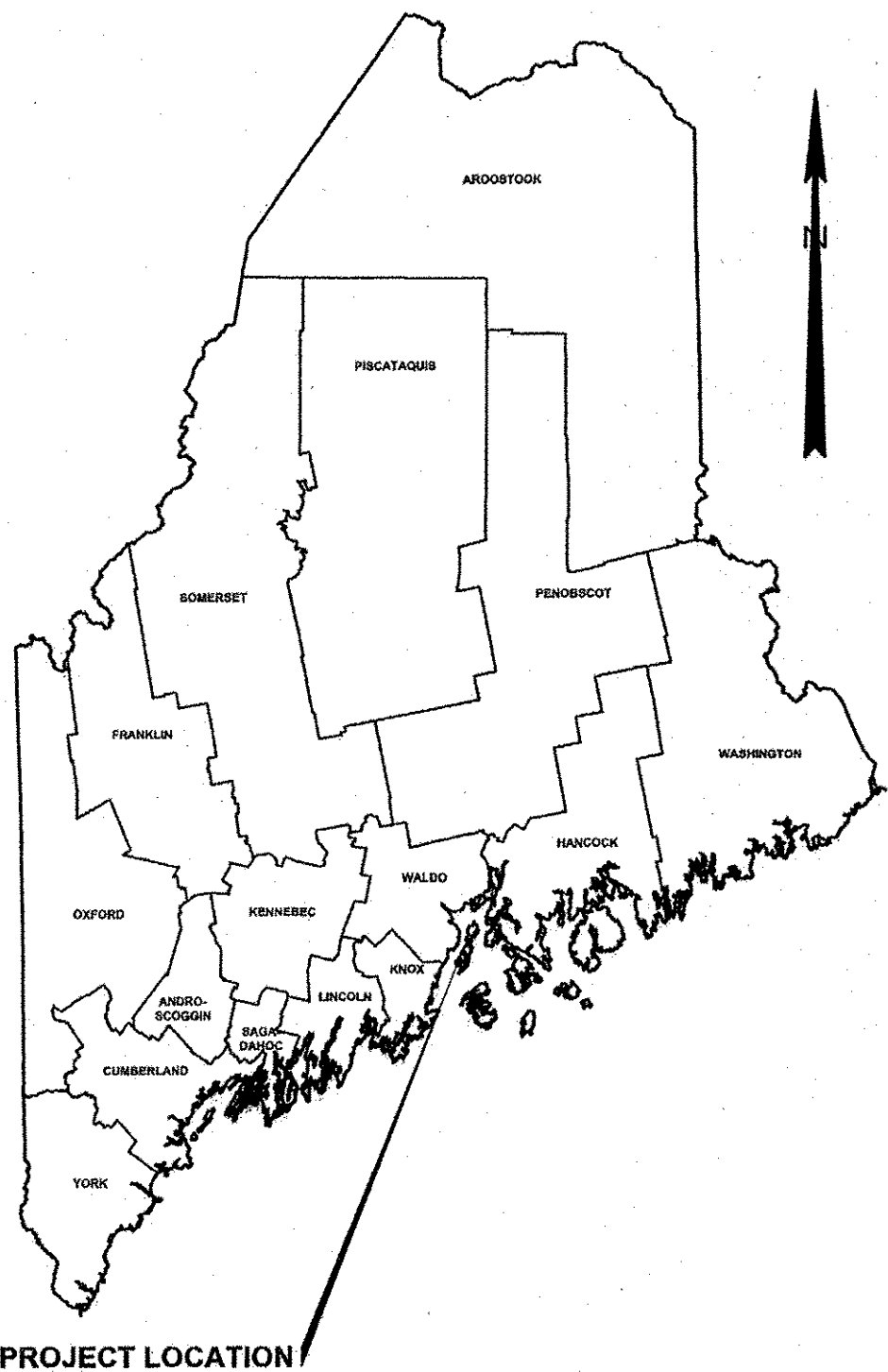


STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



TOWN OF ISLESBORO
WALDO COUNTY
ISLESBORO FERRY TERMINAL
FENDER SYSTEM MODIFICATIONS
FEDERAL PROJECT NO. 02348400
MAINEDOT WIN: 023484.00



INDEX OF SHEETS

SHEET	NO.	TITLE
GENERAL		
G01	1	TITLE SHEET
G02	2	GENERAL NOTES AND DESIGN CRITERIA
G03	3	EXISTING CONDITIONS
G04	4	BORING LOGS I
G05	5	BORING LOGS II

MARINE PLANS

S01	6	SITE PLAN
S02	7	BERTH PLAN
S03	8	DOLPHIN FOUNDATION PLAN
S04	9	DOLPHIN FOUNDATION DETAILS
S05	10	DOLPHIN DETAILS PLAN AND ELEVATION
S06	11	DOLPHIN DETAILS MOORING HARDWARE
S07	12	DOLPHIN DETAILS FENDER SYSTEM I
S08	13	DOLPHIN DETAILS FENDER SYSTEM II
S09	14	DOLPHIN DETAILS MISCELLANEOUS
S10	15	WAVE SCREEN PLAN AND ELEVATION
S11	16	GANGWAY PLAN AND ELEVATION

ELECTRICAL PLANS

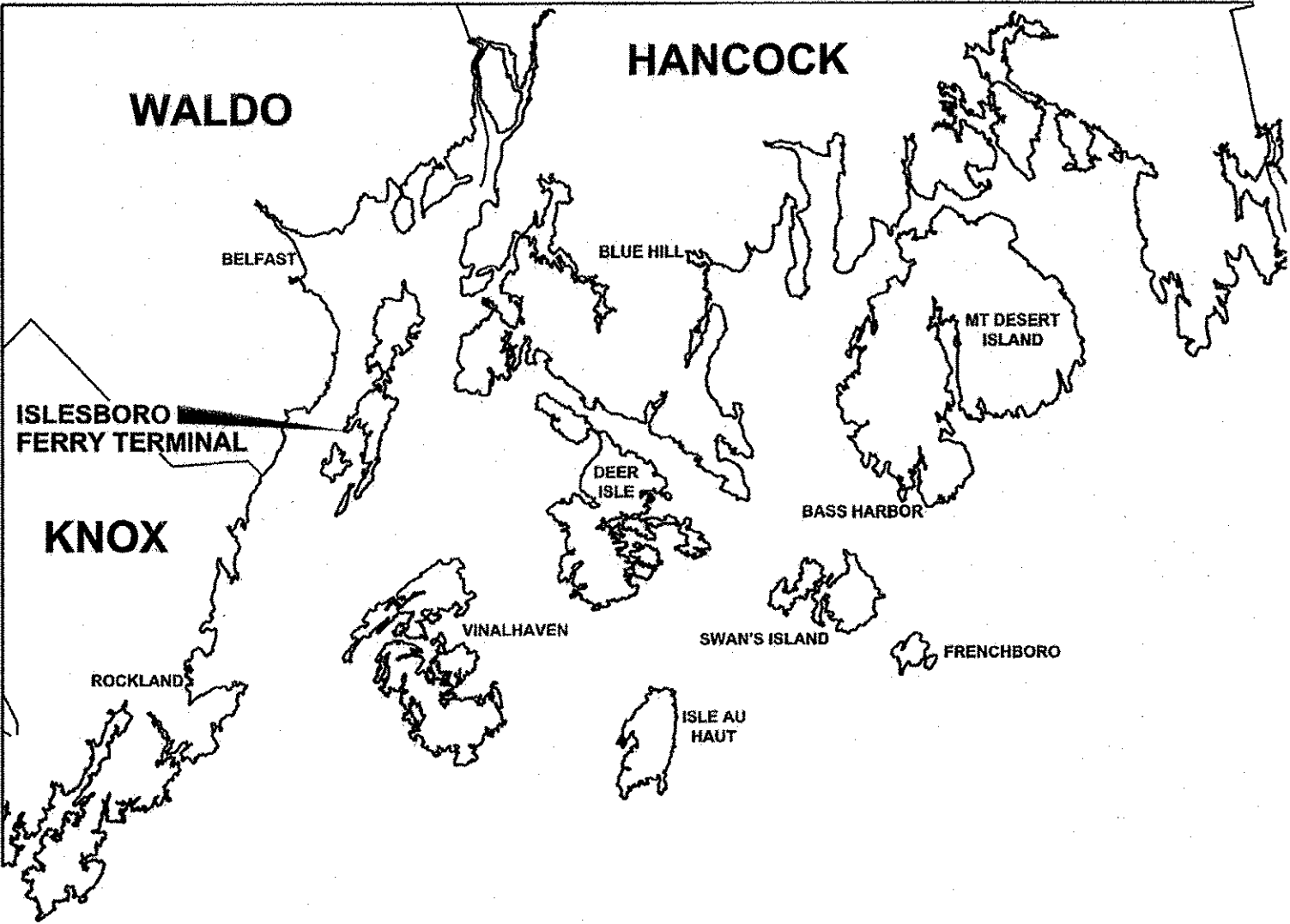
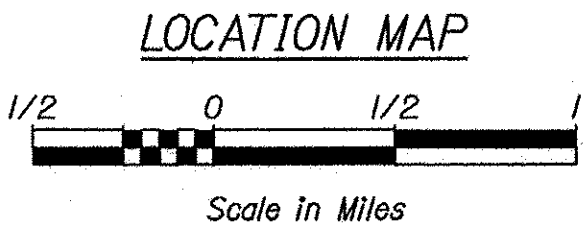
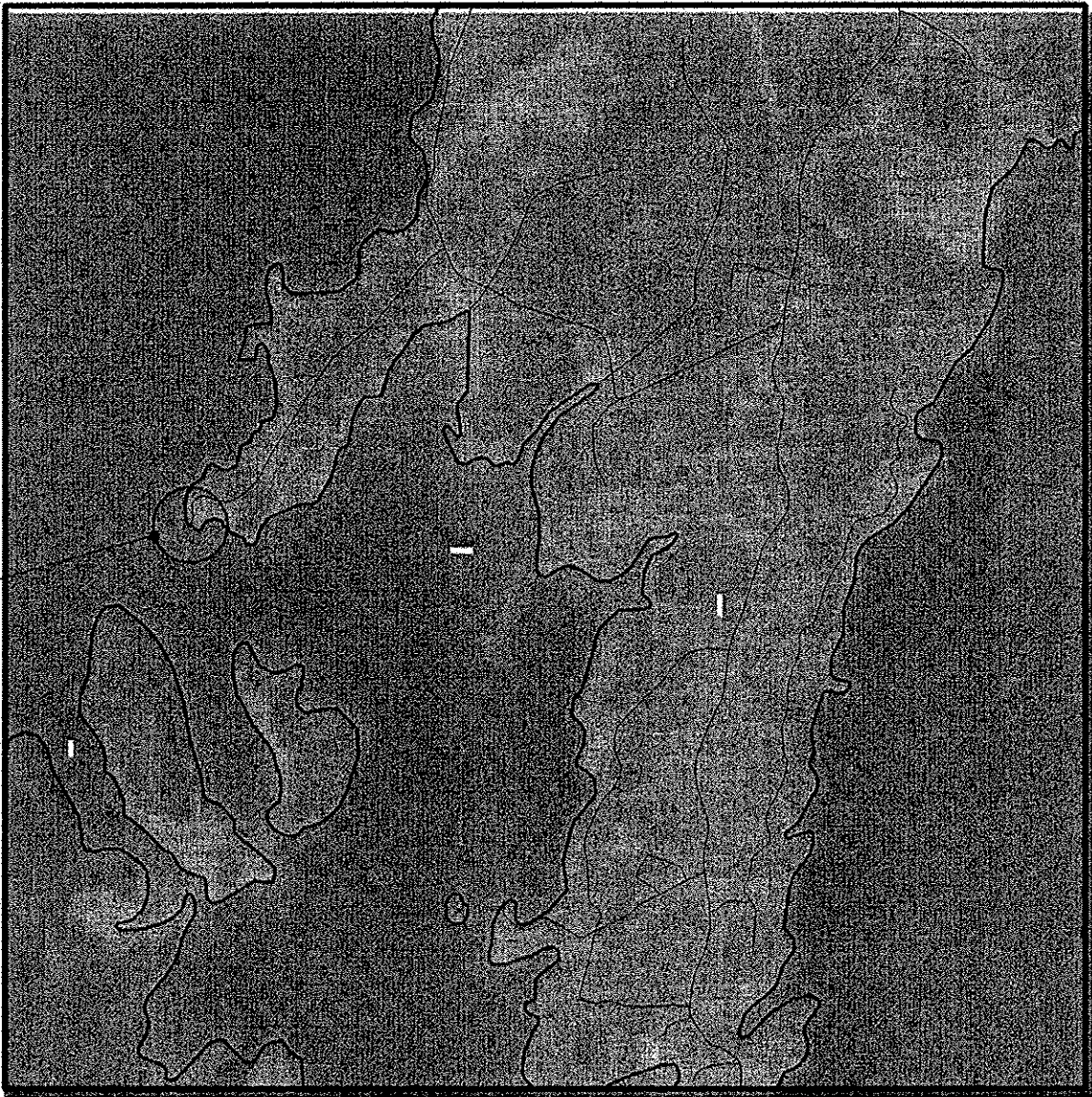
E01	17	ELECTRICAL PLAN
E02	18	ELECTRICAL DETAILS

THE PROFESSIONAL ENGINEER WHOSE STAMP APPEARS ON THIS COVER SHEET
BEARS RESPONSIBILITY FOR THE FOLLOWING SHEETS WITHIN THIS DRAWING SET:
GENERAL PLANS G01-G03
STRUCTURAL PLANS S01-S11

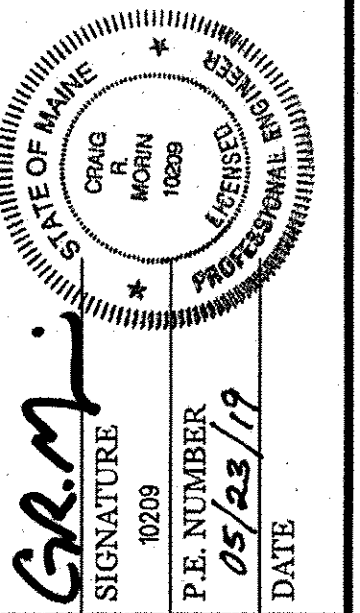
ADDITIONAL WORK APPEARS WITHIN THIS DRAWING SET AND IS THE
RESPONSIBILITY OF THE FOLLOWING ORGANIZATIONS, WHOSE STAMP APPEARS ON
THOSE INDIVIDUAL SHEETS:

GENERAL PLANS	G04-G05	GEOTECHNICAL BORING LOGS	SCHONEWALD ENGINEERING
ELECTRICAL PLANS	E01-E02	ELECTRICAL DESIGN	BARTLETT DESIGN, INC.

PROJECT
LOCATION



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE
COMMISSIONER: <i>[Signature]</i>	<i>[Signature]</i>	9/13/19
CHIEF ENGINEER: <i>[Signature]</i>		6-13-19



PROJECT INFORMATION	PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT	PROJECT RESIDENT	CONTRACTOR	PROJECT COMPLETION DATE
MULTIMODAL	AURELE CORNEAU II	CRAC R. MORIN P.E.	INTB CORPORATION				

FEDERAL PROJECT NO. 02348400

ISLESBORO FERRY TERMINAL FENDER SYSTEM MODIFICATIONS	WALDO COUNTY	TITLE SHEET
ISLESBORO		

SHEET NUMBER
G01
1 OF 18



GENERAL NOTES

1. These notes contain general information and are not complete for construction purposes. Contractor shall verify information given here with specifications and other drawings and bring any conflicts to the Engineer's attention before beginning work.
2. All geotechnical and electrical notes may be found on Sheets G04 and E01, respectively.
3. All dimensions and details shall be verified by the Contractor prior to construction.
4. Contractor shall provide and maintain horizontal and vertical controls in the Maine state plane coordinate system.
5. The MaineDOT field office shall be placed on terminal property near the crew's quarters at a location approved/determined by the Resident. The Contractor shall make accommodations off-site for their field office, lay down area, restroom facilities, etc.
6. During the duration of the project, the Contractor is responsible for the proper disposal of any cribwork planks encountered during the project that can not be reused on site. The Contractor is responsible to have the unused planks disposed of as demolition waste at a landfill approved to accept demolition waste/debris. If the Contractor encounters any other potential demolition debris and is not sure of how to dispose, the Contractor shall notify the Resident. The Resident shall contact the Senior Geologist in the Maine Department of Transportation Environmental Office (MaineDOT-ENV) at 207-624-3100 for clarification.

7. The existing stone from the stone-filled timber cribs and concrete walkways shall be removed by the Contractor and become property of the Town of Islesboro. The Contractor shall transport the stones and concrete walkways to and unload at 1399 Main Road, Islesboro, ME 04848. Payment for the transportation, relocation of stockpile, stockpiling, storage, equipment, and labor required to perform the work shall be incidental to the related Contract Items, and as approved by the Resident.

SPECIFICATIONS AND CODES

1. Project specifications titled, "Special Provisions For: Vinalhaven & Islesboro Ferry Terminals Fender System Modifications", dated May 24, 2019.
2. State of Maine, Department of Transportation, Standard Specifications, November 2014. Including all supplemental specifications and special provisions.
3. Codes and other references
- A. Unified Facilities Criteria Manuals:
 - UFC 4-150-06 Military Harbors and Coastal Facilities, with Change 1
 - UFC 4-150-07 Maintenance and Operation: Maintenance of Waterfront Facilities, with Change 1
 - UFC 4-150-08 Inspection of Mooring Hardware
 - UFC 4-151-10 General Criteria for Waterfront Construction, with Change 1
 - UFC 4-152-01 Design: Piers and Wharves
 - UFC 4-159-03 Design: Moorings, with Change 2
 - B. US Army Corps of Engineers: Coastal Engineering Manual, current edition
 - C. AASHTO LRFD specifications, 8th edition, 2017 with Interims
 - D. AWS, D1.1, "Structural Welding Code Steel", current edition
 - E. AWS, D1.2, "Structural Welding Code Aluminum", current edition

SURVEY CONTROL

1. Vertical control for marine structures is in reference to MLLW (Mean Lower Low Water). To convert to National Geodetic Vertical Datum (NGVD), use the following formula:
E1 (NGVD) = E1 (MLLW) - 9.28 ft

2. Horizontal control is the Maine state plane coordinate system (east zone), NAD 27.

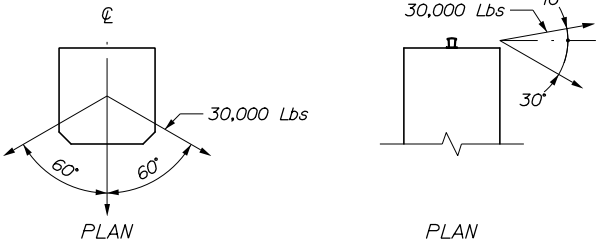
BERTHING LOADS

Dolphin	Berthing Velocity		Angle	Energy to Fender	Minimum Fender Design Energy	Max. Reaction on Dolphin*
	Ship Velocity (Vs)	⊥ to Fender				
Mooring Dolphin	2.0 Knots	0.68 Knots	20°	26,000 Ft Lbs	NA	52,500 Lb
Turning Dolphin	NA	NA	NA	NA	377,000 Ft Lbs	NA

* Includes 1.4 load factor

MOORING LOADS

Dolphin D7
Mooring line pull: Single line in each direction.



FENDER NOTES

1. All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.
2. Contractor shall design fender panels, support chains and anchors for the indicated loads.
3. Support chain anchors shall be chemical or adhesive anchors with 9 inch minimum edge distance and a minimum embedment of 12 times the diameter of the anchor.
4. The anchor design shall be based on an existing concrete strength of 3,000 psi.
5. Anchors shall be set by template.

DOLPHIN/FENDER DESIGN LOADS

Design & Current Vessel: MV Margaret Chase Smith*
Length = 166'-6"
Beam = 40'-0"
Max. Displacement = 633 long tons

* This vessel was chosen as the design vessel since it envelopes the existing vessel fleet as well as the new ferry currently in design (LOA = 154 ft).

New Vessel: New Ferry (TBD)
Length = 154'-0"
Beam = 38'-0"
Max. Displacement = 600 long tons

STEEL PIPE PILES

1. Steel pipe piles shall conform to ASTM A252, Grade 3, Fy = 45 ksi minimum. Per standard specification 711.01, Concrete fill shall be MaineDOT class "A".
2. Piles shall be coated with fusion bonded epoxy in accordance with the specifications.
3. Pile splices shall not be allowed without prior approval of the Engineer of record.
4. Any portion of pile cracked, deformed, or otherwise damaged by pile driving shall be replaced.
5. Pipe piles were designed using AASHTO LRFD specifications and shall be installed as follows:
- Piles shall be driven to a minimum nominal resistance: $\phi R_n = 1280$ kips
- The maximum factored axial pile load: $R_u = 140$ kips
6. Piles shall not be out of position shown by more than 2" longitudinally along the pile cap, and 2" transversely across the width of the pile cap.
7. The distance from the side of any pile to the nearest edge of concrete shall not be less than 9".

8. Piles shall be 16" ϕ , 1/2" wall steel pipe piles with concrete fill. Piles shall be fabricated of seamless or straight-seamed material. Spiral welded pipe pile is not permitted.

DEMOLITION NOTES

1. Demolition shall be conducted to prevent debris from falling into the ocean. All construction debris, including any liquids or slurries that are produced as part of the demolition, shall be captured and disposed of properly. The Contractor shall comply with applicable permit conditions and environmental regulations listed in the specifications. Work shall include removal of any construction debris from the water and installation and maintenance of appropriate turbidity controls during demolition and construction such that no turbidity escapes the immediate work area. Underwater inspections may be conducted by the Owner's representative to ensure all demolition and construction debris is removed from the ocean.

ENVIRONMENTAL CONDITIONS

1. Wind:
- | | |
|--------------------|---|
| Wind on Live Load: | Transverse 50 plf
Longitudinal 12 plf |
| Wind on Structure: | Transverse 100 plf
40 psf |
| Thermal: | Temp. Range for Concrete Structure = 80°F |
2. Railings:
- | | |
|---------------------|--|
| Aluminum Pedestrian | Vertical 50 plf
Horizontal 50 plf (acting simultaneously) |
|---------------------|--|
3. Tidal ranges (elevations in feet):

Islesboro	Tidal Datums				
	NGVD29	MSL	MLW	MLLW	STND
Top of Dolphin*	10.72	14.67	19.61	20.00	23.62
Highest Observed Tide	4.89	8.84	13.78	14.17	17.79
MHHW	1.29	5.24	10.18	10.57	14.19
MHW	0.89	4.84	9.78	10.17	13.79
NGVD29**	0.00	3.95	8.89	9.28	12.90
MSL	-3.95	0.00	4.94	5.33	8.95
MLW	-8.89	-4.94	0.00	0.39	4.01
MLLW	-9.28	-5.33	-0.39	0.00	3.62
Lowest Observed Tide	-11.89	-7.94	-3.00	-2.61	1.01
STND (Station Datum)	-12.90	-8.95	-4.01	-3.62	0.00

* Along top edge of dolphin at corner nearest pen.
** NGVD29 conversion taken from archive project drawings.
Station ID: 8415490, Rockland, ME
Tidal Epoch: 1983-2001

LEGEND:

- Baseline
- Plate
- Centerline
- XX-XX-XX Washboring
- Flood Light
- Navigation Marker Light
- Site Light - Existing
- Site Light - Proposed
- Curbing
- Diameter
- Double Bitt
- Chock
- Ladder

ABBREVIATIONS:

- CY Cubic Yard
- EA Each
- EL Elevation In Feet
- HSS Hollow Structural Sections
- ID Inside Diameter
- K (KIP) 1000 Pounds
- LBS Pounds
- LF Linear Feet
- MAX Maximum
- MIN. Minimum
- NA Not Applicable
- NTS Not To Scale
- OC On Center
- PSF Pounds Per Square Foot
- R Radius
- REF Reference
- SCHD. Schedule
- SF Square Feet
- TYP. Typical
- UON Unless Otherwise Noted
- USACE United States Army Corps of Engineers

STRUCTURAL STEEL AND MISCELLANEOUS STEEL FABRICATIONS

1. Steel shapes and plates shall be ASTM A709, Grade 36 typical, ASTM A709 Grade 50 where noted.
2. Steel pipes shall be ASTM A53, Grade B.
3. Steel tubing shall be ASTM A500, Grade B.
4. All bolts and nuts shall conform to ASTM A325 and be hot-dip galvanized in accordance with ASTM A153. Set anchor bolts by template only.
5. All miscellaneous steel, including all fasteners, chains, shackles, and u-bolts unless noted otherwise, shall be hot-dip galvanized. Galvanize items after fabrication. Stress relieve bends before galvanizing. Galvanizing damaged accidentally or due to field welding shall be restored with a field applied galvanizing compound.
6. Welding Electrodes: E70XX, Low Hydrogen
7. All welding shall be in accordance with the requirements of the structural welding code, D1.1 and D3.6, of the American Welding Association (AWS).

ALUMINUM ANODES

1. Cathodic protection for steel pipe piles and fender panels shall be 80 lb aluminum alloy. Dimensions shall conform to the general configuration shown on the Plans.

ALUMINUM GANGWAYS

1. The design and construction of the aluminum gangways shall be in accordance with the special provisions for the item "Aluminum Gangway". The Contractor's manufacturer shall design the gangways in accordance with the plans, specifications, and loads shown below.
2. Vertical Loads:
- Uniform Live Load 85 psf
Additional Dead Load 50 plf
3. Horizontal Loads:
- Wind - Transverse 50 plf
Wind - Longitudinal 12 plf
4. The minimum support seat width, measured perpendicular to the edge of the concrete support shall be 18 inches.
5. Handrail shall be designed for a concentrated horizontal load of 200 pounds acting at the top of the railing.

CONCRETE

1. Concrete basic design stresses shall be:
- Fill for Pipe Piles: Class "A"
- Fill for Double Bitts: Class "A"
- Cast-in-place (uon): Class "LP"
2. Concrete shall contain 5.0 gal/cy of calcium corrosion inhibitor admixture.
3. Clearances for reinforcement shall be 3" unless otherwise noted.
4. Chamfer all concrete edges 1" @ 45° unless otherwise noted.
5. All reinforcing shall be fully supported on non-metallic approved chairs. Reinforcing shall not be supported on timber blocks, bricks, concrete blocks, miscellaneous rebar, etc.
6. Construction joints shall be made only as shown unless approved otherwise.
7. All existing concrete surfaces to receive concrete shall be roughened to a minimum amplitude of 1/4" and coated with a product listed on the MaineDOT pre-qualified list of concrete bonding agents.
8. Wet curing of concrete is to begin within 30 minutes after concrete finishing, or as soon as possible without damaging finished surface.
9. All formwork for concrete shall be left in place and concrete surfaces shall be covered and kept moist for a period of not less than seven (7) full days after concrete placements.
10. Contractor shall submit detailed reinforcing drawings including bar and bending schedules to the Engineer for review and approval prior to delivery of any reinforcing steel.

11. All ferrous metal handling/lifting devices and existing embedded metals/anchors no longer in use shall be recessed or removed to a depth of one inch below the surface of the concrete and patched with an approved polymer-modified cementitious mortar. Devices located in areas to be totally encased in cast-in-place concrete shall be galvanized. Devices located in areas not to be encased in cast-in-place concrete shall be stainless steel, unless otherwise noted.

STEEL REINFORCEMENT

1. Reinforcing Steel: ASTM A775, unless noted otherwise.
2. Rock Anchors: ASTM A722, Grade 150, deformed, with triple corrosion protection.
3. Splicing of reinforcing steel is permitted. Stagger splices one splice length minimum. No more than 50 percent of the reinforcing steel shall be spliced at any location. Provide a minimum splice length of 50 bar diameters, unless noted otherwise on the drawings.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

ISLESBORO
FERRY TERMINAL

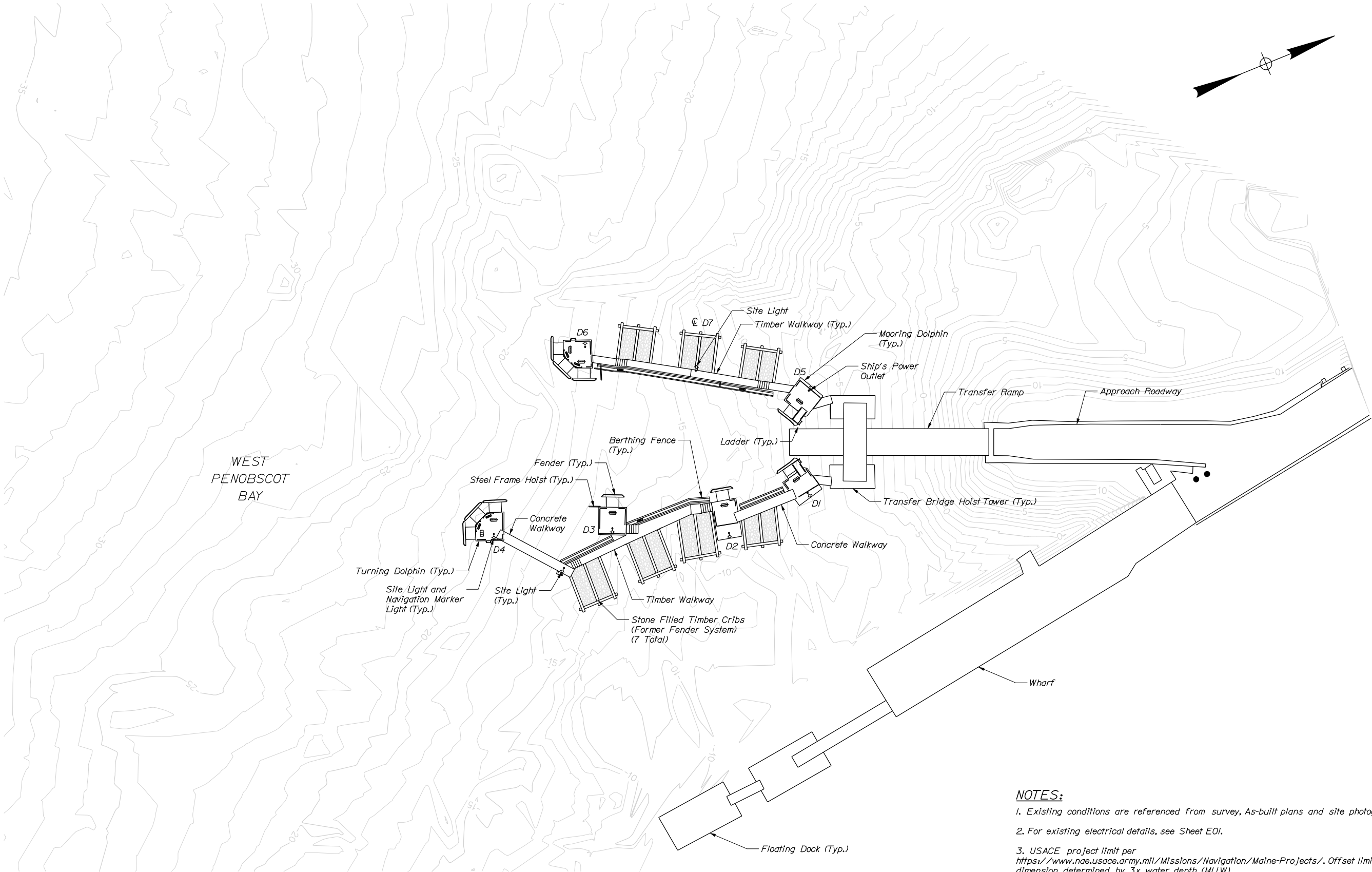
SHEET NUMBER

WIN
023484.00

GENERAL NOTES AND
DESIGN CRITERIA

G02

2 OF 18



SITE PLAN
1" = 20'-0"



- NOTES:**
- Existing conditions are referenced from survey, As-built plans and site photographs.
 - For existing electrical details, see Sheet E01.
 - USACE project limit per <https://www.nae.usace.army.mil/Missions/Navigation/Maine-Projects/>. Offset limit dimension determined by 3x water depth (MLLW).

