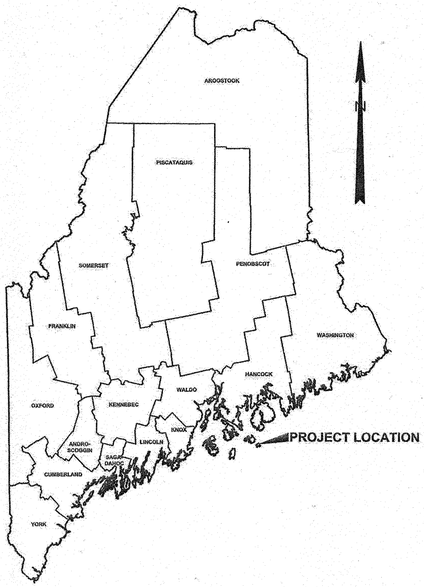
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

TOWN OF FRENCHBORO
HANCOCK COUNTY

FRENCHBORO FERRY TERMINAL

FENDER SYSTEM MODIFICATIONS

FEDERAL PROJECT NO. 02220200
MAINEDOT WIN: 022202.00

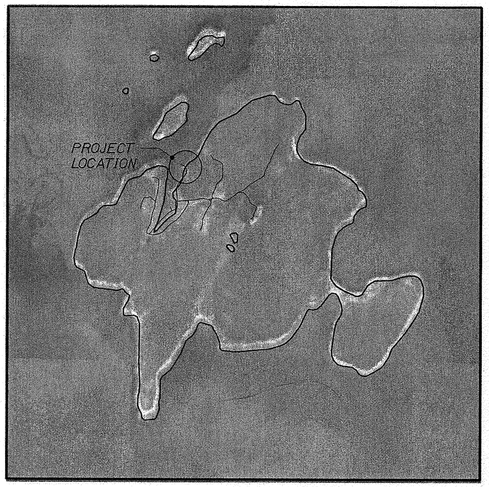


INDEX OF SHEETS

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 PLAN, ELEVATION AND DETAILS
S06	11	DOLPHIN DETAILS MOORING HARDWARE
S07	12	DOLPHIN DETAILS FENDER SYSTEM I
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S09	14	DOLPHIN DETAILS MISCELLANEOUS
S10	15	DOLPHIN DETAILS LADDERS I
S11	16	DOLPHIN DETAILS LADDERS II
S12	17	DOLPHIN DETAILS LADDERS III

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-S12

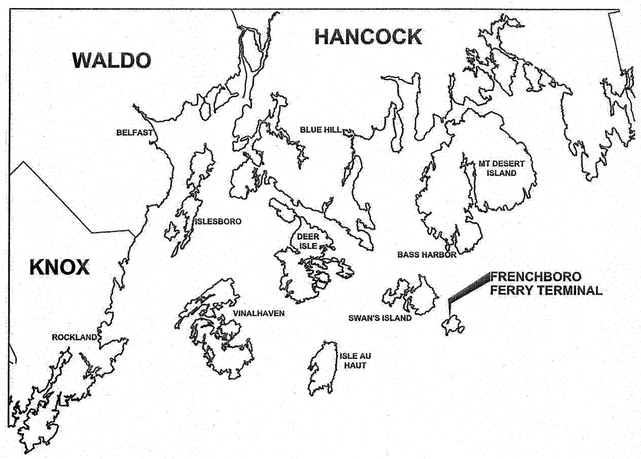
ADDITIONAL WORK APPEARS WITHIN THIS DRAWING SET AND IS THE RESPONSIBILITY OF THE FOLLOWING ORGANIZATIONS, WHOSE STAMP APPEARS ON THOSE INDIVIDUAL SHEETS:
GENERAL PLANS G04-G05 GEOTECHNICAL BORING LOGS SCHONEWALD ENGINEERING



LOCATION MAP

1/2 0 1/2 1

Scale in Miles



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED

COMMISSIONER: [signature] DATE 7/24/2020

CHIEF ENGINEER: [signature] DATE 7-22-2020

STATE OF MAINE · CRAIG R. MORIN · 10209 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE [signature] P.E. NUMBER 10209 DATE 07/13/20

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	CRAIG R. MORIN, P.E.
CONSULTANT	HNTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

FRENCHBORO FERRY TERMINAL
FENDER SYSTEM MODIFICATIONS
FRENCHBORO HANCOCK COUNTY

TITLE SHEET

WIN 022202.00 FEDERAL PROJECT NO. 02220200

HNTB

SHEET NUMBER

G01

1 OF 17

Date:6/23/2020
Username:
Division:
Filename: 001_Title.dgn

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 notes may be found on Sheets G04 and G05.

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 at a location approved/determined by the Resident. The Contractor shall make accomodations off-site for their field office, lay down area, restroom facilities, etc.

SPECIFICATIONS AND CODES

1. Project specifications titled, "Special Provisions For: Frenchboro Ferry Terminal Fender System Modifications", dated May 31, 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:
El. (NGVD) = El. (MLLW) - 9.28 ft

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

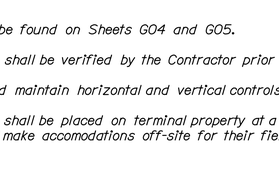
BERTHING LOADS

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

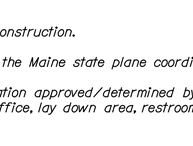
* Includes 1.4 load factor

MOORING LOADS

Dolphin D4
Mooring line pull: Single line in each direction.



PLAN



PLAN

DOLPHIN/FENDER DESIGN LOADS

Design 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).

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

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

FENDER NOTES

1. All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.

2. Contractor's steel manufacturer shall design the fender panels for the indicated loads.

3. 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.

4. Anchors shall be set by template.

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. 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.

6. The distance from the side of any pile to the nearest edge of concrete shall not be less than 9".

7. 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

1. 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

1. 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

2. Railings:

   Aluminum Pedestrian: Vertical 50 plf; Horizontal 50 plf (acting simultaneously)

3. Tidal ranges (elevations in feet):

Frenchboro***	Tidal Datums				
	NGVD29	MSL	MLW	MLLW	STND
Top of Dolphin*	6.93	10.75	15.85	16.21	17.12
Highest Observed Tide	6.72	10.54	15.64	16.00	16.91
MHHW	1.64	5.46	10.56	10.92	11.83
MHW	1.23	5.05	10.15	10.51	11.42
NGVD29**	0.00	3.82	8.92	9.28	10.19
MSL	-3.82	0.00	5.10	5.46	6.37
MLW	-8.92	-5.10	0.00	0.36	1.27
MLLW	-9.28	-5.46	-0.36	0.00	0.91
Lowest Observed Tide	-10.19	-6.37	-1.27	-0.91	0.00
STND (Station Datum)	-12.19	-8.37	-3.27	-2.91	-2.00

* Along top edge of dolphin at corner nearest pen.
** NGVD29 conversion taken from archive project drawings.
*** No values recorded. Values estimated from Swan's Island.

Station ID: 8413825, Swans Island, ME
Tidal Epoch: 1983-2001

LEGEND:

℄	Baseline
℗	Plate
℄	Centerline
XX-XX-XX	Washboring
☼	Flood Light
Ⓝ	Navigation Marker Light
	Site Light - Existing
	Site Light - Proposed
	Solar Lantern
	Curbing
ϕ	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
N.T.S.	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
USACOE	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 for steel connections shall conform to ASTM A325 and be hot-dip galvanized in accordance with ASTM A153. Set anchor bolts by template only. All bolts and nuts for timber connections shall conform to ASTM A307 and be hot-dip galvanized.

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.

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 cemtitious 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 Grade 60, deformed, epoxy coated, 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.

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STATE OF MAINE
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022202.00

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P.E. NUMBER
9209

DATE

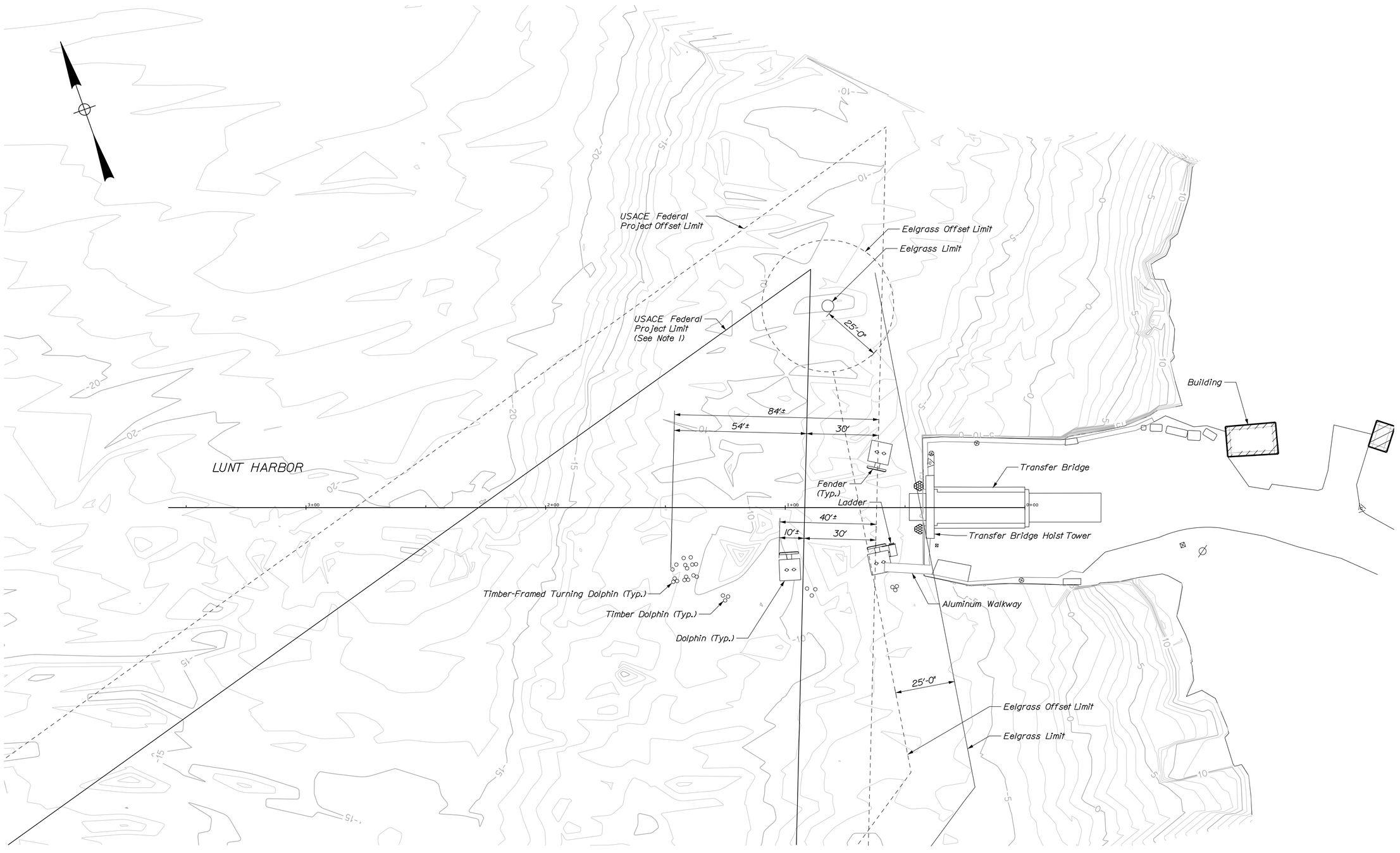
PROJ. MANAGER		BY	DATE
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2	ED2		
DESIGN3-DETAILED3	ED3		
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FRENCHBORO
FERRY TERMINAL

GENERAL NOTES AND
DESIGN CRITERIA

SHEET NUMBER
G02
2 OF 17

Date:7/10/2020
Username:
Division:
Filename: 002_GeneralNotes.dgn



NOTES:

1. USACE project limit per https://www.nae.usace.army.mil/Missions/Navigation/Maine-Projects/. Offset limit dimension determined by 3x water depth (MLLW).

2. Eelgrass Limits are approximated boundaries based on a dive survey conducted in July 2020 by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

9209
P.E. NUMBER

DATE

FRENCHBORO
FERRY TERMINAL

EXISTING CONDITIONS

SHEET NUMBER

G03

3 OF 17

Username:

Date:11/6/2020

Division:

Filename: 003_Existing Conditions.dgn

Date:5/29/2019

Username:

Division:

Filename: 004_Boring Logs 1.dgn

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: Fender System Modifications
Maine State Ferry Terminal
LOCATION: Frenchboro, Maine

Boring No.: MB-FBORO-101-18
WIN: 22202.00

Driller:	New England Boring Contractors	Elevation (ft.): ~15.4 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shane	Datum: MLLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/14/18: 1450- 8/15/18: 1330	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location:	per plan (BSA)	Casing ID/OD: HW to 38.8 ft: NW to 38.8 ft	Hammer Efficiency: 0.906
		Auger ID/OD: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
WU = Unsuccessful Thin Wall Tube Sample attempt
V = Insltu Vane Shear Test
WV = Unsuccessful Inslty Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N=uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_{fv} = Inslty Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Rec./Rec. (in./)	Sample Depth (ft.)	Blows / 6 Inches Shear Strength (psf) or RQD (%)	Uncorrected	N=60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
							SPT/N				
							16				
							24				
5							RC				
	MD	24/0	6.0 – 8.0	13-14-8-5	3*dia		17			MD: No recovery; sampler sheared off.	
							25				
							26				
10							11				
	10	24/5	10.0 – 12.0	13-7-5-8	12	18	5			10: Grey, fine to medium Sandy ORGANIC SILT with shells and occasional gravel.	
							8				
							51				
							41				
15							73				
							92				
							42				
							24				
							46				
20							57				
	20	24/18	20.0 – 22.0	2-4-1-2	5	8	---			20: Grey, Silty fine to medium SAND, trace fine gravel, trace coarse sand with shells throughout.	
							26				
							48				
25							40				
							51				

Remarks:
8/14/18: 1418 hrs: 4.4' top outboard (weaterly) dolphin to water: 7.7' barge deck to water: 35.3' barge deck to mudline
top of outboard dolphins elev. 16.60 ft MLLW
100' cleat of outboard dolphin to borehole: approx. 3' northerly of line through cleats on two southerly dolphins.

Stratification lines represent approximate boundaries between soil typest 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.

Boring No.: MB-FBORO-101-18

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PROJECT: Fender System Modifications
Maine State Ferry Terminal
LOCATION: Frenchboro, Maine

Boring No.: MB-FBORO-101-18
WIN: 22202.00

Driller: New England Boring Contractors | Elevation (ft.): ~15.4 ft (mudline) | Core Barrel: NQ2 (wireline)
Operator: Enos / Shane | Datum: MLLW | Sampler: standard split spoon
Logged By: Schonewald | Rig Type: Mobile Drill B-53 | Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish: 8/14/18: 1450- 8/15/18: 1330 | Drilling Method: cased wash boring | Hammer Type: auto hammer
Boring Location: per plan (BSA) | Casing ID/OD: HW to 38.8 ft: NW to 38.8 ft | Hammer Efficiency: 0.906
Auger ID/OD: n/a | Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
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Depth (ft.)	Sample No.	Rec./Rec. (in./)	Sample Depth (ft.)	Blows / 6 Inches Shear Strength (psf) or RQD (%)	Uncorrected	N=60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
25							T9				
							97				
							121	-43.4		28.0	
							61				
							66				
30	30	24/18	30.0 – 32.0	4-2-2-3	4	6	RC			30: Dark grey, soft, Silty CLAY, trace very fine sand.	
35								-50.4		35.0	
										35 ft: Gravel noted: possibly till interface.	
										38.8	
	R1	60/60	38.8 – 43.8	RQD: 38"=63%			NX	-54.2		Top of bedrock at Elev. -54.2 ft. R1: Bedrock: Very hard, fresh, fine to medium grained, pink grey biotite-rich GRANITE with occasional cracks. Close, low angle to moderately dipping breakss undulating, rough, fresh to discolored, and open with occasional infilling. (Devonian Granite Pluton) Core times: 2:15/ 3:10/ 3:00/ 2:55/ 2:35 min:sec/ft ROCK QUALITY = FAIR	UCT: qp= 16,78 ksi
40				sample 40.5-40.9							
	R2	60/59	43.8 – 48.8	RQD: 44"=73%						R2: Similar to R1, except close to moderately spaced breaks. 3:05/ 3:35/ 3:45/ 3:50/ 4:00 min:sec/ft ROCK QUALITY = FAIR TO GOOD	
45											
	R3	55/55	48.8 – 53.4	RQD: 44"=80%						R3: Similar to R1, except one high angle 1/4-inch thick quartzite vein and moderately spaced breaks. 5:55/ 7:10/ 10:55/ 8:45/ -- min:sec/ft	
50											

Remarks:
8/14/18: 1418 hrs: 4.4' top outboard (weaterly) dolphin to water: 7.7' barge deck to water: 35.3' barge deck to mudline
top of outboard dolphins elev. 16.60 ft MLLW
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LOCATION: Frenchboro, Maine

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Auger ID/OD: n/a | Water Level*: n/a

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SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Rec./Rec. (in./)	Sample Depth (ft.)	Blows / 6 Inches Shear Strength (psf) or RQD (%)	Uncorrected	N=60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
50										ROCK QUALITY = GOOD	
	R4	60/60	53.4 – 58.4	RQD: 49"=82%						R4: Similar to R1, except one calcsilicate- filled crack (parent rock altered along crack margins) and close to moderately spaced breaks. 4:45/ 4:45/ 5:05/ 4:25/ 5:10 min:sec/ft ROCK QUALITY = GOOD	UCT: qp= 7.11 ksi
				sample 54.4-54.9							
55								-73.8		58.4	
										Bottom of Exploration at 58.4 feet below ground surface.	
60											
65											
70											
75											

Remarks:
8/14/18: 1418 hrs: 4.4' top outboard (weaterly) dolphin to water: 7.7' barge deck to water: 35.3' barge deck to mudline
top of outboard dolphins elev. 16.60 ft MLLW
100' cleat of outboard dolphin to borehole: approx. 3' northerly of line through cleats on two southerly dolphins.

Stratification lines represent approximate boundaries between soil typest 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.

Boring No.: MB-FBORO-101-18

GEOTECHNICAL NOTES:

1. The geotechnical report for the project is entitled "Geotechnical Design Report, Fender System Modifications, Maine State Ferry Terminal, Frenchboro, Maine, MaineDOT WIN 022202.00," dated May 2019 and prepared by Schonewald Engineering Associates, Inc. The report is available on the MaineDOT website.

