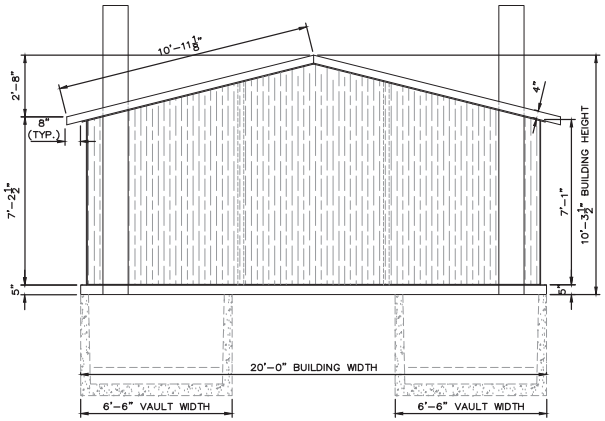
FRONT ELEVATION
3/8" = 1'–0"



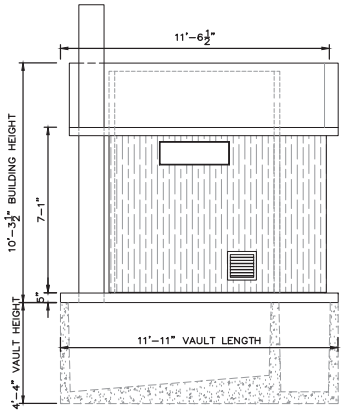
RIGHT ELEVATION
3/8" = 1'–0"



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

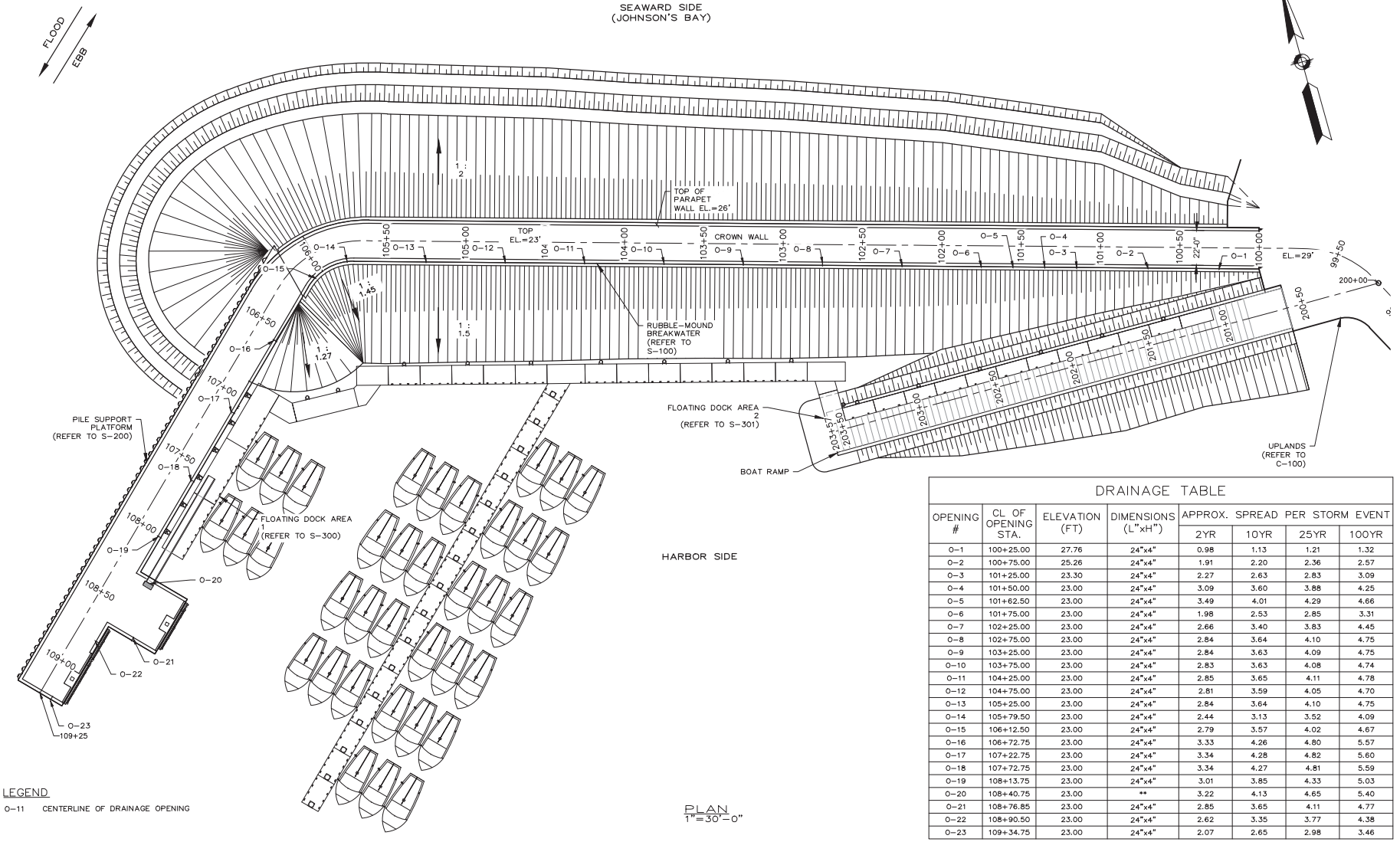
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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



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.

PLAN
1"=30'-0"

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		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

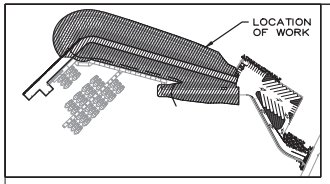
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

BREAKWATER PLAN

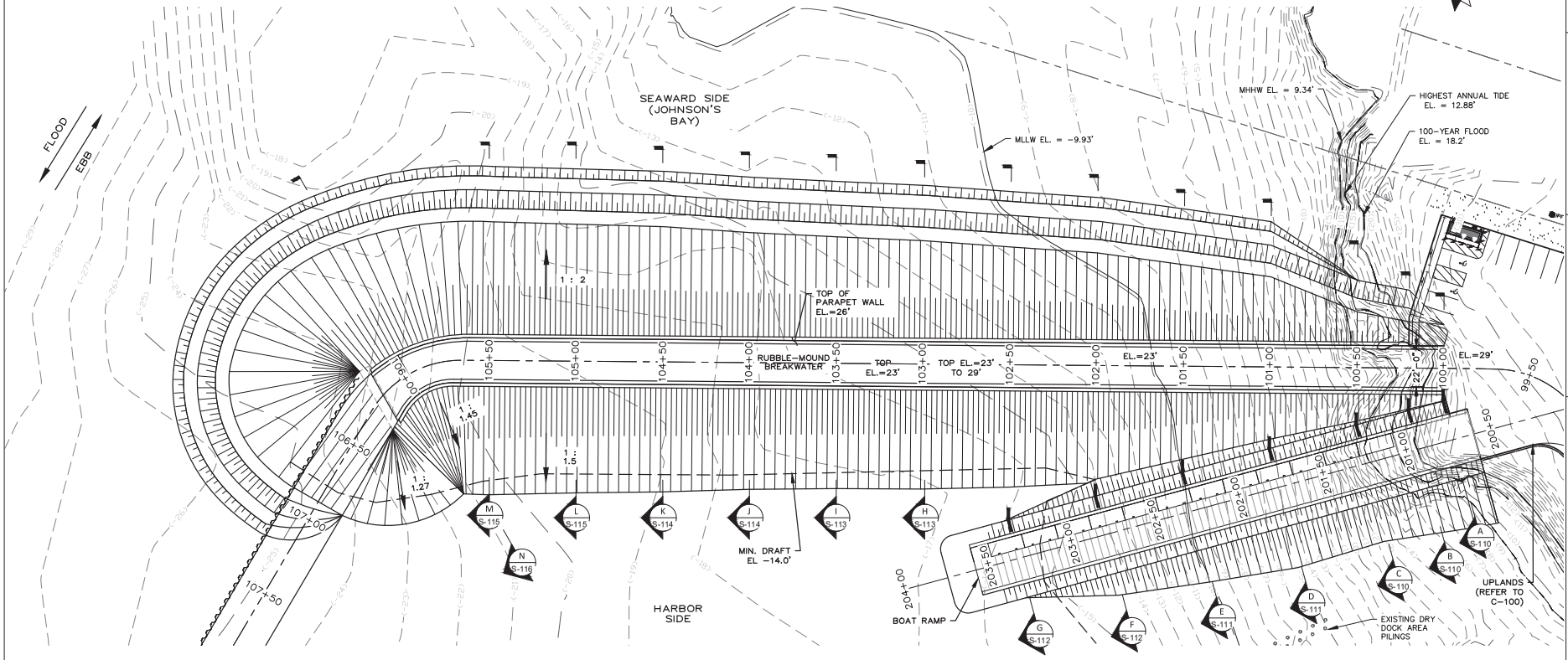
SHEET NUMBER

S-001

37 OF 97



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'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

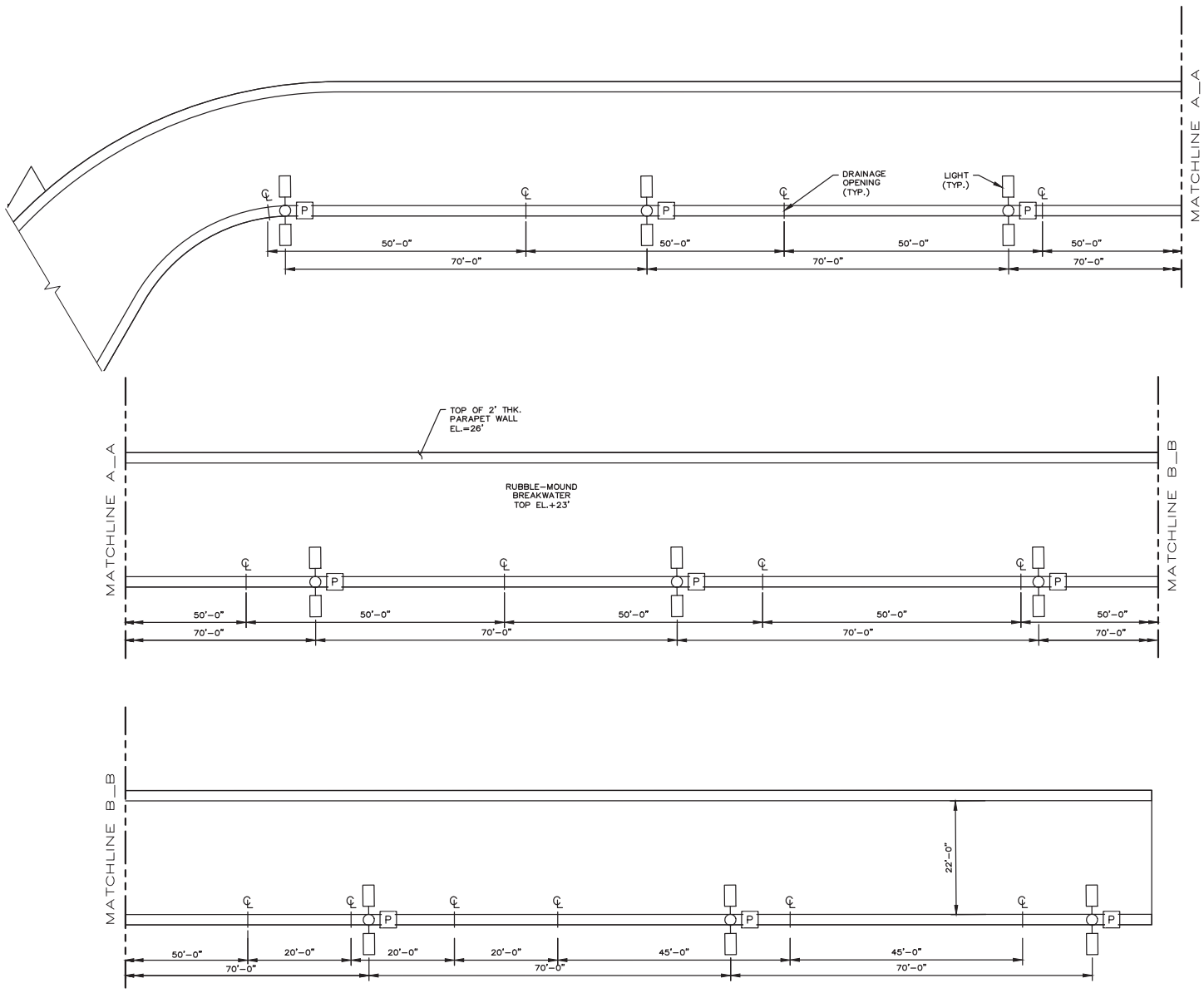
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND PLAN

SHEET NUMBER
S-100
38 OF 97



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.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

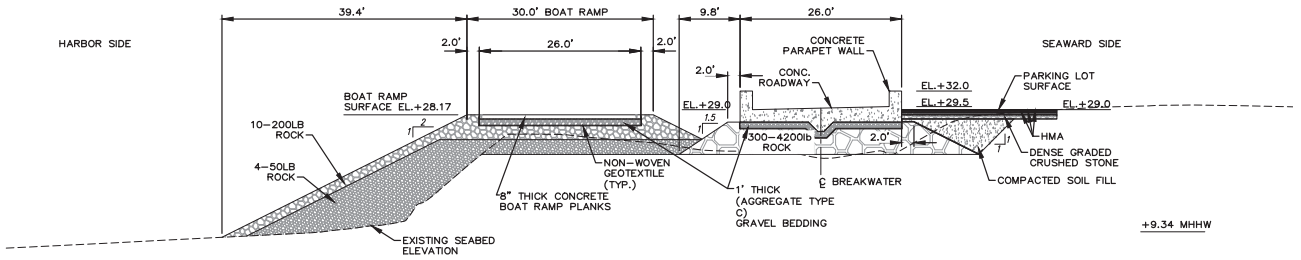
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

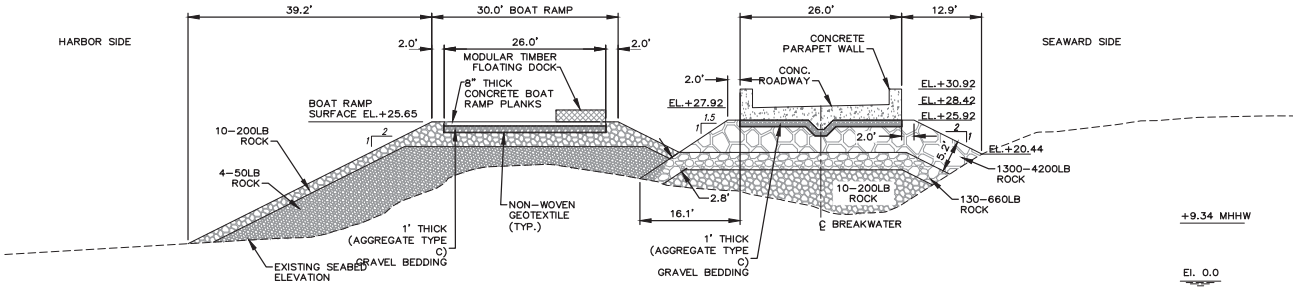
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND BREAKWATER UTILITY ARRANGEMENT PLAN

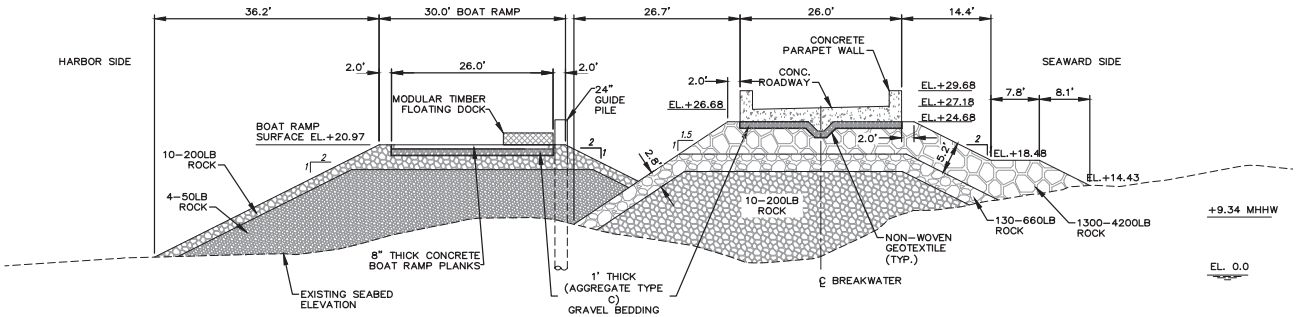
SHEET NUMBER
S-101
39 OF 97



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'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

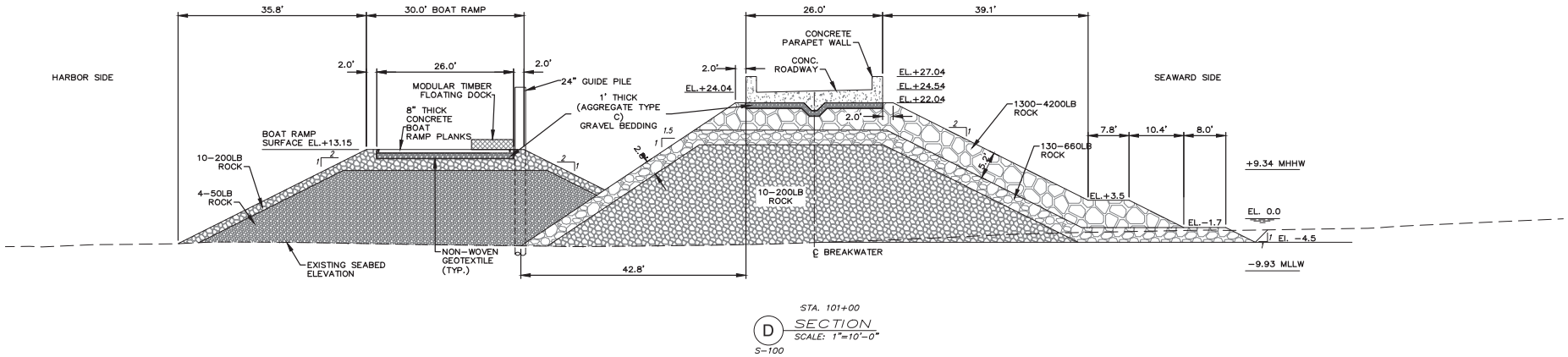
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND BREAKWATER SECTIONS - 1

SHEET NUMBER
S-110
40 OF 97

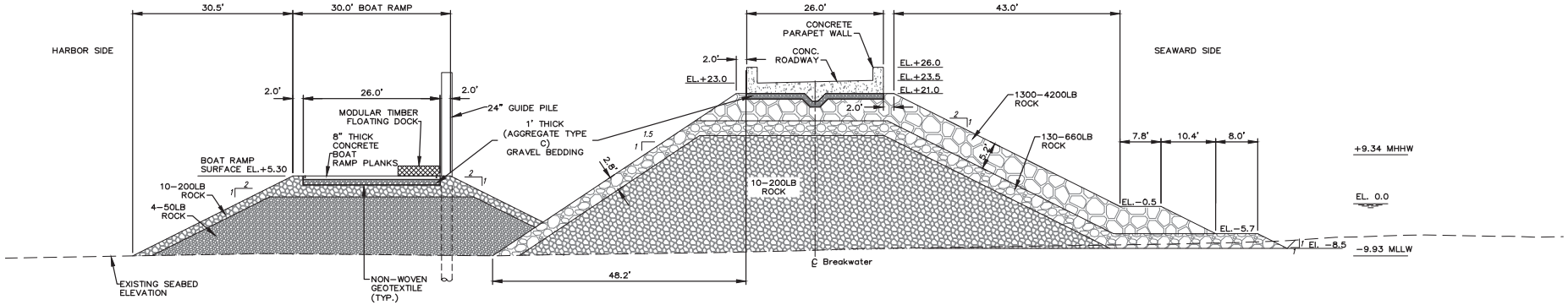


STA. 101+00

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

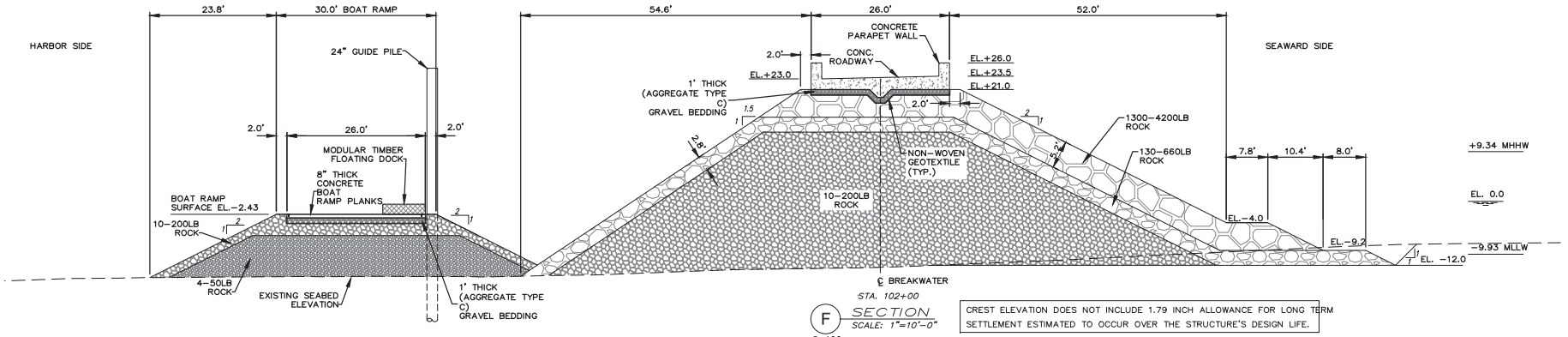
RUBBLE-MOUND BREAKWATER SECTIONS - 2

SHEET NUMBER

S-111

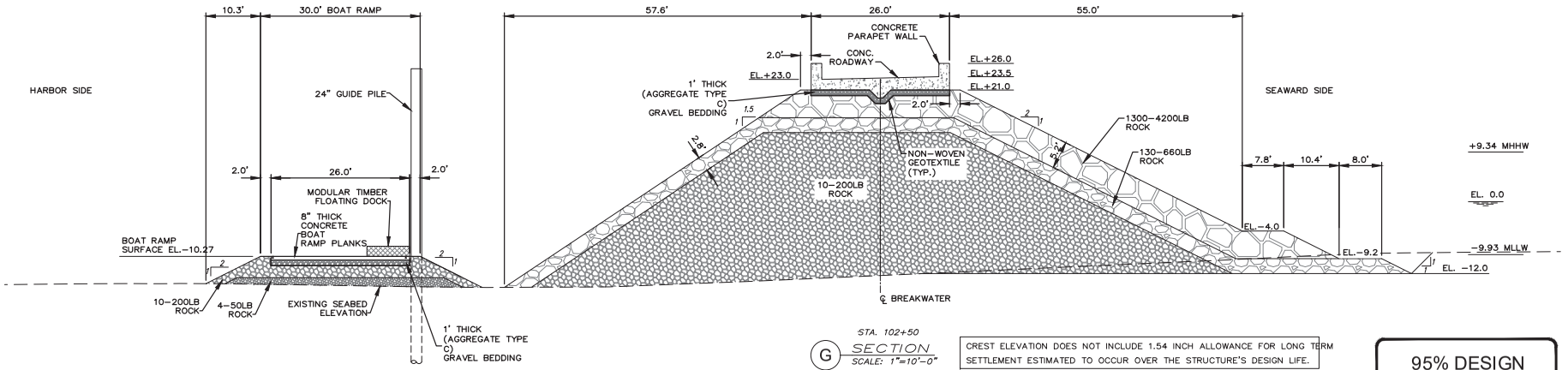
41 OF 97

File: C:\Users\hs037482\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



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.



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

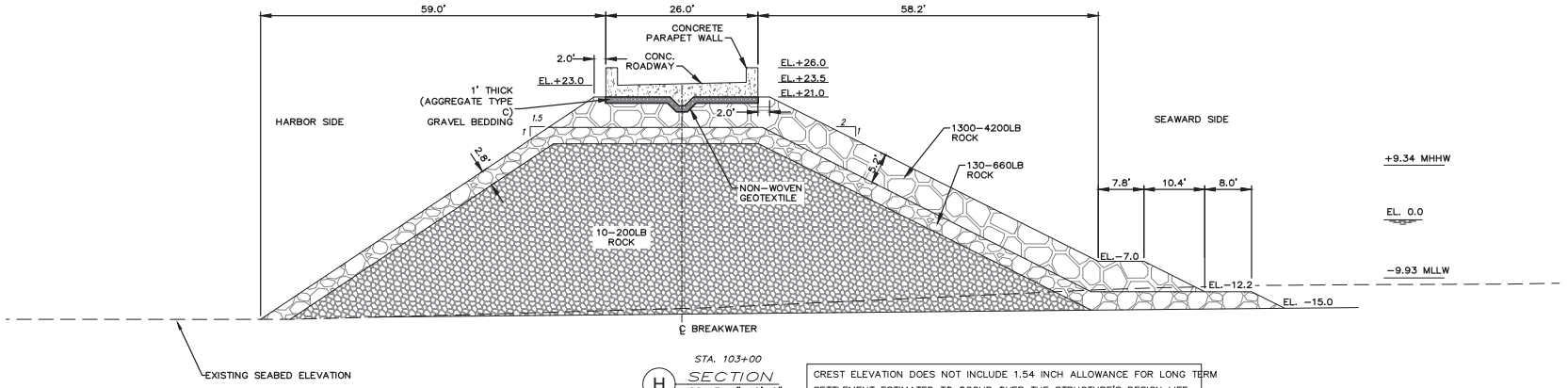
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND BREAKWATER SECTIONS - 3

SHEET NUMBER
S-112
42 OF 97



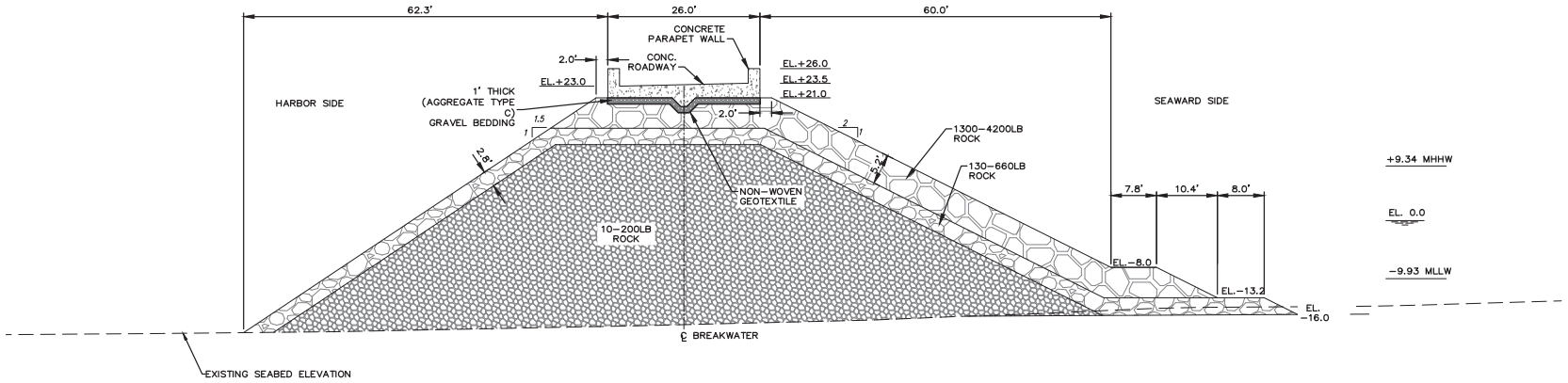
STA. 103+00

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'

NOT FOR CONSTRUCTION

95% DESIGN

SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

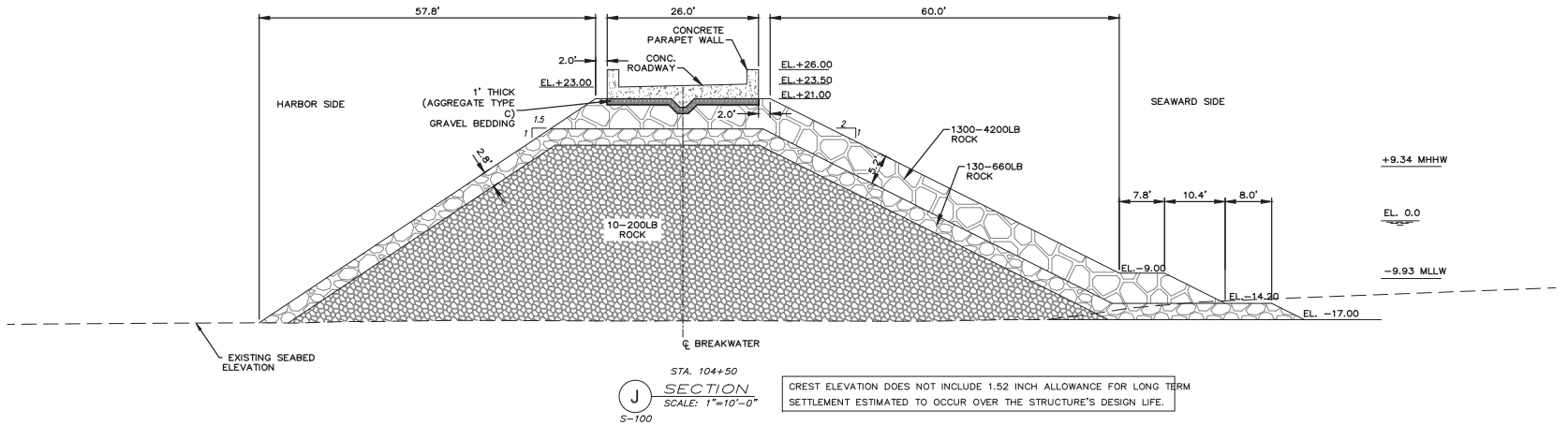
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND BREAKWATER SECTIONS - 4

SHEET NUMBER

S-113



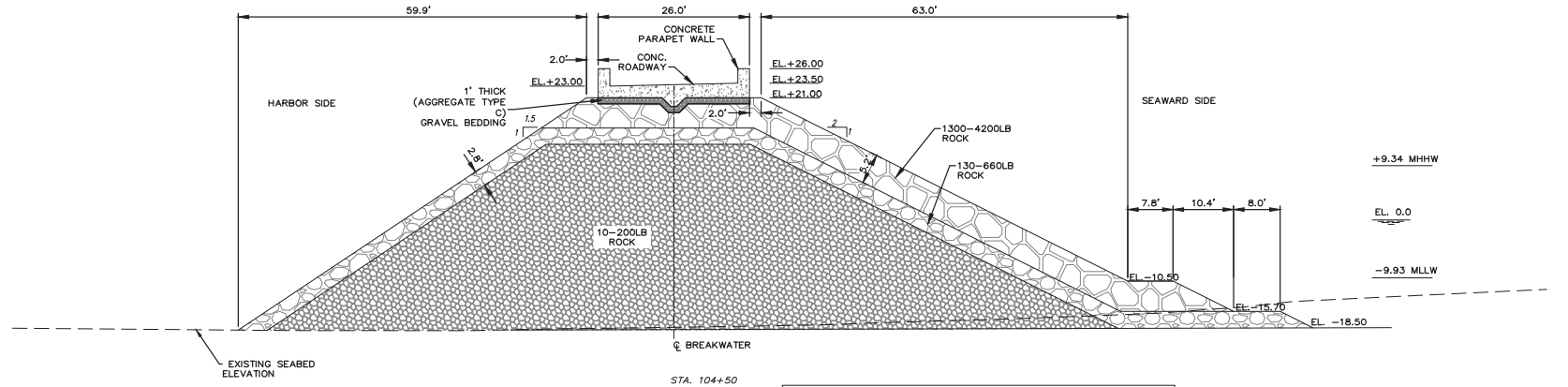
STA. 104+50

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:

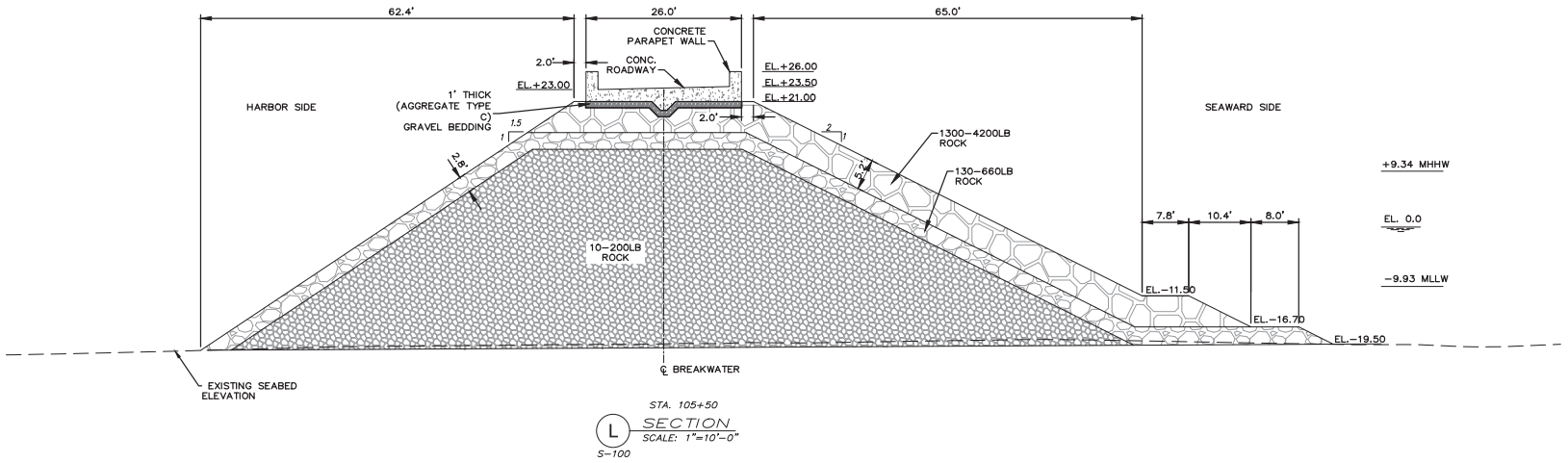
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND BREAKWATER SECTIONS - 5