PROJ. MANAGER	BY	DATE	SIGNATURE
DESIGN-DETAILED N. Willey	P. Bishop	05/18	
CHECKED-REVIEWED C. Morin	C. Morin	05/18	
DESIGN-DETAILED			10209
REVISIONS 1			P.E. NUMBER
REVISIONS 2			DATE
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Islesboro, Maine		Boring No.: MB-ISLES-101-18 WIN: 23484.00																																																																																																															
Driver:	New England Boring Contractors	Elevation (ft.):	-21.9 ft (mudline)	Core Bore:	NQ2 (wireline)																																																																																																														
Operator:	Enos / Shore	Datum:	MLW	Sampler:	standard split spoon																																																																																																														
Logged By:	Schonwald	Rig Type:	Mobile Drill B-53	Hammer Wt./Fall:	140 lbs / 30 inches																																																																																																														
Date Start/Finish:	8/77/18, 0750-1105	Drilling Method:	cased wash boring	Hammer Type:	auto hammer																																																																																																														
Boring Location:	per plan (B44); see remarks	Casing O/D:	NH to 9.2 ft / NW to 9.5 ft	Hammer Efficiency:	0.906																																																																																																														
IN-SITU SAMPLING AND TESTING: D = Split Spoon Sample MB = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MC = Unconsolidated Thin Wall Tube Sample attempt V = Initial Vane Shear Test MB = Unconsolidated Initial Vane Shear Test attempt MC = Rock Core Sample MB = Rock Quality Designation (N)		ADDITIONAL DEFINITIONS: N = uncorrected = N value N _u = N value corrected for hammer efficiency N _u = water content, percent N _u = percent fines from grain size analysis N _u = not recorded		SOURCE ADJUSTMENT METHOD: Standard stem auger/Standard stem auger/RC-water core LABORATORY TEST RESULTS: L-Liquid Limit / P-Plasticity Limit / P-Plasticity Index W _L = water content, percent P ₂₀₀ = percent fines from grain size analysis UCT _{sp} = peak compressive strength of rock																																																																																																															
<table border="1"> <thead> <tr> <th>Depth (ft.)</th> <th>Sample No.</th> <th>Tag / Ht.</th> <th>Sample Depth (ft.)</th> <th>Remarks (ft. in. / Sample Depth / or (ft. in.))</th> <th>Uncorrected</th> <th>N_u</th> <th>Coring</th> <th>Remarks</th> <th>Lab. Testing Results</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>24/11</td> <td>0.0 - 2.0</td> <td>WOR/24"</td> <td>3' dia</td> <td>Push</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 10: Grey, Gravely SILT, some fine to coarse sand with seaward grading to Grey, Silty CLAY, little fine sand. RECENT MARINE SEDIMENTS. </td> </tr> <tr> <td>15</td> <td>R1</td> <td>60/60</td> <td>9.5 - 14.5</td> <td>RQD: 47% = 78%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 15: Tip of bedrock at Elev. -31.1 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and occasional wide medium to coarse grained calcite layers. Moderately spotted, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with mud infilling typical. (Rocks of Islesboro Fm.) Core times: 4.25/ 5.00/ 2.15/ 2.25/ 2.50 min/sec/ft. ROCK QUALITY = FAIR TO GOOD. </td> </tr> <tr> <td>20</td> <td>R2</td> <td>60/60</td> <td>14.5 - 19.5</td> <td>RQD: 47% = 78%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 20: R2: Similar to R1. 2.30/ 2.20/ 2.20/ 2.60/ 2.15 min/sec/ft. ROCK QUALITY = FAIR TO GOOD. </td> </tr> <tr> <td>25</td> <td>R3</td> <td>60/60</td> <td>19.5 - 24.5</td> <td>RQD: 45% = 75%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 25: R3: Similar to R1. 1.45/ 1.35/ 1.30/ 1.35/ 1.25 min/sec/ft. ROCK QUALITY = FAIR TO GOOD. </td> </tr> <tr> <td>30</td> <td>R4</td> <td>60/60</td> <td>24.5 - 29.5</td> <td>RQD: 35% = 60%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 30: R4: Similar to R1, with one infilled, high angle. </td> </tr> </tbody> </table>						Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results	10	24/11	0.0 - 2.0	WOR/24"	3' dia	Push					10: Grey, Gravely SILT, some fine to coarse sand with seaward grading to Grey, Silty CLAY, little fine sand. RECENT MARINE SEDIMENTS.										15	R1	60/60	9.5 - 14.5	RQD: 47% = 78%						15: Tip of bedrock at Elev. -31.1 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and occasional wide medium to coarse grained calcite layers. Moderately spotted, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with mud infilling typical. (Rocks of Islesboro Fm.) Core times: 4.25/ 5.00/ 2.15/ 2.25/ 2.50 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.										20	R2	60/60	14.5 - 19.5	RQD: 47% = 78%						20: R2: Similar to R1. 2.30/ 2.20/ 2.20/ 2.60/ 2.15 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.										25	R3	60/60	19.5 - 24.5	RQD: 45% = 75%						25: R3: Similar to R1. 1.45/ 1.35/ 1.30/ 1.35/ 1.25 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.										30	R4	60/60	24.5 - 29.5	RQD: 35% = 60%						30: R4: Similar to R1, with one infilled, high angle.									
Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results																																																																																																										
10	24/11	0.0 - 2.0	WOR/24"	3' dia	Push																																																																																																														
10: Grey, Gravely SILT, some fine to coarse sand with seaward grading to Grey, Silty CLAY, little fine sand. RECENT MARINE SEDIMENTS.																																																																																																																			
15	R1	60/60	9.5 - 14.5	RQD: 47% = 78%																																																																																																															
15: Tip of bedrock at Elev. -31.1 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and occasional wide medium to coarse grained calcite layers. Moderately spotted, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with mud infilling typical. (Rocks of Islesboro Fm.) Core times: 4.25/ 5.00/ 2.15/ 2.25/ 2.50 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.																																																																																																																			
20	R2	60/60	14.5 - 19.5	RQD: 47% = 78%																																																																																																															
20: R2: Similar to R1. 2.30/ 2.20/ 2.20/ 2.60/ 2.15 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.																																																																																																																			
25	R3	60/60	19.5 - 24.5	RQD: 45% = 75%																																																																																																															
25: R3: Similar to R1. 1.45/ 1.35/ 1.30/ 1.35/ 1.25 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.																																																																																																																			
30	R4	60/60	24.5 - 29.5	RQD: 35% = 60%																																																																																																															
30: R4: Similar to R1, with one infilled, high angle.																																																																																																																			
Remarks: 8/77/18, 0742 hrs: 14.9' top dolphin #4 to water; 7.7' barge deck to water; 34.3' barge deck to mudline top of dolphin #4: elev. 19.64 ft MLW 49' crest of dolphin #4 to borehole; approx. 18.5' east of line through dolphins #3 and #4.																																																																																																																			
Simplification lines represent approximate boundaries between soil types. Transitions may be gradual.																																																																																																																			
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.																																																																																																																			

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Islesboro, Maine		Boring No.: MB-ISLES-101-18 WIN: 23484.00																																																																																	
Driver:	New England Boring Contractors	Elevation (ft.):	-21.9 ft (mudline)	Core Bore:	NQ2 (wireline)																																																																																
Operator:	Enos / Shore	Datum:	MLW	Sampler:	standard split spoon																																																																																
Logged By:	Schonwald	Rig Type:	Mobile Drill B-53	Hammer Wt./Fall:	140 lbs / 30 inches																																																																																
Date Start/Finish:	8/77/18, 0750-1105	Drilling Method:	cased wash boring	Hammer Type:	auto hammer																																																																																
Boring Location:	per plan (B44); see remarks	Casing O/D:	NH to 9.2 ft / NW to 9.5 ft	Hammer Efficiency:	0.906																																																																																
IN-SITU SAMPLING AND TESTING: D = Split Spoon Sample MB = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MC = Unconsolidated Thin Wall Tube Sample attempt V = Initial Vane Shear Test MB = Unconsolidated Initial Vane Shear Test attempt MC = Rock Core Sample MB = Rock Quality Designation (N)		ADDITIONAL DEFINITIONS: N = uncorrected = N value N _u = N value corrected for hammer efficiency N _u = water content, percent N _u = percent fines from grain size analysis N _u = not recorded		SOURCE ADJUSTMENT METHOD: Standard stem auger/Standard stem auger/RC-water core LABORATORY TEST RESULTS: L-Liquid Limit / P-Plasticity Limit / P-Plasticity Index W _L = water content, percent P ₂₀₀ = percent fines from grain size analysis UCT _{sp} = peak compressive strength of rock																																																																																	
<table border="1"> <thead> <tr> <th>Depth (ft.)</th> <th>Sample No.</th> <th>Tag / Ht.</th> <th>Sample Depth (ft.)</th> <th>Remarks (ft. in. / Sample Depth / or (ft. in.))</th> <th>Uncorrected</th> <th>N_u</th> <th>Coring</th> <th>Remarks</th> <th>Lab. Testing Results</th> </tr> </thead> <tbody> <tr> <td>25</td> <td></td> <td></td> <td></td> <td>sample 24.6-25.2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>30</td> <td>R5</td> <td>60/60</td> <td>29.5 - 34.5</td> <td>RQD: 19% = 32%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 30: R5: Similar to R4 with one near vertical fracture from 31.4 to 33.9 ft. 1.20/ 1.25/ 1.20/ 1.20/ 1.10 min/sec/ft. ROCK QUALITY = POOR. </td> </tr> <tr> <td>35</td> <td>R6</td> <td>60/60</td> <td>34.5 - 39.5</td> <td>RQD: 50% = 83%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 35: R6: Similar to R1. 1.10/ 1.10/ 1.10/ 1.30/ 1.25 min/sec/ft. ROCK QUALITY = GOOD. </td> </tr> <tr> <td>40</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 40: Bottom of Exploration at 39.5 feet below ground surface. </td> </tr> </tbody> </table>						Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results	25				sample 24.6-25.2						30	R5	60/60	29.5 - 34.5	RQD: 19% = 32%						30: R5: Similar to R4 with one near vertical fracture from 31.4 to 33.9 ft. 1.20/ 1.25/ 1.20/ 1.20/ 1.10 min/sec/ft. ROCK QUALITY = POOR.										35	R6	60/60	34.5 - 39.5	RQD: 50% = 83%						35: R6: Similar to R1. 1.10/ 1.10/ 1.10/ 1.30/ 1.25 min/sec/ft. ROCK QUALITY = GOOD.										40										40: Bottom of Exploration at 39.5 feet below ground surface.									
Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results																																																																												
25				sample 24.6-25.2																																																																																	
30	R5	60/60	29.5 - 34.5	RQD: 19% = 32%																																																																																	
30: R5: Similar to R4 with one near vertical fracture from 31.4 to 33.9 ft. 1.20/ 1.25/ 1.20/ 1.20/ 1.10 min/sec/ft. ROCK QUALITY = POOR.																																																																																					
35	R6	60/60	34.5 - 39.5	RQD: 50% = 83%																																																																																	
35: R6: Similar to R1. 1.10/ 1.10/ 1.10/ 1.30/ 1.25 min/sec/ft. ROCK QUALITY = GOOD.																																																																																					
40																																																																																					
40: Bottom of Exploration at 39.5 feet below ground surface.																																																																																					
Remarks: 8/77/18, 0742 hrs: 14.9' top dolphin #4 to water; 7.7' barge deck to water; 34.3' barge deck to mudline top of dolphin #4: elev. 19.64 ft MLW 49' crest of dolphin #4 to borehole; approx. 18.5' east of line through dolphins #3 and #4.																																																																																					
Simplification lines represent approximate boundaries between soil types. Transitions may be gradual.																																																																																					
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.																																																																																					

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Islesboro, Maine		Boring No.: MB-ISLES-102-18 WIN: 23484.00																																																																																											
Driver:	New England Boring Contractors	Elevation (ft.):	-24.4 ft (mudline)	Core Bore:	NQ2 (wireline)																																																																																										
Operator:	Enos / Shore	Datum:	MLW	Sampler:	standard split spoon																																																																																										
Logged By:	Schonwald	Rig Type:	Mobile Drill B-53	Hammer Wt./Fall:	140 lbs / 30 inches																																																																																										
Date Start/Finish:	8/20/18, 1225-1545	Drilling Method:	cased wash boring	Hammer Type:	auto hammer																																																																																										
Boring Location:	per plan (B44); see remarks	Casing O/D:	NH to 13.0 ft / NW to 14.0 ft	Hammer Efficiency:	0.906																																																																																										
IN-SITU SAMPLING AND TESTING: D = Split Spoon Sample MB = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MC = Unconsolidated Thin Wall Tube Sample attempt V = Initial Vane Shear Test MB = Unconsolidated Initial Vane Shear Test attempt MC = Rock Core Sample MB = Rock Quality Designation (N)		ADDITIONAL DEFINITIONS: N = uncorrected = N value N _u = N value corrected for hammer efficiency N _u = water content, percent N _u = percent fines from grain size analysis N _u = not recorded		SOURCE ADJUSTMENT METHOD: Standard stem auger/Standard stem auger/RC-water core LABORATORY TEST RESULTS: L-Liquid Limit / P-Plasticity Limit / P-Plasticity Index W _L = water content, percent P ₂₀₀ = percent fines from grain size analysis UCT _{sp} = peak compressive strength of rock																																																																																											
<table border="1"> <thead> <tr> <th>Depth (ft.)</th> <th>Sample No.</th> <th>Tag / Ht.</th> <th>Sample Depth (ft.)</th> <th>Remarks (ft. in. / Sample Depth / or (ft. in.))</th> <th>Uncorrected</th> <th>N_u</th> <th>Coring</th> <th>Remarks</th> <th>Lab. Testing Results</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>24/18</td> <td>0.0 - 2.0</td> <td>WOR-MCH/18"</td> <td>3' dia</td> <td>Push</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 10: Grey, v. loose, fine to coarse Silty SILT, some Gravel. </td> </tr> <tr> <td>15</td> <td>R1</td> <td>52/51</td> <td>14.0 - 18.3</td> <td>RQD: 10% = 19%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 15: Tip of bedrock at Elev. -37.4 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and one at 1/2-inch wide and occasional thin calcite veins. Typically close, low angle breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.35/ 1.20/ 1.10/ 1.05/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR. </td> </tr> <tr> <td>20</td> <td>R2</td> <td>60/60</td> <td>18.3 - 23.3</td> <td>RQD: 12% = 20%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 20: R2: Similar to R1, except some slight weathering and moderately dipping breaks. 1.05/ 1.05/ 1.10/ 1.15/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR. </td> </tr> <tr> <td>25</td> <td>R3</td> <td>42/29</td> <td>23.3 - 26.8</td> <td>RQD: 0% = 0%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 25: R3: Similar rock to R1, highly broken and decomposed throughout. 0.55/ 0.55/ 1.30/ 1.10/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR. </td> </tr> </tbody> </table>						Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results	10	24/18	0.0 - 2.0	WOR-MCH/18"	3' dia	Push					10: Grey, v. loose, fine to coarse Silty SILT, some Gravel.										15	R1	52/51	14.0 - 18.3	RQD: 10% = 19%						15: Tip of bedrock at Elev. -37.4 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and one at 1/2-inch wide and occasional thin calcite veins. Typically close, low angle breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.35/ 1.20/ 1.10/ 1.05/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.										20	R2	60/60	18.3 - 23.3	RQD: 12% = 20%						20: R2: Similar to R1, except some slight weathering and moderately dipping breaks. 1.05/ 1.05/ 1.10/ 1.15/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.										25	R3	42/29	23.3 - 26.8	RQD: 0% = 0%						25: R3: Similar rock to R1, highly broken and decomposed throughout. 0.55/ 0.55/ 1.30/ 1.10/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.									
Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results																																																																																						
10	24/18	0.0 - 2.0	WOR-MCH/18"	3' dia	Push																																																																																										
10: Grey, v. loose, fine to coarse Silty SILT, some Gravel.																																																																																															
15	R1	52/51	14.0 - 18.3	RQD: 10% = 19%																																																																																											
15: Tip of bedrock at Elev. -37.4 ft. R1: Bedrock: Hard, typically fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating remnant bedding and one at 1/2-inch wide and occasional thin calcite veins. Typically close, low angle breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.35/ 1.20/ 1.10/ 1.05/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.																																																																																															
20	R2	60/60	18.3 - 23.3	RQD: 12% = 20%																																																																																											
20: R2: Similar to R1, except some slight weathering and moderately dipping breaks. 1.05/ 1.05/ 1.10/ 1.15/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.																																																																																															
25	R3	42/29	23.3 - 26.8	RQD: 0% = 0%																																																																																											
25: R3: Similar rock to R1, highly broken and decomposed throughout. 0.55/ 0.55/ 1.30/ 1.10/ 1.15 min/sec/ft. ROCK QUALITY = VERY POOR.																																																																																															
Remarks: 8/20/18, 1222 hrs: 18.0' top dolphin #6 to water; 7.7' barge deck to water; 33.9' barge deck to mudline top of dolphin #6: elev. 19.82 ft MLW 50' center dolphin #6 to borehole; approx. in line with line through light posts on dolphins #5 and #6.																																																																																															
Simplification lines represent approximate boundaries between soil types. Transitions may be gradual.																																																																																															
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.																																																																																															

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Islesboro, Maine		Boring No.: MB-ISLES-102-18 WIN: 23484.00																																																																																											
Driver:	New England Boring Contractors	Elevation (ft.):	-24.4 ft (mudline)	Core Bore:	NQ2 (wireline)																																																																																										
Operator:	Enos / Shore	Datum:	MLW	Sampler:	standard split spoon																																																																																										
Logged By:	Schonwald	Rig Type:	Mobile Drill B-53	Hammer Wt./Fall:	140 lbs / 30 inches																																																																																										
Date Start/Finish:	8/20/18, 1225-1545	Drilling Method:	cased wash boring	Hammer Type:	auto hammer																																																																																										
Boring Location:	per plan (B44); see remarks	Casing O/D:	NH to 13.0 ft / NW to 14.0 ft	Hammer Efficiency:	0.906																																																																																										
IN-SITU SAMPLING AND TESTING: D = Split Spoon Sample MB = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MC = Unconsolidated Thin Wall Tube Sample attempt V = Initial Vane Shear Test MB = Unconsolidated Initial Vane Shear Test attempt MC = Rock Core Sample MB = Rock Quality Designation (N)		ADDITIONAL DEFINITIONS: N = uncorrected = N value N _u = N value corrected for hammer efficiency N _u = water content, percent N _u = percent fines from grain size analysis N _u = not recorded		SOURCE ADJUSTMENT METHOD: Standard stem auger/Standard stem auger/RC-water core LABORATORY TEST RESULTS: L-Liquid Limit / P-Plasticity Limit / P-Plasticity Index W _L = water content, percent P ₂₀₀ = percent fines from grain size analysis UCT _{sp} = peak compressive strength of rock																																																																																											
<table border="1"> <thead> <tr> <th>Depth (ft.)</th> <th>Sample No.</th> <th>Tag / Ht.</th> <th>Sample Depth (ft.)</th> <th>Remarks (ft. in. / Sample Depth / or (ft. in.))</th> <th>Uncorrected</th> <th>N_u</th> <th>Coring</th> <th>Remarks</th> <th>Lab. Testing Results</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>R4</td> <td>60/60</td> <td>26.8 - 31.8</td> <td>RQD: 47% = 72%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 25: R4: Hard, fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating, typically moderately dipping remnant bedding and occasional calcite veins. Close to moderately spaced, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.45/ 1.30/ 1.30/ 1.25/ 1.40 min/sec/ft. ROCK QUALITY = FAIR TO GOOD. </td> </tr> <tr> <td>30</td> <td>R5</td> <td>60/60</td> <td>31.8 - 36.8</td> <td>RQD: 44% = 73%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 30: R5: Similar to R4, except moderately to widely spaced breaks. Fracture zone from 34.1 to 34.9 ft. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD. </td> </tr> <tr> <td>35</td> <td>R6</td> <td>60/60</td> <td>36.8 - 41.8</td> <td>RQD: 48% = 80%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 35: R6: Similar to R5, except breaks typically fresh. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD. </td> </tr> <tr> <td>40</td> <td>R7</td> <td>60/60</td> <td>41.8 - 46.8</td> <td>RQD: 51% = 85%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10"> 40: R7: Similar to R6. 1.15/ 0.55/ 1.05/ 1.10/ 1.05 min/sec/ft. ROCK QUALITY = GOOD. </td> </tr> </tbody> </table>						Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results	25	R4	60/60	26.8 - 31.8	RQD: 47% = 72%						25: R4: Hard, fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating, typically moderately dipping remnant bedding and occasional calcite veins. Close to moderately spaced, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.45/ 1.30/ 1.30/ 1.25/ 1.40 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.										30	R5	60/60	31.8 - 36.8	RQD: 44% = 73%						30: R5: Similar to R4, except moderately to widely spaced breaks. Fracture zone from 34.1 to 34.9 ft. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD.										35	R6	60/60	36.8 - 41.8	RQD: 48% = 80%						35: R6: Similar to R5, except breaks typically fresh. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD.										40	R7	60/60	41.8 - 46.8	RQD: 51% = 85%						40: R7: Similar to R6. 1.15/ 0.55/ 1.05/ 1.10/ 1.05 min/sec/ft. ROCK QUALITY = GOOD.									
Depth (ft.)	Sample No.	Tag / Ht.	Sample Depth (ft.)	Remarks (ft. in. / Sample Depth / or (ft. in.))	Uncorrected	N _u	Coring	Remarks	Lab. Testing Results																																																																																						
25	R4	60/60	26.8 - 31.8	RQD: 47% = 72%																																																																																											
25: R4: Hard, fresh, aphanitic to fine grained, grey, METAPELITE with highly undulating, typically moderately dipping remnant bedding and occasional calcite veins. Close to moderately spaced, moderately dipping breaks; undulating, rough, dull, typically discolored, and open with occasional mud infilling. (Rocks of Islesboro Fm.) Core times: 1.45/ 1.30/ 1.30/ 1.25/ 1.40 min/sec/ft. ROCK QUALITY = FAIR TO GOOD.																																																																																															
30	R5	60/60	31.8 - 36.8	RQD: 44% = 73%																																																																																											
30: R5: Similar to R4, except moderately to widely spaced breaks. Fracture zone from 34.1 to 34.9 ft. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD.																																																																																															
35	R6	60/60	36.8 - 41.8	RQD: 48% = 80%																																																																																											
35: R6: Similar to R5, except breaks typically fresh. 1.20/ 1.20/ 1.10/ 1.10/ 1.10 min/sec/ft. ROCK QUALITY = GOOD.																																																																																															
40	R7	60/60	41.8 - 46.8	RQD: 51% = 85%																																																																																											
40: R7: Similar to R6. 1.15/ 0.55/ 1.05/ 1.10/ 1.05 min/sec/ft. ROCK QUALITY = GOOD.																																																																																															
Remarks: 8/20/18, 1222 hrs: 18.0' top dolphin #6 to water; 7.7' barge deck to water; 33.9' barge deck to mudline top of dolphin #6: elev. 19.82 ft MLW 50' center dolphin #6 to borehole; approx. in line with line through light posts on dolphins #5 and #6.																																																																																															
Simplification lines represent approximate boundaries between soil types. Transitions may be gradual.																																																																																															
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.																																																																																															

GEOTECHNICAL NOTES:

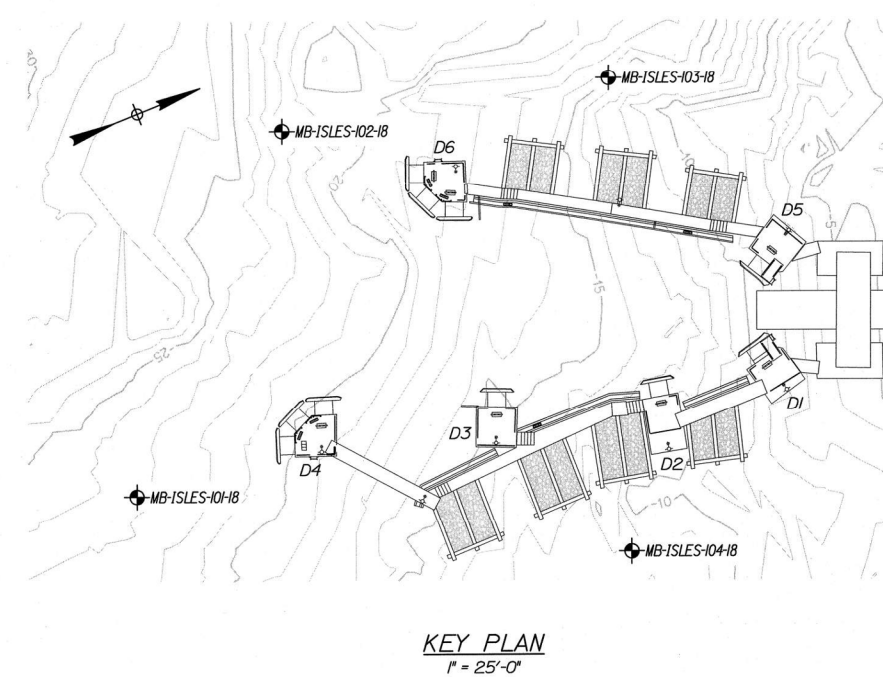
1. The geotechnical report for the project is entitled "Geotechnical Design Report, Fender System Modifications, Maine State Ferry Terminal, Islesboro, Maine, MaineDOT WIN 023484.00," dated April 2019 and prepared by Schonwald Engineering Associates, Inc. The report is available on the MaineDOT website.

2. Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for the Bidders' and Contractors' interpretations of, or conclusions drawn from, the geotechnical information. The boring logs contained in the plan set and the referenced report present interpretive subsurface information collected at discrete locations; data provided may not be representative of the subsurface conditions between widely-spaced boring locations.

3. Grid north on the North American Datum 1983 (NAD83).

4. Tidal datum is Mean Lower Low Water (MLLW).

BORING COORDINATES		
Location	Northing	Easting
MB-ISLES-101-18	223986.69	868250.52
MB-ISLES-102-18	224061.87	868172.06
MB-ISLES-103-18	224150.72	868192.51
MB-ISLES-104-18	224107.28	868316.27



KEY PLAN
1" = 25'-0"

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		ISLESBORO FERRY TERMINAL		BORING LOGS I	
PROJECT MANAGER	DATE	BY	DATE	REVISIONS	FIELD CHANGES
CHECKED-REVIEWED	04/19	P. Bishop	04/19	1	
DESIGN-REVIEWED	04/19	C. Morin	04/19	2	
DESIGN-REVIEWED	04/19		04/19	3	
DESIGN-REVIEWED	04/19		04/19	4	
DESIGN-REVIEWED	04/19		04/19	5	
DESIGN-REVIEWED	04/19		04/19	6	
DESIGN-REVIEWED	04/19		04/19	7	
DESIGN-REVIEWED	04/19		04/19	8	
DESIGN-REVIEWED	04/19		04/19	9	
DESIGN-REVIEWED	04/19		04/19	10	
DESIGN-REVIEWED	04/19		04/19	11	
DESIGN-REVIEWED	04/19		04/19	12	
DESIGN-REVIEWED	04/19		04/19	13	
DESIGN-REVIEWED	04/19		04/19	14	
DESIGN-REVIEWED	04/19		04/19	15	
DESIGN-REVIEWED	04/19		04/19	16	
DESIGN-REVIEWED	04/19		04/19	17	
DESIGN-REVIEWED	04/19		04/19	18	
DESIGN-REVIEWED	04/19		04/19	19	
DESIGN-REVIEWED	04/19		04/19	20	
DESIGN-REVIEWED	04/19		04/19	21	
DESIGN-REVIEWED	04/19		04/19	22	
DESIGN-REVIEWED	04/19		04/19	23	
DESIGN-REVIEWED	04/19		04/19	24	
DESIGN-REVIEWED	04/19		04/19	25	
DESIGN-REVIEWED	04/19		04/19	26	
DESIGN-REVIEWED	04/19		04/19	27	
DESIGN-REVIEWED	04/19		04/19	28	
DESIGN-REVIEWED	04/19		04/19	29	
DESIGN-REVIEWED	04/19		04/19	30	
DESIGN-REVIEWED	04/19		04/19	31	
DESIGN-REVIEWED	04/19		04/19	32	
DESIGN-REVIEWED	04/19		04/19	33	
DESIGN-REVIEWED	04/19		04/19	34	
DESIGN-REVIEWED	04/19		04/19	35	
DESIGN-REVIEWED	04/19		04/19	36	
DESIGN-REVIEWED	04/19		04/19	37	
DESIGN-REVIEWED	04/19		04/19	38	
DESIGN-REVIEWED	04/19		04/19	39	
DESIGN-REVIEWED	04/19		04/19	40	
DESIGN-REVIEWED	04/19		04/19	41	
DESIGN-REVIEWED	04/19		04/19	42	
DESIGN-REVIEWED	04/19		04/19	43	
DESIGN-REVIEWED	04/19		04/19	44	
DESIGN-REVIEWED	04/19		04/19	45	
DESIGN-REVIEWED	04/19		04/19	46	
DESIGN-REVIEWED	04/19		04/19	47	
DESIGN-REVIEWED	04/19		04/19	48	
DESIGN-REVIEWED	04/19		04/19	49	
DESIGN-REVIEWED	04/19		04/19	50	
DESIGN-REVIEWED	04/19		04/19	51	
DESIGN-REVIEWED	04/19		04/19	52	
DESIGN-REVIEWED	04/19		04/19	53	
DESIGN-REVIEWED	04/19		04/19	54	
DESIGN-REVIEWED	04/19		04/19	55	
DESIGN-REVIEWED	04/19		04/19	56	
DESIGN-REVIEWED	04/19		04/19		

--	--

		PROJECT: Fender System Modifications Maine State Ferry Terminal Islesboro, Maine		Boring No.: MB-ISLES-104-18							
LOCATION:				WIN: 23484.00							
Ditcher: New England Boring Contractors		Elevation (ft.): -11.7 ft. (mudline)		Core Bore: NQZ (wireline)							
Operator: Enos / Shore		Datum: MLW		Sampler: standard split spoon							
Lugged By: Schonwald		Rig type: Mobile D&B B-53		Hammer Wt./Fall: 140 lbs / 30 inches							
Date Start/Finish: 8/21/98; 0750-1220		Drilling Method: closed water boring		Hammer Type: auto hammer							
Boring Location: per plan (BMS) west entrance		Coating ID/DOD: HB 16 4.0 ft./17' HB to 15.1 ft.		Hammer Efficiency: 0.898							
		Auger ID/DOD: n/a		Mud Level - " : n/a							
				--- = not recorded							
R-SPS SAMPLING AND TESTING R = Split Spoon Sampler M = Unclassified Fine Mud Sample attempt U = Too Hard To Sample H = Unclassified Very Hard To Sample Attempt H+ = Walk-In Vane Shear Test H2 = Unconfined Compressive Shear Strength Test		ADDITIONAL DEFINITIONS N=non-tested Sw = N value corrected for hammer efficiency Hsc = Hammer Efficiency Calculated Hammer Efficiency Sv = Walk Fall Value Shear Strength Unit Hs = Rock Core Strength RD = Rock Stability Designation [R]		ADDITIONAL DEFINITIONS N=non-tested Nw = weight of 140lb hammer Np = weight of 10lb --- = not recorded							
				BORISOLE INCREMENT METHOD Striations seen upper/lower-half stem approx/Crater core RC = water content, percent LU-Lmax Length of P-Half/Stem Length Hc = water content, percent RDSD = percent fine grain size sample UCT qn = peak compressive strength at tip							
		Sample Information		Visual Description and Remarks							
Depth (ft.)	Sample no.	Pkg. /Pac.	Sample Depth (ft.)	Blows (F/G In.)	Strength (lb/inch)	N-uncorrected	N=40	Quality Status	Description (ft.)	Length	Lab Testing Results
30	R4	BA/57	27.8 - 34.6			RDSD: 38°±53%					R4: (27.8 to 32.3 ft.) Similar to R1. Majority of material test between 27.9 to 30.3 ft. Major high-angle calcite vein, 31.5 to 32.3 ft. R4A: (32.3 to 34.6 ft.) Hard, typically fresh, granitic to fine grained, grey, METAFELTIC with highly undulating, typically moderately dipping remnant bedding and occasional calcite veins. Close to moderately sparse, typically moderately dipping breake; undulating, rough, dark, typically discolored, and open. (Blocks of limestones) -- / 1:05/ 0.25/ 1:20/ 1.45/ 1:55/ 1.45 minsec/ft ROCK QUALITY = FAIR (for btm 60")
						RD for btm 60"					
35	R5	60/60	34.8 - 39.6			RDSD: 46°±78%					R5: Similar to R4A. One-inch thick, moderately dipping quartzite vein at 37.4 to 37.6 ft. 1:15/ 1:10/ 0.55/ 1:00/ 1:05 minsec/ft ROCK QUALITY = FAIR TO GOOD
40	R6	60/60	39.8 - 44.6			RDSD: 37°±62% sample 39.9-40.2					R6: Similar to R4A. Fracture zones with slight decomposition from 40.3 to 40.9, 41.7 to 42.2, and 43.7 to 44.0 ft. 1:00/ 1:00/ 0.55/ 1:00/ 1:05 minsec/ft ROCK QUALITY = FAIR
45	R7	60/60	44.8 - 49.8			RDSD: 36°±60%					R7: Similar to R4A. Two-inch thick, moderately dipping quartzite vein at 46.5 to 46.7 ft. Fracture zone with some decomposition from 47.9 to 48.7 ft. 0:55/ 0:55/ 1:25/ 1:20/ 1:15 minsec/ft ROCK QUALITY = FAIR
50	R8	60/60	49.8 - 54.6			RDSD: 59°±98%					
8/21/98; 0748 hrs: 10.4' top dolphin #2 to water; 7.7' barge deck to water; 28.7' barge deck to mudline top of dolphin #2: elev. 19.73 ft MLW 39.7' perpendicular to the line between the cleats on dolphins #2 and #3 to borehole; perpendicular line runs approx. 8.5' from dolphin #2 cleat towards dolphin #3.											
Stratification lines represent approximate boundaries between soil types, transitions may be gradual.											
* Note: Lab readings have been made as times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.											
Boring No.: MB-ISLES-104-18										Page 2 of 3	

EXISTING DI		
LOCATION	NORTHING	EASTING
A	224166.71	868279.45
B	224169.46	868290.26
C	224158.38	868293.06
D	224155.59	868281.85

EXISTING D2		
LOCATION	NORTHING	EASTING
A	224125.71	868280.54
B	224132.12	868295.83
C	224122.30	868293.67
D	224125.71	868278.50

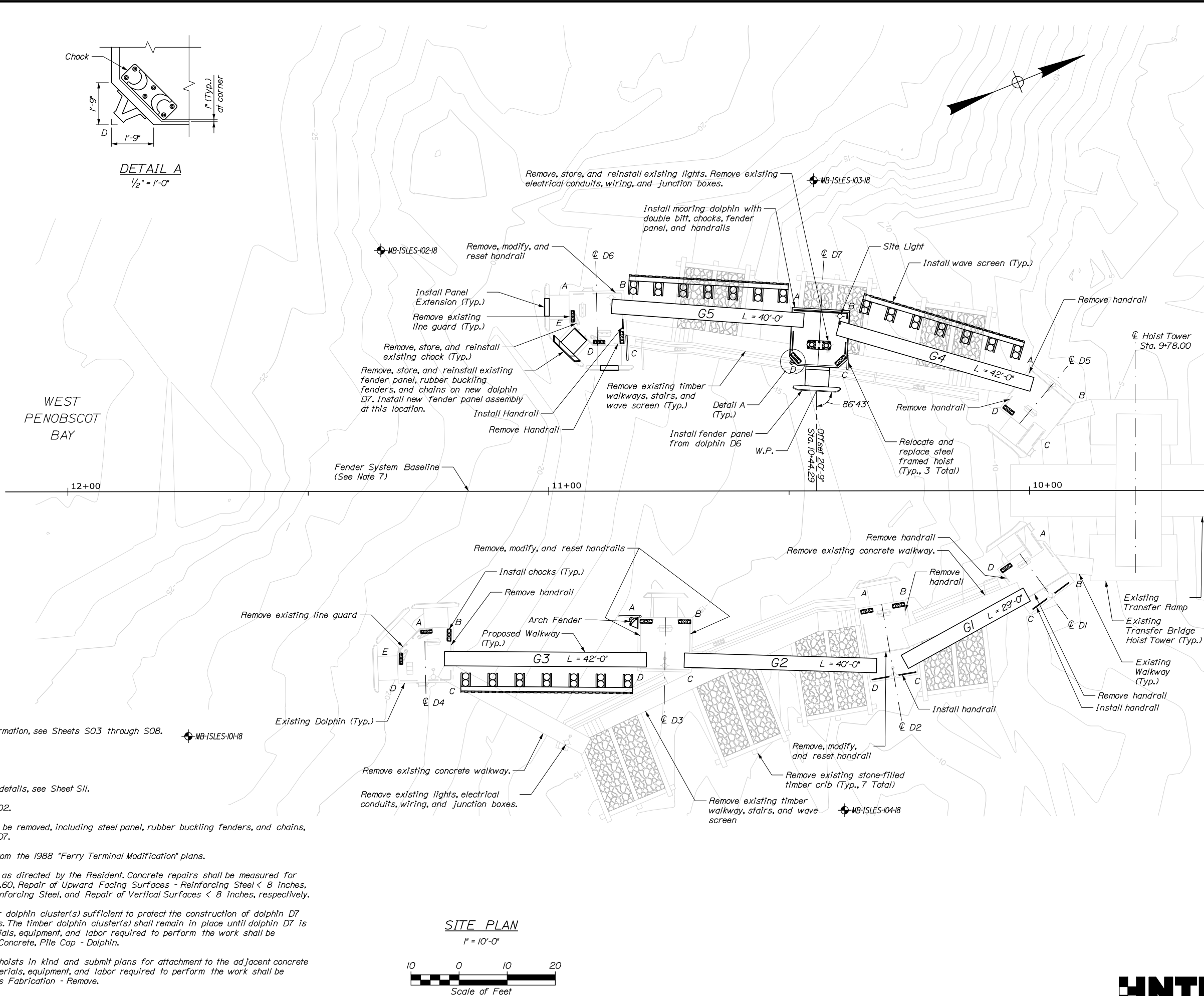
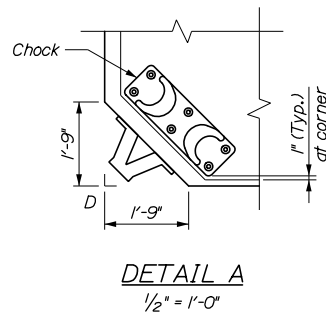
EXISTING D3		
LOCATION	NORTHING	EASTING
A	224082.64	868262.87
B	224093.13	868267.31
C	224088.58	868277.63
D	224078.36	868277.32