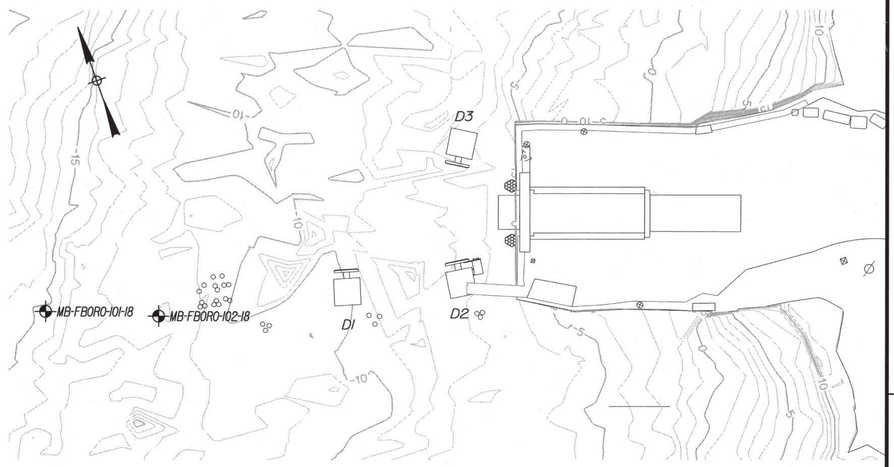
2. Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for 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-FBORO-101-18	165811.17	1020262.14
MB-FBORO-102-18	165797.35	1020296.81



KEY PLAN
1" = 25'-0"

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

ISABEL V. SCHONEWALD No. 7628 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

SIGNATURE

7128
P.E. NUMBER

5/29/19
DATE

BY	DATE
P. Bishop	05\19
C. Morin	05\19

PROJ. MANAGER	N. Wiley
DESIGN-DETAILED	N. Wiley
CHECKED-REVIEWED	C. Morin
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

FRENCHBORO
FERRY TERMINAL

BORING LOGS 1

SHEET NUMBER
G04
4 OF 17

SCHNEWALD ENGINEERING ASSOCIATES, INC.	PROJECT: Fender System Modifications Maine State Ferry Terminal LOCATION: Frenchboro, Maine	Boring No.: MB-FBORO-102-18 WIN: 22202.00	
Driller: New England Boring Contractors	Elevation (ft.): -11.8 ft (mudline)	Core Barrel: NQ2 (wireline)	
Operator: Enos / Share	Datum: MLW	Sampler: standard split spoon	
Logged By: Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	
Date Start/Finish: 8/13/18: 1515- 8/14/18: 1355	Drilling Method: cased wash boring	Hammer Type: auto hammer	
Boring Location: per plan (BSB)	Casing ID/OD: HW to 35 ft† NW to 35.6 ft	Hammer Efficiency: 0.906	
	Auger ID/OD: n/a	Water Level*: n/a	

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
UD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
WU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
WV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows /6 in.= Shear Strength or RQD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0	1D	24/5	0.0 - 2.0	38-20-17-14	37dia		9			1D: Brown grey, GRAVEL, trace to little fine to coarse sand, trace silt. RECENT MARINE SEDIMENT	
							47				
							73				
							49				
							26				
5	2D	24/2	5.5 - 7.5	11-3-2-2	5	8	---			2D: Grey, loose, Silty fine to coarse SAND, trace fine gravel! appears to be mostly wash.	
							27				
							40				
							36				
							28				
10	3D	24/24	10.0 - 12.0	7-5-1-2	6	9	RC			3D: Brown grey, fine to medium Sandy ORGANIC SILT, little gravel, trace coarse sand with numerous shells.	
15	4D	24/10	15.0 - 17.0	WOH/12"-2-2	2	3	PUSH			4D: Grey, soft, Silty CLAY, little fine to medium sand with numerous shell fragments and occasional fine gravel and coarse sand.	
							46				
							44				
20	5D	24/20	20.0 - 22.0	4-1-1/12"	2	3	24			5D: Grey, v. loose, Interbedded, Silty fine to medium SAND with shells& Silty CLAY with shells and random pieces of fine gravels and fine to medium SAND, little to some silt with shells.	
							26				
							33				
							36				
25							74				

Remarks:
8/13/18: 1505 hrs: 8.0' top outboard (westerly) dolphin to water: 7.7' barge deck to water: 28.1' barge deck to mudline
top of outboard dolphin: elev. 16.60 ft MLW
63' cleat of outboard dolphin to borehole: approx. 2' southerly of line through cleats on two southerly dolphins.

Stratification 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.

SCHNEWALD ENGINEERING ASSOCIATES, INC.	PROJECT: Fender System Modifications Maine State Ferry Terminal LOCATION: Frenchboro, Maine	Boring No.: MB-FBORO-102-18 WIN: 22202.00	
Driller: New England Boring Contractors	Elevation (ft.): -11.8 ft (mudline)	Core Barrel: NQ2 (wireline)	
Operator: Enos / Share	Datum: MLW	Sampler: standard split spoon	
Logged By: Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	
Date Start/Finish: 8/13/18: 1515- 8/14/18: 1355	Drilling Method: cased wash boring	Hammer Type: auto hammer	
Boring Location: per plan (BSB)	Casing ID/OD: HW to 35 ft† NW to 35.6 ft	Hammer Efficiency: 0.906	
	Auger ID/OD: n/a	Water Level*: n/a	

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
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WV = Unsuccessful Insitu Vane Shear Test attempt

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N-uncorrected = N value
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S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

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WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows /6 in.= Shear Strength or RQD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
30							RC	-37.8		26.0	
	6D	18/7	30.0 - 31.5	7-18-50/6"	68	103	RC			6D: Grey, Silty fine to medium SAND, some gravel, trace coarse sand, TILL	
35											
	TD	6/6	35.0 - 35.5	9-30/0"			NQ2	-47.4		7D: Grey, Silty GRAVEL, some fine to coarse sand. 35.6	
	R1	60/60	35.5 - 40.6	RQD1 20"=33%						Top of bedrock at Elev. -47.4 ft. R1: Bedrock: Very hard, fresh, fine to medium grained, pink grey biotite-rich GRANITE. Close, typically low angle breakst undulating, rough, fresh to discolored, and open with occasional lime infilling. (Devonian Granite Pluton) Core times: 3':0/ 1':45/ 1':45/ 2':10/ 2':05 minsec/ft ROCK QUALITY = POOR	
				sample 37.3-37.7							UCT qp= 26.19 ksi
40	R2	60/60	40.6 - 45.6	RQD: 37"=62%						R2: Similar to R1, except one near vertical infilled crack from 43.1 to 44. 6 ft (parent rock altered along crack margins) moderately spaced breaks! and open fracture from 40.6 to 40.8 ft. --/ 1':35/ 1':45/ 2':00/ 1':55 minsec/ft ROCK QUALITY = FAIR	
				sample 41.3-42.0							UCT qp= 27.47 ksi
45	R3	25/24	45.6 - 47.7	RQD: 16"=64%						R3: Similar to R1, except close breaks below 47.0 ft. 2':10/ 1':50/ -- minsec/ft ROCK QUALITY = FAIR	
	R4	54/53	47.7 - 52.2	RQD: 50"=93%						R4: Similar to R1, except widely spaced breaks. One near vertical infilled crack from 47.7 to 48.9 ft and one inclusion. --/ 2':40/ 2':55/ 2':55/ -- minsec/ft. ROCK QUALITY = EXCELLENT	
50											

Remarks:
8/13/18: 1505 hrs: 8.0' top outboard (westerly) dolphin to water: 7.7' barge deck to water: 28.1' barge deck to mudline
top of outboard dolphin: elev. 16.60 ft MLW
63' cleat of outboard dolphin to borehole: approx. 2' southerly of line through cleats on two southerly dolphins.

Stratification 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.

SCHNEWALD ENGINEERING ASSOCIATES, INC.	PROJECT: Fender System Modifications Maine State Ferry Terminal LOCATION: Frenchboro, Maine	Boring No.: MB-FBORO-102-18 WIN: 22202.00	
Driller: New England Boring Contractors	Elevation (ft.): -11.8 ft (mudline)	Core Barrel: NQ2 (wireline)	
Operator: Enos / Share	Datum: MLW	Sampler: standard split spoon	
Logged By: Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	
Date Start/Finish: 8/13/18: 1515- 8/14/18: 1355	Drilling Method: cased wash boring	Hammer Type: auto hammer	
Boring Location: per plan (BSB)	Casing ID/OD: HW to 35 ft† NW to 35.6 ft	Hammer Efficiency: 0.906	
	Auger ID/OD: n/a	Water Level*: n/a	

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RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
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BOREHOLE ADVANCEMENT METHOD:
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LABORATORY TEST RESULTS:
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MC = water content, percent
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UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows /6 in.= Shear Strength or RQD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
50											
	R5	60/60	52.2 - 57.2	RQD: 50"=83%						R5: Similar to R4. One fracture zone at 52. 2 ft. 4':35/ 2':45/ 2':25/ 2':45/ 2':55 minsec/ft ROCK QUALITY = GOOD	
55											
	R6	60/60	57.2 - 62.2	RQD: 52"=87%						R6: Similar to R4. 2':15/ 2':25/ 2':40/ 2':45 minsec/ft ROCK QUALITY = GOOD	
60											
								-74.0		62.2 Bottom of Exploration at 62.2 feet below ground surface.	
65											
70											
75											

Remarks:
8/13/18: 1505 hrs: 8.0' top outboard (westerly) dolphin to water: 7.7' barge deck to water: 28.1' barge deck to mudline
top of outboard dolphin: elev. 16.60 ft MLW
63' cleat of outboard dolphin to borehole: approx. 2' southerly of line through cleats on two southerly dolphins.

Stratification 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.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

STATE OF MAINE * ISABEL V. SCHONEWALD No. 7528 * REGISTERED PROFESSIONAL ENGINEER

SIGNATURE 7/29

P.E. NUMBER

5/29/19
DATE

PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	05\19
CHECKED-REVIEWED	C. Morin	C. Morin	05\19
DESIGNED-DETAILED2			
DESIGNED-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

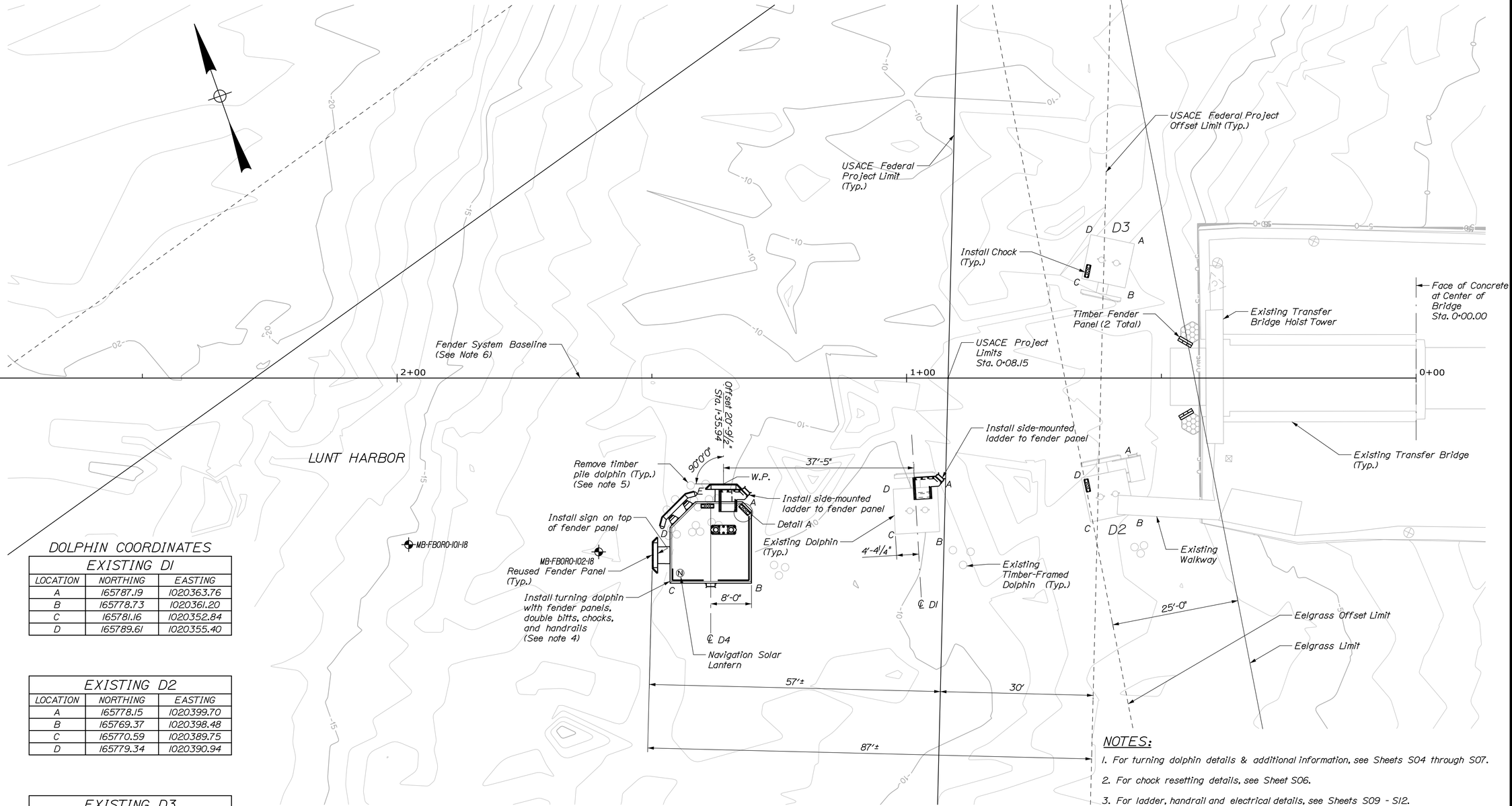
FRENCHBORO
FERRY TERMINAL

BORING LOGS II

SHEET NUMBER
G05
5 OF 17

HNTB

Date:5/29/2019
Username:
Division:
Filename: 005_Boring Logs II.dgn



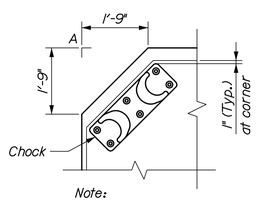
DOLPHIN COORDINATES

EXISTING D1		
LOCATION	NORTHING	EASTING
A	165787.19	1020363.76
B	165778.73	1020361.20
C	165781.16	1020352.84
D	165789.61	1020355.40

EXISTING D2		
LOCATION	NORTHING	EASTING
A	165778.15	1020399.70
B	165769.37	1020398.48
C	165770.59	1020389.75
D	165779.34	1020390.94

EXISTING D3		
LOCATION	NORTHING	EASTING
A	165819.17	1020416.13
B	165811.63	1020411.50
C	165816.21	1020404.10
D	165823.76	1020408.66

PROPOSED D4		
LOCATION	NORTHING	EASTING
A	165795.90	1020328.33
B	165780.53	1020323.87
C	165784.98	1020308.50
D	165795.55	1020311.57
E	165798.96	1020317.76



Note: For chock position, see Sheet S05.

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

SITE PLAN
1" = 10'-0"

10 0 10 20
Scale of Feet

NOTES:

1. For turning dolphin details & additional information, see Sheets S04 through S07.
2. For chock resetting details, see Sheet S06.
3. For ladder, handrail and electrical details, see Sheets S09 - S12.
4. Fender panels, rubber buckling fenders, and chains shall be owner-supplied. These elements are currently stored at the Swan's Island Ferry Terminal, exact location to be determined, and shall be picked up and transported to the site by the Contractor.
5. Timber piles within the footprint of the dolphin shall be removed by extraction. Timber piles adjacent to the proposed dolphin shall also be extracted to facilitate dolphin construction.
6. Baseline was developed using information from 2013 As-built plans, Sheet S-3.
7. 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.
8. Eelgrass Limits are approximated boundaries based on a dive survey conducted in July 2020 by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

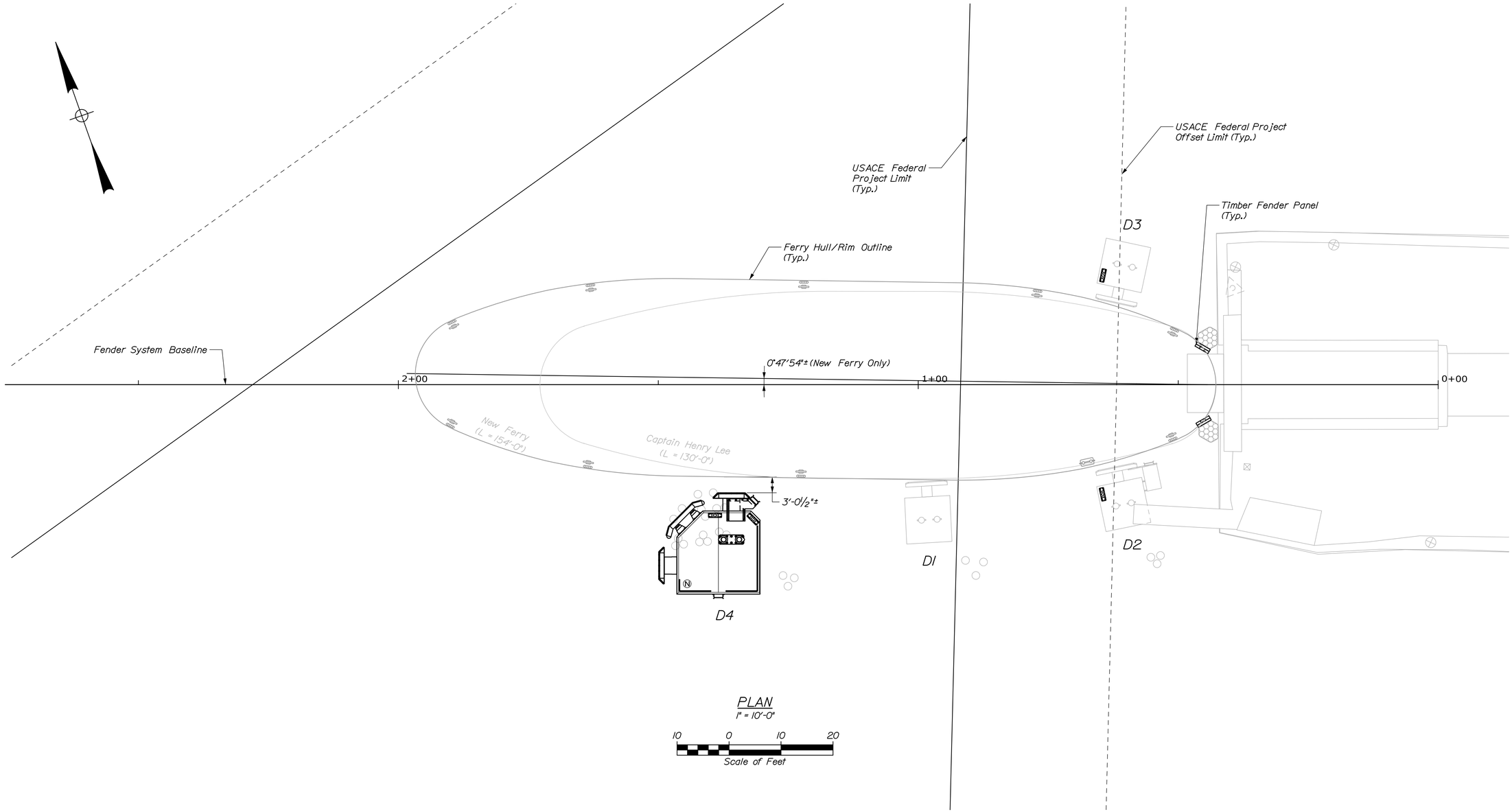
SIGNATURE
#0209
P.E. NUMBER
DATE

FRENCHBORO
FERRY TERMINAL

SITE PLAN

SHEET NUMBER
S01
6 OF 17

Date:11/6/2020
Username:
Division:
Filename: 006_Site Plan.dgn



PLAN
1" = 10'-0"