SHEET NUMBER

S-114

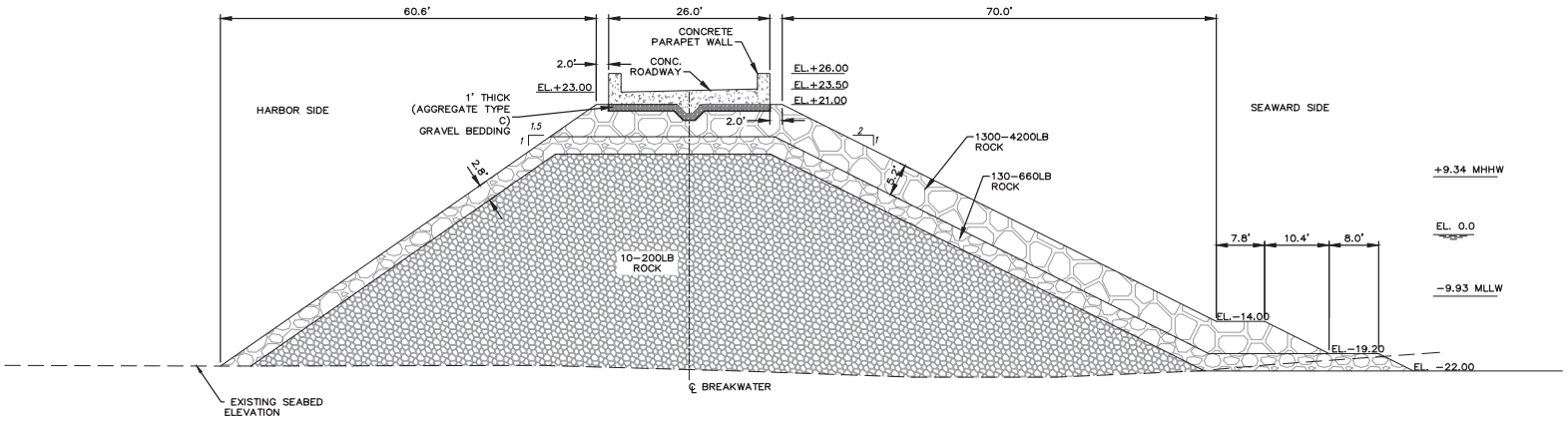


STA. 105+50

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			

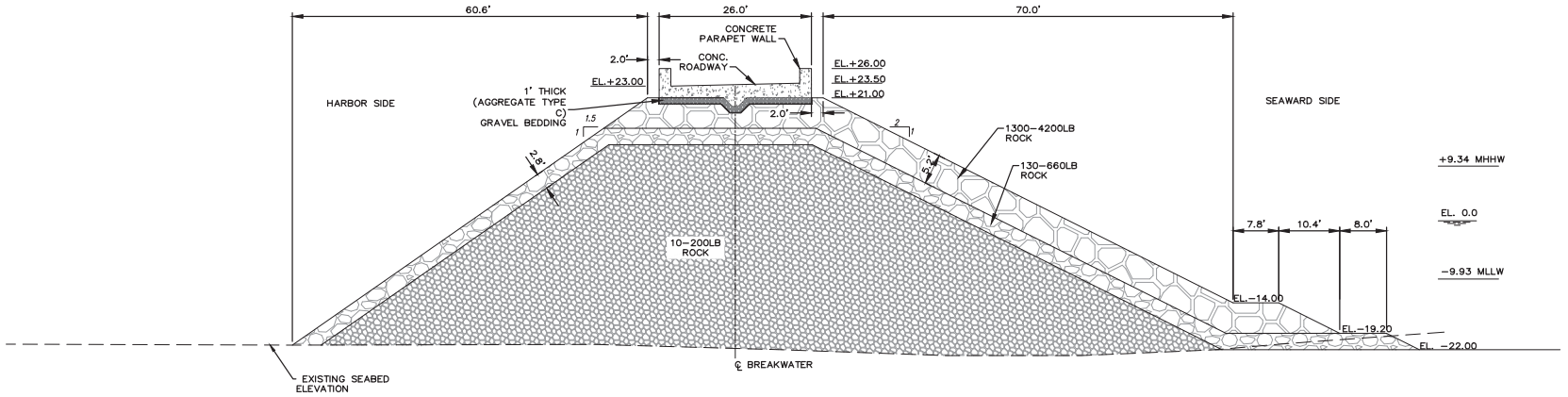
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND BREAKWATER SECTIONS - 6

SHEET NUMBER

S-115

45 OF 97



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

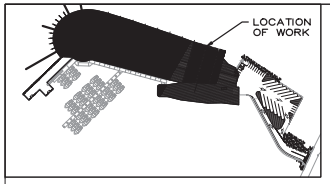
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

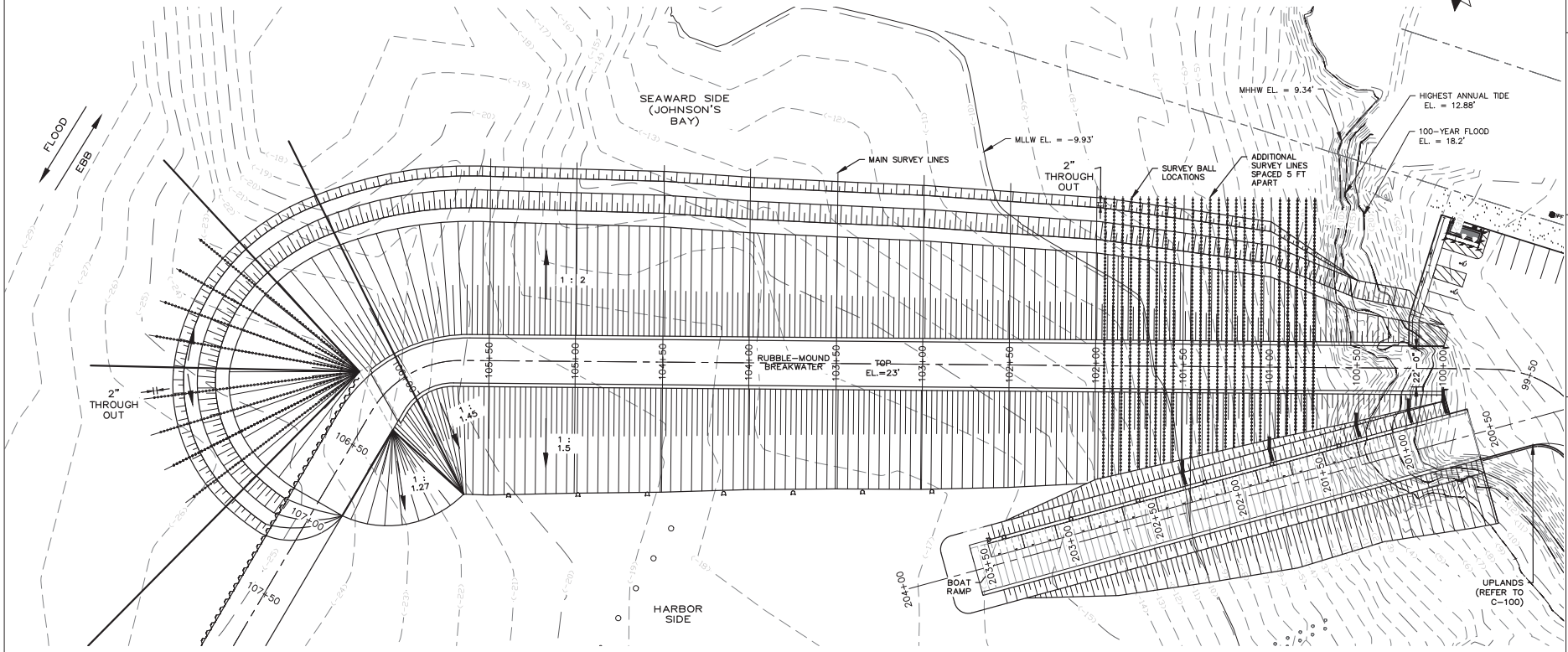
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND BREAKWATER SECTIONS - 7

SHEET NUMBER
S-116
46 OF 97



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

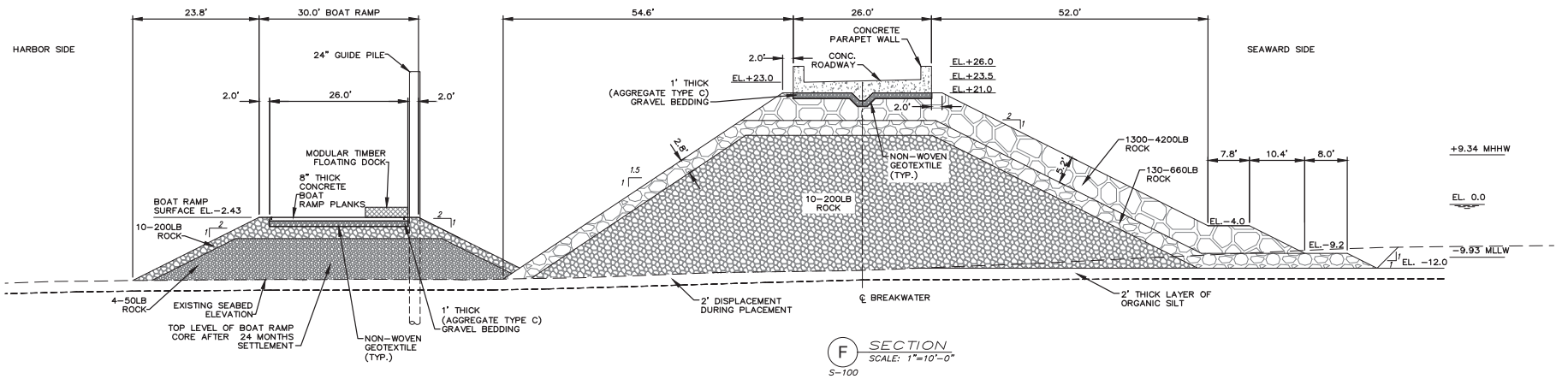
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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



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:

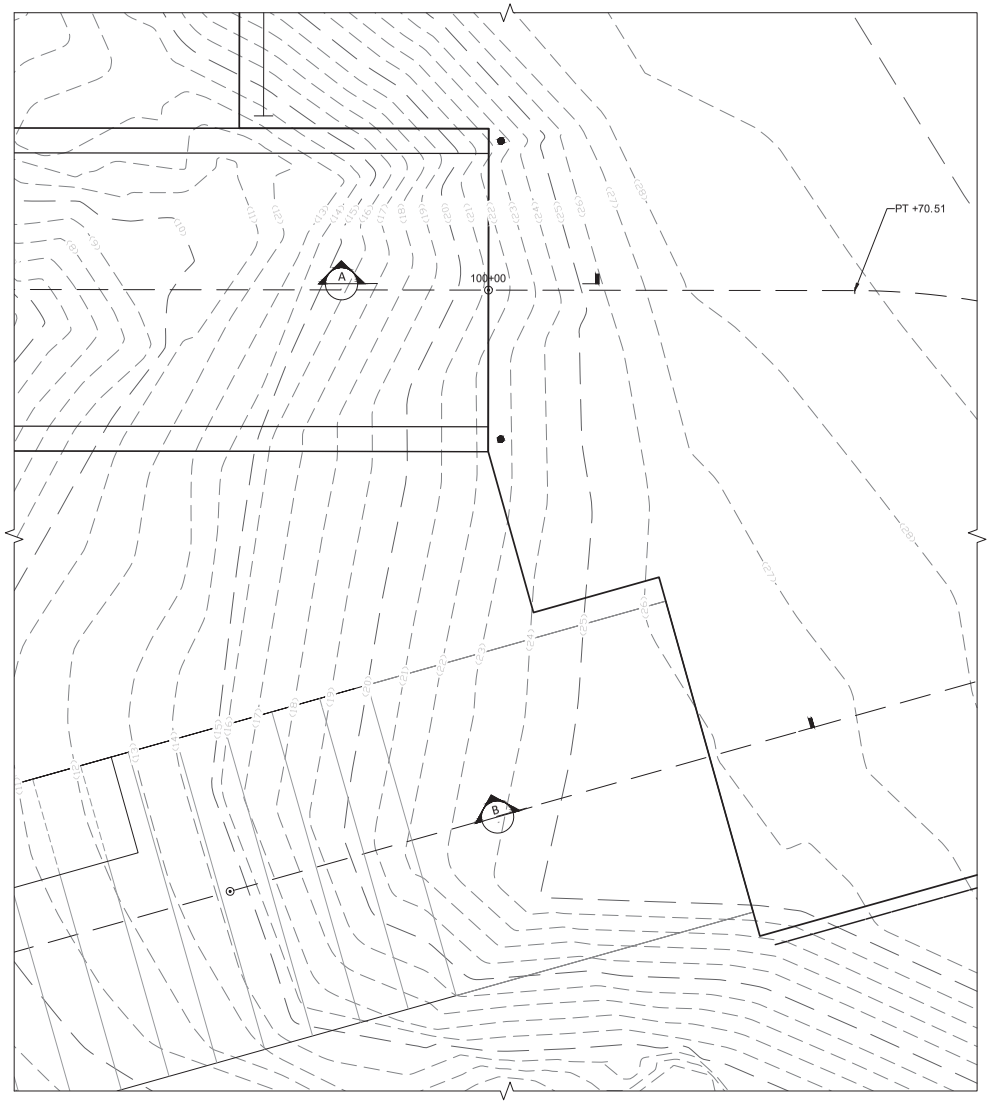
PROJECT INFORMATION

PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

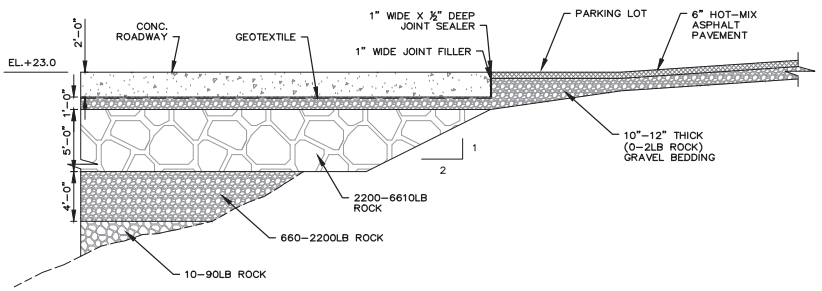
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND BREAKWATER CONSTRUCTION SEQUENCE

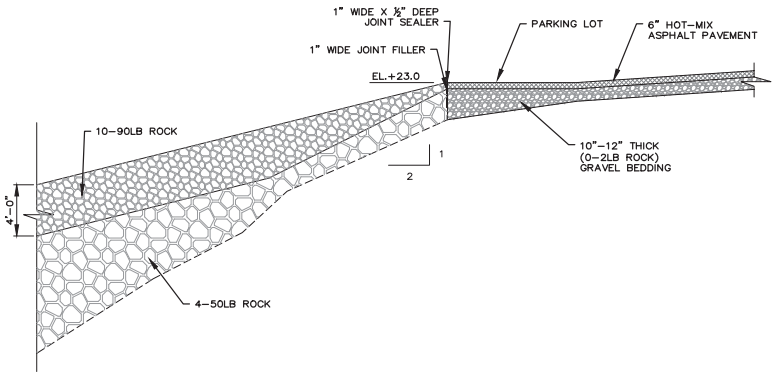
SHEET NUMBER
S-118
48 OF 97



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:

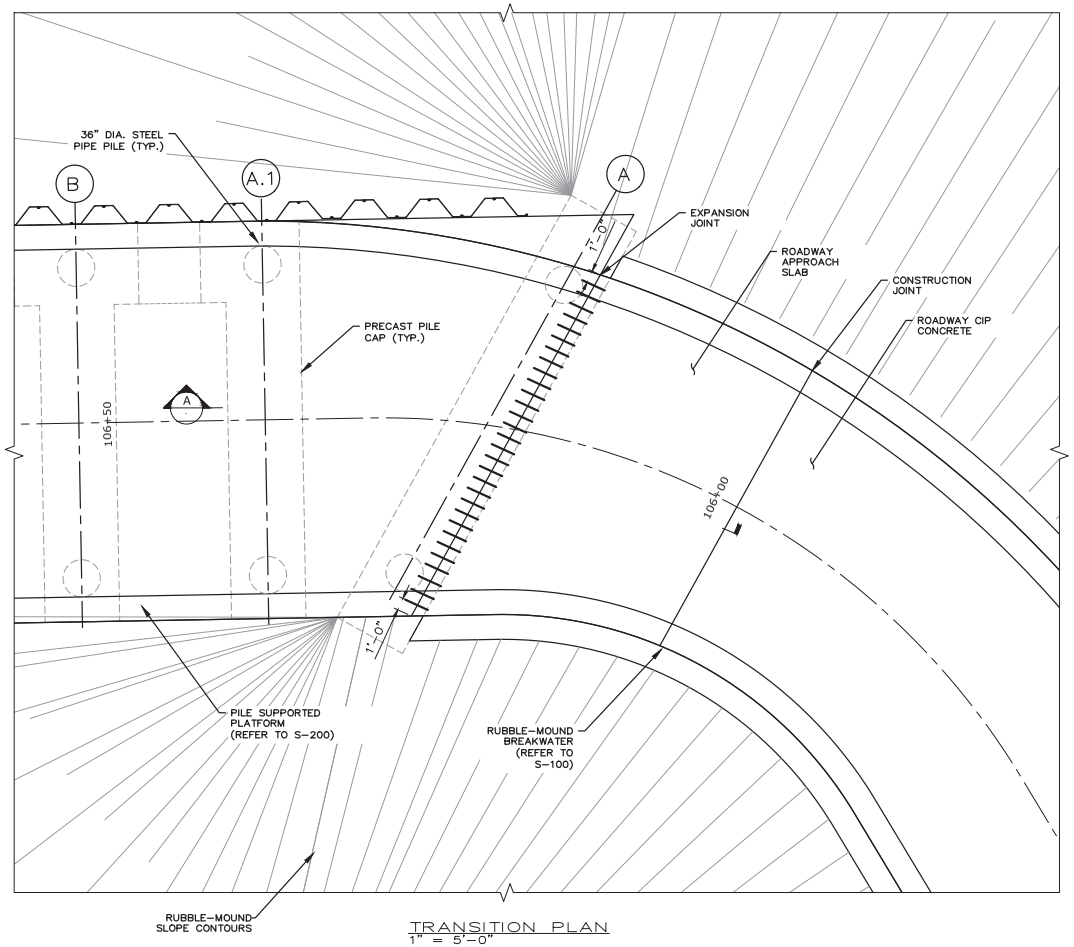
CHIEF ENGINEER:

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			

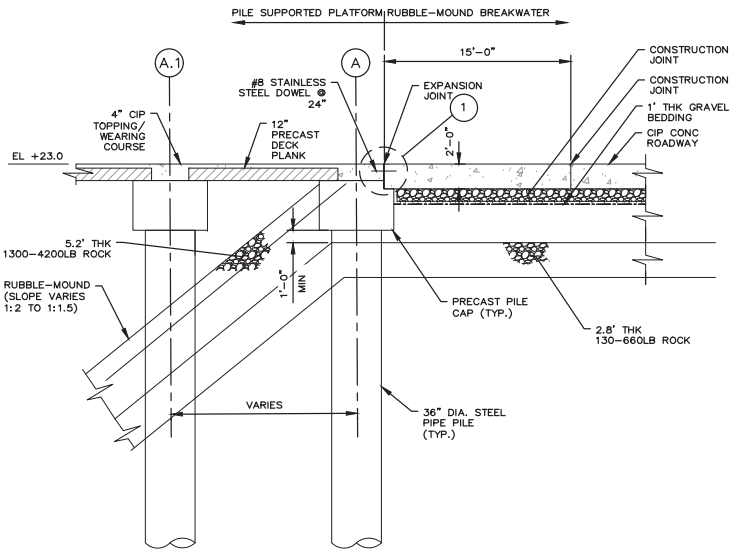
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

RUBBLE-MOUND TO UPLANDS TRANSITION DETAILS

SHEET NUMBER
S-121
49 OF 97

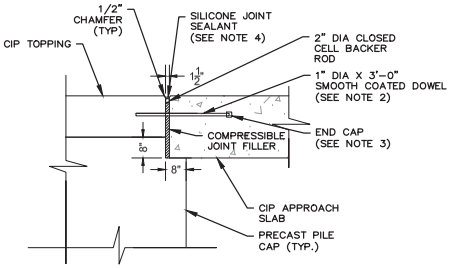


TRANSITION PLAN
1" = 5'-0"



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

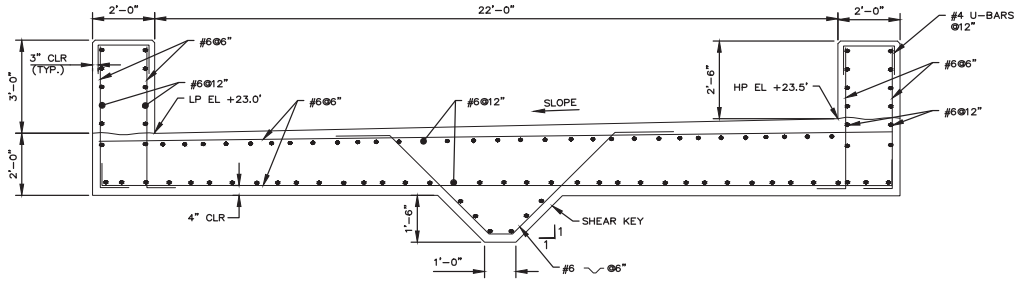
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

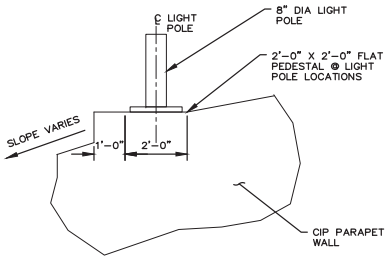
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

RUBBLE-MOUND TO PILE SUPPORTED PLATFORM TRANSITION DETAILS

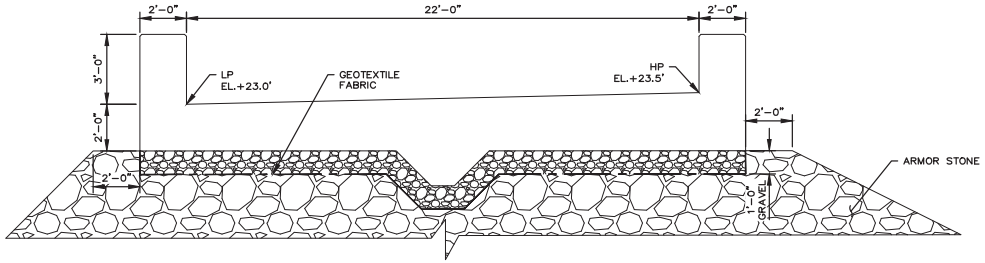
SHEET NUMBER
S-122
50 OF 97



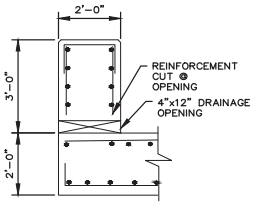
RUBBLE-MOUND ROADWAY REINFORCING SECTION
1/2" = 1'-0"



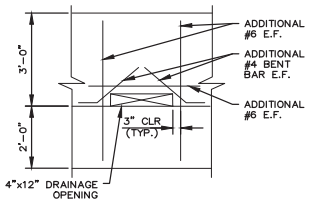
LIGHT POLE FOUNDATION @ SLOPED SECTION OF PARAPET WALL
1/2" = 1'-0"



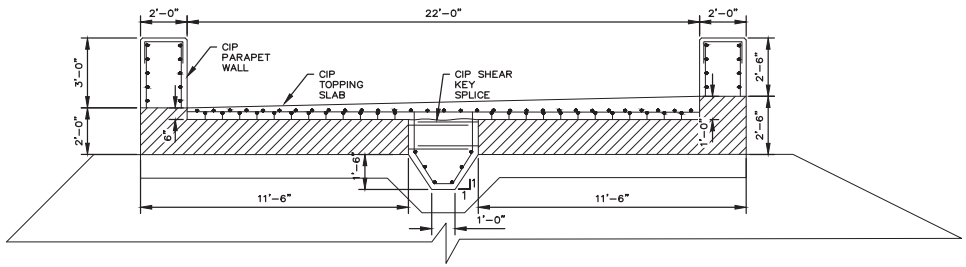
RUBBLE-MOUND ROADWAY BASE DETAIL
3/8" = 1'-0"



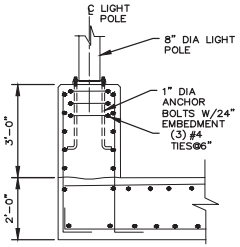
RUBBLE-MOUND ROADWAY PARAPET WALL @ DRAINAGE OPENING
1/2" = 1'-0"



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

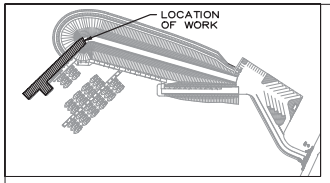
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

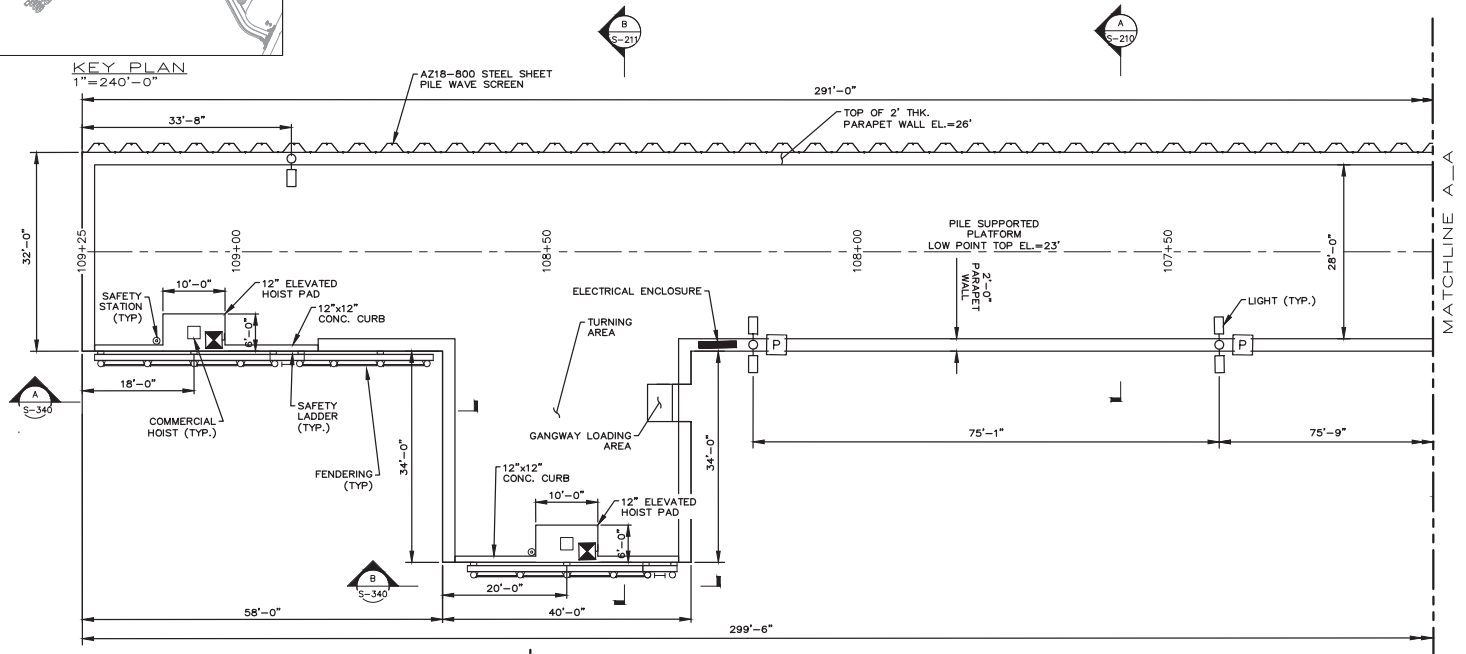
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

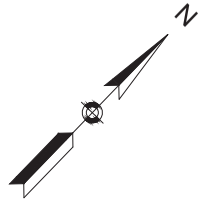
RUBBLE MOUND ROADWAY REINFORCING SECTIONS AND DETAILS

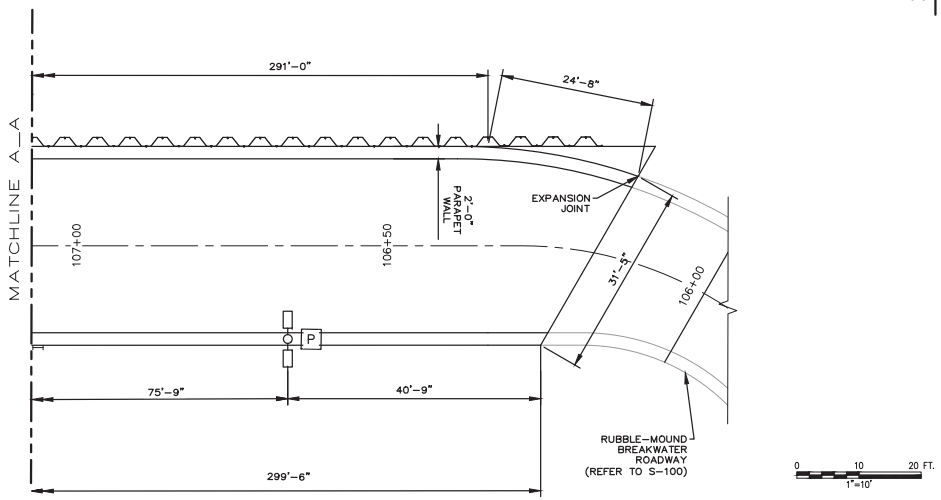
SHEET NUMBER
S-130
51 OF 97



KEY PLAN
1"=240'-0"







NOTE: FLOATING DOCKS NOT SHOWN FOR CLARITY

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.
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

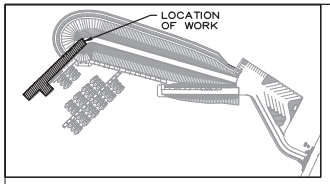
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

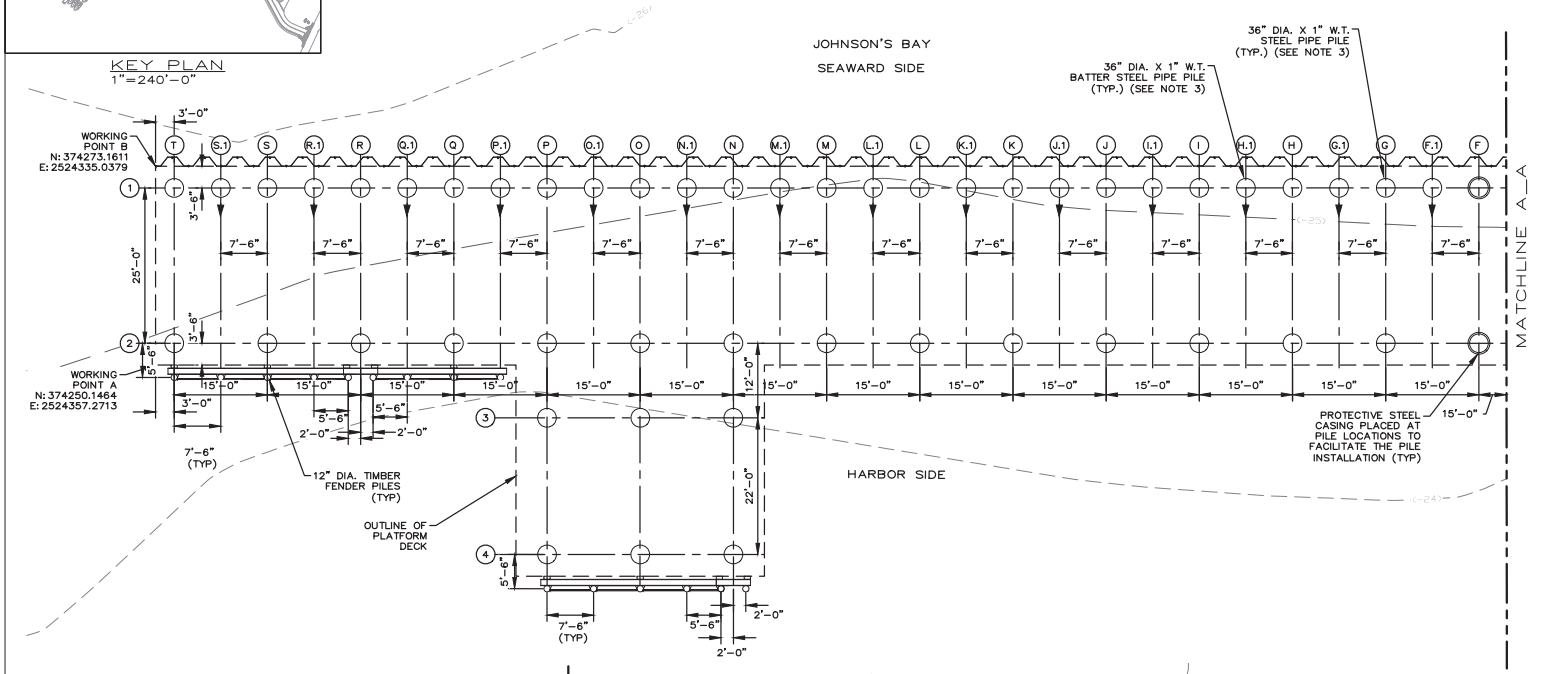
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

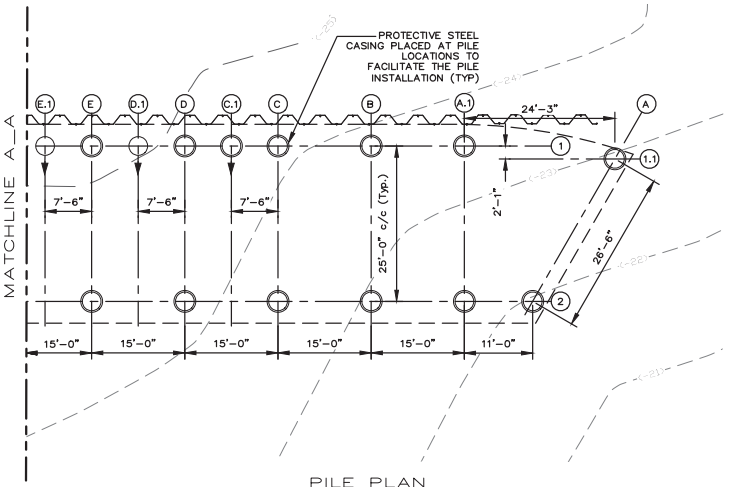
PILE SUPPORTED PLATFORM ARRANGEMENT PLAN

SHEET NUMBER
S-200
52 OF 97



KEY PLAN
1"=240'-0"





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

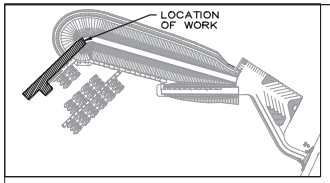
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

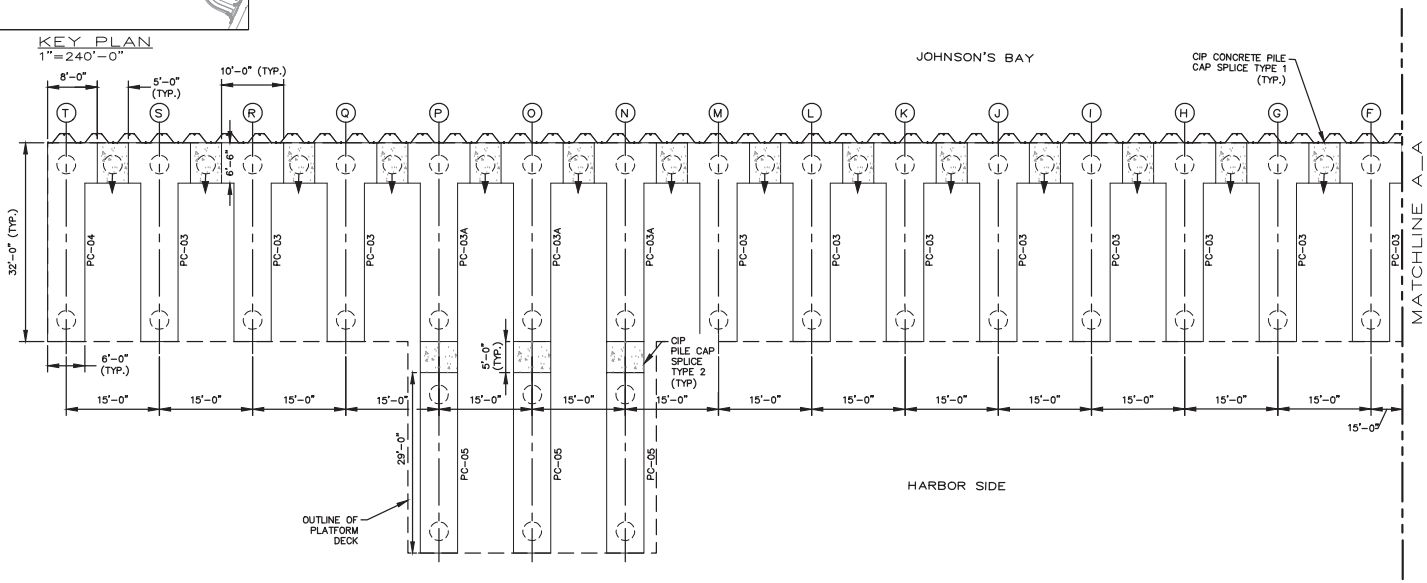
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