EXISTING D4		
LOCATION	NORTHING	EASTING
A	224039.74	868247.91
B	224046.27	868250.22
C	224041.91	868260.87
D	224031.27	868256.79
E	224033.48	868250.73

EXISTING D5		
LOCATION	NORTHING	EASTING
A	224178.48	868245.09
B	224183.98	868255.45
C	224174.40	868260.84
D	224168.70	868251.05

EXISTING D6		
LOCATION	NORTHING	EASTING
A	224094.89	868194.77
B	224105.53	868198.85
C	224101.65	868209.67
D	224095.25	868207.03
E	224092.48	868200.74

PROPOSED D7		
LOCATION	NORTHING	EASTING
A	224136.63	868215.32
B	224147.47	868220.47
C	224142.33	868231.31
D	224131.49	868226.16



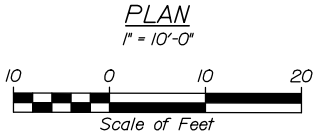
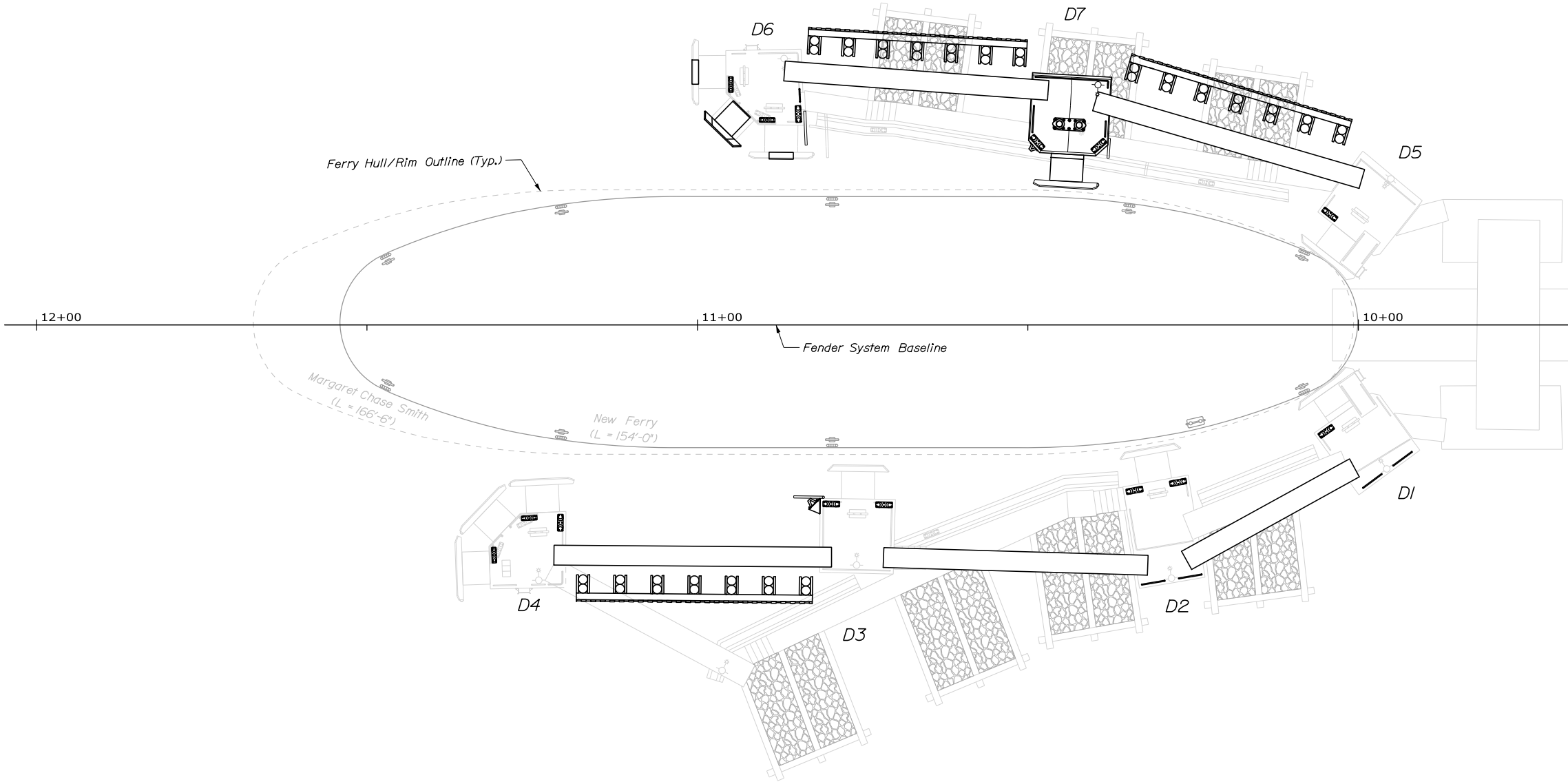
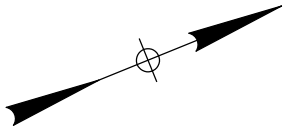
1. For mooring dolphin details & additional information, see Sheets S03 through S08.
2. For chock resetting details, see Sheet S06.
3. For wave screen details, see Sheet S10.
4. For aluminum gangway and transition plate details, see Sheet S11.
5. For lighting details, see Sheet E01 through E02.
6. Fender panel removed from dolphin D6 shall be removed, including steel panel, rubber buckling fenders, and chains, without damage, for installation at new dolphin D7.
7. Baseline was developed using information from the 1988 "Ferry Terminal Modification" plans.
8. The Contractor shall repair existing concrete as directed by the Resident. Concrete repairs shall be measured for payment under pay items, 518.50, 518.51, and 518.60, Repair of Upward Facing Surfaces - Reinforcing Steel < 8 inches, Repair of Upward Facing Surfaces - below Reinforcing Steel, and Repair of Vertical Surfaces < 8 inches, respectively.
9. The Contractor shall design and install timber dolphin cluster(s) sufficient to protect the construction of dolphin D7 after the removal of the stone filled timber cribs. The timber dolphin cluster(s) shall remain in place until dolphin D7 is ready for service. Payment for the design, materials, equipment, and labor required to perform the work shall be incidental to the Pay Item 502.2351, Structural Concrete, Pile Cap - Dolphin.
10. The Contractor shall replace all steel framed hoists in kind and submit plans for attachment to the adjacent concrete dolphins for review. Payment for the design, materials, equipment, and labor required to perform the work shall be incidental to the Pay Item 504.510, Miscellaneous Fabrication - Remove.

11. For arch fender detail on dolphin D3, see Sheet S04.

1" = 10'-0"

A horizontal scale bar with tick marks at 0, 10, and 20 feet. The segment from 0 to 10 feet is divided into five equal parts, each representing 2 feet. The segment from 10 to 20 feet is a single solid block. The text "Scale of Feet" is centered below the bar.

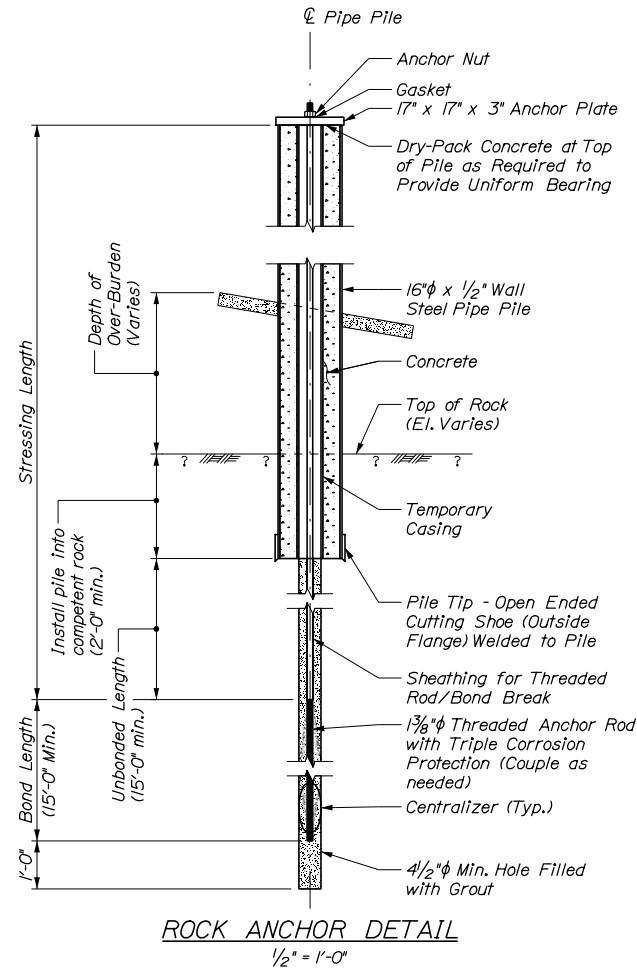
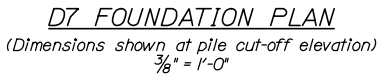
Scale of Feet



NOTES:
1. MV Margaret Chase Smith is currently in operation. New ferry is proposed.



ISLESBORO FERRY TERMINAL		PROJ. MANAGER		BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION
		DESIGN-DETAILED		N. Willey	05\19	
		CHECKED-REVIEWED		P. Bishop		
				C. Morin	05\19	
		DESIGN2-DETAILED2				
		DESIGN3-DETAILED3				SIGNATURE
					10209	
		REVISIONS 1				P.E. NUMBER
		REVISIONS 2				
		REVISIONS 3				
		REVISIONS 4				DATE
		FIELD CHANGES				
SHEET NUMBER		WIN 023484.00				
S02						
7 OF 18						



	Pile No.	Estimated Pile Length	Vertical or Batter (Rise/Run)
Mooring Dolphin D7	1	46	Vert.
	2	48	Batter 4:12
	3	48	Batter 4:12
	4	48	Batter 4:12
	5	48	Batter 4:12
	6	46	Vert.
	7	48	Batter 4:12
	8	46	Vert.
	9	48	Batter 4:12

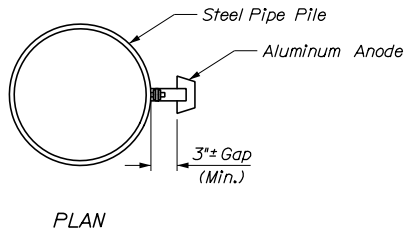
1. A length of 10' has been included for contingency to each estimated pile length to determine order length.
2. All steel pipe piles shall have rock anchors. For rock anchors, see detail.
3. All steel pipe piles shall have aluminum anodes.
4. Overburden and rock materials removed during pile installation activities shall be disposed in accordance with Special Provision 203.
5. For anode details, see Sheet S04.

1. Advance pipe pile open ended with cutting shoe to the top of bedrock. Advance pipe pile into competent rock per detail.
2. Pile shall be cut off at final top elevation to perform anchor load test. Refer to structural drawings for top of pile elevations.
3. Clean and flush rock cuttings and soil from inside the pile and socket. Confirm pile socketed into bedrock per detail. Install grout plug.
4. Install temporary casing with centralizers as needed to top of grout plug inside the pipe pile. Advance temporary casing until it is seated.
5. Insert rock anchor drill casing and drill bit into temporary casing and drill anchor hole. Minimum length of anchor hole per the detail.
6. Clean and flush rock cuttings from anchor hole. Do not allow drill cuttings to enter the pipe pile.
7. Install triple corrosion protected anchor, sheathing and centralizers, preassembled to the required dimensions.
8. Using tremie methods, fill the annular space between the anchor rod / sheathing and the anchor hole with 5,000 psi cement grout to above the top of the bedrock surface.
9. Install anchor plate at top of anchor with hex nut and hardened washer.
10. Verify that pile head is restrained from moving laterally by fixing the pile head to the pile template, falsework or other appropriate means.
11. Perform rock anchor proof and performance tests to 33% of the max. pile tension load (See pile schedule).
12. Place concrete in the annular space between the anchor rod sheathing and the pipe pile as the temporary casing is withdrawn, maintaining the concrete surface above the bottom of the temporary casing at all times. Temporary casing may be left in the piling at the option of the Contractor.
13. Lock off rock anchor at 110% of max. pile tension load (See pile schedule).
14. Proceed with dolphin construction.

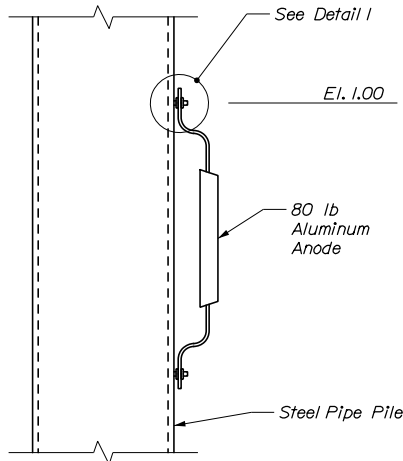
Pile Load Schedule	
Max. Factored Applied Pile Compression Load (LRFD):	163 kips
Max. Factored Applied Pile Tension Load (LRFD):	78 kips
Max. Applied Pile Tension Load (ASD):	49 kips
Min. Pile Compression Resistance (LRFD):	616 kips
Min. Rock Anchor Tension Capacity (ASD):	361 kips
Rock Anchor Test Load:	66 kips
Rock Anchor Lock Off Load:	54 kips

2. The tensile capacity of rock anchors was determined using established ASD methods in the absence of definitive guidance in the LRFD Manual, Article 1.9.4.2 - "Anchor Pullout Capacity." A resistance factor equal to 1.0 is allowed per the LRFD Manual since all the rock anchors will be tested.

ISLESBORO FERRY TERMINAL DOLPHIN FOUNDATION PLAN	SHEET NUMBER		8 OF 18	
	PROJ. MANAGER		BY	DATE
	DESIGN-DETAILED	N. Wiley	P. Bishop	05/19
	CHECKED-REVIEWED	C. Morin	C. Morin	05/19
	DESIGN2-DETAILED2			
	DESIGN3-DETAILED3			
	REVISIONS 1			P.E. NUMBER
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			DATE
FIELD CHANGES				
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		
		WIN 023484.00		



PLAN

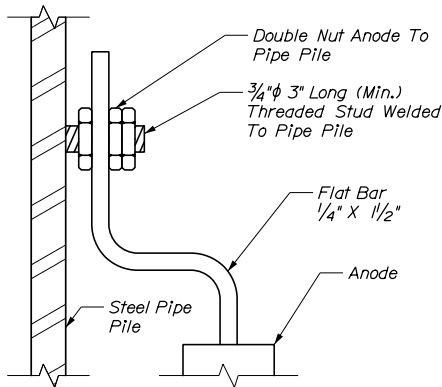


ELEVATION

Note: Anode shall be positioned along the inshore face of piles.

ANODE DETAIL

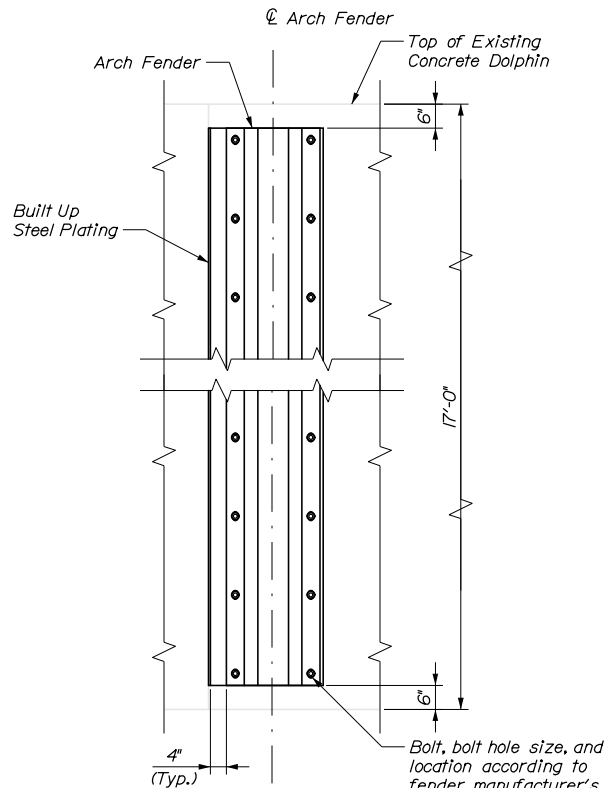
N.T.S.



DETAIL I

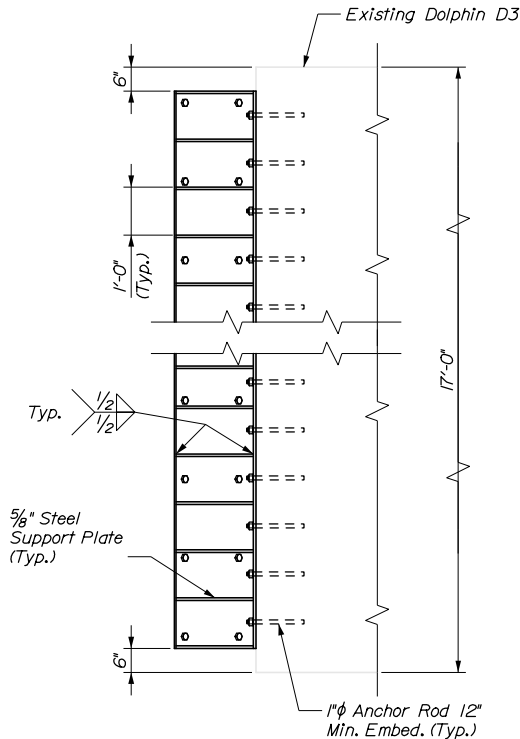
N.T.S.

NOTE:
1. Studs and hardware shall be stainless steel.



SECTION A-A

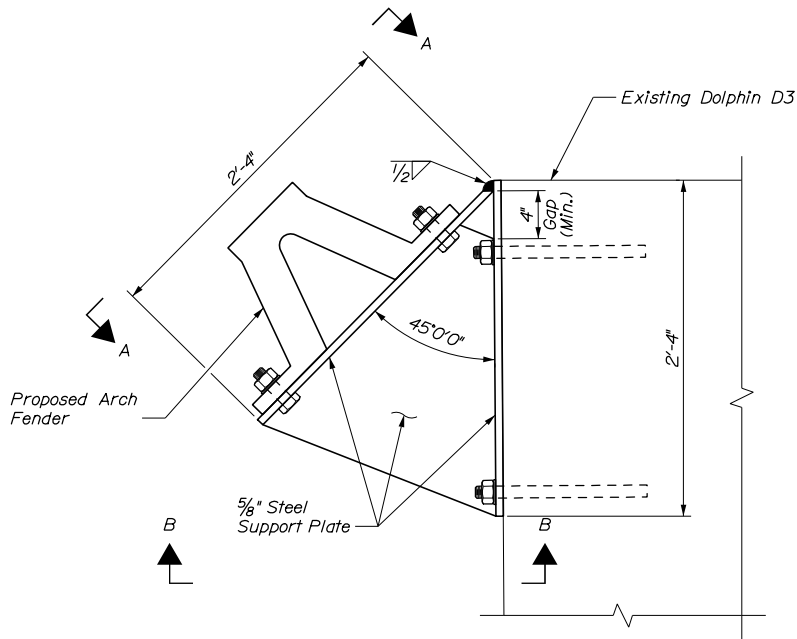
1/2" = 1'-0"



SECTION B-B

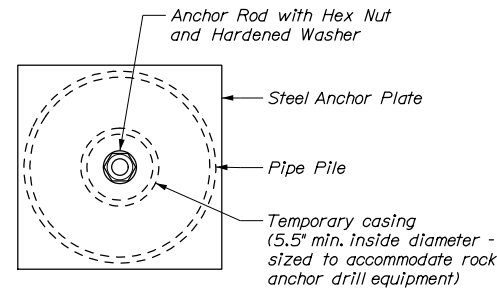
1/2" = 1'-0"

Note:
1. Contractor shall shift arch fender vertically as needed to avoid bolt interference with support plates.



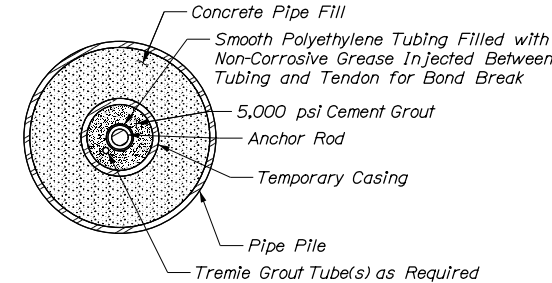
ARCH FENDER PLAN AT DOLPHIN D3

1/2" = 1'-0"



TOP OF PILE DETAIL

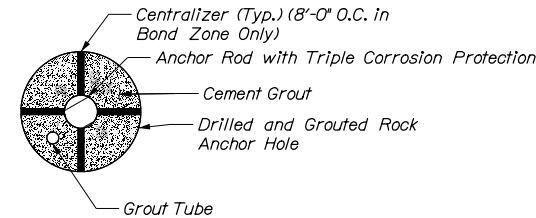
N.T.S.



ROCK ANCHOR SECTION

(UNBONDED ZONE)

N.T.S.



ROCK ANCHOR SECTION

(BOND ZONE)

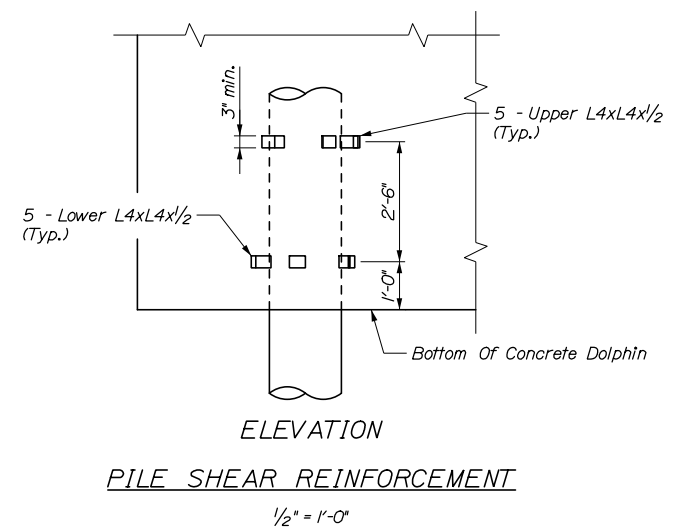
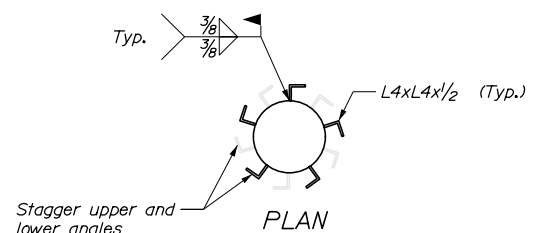
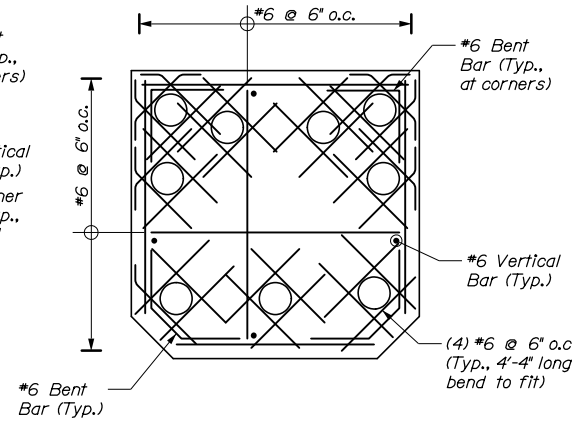
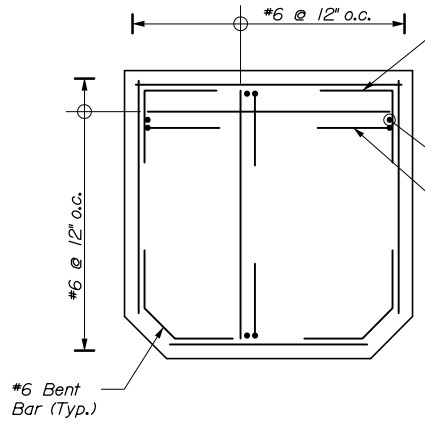
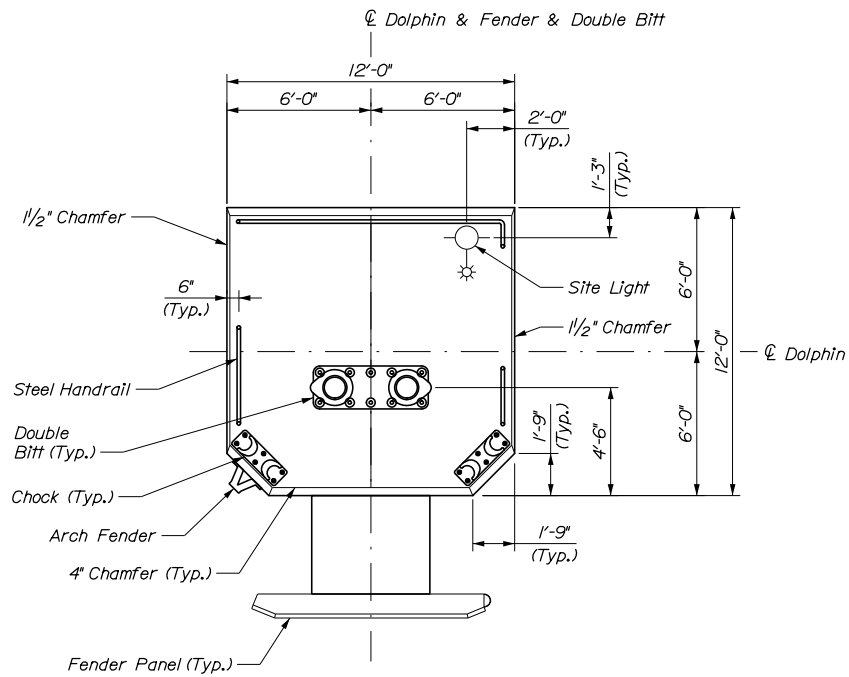
N.T.S.

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
N. Willey	C. Morin	P. Bishop	C. Morin	05/18		10209	
DESIGN-DETAILED	DESIGN-DETAILED	DESIGN-DETAILED					
REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES			

Date:5/30/2019

Username:

Filename: ... \010_Dolphin Plan and Elevation.dgn Division:



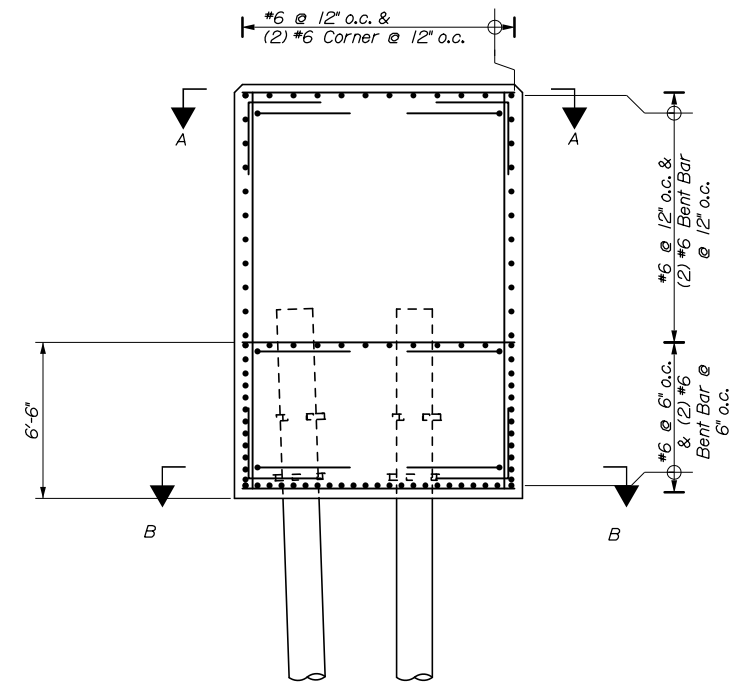
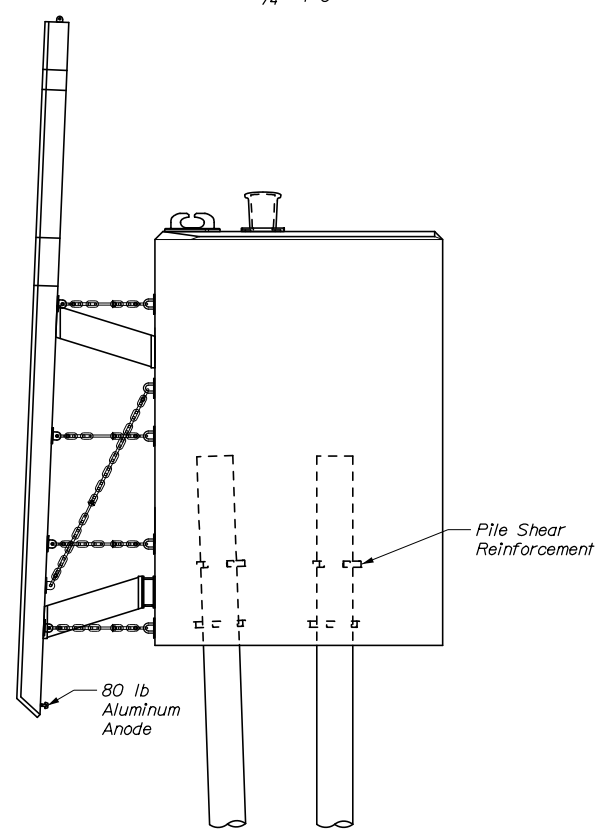
El. 29.00
Top of Fender
Panel Extension
El. 27.00
Top of Existing
Fender Panel

El. 20.25
Top of Dolphin

El. 11.00
Pile Cut-Off
El. 10.57
MHHW

El. 3.00
Bottom of Dolphin

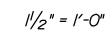
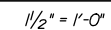
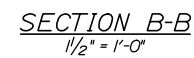
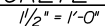
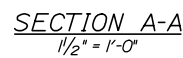
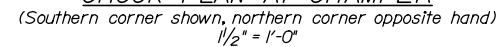
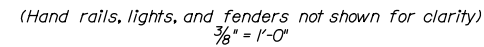
El. 0.00
MLLW & Bottom
of Fender Panel



- NOTES:
1. For anode details, see Sheet S04.
 2. For double bitt and chock details, see Sheet S06.
 3. For dolphin pad eye detail, see Sheet S08.
 4. For handrail details, see Sheet S09.
 5. All reinforcing shall be cut to maintain 2" clear from piles and 4" clear of concrete surfaces.
 6. Reinforcing bars shall be adjusted to maintain 1" clear from anchor rods.



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN		023484.00	
ISLESBORO		FERRY TERMINAL		DOLPHIN DETAILS		PLAN AND ELEVATION	
SHEET NUMBER		S05		10 OF 18			
PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE		
DESIGN-DETAILED	N. Wiley	05/18					
CHECKED-REVIEWED	C. Morin	05/18					
DESIGN-DETAILED							
REVISIONS 1							
REVISIONS 2							
REVISIONS 3							
REVISIONS 4							
FIELD CHANGES							



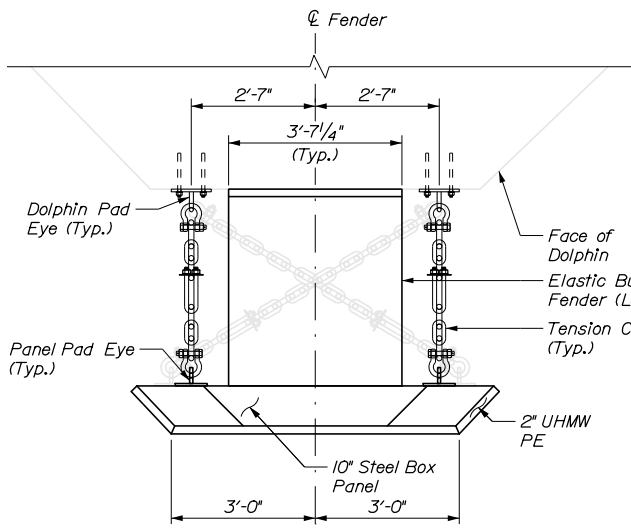
1. For handrail details and locations, see Sheet S09.