10 0 10 20
Scale of Feet

NOTES:

1. MV Captian Henry Lee is currently in operation. New ferry is proposed.

2. MV Margaret Chase Smith not shown. Ferry is too wide for the pen and does not use this terminal.

3. Offset dimensions shown for new ferry are provided for future planning puposes. Modifications to the fender panels at dolphins D1 and D4 should be considered for new ferry operations.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

	N. Willey	SIGNATURE
	C. Morin	#0209
		P.E. NUMBER
		DATE

FRENCHBORO
FERRY TERMINAL

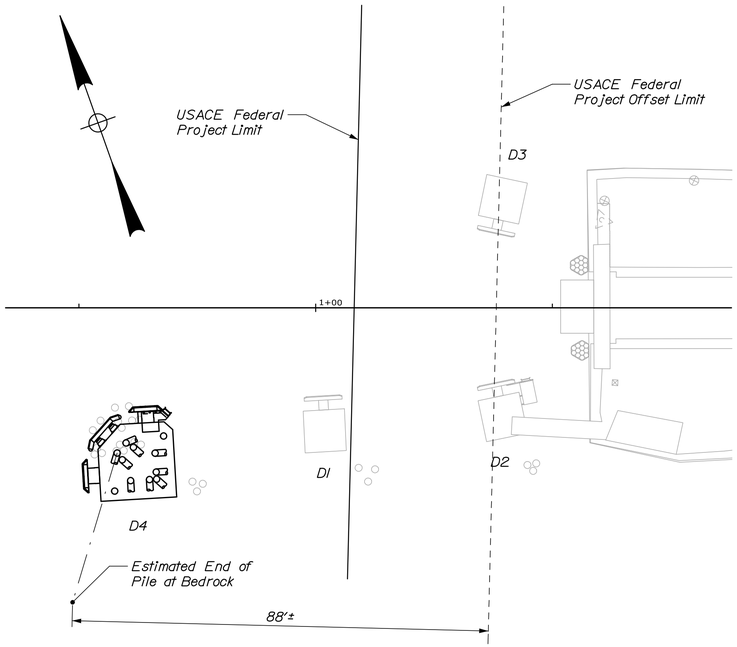
BERTH PLAN

SHEET NUMBER

S02

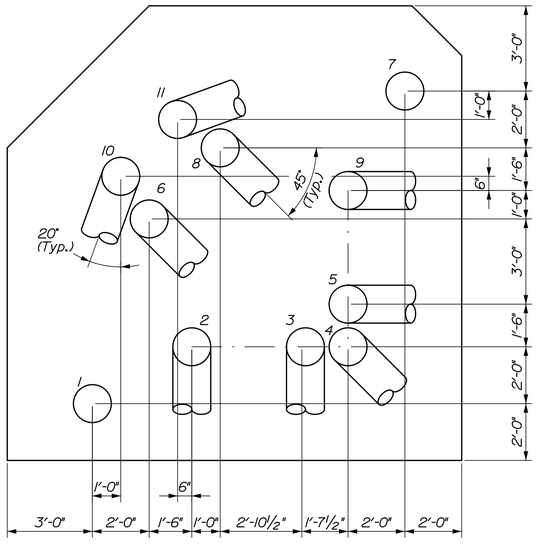
7 OF 17

Date:7/10/2020
Username:
Division:
Filename: 007_Berth Plan.dgn



PLAN

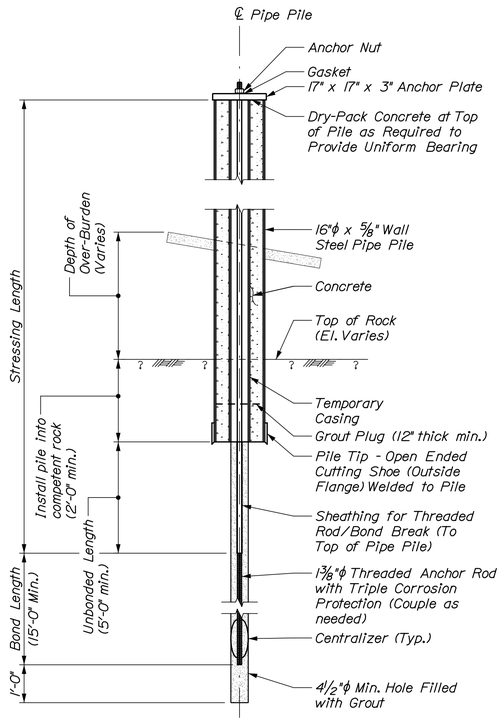
1/16" = 1'-0"



D4 FOUNDATION PLAN

(Dimensions shown at pile cut-off elevation)

3/8" = 1'-0"



ROCK ANCHOR DETAIL

1/2" = 1'-0"

STEEL PILE TABLE

	Pile No.	Estimated Pile Length	Vertical or Batter (Rise/Run)
Turning Dolphin D4	1	66	Vert.
	2	69	Batter 4:12
	3	69	Batter 4:12
	4	69	Batter 4:12
	5	69	Batter 4:12
	6	69	Batter 4:12
	7	66	Vert.
	8	69	Batter 4:12
	9	69	Batter 4:12
	10	67	Batter 2:12
	11	67	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. For anode details, see Sheet S04.

5. 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 using drilling methods to top of competent rock and socket 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. Check tolerances. Inspect integrity of pipe pile. Resident shall accept pipe pile prior to grout plug installation. Install grout plug; 12" thick minimum.

4. Install temporary casing with centralizers as needed until it is seated into the grout plug to bedrock at the bottom of pile.

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). Release proof load and remove anchor plate.

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.

13. Re-install anchor plate at top of anchor with hex nut and hardened washer. Apply 110% of the max. pile tension load (see pile schedule). Lock off rock anchor.

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

WIN
022202.00

	BY	DATE
PROJ. MANAGER	N. Willey	
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

#9209

P.E. NUMBER

DATE

FRENCHBORO
FERRY TERMINAL

DOLPHIN
FOUNDATION PLAN

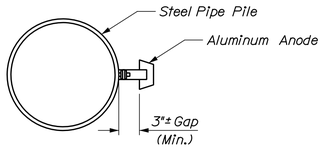
SHEET NUMBER

S03

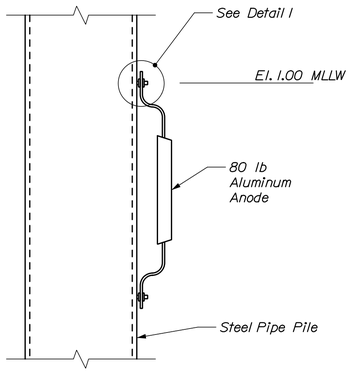
8 OF 17

HNTB

Date:7/10/2020 Username: Division: Filename: 008_Dolphin Foundation Plan.dgn



PLAN

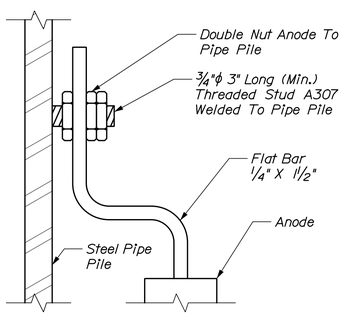


ELEVATION

Note: Anode shall be positioned along the inshore face of piles. Set top of Anode at +1.00 MLLW

ANODE DETAIL

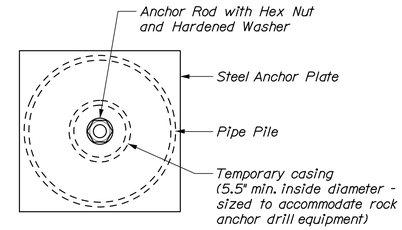
N.T.S.



DETAIL I

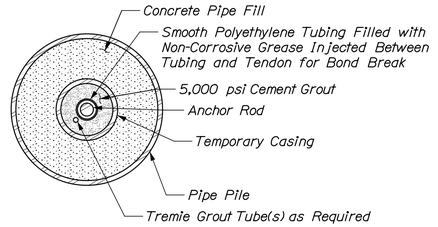
N.T.S.

Note: Studs and hardware shall be A307.



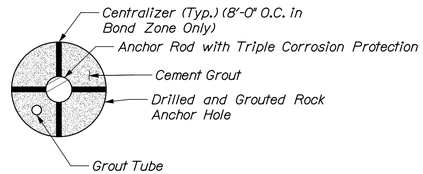
TOP OF PILE DETAIL

N.T.S.



ROCK ANCHOR SECTION
(UNBONDED ZONE)

N.T.S.



ROCK ANCHOR SECTION
(BOND ZONE)

N.T.S.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

SIGNATURE
#0209
P.E. NUMBER
DATE

PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	07\20	DESIGN1-DETAILED3
CHECKED-REVIEWED	C. Morin	07\20	REVISIONS 1
DESIGN2-DETAILED2			REVISIONS 2
DESIGN3-DETAILED3			REVISIONS 3
REVISIONS 1			REVISIONS 4
REVISIONS 2			FIELD CHANGES
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FRENCHBORO
FERRY TERMINAL

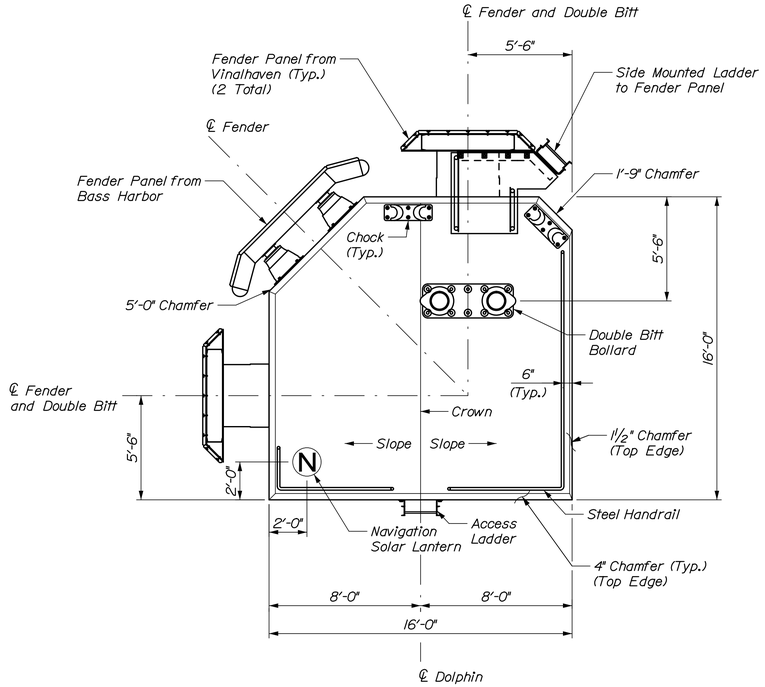
DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER

S04

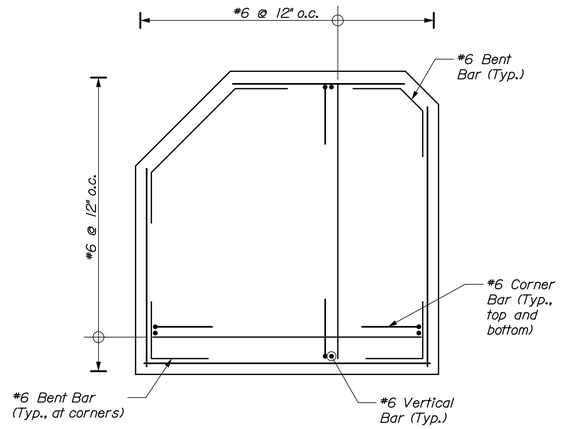
9 OF 17

Filename: 009_Dolphin Foundation Details.dgn Division: Username: Date:7/10/2020



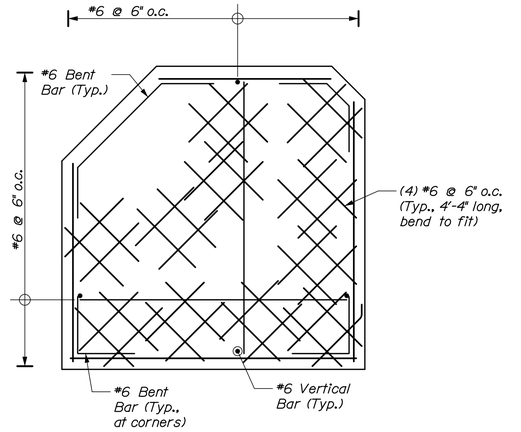
TURNING DOLPHIN PLAN

1/4" = 1'-0"



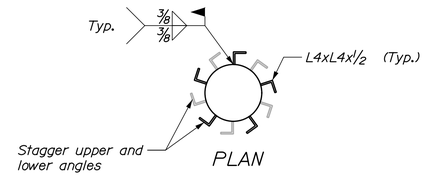
SECTION A-A

(Same as shown for El. 9.50 - 11.00, but with pile cutouts)
1/4" = 1'-0"

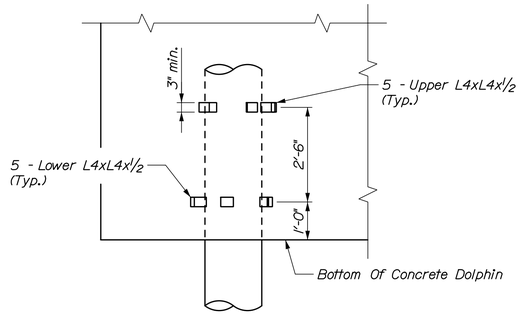


SECTION B-B

1/4" = 1'-0"



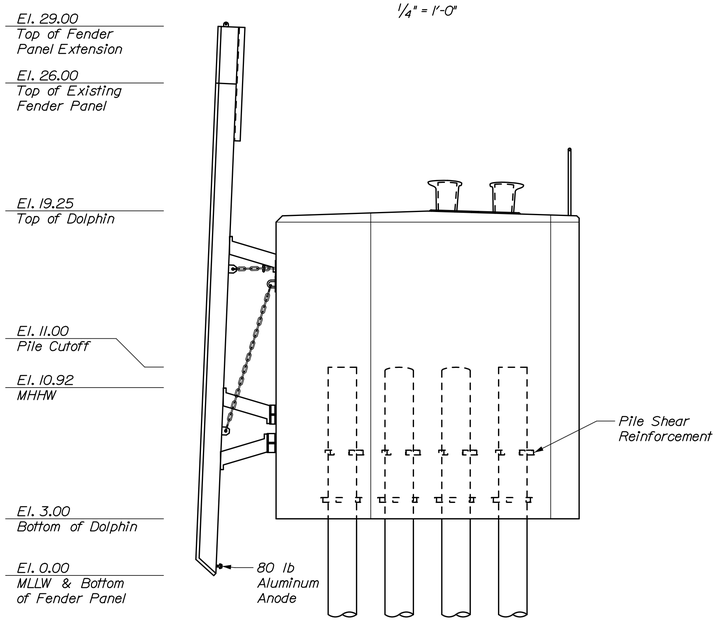
PLAN



ELEVATION

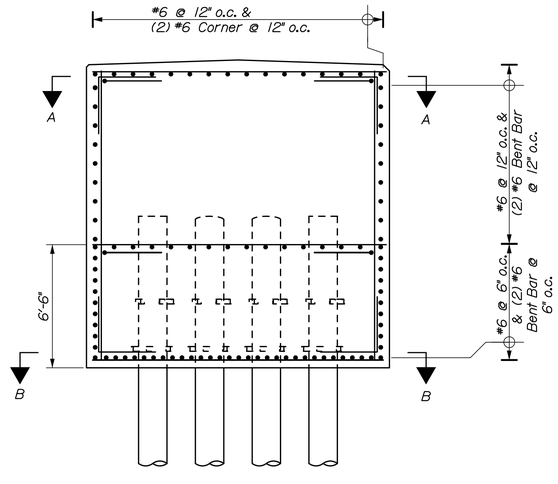
PILE SHEAR REINFORCEMENT

1/2" = 1'-0"



TURNING DOLPHIN ELEVATION

(Select fenders and chocks not shown for clarity)
1/4" = 1'-0"



TURNING DOLPHIN REINFORCING TYPICAL SECTION

1/4" = 1'-0"

NOTES:

1. For anode details, see Sheet S04.
2. For double bitt and chock details, see Sheet S06.
3. For handrail details, see Sheet S09.
4. For access ladder details, see Sheet S10 through S12.
5. All reinforcing shall be cut to maintain 2" clear from piles and 3" clear of concrete surfaces.
6. Reinforcing bars shall be adjusted to maintian 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be 1/4" per foot and pitched as shown.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