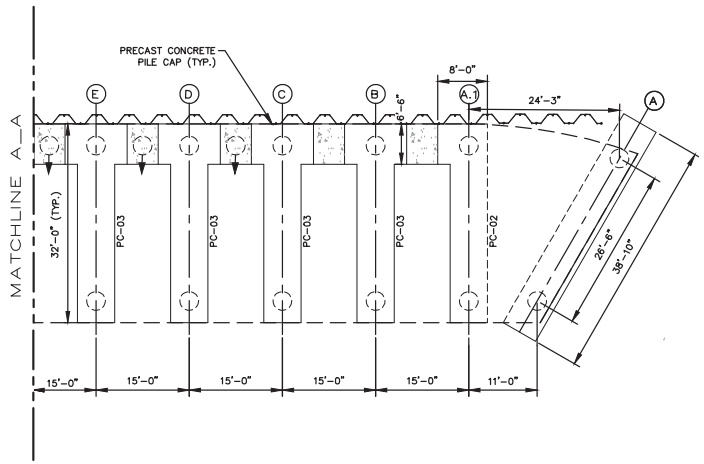
PILE SUPPORTED PLATFORM
PILE PLAN

SHEET NUMBER
S-201



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'

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

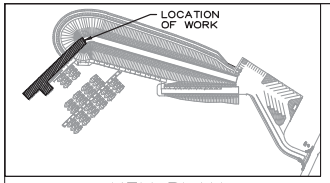
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

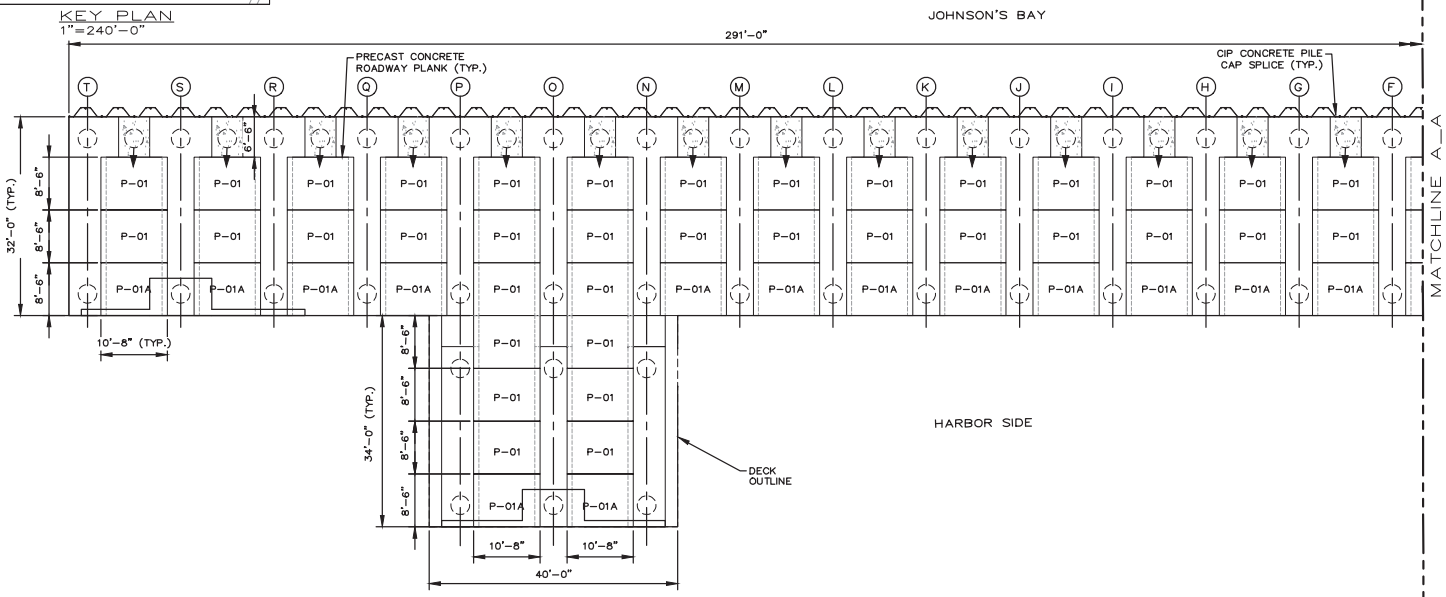
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

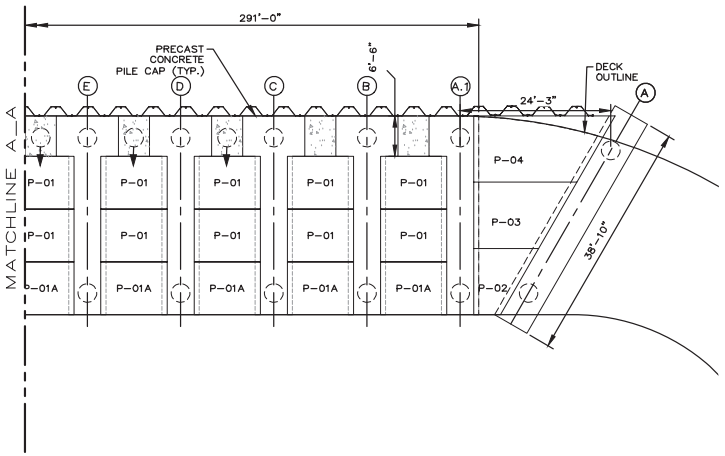
PILE SUPPORTED PLATFORM
PILE CAP PLAN

SHEET NUMBER
S-202



KEY PLAN
1"=240'-0"





PRECAST DECK PLANK 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

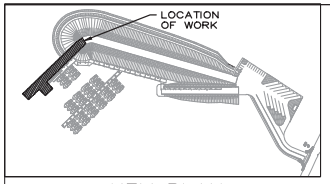
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

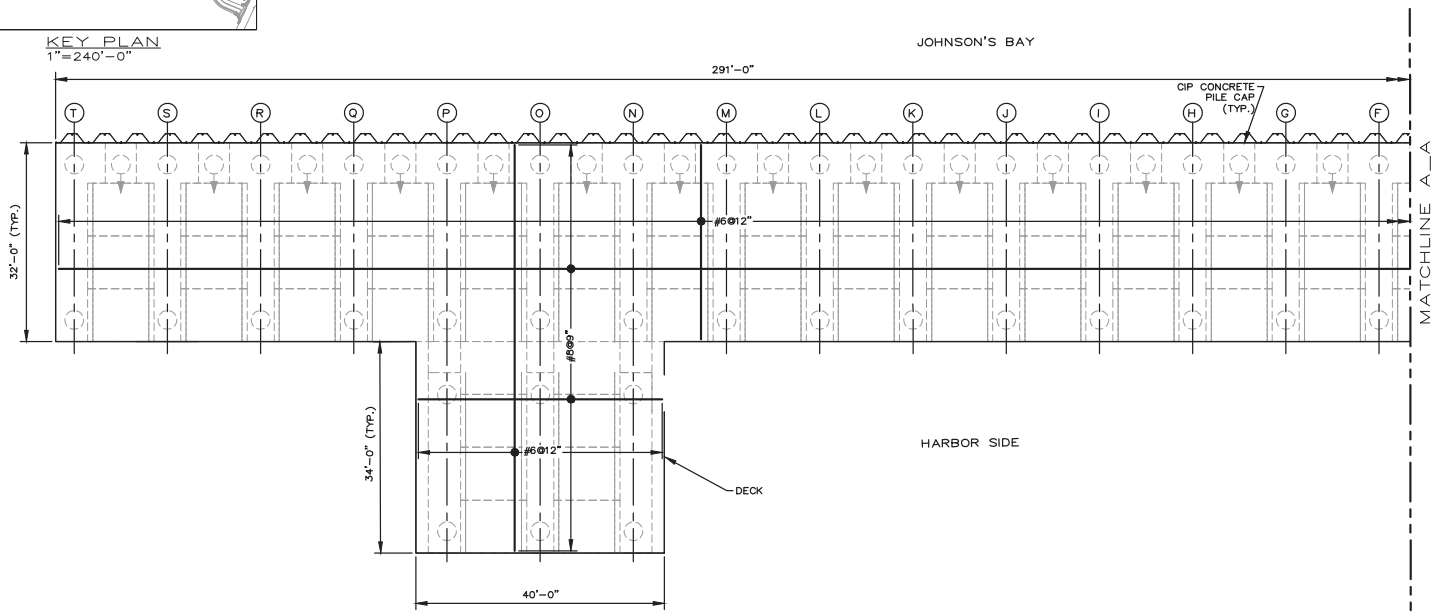
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

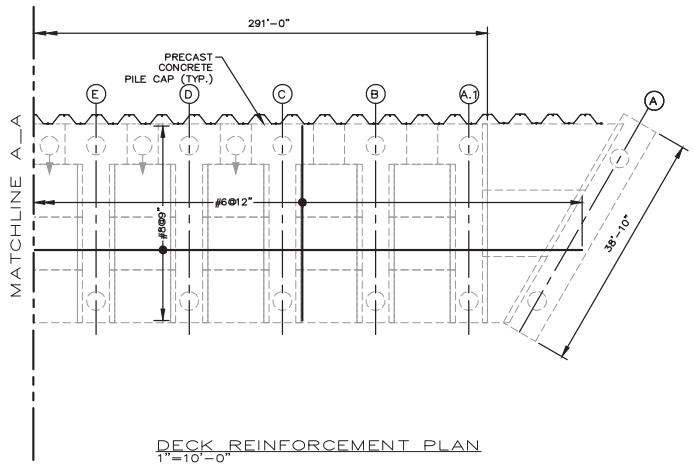
PILE SUPPORTED PLATFORM
PRECAST PLANK PLAN

SHEET NUMBER
S-203
55 OF 97



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

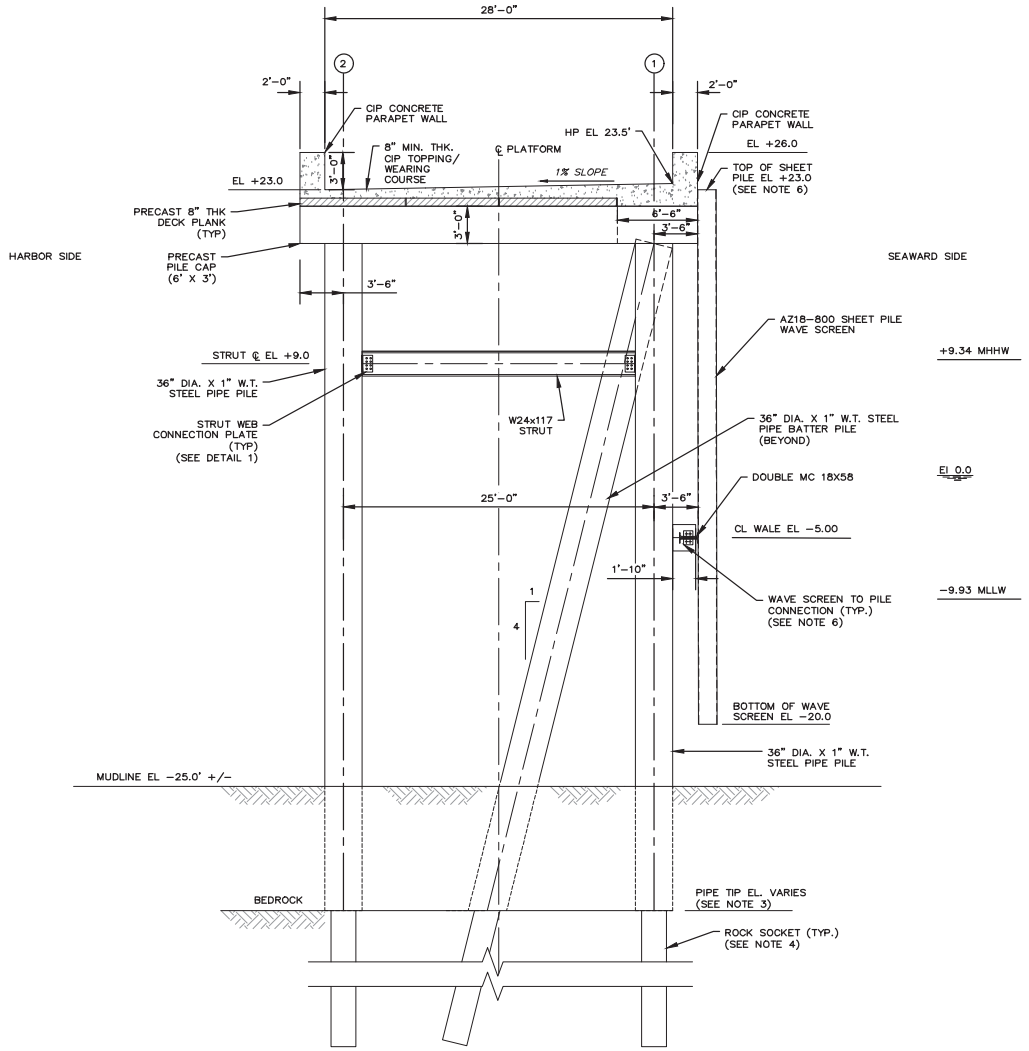
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

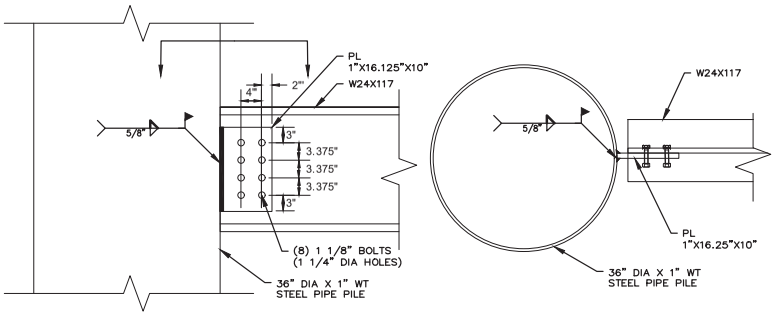
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM
DECK REINFORCEMENT PLAN

SHEET NUMBER
S-204



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.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

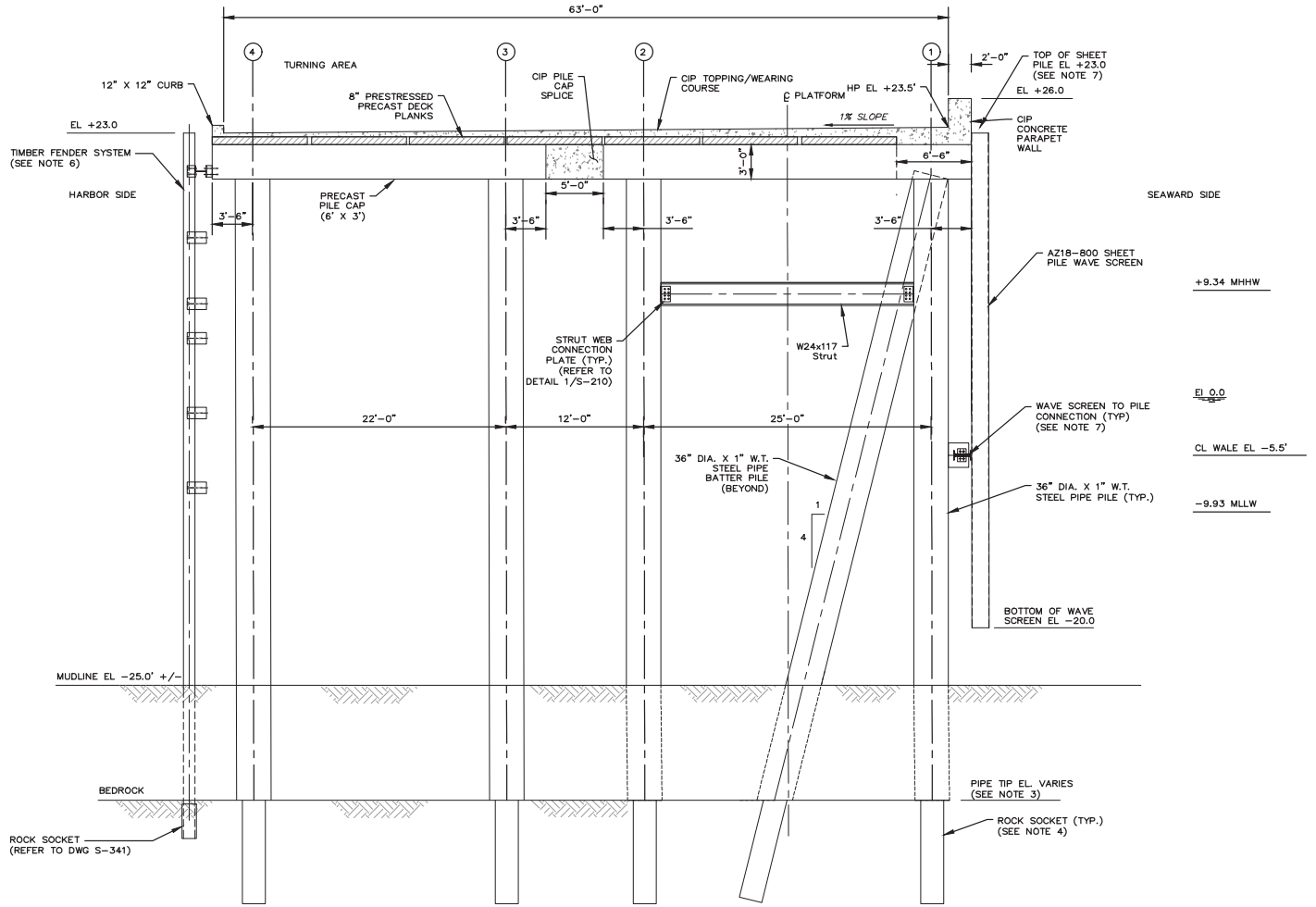
	DATE
APPROVED	
COMMISSIONER:	
CHIEF ENGINEER:	

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



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

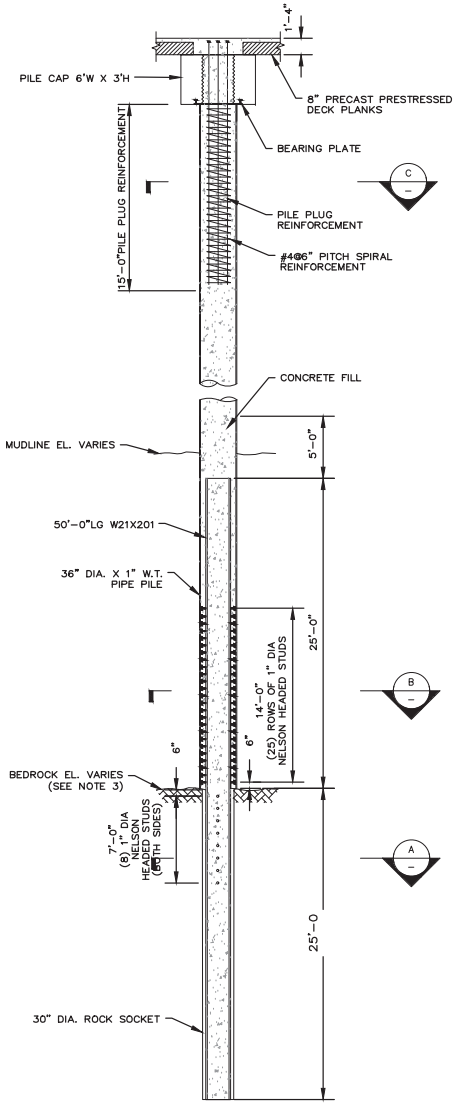
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

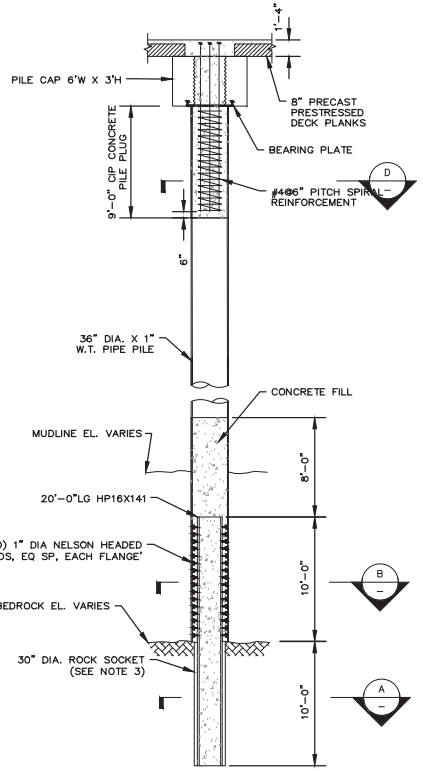
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM SECTION -2

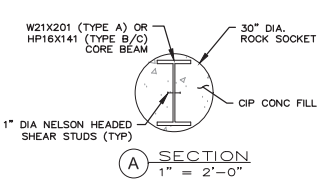
SHEET NUMBER
S-211



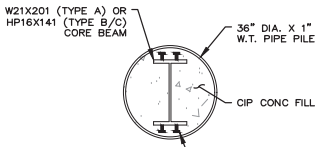
Pile–Supported Platform Pile Type A DETAIL
N.T.S.



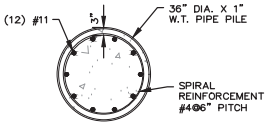
Pile–Supported Platform Pile Type B DETAIL
N.T.S.



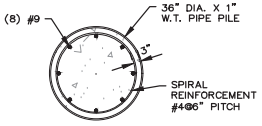
A SECTION
1" = 2'-0"



B SECTION
1" = 2'-0"



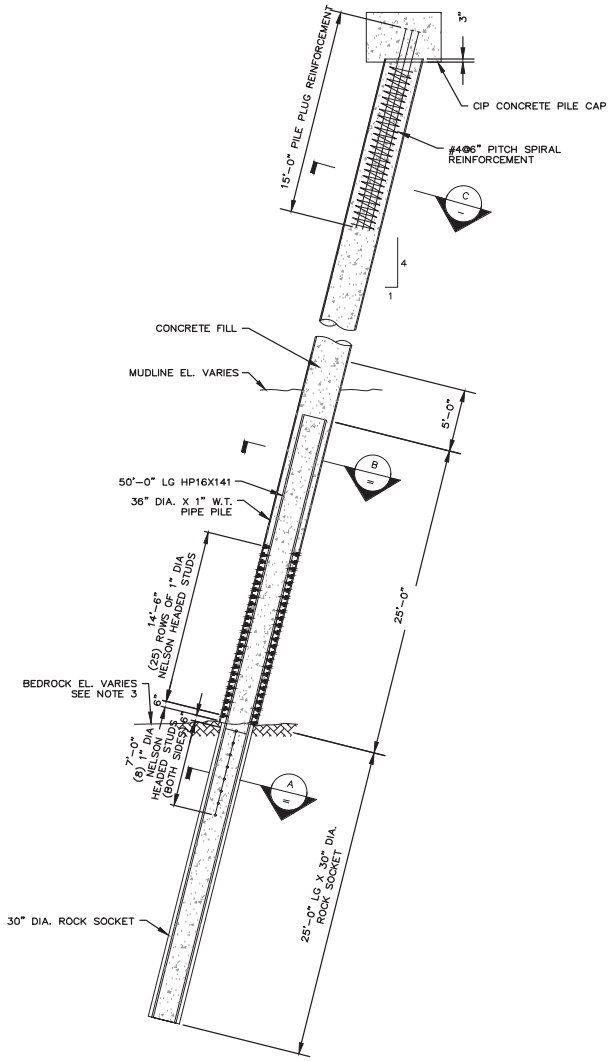
C SECTION
1" = 2'-0"



D SECTION
1" = 2'-0"

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.



Pile–Supported Platform Pile Type C DETAIL
N.T.S.

1"=2' 0 2 4 FT.

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

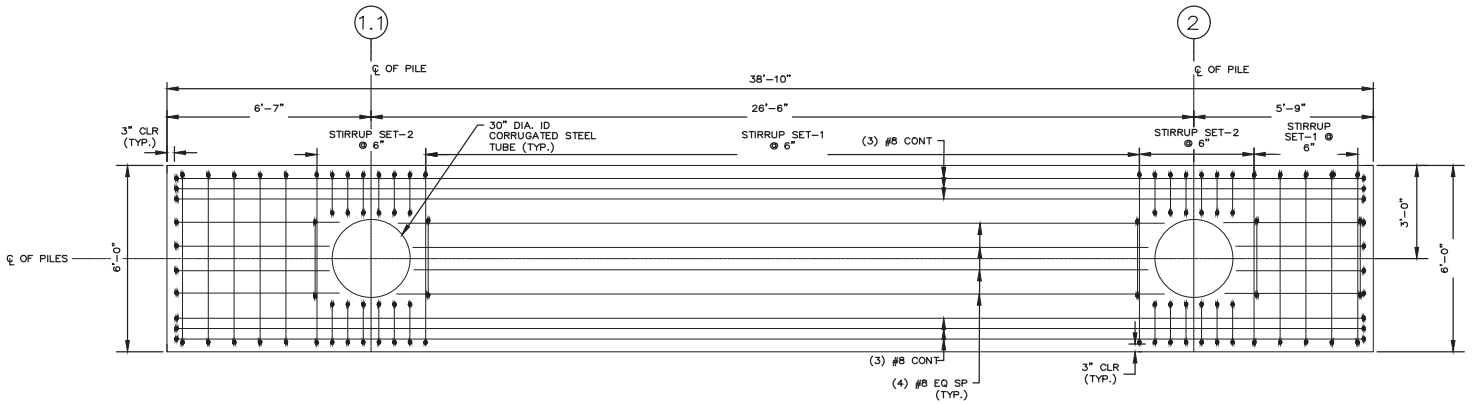
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELIE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

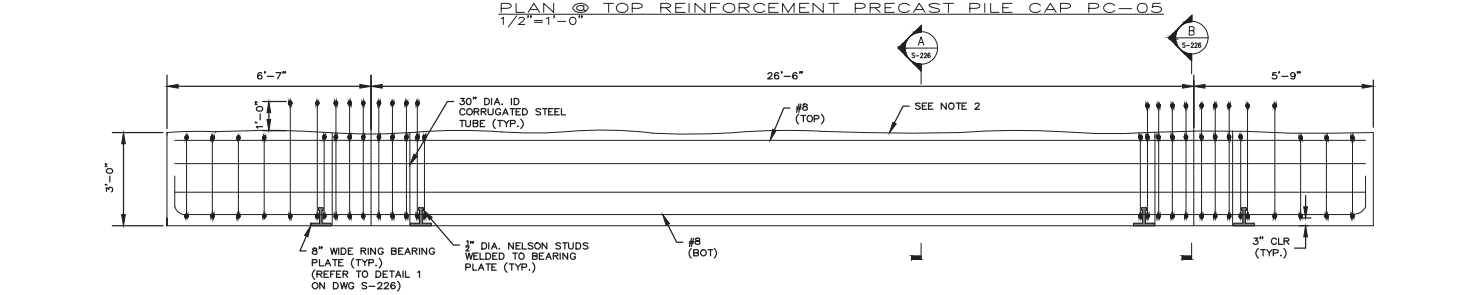
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE-SUPPORTED PLATFORM PILE DETAILS

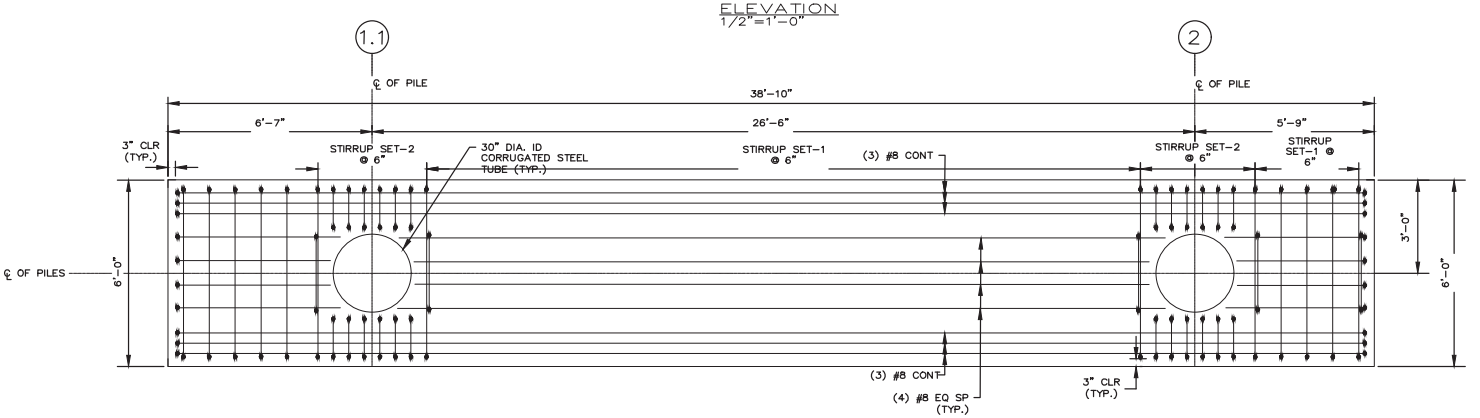
SHEET NUMBER
S-220
59 OF 97



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:

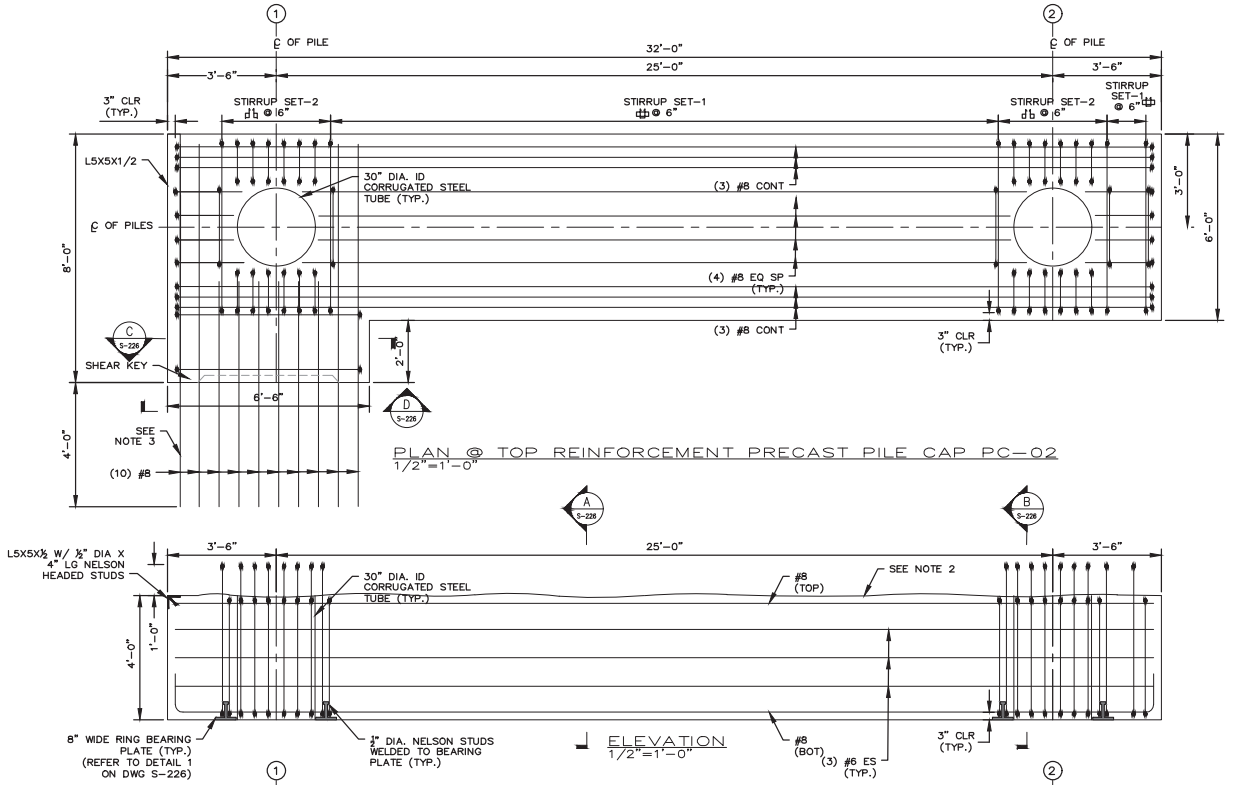
CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
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
PRECAST PILE CAP PC-01 DETAILS

SHEET NUMBER
S-221



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.