Date:5/30/2019

Username:

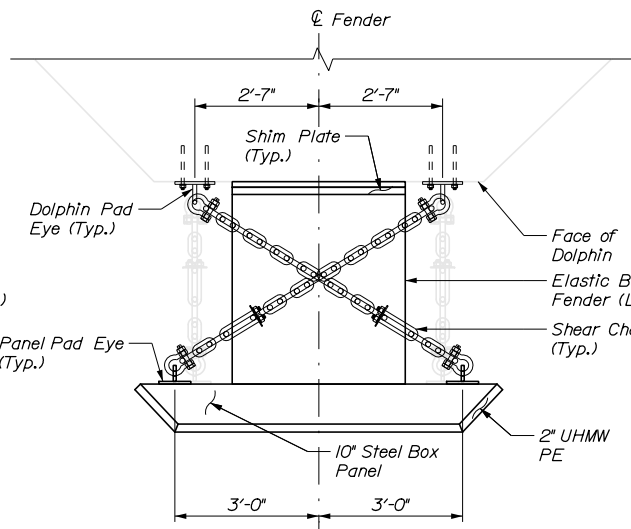
Division:

Filename: ... \012_Fender System 1.dgn



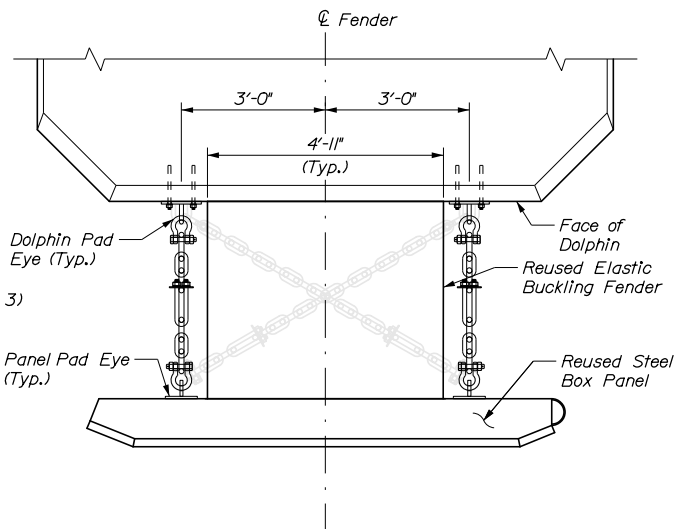
PLAN - TYPE 2 TOP FENDER PANEL

1/2" = 1'-0"



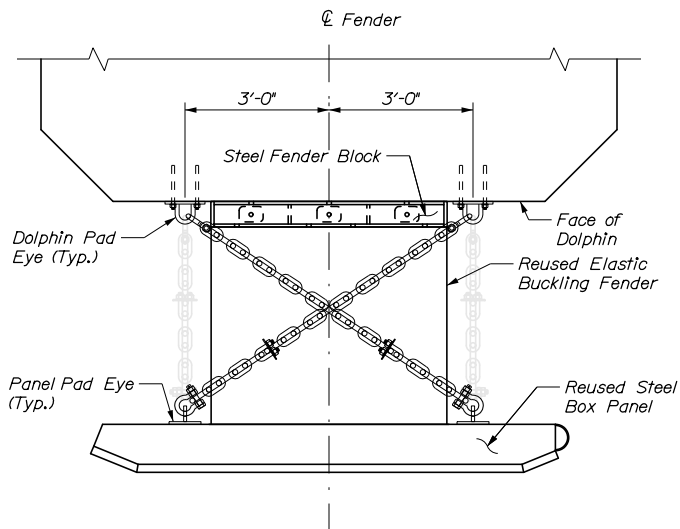
PLAN - TYPE 2 BOTTOM FENDER PANEL

1/2" = 1'-0"



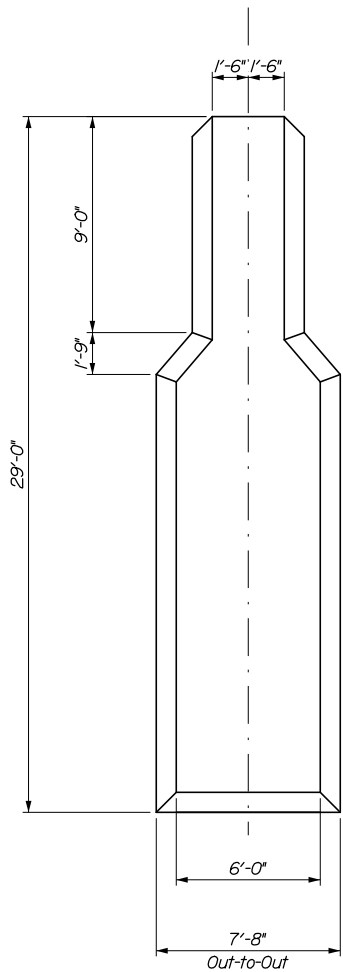
PLAN - REUSED TOP FENDER PANEL

1/2" = 1'-0"



PLAN - REUSED BOTTOM FENDER PANEL

1/2" = 1'-0"



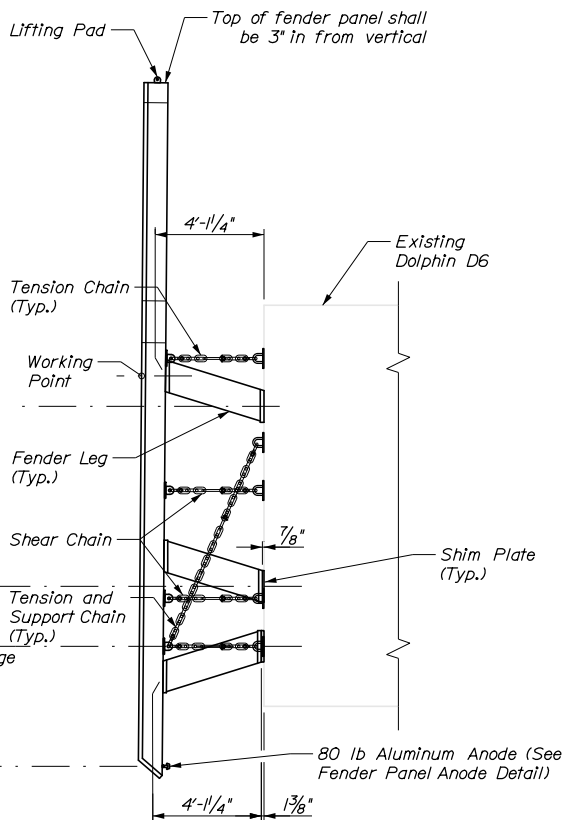
TYPE 2 PANEL

1/4" = 1'-0"

El. 17.50
Anchorage
El. 15.50
Leg
El. 14.00
Anchorage
El. 12.00
Anchorage

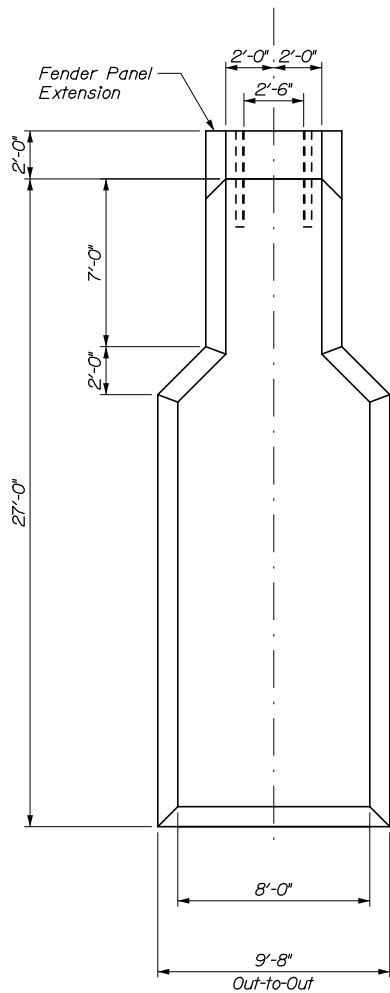
El. 8.00
Leg
El. 7.50
Anchorage
El. 5.50
Leg and Anchorage
El. 4.00
Anchorage

El. 0.50
Anode
El. 0.00
Bottom of Fender Panel



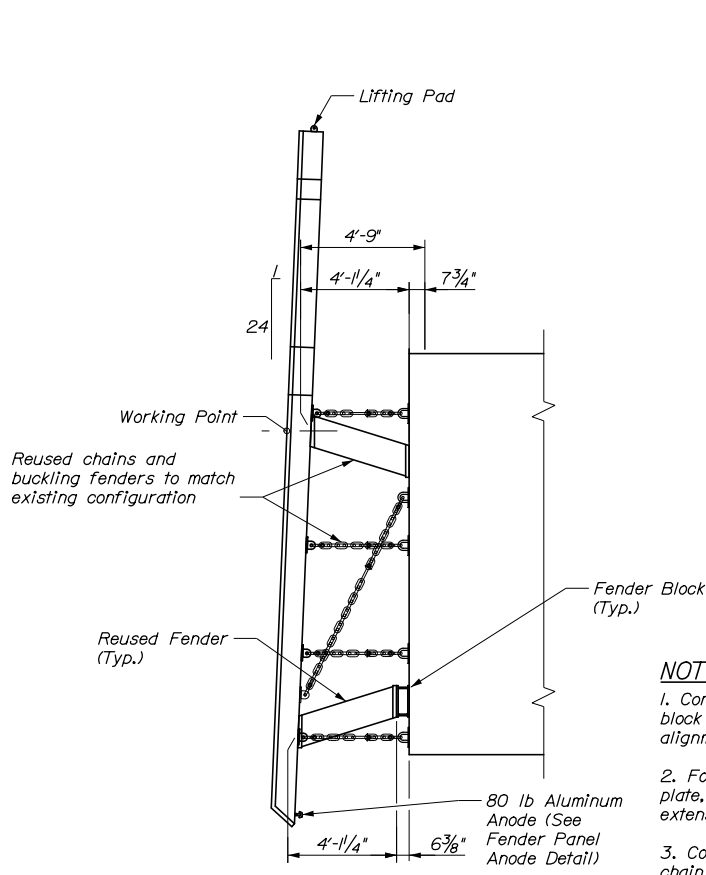
ELEVATION - TYPE 2 PANEL

(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"



REUSED PANEL

1/4" = 1'-0"



ELEVATION - REUSED PANEL

(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"

NOTES:

- Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
- For steel fender block, panel pad eye, spacer plate, dolphin pad eye, panel anode, and panel extension details, see Sheet S08.
- Contractor shall replace broken or bent chain links, dog bones, or chain tensioners in kind.
- Existing chains and connectors shall be reused unless damaged or corroded. The Engineer shall determine if replacement is required and Contractor shall replace in kind.
- Contractor shall remove top of panel obstructions for fender panel extension.
- Elastic buckling fenders (Leg Type 3) shall be Trelleborg Compound B MV 1250x1100, or approved equal.

HNTB

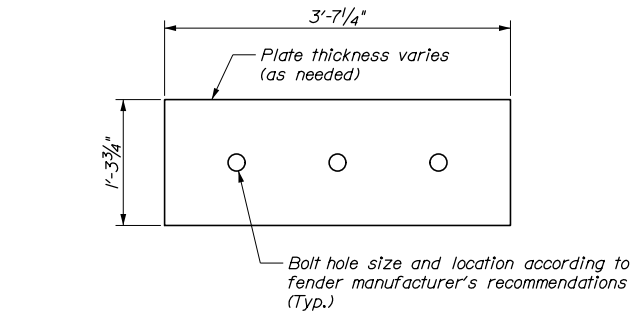
STATE OF MAINE DEPARTMENT OF TRANSPORTATION				WIN 023484.00			
PROJ. MANAGER	CHECKED	DESIGNED	DATE	SIGNATURE	P.E. NUMBER	DATE	
N. Willey	P. Bishop	C. Morin	05/18		10209		
DESIGN-DETAILED	CHECKED-REVIEWED	DESIGNED-DETAILED					
REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4				
ISLESBORO FERRY TERMINAL				DOLPHIN DETAILS FENDER SYSTEM I			
SHEET NUMBER				S07			
				12 OF 18			

Date:5/30/2019

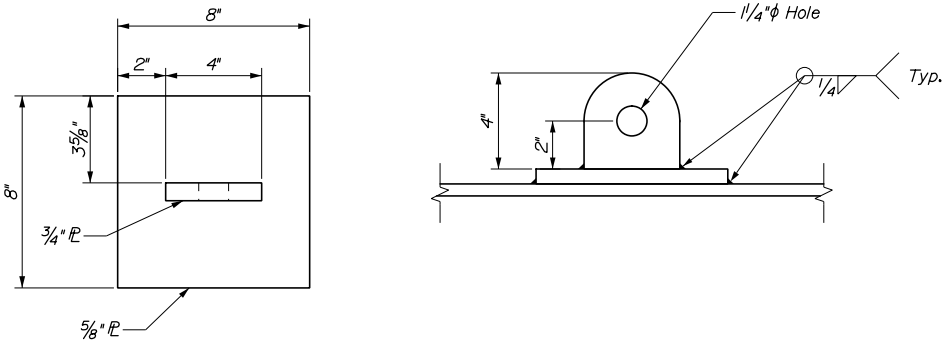
Username:

Division:

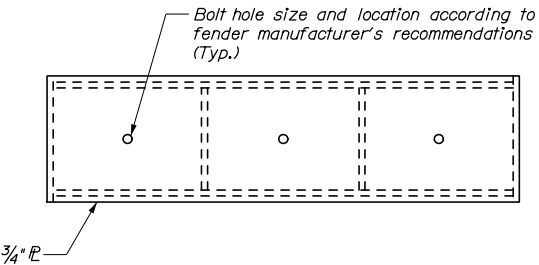
Filename: ... \013_Fender System II.dgn



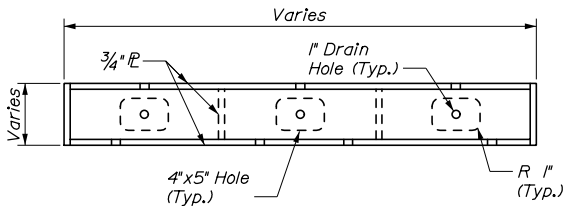
TYPE 2 PANEL SPACER PLATE DETAIL
1" = 1'-0"



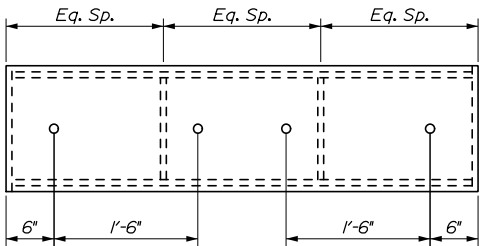
PANEL PAD EYE DETAIL
3" = 1'-0"



FRONT ELEVATION



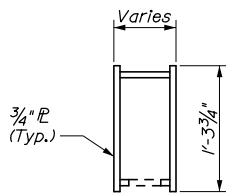
PLAN



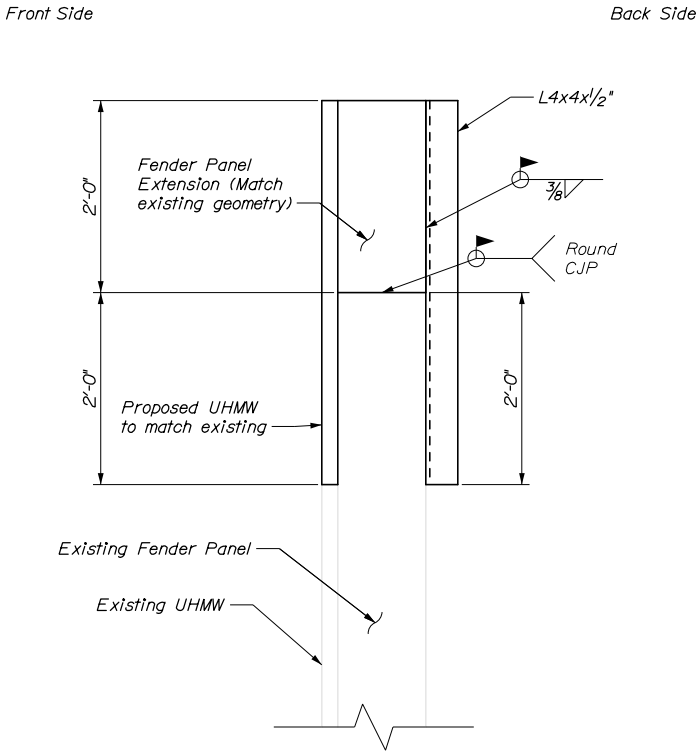
BACK ELEVATION

STEEL FENDER BLOCK

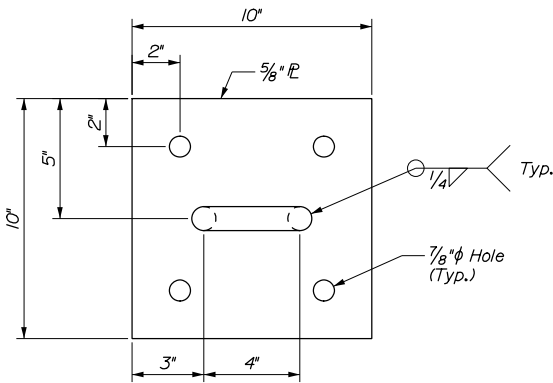
(For use on reused panel attached to D7)
1" = 1'-0"



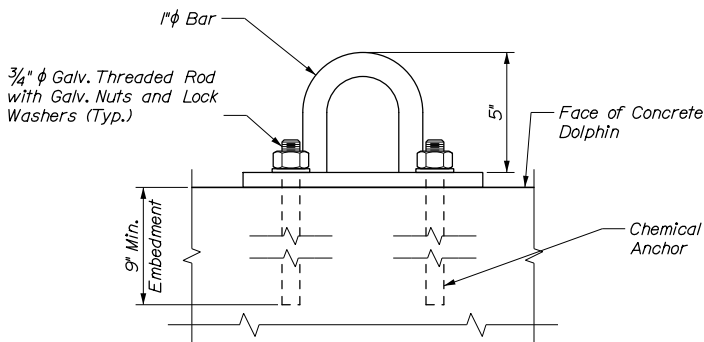
SECTION



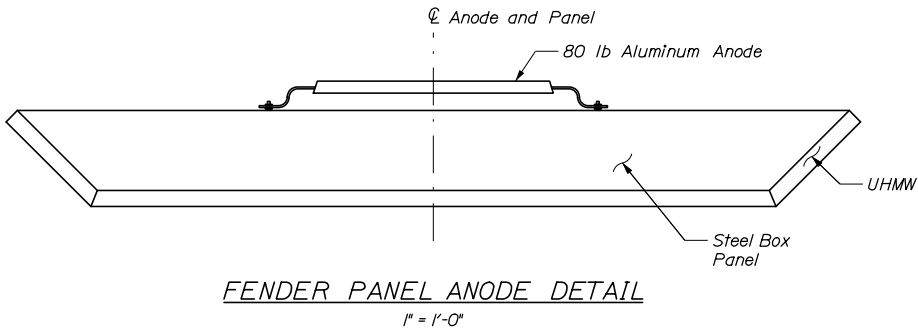
TYPICAL PANEL EXTENSION DETAIL
1" = 1'-0"



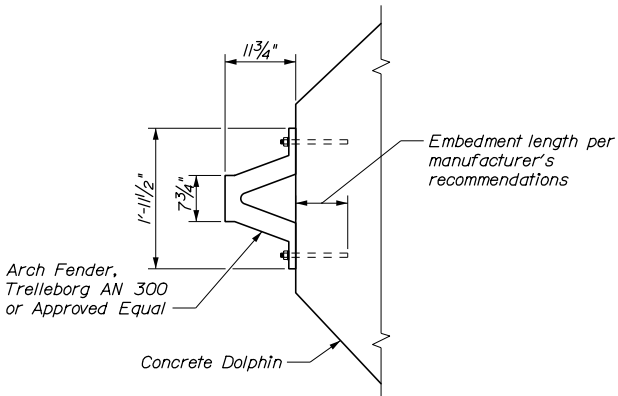
DOLPHIN PAD EYE DETAIL
3" = 1'-0"



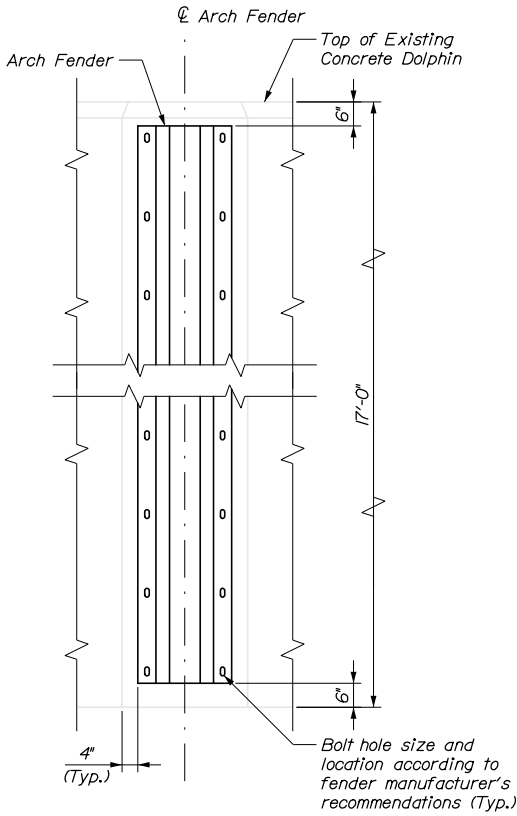
DOLPHIN PAD EYE DETAIL
3" = 1'-0"



FENDER PANEL ANODE DETAIL
1" = 1'-0"



ARCH FENDER PLAN AT DOLPHIN D7
3/4" = 1'-0"

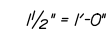
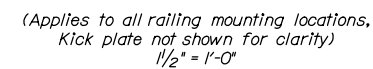
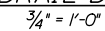


ELEVATION - ARCH FENDER AT DOLPHIN D7
1/2" = 1'-0"

NOTES:

1. For anode attachment details, see Sheet S04.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		WIN 023484.00	
ISLESBORO FERRY TERMINAL		DOLPHIN REPAIRS FENDER SYSTEM II	
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED
N. Wiley	C. Morin	C. Morin	C. Morin
DATE	05/18	05/18	10/20
BY	P. Bishop	C. Morin	
SIGNATURE			
P.E. NUMBER	10209		
DATE			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
SHEET NUMBER		S08	
13 OF 18			



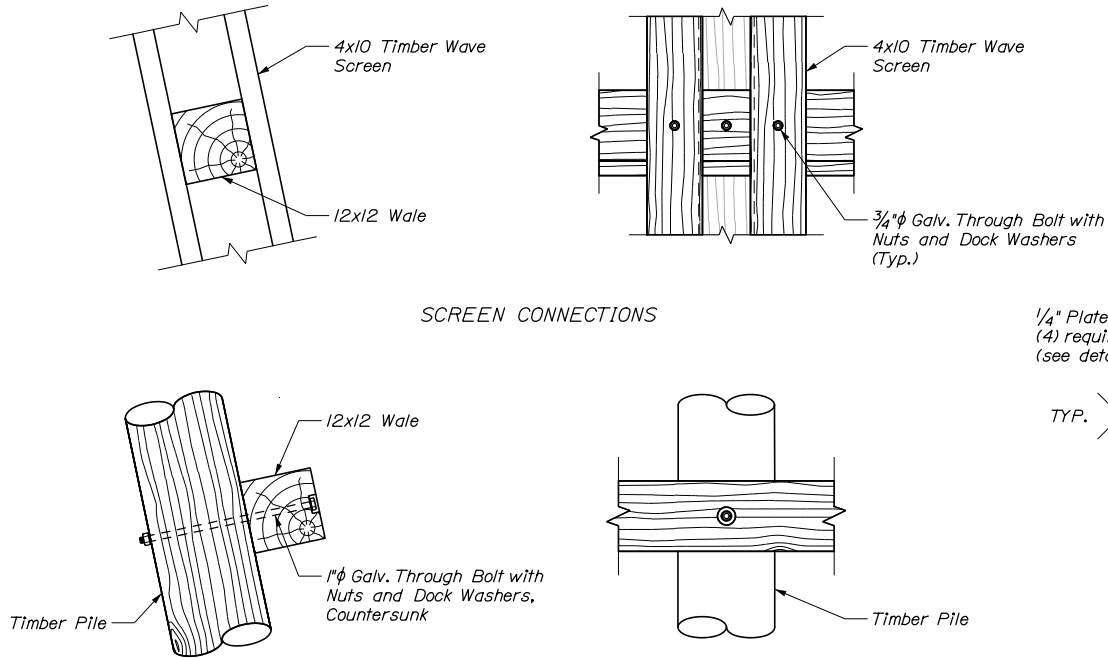
1. Contractor to field verify dimensions of line guards & number of bolts to be removed.

<i>Dolphin</i>	<i>Location</i>	<i>Identification</i>
<i>D1</i>	<i>E</i>	<i>T1 - 3'-6" - 0</i>
<i>D2</i>	<i>E</i>	<i>T1 - 3'-6" - 0</i>
<i>D1</i>	<i>E</i>	<i>T1 - 3'-6" - 0</i>
<i>D2</i>	<i>E</i>	<i>T1 - 3'-6" - 0</i>
<i>D4</i>	<i>E</i>	<i>T2 - 3'-10" - 1</i>
<i>D6</i>	<i>E</i>	<i>T1 - 1'-11" - 0</i>
<i>D7</i>	<i>S</i>	<i>T1 - 4'-0" - 0</i>
<i>D7</i>	<i>W</i>	<i>T2 - 12'-0" - 3</i>
<i>D7</i>	<i>N</i>	<i>T1 - 2'-4" - 0</i>

Railing
 Identification: T2 - L - X

Type Length Inter. Post
 Quantity

1. Where handrail posts or line guard anchorages are removed, fill with Sika Flex 1A self leveling sealant, or approved equal.
2. Contractor shall grind smooth, cap ends of cut handrails, and galvanize exposed steel.
3. For additional details on chock setting, see Sheet S06.

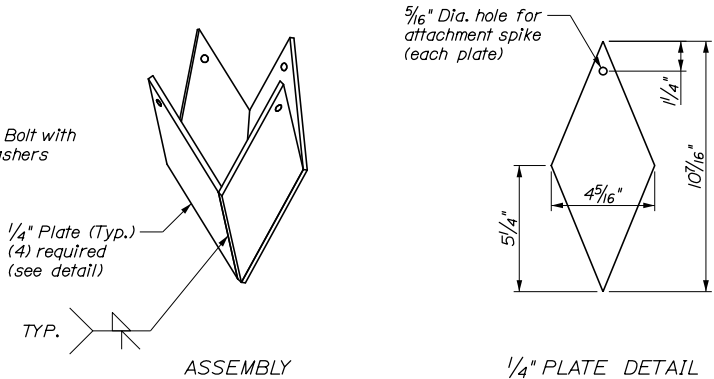


SCREEN CONNECTIONS

WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/4" = 1'-0"



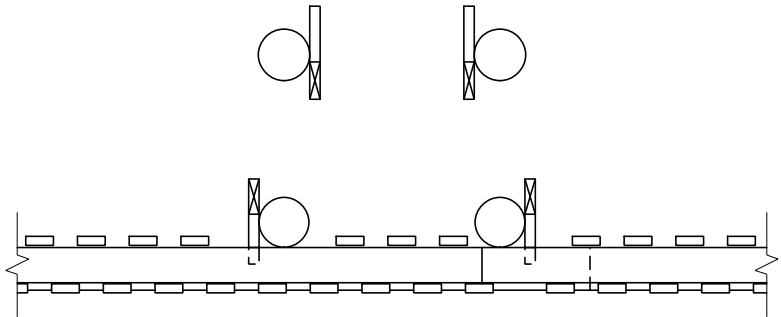
ASSEMBLY

1/4" PLATE DETAIL

Note: Dimensions shown similar to pile point manufactured by Associated Pile & Fitting

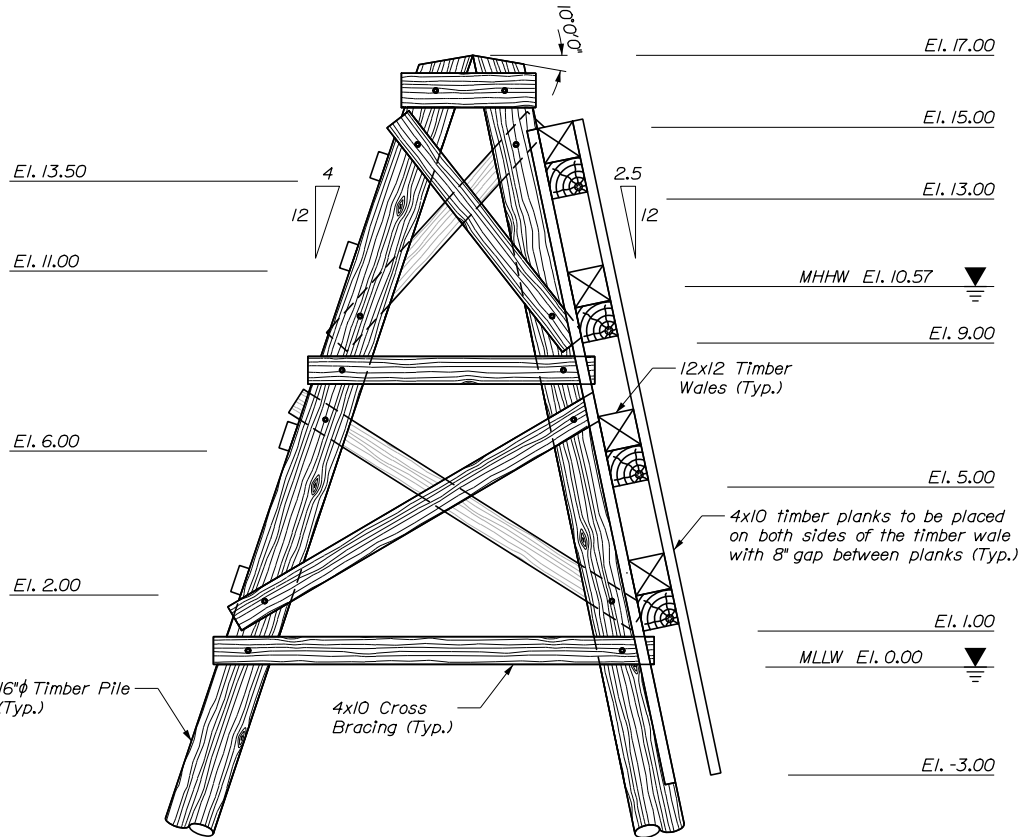
TIMBER PILE POINT DETAIL

3" = 1'-0"



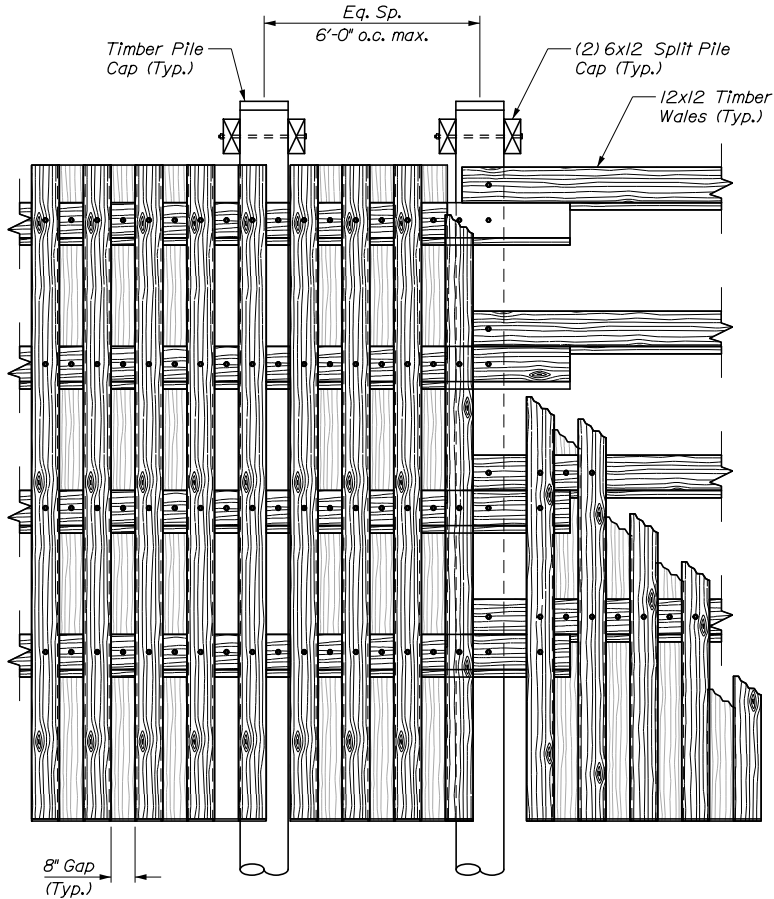
WAVE SCREEN PLAN VIEW

(View shown at El. 11.00)
3/8" = 1'-0"



WAVE SCREEN END ELEVATION

3/8" = 1'-0"



WAVE SCREEN FRONT ELEVATION

3/8" = 1'-0"

NOTES:

- All bolts are 1" dia. galv. with nuts and dock washers, except where noted.
- All timber associated with wave screen shall be 2.5 cca treated.
- All timber vertical and batter piles shall have a driven capacity of 16 tons or a minimum embedment length of 20 feet. See timber pile point detail.
- All timber battered piles for wave screens shall be installed at a batter of 4 horiz. on 12 vert. except for the slip side piles which shall have a batter of 2.5 horiz. on 12 vert.
- Timber shall be southern pine with a stress rating of 1,200 psi. Timber shall be pressure treated in accordance with the specifications.
- All timber construction shall conform to the national design specification for wood construction of the American Forest and Paper Association.
- All connections shall be made with ASTM A325, type I galvanized bolts and 1/16" oversized holes and shall have washers on both ends, unless otherwise noted.
- Field treat all cut and drilled timber surfaces with two coats of preservative containing copper naphthanate solution (min. 2% metallic solution) per specifications.
- Wave screens shall be 6" minimum clear from dolphins.
- Contractor shall take care while installing timber piles to avoid conflict with steel pipe piles.