9209
P.E. NUMBER

DATE

FRENCHBORO
FERRY TERMINAL

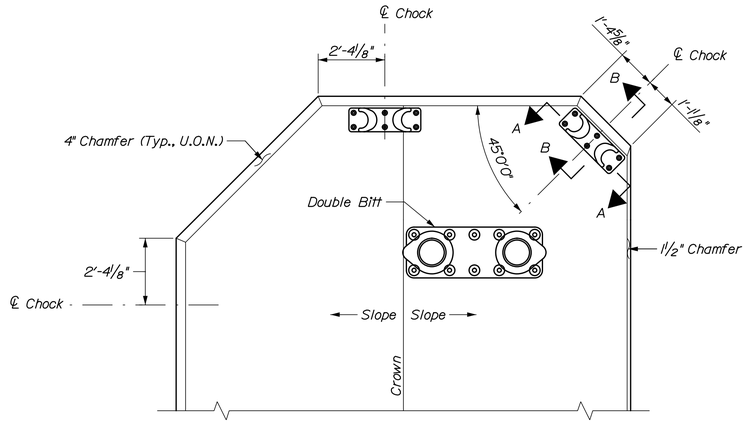
DOLPHIN PLAN, ELEVATION, AND DETAILS

SHEET NUMBER

S05

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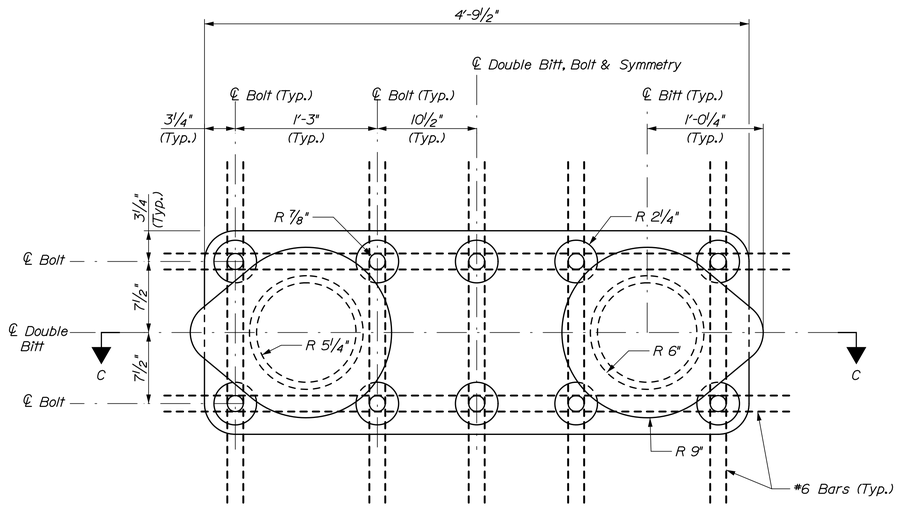
Filename: 010_Dolphin Plan and Elevation.dgn Division: Username: Date:7/10/2020



PLAN VIEW OF PROPOSED DOLPHIN

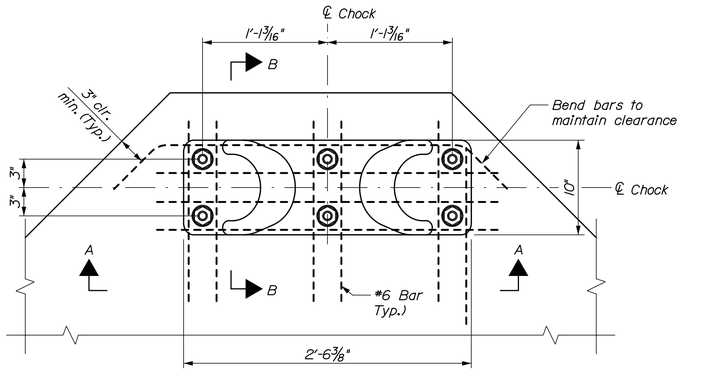
(Hand rails, lights, and fenders not shown for clarity)

3/8" = 1'-0"



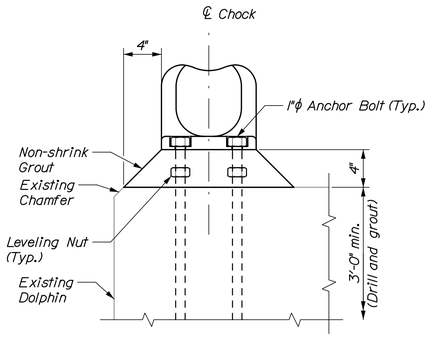
DOUBLE BITT PLAN

1 1/2" = 1'-0"



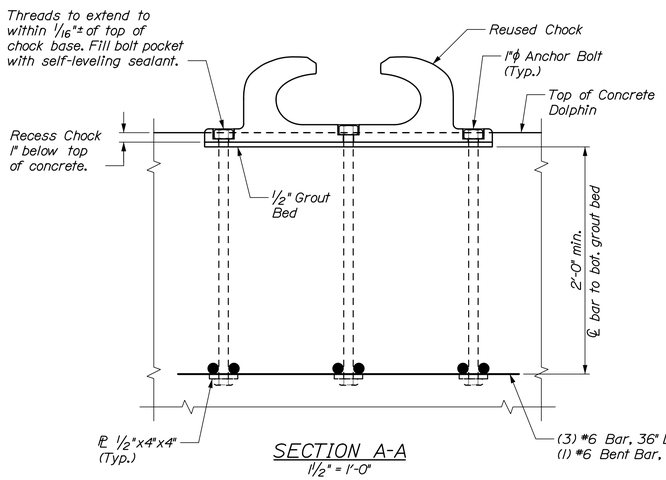
CHOCK PLAN AT CHAMFER

1 1/2" = 1'-0"



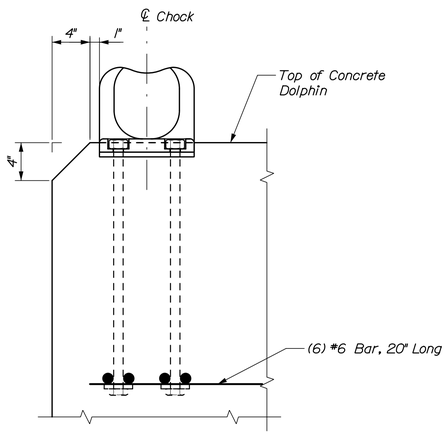
EXISTING CONCRETE CHOCK DETAIL

1 1/2" = 1'-0"



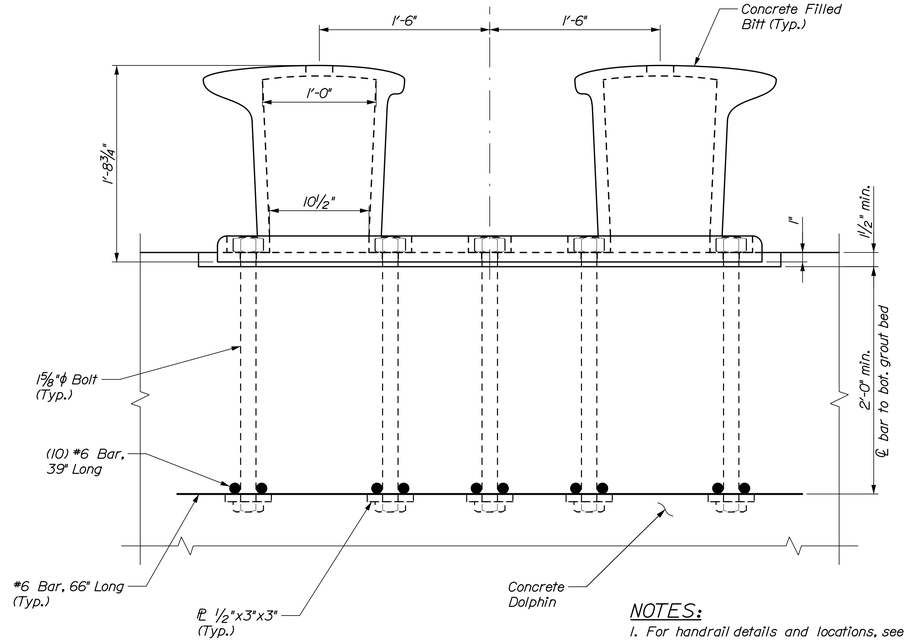
SECTION A-A

1 1/2" = 1'-0"



SECTION B-B

1 1/2" = 1'-0"



SECTION C-C

1 1/2" = 1'-0"

NOTES:

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

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

9209

P.E. NUMBER

DATE

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
MOORING HARDWARE

SHEET NUMBER

S06

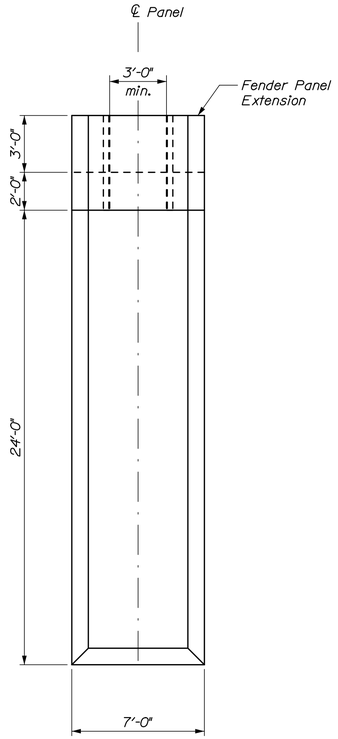
11 OF 17

Date:7/22/2020

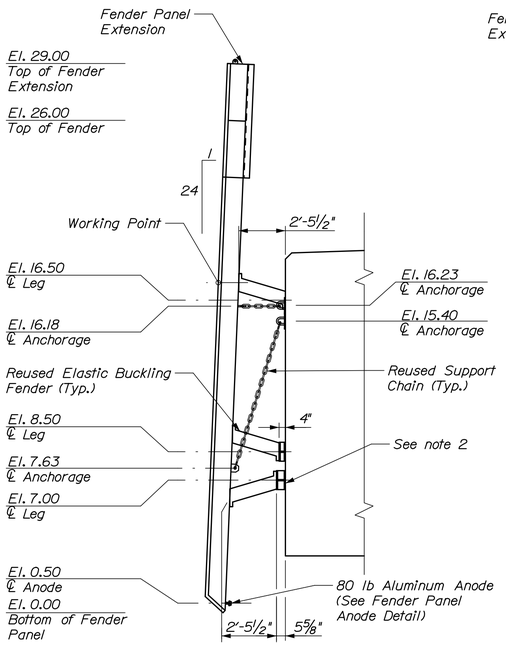
Username:

Division:

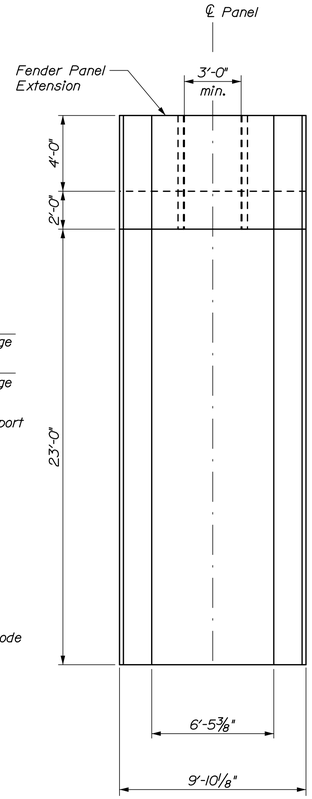
Filename: 011_Mooring Hardware.dgn



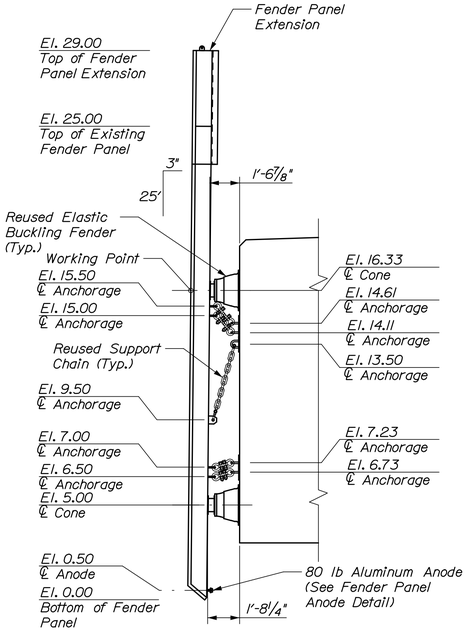
EXISTING PANEL
(FROM VINALHAVEN)
1/4" = 1'-0"



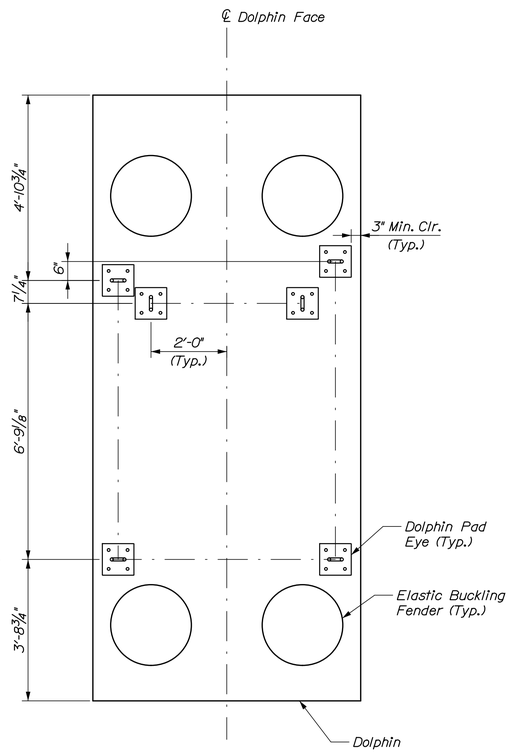
EXISTING PANEL ELEVATION
(FROM VINALHAVEN)
(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"



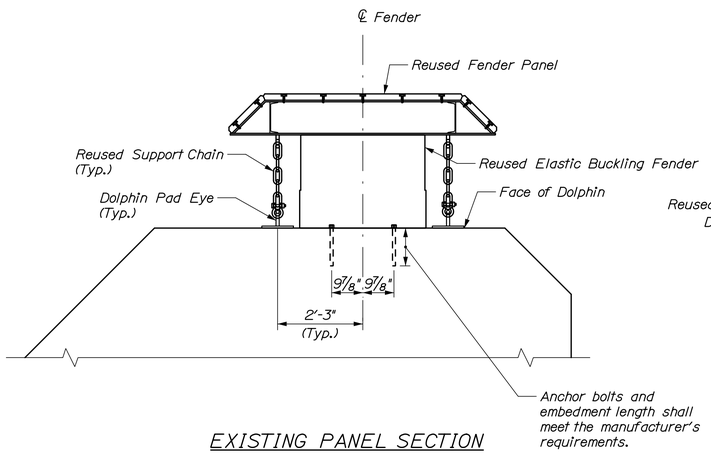
EXISTING PANEL
(FROM BASS HARBOR)
1/4" = 1'-0"



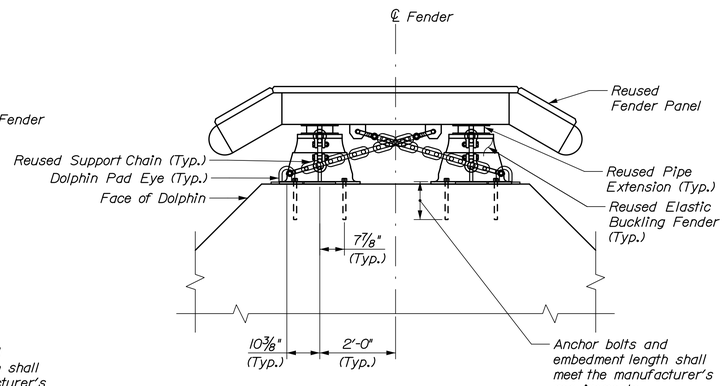
EXISTING PANEL ELEVATION
(FROM BASS HARBOR)
(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"



EXISTING PANEL DETAIL
(DOLPHIN PAD EYE LOCATIONS)
(FROM BASS HARBOR)
1/2" = 1'-0"



EXISTING PANEL SECTION
(FROM VINALHAVEN)
(2 Panels Total)
1/2" = 1'-0"



EXISTING PANEL SECTION
(FROM BASS HARBOR)
1/2" = 1'-0"

NOTES

1. Existing chains, dog bones, and connectors shall be reused unless damaged or corroded. The Resident shall determine if replacement is required and the Contractor shall replace in kind.

2. Existing steel fender blocks from Vinalhaven dolphin D1 shall not be used.

3. Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.

4. For dolphin pad eye, panel anode and steel fender block details, see Sheet S08.

5. Contractor to replace broken or bent chain links, dog bones, or chain tensioner in kind.

6. Contractor shall remove obstructions or modify detail for panel extension.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

	BY	DATE
DESIGNED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20

SIGNATURE
9209
P.E. NUMBER
DATE

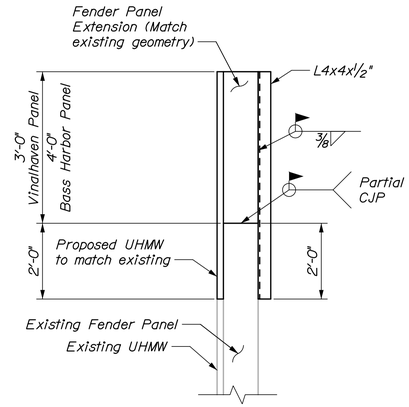
PROJ. MANAGER	
DESIGN-DETAILED	N. Willey
CHECKED-REVIEWED	C. Morin
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

FRENCHBORO
FERRY TERMINAL

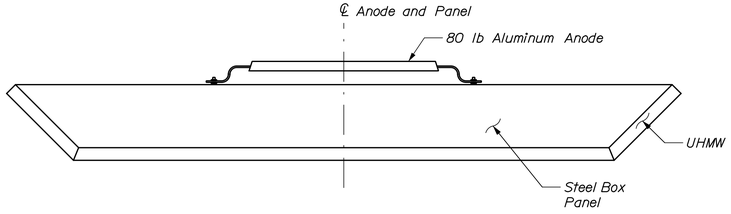
DOLPHIN DETAILS
FENDER SYSTEM I

SHEET NUMBER
S07
12 OF 17

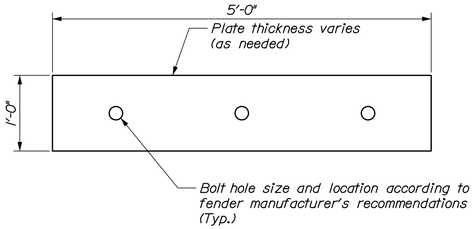
Username:
Division:
Date:7/10/2020
Filename: 012_Fender System 1.dgn



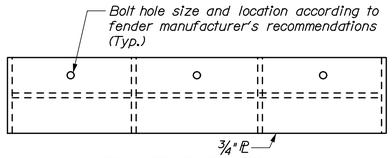
TYPICAL PANEL EXTENSION DETAIL
1/2" = 1'-0"



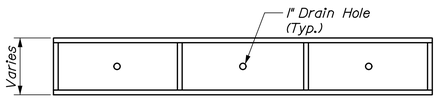
FENDER PANEL ANODE DETAIL
1" = 1'-0"



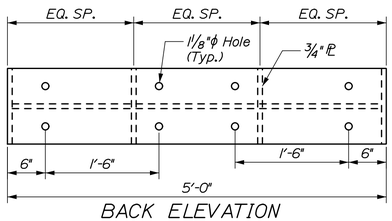
PANEL SPACER PLATE DETAIL
1" = 1'-0"