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

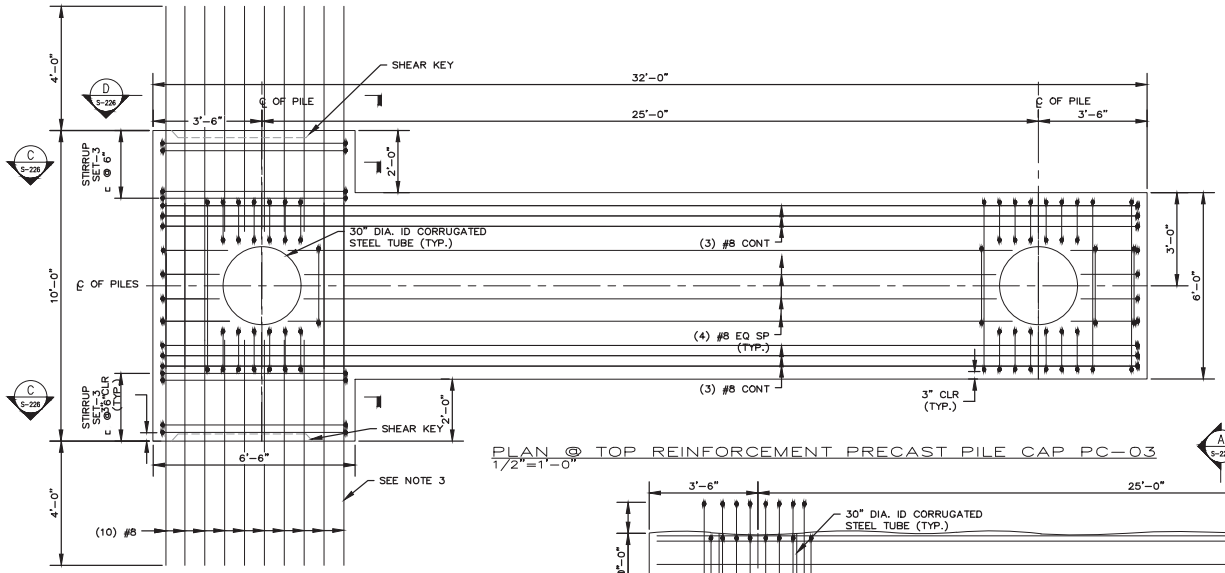
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

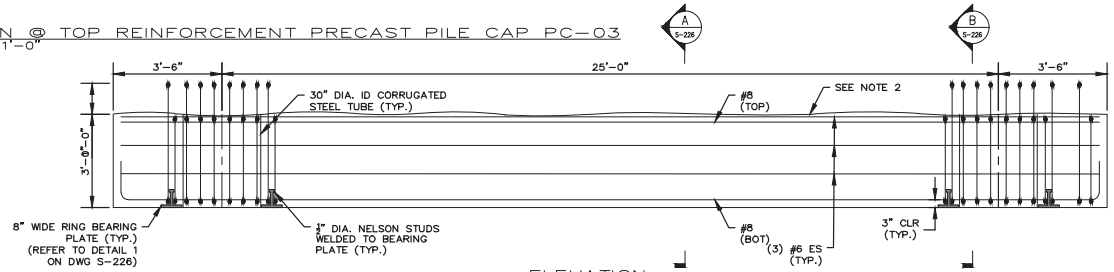
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-02 DETAILS

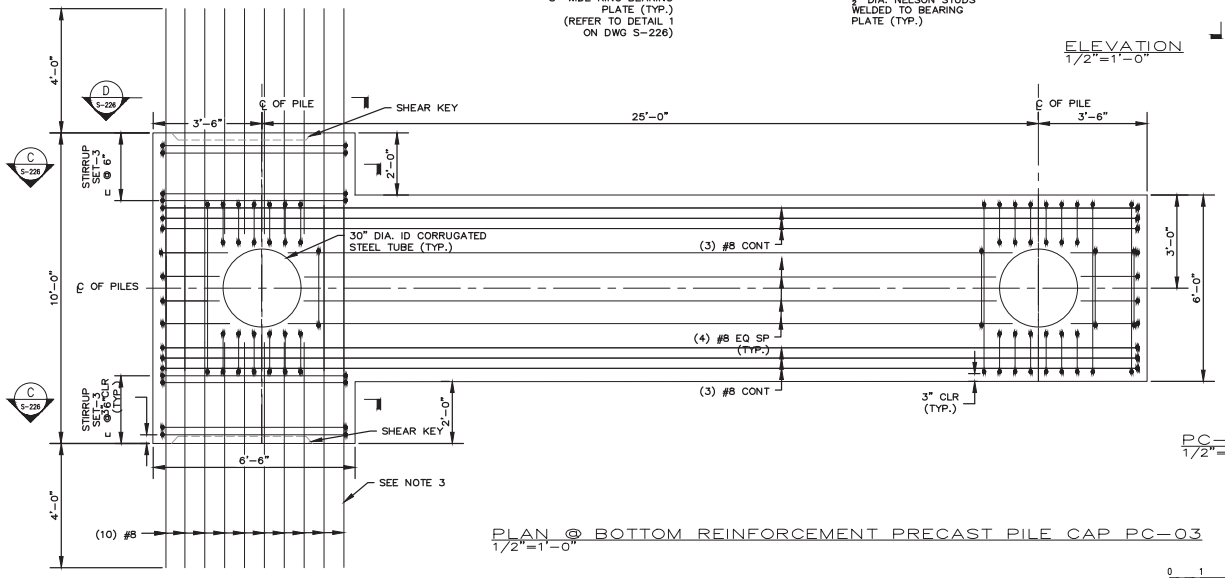
SHEET NUMBER
S-222
61 OF 97



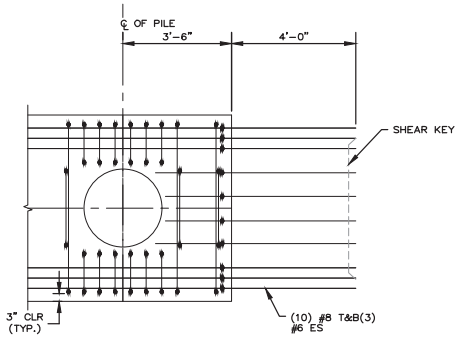
PLAN @ TOP REINFORCEMENT PRECAST PILE CAP PC–03
1/2"=1'-0"



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"

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

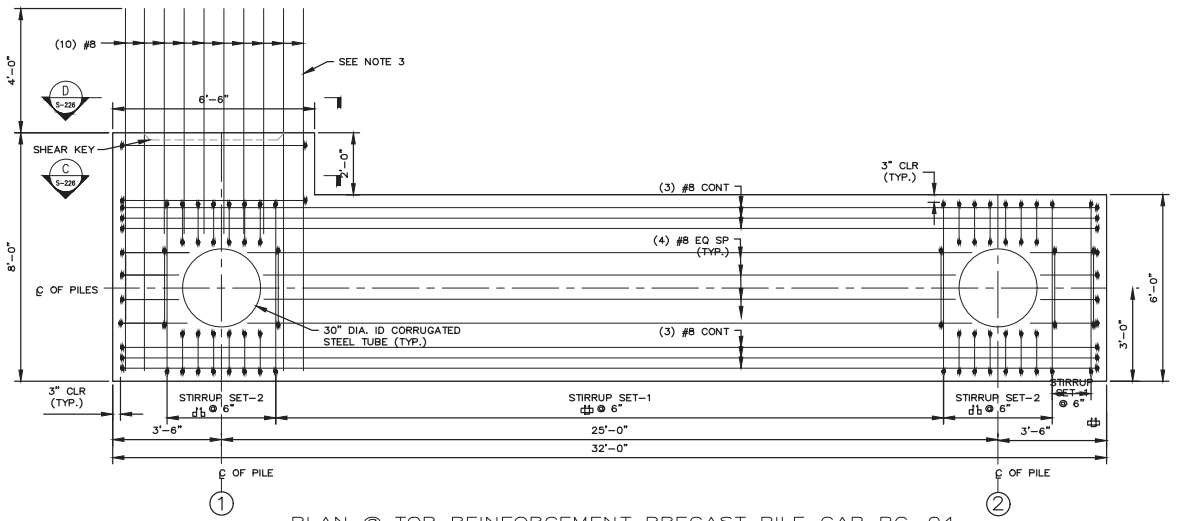
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION		PC-03/03A DETAILS
PROGRAM	BRIDGE/PILE CAP	
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE
DESIGNER	CRAIG MORIN	P.E. NUMBER
CONSULTANT	JACOBS	
PROJECT RESIDENT		
CONTRACTOR		DATE
PROJECT COMPLETION DATE		

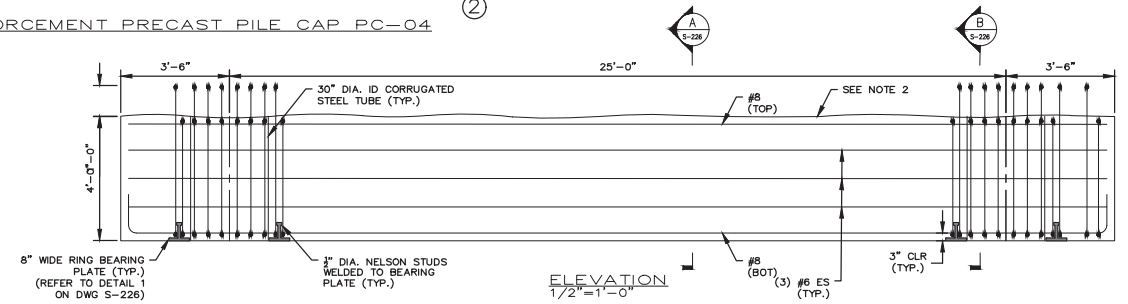
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-03 DETAILS

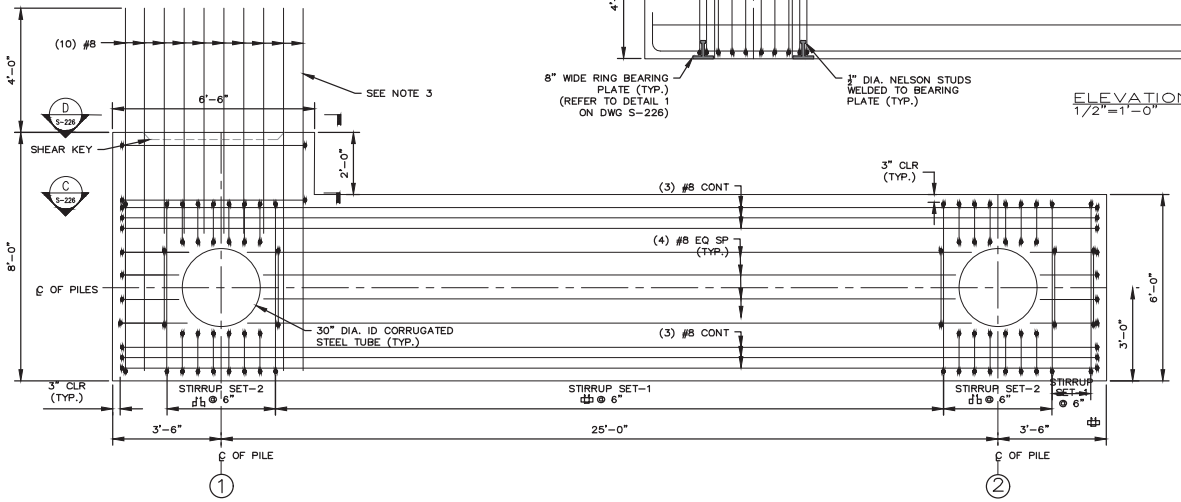
SHEET NUMBER
S-223



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

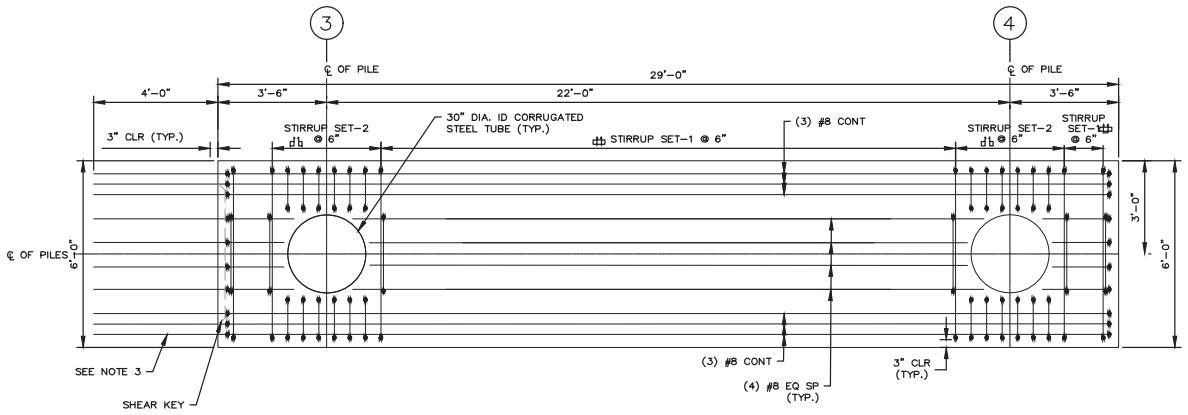
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

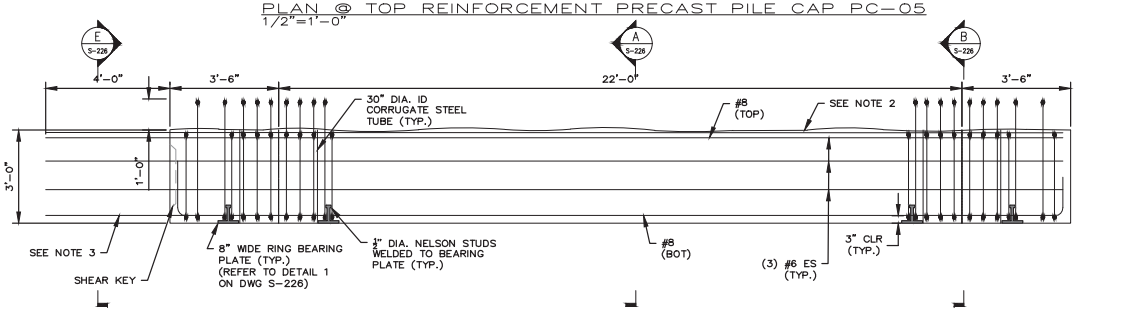
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-04 DETAILS

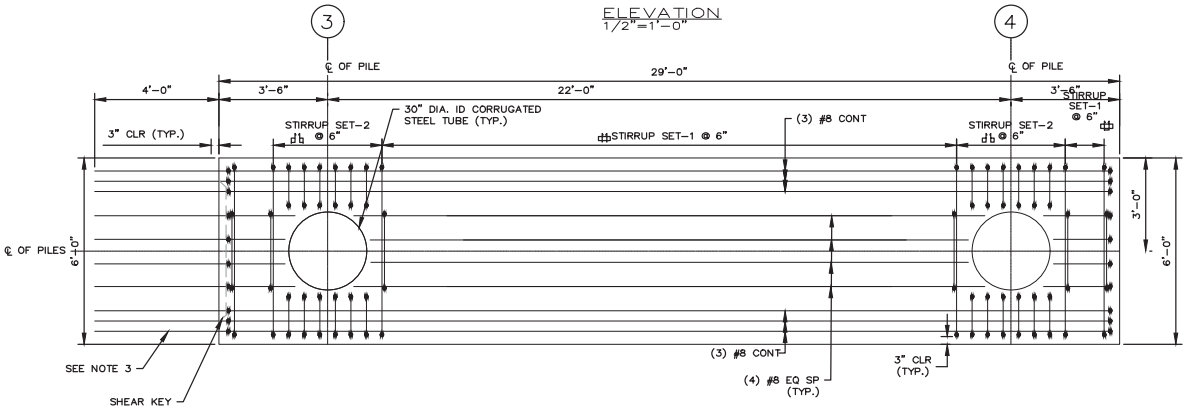
SHEET NUMBER
S-224



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

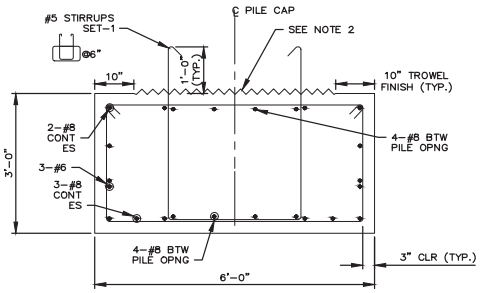
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

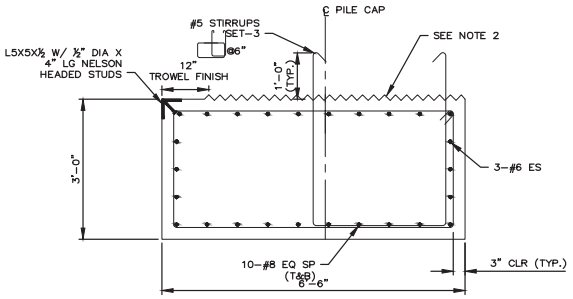
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PILE CAP PC-05 DETAILS

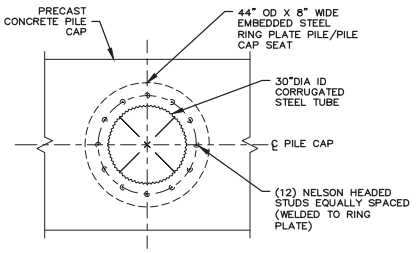
SHEET NUMBER
S-225
64 OF 97



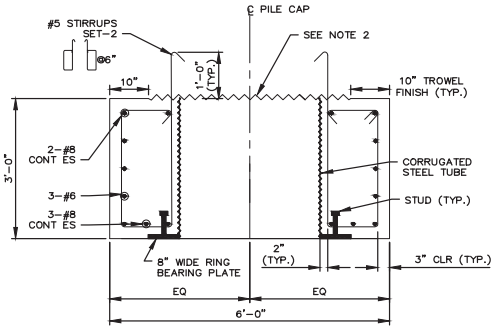
A SECTION
3/4"=1'-0"
S-221
S-222
S-223
S-224
S-225



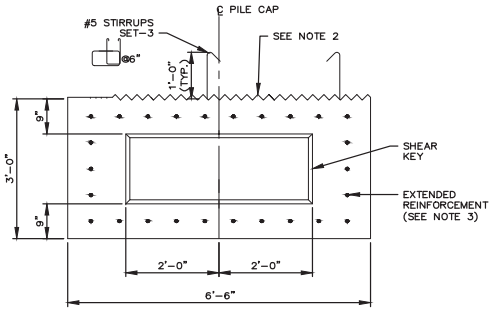
C SECTION
3/4"=1'-0"
S-222
S-223
S-224



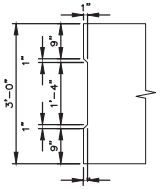
1 STEEL RING PLATE DETAIL
1/2"=1'-0"



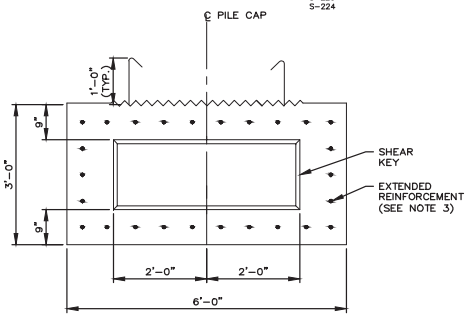
B SECTION
3/4"=1'-0"
S-221
S-222
S-223
S-224
S-225



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

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.

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

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

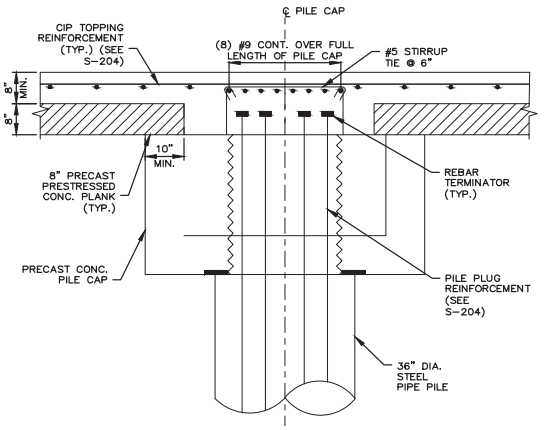
APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

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			

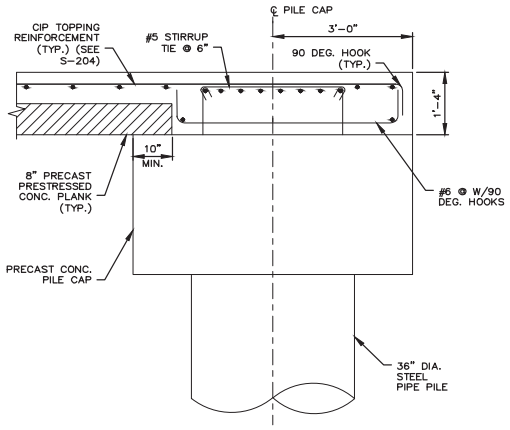
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 1

SHEET NUMBER
S-226

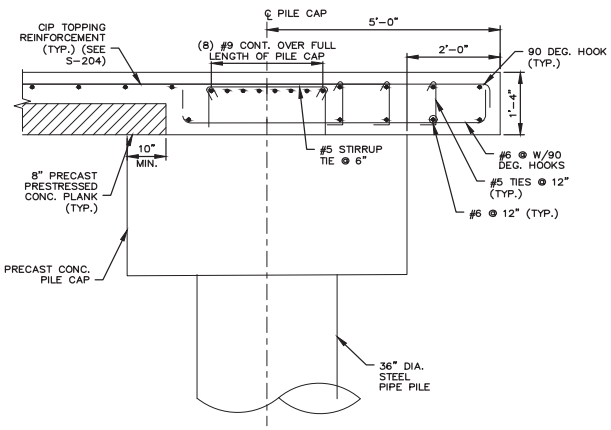


TYPICAL PILE CAP CLOSURE POUR AT PILE
3/4"=1'–0"



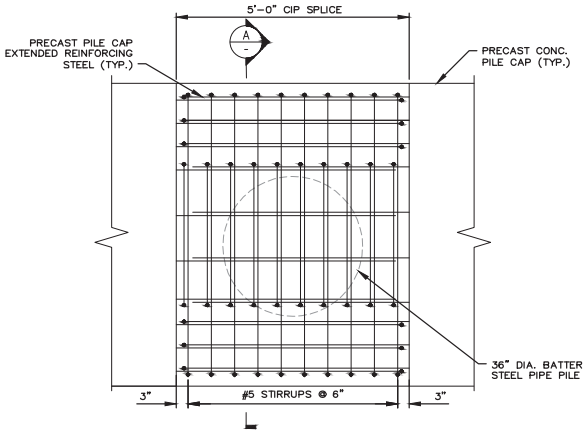
TYPICAL DECK REINFORCING AT PILE CAP ROW BENT T
3/4"=1'–0"

NOTE: CONCRETE PARAPET WALL/CURB NOT SHOWN FOR CLARITY.

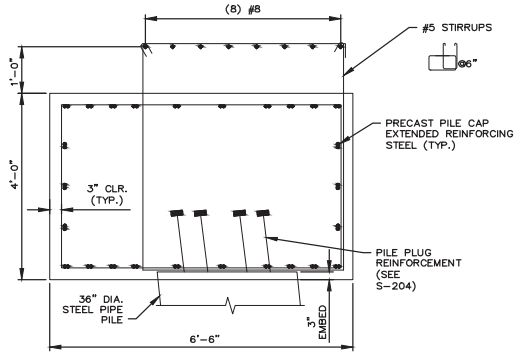


TYPICAL DECK REINFORCING AT PILE CAP ROW BENT N & P AT PLATFORM DECK
3/4"=1'–0"

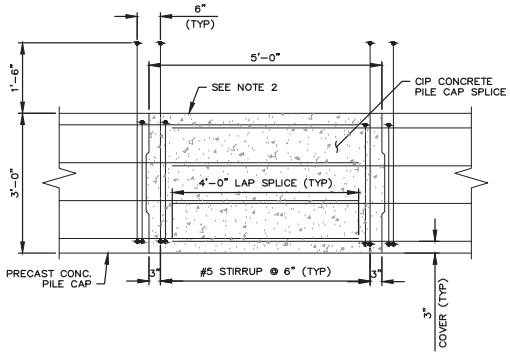
NOTE: CONCRETE PARAPET WALL/CURB NOT SHOWN FOR CLARITY.



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

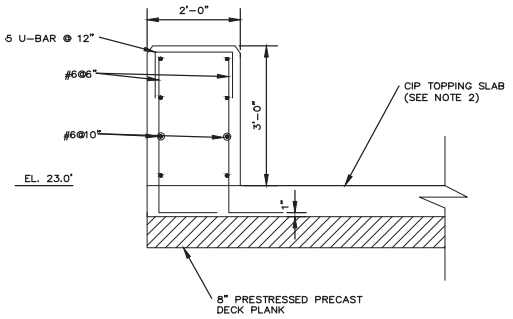
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

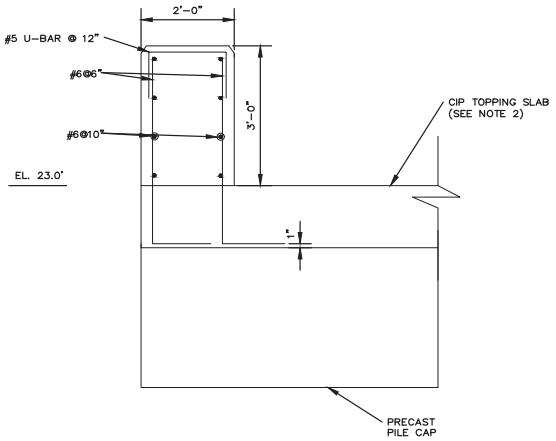
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 2

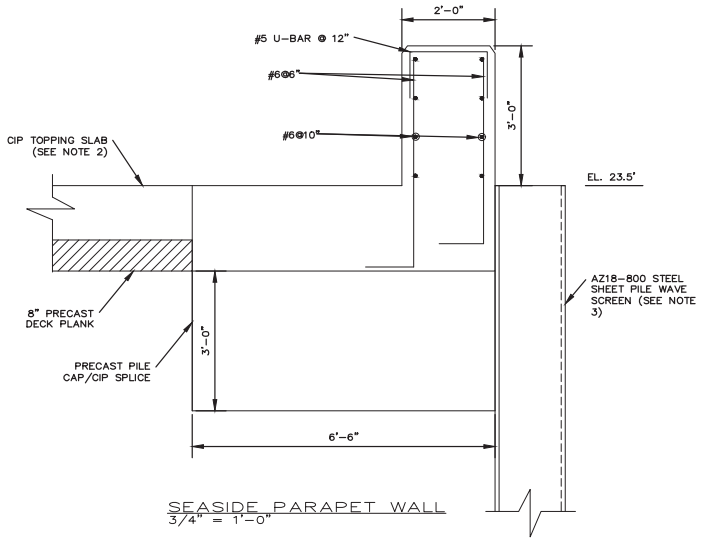
SHEET NUMBER
S-227
66 OF 97



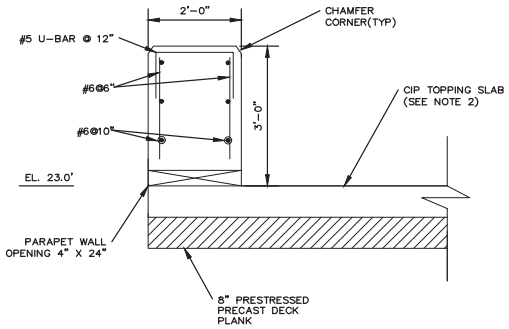
HARBORSIDE PARAPET WALL
@ PRECAST DECK PLANK
3/4" = 1'-0"



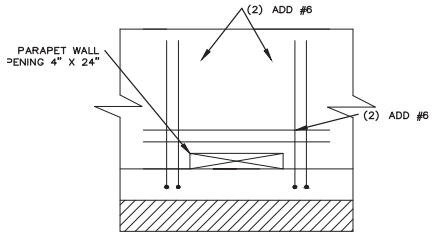
HARBOR SIDE PARAPET WALL
@ PRECAST PILE CAP
3/4" = 1'-0"



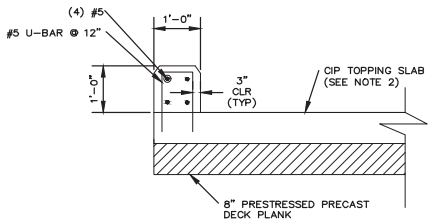
SEASIDE PARAPET WALL
3/4" = 1'-0"



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

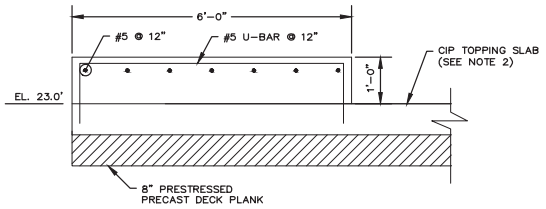
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

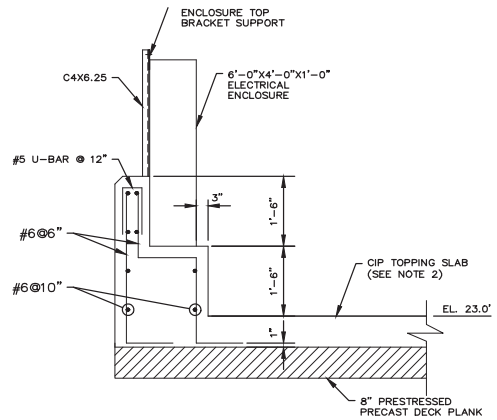
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM REINFORCING SECTIONS AND DETAILS - 2

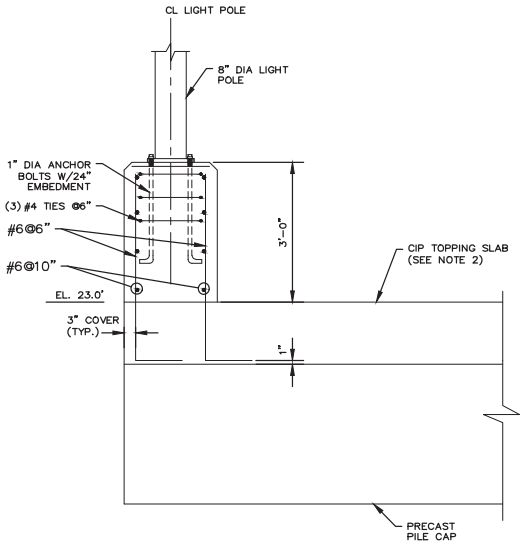
SHEET NUMBER
S-228



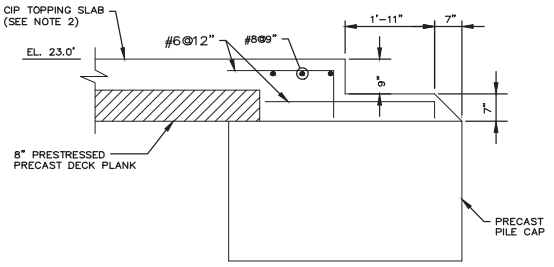
PILE SUPPORTED PLATFORM HOIST PLATFORM REINFORCING – SECTION
3/4" = 1'-0"



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

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

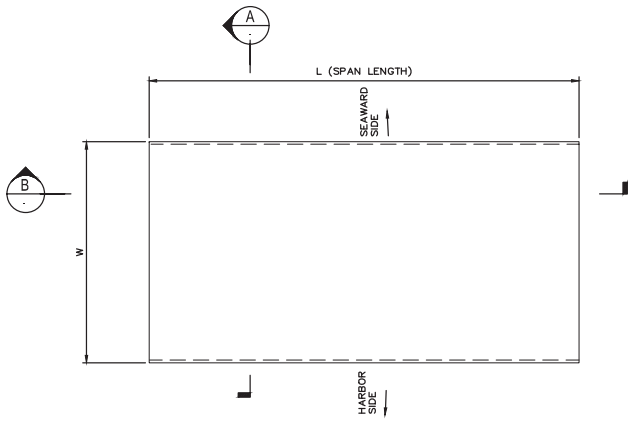
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM PILE SCHEDULE

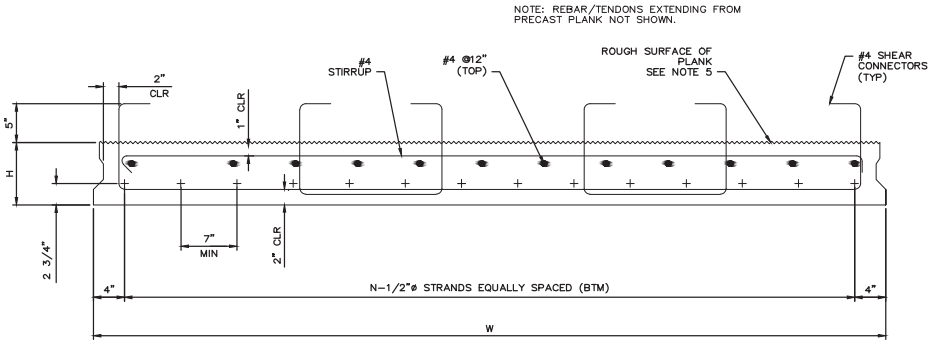
SHEET NUMBER

S-230

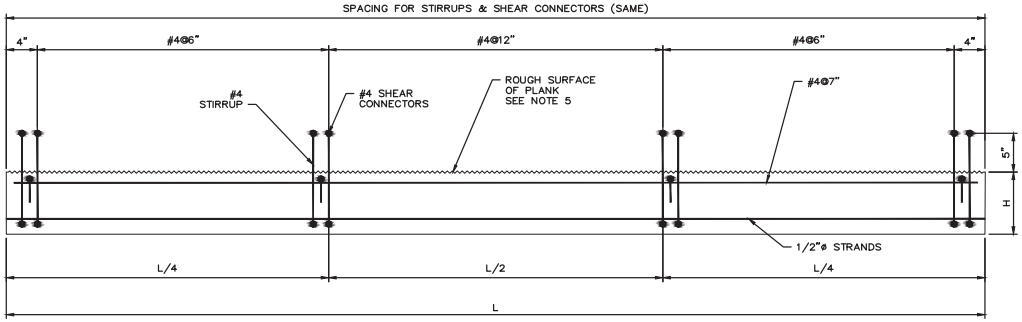


TYPICAL PRESTRESSED PRECAST CONCRETE PLANK
1/2"=1'-0"

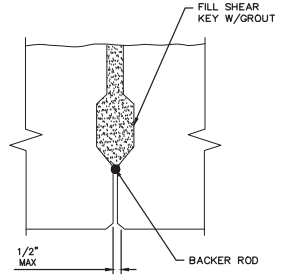
DECK PLANK SCHEDULE / NOMINAL DIMENSIONS						
MARK	W	L	H	N	REQUIRED NUMBER	SHEAR KEYS
P-01	8' - 6"	10'-8"	8"	14	46	HARBOR SIDE, SEAWARD SIDE
P-01A	8' - 6"	10'-8"	8"	14	19	SEAWARD SIDE
P-02	SEE S-241	SEE S-241	8"	MILD STEEL, SEE S-241	1	HARBOR SIDE, SEAWARD SIDE
P-03	SEE S-241	SEE S-241	8"	20	1	HARBOR SIDE, SEAWARD SIDE
P-04	SEE S-241	SEE S-241	8"	20	1	HARBOR SIDE



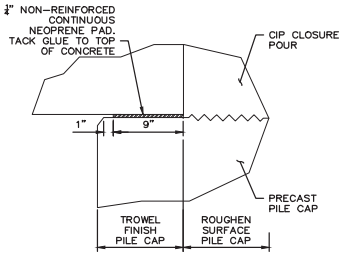
A TYPICAL FOR W>4' SECTION
1-1/2"=1'-0"



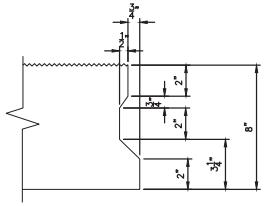
B SECTION
1-1/2"=1'-0"



TYPICAL PLANK JOINT DETAIL
3"=1'-0"



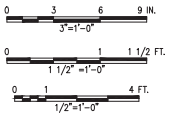
DECK PLANK BEARING DETAIL
1 1/2"=1'-0"



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:

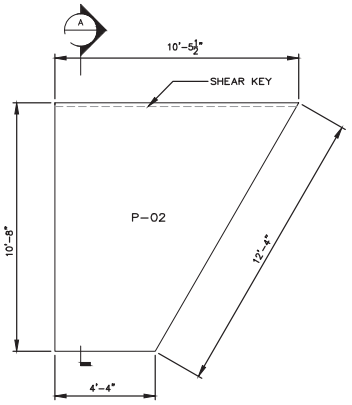
PROJECT INFORMATION

PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

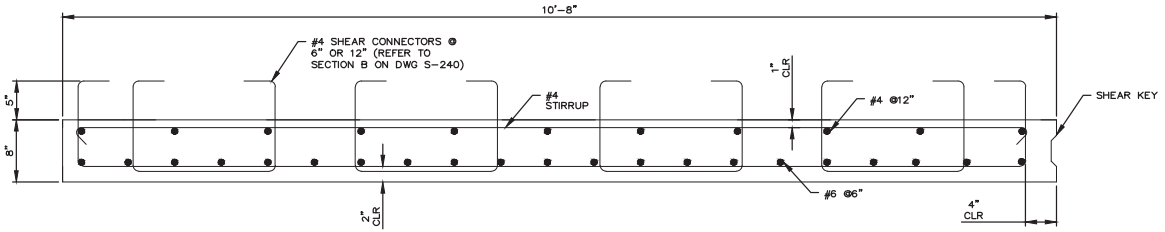
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM
PRECAST PLANK DETAILS