ISLESBORO FERRY TERMINAL					PROJ. MANAGER		BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
WAVE SCREEN PLAN AND ELEVATION					DESIGN-DETAILED	N. Wiley	P. Bishop	05/19	SIGNATURE 10209 P.E. NUMBER DATE	
					CHECKED-REVIEWED	C. Morin	C. Morin	05/19		
					DESIGN2-DETAILED2					
					DESIGN3-DETAILED3					
					REVISIONS 1					
					REVISIONS 2					
					REVISIONS 3					
					REVISIONS 4					
					FIELD CHANGES					
SHEET NUMBER					WIN 023484.00					
S10										
15 OF 18										

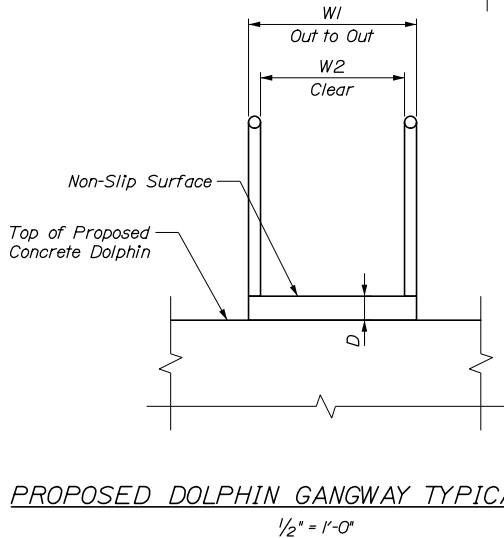
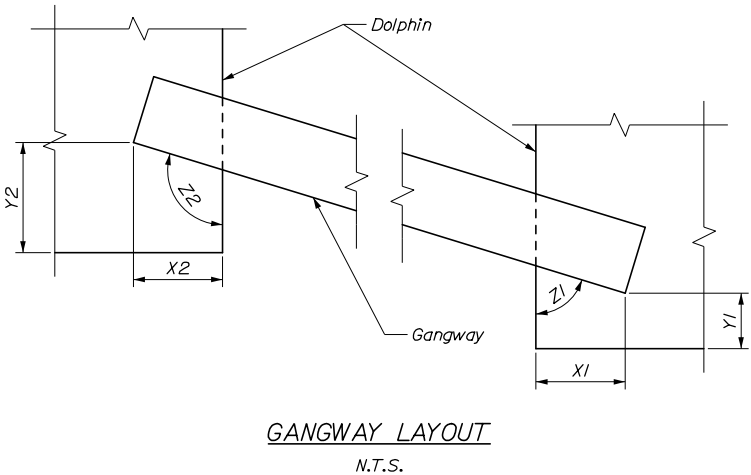
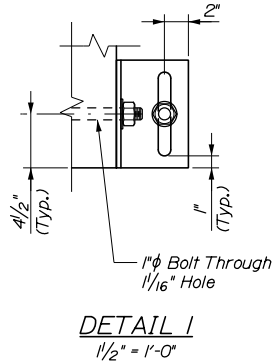
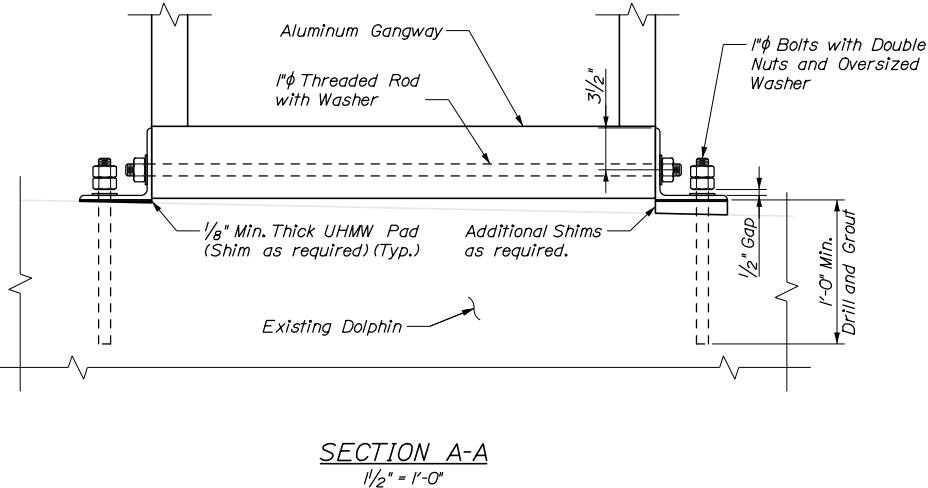
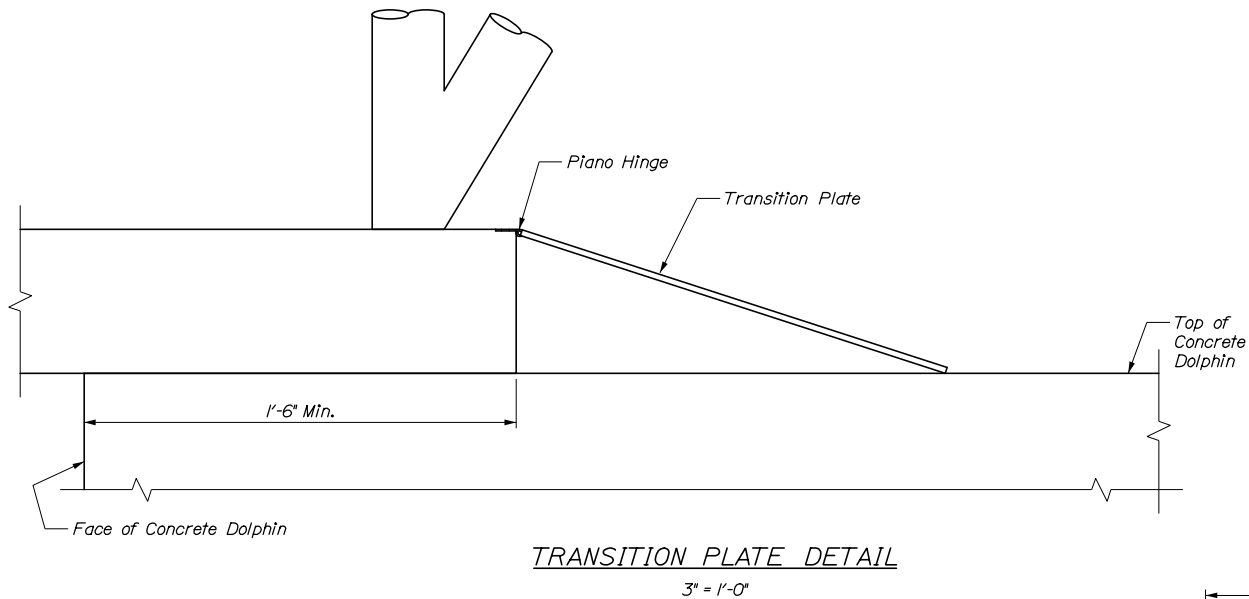
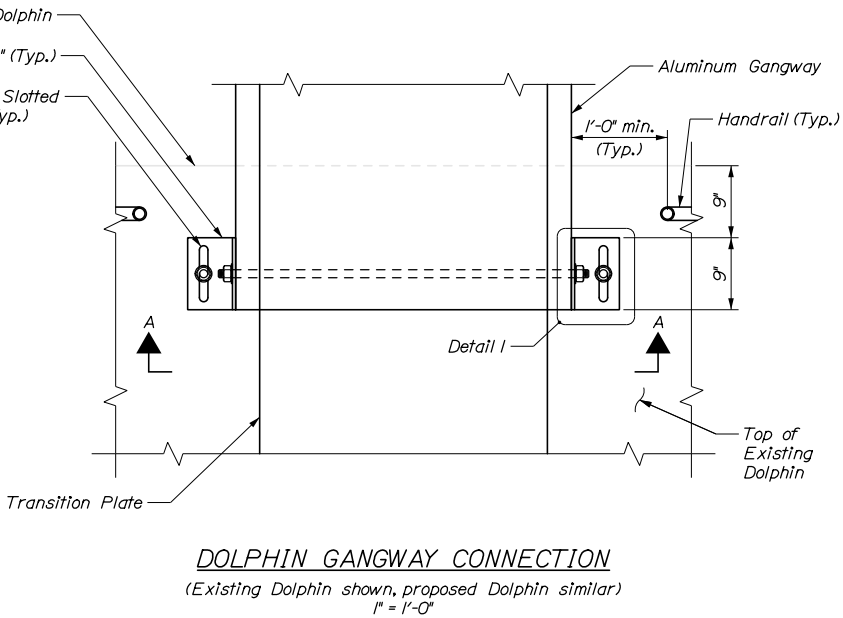
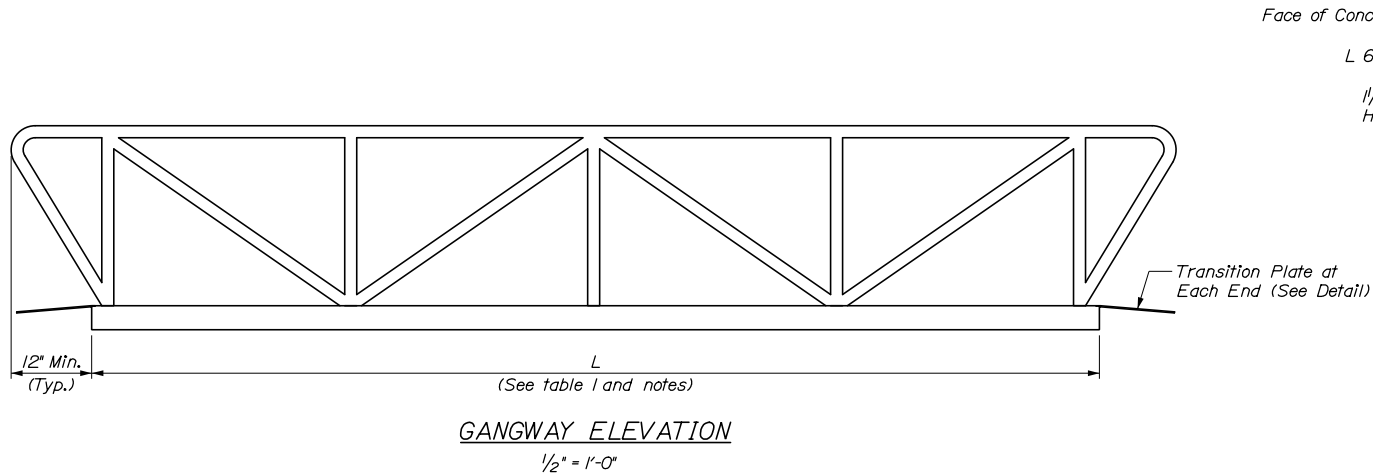


TABLE I
GANGWAY DIMENSIONS

DIMENSIONS												
Gangway I.D.	W1	W2	D	L	Dolphin 1	X1	Y1	Z1	Dolphin 2	X2	Y2	Z2
G1	42"	36"	6"	29'-0"	D1	1'-8"	2'-2"	82'49'	D2	1'-10"	1'-6"	70'31'
G2	42"	36"	6"	40'-0"	D2	1'-6"	1'-9"	78'54'	D3	1'-6"	0'-11"	90'0"
G3	42"	36"	6"	42'-0"	D3	1'-9"	0'-10"	90'0"	D4	1'-10"	3'-5"	90'16'
G4	42"	36"	6"	42'-0"	D7	1'-10"	2'-3"	77'02'	D5	1'-11"	1'-11"	69'42'
G5	42"	36"	6"	40'-0"	D6	2'-6"	1'-9"	83'25'	D7	2'-6"	1'-0"	90'55'

- NOTES:
- See Sheet G02 for design loads.
 - Gangway shall be truss type constructed, fabricated of aluminum grade 6061-T6 marine alloy.
 - Gangway length shall be confirmed or adjusted once dolphins are constructed.
 - Contractor shall field verify dimensions of dolphins and distances between dolphins.
 - Install bolt through gangway prior to installing bolts into existing concrete.
 - Contractor shall provide shims at gangway ends as required.

Date: 3/29/2019

Username:

Division:

Filename: ...\\017_ElectricalPlan.dgn

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET, BATH, ME 04530
TEL (207) 443-5447 FAX (207) 443-5560

WIRING NOTES:

- 1 Two circuits in 1" pvc coated rigid galvanized steel conduit. Navigation light circuit: 2*10, 1*12 gnd. Dolphin light circuit: 2*10, 1*12 gnd.
- 2 One circuit in 1" pvc coated rigid galvanized steel conduits. Navigation light circuit: 2*10, 1*12 gnd.
- 3 Existing conduit and wiring to remain.
- 4 Remove existing conduit and wiring.
- 5 Two circuits in 1" pvc coated flexible conduit. Navigation light circuit: 2*10, 1*12 gnd. Dolphin light circuit: 2*10, 1*12 gnd.
- 6 One circuit in 1" PVC coated flexible conduit. Dolphin light circuit: 2 *10, 1 *12 Ggnd.
- 7 Two circuits in 1" PVC coated flexible conduit. Navigation light circuit: 2 *10, 1 *12 gnd. Dolphin Light Circuit: 2 *10, 1 *12 gnd.

NOTES:

1. All conduits shall be PVC coated rigid steel, including conduit bodies and clips.
2. All conduit shall be 1" min. size, hot dipped galvanized with 40 mil bonded PVC coating (black or gray).
3. All wire shall be type THWN/THHN, copper.
4. Provide stainless steel framing channel attached to the vertical side of the dolphin extending above the top of the dolphin for conduit and box support. Do not support from handrails.
5. New junction boxes shall be 16"x16" stainless steel.
6. All electrical work shall conform to NFPA 70.
7. Verify existing electrical conditions to determine proper installation means and methods.
8. Bond all new junction boxes and connectors to the equipment grounding conductor inside the box.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023484.00



Lawrence E. Bishop
SIGNATURE
T916
P.E. NUMBER
3/29/2019
DATE

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	04/18	P. Bishop	04/18
CHECKED-REVIEWED		C. Mott	
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

ISLESBORO
FERRY TERMINAL

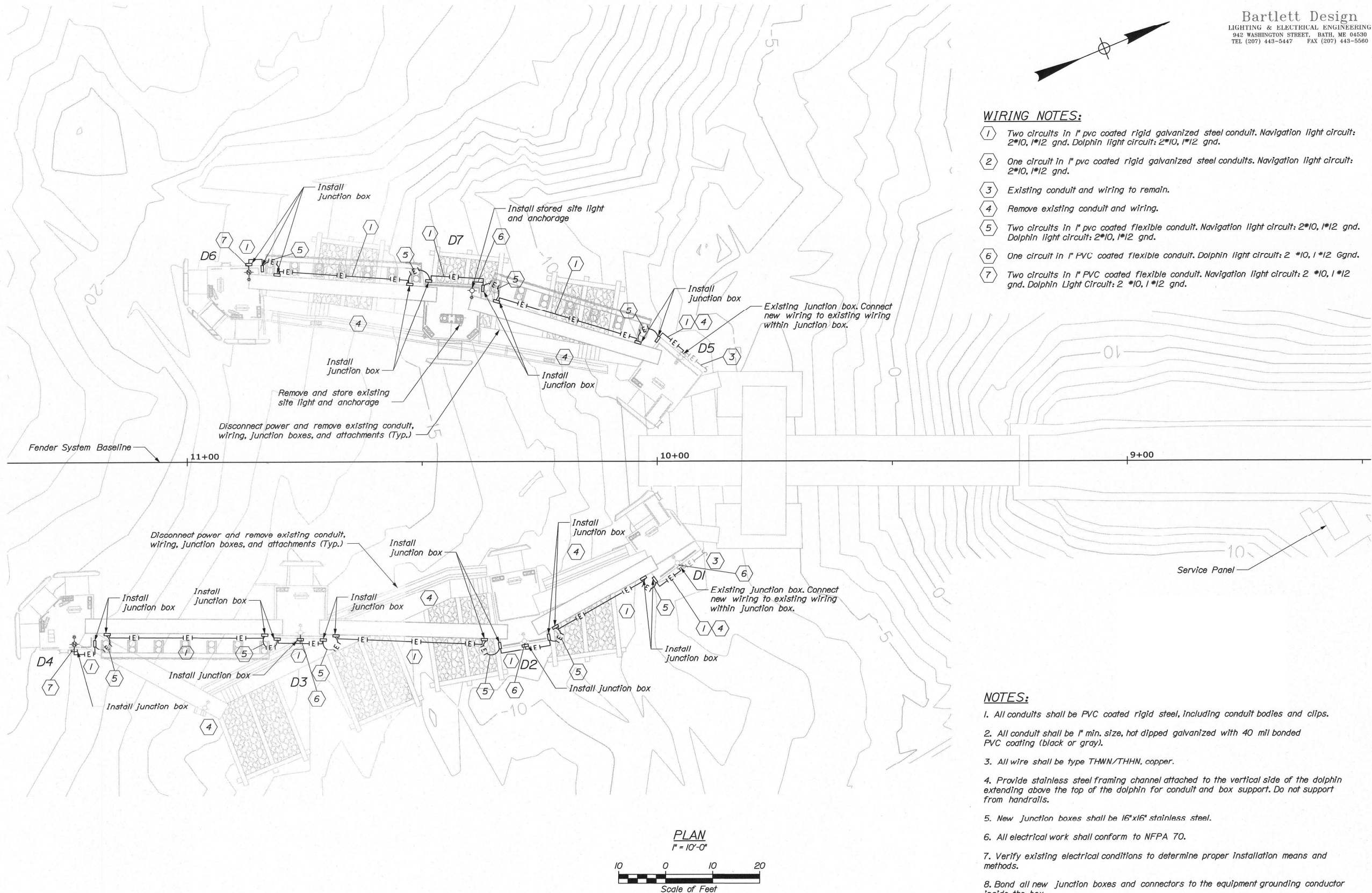
ELECTRICAL PLAN

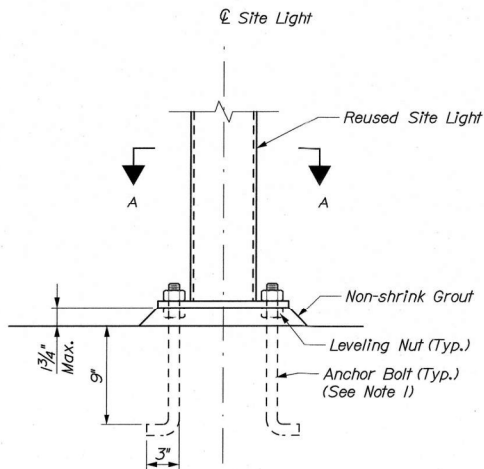
SHEET NUMBER

E01

17 OF 18

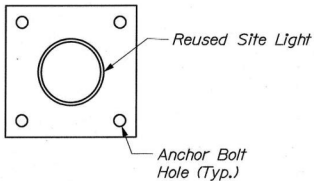
HNTB





SITE LIGHT INSTALLATION DETAIL

1 1/2" = 1'-0"

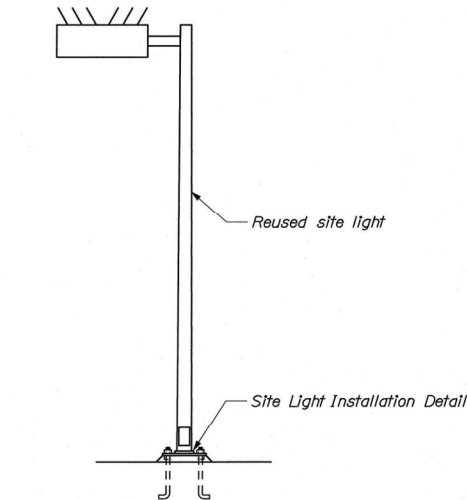


SECTION A-A

1 1/2" = 1'-0"

TABLE 1
NAVIGATION MARKER LENS
REPLACEMENT SUMMARY

Location	* of Light Opening	Lamp Size	Lens
Dolphin D-4	360°	2-100W A-19	Clear
Dolphin D6	360°	2-100W A-19	Clear



REUSED SITE LIGHT DETAIL

N.T.S.

NOTES:

1. Anchor bolt size and pattern shall match the existing condition.
2. Site light wiring connection shall match the existing condition.
3. Where anchorages are removed, bolts and rods shall be cut, ground flush to concrete, and filled with Sikula 1A Flex self-leveling sealant, or approved equal.

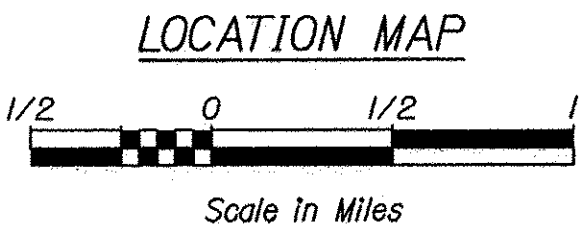
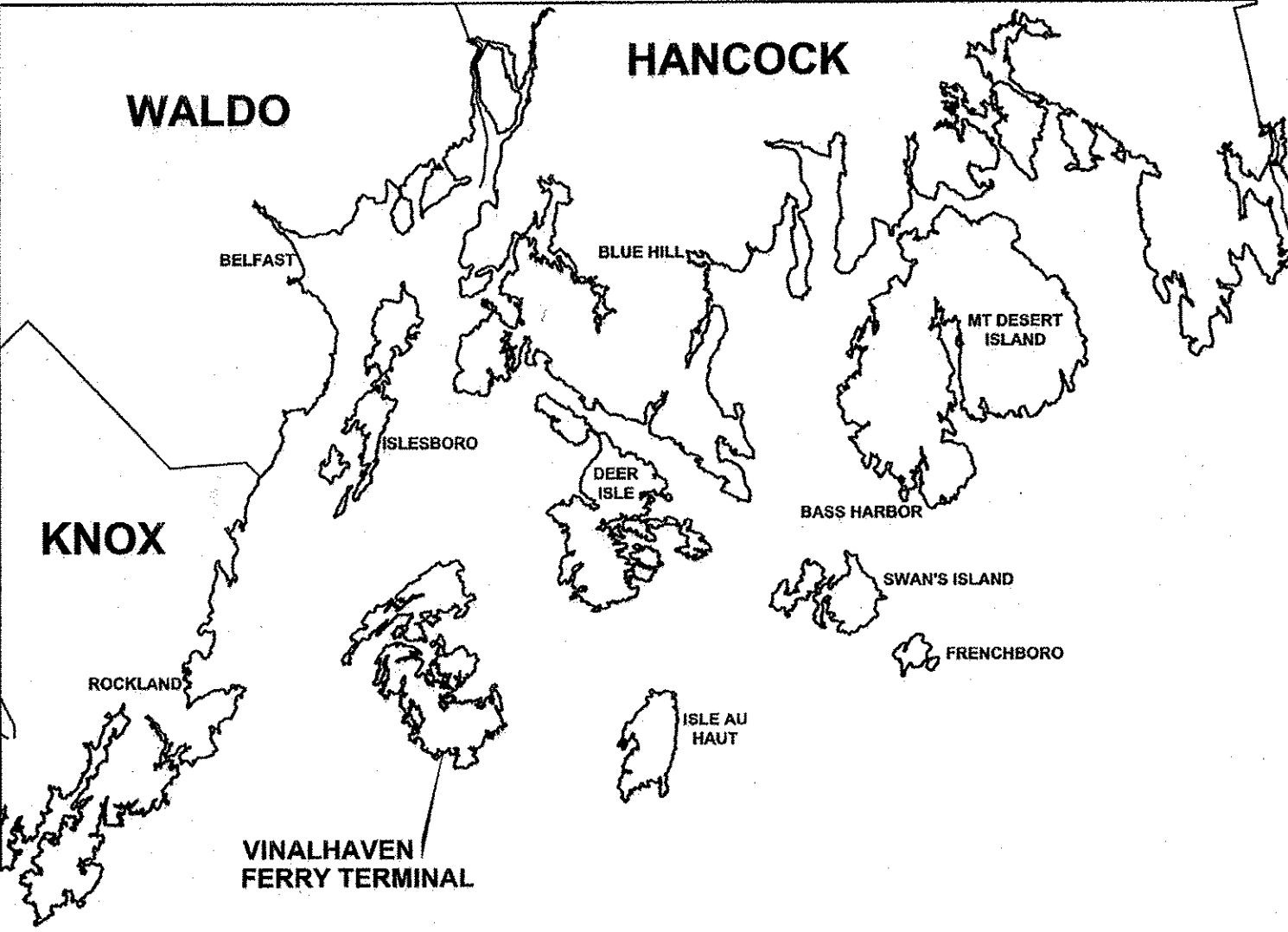
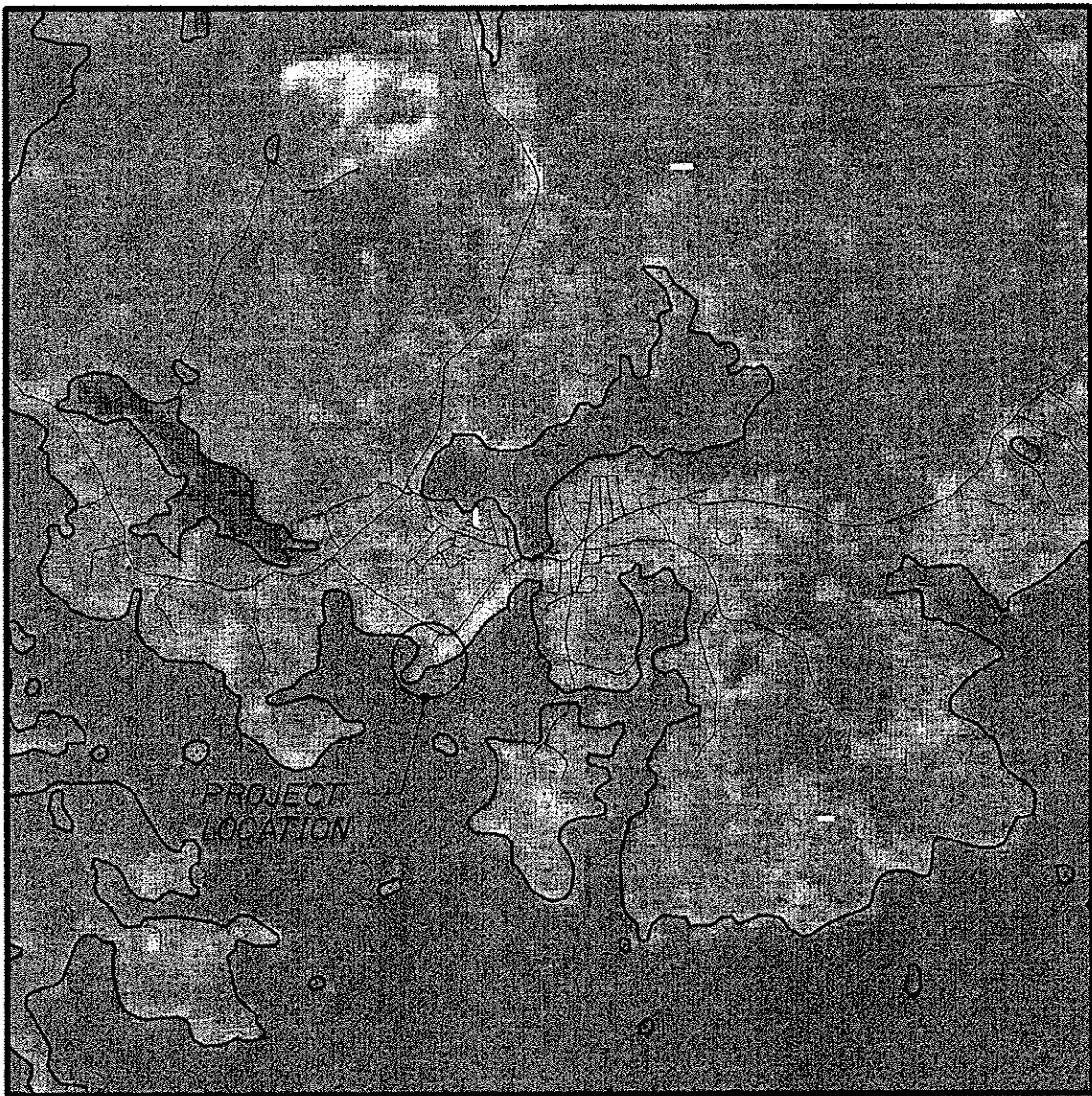
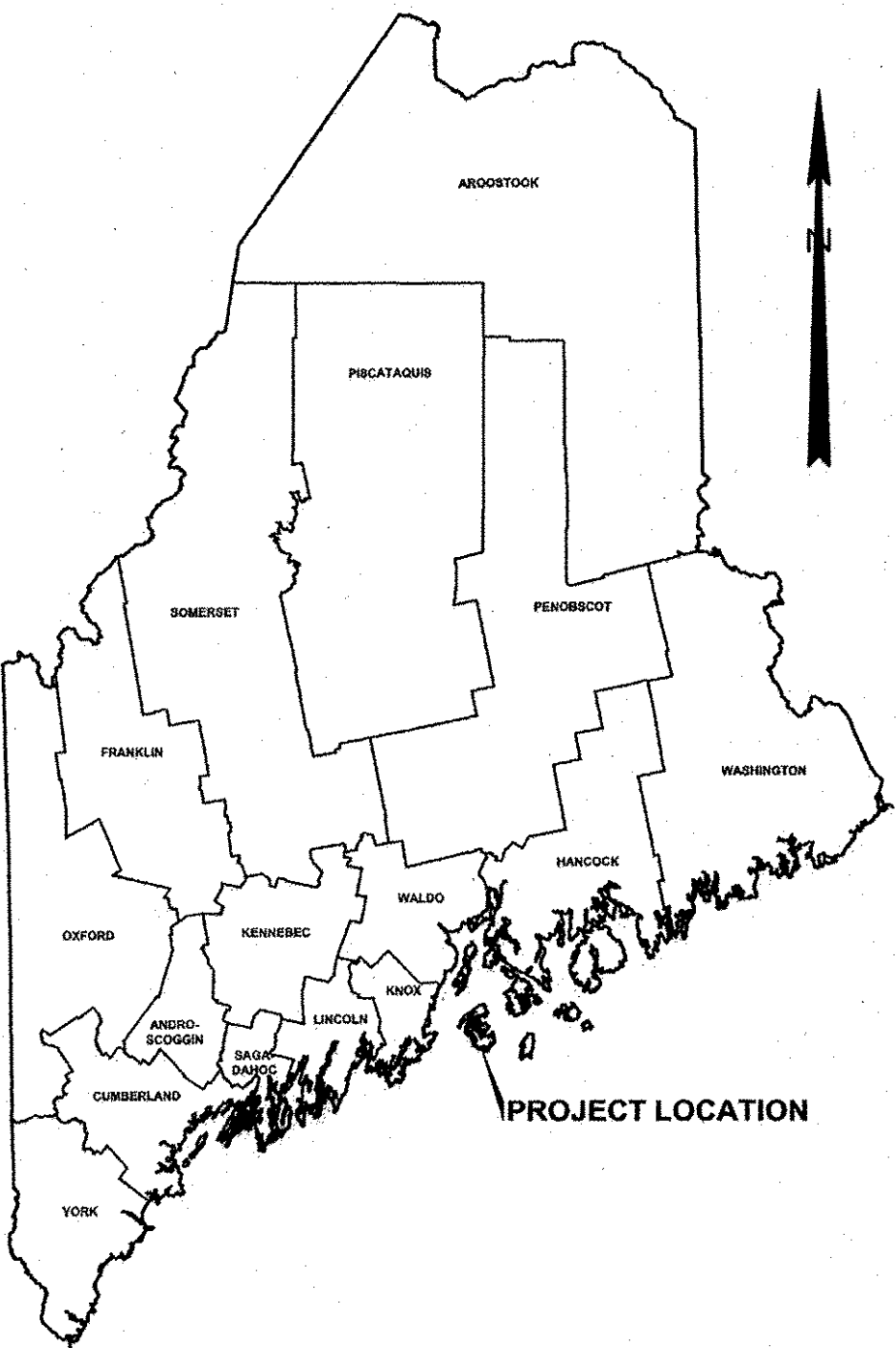
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



TOWN OF VINALHAVEN
KNOX COUNTY

VINALHAVEN FERRY TERMINAL
FENDER SYSTEM MODIFICATIONS

FEDERAL PROJECT NO. 02382300
MAINEDOT WIN: 023823.00



INDEX OF SHEETS

SHEET	NO.	TITLE
GENERAL		
G01	1	TITLE SHEET
G02	2	GENERAL NOTES AND DESIGN CRITERIA
G03	3	EXISTING CONDITIONS
G04	4	BORING LOGS

STRUCTURAL/MARINE PLANS

S01	5	SITE PLAN
S02	6	BERTH PLAN
S03	7	DOLPHIN FOUNDATION PLAN
S04	8	DOLPHIN FOUNDATION DETAILS
S05	9	DOLPHIN PLAN, ELEVATION, AND DETAILS
S06	10	DOLPHIN DETAILS MOORING HARDWARE
S07	11	DOLPHIN DETAILS FENDER SYSTEM
S08	12	DOLPHIN DETAILS MISCELLANEOUS I
S09	13	DOLPHIN DETAILS MISCELLANEOUS II
S10	14	DOLPHIN REPAIR DETAILS
S11	15	WAVE SCREEN PLAN AND ELEVATION
S12	16	GANGWAY PLAN AND ELEVATION

ELECTRICAL PLANS

E01	17	ELECTRICAL PLAN
E02	18	ELECTRICAL DETAILS

THE PROFESSIONAL ENGINEER WHOSE STAMP APPEARS ON THIS COVER SHEET
BEARS RESPONSIBILITY FOR THE FOLLOWING SHEETS WITHIN THIS DRAWING SET:
GENERAL PLANS G01-G03
STRUCTURAL/MARINE PLANS S01-S12

ADDITIONAL WORK APPEARS WITHIN THIS DRAWING SET AND IS THE
RESPONSIBILITY OF THE FOLLOWING ORGANIZATIONS, WHOSE STAMP APPEARS ON
THOSE INDIVIDUAL SHEETS:
GENERAL PLANS G04 GEOTECHNICAL BORING LOGS SCHONEWALD ENGINEERING
ELECTRICAL PLANS E01-E02 ELECTRICAL DESIGN BARTLETT DESIGN, INC.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE
COMMISSIONER: <i>[Signature]</i>		6/13/19
CHIEF ENGINEER: <i>[Signature]</i>		6-13-19

[Signature]
CRAG R. MORIN
P.E. NUMBER 10209
DATE 05/23/19

PROJECT INFORMATION	MULTIMEDIA
PROGRAM	PROJECT MANAGER
DESIGNER	CRAG R. MORIN, P.E.
CONSULTANT	INTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

VINALHAVEN FERRY TERMINAL FENDER SYSTEM MODIFICATIONS	KNOX COUNTY
VINALHAVEN	TITLE SHEET

SHEET NUMBER
G01
1 OF 18



Date:5/30/2019

Username:

Division:

Filename: ...\\02 CAD\\002_GeneralNotes.dgn

GENERAL NOTES

- These notes contain general information and are not complete for construction purposes. Contractor shall verify information given here with specifications and other drawings and bring any conflicts to the Engineer's attention before beginning work.
- All geotechnical and electrical notes may be found on Sheets G04 and E01, respectively.
- All dimensions and details shall be verified by the Contractor prior to construction.
- Contractor shall provide and maintain horizontal and vertical controls in the Maine state plane coordinate system.
- The MaineDOT field office shall be placed on terminal property near the crew's quarters at a location approved/determined by the Resident. The Contractor shall make accommodations off-site for their field office, lay down area, restroom facilities, etc.
- During the duration of the project, the Contractor is responsible for the proper disposal of any cribwork planks encountered during the project that can not be reused on site. The Contractor is responsible to have the unused planks disposed of as demolition waste at a landfill approved to accept demolition waste/debris. If the Contractor encounters any other potential demolition debris and is not sure of how to dispose, the Contractor shall notify the Resident. The Resident shall contact the Senior Geologist in the Maine Department of Transportation Environmental Office (MaineDOT-ENV) at 207-624-3100 for clarification.

SPECIFICATIONS AND CODES

- Project specifications titled, "Special Provisions For: Vinalhaven & Islesboro Ferry Terminals Fender System Modifications", dated May 24, 2019.
- State of Maine, Department of Transportation, Standard Specifications, November 2014. Including all supplemental specifications and special provisions.
- Codes and other references
 - Unified Facilities Criteria Manuals:
 - UFC 4-150-06 Military Harbors and Coastal Facilities, with Change 1
 - UFC 4-150-07 Maintenance and Operation: Maintenance of Waterfront Facilities, with Change 1
 - UFC 4-150-08 Inspection of Mooring Hardware
 - UFC 4-151-10 General Criteria for Waterfront Construction, with Change 1
 - UFC 4-152-01 Design: Piers and Wharves
 - UFC 4-159-03 Design: Moorings, with Change 2
 - US Army Corps of Engineers: Coastal Engineering Manual, current edition
 - AASHTO LRFD specifications, 8th edition, 2017 with Interims
 - AWS, D1.1, "Structural Welding Code Steel", current edition
 - AWS, D1.2, "Structural Welding Code Aluminum", current edition

SURVEY CONTROL

- Vertical control for marine structures is in reference to MLLW (Mean Lower Low Water). To convert to National Geodetic Vertical Datum (NGVD), use the following formula:
EI. (NGVD) = EI. (MLLW) - 9.28 ft

- Horizontal control is the Maine state plane coordinate system (east zone), NAD 27.

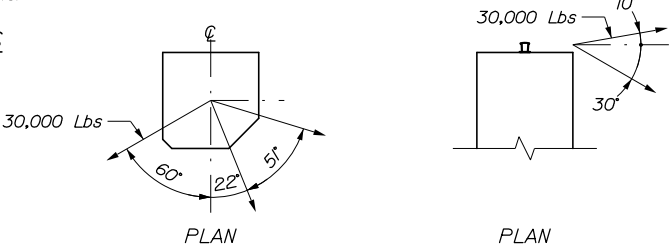
BERTHING LOADS

Dolphin	Berthing Velocity		App. Angle	Energy to Fender	Minimum Fender Design Energy	Max. Reaction on Dolphin*
	Ship Velocity (Vs)	⊥ to Fender				
Turning Dolphins: Normal	2.0 Knots	1.41 Knots	45°	112,000 Ft Lbs	380,000 Ft Lbs	244,000 Lb
Turning Dolphins: Extreme	3.0 Knots	2.60 Knots	60°	378,000 Ft Lbs	380,000 Ft Lbs	244,000 Lb

* Includes 1.4 load factor

MOORING LOADS

Dolphin D7 and D8
Mooring line pull: Single line in each direction.



DOLPHIN/FENDER DESIGN LOADS

Design Vessel: MV Margaret Chase Smith*
Length = 166'-6"
Beam = 40'-0"
Max. Displacement = 633 long tons

* Vessel is the largest in the Department's fleet and envelopes all other vessels in the fleet, as well as the new ferry currently in design (LOA = 154 ft).

Current Vessel: MV Captain Charles Philbrook
Length = 130'-0"
Beam = 36'-0"
Max. Displacement = 500 long tons (est.)

New Vessel: MV Captain E. Frank Thompson and New Ferry (TBD)
Length = 154'-0"
Beam = 38'-0"
Max. Displacement = 600 long tons (est.)

FENDER NOTES

- All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.
- Contractor's steel manufacturer shall design the fender panels for the indicated loads.
- Embedded anchors for chains shall be set by chemical/adhesive material with 9 inch minimum edge distance and a minimum embedment of 12 times the diameter of the anchor. Strength of existing concrete is 3,000 psi.
- Anchors shall be set by template.

STEEL PIPE PILES

- Steel pipe piles shall conform to ASTM A252, Grade 3, Fy = 45 ksi minimum. Per standard specification 711.01, Concrete fill shall be MaineDOT class "A".
- Piles shall be coated with fusion bonded epoxy in accordance with the specifications.
- Pile splices shall not be allowed without prior approval of the Engineer of record.
- Any portion of pile cracked, deformed, or otherwise damaged by pile driving shall be replaced.
- Pipe piles were designed using AASHTO LRFD specifications and shall be installed as follows:
 - Piles shall be driven to a minimum nominal resistance: $\phi R_n = 386$ kips
 - The maximum factored axial pile load: $R_u = 356$ kips
- Piles shall not be out of position shown by more than 2" longitudinally along the pile cap, and 2" transversely across the width of the pile cap.
- The distance from the side of any pile to the nearest edge of concrete shall not be less than 9".
- Piles shall be 16 ϕ , 5/8" wall steel pipe piles with concrete fill. Piles shall be fabricated of seamless or straight-seamed material. Spiral welded pipe pile is not permitted.