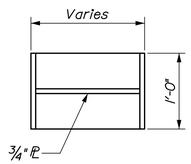
FRONT ELEVATION



PLAN

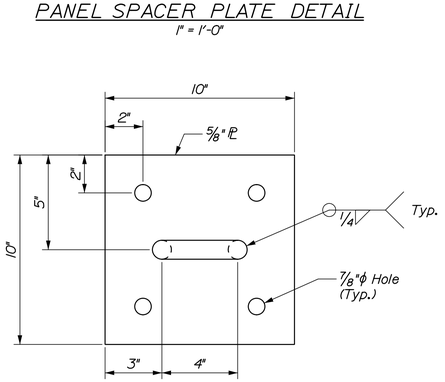


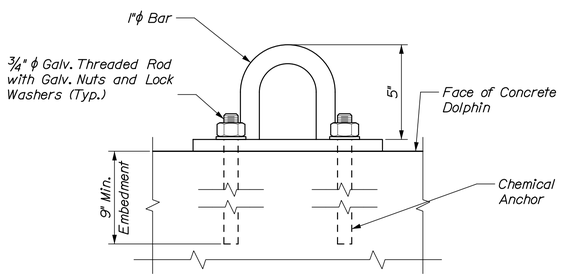
BACK ELEVATION



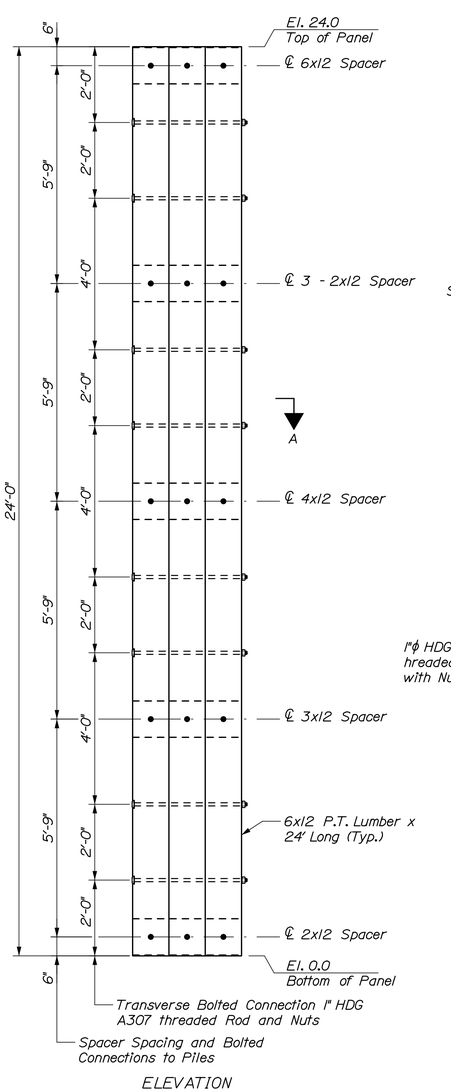
SECTION

STEEL FENDER BLOCK
1" = 1'-0"

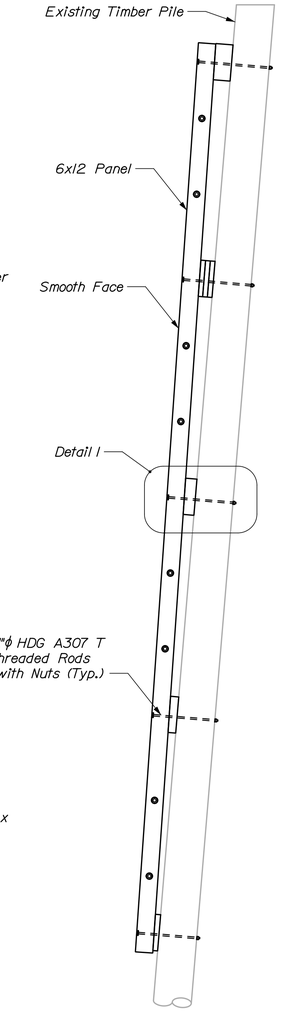




DOLPHIN PAD EYE DETAIL
3" = 1'-0"



ELEVATION

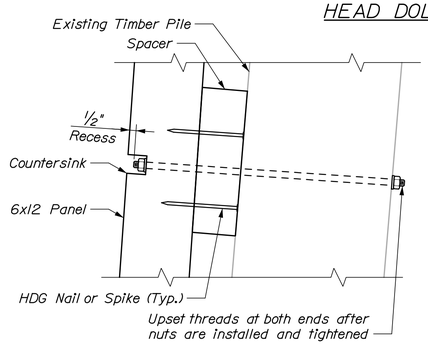


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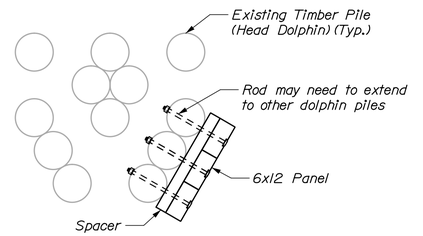
NOTES:

1. For anode attachment details, see Sheet S04.
2. All steel hardware shall be hot-dip galvanized.
3. All rod/nut heads in 6x12 panel to provide 1/2" recess beyond face.

HEAD DOLPHIN TIMBER FENDER PANEL
1/2" = 1'-0"



DETAIL I
2" = 1'-0"



SECTION A-A

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	N. Willey	
REVISIONS 2	C. Morin	
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

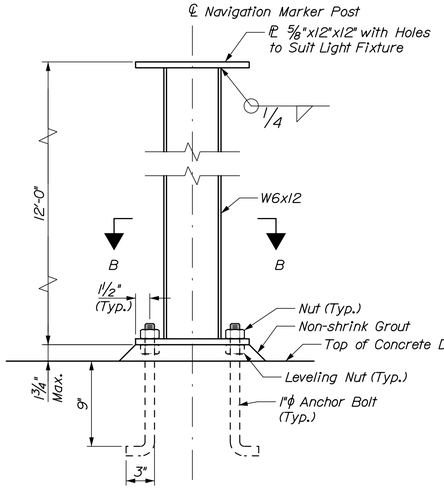
SIGNATURE
#9209
P.E. NUMBER
DATE

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM II

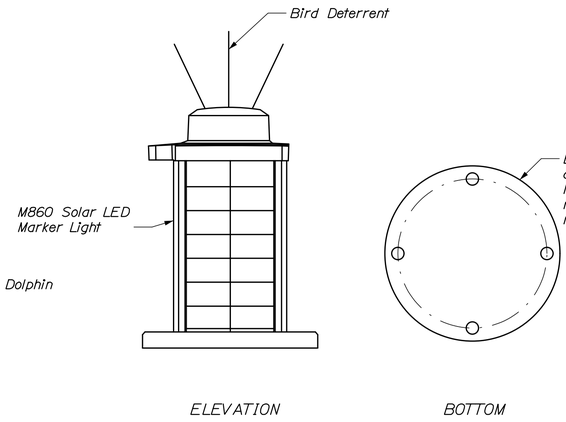
SHEET NUMBER
S08
13 OF 17

Filename: 013_Fender System 2.dgn Division: Username: Date:7/10/2020



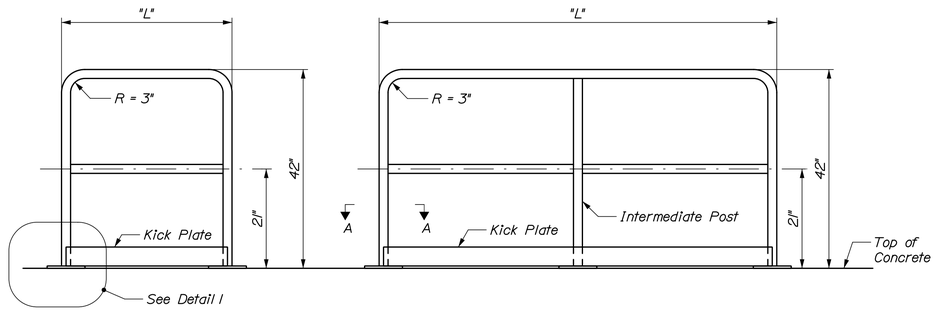
NAVIGATION MARKER INSTALLATION DETAIL

1 1/2" = 1'-0"



SOLAR LANTERN DETAIL

3" = 1'-0"



HANDRAIL DETAIL

3/4" = 1'-0"

TABLE 1
HANDRAIL SUMMARY TABLE

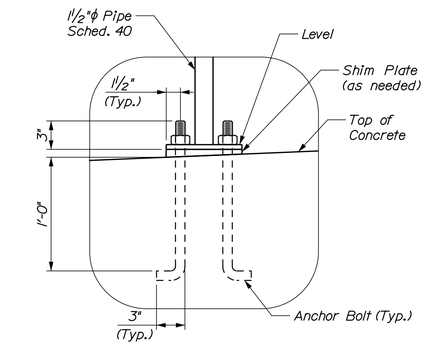
Dolphin	Location	Identification
D4	S	T2 - 8'-2" - 1
D4	S	T2 - 18'-6" - 3

Railing Identification: T2 - L - X

Type

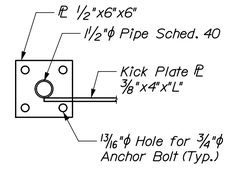
Length

Inter. Post Quantity



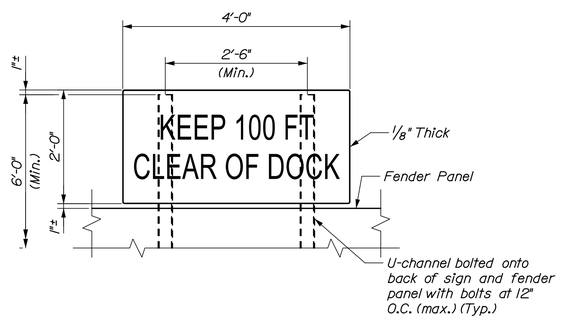
DETAIL 1

(Applies to all railing mounting locations. Kick plate not shown for clarity)
1 1/2" = 1'-0"



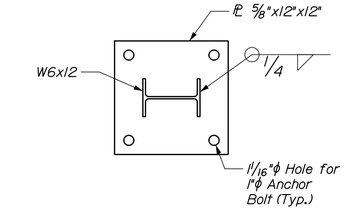
SECTION A-A

1 1/2" = 1'-0"



SIGN DETAIL

3/4" = 1'-0"



SECTION B-B

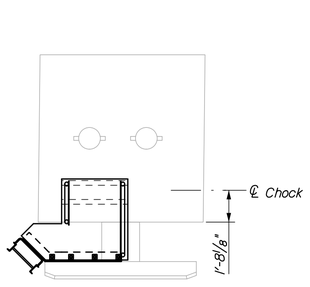
1 1/2" = 1'-0"

TABLE 1
LANTERN SUMMARY TABLE

Location	Model	Range (Nm)	Lens
Dolphin D4	M860	4-7	Red

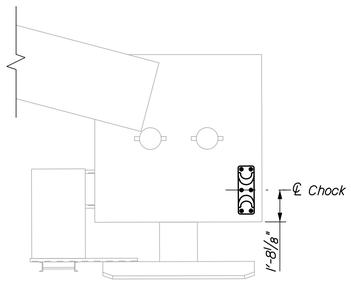
NOTES:

1. Solar lantern shall be a Carmanah 860 lantern or approved equal.
2. Solar lantern shall be self-contained.
3. Solar lantern shall have an optical performance of 230 cd or more for the red lens.
4. Solar lantern shall have an ingress protection of 68 or better.
5. Solar lantern light shall be LED.
6. The solar modules of the lantern shall be high-efficiency cells with embedded MPPT.
7. For additional details on chock setting, see Sheet S06.
8. 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.
9. All steel components for navigation marker post, handrails, and sign supports shall be hot-dip galvanized.



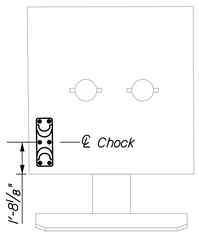
D1 CHOCK PLAN

1/4" = 1'-0"



D2 CHOCK PLAN

1/4" = 1'-0"



D3 CHOCK PLAN

1/4" = 1'-0"

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

PROJ. MANAGER	BY	DATE	SIGNATURE
DESIGN-DETAILED	N. Willey	07\20	
CHECKED-REVIEWED	C. Morin	07\20	
DESIGN2-DETAILED2			P.E. NUMBER
DESIGN3-DETAILED3			9209
REVISIONS 1			DATE
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
MISCELLANEOUS

SHEET NUMBER

S09

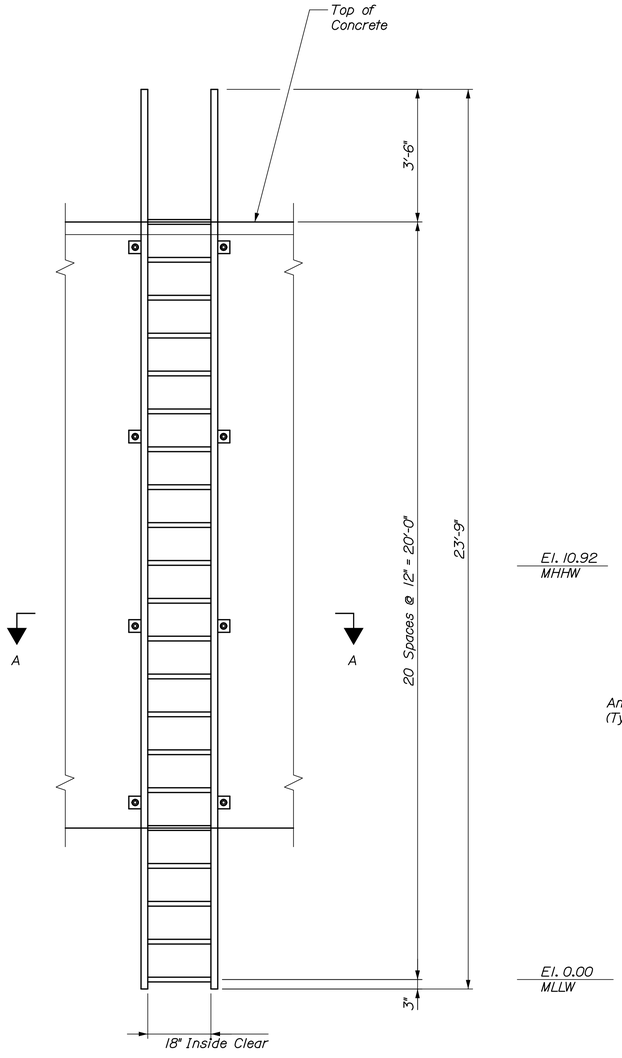
14 OF 17

Date:7/10/2020

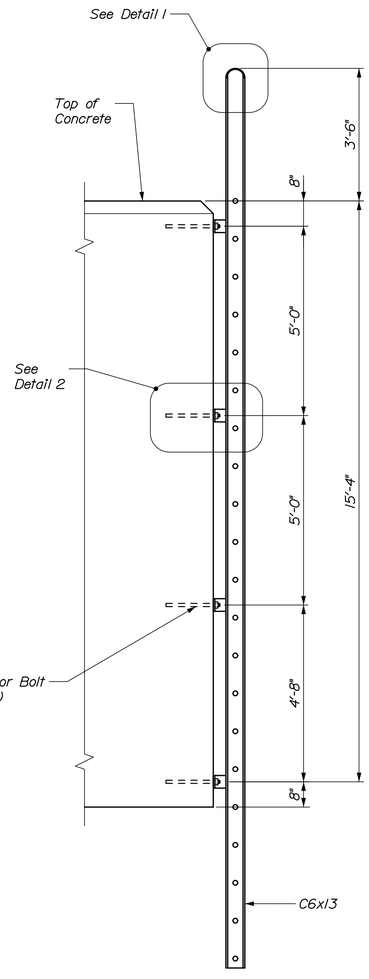
Username:

Division:

Filename: 014_Miscellaneous Details.dgn



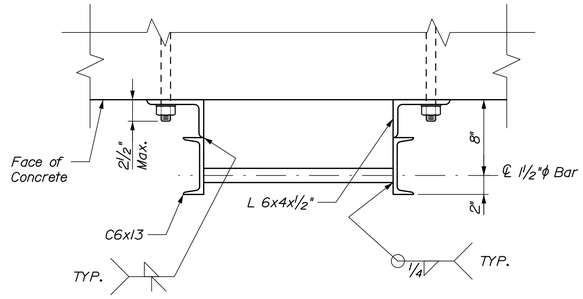
ELEVATION



SECTION

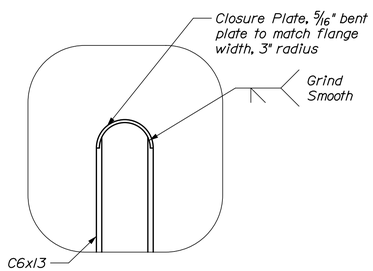
DOLPHIN ACCESS LADDER

1/2" = 1'-0"



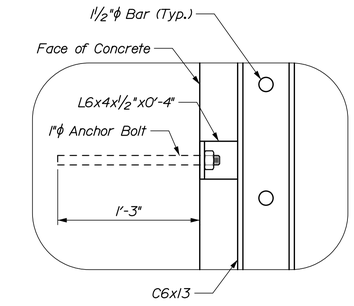
SECTION A-A

1 1/2" = 1'-0"



DETAIL 1

(Typical for all ladders)
1 1/2" = 1'-0"



DETAIL 2

(Typical all ladder mounting locations)
1 1/2" = 1'-0"

NOTES:

1. The panel mounted access ladder shall be designed by the Contractor for a 350 Lb concentrated vertical load acting at any point on the ladder. The ladder shall conform with all applicable provisions of OSHA regulations for ladders and with dimensions shown on the drawings. The ladder assembly shall be hot-dip galvanized after fabrication.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

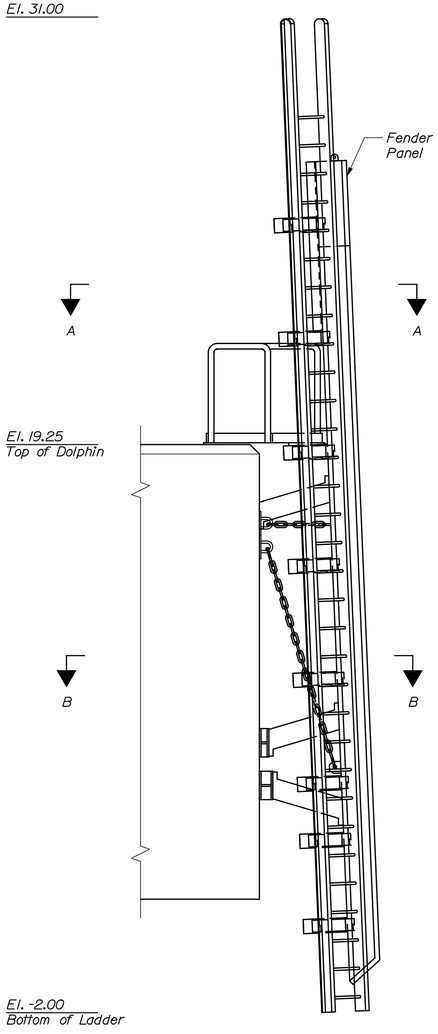
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9209
P.E. NUMBER
DATE