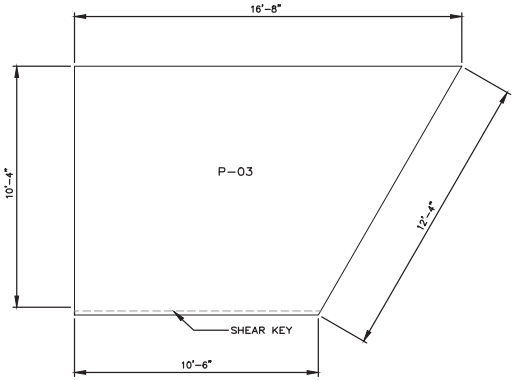
SHEET NUMBER
S-240
70 OF 97



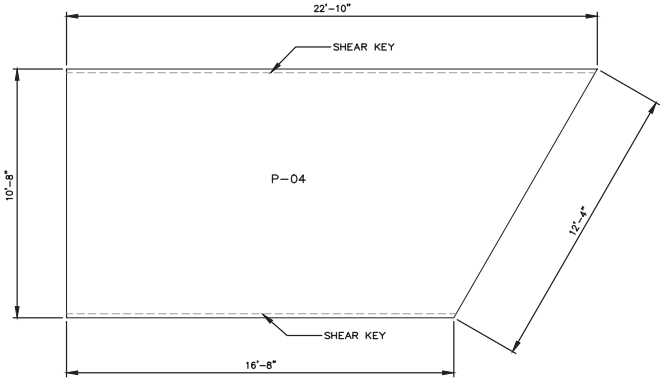
NOTE: SHEAR KEY ON SEAWARD SIDE



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:

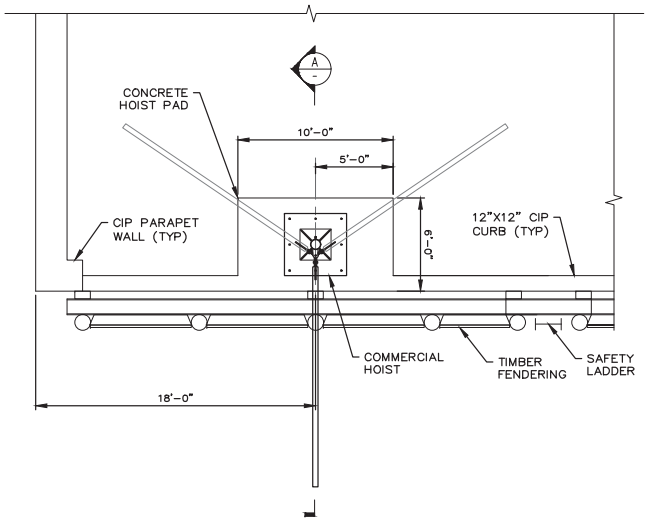
CHIEF ENGINEER:

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		P.E. NUMBER
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR			DATE
PROJECT COMPLETION DATE			

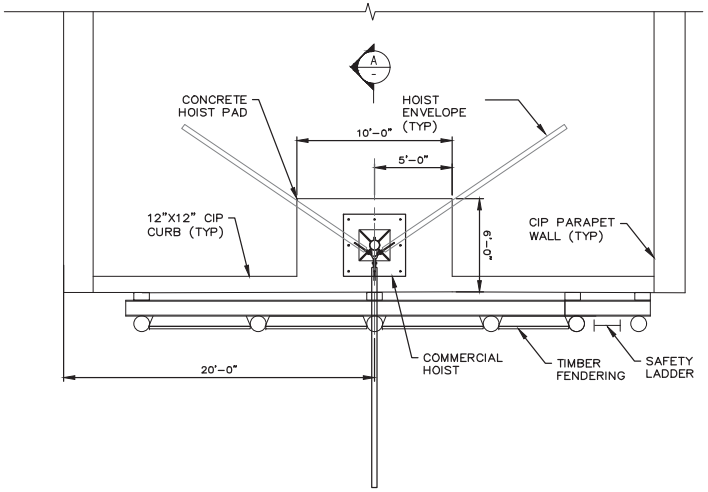
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PILE SUPPORTED PLATFORM
PRECAST PLANK DETAILS - 2

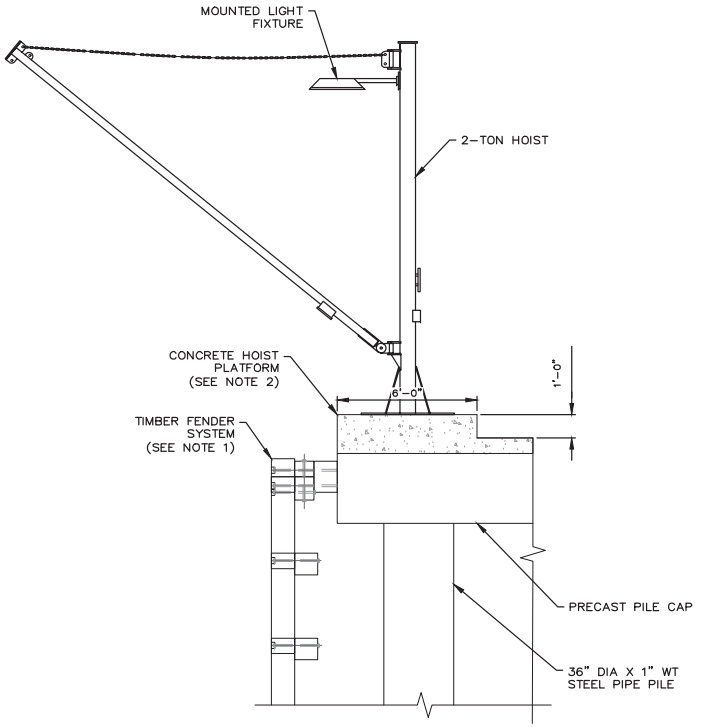
SHEET NUMBER
S-241



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"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

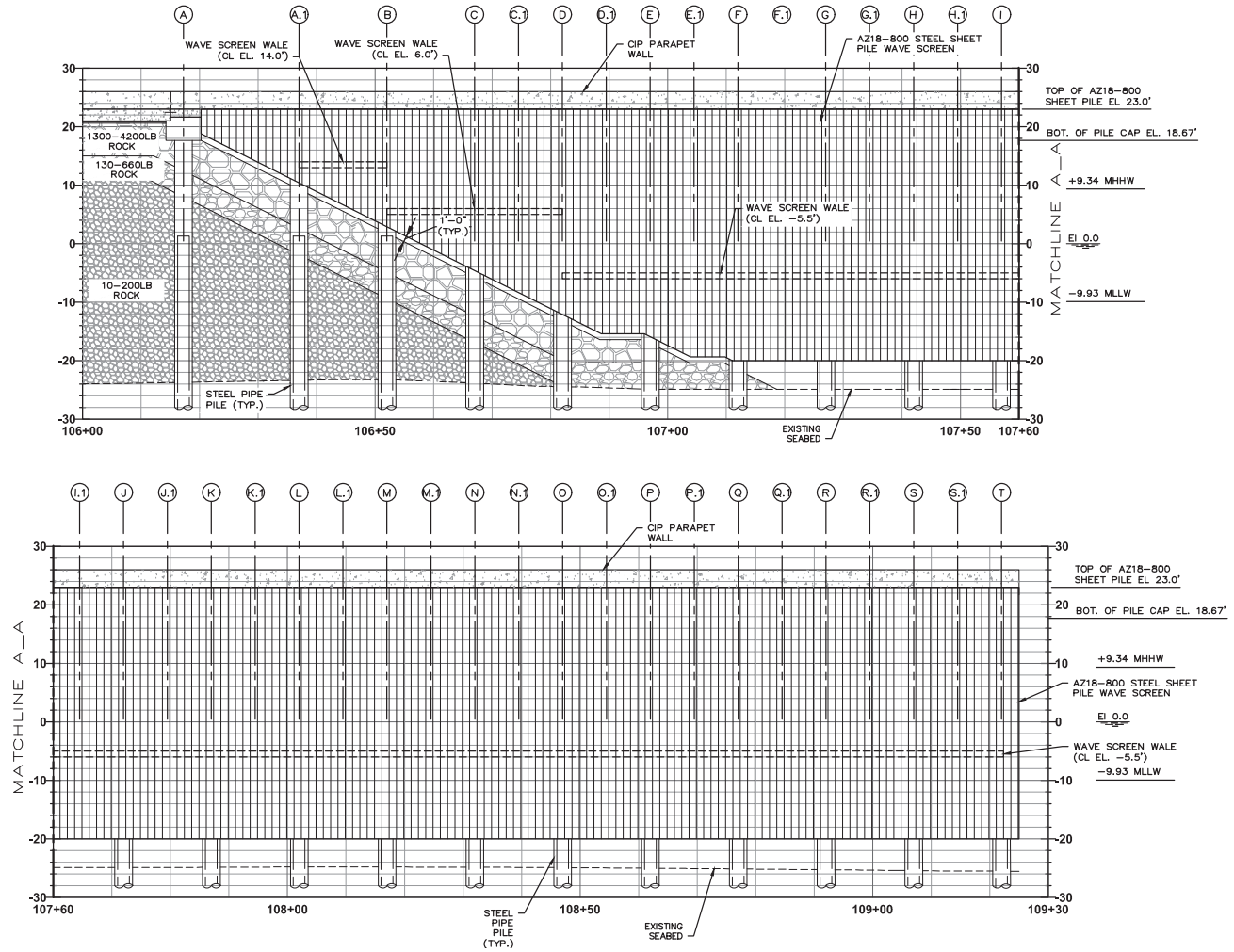
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
HOIST AREA ELEVATION & DETAILS

SHEET NUMBER
S-260



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'

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE

COMMISSIONER:

CHIEF ENGINEER:

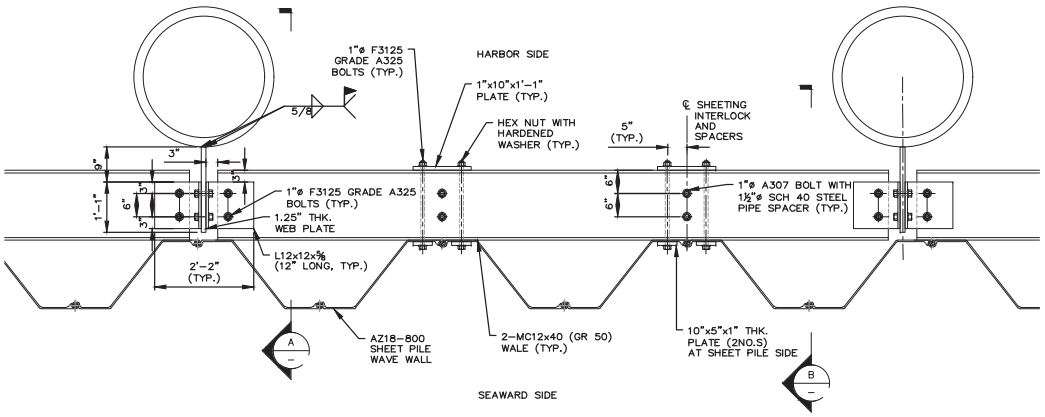
PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

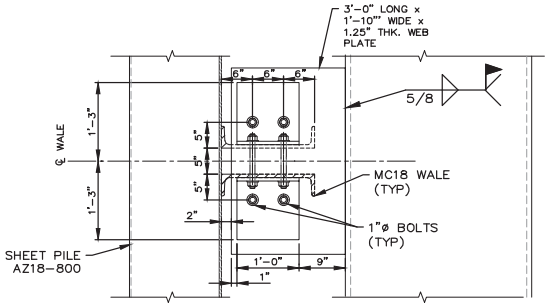
PILE SUPPORTED PLATFORM WAVE SCREEN PROFILE

SHEET NUMBER

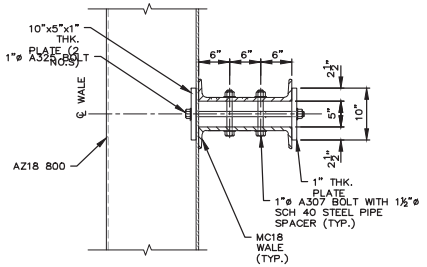
S-270



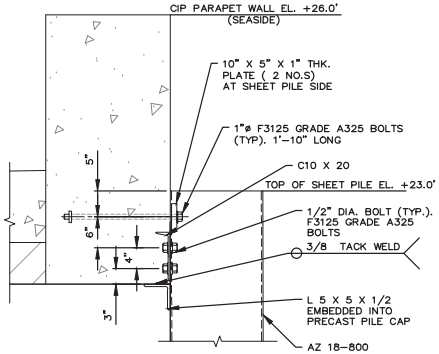
PARTIAL WALE PLAN AT WAVE WALL
3/4"=1'-0"



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"

NOT FOR CONSTRUCTION

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

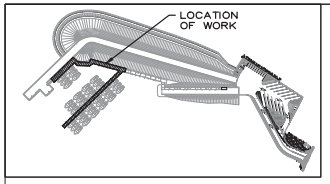
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

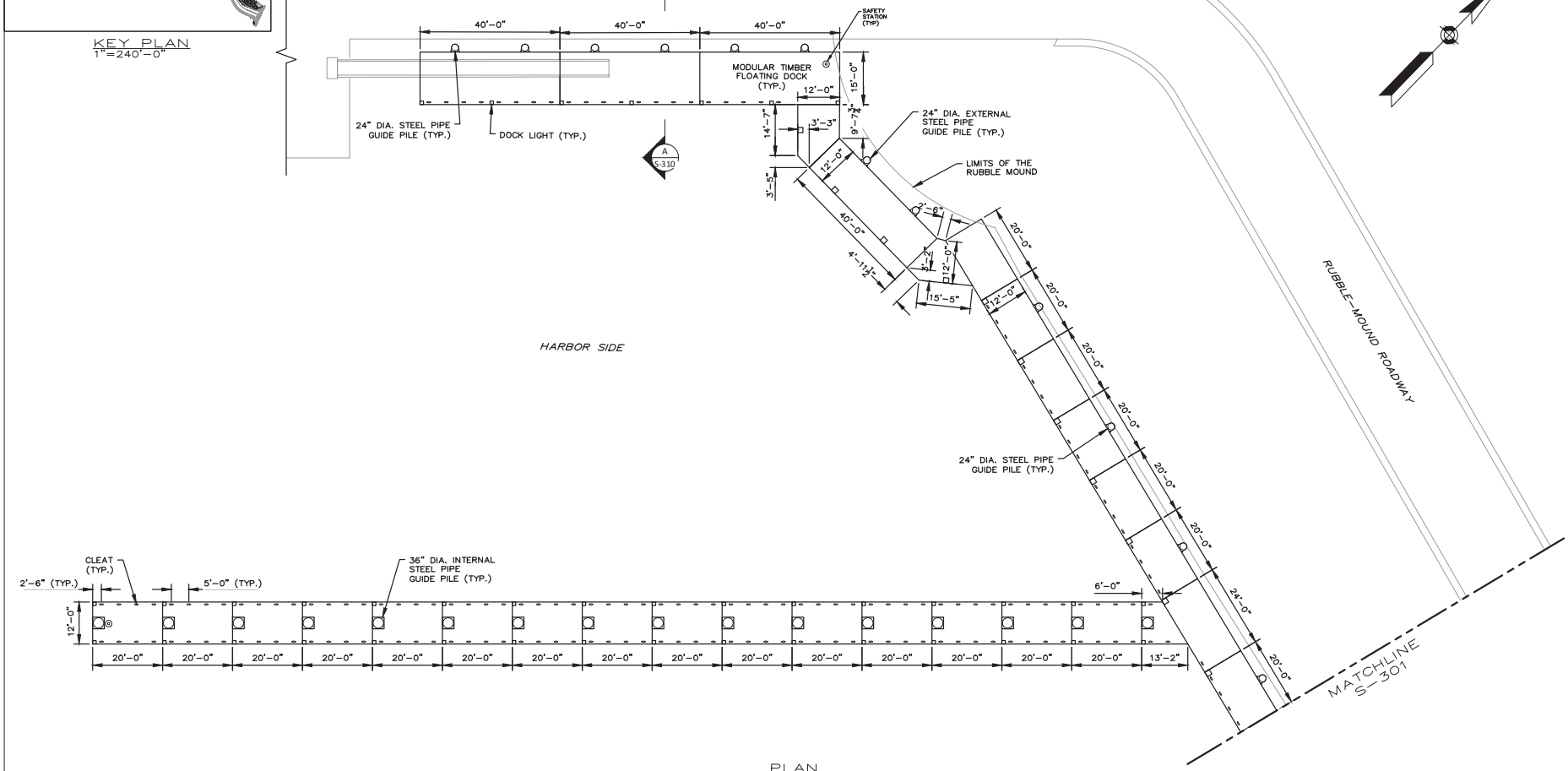
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM WAVE SCREEN DETAILS

SHEET NUMBER
S-271



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

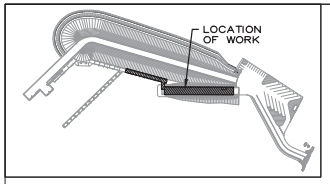
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

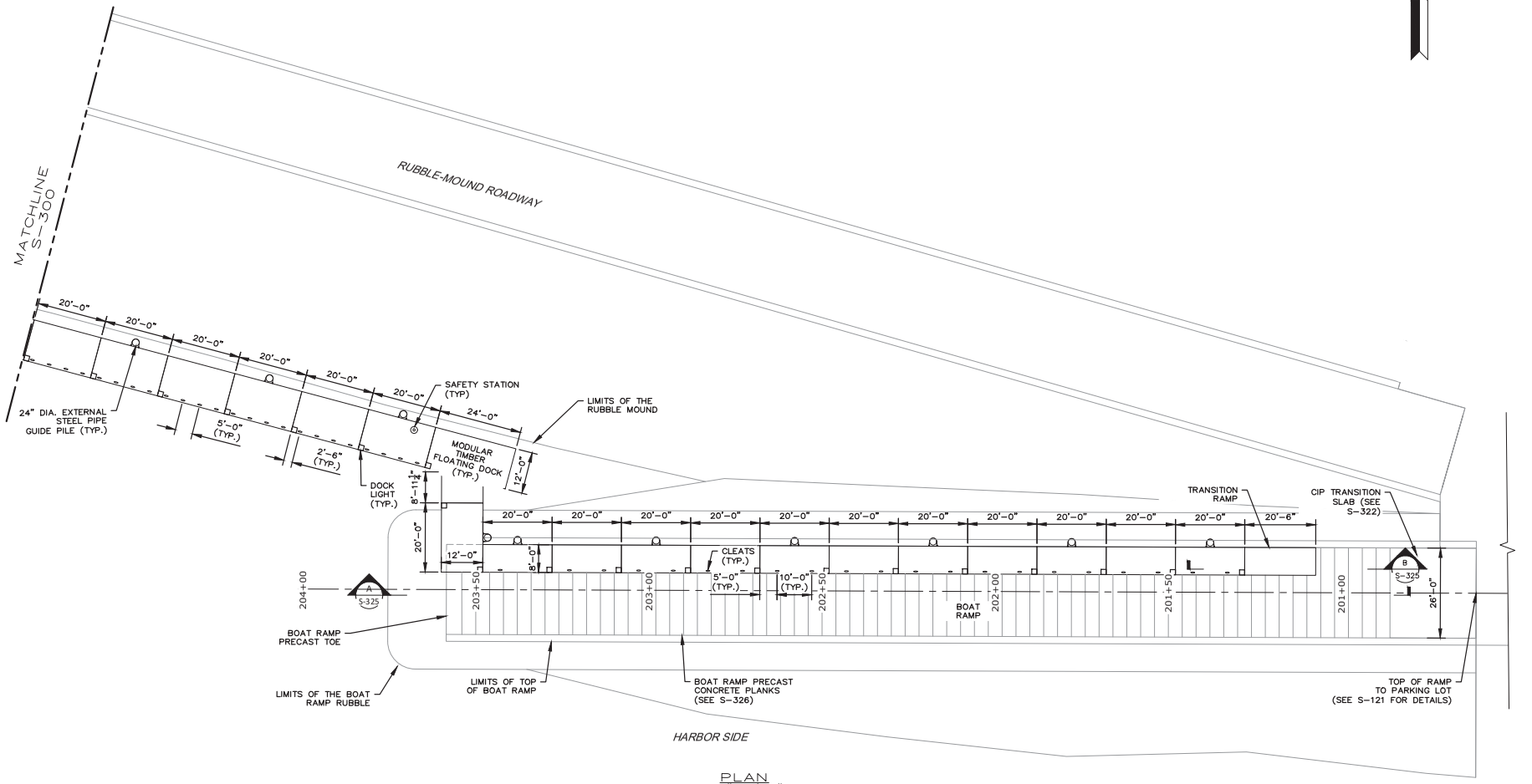
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

FLOATING DOCK
GENERAL ARRANGEMENT PLAN - 1

SHEET NUMBER
S-300
75 OF 97



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

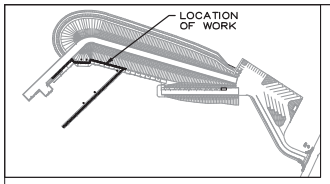
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

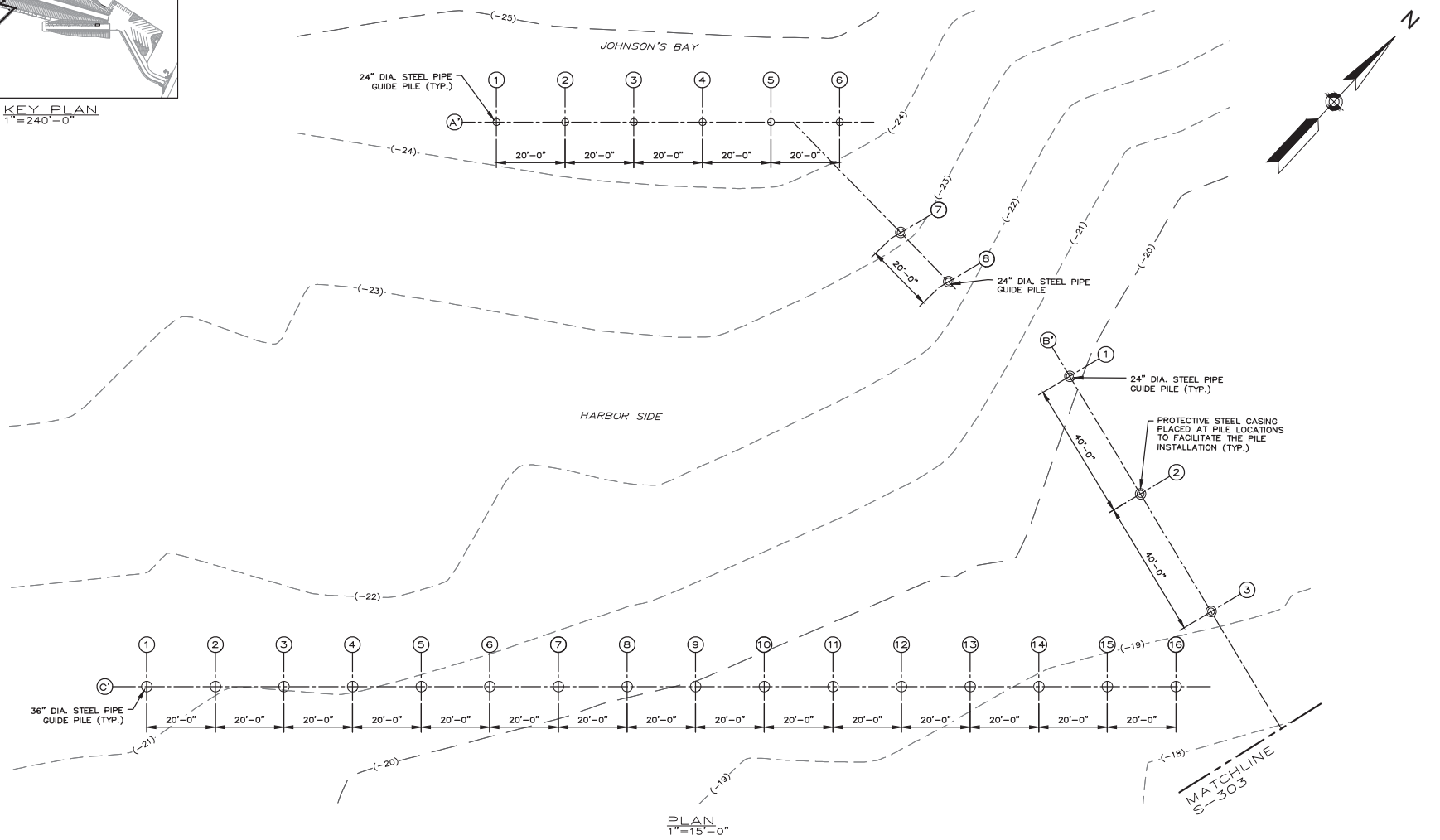
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

FLOATING DOCK
GENERAL ARRANGEMENT PLAN - 2

SHEET NUMBER
S-301
76 OF 97



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

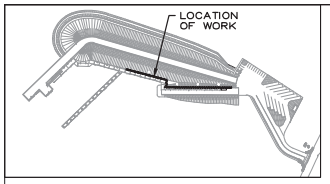
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
WASHINGTON, COUNTY
LUBEC, ME

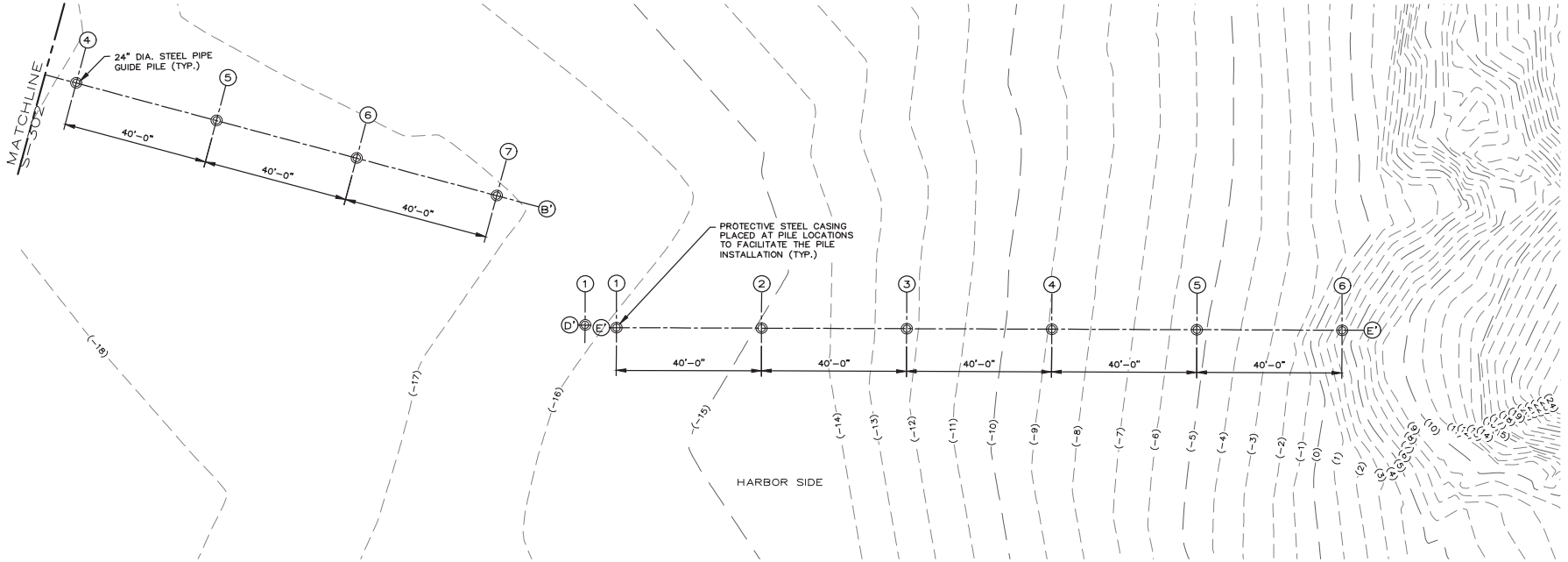
FLOATING DOCK PILE PLAN - 1

SHEET NUMBER
S-302
77 OF 97



KEY PLAN
1"=240'-0"

N



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

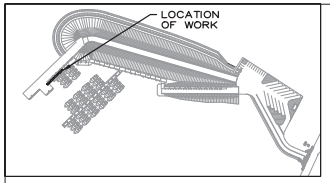
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

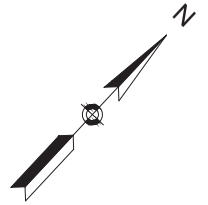
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

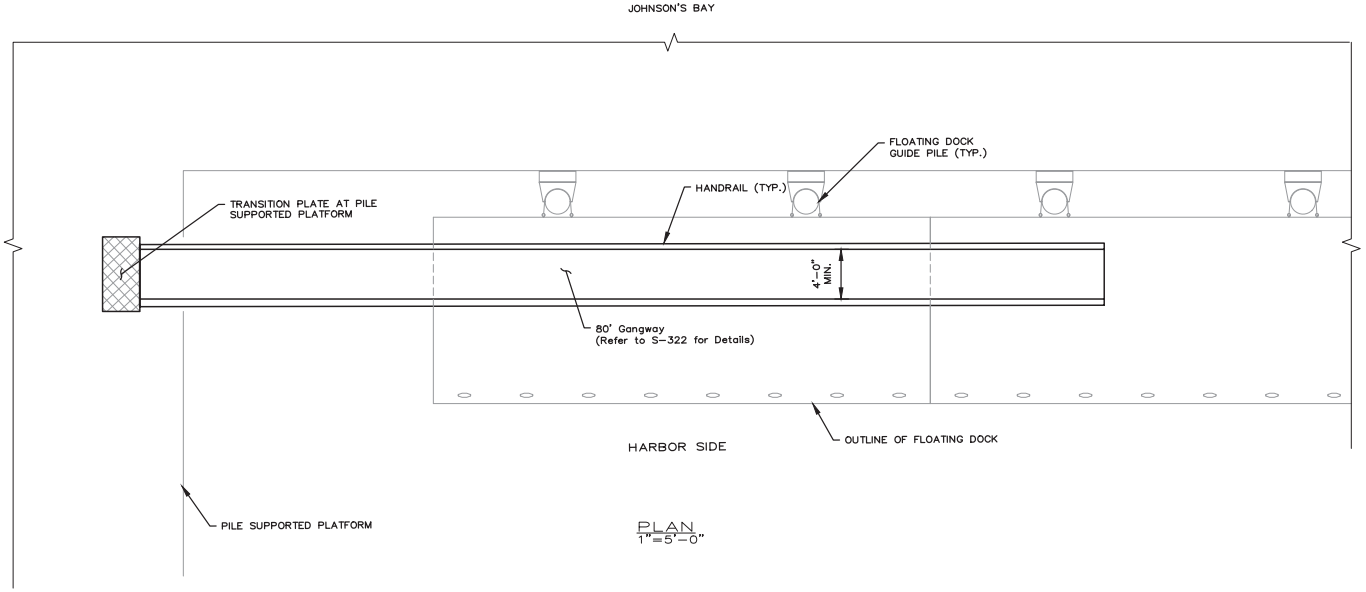
FLOATING DOCK PILE PLAN - 2

SHEET NUMBER
S-303
78 OF 97



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

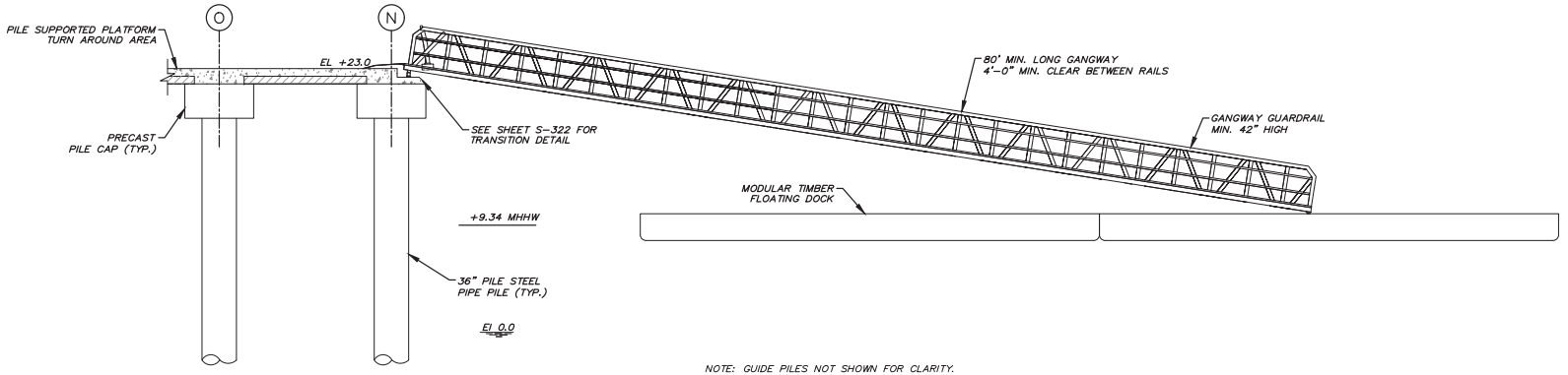
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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