DEMOLITION NOTES

- Demolition shall be conducted to prevent debris from falling into the ocean. To the maximum extent practicable, all construction debris, including any liquids or slurries that are produced as part of the demolition, shall be captured and disposed of properly. The Contractor shall comply with applicable permit conditions and environmental regulations listed in the specifications. Work shall include removal of any construction debris from the river and installation and maintenance of appropriate turbidity controls during demolition and construction such that no turbidity escapes the immediate work area. Underwater inspections may be conducted by the Owner's representative to ensure all demolition and construction debris is removed from the ocean.

ENVIRONMENTAL CONDITIONS

- Wind:
 - Transverse 50 plf
 - Longitudinal 12 plf
 - Wind on Live Load: Transverse 100 plf
 - Wind on Structure: 40 psf
 - Thermal: Temp. Range for Concrete Structure = 80°F
- Railings:
 - Aluminum Pedestrian Vertical 50 plf
 - Horizontal 50 plf (acting simultaneously)
- Tidal ranges (elevations in feet):

Vinalhaven	Tidal Datums				
	NGVD29	MSL	MLW	MLLW	STND
Top of Dolphin*	7.22	11.17	16.11	16.50	20.12
Highest Observed Tide	4.89	8.84	13.78	14.17	17.79
MHHW	1.29	5.24	10.18	10.57	14.19
MHW	0.89	4.84	9.78	10.17	13.79
NGVD29**	0.00	3.95	8.89	9.28	12.90
MSL	-3.95	0.00	4.94	5.33	8.95
MLW	-8.89	-4.94	0.00	0.39	4.01
MLLW	-9.28	-5.33	-0.39	0.00	3.62
Lowest Observed Tide	-11.89	-7.94	-3.00	-2.61	1.01
STND (Station Datum)	-12.90	-8.95	-4.01	-3.62	0.00

* Along top edge of dolphin at corner nearest pen.
** NGVD29 conversion taken from archive project drawings.

Station ID: 8415490, Rockland, ME
Tidal Epoch: 1983-2001

LEGEND:

- Baseline
- Plate
- Centerline
- ⊕-XX-XX-XX Washboring
- ☼ Flood Light
- Ⓝ Navigation Marker Light
- ⊙ Site Light - Existing
- ⊙☼ Site Light - Proposed
- ▬ Curbing
- ⌀ Diameter



Double Bitt



Chock



Ladder

ABBREVIATIONS:

- CY Cubic Yard
- EA Each
- EL Elevation In Feet
- HSS Hollow Structural Sections
- ID Inside Diameter
- K (KIP) 1000 Pounds
- LBS Pounds
- LF Linear Feet
- MAX Maximum
- MIN. Minimum
- NA Not Applicable
- NTS Not To Scale
- OC On Center
- PSF Pounds Per Square Foot
- R Radius
- REF Reference
- SCHD. Schedule
- SF Square Feet
- TYP. Typical
- UON Unless Otherwise Noted
- USACE United States Army Corps of Engineers

STRUCTURAL STEEL AND MISCELLANEOUS STEEL FABRICATIONS

- Steel shapes and plates shall be ASTM A709, Grade 36 typical, ASTM A709 Grade 50 where noted.
- Steel pipes shall be ASTM A53, Grade B.
- Steel tubing shall be ASTM A500, Grade B.
- All bolts and nuts shall conform to ASTM A325 and be hot-dip galvanized in accordance with ASTM A153. Set anchor bolts by template only.
- All miscellaneous steel, including all fasteners, chains, shackles, and u-bolts unless noted otherwise, shall be hot-dip galvanized. Galvanize items after fabrication. Stress relieve bends before galvanizing. Galvanizing damaged accidentally or due to field welding shall be restored with a field applied galvanizing compound.
- Welding Electrodes: E70XX, Low Hydrogen

- All welding shall be in accordance with the requirements of the structural welding code, D1.1 and D3.6, of the American Welding Association (AWS).

ALUMINUM ANODES

- Cathodic protection for steel pipe piles and fender panels shall be 80 lb aluminum alloy. Dimensions shall conform to the general configuration shown on the Plans.

ALUMINUM GANGWAYS

- The design and construction of the aluminum gangways shall be in accordance with the special provisions for the item "Aluminum Gangway". The Contractor's manufacturer shall design the gangways in accordance with the plans, specifications, and loads shown below.

- Vertical Loads:
 - Uniform Live Load 85 psf
 - Additional Dead Load 50 plf
- Horizontal Loads:
 - Wind - Transverse 50 plf
 - Wind - Longitudinal 12 plf

- The minimum support seat width, measured perpendicular to the edge of the concrete support shall be 18 inches.

- Handrail shall be designed for a concentrated horizontal load of 200 pounds acting at the top of the railing.

CONCRETE

- Concrete basic design stresses shall be:
 - Fill for Pipe Piles: Class "A"
 - Fill for Double Bitts: Class "A"
 - Cast-in-place (uon): Class "LP"
- Concrete shall contain 5.0 gal/cy of calcium corrosion inhibitor admixture.
- Clearances for reinforcement shall be 3" unless otherwise noted.
- Chamfer all concrete edges 1" @ 45° unless otherwise noted.
- All reinforcing shall be fully supported on non-metallic approved chairs. Reinforcing shall not be supported on timber blocks, bricks, concrete blocks, miscellaneous rebar, etc.
- Construction joints shall be made only as shown unless approved otherwise.
- All existing concrete surfaces to receive concrete shall be roughened to a minimum amplitude of 1/4" and coated with a product listed on the MaineDOT pre-qualified list of concrete bonding agents.
- Wet curing of concrete is to begin within 30 minutes after concrete finishing, or as soon as possible without damaging finished surface.
- All formwork for concrete shall be left in place and concrete surfaces shall be covered and kept moist for a period of not less than seven (7) full days after concrete placements.
- Contractor shall submit detailed reinforcing drawings including bar and bending schedules to the Engineer for review and approval prior to delivery of any reinforcing steel.

- All ferrous metal handling/lifting devices and existing embedded metals/anchors no longer in use shall be recessed or removed to a depth of one inch below the surface of the concrete and patched with an approved polymer-modified cementitious mortar. Devices located in areas to be totally encased in cast-in-place concrete shall be galvanized. Devices located in areas not to be encased in cast-in-place concrete shall be stainless steel, unless otherwise noted.

STEEL REINFORCEMENT

- Reinforcing Steel: ASTM A775, unless noted otherwise.

- Rock Anchors: ASTM A722, Grade 150, deformed, with triple corrosion protection.

- Splicing of reinforcing steel is permitted. Stagger splices one splice length minimum. No more than 50 percent of the reinforcing steel shall be spliced at any location. Provide a minimum splice length of 50 bar diameters, unless noted otherwise on the drawings.

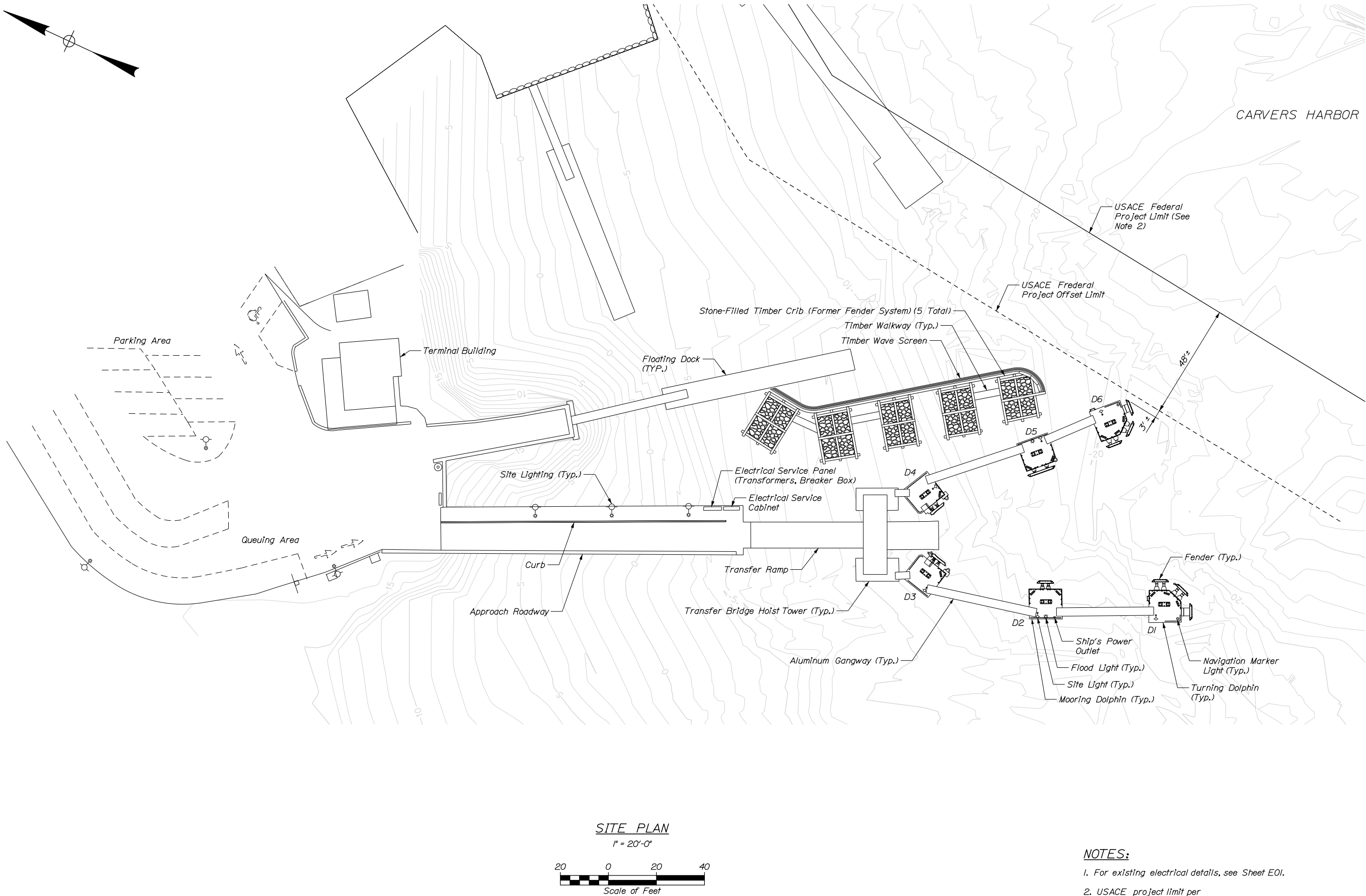
STATE OF MAINE DEPARTMENT OF TRANSPORTATION					WIN 023823.00
VINALHAVEN FERRY TERMINAL	PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER
	DESIGN-DETAILED	P. Bishop	05/18	10209	DATE
	CHECKED-REVIEWED	N. Willey C. Morin	05/18		
	DESIGN-DETAILED				
	REVISIONS 1				
	REVISIONS 2				
	REVISIONS 3				
	REVISIONS 4				
	FIELD CHANGES				
	GENERAL NOTES AND DESIGN CRITERIA				
SHEET NUMBER					
G02					
2 OF 18					

Date:5/30/2019

Username:

Division:

Filename: ... \003_Existing Conditions.dgn



NOTES:
 1. For existing electrical details, see Sheet E01.
 2. USACE project limit per <https://www.nae.usace.army.mil/Missions/Navigation/Maine-Projects/>. Offset limit dimension determined by 3x water depth (MLLW).



VINALHAVEN FERRY TERMINAL				DATE		BY		PROJ. MANAGER		STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
EXISTING CONDITIONS				05\19		P. Bishop		DESIGN-DETAILED		SIGNATURE	
				05\19		C. Morin		CHECKED-REVIEWED		10209	
								DESIGN2-DETAILED2		P.E. NUMBER	
								DESIGN3-DETAILED3		DATE	
								REVISIONS 1			
								REVISIONS 2			
								REVISIONS 3			
								REVISIONS 4			
								FIELD CHANGES			
SHEET NUMBER				WIN 023823.00							
G03											
3 OF 18											

Date: 4/4/2019

Username:

Division:

Filename: ...\\02 CAD\\004_Boring Logs.dgn

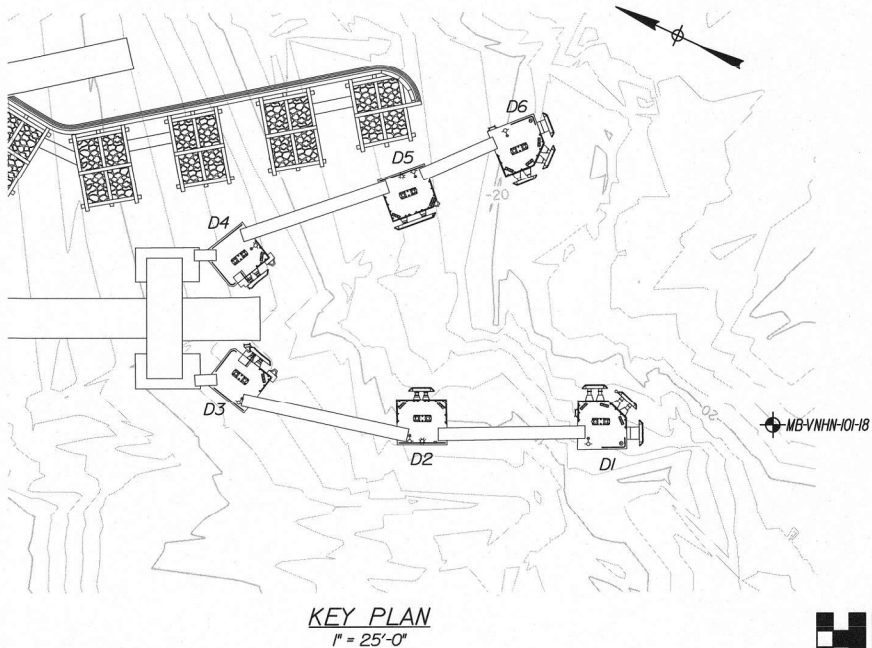
Schonewald Engineering Associates, Inc.		PROJECT: Fender System Modifications Maine State Ferry Terminal Vinalhaven, Maine		Boring No.: MB-VNHN-101-18 WIN: 23823.00	
Driver: New England Boring Contractors		Elevation (ft.): -21.3 ft. (mudline)		Core Barrel: NQ2 (wireline)	
Operator: Enos / Share		Datum: MLLW		Sampler: standard split-spoon	
Logged By: Schonewald		Rig Type: Mobile Drill B-53		Hammer Bl./Fall: 140 lbs/ 30 inches	
Date Start/Finish: 8/7/18; 0830-1430		Drilling Method: cased wash boring		Hammer Type: auto hammer	
Boring Location: per plan (B1A); see remarks		Casing ID/OD: HW to 14.7 ft / HW to 15.2 ft		Hammer Efficiency: 0.98%	
Auger ID/OD: n/a		Water Level: n/a		Borehole Advancement Method: Standard stem super/MSA/station stem super/PC/crawler core	
In-Situ Sampling and Testing: D = Split Spoon Sample MS = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MS = Unconsolidated Thin Wall Tube Sample attempt V = In-situ Vane Shear Test MS = Unconsolidated In-situ Vane Shear Test attempt		Additional Definitions: N = uncorrected N value Nq = N value corrected for hammer efficiency N ₆₀ = corrected N value S _u = in-situ Undrained Shear Strength (psi) R = Rock Core Sample RQD = Rock Quality Designation (%)		Borehole Advancement Method: MSA = weight of 140lb hammer MS = weight of 140lb hammer LL = Liquid Limit / PL = Plastic Limit / PI = Plasticity Index WC = water content, percent #200 = percent fines from grain size analysis UC = U _c = peak compressive strength of rock	
Sample Information		Visual Description and Remarks		Lab. Testing Results	
Depth (ft.)	Sample No.	Top (ft.)	Bottom (ft.)	Remarks	Lab. Testing Results
10	24/20	0.0 - 2.0	WOR/24"	10: Dark grey, ORGANIC SILT, trace to little fine sand with shells, strong organic odor.	
20	24/24	5.0 - 7.0	WOR/24"	Dark grey, fine to medium SANDY ORGANIC SILT, changing at 5.8 ft to: 20: Dark grey, Silty CLAY.	
15	R1	60/60	15.2 - 20.2	RQD: 50% = 83% 13.6 ft: Unable to push HW past 13.6 ft. 14.7 ft: HW refusal. Rater cone to 15.1 ft. Spin HW to 15.2 ft.	
20	R2	60/60	20.3 - 25.3	RQD: 49% = 82% R2: Similar rock as R1 with coarse grained layer from 22.5 to 23.4 ft. One moderately dipping break, same as R1. 2:10/ 3:15/ 5:30/ 6:30/ 5:40 min/sec/ft ROCK QUALITY = GOOD	
Remarks: 8/7/18; 0905 hrs: 8.3' top dolphin #1 to water; 7.7' barge deck to water; 37.5' barge deck to mudline Top of dolphin #1: elev. 16.84 ft MLLW 47.5' off coast of dolphin #1 to borehole; approx. on line through cleats on dolphins #1 and #2.					
Stratification lines represent approximate boundaries between soil types. Transitions may be gradual.					
* Note: Test readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.					
Page 1 of 2 Boring No.: MB-VNHN-101-18					

Schonewald Engineering Associates, Inc.		PROJECT: Fender System Modifications Maine State Ferry Terminal Vinalhaven, Maine		Boring No.: MB-VNHN-101-18 WIN: 23823.00	
Driver: New England Boring Contractors		Elevation (ft.): -21.3 ft. (mudline)		Core Barrel: NQ2 (wireline)	
Operator: Enos / Share		Datum: MLLW		Sampler: standard split-spoon	
Logged By: Schonewald		Rig Type: Mobile Drill B-53		Hammer Bl./Fall: 140 lbs/ 30 inches	
Date Start/Finish: 8/7/18; 0830-1430		Drilling Method: cased wash boring		Hammer Type: auto hammer	
Boring Location: per plan (B1A); see remarks		Casing ID/OD: HW to 14.7 ft / HW to 15.2 ft		Hammer Efficiency: 0.98%	
Auger ID/OD: n/a		Water Level: n/a		Borehole Advancement Method: Standard stem super/MSA/station stem super/PC/crawler core	
In-Situ Sampling and Testing: D = Split Spoon Sample MS = Unconsolidated Split Spoon Sample attempt U = Thin Wall Tube Sample MS = Unconsolidated Thin Wall Tube Sample attempt V = In-situ Vane Shear Test MS = Unconsolidated In-situ Vane Shear Test attempt		Additional Definitions: N = uncorrected N value Nq = N value corrected for hammer efficiency N ₆₀ = corrected N value S _u = in-situ Undrained Shear Strength (psi) R = Rock Core Sample RQD = Rock Quality Designation (%)		Borehole Advancement Method: MSA = weight of 140lb hammer MS = weight of 140lb hammer LL = Liquid Limit / PL = Plastic Limit / PI = Plasticity Index WC = water content, percent #200 = percent fines from grain size analysis UC = U _c = peak compressive strength of rock	
Sample Information		Visual Description and Remarks		Lab. Testing Results	
Depth (ft.)	Sample No.	Top (ft.)	Bottom (ft.)	Remarks	Lab. Testing Results
30	R3	60/60	25.3 - 30.3	RQD: 56% = 93% R3: Similar rock as R1 with numerous phenocrysts. No cracks, one open fracture from 28.6 to 28.8 ft. 4:35/ 2:55/ 2:45/ 2:40/ 2:25 min/sec/ft ROCK QUALITY = EXCELLENT	
35	R4	60/60	30.3 - 35.3	RQD: 36% = 60% R4: (30.3 to 32.9 ft) Similar rock as R1 with numerous phenocrysts. Close to moderately spaced, low angle cracks, undulating, rough, fresh to discolored, and open. One mud infilled open fracture from 30.9 to 31.5 ft. Changing at 32.9 ft to: R4A: (32.9 to 35.3 ft) Very hard, fresh, fine to medium grained, pink grey, GRANITE. One high angle break at contact; undulating, rough, fresh, and open. (Deconion Granite Pluton) 2:00/ 2:10/ 2:20/ 2:45/ 3:00 min/sec/ft ROCK QUALITY = FAIR (R4 AND R4A)	
40	R5	60/60	35.3 - 40.3	RQD: 36% = 60% R5: Upper 3.5 ft similar rock as R4A. One high angle break from 38.8 to 38.9 ft; undulating, rough, fresh, and open. Becoming chert-like at 38.8 to 40.3 ft with near vertical breaks. 2:30/ 2:25/ 2:30/ 2:35/ 3:05 min/sec/ft ROCK QUALITY = FAIR	
45	R6	60/60	40.3 - 45.3	RQD: 54% = 90% R6: Upper 2.4 ft similar rock as R4A. No breaks. Changing at 42.7 ft to similar rock as R1 with numerous phenocrysts. No breaks. Changing at 43.6 ft to: R6A: Very hard, fresh, upthrust to fine grained, dark grey GABBRO with one 3-inch thick quartz inclusion from 44.0 to 44.2 ft; three low angle breaks around inclusion; undulating, rough, fresh, and open. (Deconion Gabbro Pluton) 3:00/ 3:05/ 3:20/ 3:05/ 2:40 min/sec/ft ROCK QUALITY = EXCELLENT Bottom of Exploration at 45.3 feet below ground surface.	
Remarks: 8/7/18; 0905 hrs: 8.3' top dolphin #1 to water; 7.7' barge deck to water; 37.5' barge deck to mudline Top of dolphin #1: elev. 16.84 ft MLLW 47.5' off coast of dolphin #1 to borehole; approx. on line through cleats on dolphins #1 and #2.					
Stratification lines represent approximate boundaries between soil types. Transitions may be gradual.					
* Note: Test readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.					
Page 2 of 2 Boring No.: MB-VNHN-101-18					

GEOTECHNICAL NOTES:

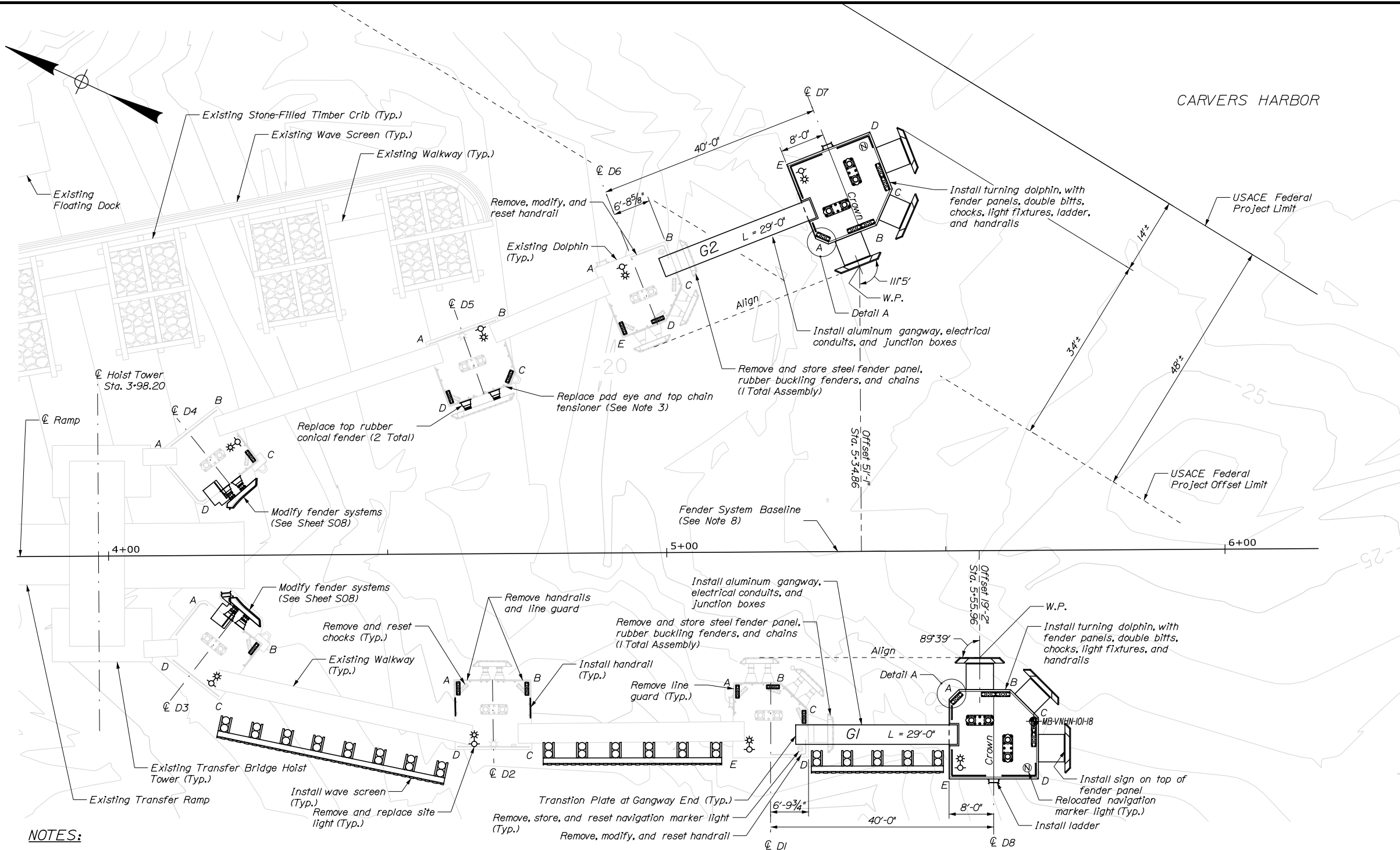
- The geotechnical report for the project is entitled "Geotechnical Design Report, Fender System Modifications, Maine State Ferry Terminal, Vinalhaven, Maine, MaineDOT win 023823.00," dated April 2019 and prepared by Schonewald Engineering Associates, Inc. The report is available on the MaineDOT website.
- Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for the Bidders' and Contractors' interpretations of, or conclusions drawn from, the geotechnical information. The boring logs contained in the plan set and the referenced report present interpretive subsurface information collected at discrete locations. Data provided may not be representative of the subsurface conditions between widely-spaced boring locations.
- Grid north on the North American Datum 1983 (NAD83).
- Tidal datum is Mean Lower Low Water (MLLW).

BORING COORDINATES		
Location	Northing	Easting
MB-VNHN-101-18	137240.08	895034.21



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		WIN 023823.00	
PROJ. MANAGER N. Willey		DATE 04/19	
CHECKED-REVIEWED C. Morn		SIGNATURE 7528	
DESIGN-DETAILED DESIGN-DETAILED3		P.E. NUMBER 4/4/19	
REVISIONS 1		DATE	
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
VINALHAVEN FERRY TERMINAL		BORING LOGS	
SHEET NUMBER G04		4 OF 18	



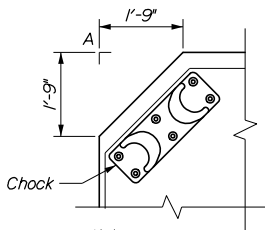


NOTES:

1. For turning dolphin details and additional information, see Sheets S04 through S06.
2. For chock resetting details, see Sheet S06.
3. For lineguard removal, handrail, and handrail modification details, see Sheet S07.
4. For ladder details, see Sheet S08.
5. For dolphin repair and modification details, see Sheet S09.
6. For wave screen details, see Sheet S10.
7. For aluminum gangway and transition plate details see Sheet S11.
8. For lighting details, see Sheets E01 through E02.
9. Fender panels removed from Dolphins D1 and D6 shall be removed, including steel panels, rubber buckling fenders, and chains, without damage for reuse by the Owner. The Contractor shall store these materials at the Swan's Island Ferry Terminal, exact location to be determined. Material is scheduled to be relocated to Frenchboro.
10. Alignment was developed using information from As-built plans. For more information refer to Sheet 6 of the 1999 As-built plans.
11. The Contractor shall repair existing concrete as directed by the Resident. Concrete repairs shall be measured for payment under pay items, 518.50, 518.51, and 518.60, Repair of Upward Facing Surfaces - Reinforcing Steel < 8 inches, Repair of Upward Facing Surfaces - below Reinforcing Steel, and Repair of Vertical Surfaces < 8 inches, respectively.

PLAN

1" = 10'-0"



Note:
For chock position,
see Sheet S05.

DETAIL A

1/2" = 1'-0"

DOLPHIN COORDINATES

EXISTING D1

LOCATION	NORTHING	EASTING
A	137291.82	895017.84
B	137284.17	895021.40
C	137277.64	895019.11
D	137274.00	895011.42
E	137286.24	895005.54

EXISTING D2

LOCATION	NORTHING	EASTING
A	137337.48	894997.28
B	137324.94	895003.05
C	137319.50	894991.76
D	137331.98	894986.02

EXISTING D3

LOCATION	NORTHING	EASTING
A	137384.60	894991.55
B	137371.24	894988.60
C	137374.04	894976.22
D	137387.29	894979.46

EXISTING D4

LOCATION	NORTHING	EASTING
A	137402.86	895011.66
B	137396.56	895023.87
C	137385.62	895018.17
D	137391.85	895006.17

EXISTING D5

LOCATION	NORTHING	EASTING
A	137367.50	895049.93
B	137357.81	895059.52
C	137349.35	895050.54
D	137358.84	895041.24

EXISTING D6

LOCATION	NORTHING	EASTING
A	137345.67	895074.74
B	137336.18	895084.45
C	137330.06	895078.53
D	137329.99	895071.61
E	137335.82	895065.51

PROPOSED D7

LOCATION	NORTHING	EASTING
A	137310.67	895095.04
B	137303.07	895103.00
C	137303.23	895110.07
D	137311.19	895117.67
E	137322.24	895106.09

PROPOSED D8

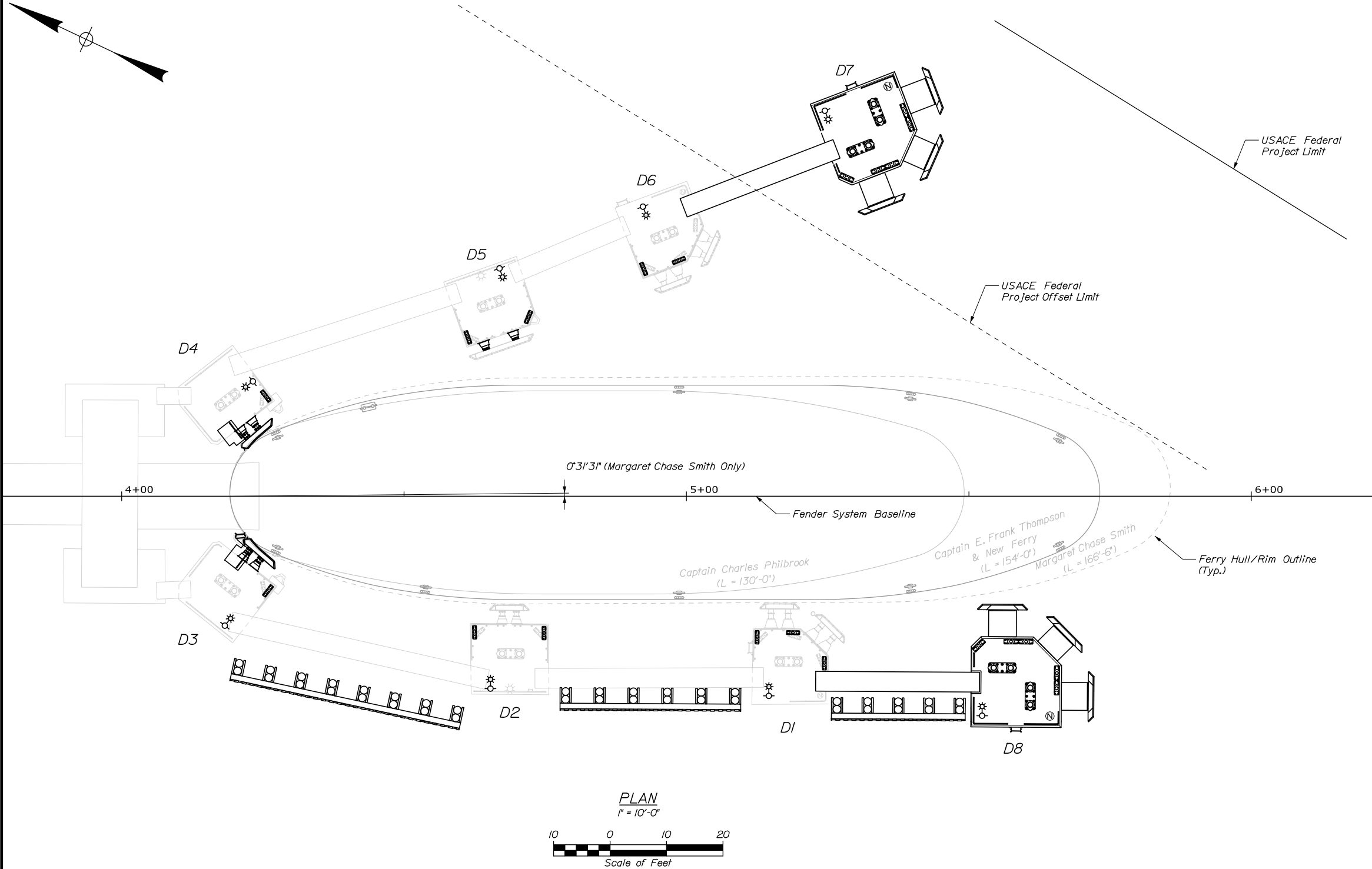
LOCATION	NORTHING	EASTING
A	137256.24	895032.98
B	137246.26	895037.61
C	137239.62	895035.18
D	137234.99	895025.20
E	137249.50	895018.47

Date:5/30/2019

Username:

Division:

Filename: ... \02 CADD\006_Berth Plan.dgn



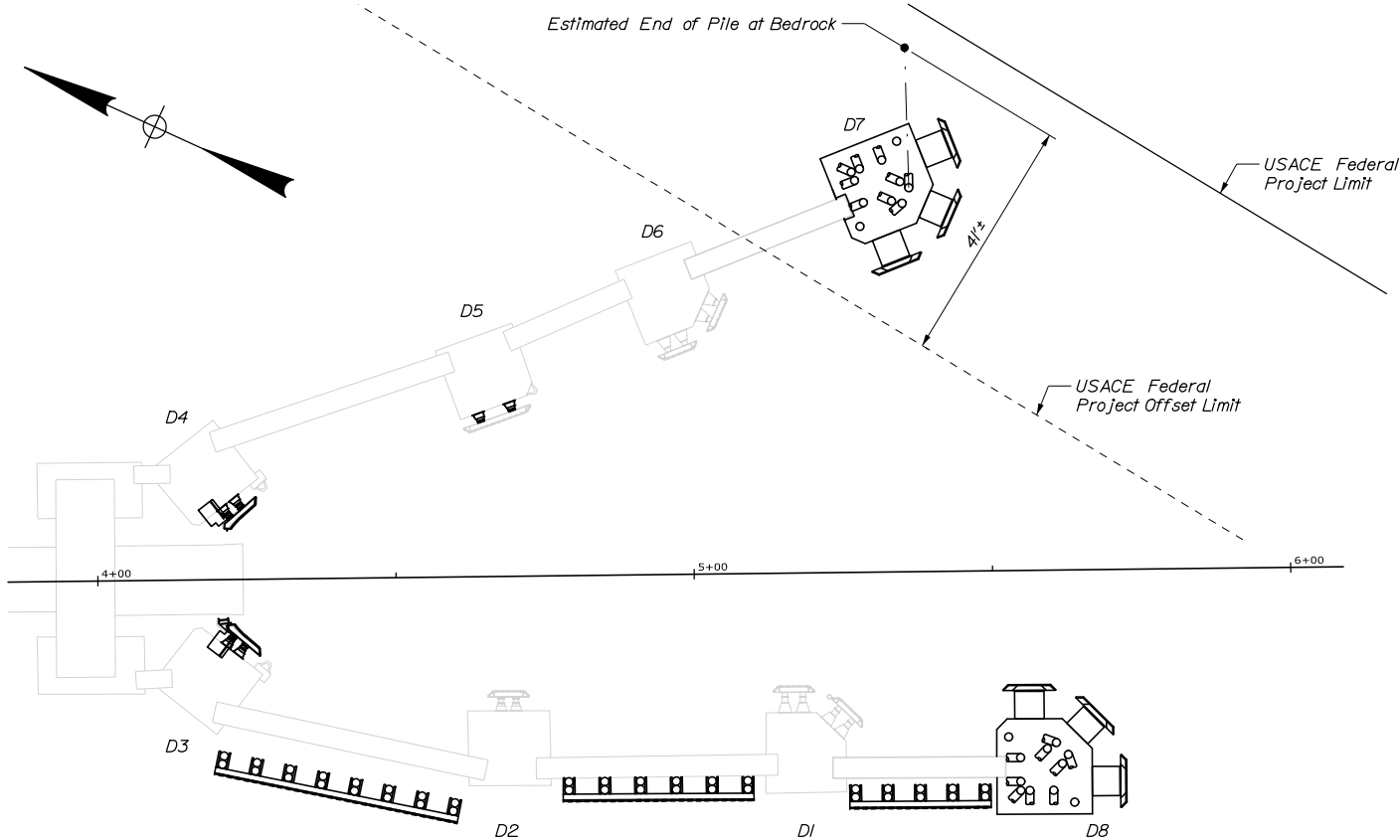
NOTES:

1. MV Captain Charles Philbrook and Captain E. Frank Thompson are currently in operation. New Frank Thompson is proposed. Margaret Chase Smith is shown for comparative purposes.