FRENCHBORO
FERRY TERMINAL

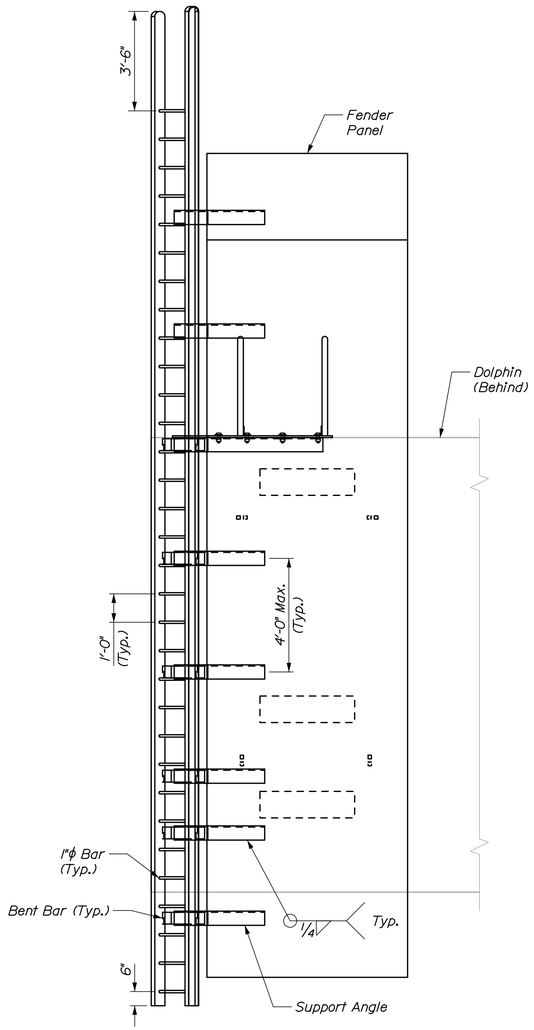
DOLPHIN DETAILS
LADDERS I

SHEET NUMBER
S10
15 OF 17

Username:
Date:7/10/2020
Division:
Filename: 015_Miscellaneous Details II.dgn

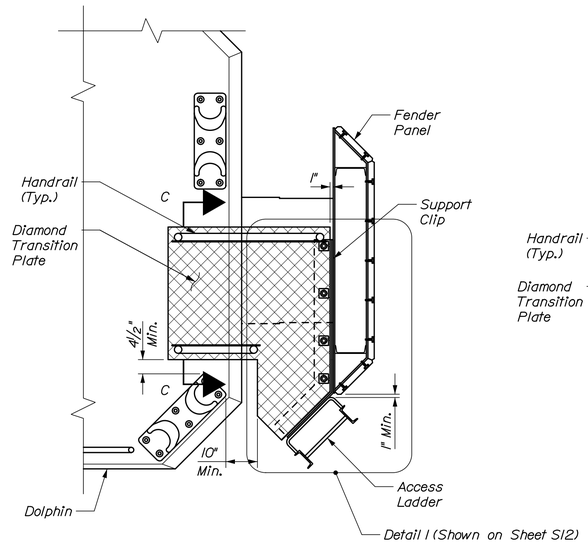


SIDE ELEVATION

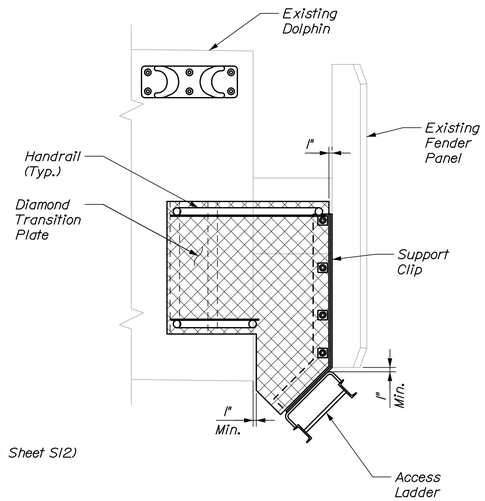


FRONT ELEVATION
(Dolphin D4 shown screened for clarity, DI similar)

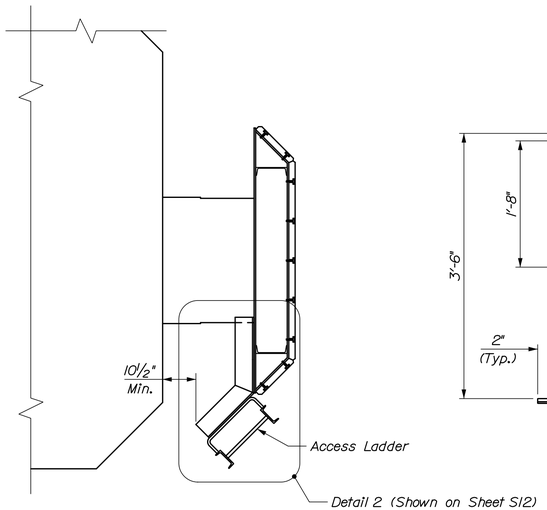
FENDER ACCESS LADDER
(D4 shown, DI similar)
3/8" = 1'-0"



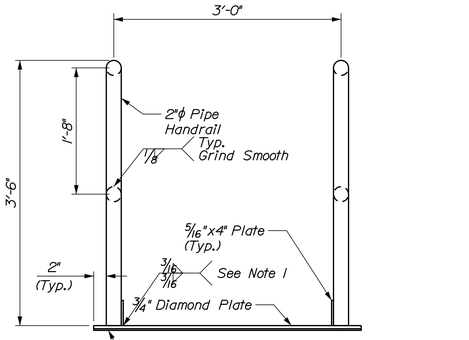
D4 SECTION A-A
1/2" = 1'-0"



D1 SECTION A-A
1/2" = 1'-0"



SECTION B-B
(D4 shown, DI similar)
1/2" = 1'-0"



SECTION C-C
(D4 Shown, DI Similar)
1 1/2" = 1'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

PROJ. MANAGER			
DESIGN-DETAILED	N. Wiley	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
#0209
P.E. NUMBER
DATE

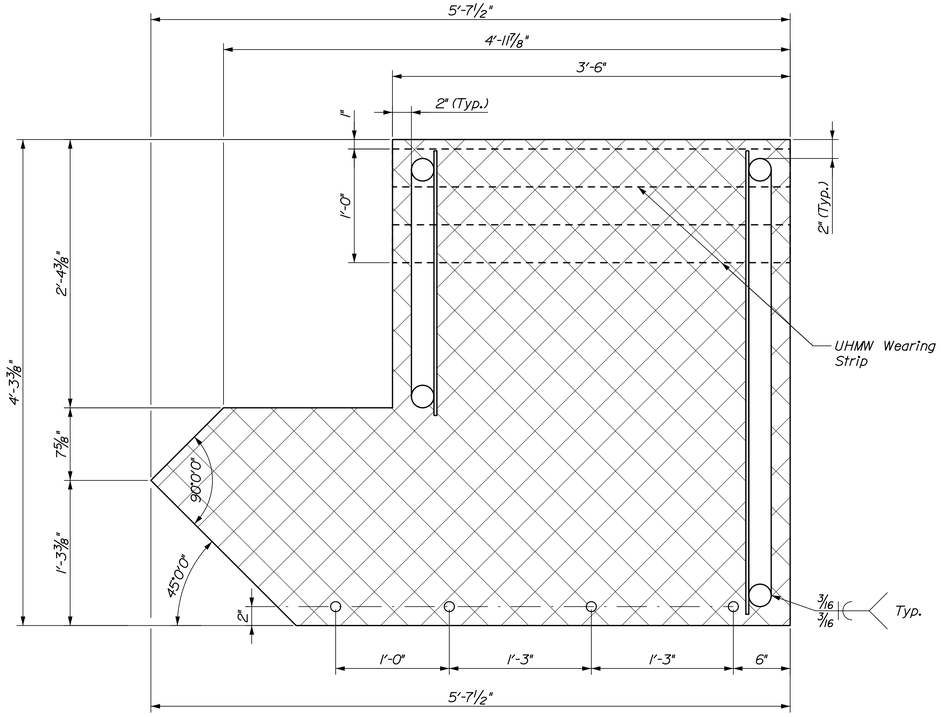
FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
LADDERS II

SHEET NUMBER
S11
16 OF 17

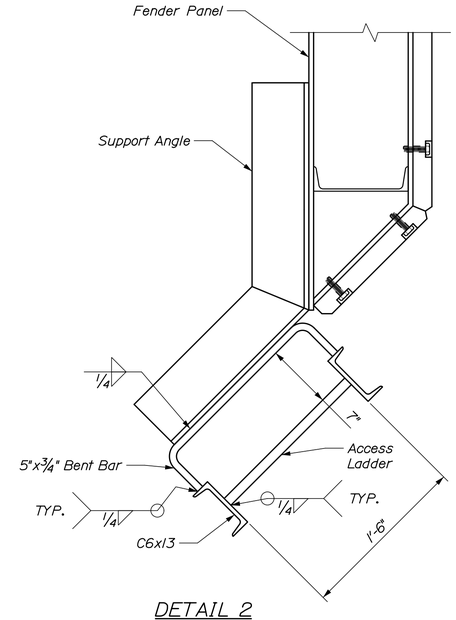
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Filename: 016_Miscellaneous Details III.dgn Division: Username: Date:7/10/2020



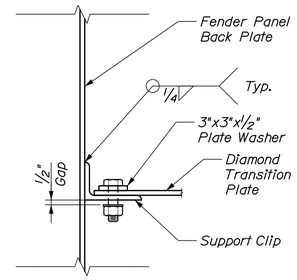
DIAMOND TRANSITION PLATE DETAIL

1 1/2" = 1'-0"



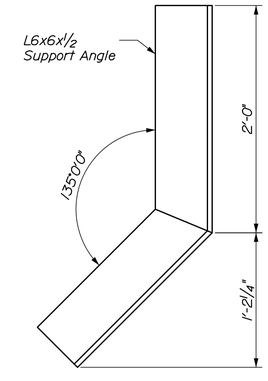
DETAIL 2

1 1/2" = 1'-0"



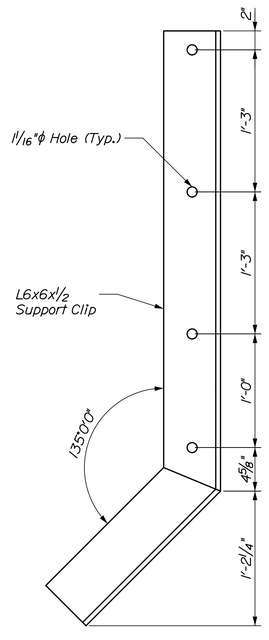
SUPPORT CLIP ATTACHMENT DETAIL

1 1/2" = 1'-0"



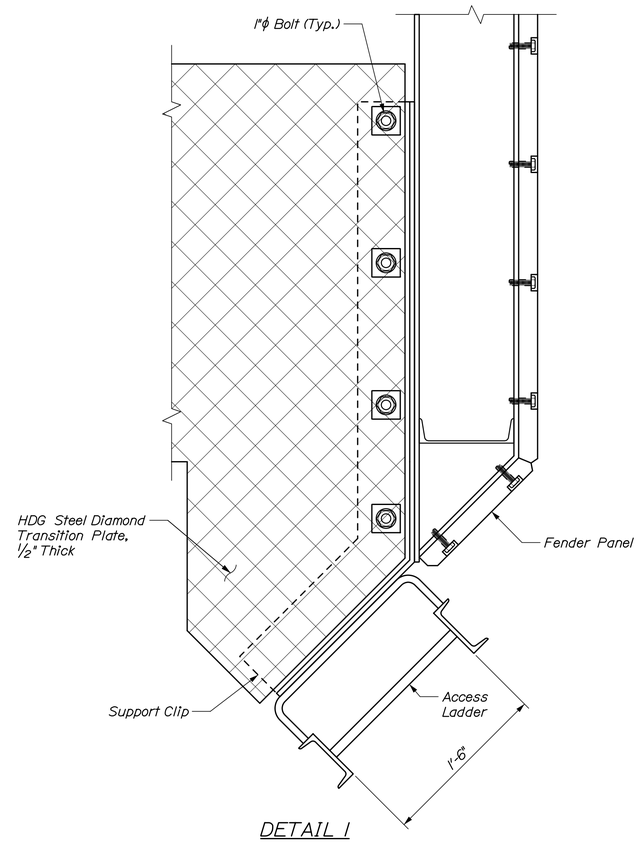
SUPPORT ANGLE DETAIL

1 1/2" = 1'-0"



SUPPORT CLIP DETAIL

1 1/2" = 1'-0"



DETAIL 1

(Hand rail not shown for clarity)
1 1/2" = 1'-0"

NOTES:

1. Grind tread flat to weld plate (Typ.)

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 022202.00

	BY	DATE
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

PROJ. MANAGER: N. Willey

SIGNATURE
#0209
P.E. NUMBER

DATE

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
LADDERS III

SHEET NUMBER

S12

17 OF 17

Filename: 017_Miscellaneous Details IV.dgn Division: Username: Date:7/10/2020

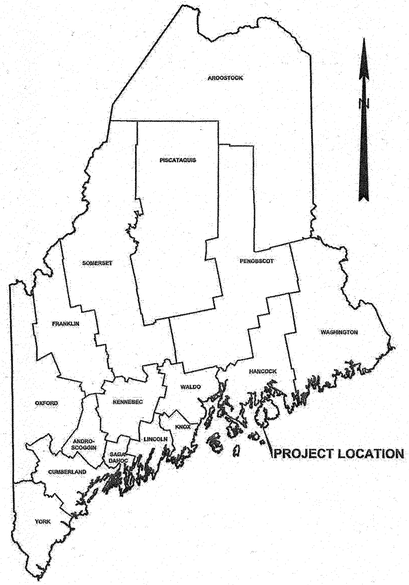
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

VILLAGE OF BASS HARBOR
HANCOCK COUNTY

BASS HARBOR FERRY TERMINAL

FENDER SYSTEM MODIFICATIONS

FEDERAL PROJECT NO. 02347600
MAINEDOT WIN: 023476.00



INDEX OF SHEETS

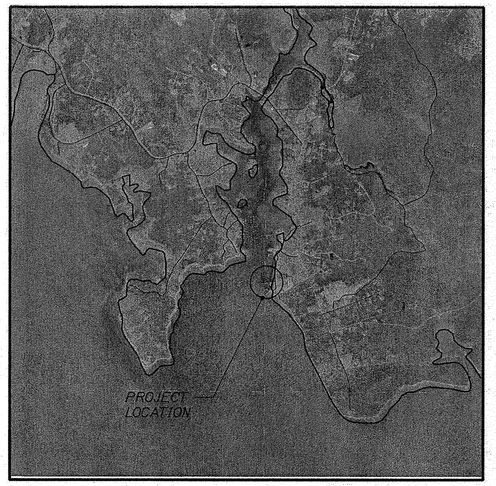
SHEET	NO.	TITLE
GENERAL		
G01	1	TITLE SHEET
G02	2	GENERAL NOTES AND DESIGN CRITERIA
G03	3	EXISTING CONDITIONS
G04	4	BORING LOGS
MARINE PLANS		
S01	5	SITE PLAN
S02	6	BERTH PLAN
S03	7	DOLPHIN FOUNDATION PLAN
S04	8	DOLPHIN FOUNDATION DETAILS
S05	9	DOLPHIN PLAN, ELEVATION, AND DETAILS
S06	10	DOLPHIN DETAILS MOORING HARDWARE
S07	11	DOLPHIN DETAILS FENDER SYSTEM I
S08	12	DOLPHIN DETAILS FENDER SYSTEM II
S09	13	DOLPHIN DETAILS MISCELLANEOUS I
S10	14	DOLPHIN DETAILS MISCELLANEOUS II
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 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:

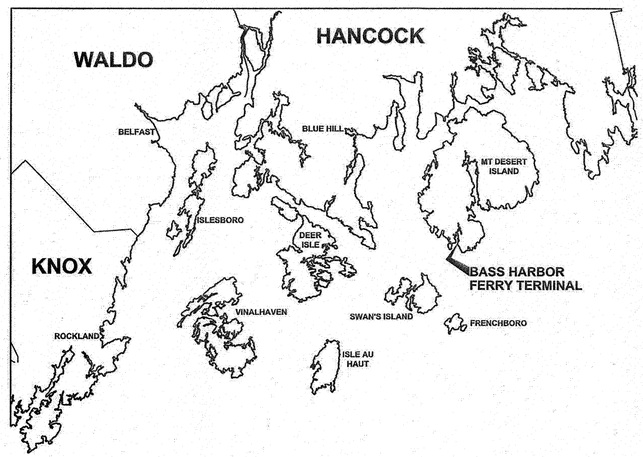
GENERAL PLANS	G04	GEOTECHNICAL BORING LOGS	SCHONEWALD ENGINEERING
ELECTRICAL PLANS	E01-E02	ELECTRICAL DESIGN	BARTLETT DESIGN, INC.



LOCATION MAP

1/2 0 1/2 1

Scale in Miles



WIN 023476.00 FEDERAL PROJECT NO. 02347600

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE 7-22-2020

COMMISSIONER: [signature]

CHIEF ENGINEER: [signature] 7-22-2020

STATE OF MAINE — CRAIG R. MORIN — 10209 — LICENSED PROFESSIONAL ENGINEER

C.R.M. — SIGNATURE — P.E. NUMBER 10209 — 07/13/20 DATE

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELIE GORNEAU II
DESIGNER	CRAIG R. MORIN, P.E.
CONSULTANT	HNTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

BASS HARBOR FERRY TERMINAL
FENDER SYSTEM MODIFICATIONS
BASS HARBOR — HANCOCK COUNTY

TITLE SHEET

SHEET NUMBER

G01

1 OF 18

HNTB

Date:7/7/2020
Username:
Division:
Filename: 001_Title.dgn

Date:7/13/2020

Username:

Division:

Filename: 002_GeneralNotes.dgn

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. The contractor shall be aware of the eelgrass limit and offset limit boundaries, which are approximated based on a June 27, 2019 dive survey by MaineDOT. All actions during construction, including but not limited to demolition, installation, and equipment setup and storage, shall not affect these environmental resources.