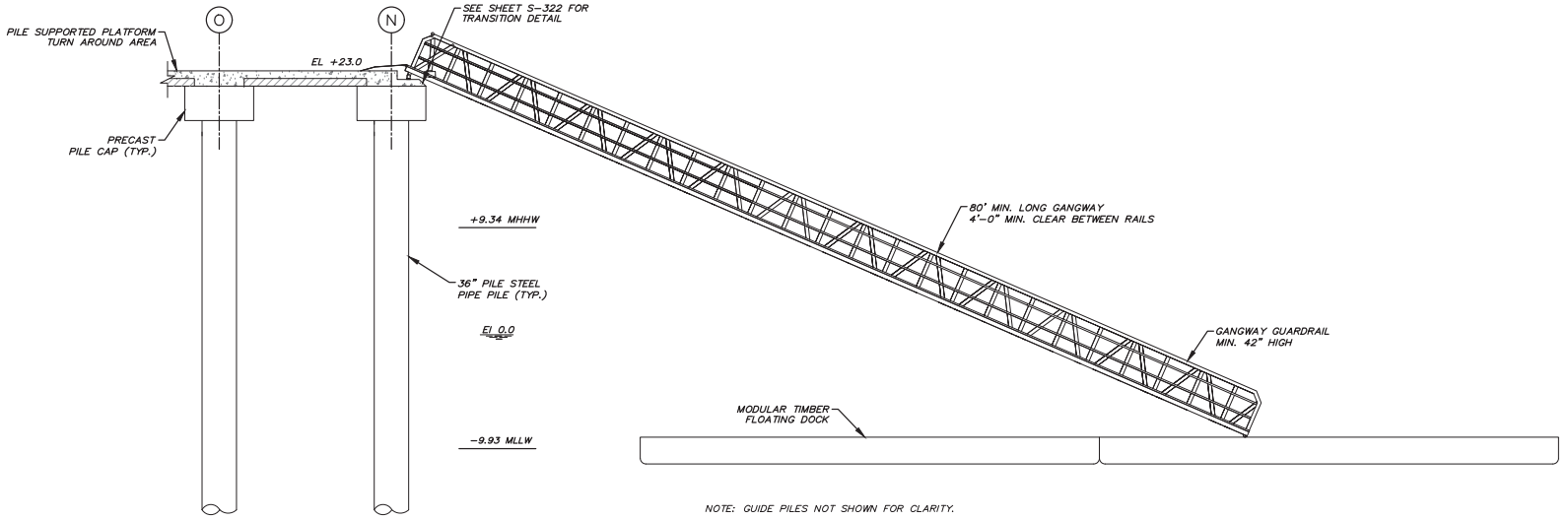
FLOATING DOCK GANGWAY PLAN

SHEET NUMBER
S-304
79 OF 97



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

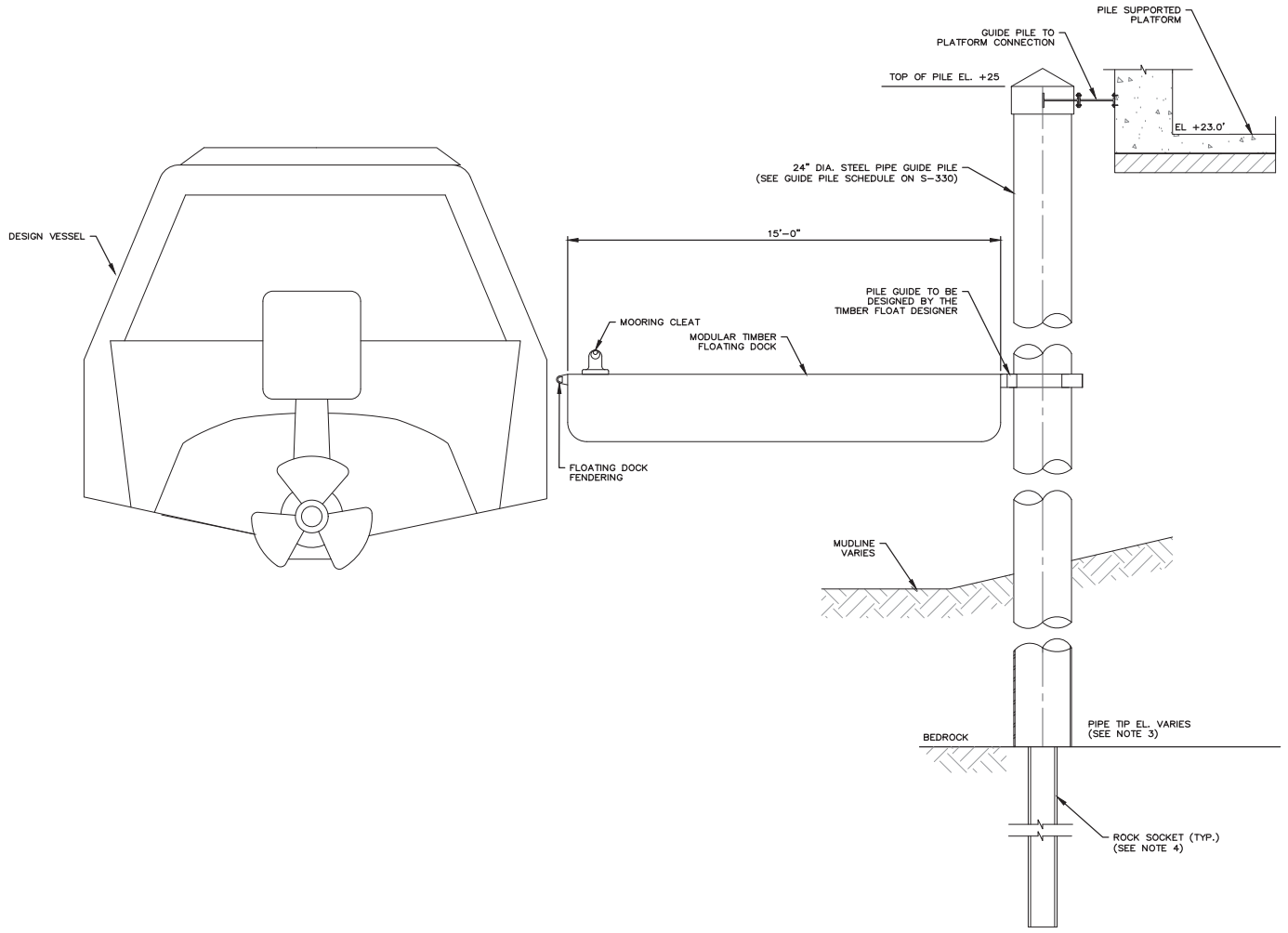
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK GANGWAY SECTIONS

SHEET NUMBER
S-305



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:

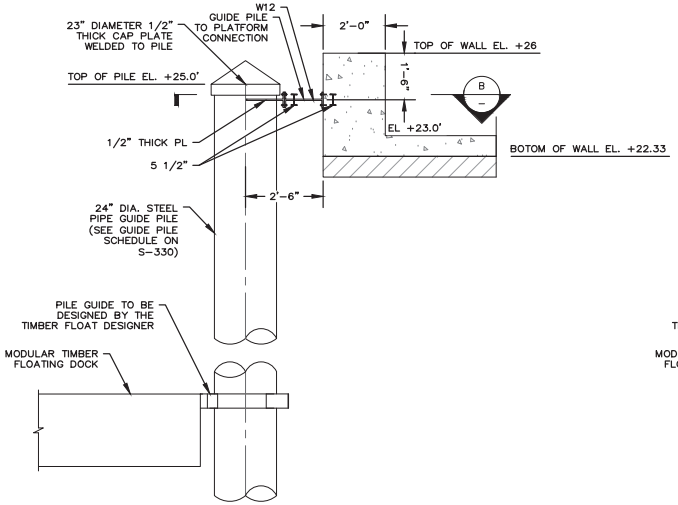
PROJECT INFORMATION

PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

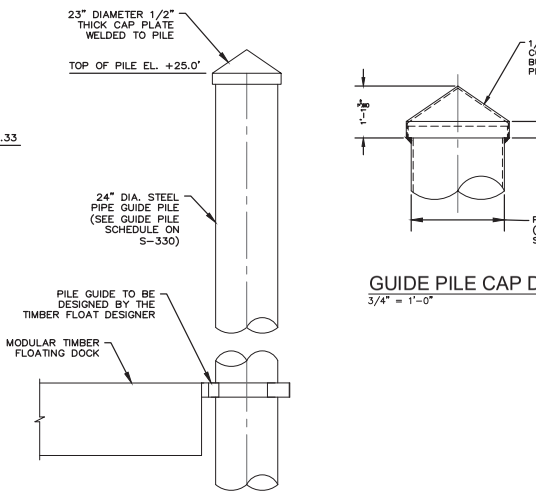
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK SECTION

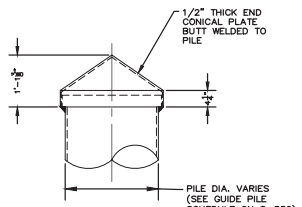
SHEET NUMBER
S-310
81 OF 97



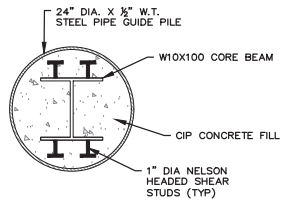
GUIDE PILE DETAIL TYPE A
1/2" = 1'-0"



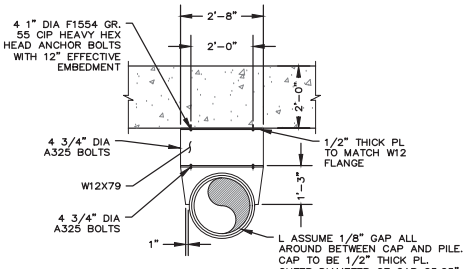
GUIDE PILE DETAIL TYPE B
1/2" = 1'-0"



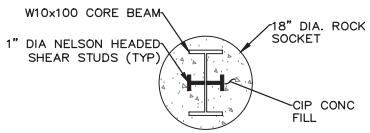
GUIDE PILE CAP DETAIL
3/4" = 1'-0"



A SECTION
1" = 1'-0"



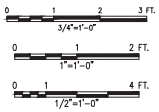
B SECTION
1/2" = 1'-0"



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

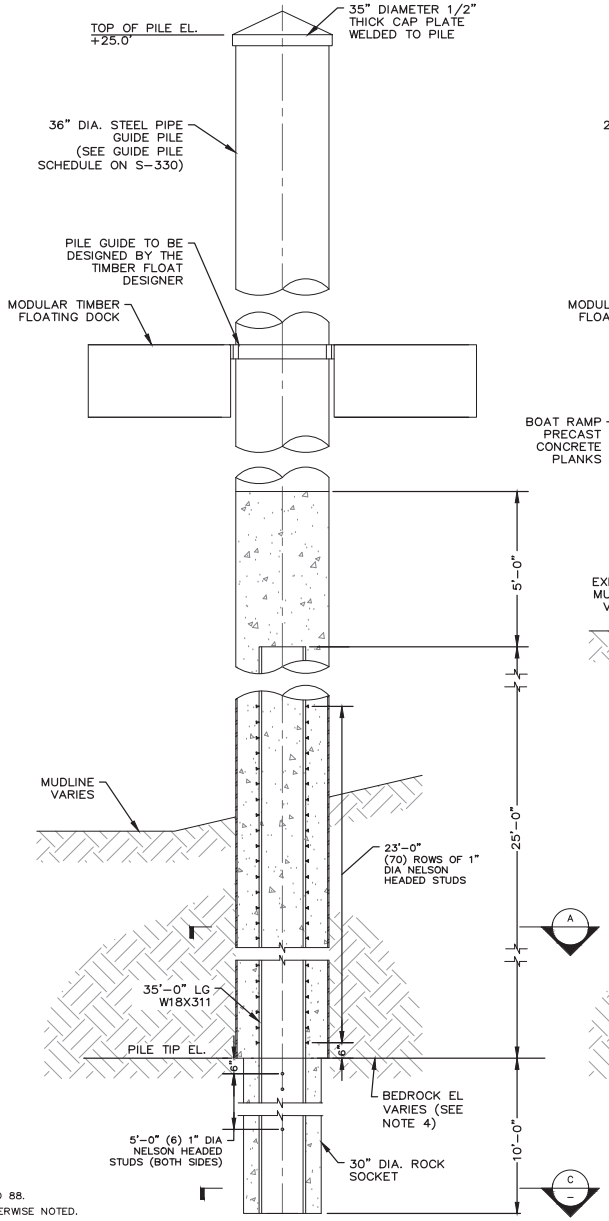
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

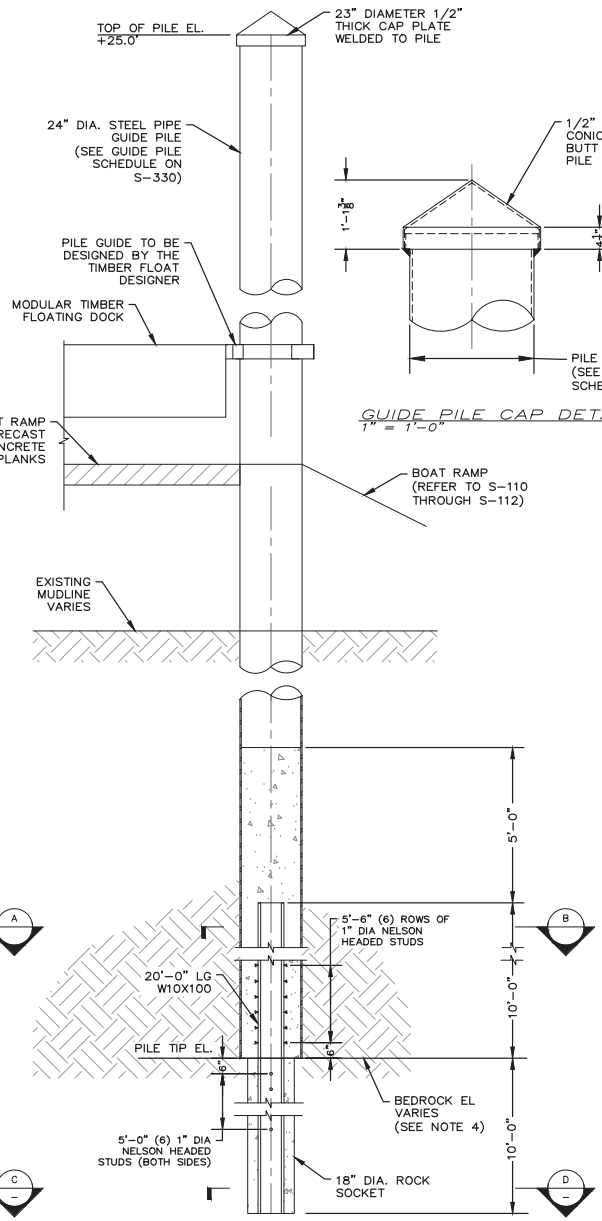
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK GUIDE PILE DETAILS - 1

SHEET NUMBER
S-320

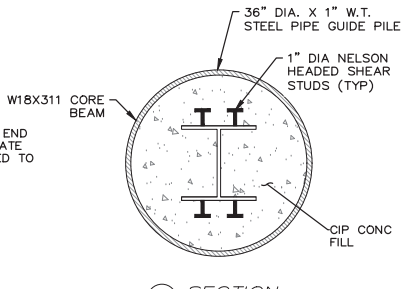


GUIDE PILE DETAIL C
1/2" = 1'-0"

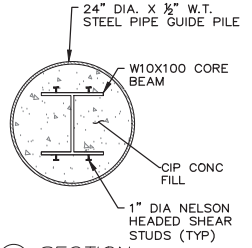


GUIDE PILE DETAIL D
1/2" = 1'-0"

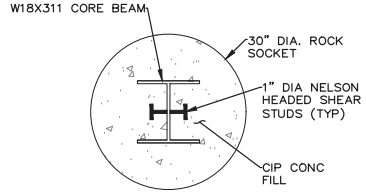
GUIDE PILE CAP DETAIL
1" = 1'-0"



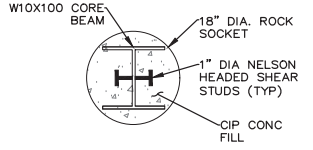
A SECTION
1" = 1'-0"



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

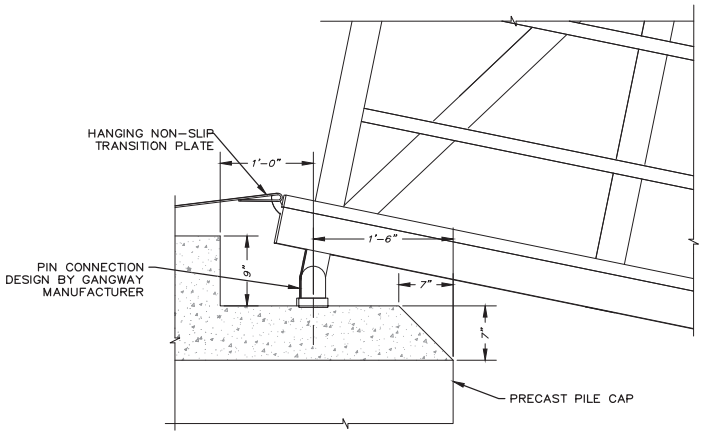
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

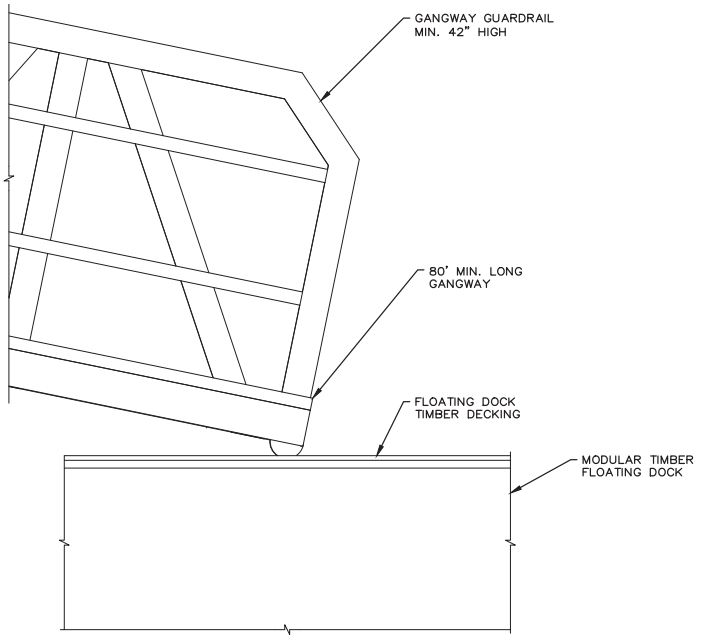
PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	AURELE GORNEAU II		
DESIGNER	CRAIG MORIN	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK GUIDE PILE DETAILS - 2

SHEET NUMBER
S-321
83 0F 97





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

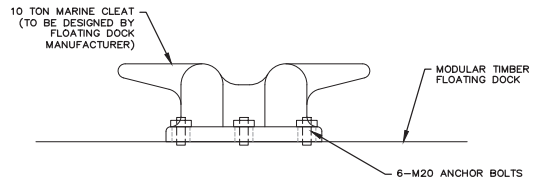
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

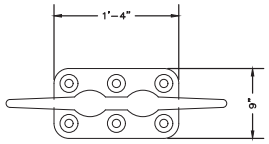
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK GANGWAY DETAILS

SHEET NUMBER
S-322
84 OF 97



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

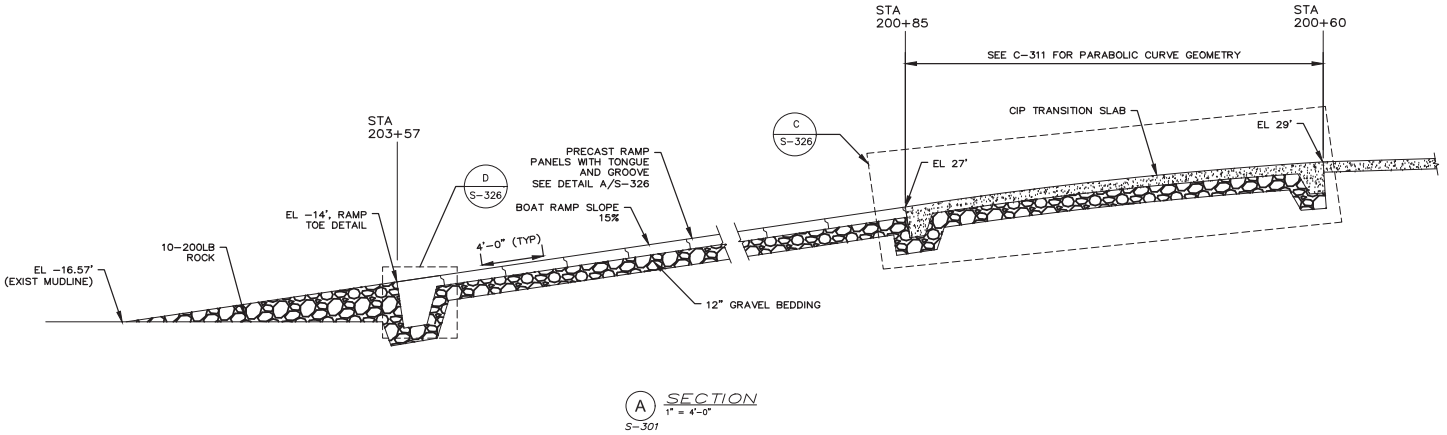
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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			

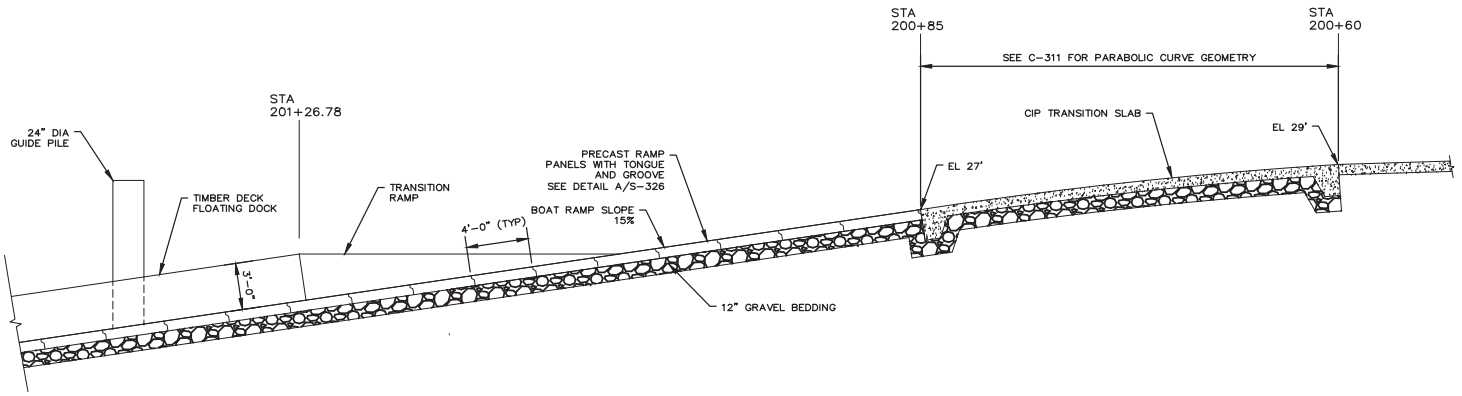
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

FLOATING DOCK CLEAT DETAILS

SHEET NUMBER
S-323



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

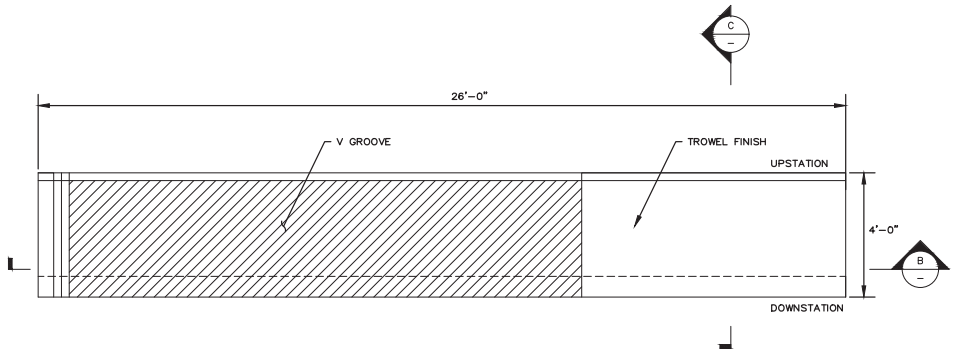
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

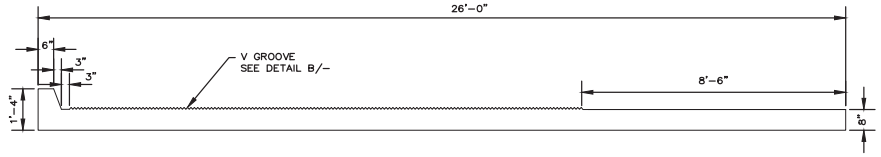
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

BOAT RAMP SECTION AND DETAILS

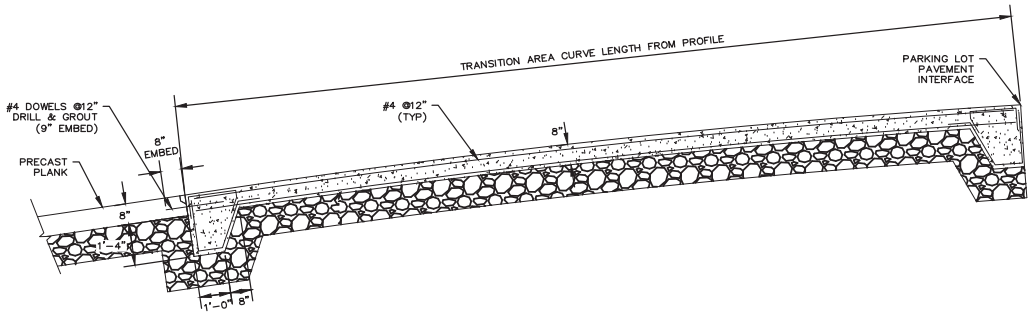
SHEET NUMBER
S-325
86 0F 97



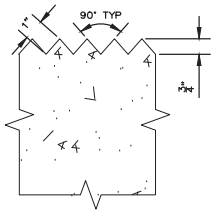
A S-325 BOAT RAMP PLANK DETAIL — PLAN
1"=2'-0"



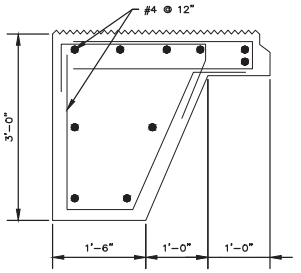
B SECTION
1" = 2'-0"



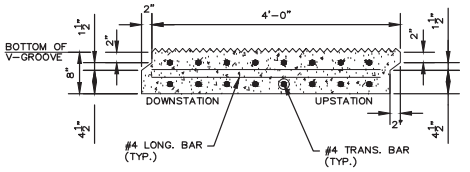
E S-325 DETAIL
1"=2'-0"



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		
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

BOAT RAMP SECTION AND DETAILS

SHEET NUMBER
S-326
87 0F 97

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

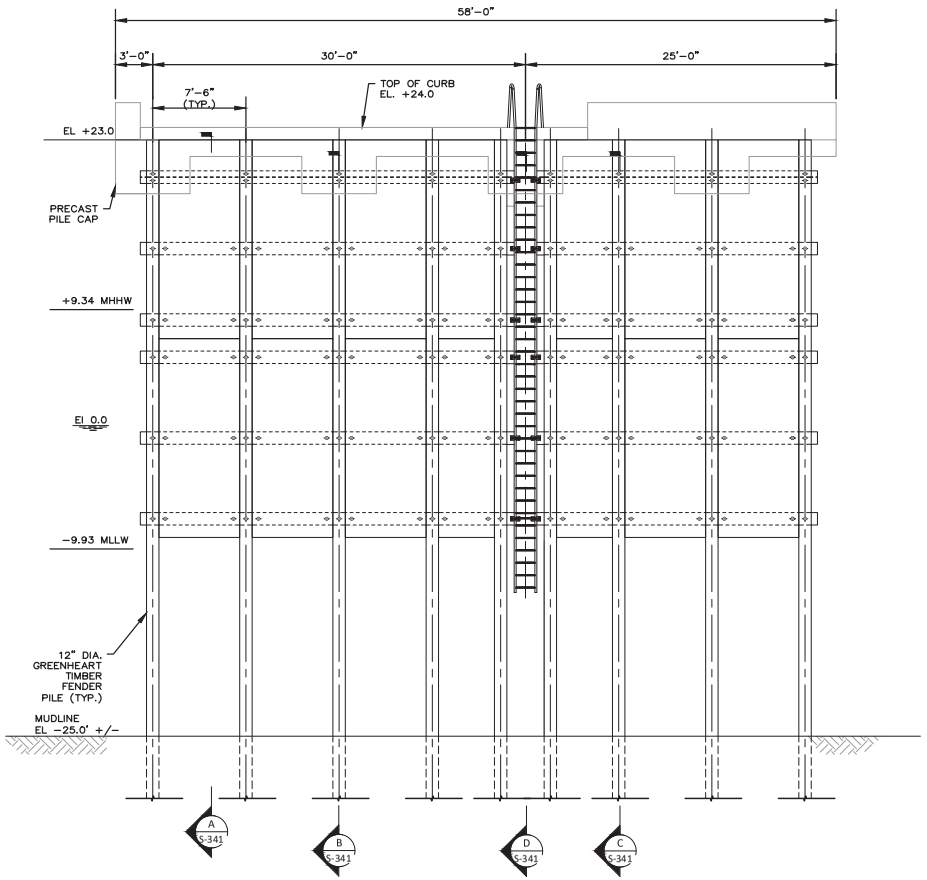
PROGRAM	MULTIMODAL	
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE
DESIGNER	CRAIG MORIN	
CONSULTANT	JACOBS	P.E. NUMBER
PROJECT RESIDENT		
CONTRACTOR		DATE
PROJECT COMPLETION DATE		

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

FLOATING DOCK GUIDE PILE SCHEDULE

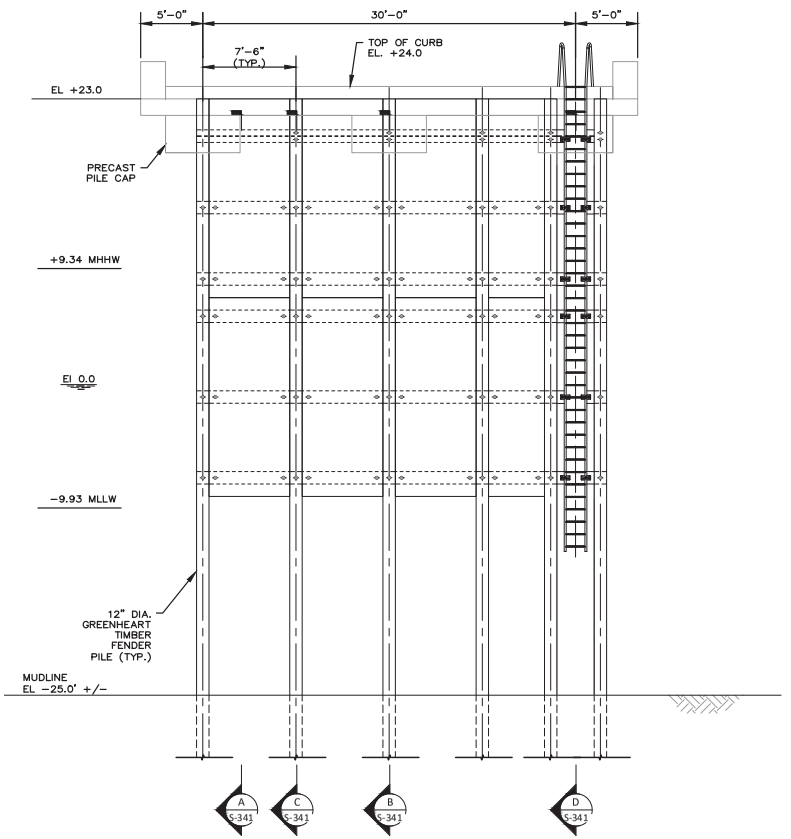
SHEET NUMBER

S-330



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

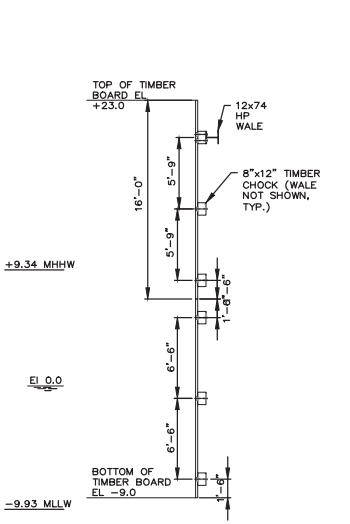
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL		
PROJECT MANAGER	AURELE GORNEAU II	SIGNATURE	
DESIGNER	CRAIG MORIN		
CONSULTANT	JACOBS	P.E. NUMBER	
PROJECT RESIDENT			
CONTRACTOR		DATE	
PROJECT COMPLETION DATE			

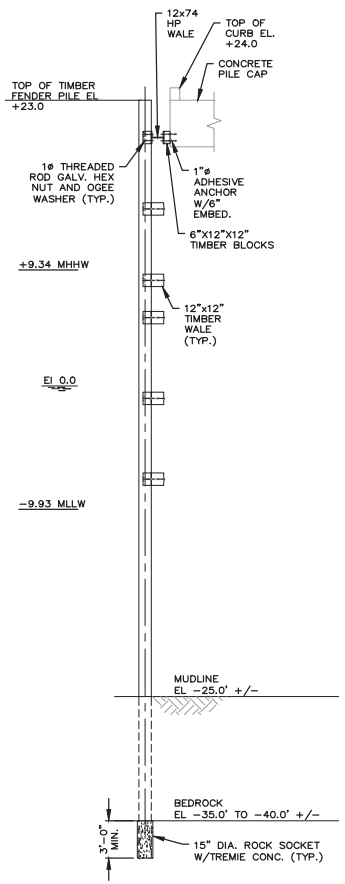
MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM ELEVATIONS

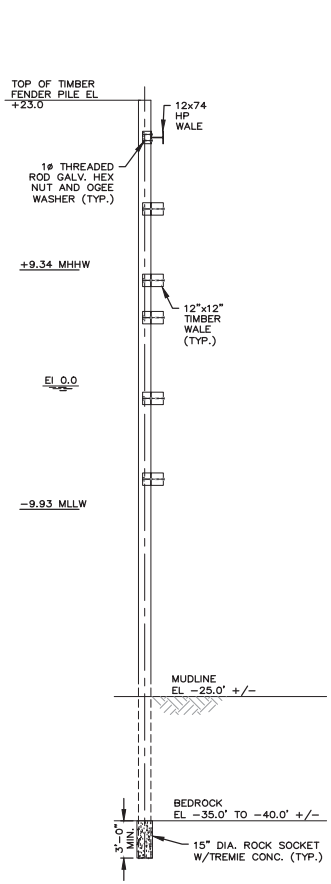
SHEET NUMBER
S-340



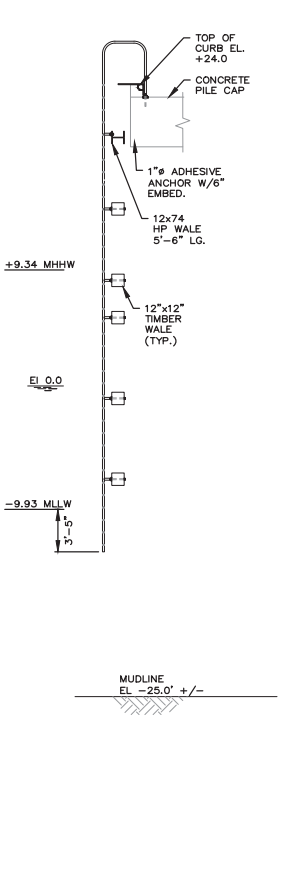
A SECTION
1" = 5'-0"
S-340



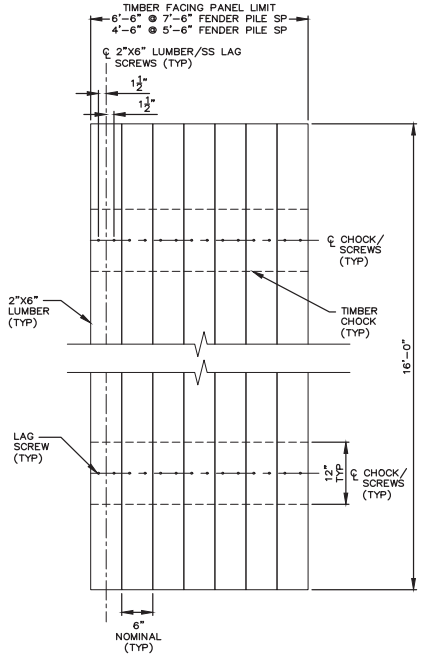
B SECTION
1" = 5'-0"
S-340



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

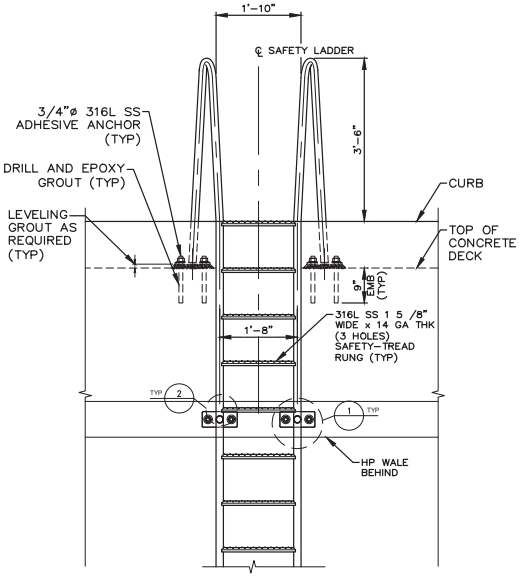
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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

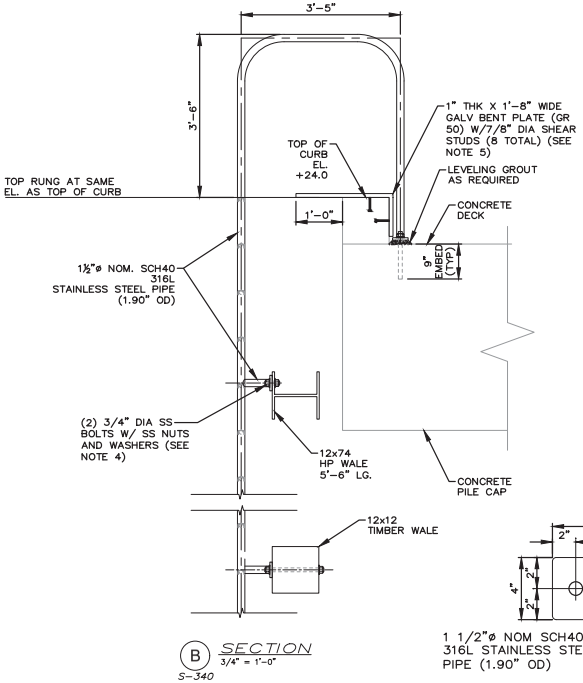
PILE SUPPORTED PLATFORM
TIMBER FENDER SYSTEM SECTIONS

SHEET NUMBER
S-341
90 OF 97

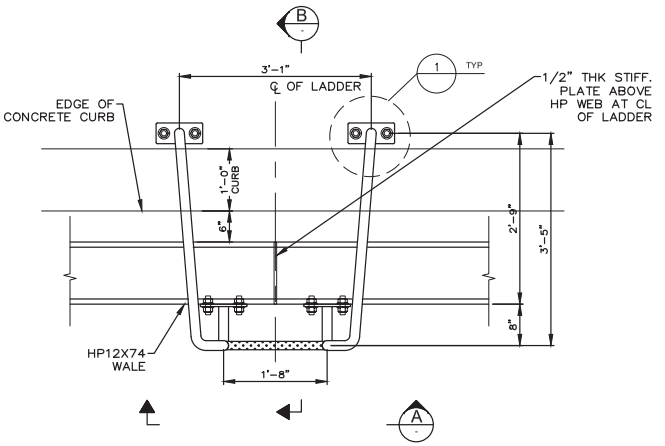


NOTE: BENT STEEL PLATE NOT SHOWN FOR CLARITY.