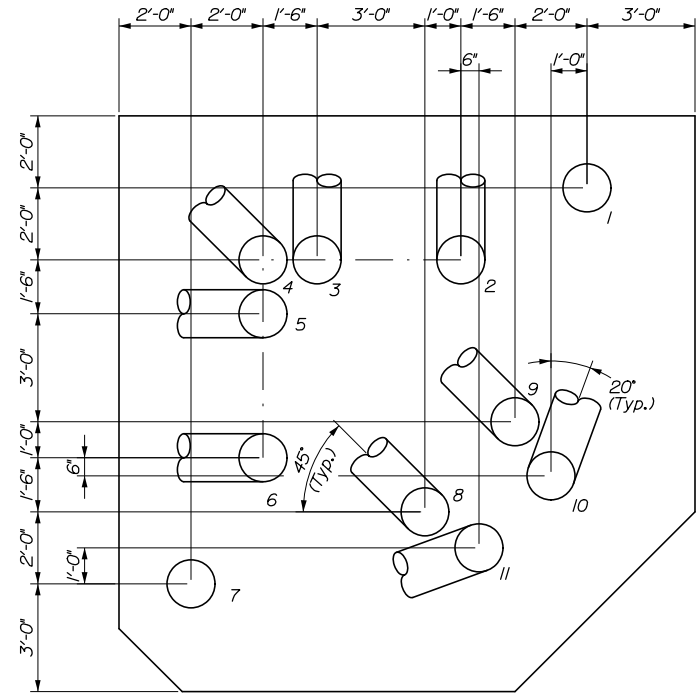
2. Cleats and scuppers are shown for the new ferry only.



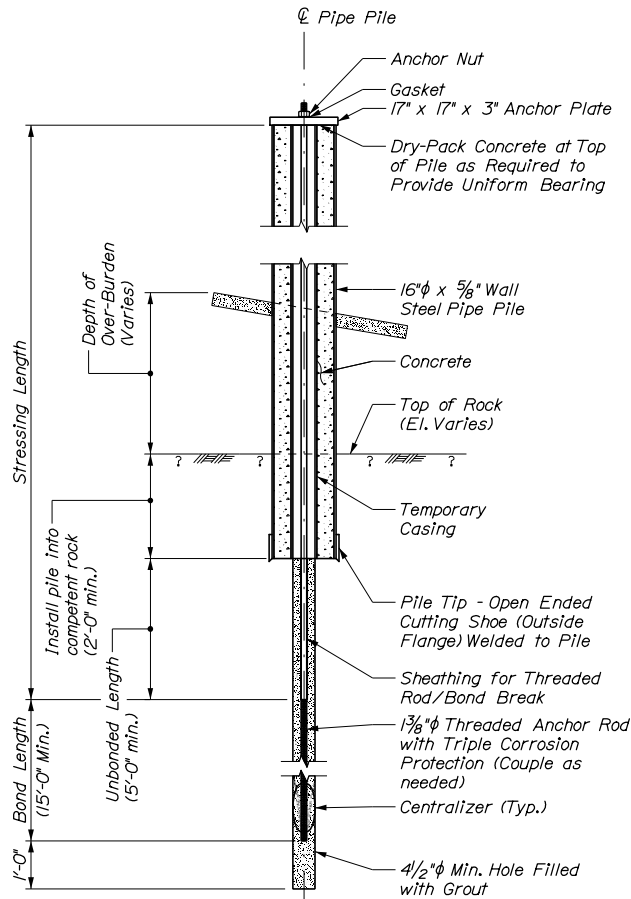
STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE 10209		P.E. NUMBER 10209		DATE	
WIN		023823.00					
VINALHAVEN FERRY TERMINAL		SHEET NUMBER		DATE			
BERTH PLAN		S02		6 OF 18			



PLAN



D7 FOUNDATION PLAN
(Dimensions shown at pile cut-off elevation, El. 11.00 ft)
(Dolphin D7 shown, D8 similar)
3/8" = 1'-0"



ROCK ANCHOR DETAIL
1/2" = 1'-0"

STEEL PIPE PILE TABLE			
	Pile No.	Estimated Pile Length	Vertical or Batter (Rise/Run)
Turning Dolphin D7	1	55	Vert.
	2	58	Batter 4:12
	3	58	Batter 4:12
	4	58	Batter 4:12
	5	58	Batter 4:12
	6	58	Batter 4:12
	7	55	Vert.
	8	58	Batter 4:12
	9	58	Batter 4:12
	10	56	Batter 2:12
	11	56	Batter 2:12
Turning Dolphin D8	1	55	Vert.
	2	58	Batter 4:12
	3	58	Batter 4:12
	4	58	Batter 4:12
	5	58	Batter 4:12
	6	58	Batter 4:12
	7	55	Vert.
	8	58	Batter 4:12
	9	58	Batter 4:12
	10	56	Batter 2:12
	11	56	Batter 2:12

NOTES:

1. A length of 5' has been included for contingency to each estimated pile length to determine order length.
2. All steel pipe piles shall have rock anchors. For rock anchors, see detail.
3. All steel pipe piles shall have aluminum anodes.
4. Overburden and rock materials removed during pile installation activities shall be disposed in accordance with Special Provision 203.
5. For anode details, see Sheet S04.

6. Pile splices shall not be allowed without prior approval of the Engineer of Record (EOR). Pile splices approved by the EOR and installed by the Contractor to achieve the installed pile length as noted herein shall be incidental to pay item 501.241, Steel Pipe Piles In-Place.

PILE AND ROCK ANCHOR

SUGGESTED CONSTRUCTION SEQUENCE:

1. Advance pipe pile open ended with cutting shoe to the top of bedrock. Advance pipe pile into competent rock per detail.
2. Pile shall be cut off at final top elevation to perform anchor load test. Refer to structural drawings for top of pile elevations.
3. Clean and flush rock cuttings and soil from inside the pile and socket. Confirm pile socketed into bedrock per detail. Install grout plug.
4. Install temporary casing with centralizers as needed to top of grout plug inside the pipe pile. Advance temporary casing until it is seated.
5. Insert rock anchor drill casing and drill bit into temporary casing and drill anchor hole. Minimum length of anchor hole per the detail.
6. Clean and flush rock cuttings from anchor hole. Do not allow drill cuttings to enter the pipe pile.
7. Install triple corrosion protected anchor, sheathing and centralizers, preassembled to the required dimensions.
8. Using tremie methods, fill the annular space between the anchor rod / sheathing and the anchor hole with 5,000 psi cement grout to above the top of the bedrock surface.
9. Install anchor plate at top of anchor with hex nut and hardened washer.
10. Verify that pile head is restrained from moving laterally by fixing the pile head to the pile template, falsework or other appropriate means.
11. Perform rock anchor proof and performance tests to 133% of the Max. pile tension load (See pile schedule).
12. Place concrete in the annular space between the anchor rod sheathing and the pipe pile as the temporary casing is withdrawn, maintaining the concrete surface above the bottom of the temporary casing at all times. Temporary casing may be left in the piling at the option of the Contractor.
13. Lock off rock anchor at 110% of the Max. pile tension load (See pile schedule).
14. Proceed with dolphin construction.

Pile Load Schedule	
Max. Factored Applied Pile Compression Load (LRFD):	345 kips
Max. Factored Applied Pile Tension Load (LRFD):	217 kips
Max. Applied Pile Tension Load (ASD):	112 kips
Min. Pile Compression Resistance (LRFD):	390 kips
Min. Rock Anchor Tension Capacity (ASD):	361 kips
Rock Anchor Test Load:	150 kips
Rock Anchor Lock Off Load:	124 kips

NOTES:

1. In the absence of definitive guidance in AASHTO's LRFD Bridge Design Specifications (LRFD Manual), Article 10.7.3.2.3 "Point Bearing Piles on Rock - Piles Driven to Hard Rock," the geotechnical axial capacity of pipe piles end-bearing on rock was determined using established ASD methods with a Factor of Safety of 2.0, equivalent to a resistance factor of 0.5 as required per the LRFD Manual.
2. The tensile capacity of rock anchors was determined using established ASD methods in the absence of definitive guidance in the LRFD Manual, Article 11.9.4.2 - "Anchor Pullout Capacity." A resistance factor equal to 1.0 is allowed per the LRFD Manual since all the rock anchors will be tested.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

VINALHAVEN
FERRY TERMINAL

DOLPHIN
FOUNDATION PLAN

SHEET NUMBER
S03

7 OF 18

WIN
023823.00

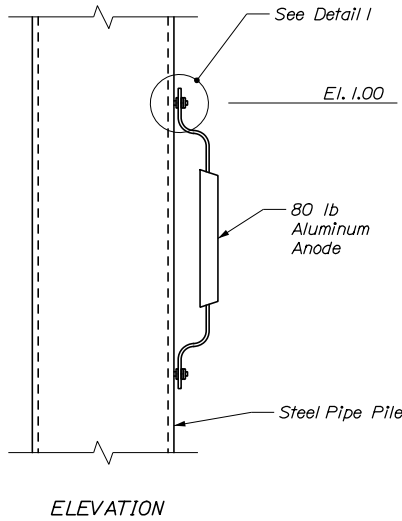
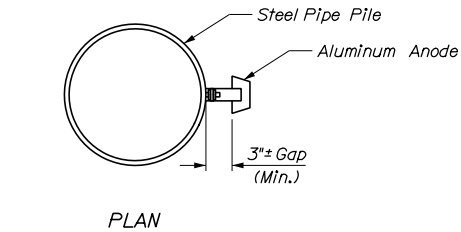
DATE
05/18/2019

SIGNATURE
C. Morin

P.E. NUMBER
10209

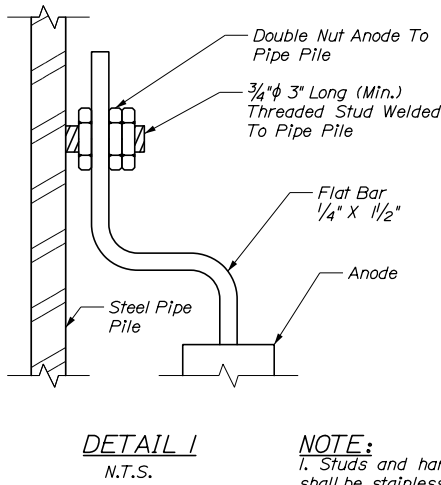
REVISIONS
1
2
3
4

FIELD CHANGES

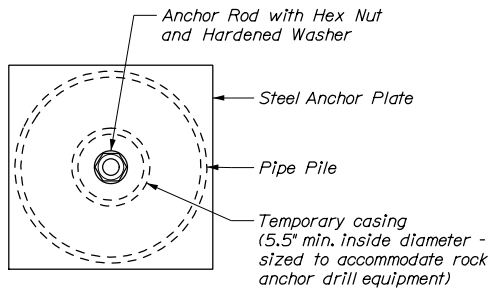


Note: Anode shall be positioned along the inshore face of piles.

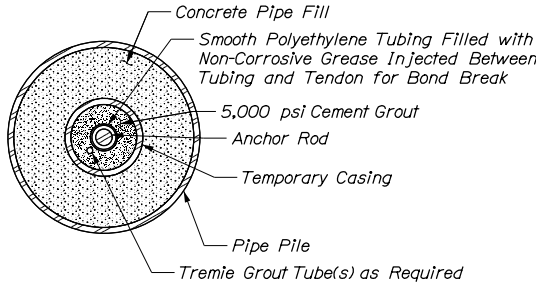
ANODE DETAIL
N.T.S.



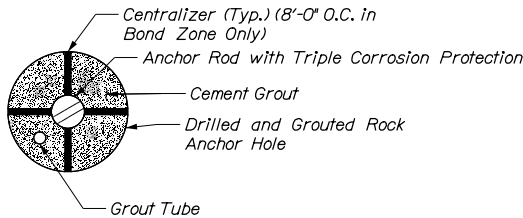
NOTE:
1. Studs and hardware shall be stainless steel.



TOP OF PILE DETAIL
N.T.S.



ROCK ANCHOR SECTION (UNBONDED ZONE)
N.T.S.



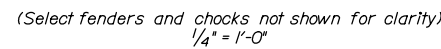
ROCK ANCHOR SECTION (BOND ZONE)
N.T.S.

STATE OF MAINE	
DEPARTMENT OF TRANSPORTATION	
	WIN
	023823.00

PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED	P. Bishop	05/18			
CHECKED-REVIEWED	N. Willey	05/18			
DESIGN-DETAILED	C. Morin			10209	
DESIGN-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

VINALHAVEN FERRY TERMINAL	DOLPHIN FOUNDATION DETAILS
------------------------------	-------------------------------

SHEET NUMBER
S04
8 OF 18



1. *For anode details, see Sheet S04.*
2. *For double bitt and chock details, see Sheet S05.*
3. *For handrail details, see Sheet S07.*
4. *For access ladder details, see Sheet S08.*
5. *For gangway pocket and transition plate detail, see Sheet S11.*
6. *All reinforcing shall be cut to maintain 2" clear from piles and 3" clear of concrete surfaces.*
7. *Reinforcing bars shall be adjusted to maintain 1" clear from anchor rods.*

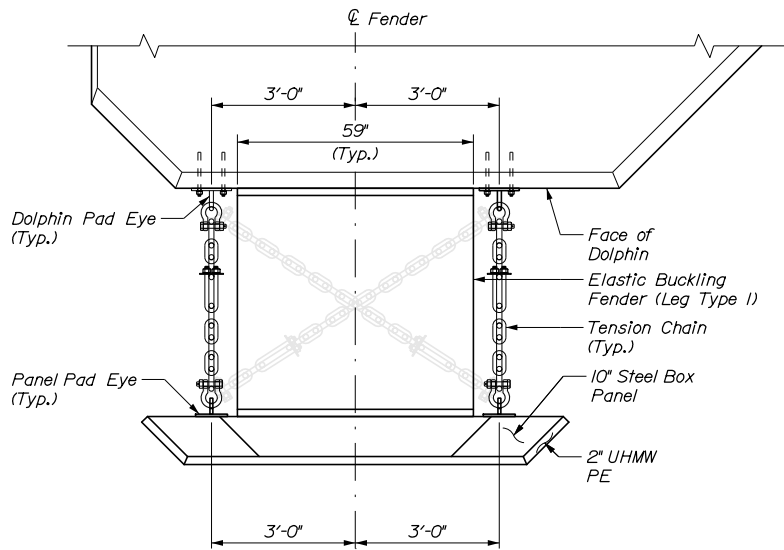


Date:5/30/2019

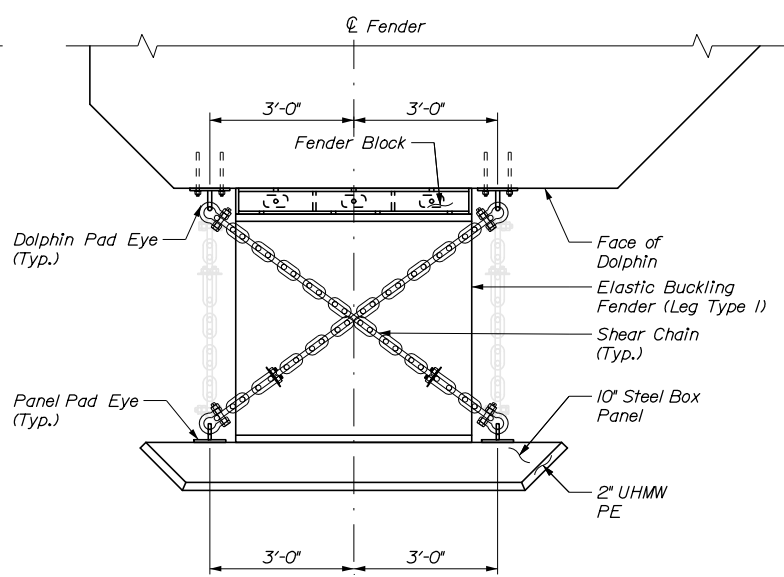
Username:

Division:

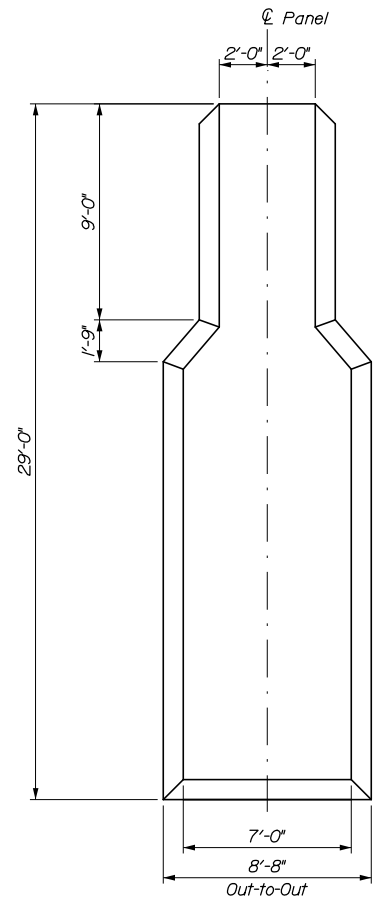
Filename: ... \02 CADD\011_Fender System.dgn



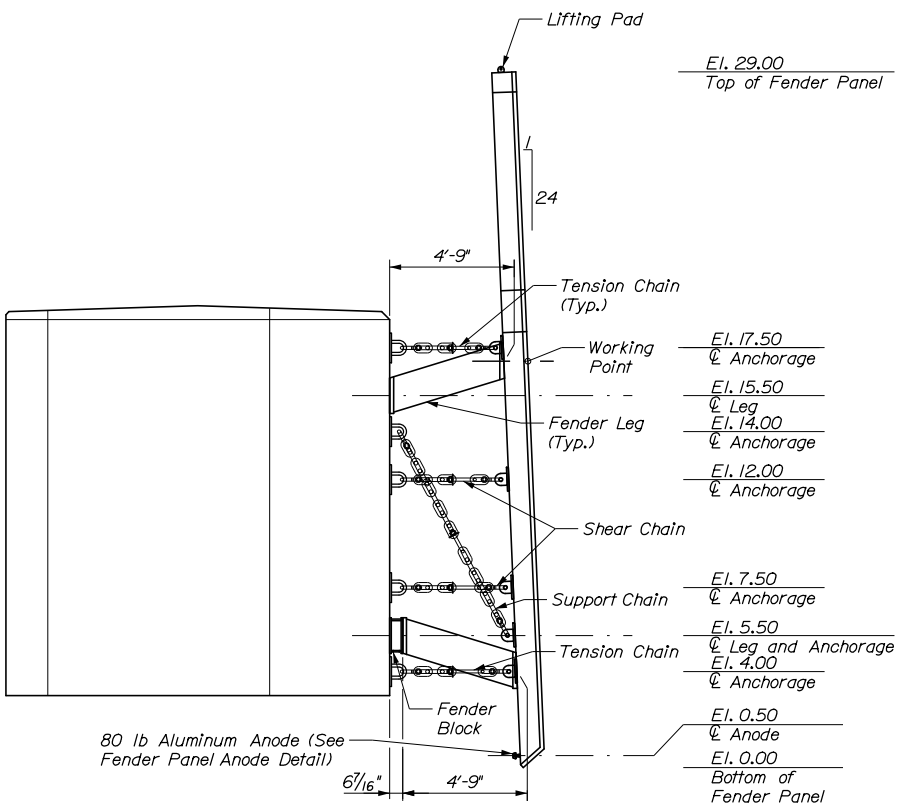
PLAN - TYPE I TOP OF FENDER PANEL
(D7 Pen facing fender shown, others similar)
1/2" = 1'-0"



PLAN - TYPE I BOTTOM OF FENDER PANEL
(D7 Pen facing fender shown, others similar)
1/2" = 1'-0"



TYPE I PANEL
1/4" = 1'-0"



ELEVATION - TYPE I PANEL
(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"

- NOTES:**
- Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
 - For fender block, panel pad eye, and panel anode details, see Sheet S09.
 - For dolphin pad eye and spacer plate details, see Sheet S10.
 - Elastic buckling fenders (Leg Type 1) shall be Trelleborg Compound B MV 1450x1500, or approved equal.
 - Elastic buckling fenders (Leg Type 2) shall be Trelleborg Compound B MV 1250x1500, or approved equal.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE 10/209		P.E. NUMBER 10209		DATE	
VINYLHAVEN FERRY TERMINAL		DESIGN-DETAILED N. Wiley		CHECKED-REVIEWED C. Morin		BY P. Bishop C. Morin	
DOLPHIN DETAILS FENDER SYSTEM		DESIGN-DETAILED N. Wiley		CHECKED-REVIEWED C. Morin		BY P. Bishop C. Morin	
SHEET NUMBER S07		DESIGN-DETAILED N. Wiley		CHECKED-REVIEWED C. Morin		BY P. Bishop C. Morin	
11 OF 18		DESIGN-DETAILED N. Wiley		CHECKED-REVIEWED C. Morin		BY P. Bishop C. Morin	
023823.00		DESIGN-DETAILED N. Wiley		CHECKED-REVIEWED C. Morin		BY P. Bishop C. Morin	

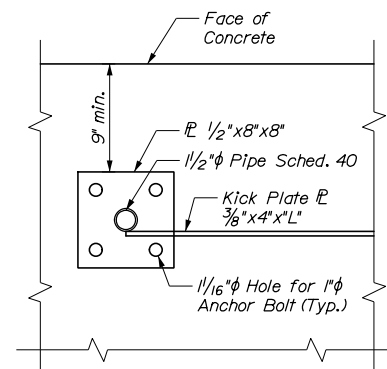
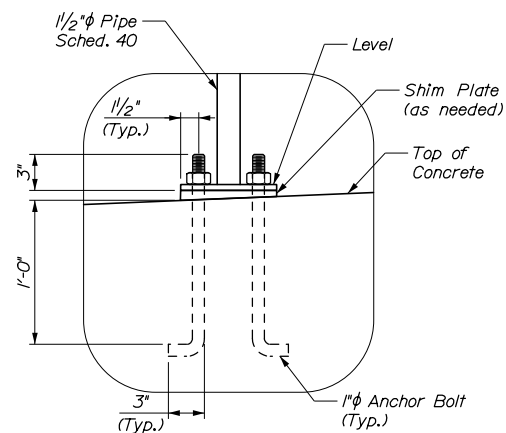
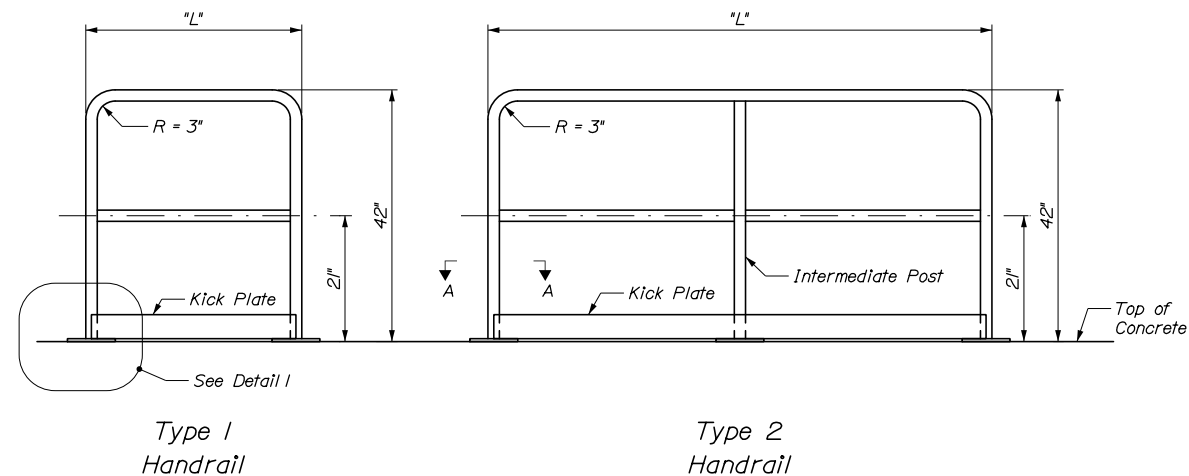
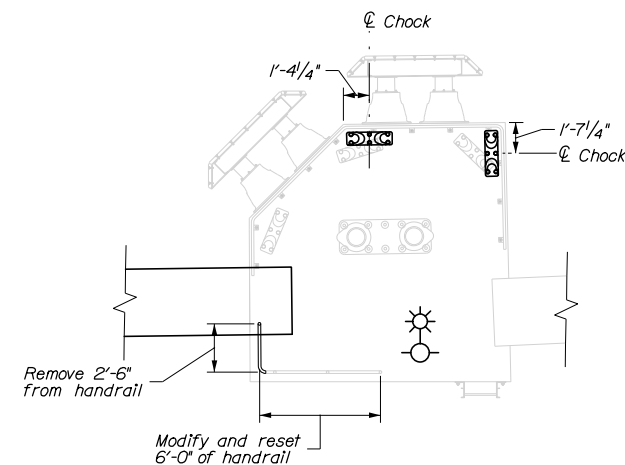
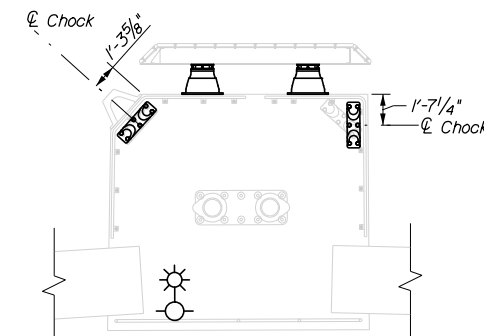
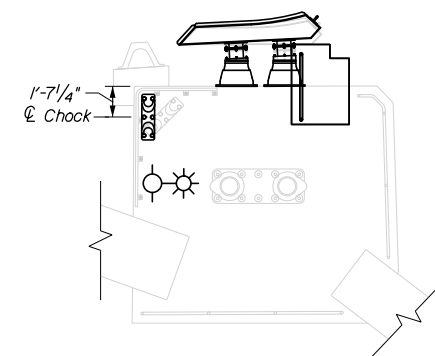
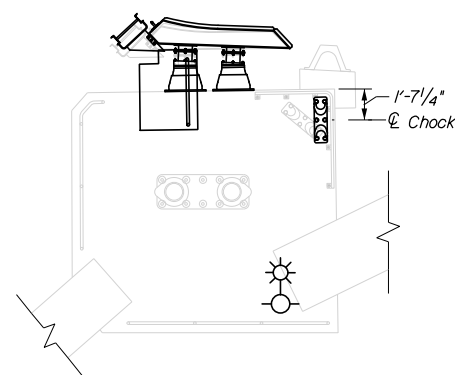
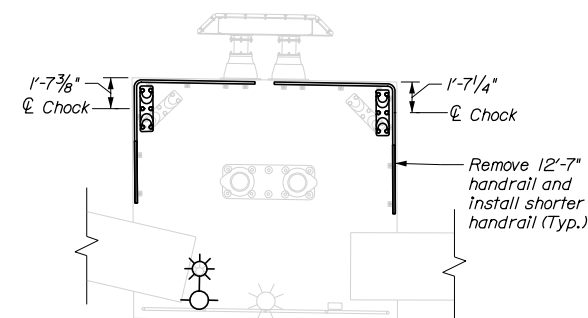
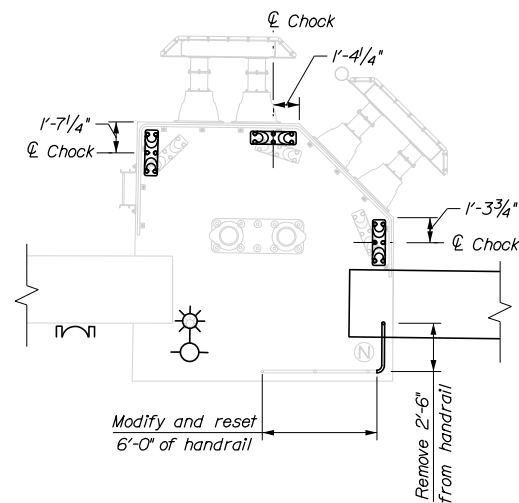
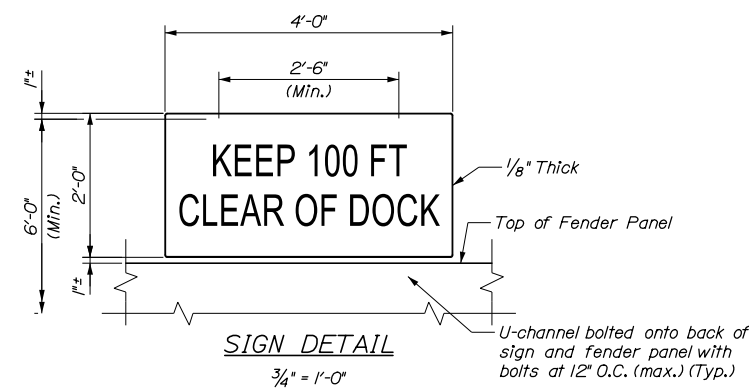


TABLE 1
HANDRAIL SUMMARY TABLE

<i>Dolphin</i>	<i>Location</i>	<i>Identification</i>
<i>D2</i>	<i>NE</i>	<i>T1 - 3'-3" - 0</i>
<i>D2</i>	<i>SE</i>	<i>T1 - 3'-6" - 0</i>
<i>D7</i>	<i>W</i>	<i>T1 - 1'-4" - 0</i>
<i>D7</i>	<i>N</i>	<i>T2 - 11'-8" - 3</i>
<i>D7</i>	<i>E</i>	<i>T2 - 8'-2" - 2</i>
<i>D8</i>	<i>S</i>	<i>T2 - 8'-2" - 2</i>
<i>D8</i>	<i>W</i>	<i>T2 - 10'-8" - 3</i>
<i>D8</i>	<i>N</i>	<i>T1 - 2'-5" - 0</i>

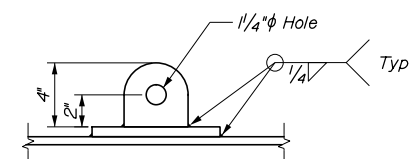
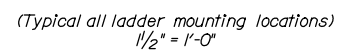
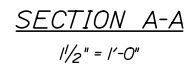
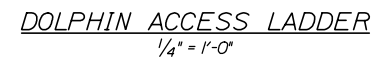
NOTES:

1. Contractor to field verify dimensions of line guards & number of bolts to be removed.



NOTES:

1. Where handrail posts or line guard anchorages are removed, fill with Sika Flex 1A self leveling sealant, or approved equal.
2. Contractor shall grind smooth, cap ends of cut handrails, and galvanize exposed steel.
3. For additional details on chock setting, see Sheet S06.
4. Contractor shall support the navigation sign along the back of the fender panel with a pair of u-channels in accordance with Special Provision 645, Highway Signing.