SPECIFICATIONS AND CODES

1. Project specifications titled, "Special Provisions For: Bass Harbor Ferry Terminal Fender System Modifications", dated May 31, 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:
EI. (NGVD) = EI. (MLLW) - 9.28 ft

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

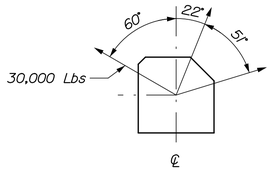
BERTHING LOADS

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

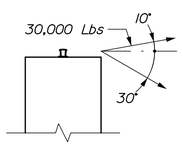
* Includes 1.4 load factor

MOORING LOADS

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



PLAN



PLAN

FENDER NOTES

1. All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.

2. Contractor's steel manufacturer shall design the fender panels for the indicated loads.

3. 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.

4. Anchors shall be set by template.

DOLPHIN/FENDER DESIGN LOADS

Design 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).

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

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

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. 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.

6. The distance from the side of any pile to the nearest edge of concrete shall not be less than 9".

7. 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

1. 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

1. 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

2. Railings:

   Aluminum Pedestrian: Vertical 50 plf; Horizontal 50 plf (acting simultaneously)

3. Tidal ranges (elevations in feet):

Bass Harbor	Tidal Datums				
	NGVD29	MSL	MLW	MLLW	STND
Top of Dolphin*	9.10	12.71	18.00	18.38	21.85
Highest Observed Tide	6.93	10.54	15.83	16.21	19.68
MHHW	2.09	5.70	10.99	11.37	14.84
MHW	1.67	5.28	10.57	10.95	14.42
NGVD29**	0.00	3.61	8.90	9.28	12.75
MSL	-3.61	0.00	5.29	5.67	9.14
MLW	-8.90	-5.29	0.00	0.38	3.85
MLLW	-9.28	-5.67	-0.38	0.00	3.47
Lowest Observed Tide	-12.19	-8.58	-3.29	-2.91	0.56
STND (Station Datum)	-12.75	-9.14	-3.85	-3.47	0.00

*Along top edge of dolphin at corner nearest pen.
**NGVD29 conversion taken from archive project drawings.
Station ID: 8413320, Bar Harbor, ME
Tidal Epoch: 1983-2001

LEGEND:

- ℄ Baseline
- ℙ Plate
- ℄ Centerline
- XX-XX-XX Washboring
- Flood Light
- Ⓝ Navigation Marker Light
- Site Light - Existing
- Site Light - Proposed
- Curbing
- ϕ 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
N.T.S.	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
USACOE	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 for steel connections shall conform to ASTM A325 and be hot-dip galvanized in accordance with ASTM A153. Set anchor bolts by template only. All bolts and nuts for timber connections shall conform to ASTM A307 and be hot-dip galvanized.

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

WIN
023476.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

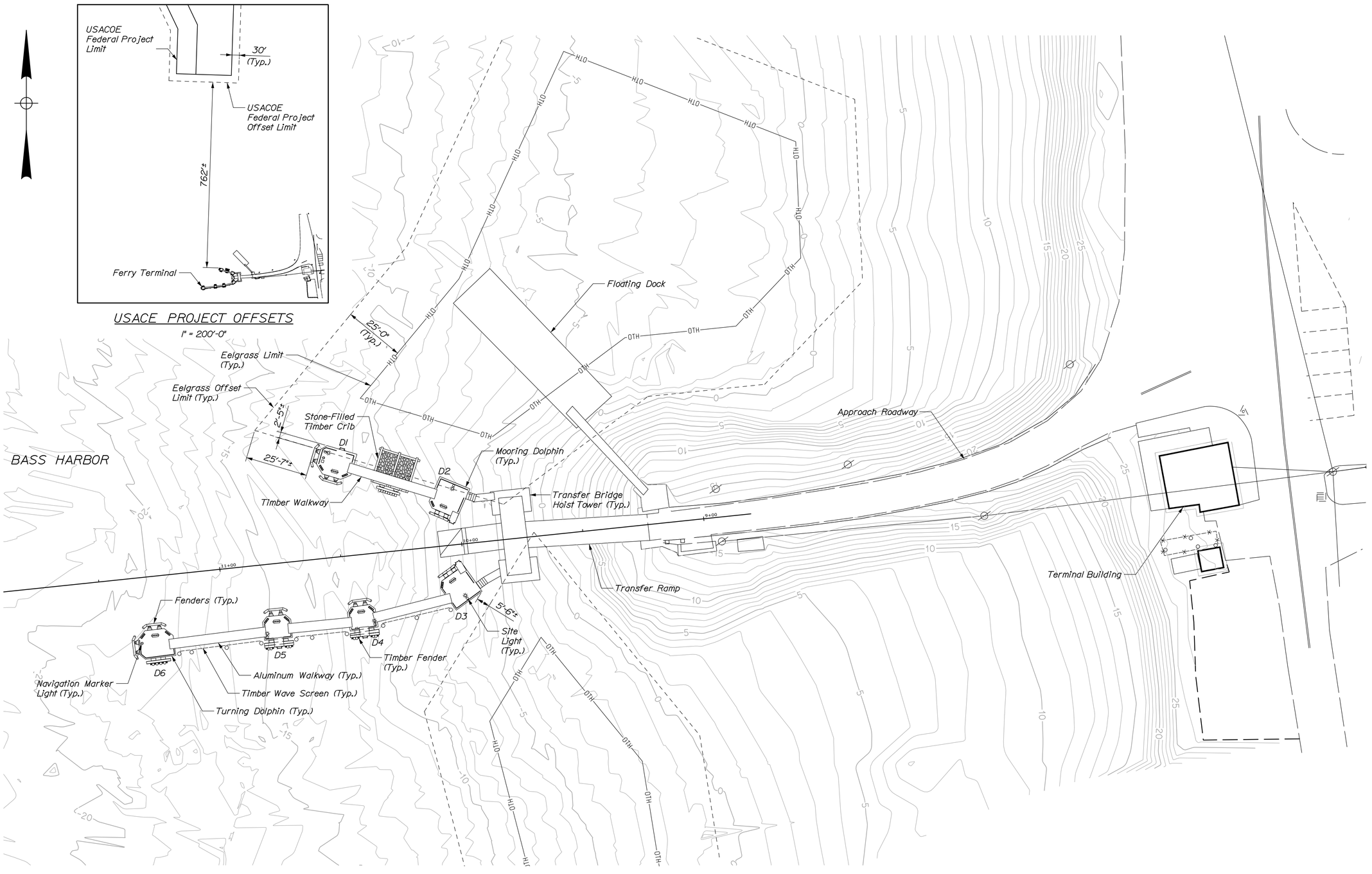
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P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL

GENERAL NOTES AND
DESIGN CRITERIA

SHEET NUMBER
G02
2 OF 18

HNTB



NOTES:

1. For existing electrical details, see Sheet E01.
2. USACOE project limit per https://www.nae.usace.army.mil/Missions/Navigation/Maine-Projects/. Offset limit dimension determined by 3x water depth (MLLW).
3. Eelgrass limits are approximate boundaries, based on a June 27, 2019 dive survey by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	N. Willey	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	C. Morin	07\20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
#0209
P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL

EXISTING CONDITIONS

SHEET NUMBER
G03
3 OF 18

Username:
Division:
Date:7/13/2020
Filename: 003_Existing Conditions.dgn

Date:5/29/2019
Username:
Division:
Filename: ...\02 CADD\004_Boring Logs.dgn

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Bass Harbor, Maine

Boring No.: MB-BASS-101-18
WIN: 23476.00

Drillers:	New England Boring Contractors	Elevation (ft.): -19.8 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLLW	Sampler: standard split-spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs/ 30 inches
Date Start/Finish:	8/8/18: 1230 – 8/9/18: 1145	Drilling Method: cased wash borings	Hammer Type: auto hammer
Boring Locations:	per plan (B2A)	Casing ID/OD: HW to 42.0 ft / NW to 42.2 ft	Hammer Efficiency: 0.906
		Auger ID/OD: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insltu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
ROD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-
-
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone
LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows / 6 inches Shear Strength (psf) or ROD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0	1D	24/3	0.0 – 2.0	WOR/18"-WOH	3"dia		PUSH			1D: SHELL FRAGMENTS: (1)va) crab in tip of spoon (not jarred).	
5	2D	24/24	5.0 – 7.0	WOR/24"	—		PUSH			2D: Grey brown. v. soft. ORGANIC SILT. some fine sand with occasional shells and wood. RECENT MARINE SEDIMENTS	
10	3D	24/24	10.0 – 12.0	WOR/24"	—		PUSH			3D: Grey brown. v. soft. ORGANIC SILT. some fine sand with occasional shells and wood.	
								-38.8		17.0 ft: Casing fetches up: probable stratum change based on drilling behavior and wash.	
20	4D	24/24	20.0 – 22.0	5-5-2-1	7	11	25	-40.8		4D: Dark grey. loose. SILT. some fine sand. trace to little gravel possible transition to marine silt-clay.	

Remarks:
8/8/18: 1224 hrs: 15.0' top turn dolphin #2 to water: 7.7' barge deck to water: 31.8' barge deck to mudline
top of turn dolphin #2: elev. 19.28 ft MLLW
50' approx. center of turn dolphin #2 to boreholes approx. on line with center of walkway between turn dolphin #2 and side dolphin #2.

Stratification 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.

Page 1 of 3
Boring No.: MB-BASS-101-18

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Bass Harbor, Maine

Boring No.: MB-BASS-101-18
WIN: 23476.00

Drillers:	New England Boring Contractors	Elevation (ft.): -19.8 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLLW	Sampler: standard split-spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs/ 30 inches
Date Start/Finish:	8/8/18: 1230 – 8/9/18: 1145	Drilling Method: cased wash borings	Hammer Type: auto hammer
Boring Locations:	per plan (B2A)	Casing ID/OD: HW to 42.0 ft / NW to 42.2 ft	Hammer Efficiency: 0.906
		Auger ID/OD: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
ROD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-
-
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone
LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows / 6 inches Shear Strength (psf) or ROD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
25	5D	24/24	25.0 – 27.0	WOR/24"	—		27			5D: Dark grey with occasional black. v. soft. Silty CLAY. MARINE SILT-CLAY	
30	6D	24/16	35.0 – 37.0	WOR/24"	—		19	-58.5		6D: Dark grey with occasional black. v. soft. Silty CLAY.	
										38.7 ft: Possible stratum change based on sudden increase in casing blows.	
40	7D	24/3	40.0 – 42.0	8-3-2/12"	5	8	---	-62.0		7D: Dark grey. Silty GRAVEL. some fine to coarse sand. TILL	
	R1	17/14	42.2 – 43.6	RQD: 0"=0%			N02			Top of bedrock at Elev. -62.0 ft. R1: Bedrock: Very hard, typically fresh, aphanitic to fine grained, dark grey BASALT with thin quartzite veins. Very close, typically low angle breaks/ undulating, rough, typically fresh, and open with mud infilling typical. (Castine Formation) Core timesi 3:35/ – minisec/ft ROCK QUALITY = VERY POOR	UCT qp: specimen chipped; not viable for testing
45	R2	52/52	43.6 – 47.9	RQD: 30"=58%						R2: Similar to R1. except with numerous low angle healed fractures and close to widely spaced breaks. ~/ 2:40/ 2:50/ 2:35/ – minisec/ft ROCK QUALITY = FAIR	
				sample 46.2-46.7						R3: Similar to R1. except with occasional low angle healed fractures and close to widely spaced, low angle to moderately dipping breaks with occasional mud infilling. 4:15/ 3:10/ 3:55/ 3:30/ 3:50 minisec/ft	
	R3	60/60	47.9 – 52.9	RQD: 47"=78%							

Remarks:
8/8/18: 1224 hrs: 15.0' top turn dolphin #2 to water: 7.7' barge deck to water: 31.8' barge deck to mudline
top of turn dolphin #2: elev. 19.28 ft MLLW
50' approx. center of turn dolphin #2 to boreholes approx. on line with center of walkway between turn dolphin #2 and side dolphin #2.

Stratification 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.

Page 2 of 3
Boring No.: MB-BASS-101-18

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Bass Harbor, Maine

Boring No.: MB-BASS-101-18
WIN: 23476.00

Driller:	New England Boring Contractors	Elevation (ft.): -19.8 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLLW	Sampler: standard split-spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs/ 30 inches
Date Start/Finish:	8/8/18: 1230 – 8/9/18: 1145	Drilling Method: cased wash borings	Hammer Type: auto hammer
Boring Locations:	per plan (B2A)	Casing ID/OD: HW to 42.0 ft / NW to 42.2 ft	Hammer Efficiency: 0.906
		Auger ID/OD: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
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MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
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S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
ROD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
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WOR = weight of rods
-
-
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone
LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (in.)	Sample Depth (ft.)	Blows / 6 inches Shear Strength (psf) or ROD (%)	N-uncorrected	N-60	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
50										ROCK QUALITY = FAIR TO GOOD	
				sample 50.8-51.2							UCT qp = 15.85 ksi
55	R4	46/46	52.9 – 56.7	sample 52.3-52.8 RQD: 10"=22%						R4: Similar to R1. except with occasional moderately dipping healed fractures and close to moderately spaced, typically moderately dipping breaks with mud infilling typical. 3:00 / 3:35/ 4:15/ – minisec/ft ROCK QUALITY = VERY POOR TO POOR	UCT qp = 14.05 ksi
	R5	38/38	56.7 – 59.9	RQD: 10"=26%						R5: Similar to R1. except with occasional healed fractures and typically close, typically moderately dipping breaks: typically fresh with occasional mud infilling. 2:40/ 2:10/ 2:15/ 2:05/ – minisec/ft ROCK QUALITY = VERY POOR TO POOR	
60	R6	55/55	59.9 – 64.5	RQD: 18"=33%						R6: Similar to R1. except with occasional moderately dipping healed fractures and typically close, typically moderately dipping breaks: typically fresh with occasional mud infilling. ~/ 4:25/ 3:55/ 3:40/ – minisec ft ROCK QUALITY = POOR	
65	R7	49/49	64.5 – 68.6	RQD: 27"=55%						R7: Similar to R1. except with occasional low angle to moderately dipping healed fractures and typically close to moderately spaced, typically moderately dipping breaks: fresh with occasional mud infilling. 3:25/ 4:00/ 4:05/ 4:35/ – minisec ft ROCK QUALITY = FAIR	
70	R8	47/47	68.6 – 72.5	RQD: 25"=53%						R8: Similar to R1. except with occasional moderately dipping healed fractures and typically close to moderately spaced, typically moderately dipping breaks: fresh with occasional mud infilling. 3:50/ 4:10/ 5:10/ – minisec ft ROCK QUALITY = POOR TO FAIR	
								-92.3		Bottom of Exploration at 72.5 feet below ground surface.	
75								-72.5			

Remarks:
8/8/18: 1224 hrs: 15.0' top turn dolphin #2 to water: 7.7' barge deck to water: 31.8' barge deck to mudline
top of turn dolphin #2: elev. 19.28 ft MLLW
50' approx. center of turn dolphin #2 to borehole approx. on line with center of walkway between turn dolphin #2 and side dolphin #2.

Stratification 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.

Page 3 of 3
Boring No.: MB-BASS-101-18

GEOTECHNICAL NOTES:

1. The geotechnical report for the project is entitled "Geotechnical Design Report, Fender System Modifications, Maine State Ferry Terminal, Bass Harbor, Maine, MaineDOT WIN 023476.00," dated May 2019 and prepared by Schonewald Engineering Associates, Inc. The report is available on the MaineDOT website.

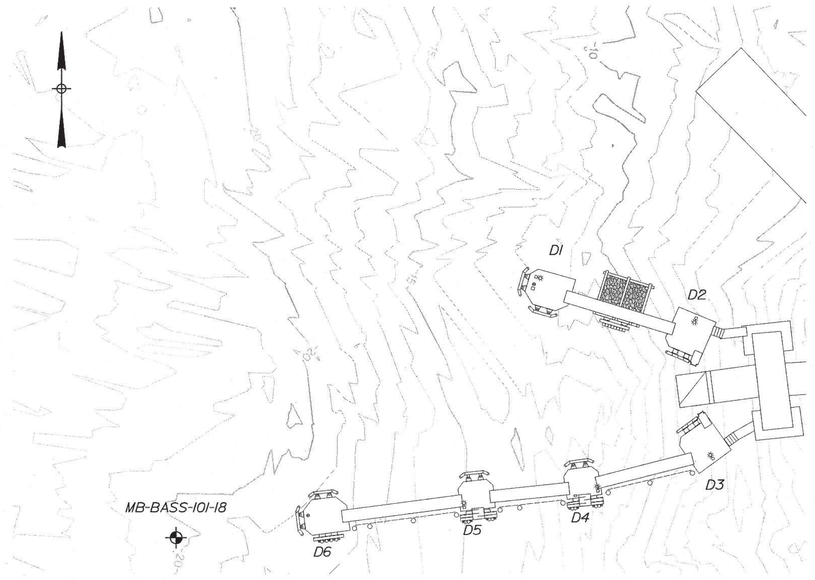
2. Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for 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-BASS-101-18	207089.81	1023740.02



KEY PLAN
1" = 25'-0"

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
WIN 023476.00

STATE OF MAINE
ISABEL V. SCHONEWALD
No. 7528
LICENSED PROFESSIONAL ENGINEER

BY	DATE
P. Bishop	05/19
C. Morin	05/19

SIGNATURE

7528
P.E. NUMBER

5/29/19
DATE

PROJ. MANAGER	N. Willey
DESIGN-DETAILED	N. Willey
CHECKED-REVIEWED	C. Morin
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

BASS HARBOR
FERRY TERMINAL

BORING LOGS

SHEET NUMBER
G04
4 OF 18

DOLPHIN COORDINATES

EXISTING DI		
LOCATION	NORTHING	EASTING
A	207178.93	1023857.59
B	207174.79	1023871.95
C	207166.18	1023869.39
D	207164.47	1023865.22
E	207166.69	1023857.77
F	207170.86	1023855.26

EXISTING D2		
LOCATION	NORTHING	EASTING
A	207165.68	1023906.03
B	207160.60	1023918.36
C	207148.44	1023913.05
D	207153.54	1023900.77

EXISTING D3		
LOCATION	NORTHING	EASTING
A	207129.11	1023915.84
B	207118.50	1023923.39
C	207110.74	1023912.78
D	207121.52	1023905.10