A ELEVATION
3/4" = 1'-0"
S-340

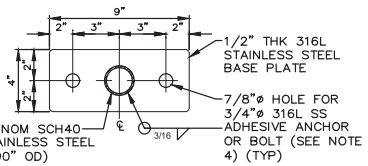


B SECTION
3/4" = 1'-0"
S-340

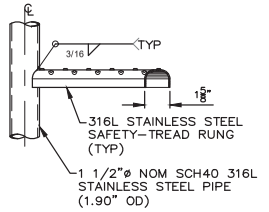


NOTE: BENT STEEL PLATE NOT SHOWN FOR CLARITY.

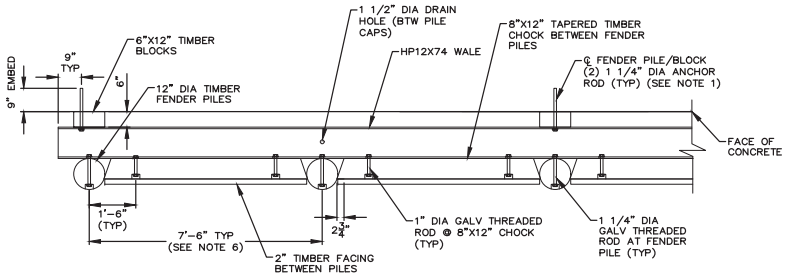
PARTIAL PLAN — TYPICAL SAFETY LADDER
1" = 1'-0"



1 MOUNTING PLATE DETAIL
3" = 1'-0"
S-340

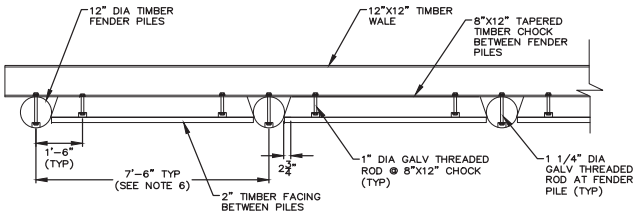


2 DETAIL
3" = 1'-0"
S-340



NOTE: TIMBER FACING DETAILS NOT SHOWN FOR CLARITY.

PLAN — UPPER TIMBER FENDER SYSTEM DETAIL
1/2" = 1'-0"

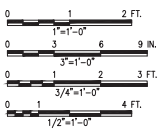


NOTE: TIMBER FACING DETAILS NOT SHOWN FOR CLARITY.

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

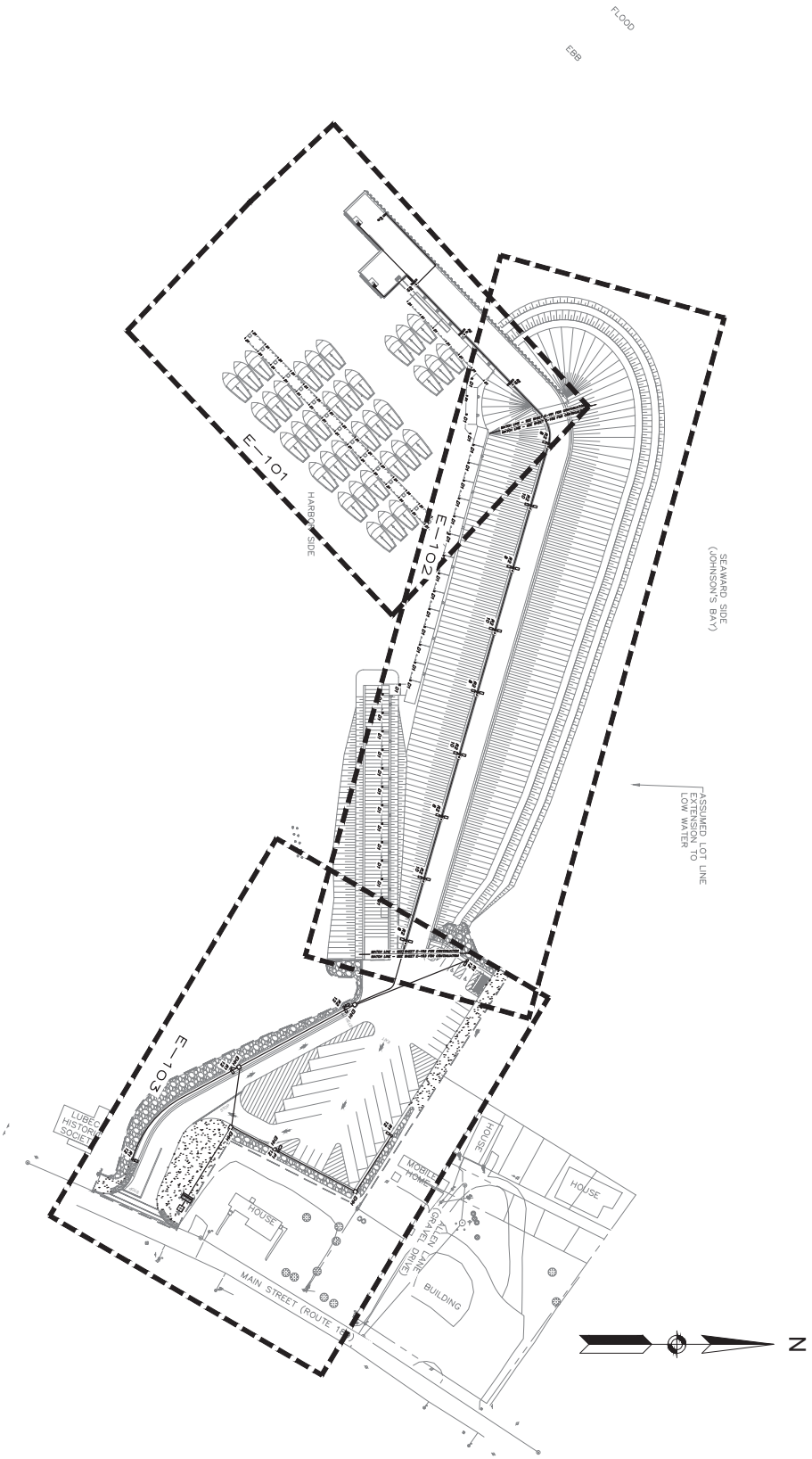
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

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
LUBEC, ME
WASHINGTON, COUNTY

PILE SUPPORTED PLATFORM TIMBER FENDER SYSTEM DETAILS

SHEET NUMBER
S-342
91 OF 97



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).

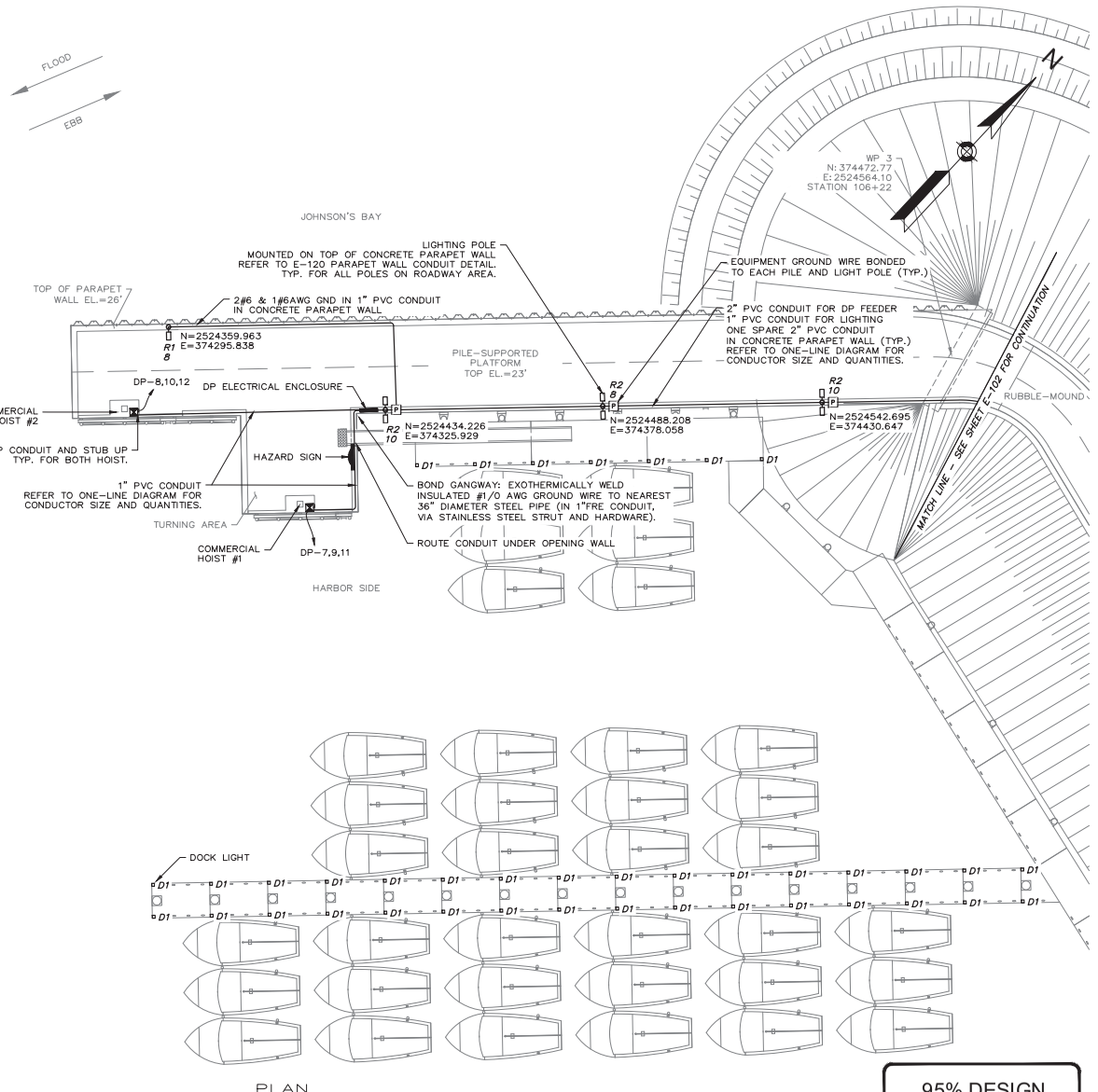
I. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

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.

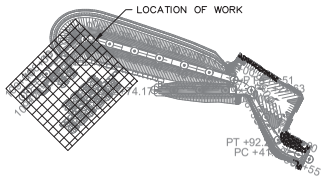
L. PROVIDE LABELS ON ALL RECEPTACLES, SWITCHES, ETC. INDICATING PANEL/CIRCUIT NUMBERS, AS APPLICABLE.

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

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.

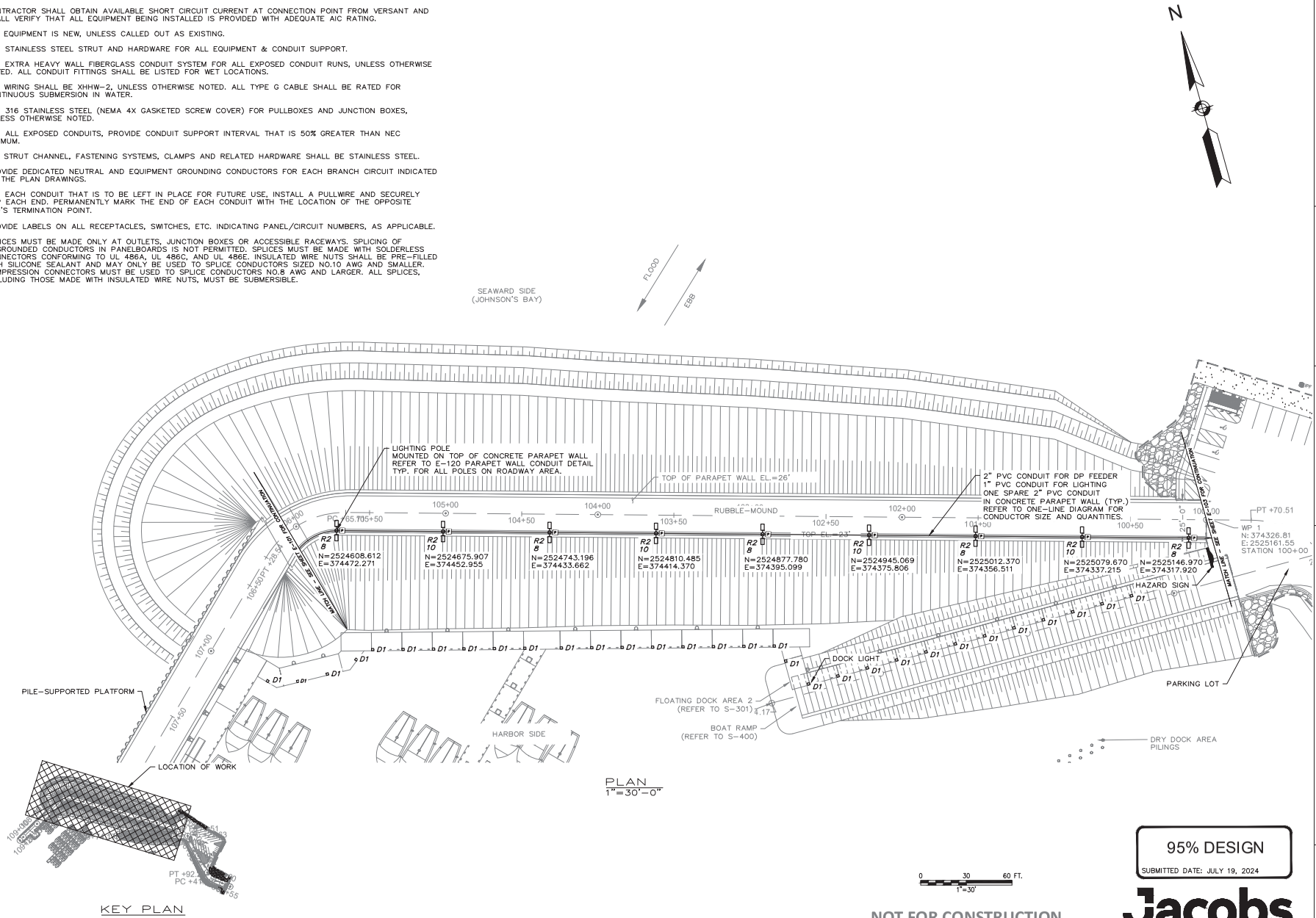
H. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

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.



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	SIGNATURE	
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

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 "MDP" (SEALED IN PLASTIC).

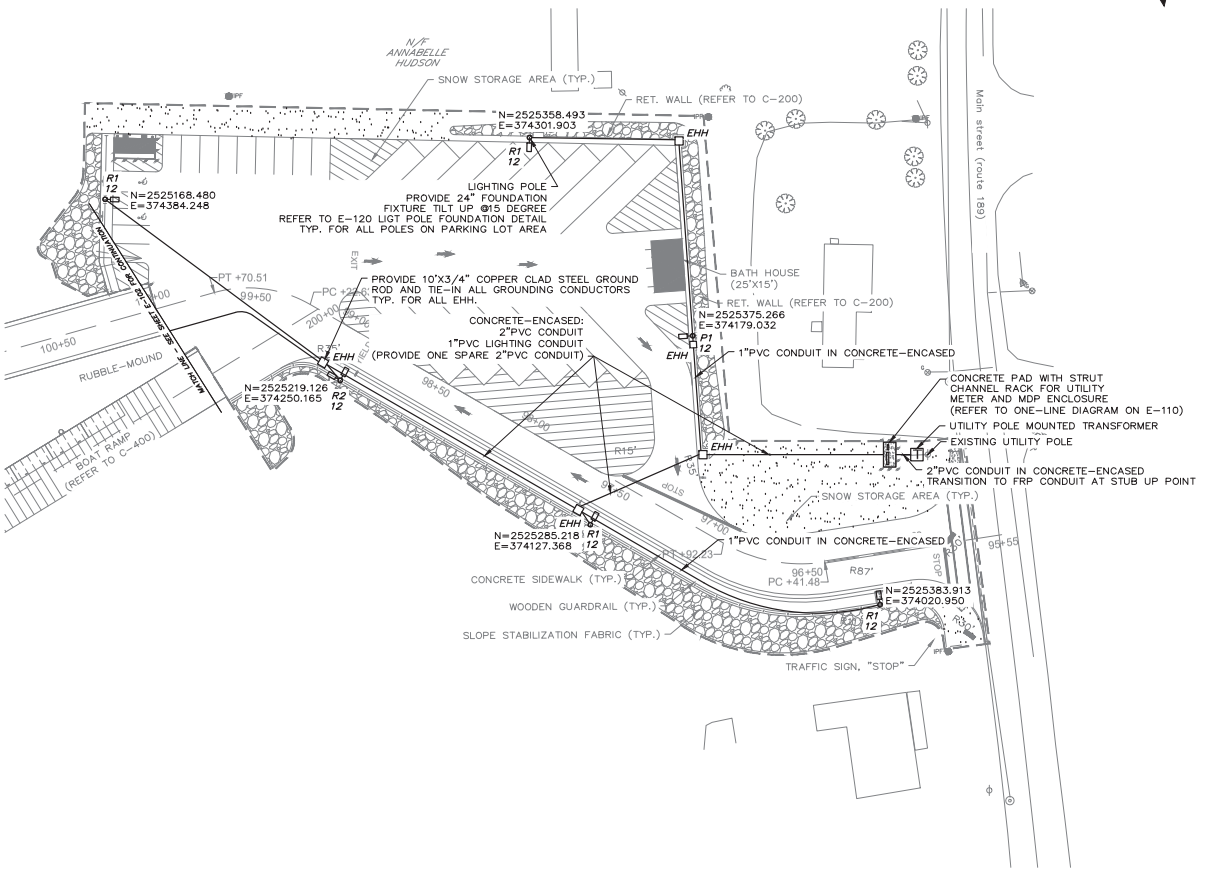
I. ALL STRUT CHANNEL, FASTENING SYSTEMS, CLAMPS AND RELATED HARDWARE SHALL BE STAINLESS STEEL.

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.

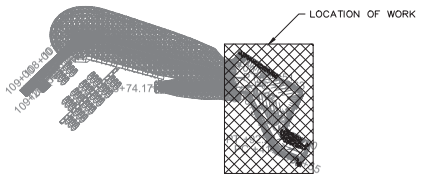
L. PROVIDE LABELS ON ALL RECEPTACLES, SWITCHES, ETC. INDICATING PANEL/CIRCUIT NUMBERS, AS APPLICABLE.

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

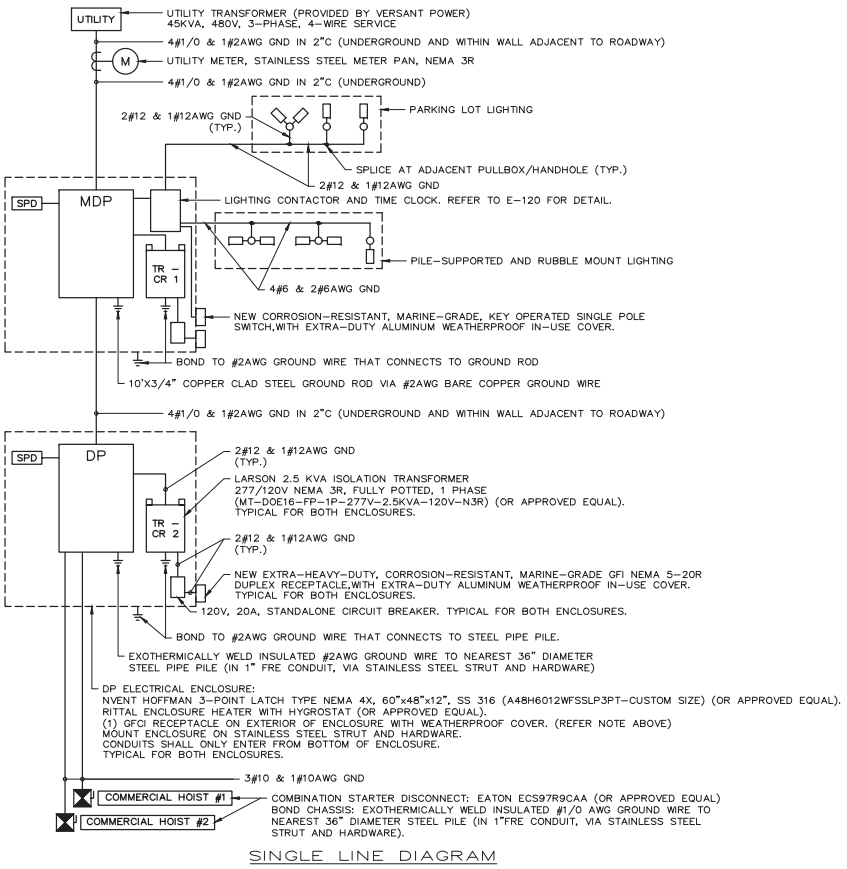
APPROVED	DATE
COMMISSIONER:	
CHIEF ENGINEER:	

PROJECT INFORMATION			
PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	A. GORNEAU, II		
DESIGNER	R. BEIKES	P.E. NUMBER	
CONSULTANT	JACOBS		
PROJECT RESIDENT		DATE	
CONTRACTOR			
PROJECT COMPLETION DATE			

MAINE DEPARTMENT OF TRANSPORTATION
LUBEC BREAKWATER
WASHINGTON, COUNTY
LUBEC, ME

PARKING LOT UTILITY PART PLAN

SHEET NUMBER
E-103



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

VOLTAGE: 480Y/277V CYCLE: 60 Hz PHASE: 3 WIRES: 4
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

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

VOLTAGE: 480Y/277V CYCLE: 60 Hz PHASE: 3 WIRES: 4
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

95% DESIGN
SUBMITTED DATE: JULY 19, 2024

NOT FOR CONSTRUCTION

Jacobs

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED | DATE
COMMISSIONER:
CHIEF ENGINEER:

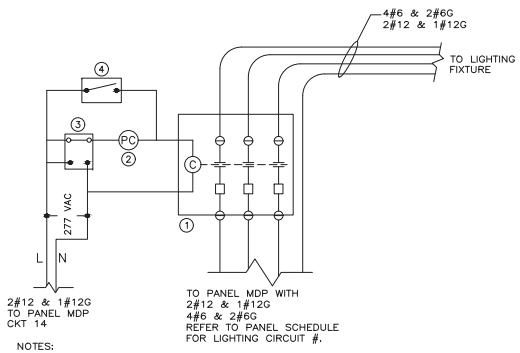
PROJECT INFORMATION
PROGRAM: MULTIMODAL
PROJECT MANAGER: A. GORNEAU, II
DESIGNER: R. BEIKES
CONSULTANT: JACOBS
PROJECT RESIDENT
CONTRACTOR
PROJECT COMPLETION DATE

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



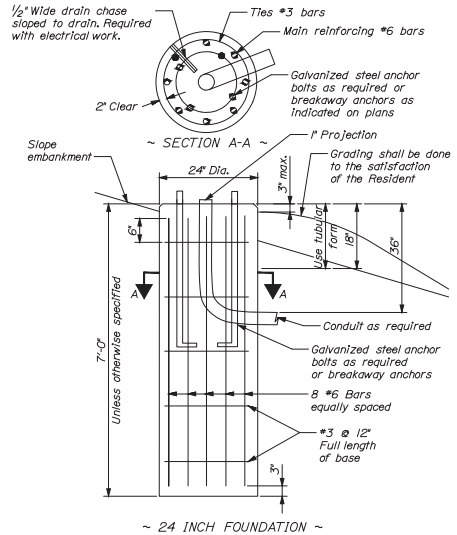
NOTES:

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

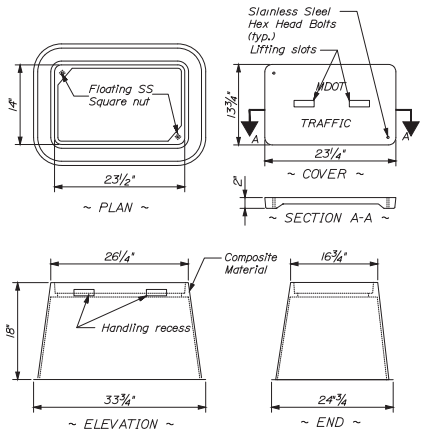
LEGEND NOTES:

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.

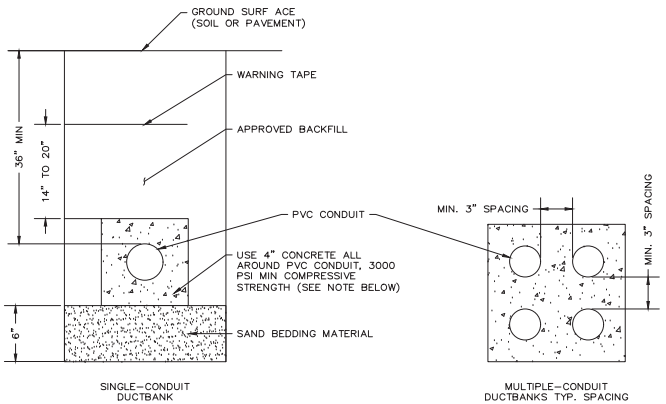


24" LIGHT POLE FOUNDATION DETAIL
N.T.S.



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.

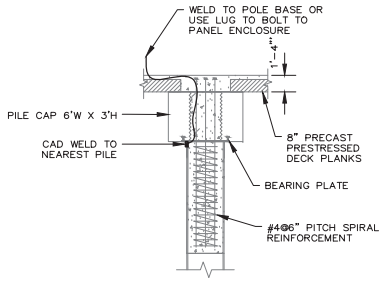
TYPICAL CONCRETE HANDHOLE DETAIL
N.T.S.



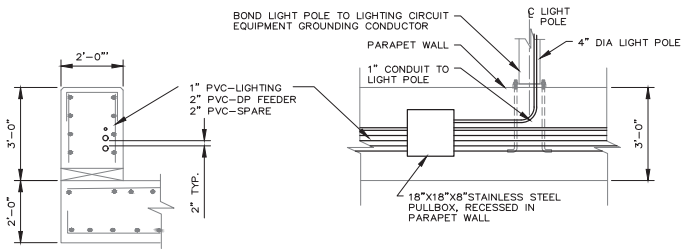
NOTE:

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, 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

UTILITY DETAILS - 1

SHEET NUMBER
E-120
97 of 97

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.

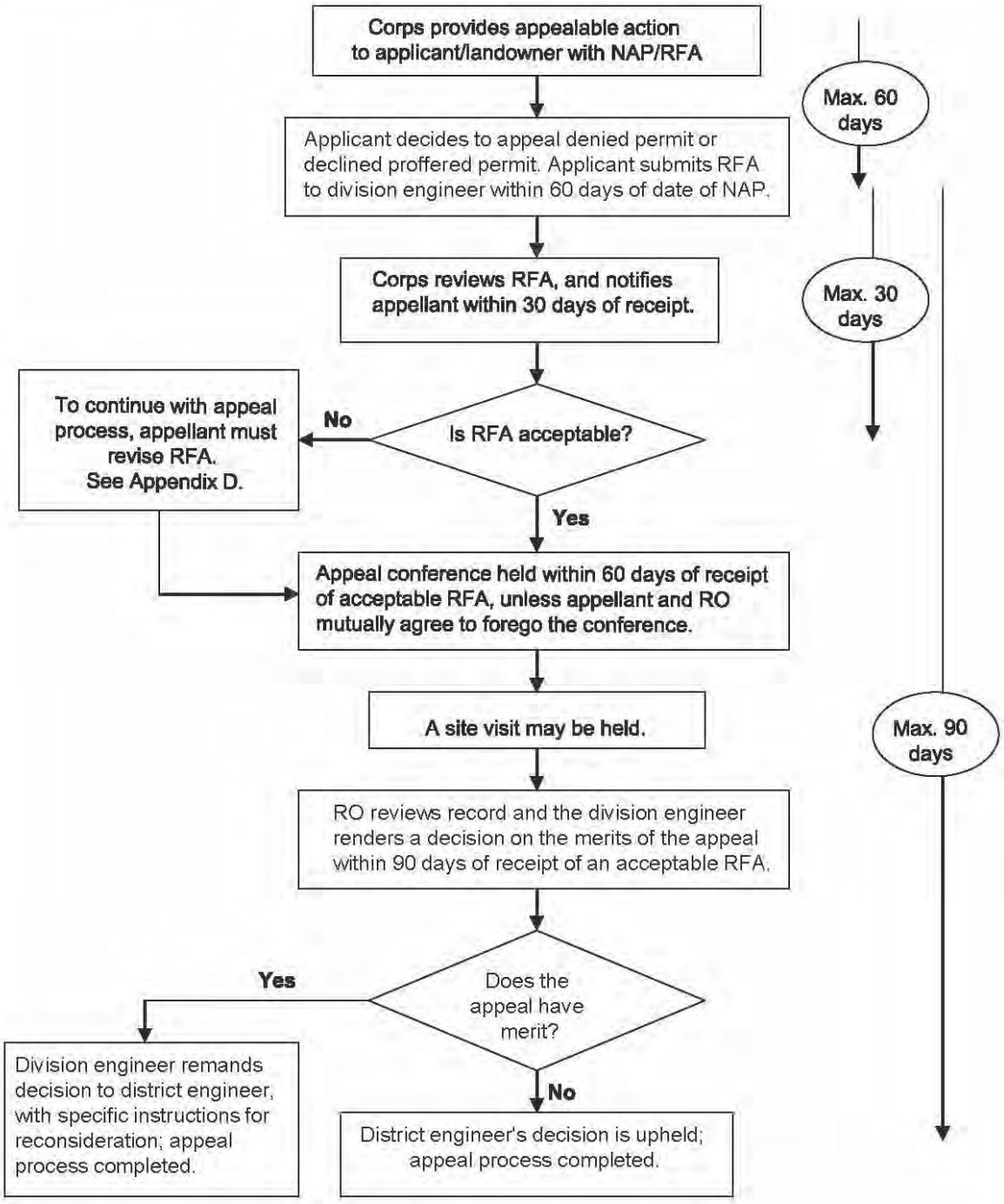
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

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:

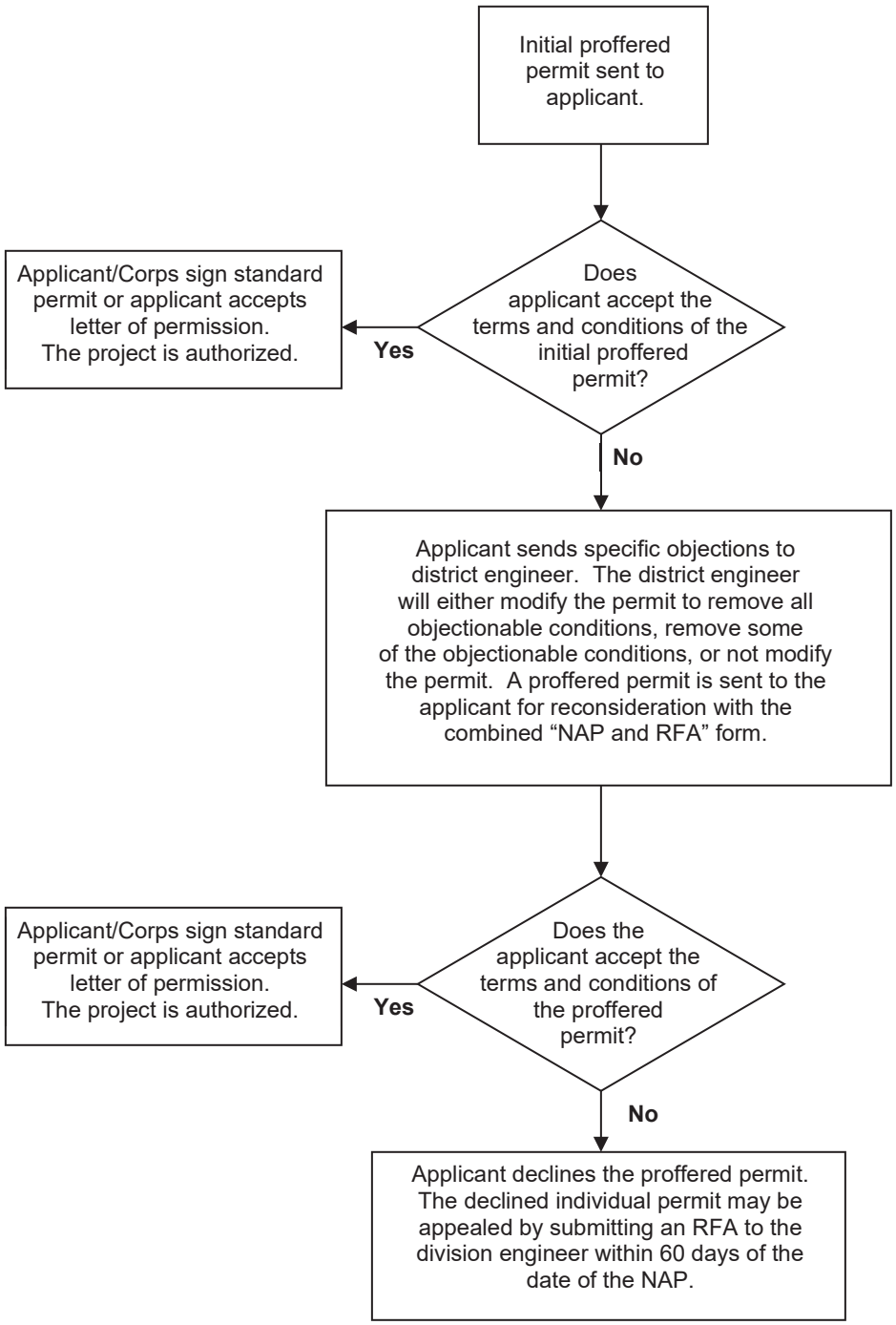
Administrative Appeal Process for Permit Denials and Proffered Permits



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.