HNTB

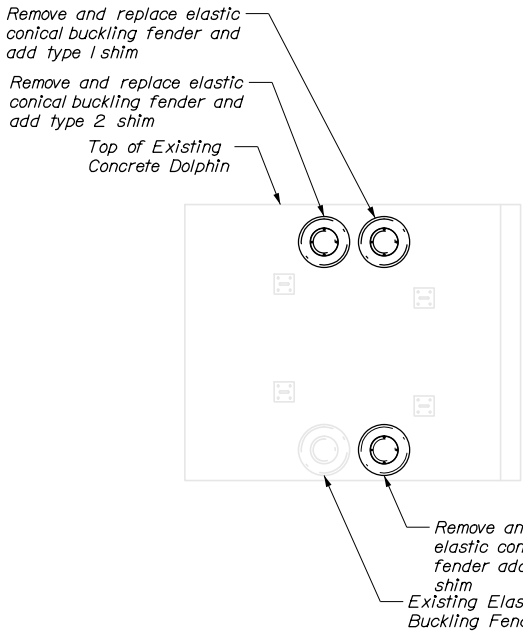
S09	SHEET NUMBER	VINALHAVEN FERRY TERMINAL		PROJ. MANAGER	BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION
		DESIGN-DETAILED CHECKED-REVIEWED DESIGN2-DETAILED2 DESIGN3-DETAILED3		N. Willey C. Morin	P. Bishop C. Morin	05/19 05/19	
DOLPHIN DETAILS MISCELLANEOUS II		DESIGN3-DETAILED3					SIGNATURE 10209
		REVISIONS 1					
		REVISIONS 2					P.E. NUMBER
		REVISIONS 3					
		REVISIONS 4					
		FIELD CHANGES					
							WIN 023823.00

Date:5/30/2019

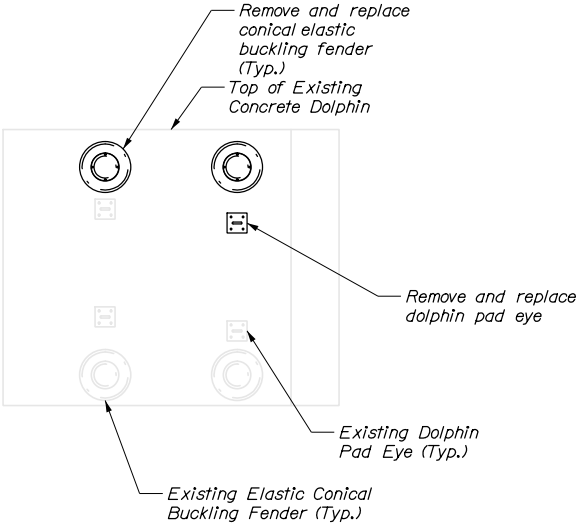
Username:

Division:

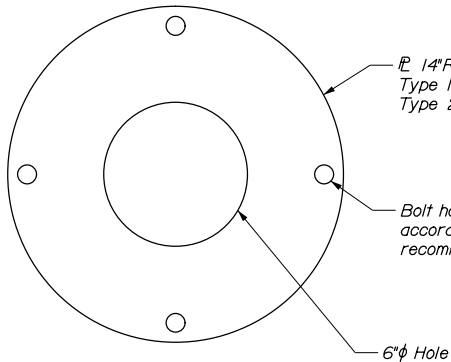
Filename: ... \014_Dolphin Repair Details.dgn



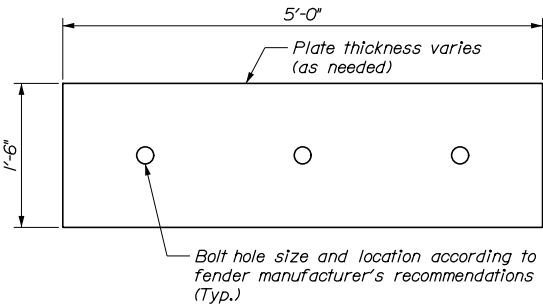
ELEVATION - DOLPHIN D3
(D4 opposite hand)
1/4" = 1'-0"



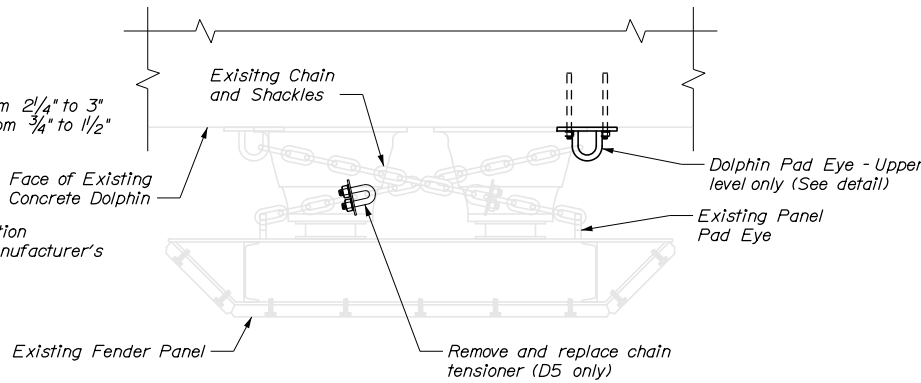
ELEVATION - DOLPHIN D5
1/4" = 1'-0"



SHIM DETAIL
3" = 1'-0"

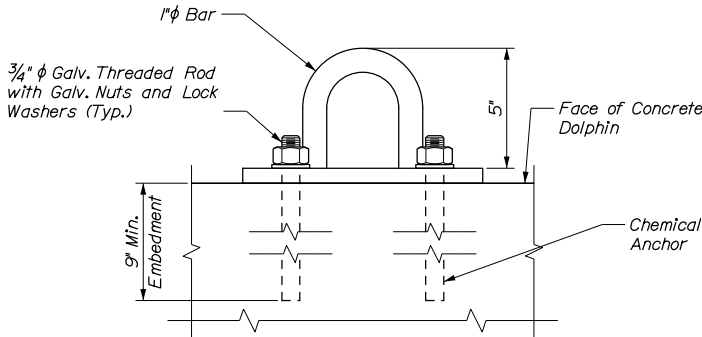
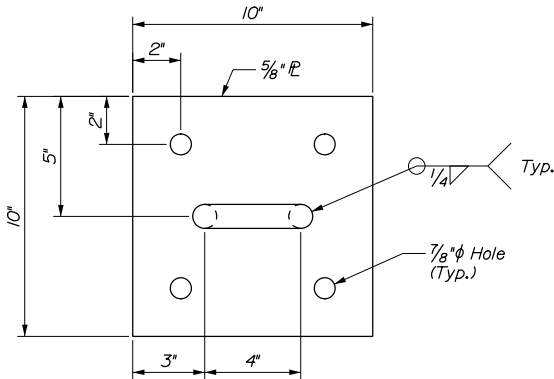


SPACER PLATE DETAIL
1" = 1'-0"



Note: Two levels per fender panel.

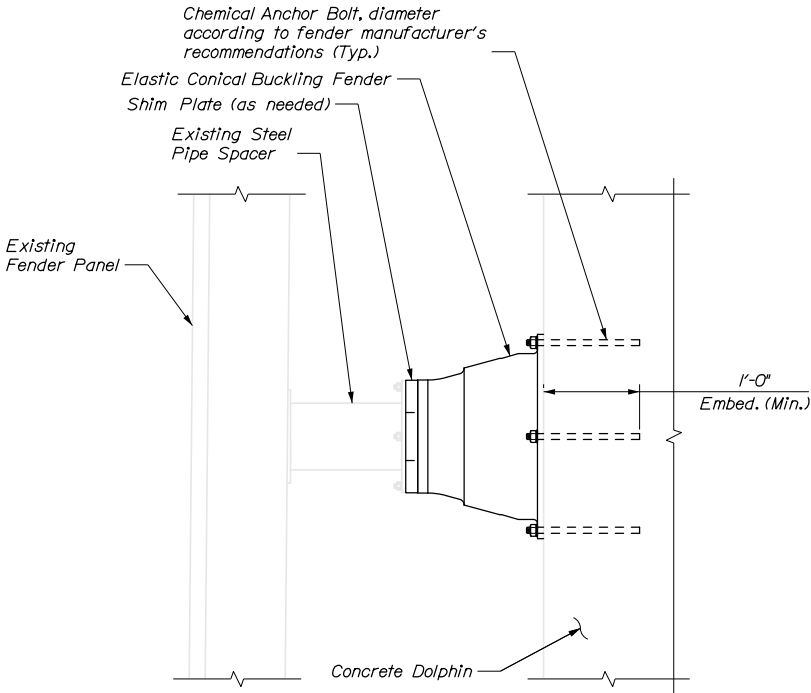
SHEAR CHAIN CONFIGURATION
3/4" = 1'-0"



DOLPHIN PAD EYE DETAIL
3" = 1'-0"

NOTES:

1. Contractor to replace broken or bent chain links, dog bones, or chain tensioners in kind.



TYPICAL FENDER ATTACHMENT DETAILS
1" = 1'-0"

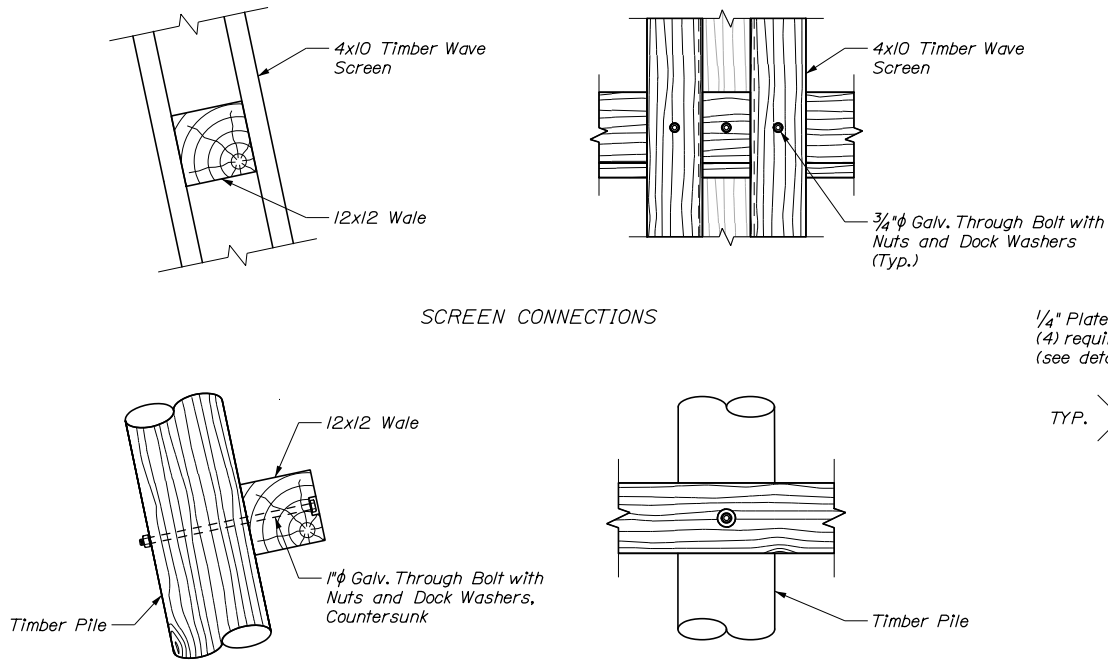
STATE OF MAINE DEPARTMENT OF TRANSPORTATION
WIN 023823.00

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	P. Bishop	05/18
CHECKED-REVIEWED	N. Willey	05/18
DESIGN-DETAILED	C. Morin	
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE	P.E. NUMBER	DATE
	10209	

VINALHAVEN FERRY TERMINAL
DOLPHIN REPAIR DETAILS

SHEET NUMBER
S10
14 OF 18

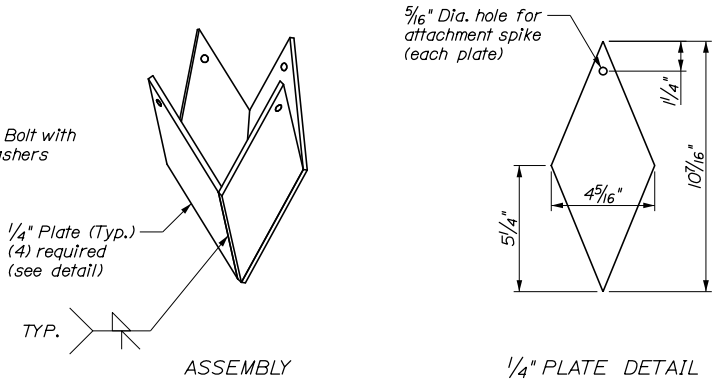


SCREEN CONNECTIONS

WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/4" = 1'-0"



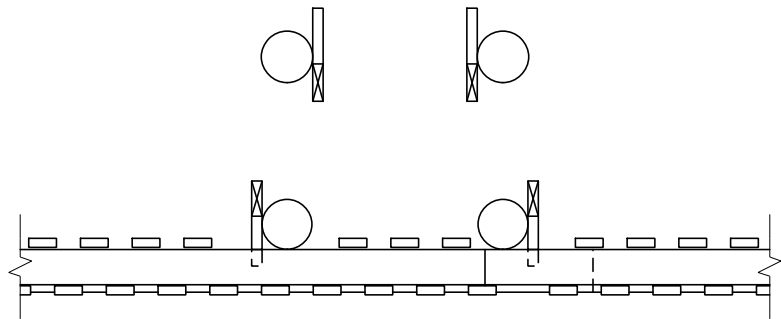
ASSEMBLY

1/4" PLATE DETAIL

Note: Dimensions shown similar to pile point manufactured by Associated Pile & Fitting

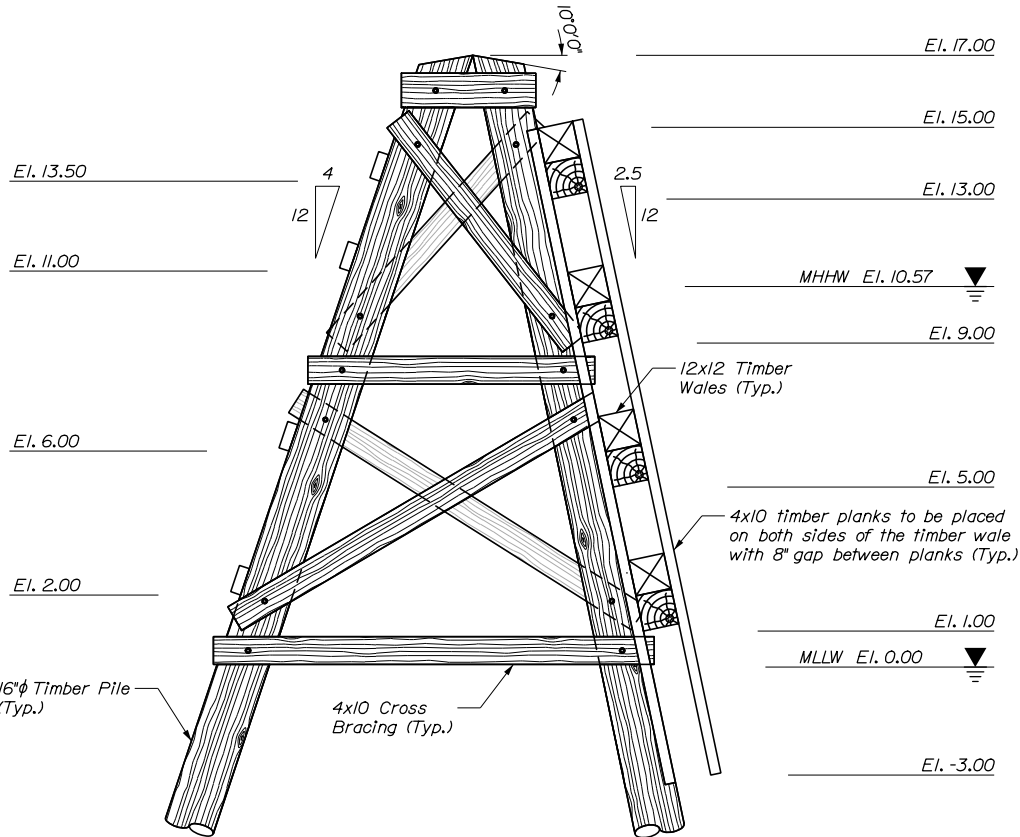
TIMBER PILE POINT DETAIL

3" = 1'-0"



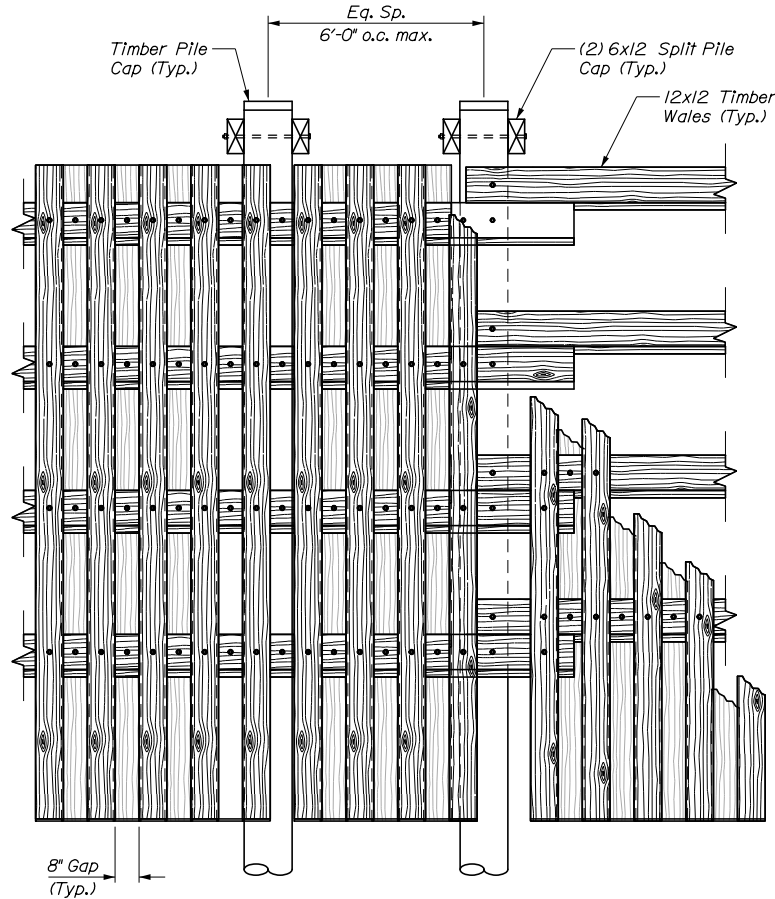
WAVE SCREEN PLAN VIEW

(View shown at El. 11.00)
3/8" = 1'-0"



WAVE SCREEN END ELEVATION

3/8" = 1'-0"



WAVE SCREEN FRONT ELEVATION

3/8" = 1'-0"

NOTES:

1. All bolts are 1" dia. galv. with nuts and dock washers, except where noted.
2. All timber associated with wave screen shall be 2.5 cca treated.
3. All timber vertical and batter piles shall have a driven capacity of 16 tons or a minimum embedment length of 20 feet. See timber pile point detail.
4. All timber battered piles for wave screens shall be installed at a batter of 4 horiz. on 12 vert. except for the slip side piles which shall have a batter of 2.5 horiz. on 12 vert.
5. Timber shall be southern pine with a stress rating of 1,200 psi. Timber shall be pressure treated in accordance with the specifications.
6. All timber construction shall conform to the national design specification for wood construction of the American Forest and Paper Association.
7. All connections shall be made with ASTM A325, type 1 galvanized bolts and 1/16" oversized holes and shall have washers on both ends, unless otherwise noted.
8. Field treat all cut and drilled timber surfaces with two coats of preservative containing copper naphthanate solution (min. 2% metallic solution) per specifications.
9. Wave screens shall be 6" minimum clear from dolphins.
10. Contractor shall take care while installing timber piles to avoid conflict with steel pipe piles.

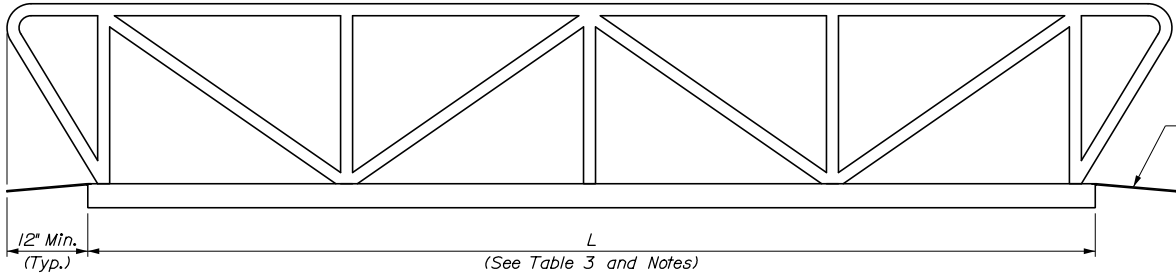
STATE OF MAINE	
DEPARTMENT OF TRANSPORTATION	
WIN	
023823.00	

SIGNATURE	
10209	
P.E. NUMBER	
DATE	

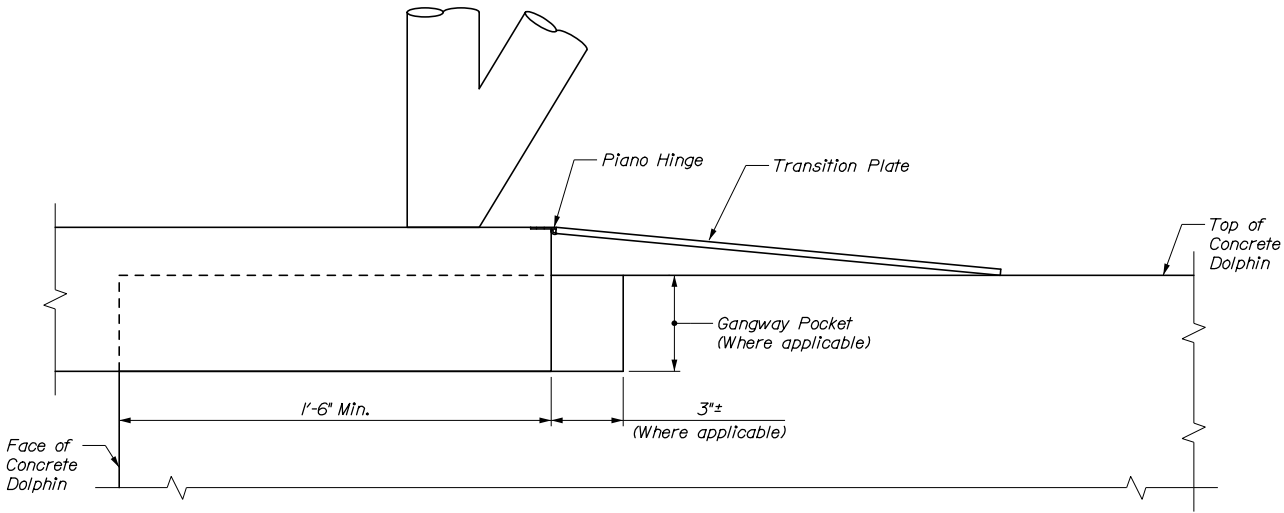
DATE	05/18
BY	P. Bishop
PROJ. MANAGER	N. Wiley
DESIGN-DETAILED	C. Morin
CHECKED-REVIEWED	C. Morin
DESIGN-DETAILED	C. Morin
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

VINALHAVEN
FERRY TERMINAL
WAVE SCREEN
PLAN AND ELEVATION

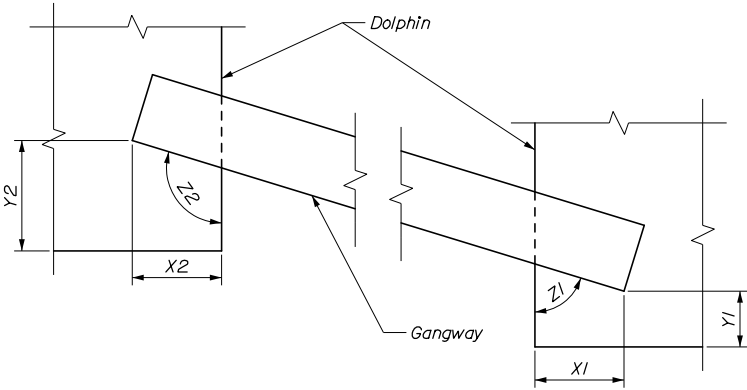
SHEET NUMBER
S11
15 OF 18



GANGWAY ELEVATION
(Schematically Shown)
1/2" = 1'-0"



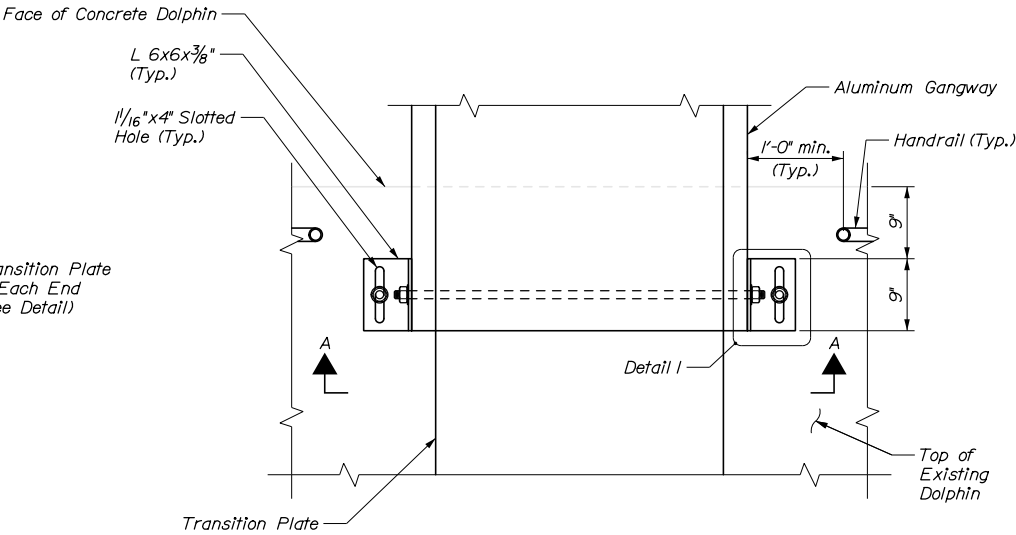
TRANSITION PLATE DETAIL
3" = 1'-0"



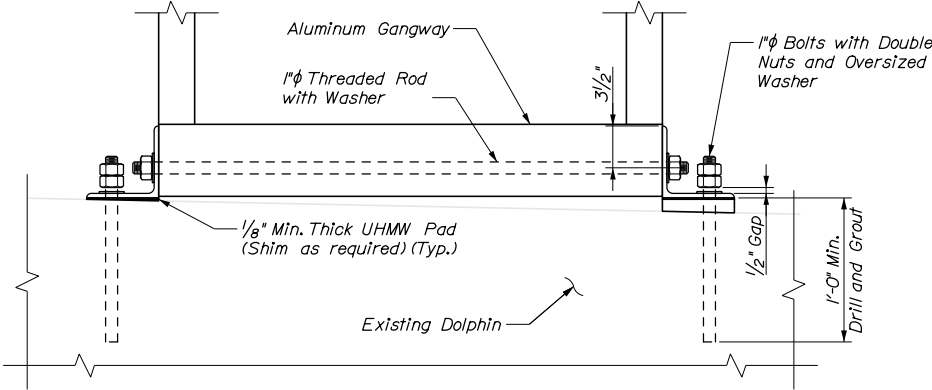
GANGWAY LAYOUT
N.T.S.

TABLE 3
GANGWAY DIMENSIONS

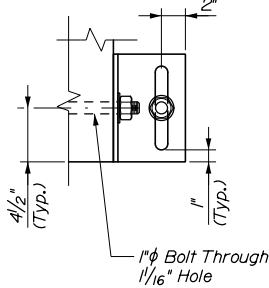
Gangway I.D.	Dimensions											
	W1	W2	D	L	Dolphin 1	X1	Y1	Z1	Dolphin 2	X2	Y2	Z2
G1	42"	36"	6"	29'-0"	D8	1'-6"	6'-2"	90°0'	D1	2'-4"	2'-4"	90°26'
G2	42"	36"	6"	29'-0"	D6	2'-3"	2'-6"	90°24'	D7	1'-6"	7'-3"	90°0'



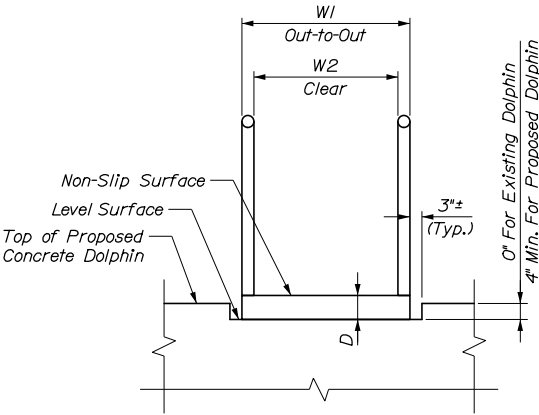
EXISTING DOLPHIN
GANGWAY CONNECTION
1" = 1'-0"



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



DETAIL I
1/2" = 1'-0"



PROPOSED DOLPHIN GANGWAY TYPICAL SECTION
1/2" = 1'-0"

- NOTES:
- See Sheet G02 for design loads.
 - Gangway shall be truss type constructed, fabricated of aluminum grade 6061-T6 marine alloy.
 - Gangway length shall be confirmed or adjusted once dolphins are constructed.
 - Contractor shall field verify dimensions of dolphins and distances between dolphins.
 - Install bolt through gangway prior to installing bolts into existing concrete.
 - Contractor shall provide UHMW shims at gangway ends.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023823.00

PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

BY
P. Bishop
C. Morin

DATE
05/18
05/18

SIGNATURE
10209

P.E. NUMBER

DATE

VINALHAVEN
FERRY TERMINAL

GANGWAY
PLAN AND ELEVATION

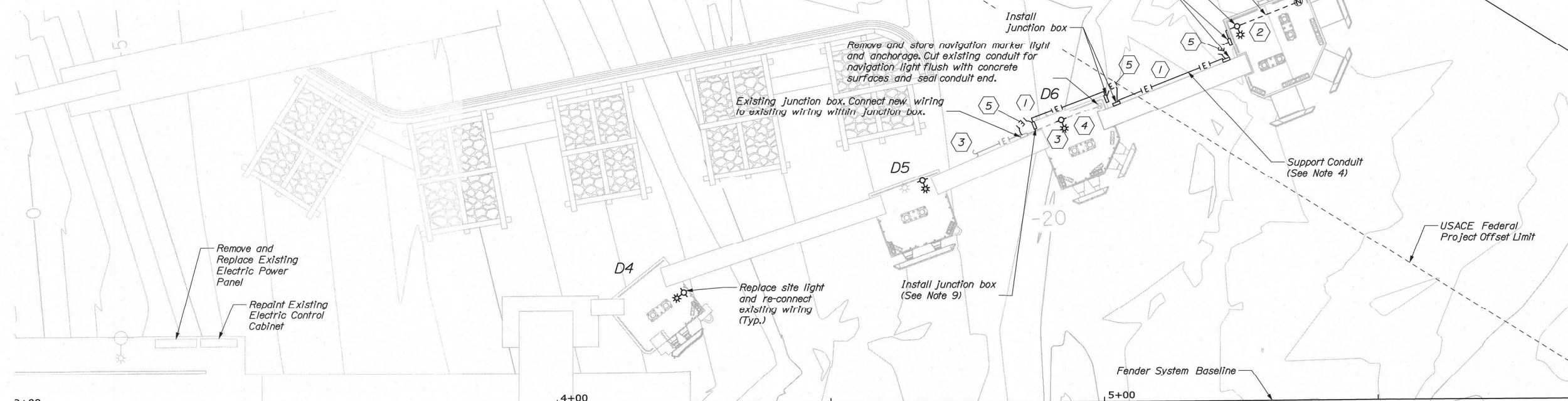
SHEET NUMBER

S12

16 OF 18



Two circuits in III



1. All seeds

1. All conduits shall be PVC coated rigid steel, including conduit bodies and clips.

100



0

[illegible]

	ATE
	4 / 19
	4 / 19

[illegible]

P. B.						
C. M.						

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

	D	L
	2	
	3	

AGENT	TAIL	REVIEW	ETA	ETA	1	2	3	4
-------	------	--------	-----	-----	---	---	---	---

PROJ.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

100

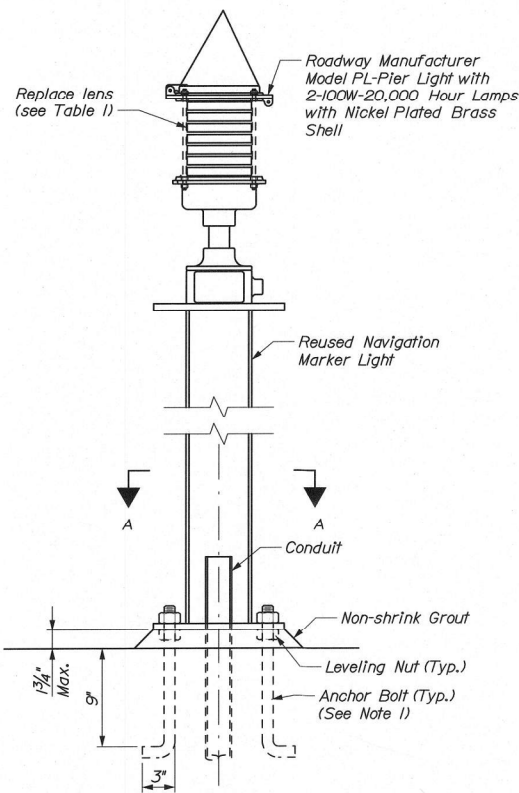
.....

Date:3/29/2019

Username:

Division:

Filename: ...\\018_ElectricalDetails.dgn



NAVIGATION MARKER INSTALLATION DETAIL

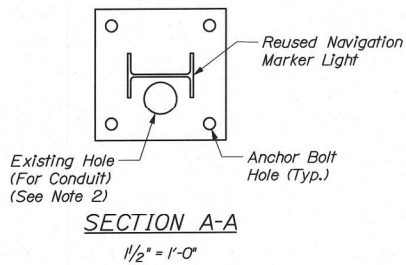
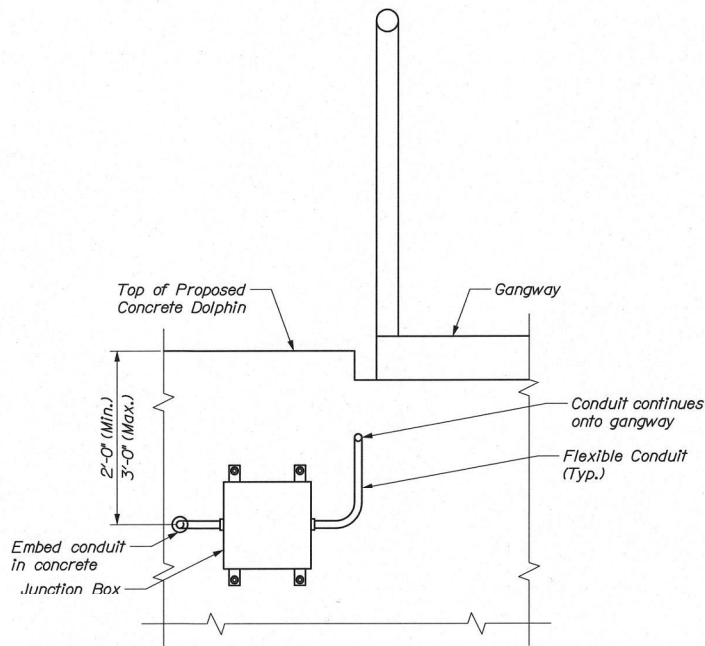
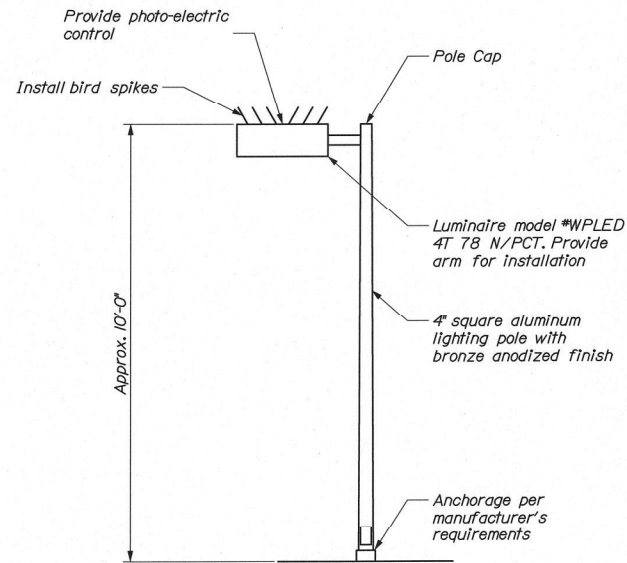


TABLE I
NAVIGATIONAL MARKER LENS
REPLACEMENT SUMMARY

Location	° of Light Opening	Lamp Size	Lens
Dolphin D7	180°	2-100W A-19	Red
Dolphin D8	360°	2-100W A-19	Clear



EMBEDDED CONDUIT JUNCTION BOX DETAIL



SITE LIGHT TYPE A DETAIL
N.T.S.

NOTES:

1. Anchor bolt size and pattern shall match the existing condition.
2. Navigation marker wiring connection shall match the existing condition.
3. Where anchorages are removed, bolts and rods shall be cut, ground flush to concrete, and filled with Sika 1A Flex self-leveling sealant, or approved equal.

HNTB

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	WIN 023823.00
Lawrence E. Bartlett SIGNATURE 79128 P.E. NUMBER 3/29/2019 DATE	
PROJ. MANAGER DESIGN-DETAILED CHECKED-REVIEWED DESIGN-DETAILED02 DESIGN-DETAILED03 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	DATE 04/19 04/19 BY P. Bishop C. Morin L. Bartlett
VINALHAVEN FERRY TERMINAL	ELECTRICAL DETAILS
SHEET NUMBER E02	18 OF 18