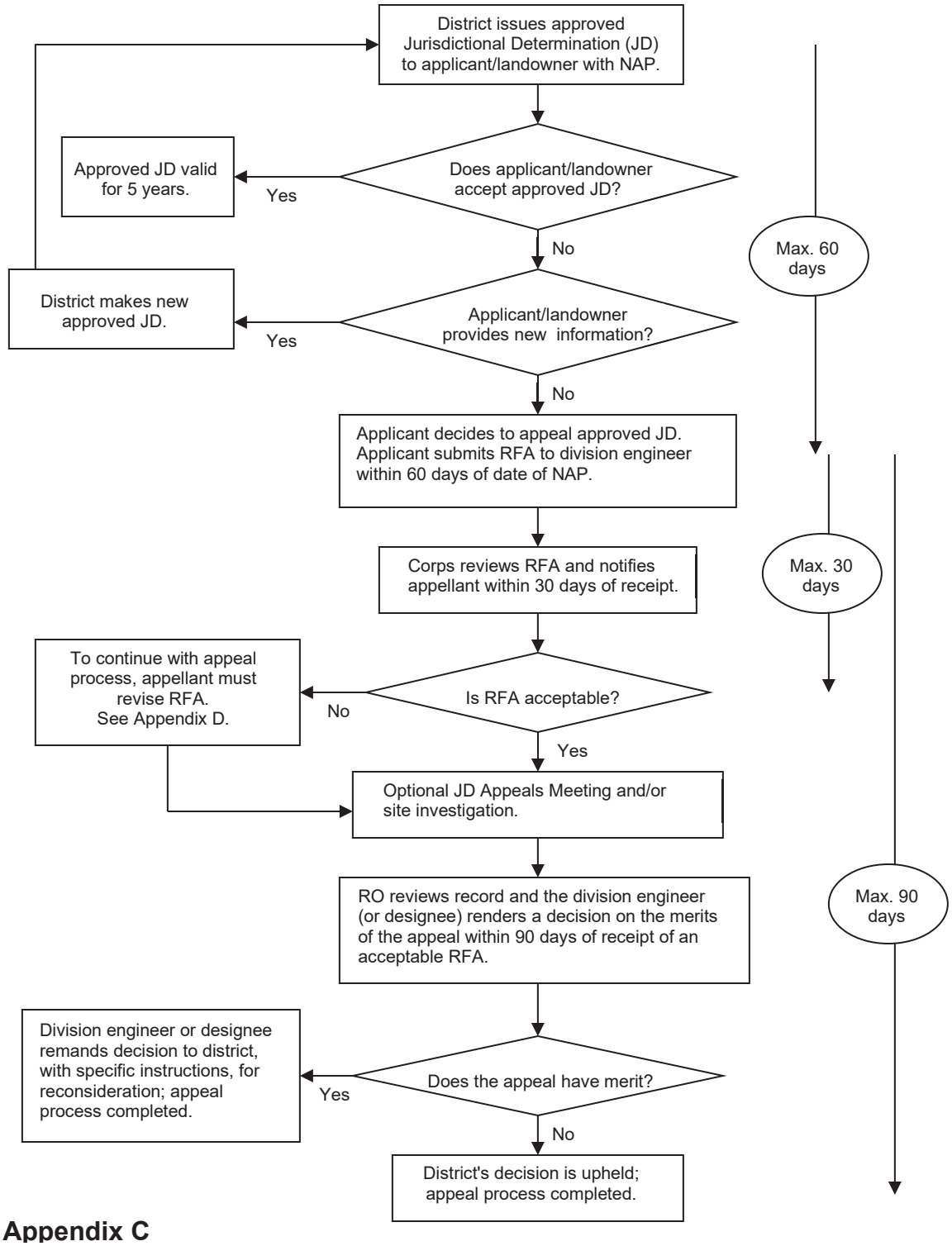
Appendix A

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**

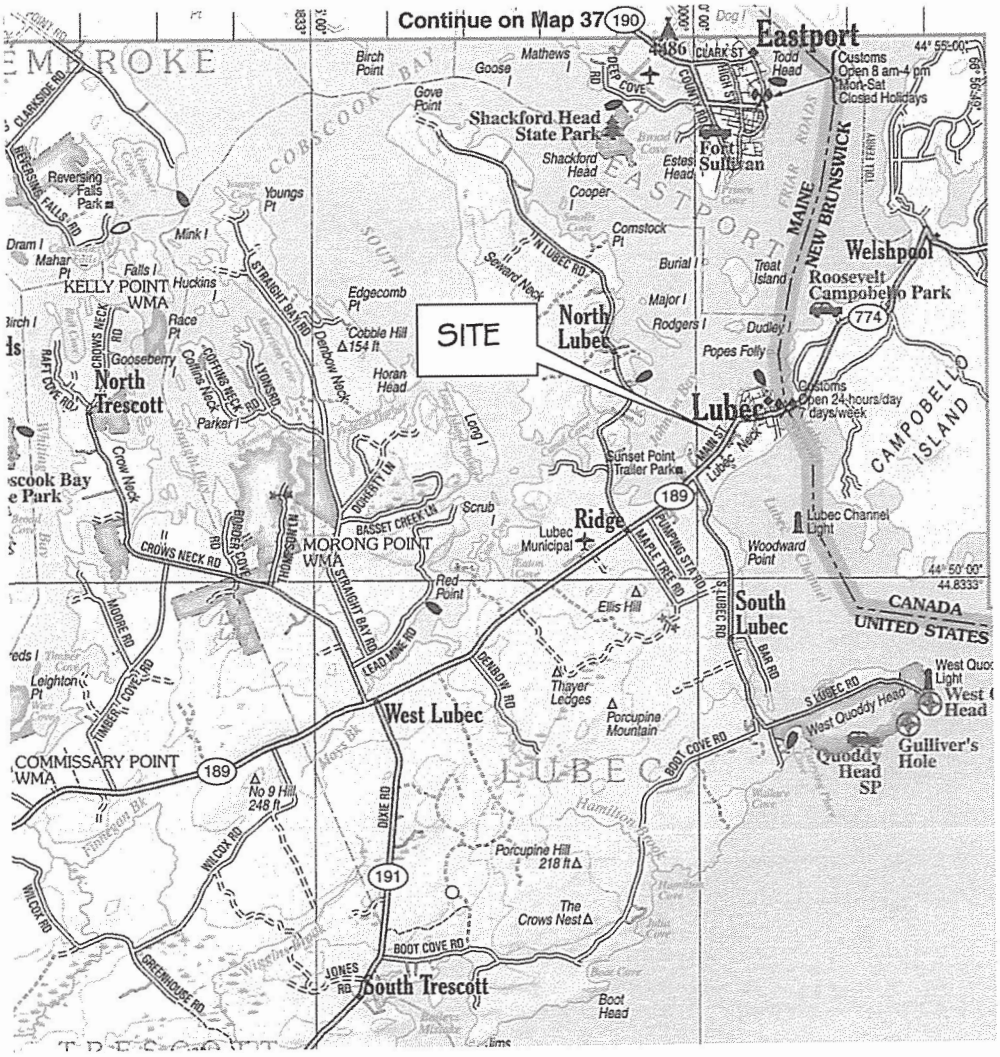
Total impact area subject to compensation: **143,233SF (3.29 acres)**

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

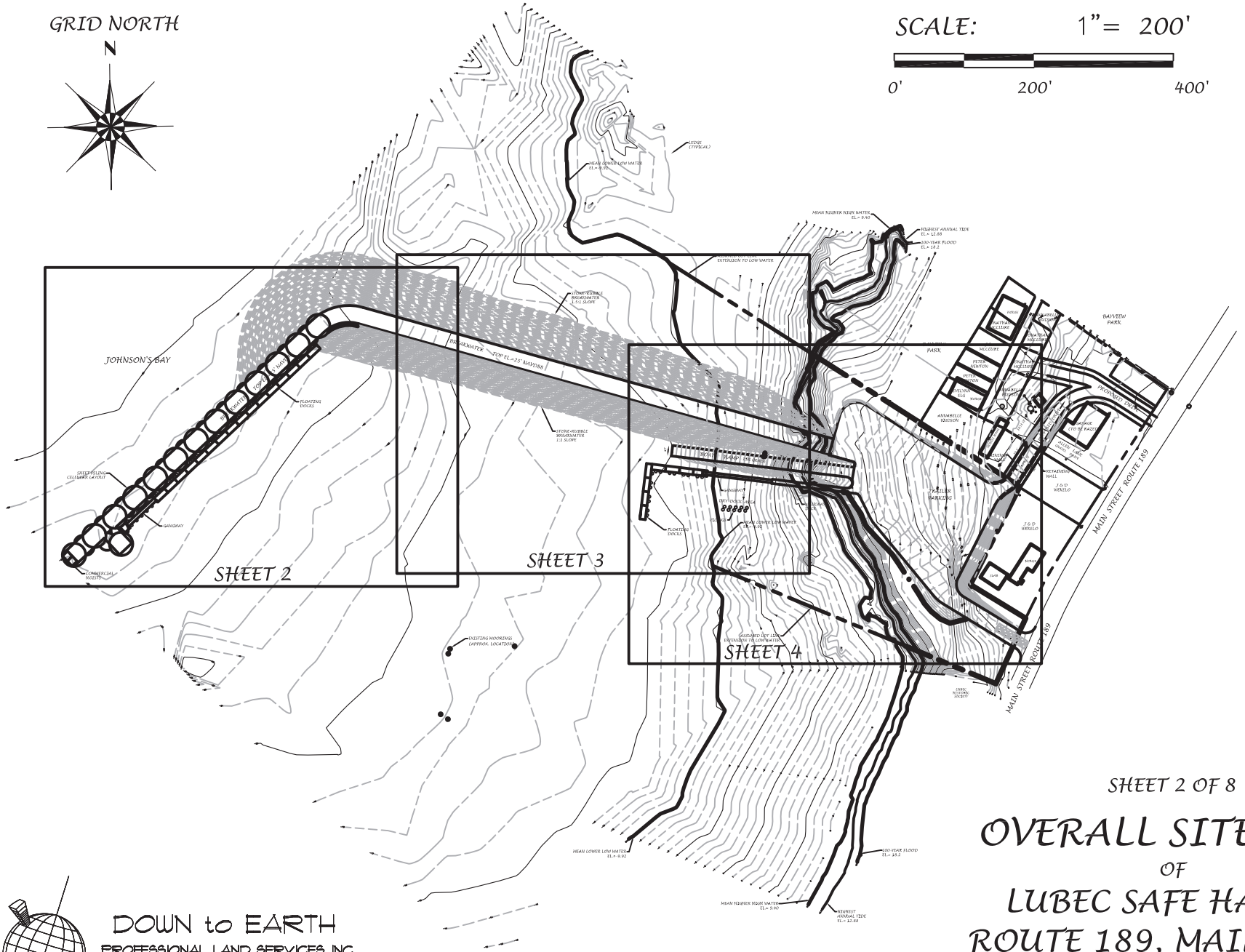
Sheet 1 of 8
Lubec Safe Harbor
Route 189, Main Street
Lubec, Maine
Date: June 2021

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'

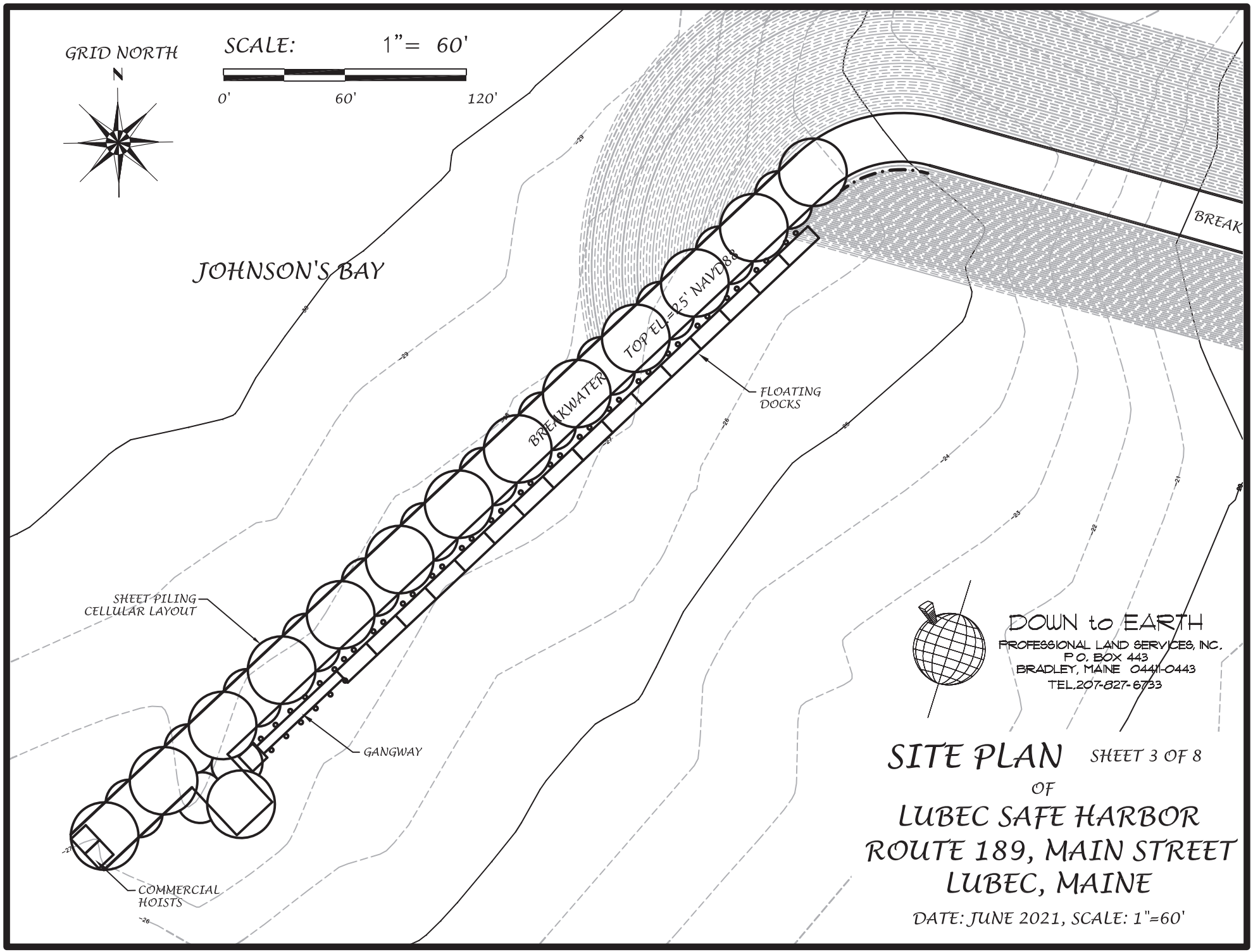
DOWN to EARTH

PROFESSIONAL LAND SERVICES, INC.

P.O. BOX 443

BRADLEY, MAINE 04411-0443

TEL.207-827-6733



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BRADLEY, MAINE 04411-0443
TEL.207-827-6733

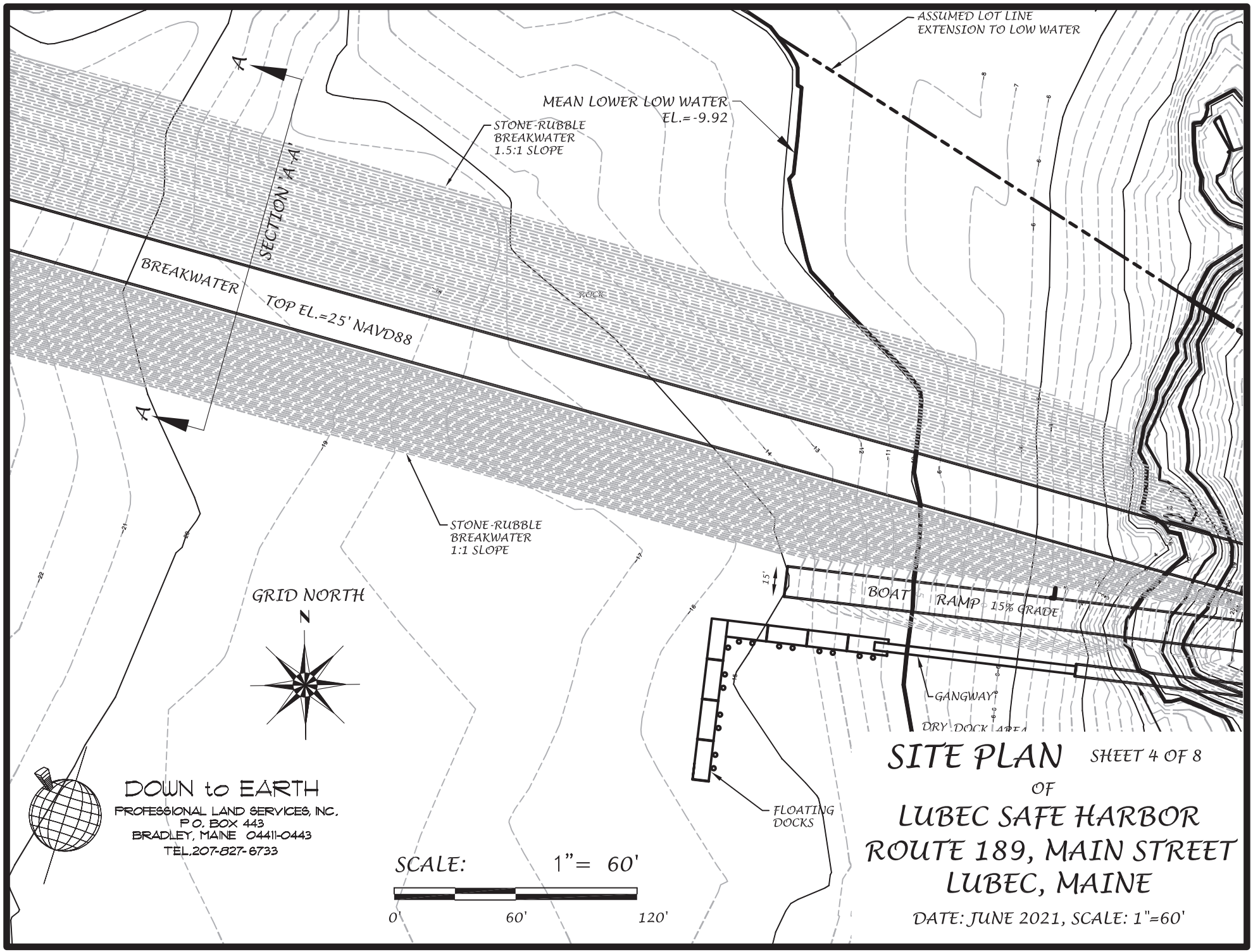
SITE PLAN

SHEET 3 OF 8

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=60'



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BRADLEY, MAINE 04411-0443
TEL.207-827-6733

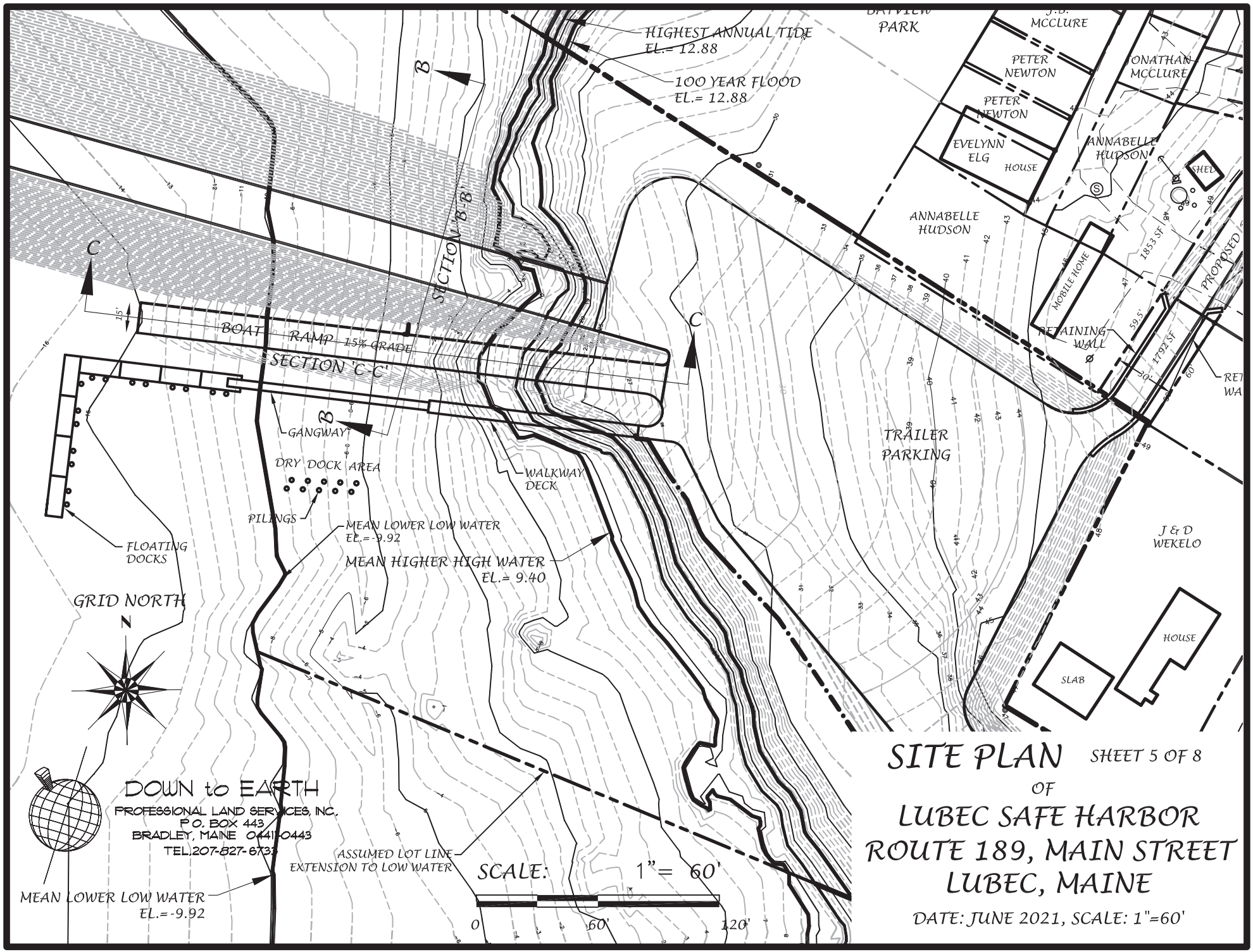
SITE PLAN

SHEET 4 OF 8

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021, SCALE: 1"=60'



SITE PLAN

SHEET 5 OF 8

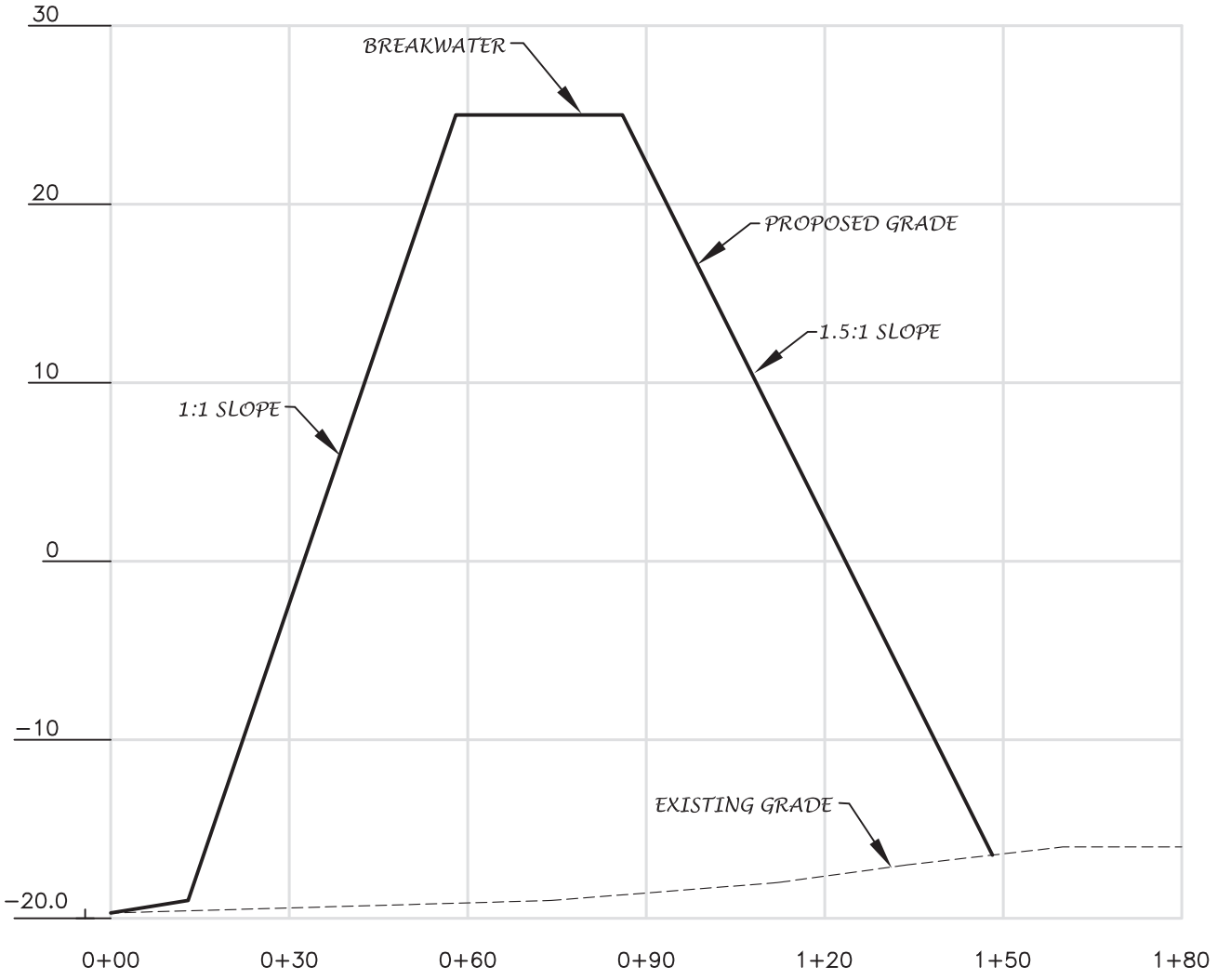
OF

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

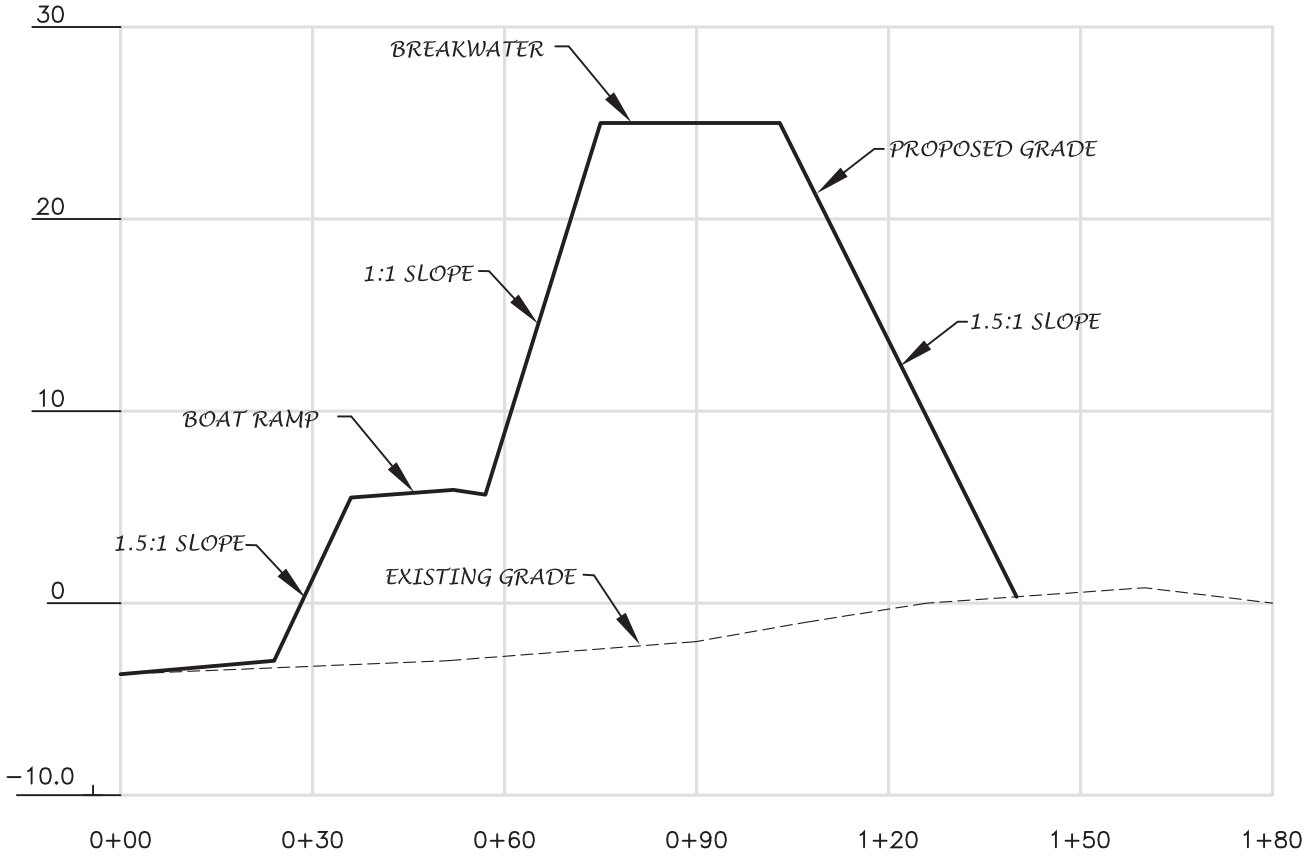
LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021

DOWN to EARTH
PROFESSIONAL LAND SERVICES, INC.
P.O. BOX 443
BRADLEY, MAINE 04411-0443
TEL.207-827-6733

SCALE: 1"= 30'

0' 30' 60'



SCALE: 1"=30' HORIZONTAL
1"=10' VERTICAL

SHEET 7 OF 8

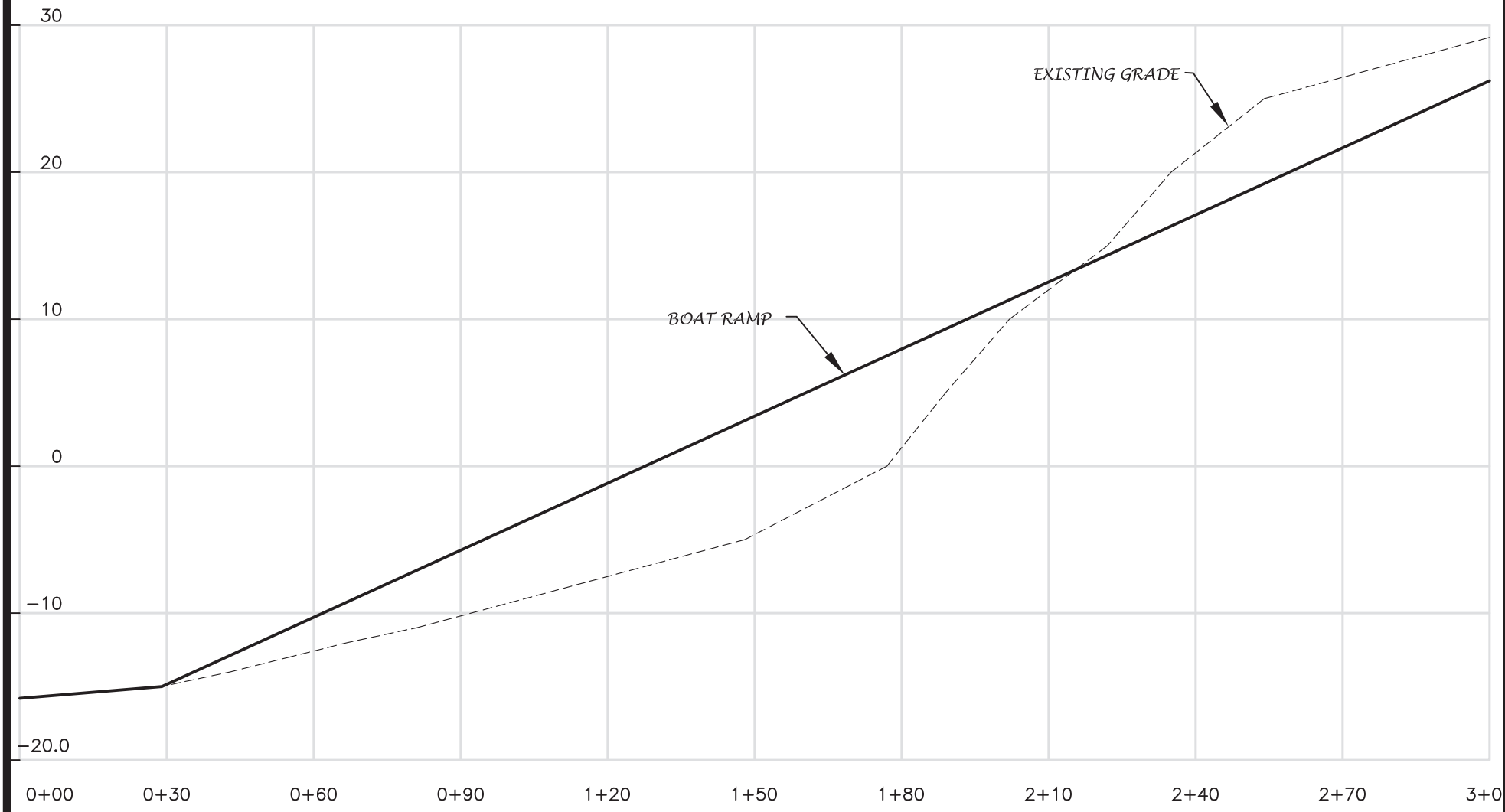
CROSS SECTION 'B-B'

OF

LUBEC SAFE HARBOR
ROUTE 189, MAIN STREET
LUBEC, MAINE

DATE: JUNE 2021

DOWN to EARTH
PROFESSIONAL LAND SERVICES, INC.
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
TEL.207-827-6733

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.

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

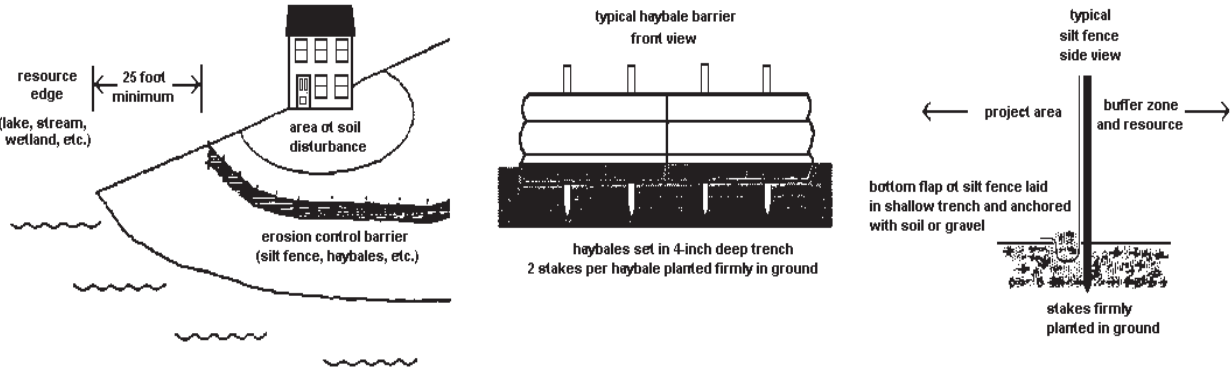
Before Construction

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.


DOT