EXISTING D4		
LOCATION	NORTHING	EASTING
A	207113.34	1023879.07
B	207103.86	1023880.71
C	207102.15	1023869.20
D	207111.72	1023867.72

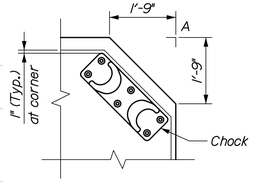
EXISTING D5		
LOCATION	NORTHING	EASTING
A	207109.10	1023844.55
B	207099.57	1023845.44
C	207098.35	1023834.01
D	207107.88	1023832.93

EXISTING D6		
LOCATION	NORTHING	EASTING
A	207103.20	1023792.75
B	207100.34	1023796.41
C	207092.19	1023797.55
D	207090.58	1023785.02
E	207098.70	1023782.02
F	207102.32	1023784.80

PROPOSED D7		
LOCATION	NORTHING	EASTING
A	207096.01	1023757.19
B	207080.11	1023758.96
C	207078.34	1023743.05
D	207089.28	1023741.84
E	207094.80	1023746.26

USACE PROJECT OFFSETS

1" = 200'-0"

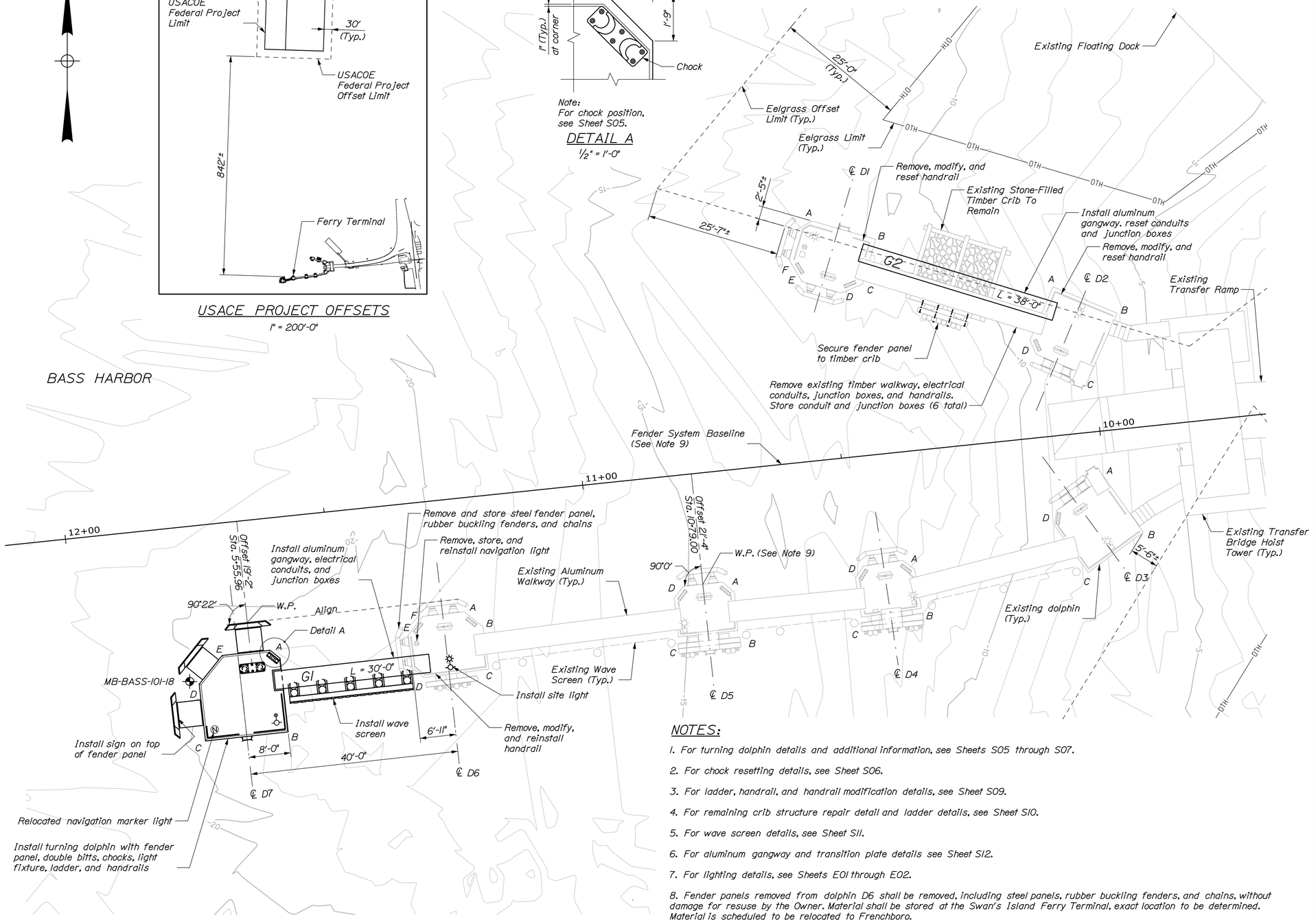


Note: For chock position, see Sheet S05.

DETAIL A

½" = 1'-0"

BASS HARBOR



SITE PLAN

1" = 10'-0"

10 0 10 20

Scale of Feet

NOTES:

1. For turning dolphin details and additional information, see Sheets S05 through S07.
2. For chock resetting details, see Sheet S06.
3. For ladder, handrail, and handrail modification details, see Sheet S09.
4. For remaining crib structure repair detail and ladder details, see Sheet S10.
5. For wave screen details, see Sheet S11.
6. For aluminum gangway and transition plate details see Sheet S12.
7. For lighting details, see Sheets E01 through E02.
8. Fender panels removed from dolphin D6 shall be removed, including steel panels, rubber buckling fenders, and chains, without damage for resuse by the Owner. Material shall be stored at the Swan's Island Ferry Terminal, exact location to be determined. Material is scheduled to be relocated to Frenchboro.
9. Alignment was developed using information from As-built plans. For more information refer to sheet M-004 of the As-built plans project number FBD-7826(10).
10. 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.
11. Eelgrass limits are approximate boundaries, based on a June 27, 2019 dive survey by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 023476.00

SIGNATURE 9209

P.E. NUMBER

DATE

BY	DATE
P. Bishop	07\20
C. Morin	07\20

PROJ. MANAGER	N. Willey
DESIGN-DETAILED	C. Morin
CHECKED-REVIEWED	
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

BASS HARBOR
FERRY TERMINAL

SITE PLAN

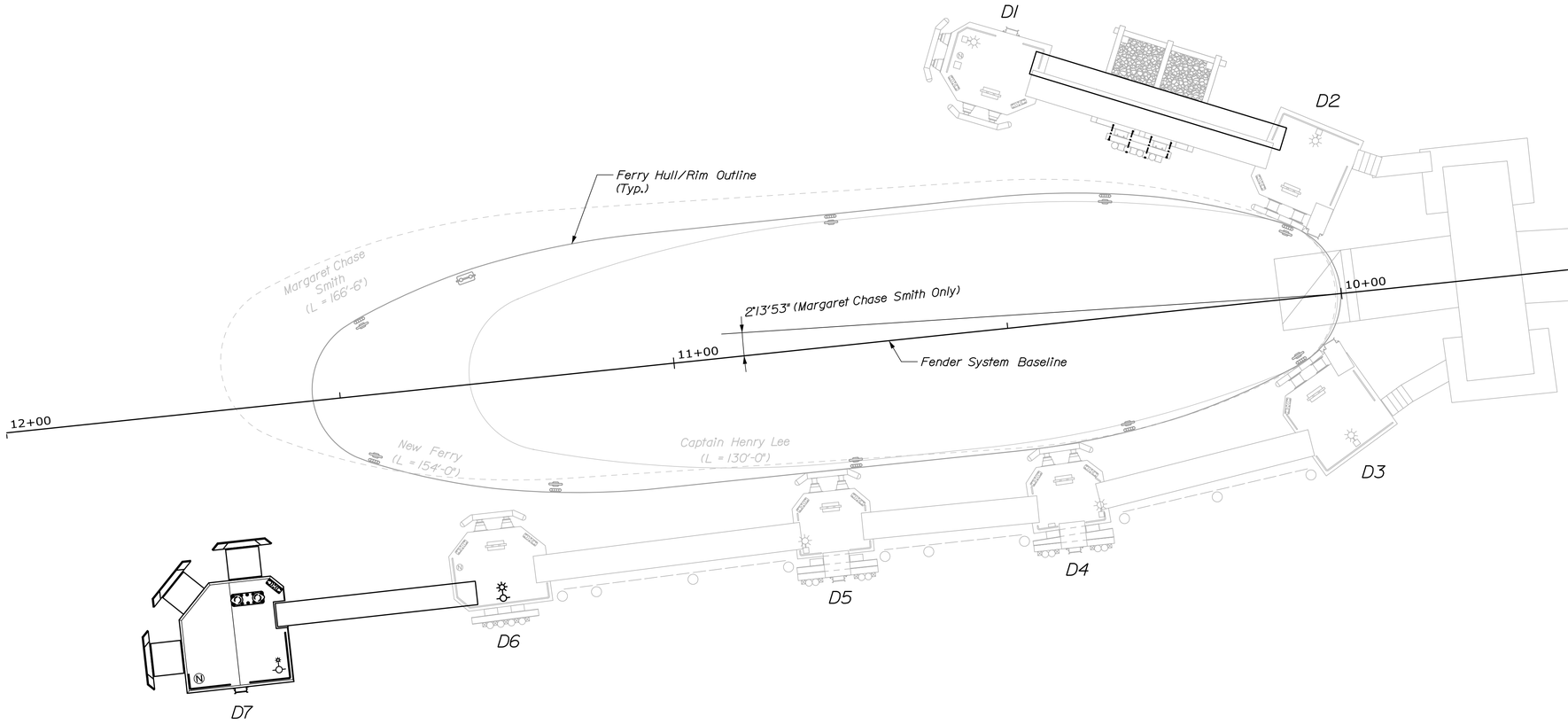
SHEET NUMBER

S01

5 OF 18

Filename: 005_Site Plan.dgn Division: Username: Date:7/13/2020

Filename: 006_Berth Plan.dgn Division: Username: Date:7/13/2020



PLAN
1" = 10'-0"

10 0 10 20
Scale of Feet

NOTES:

1. MV Captain Henry Lee is currently in operation. New ferry is proposed. Maragret Chase Smith is shown for comparative purposes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

	BY	DATE
	P. Bishop	07\20
	C. Morin	07\20

SIGNATURE

P.E. NUMBER

DATE

PROJ. MANAGER	N. Willey
DESIGN-DETAILED	C. Morin
CHECKED-REVIEWED	
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

BASS HARBOR
FERRY TERMINAL

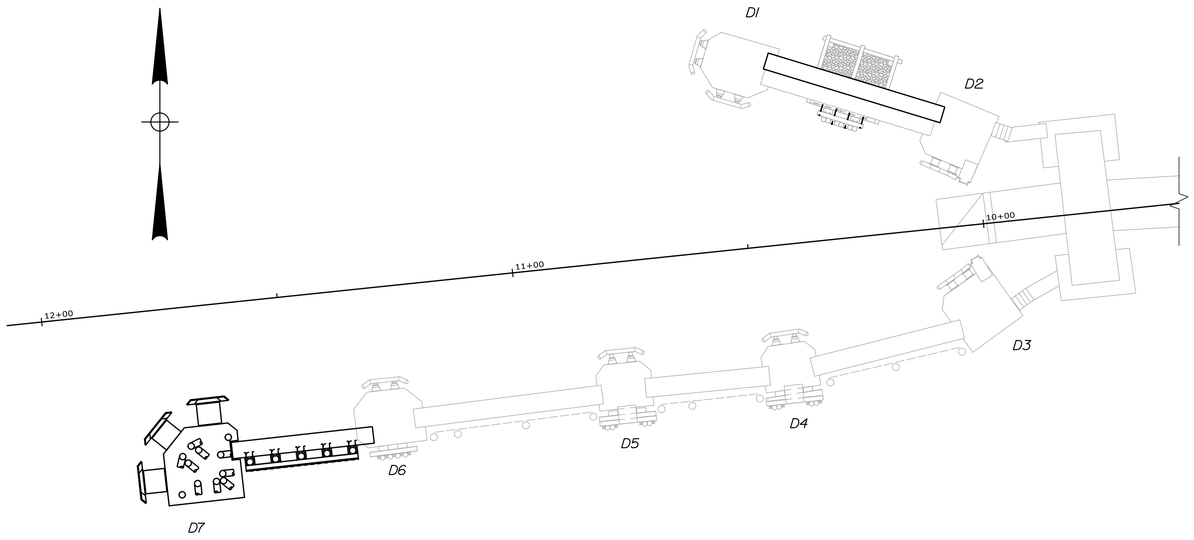
BERTH PLAN

SHEET NUMBER

S02

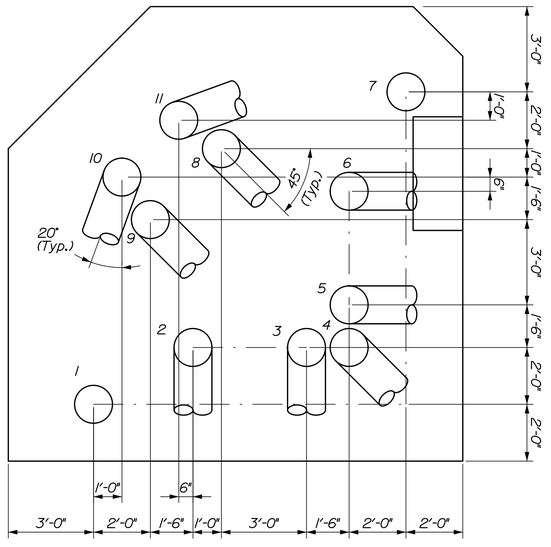
6 OF 18

HNTB



PLAN

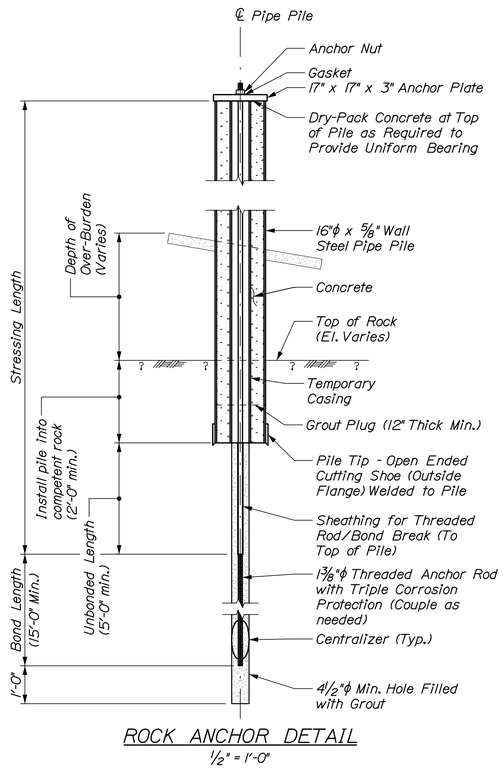
1/16" = 1'-0"



D7 FOUNDATION PLAN

(Dimensions shown at pile cut-off elevation)

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	80	Vert.
	2	85	Batter 4:12
	3	85	Batter 4:12
	4	85	Batter 4:12
	5	85	Batter 4:12
	6	85	Batter 4:12
	7	80	Vert.
	8	85	Batter 4:12
	9	85	Batter 4:12
	10	82	Batter 2:12
	11	82	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. For anode details, see Sheet S04.

5. 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 using drilling methods to top of competent rock and socket 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. Check tolerances. Inspect integrity of pipe pile. Resident shall accept pipe pile prior to grout plug installation. Install grout plug; 12" thick minimum.

4. Install temporary casing with centralizers as needed until it is seated into the grout plug to bedrock at the bottom of pile.

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). Release proof load and remove anchor plate.

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.

13. Re-install anchor plate at top of anchor with hex nut and hardened washer. Apply 110% of the max. pile tension load (see pile schedule). Lock off rock anchor.

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

WIN
023476.00

SIGNATURE

9209
P.E. NUMBER

DATE

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	N. Willey	
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

BASS HARBOR
FERRY TERMINAL

DOLPHIN
FOUNDATION PLAN

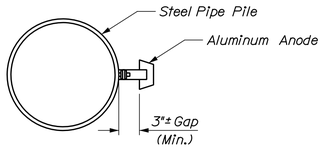
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S03

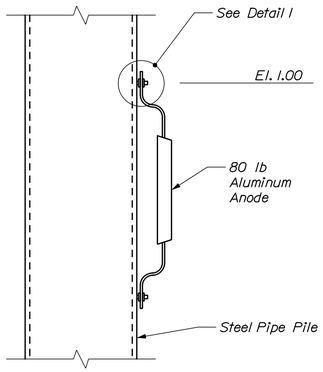
7 OF 18

HNTB

Filename: 007_Dolphin Foundation Plan.dgn Division: Username: Date:7/13/2020



PLAN

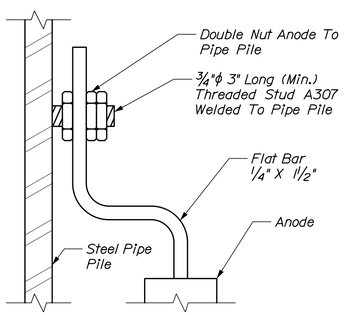


ELEVATION

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

ANODE DETAIL

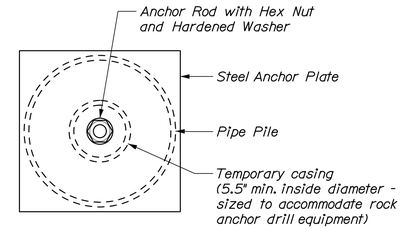
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DETAIL I

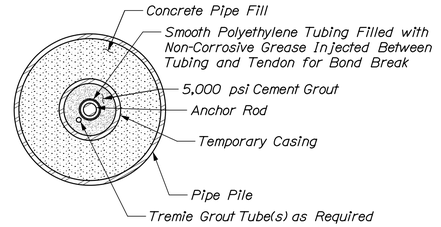
N.T.S.

Note: Studs and hardware shall be A307.



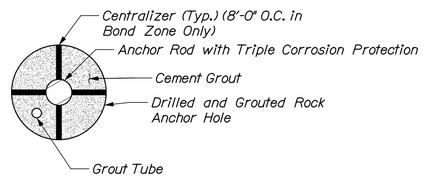
TOP OF PILE DETAIL

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
023476.00

SIGNATURE
#0209
P.E. NUMBER
DATE

	BY	DATE
DESIGNED	P. Bishop	07\20
DRAWN	C. Morin	07\20
CHECKED	N. Willey	
QUALITY CONTROL	C. Morin	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED

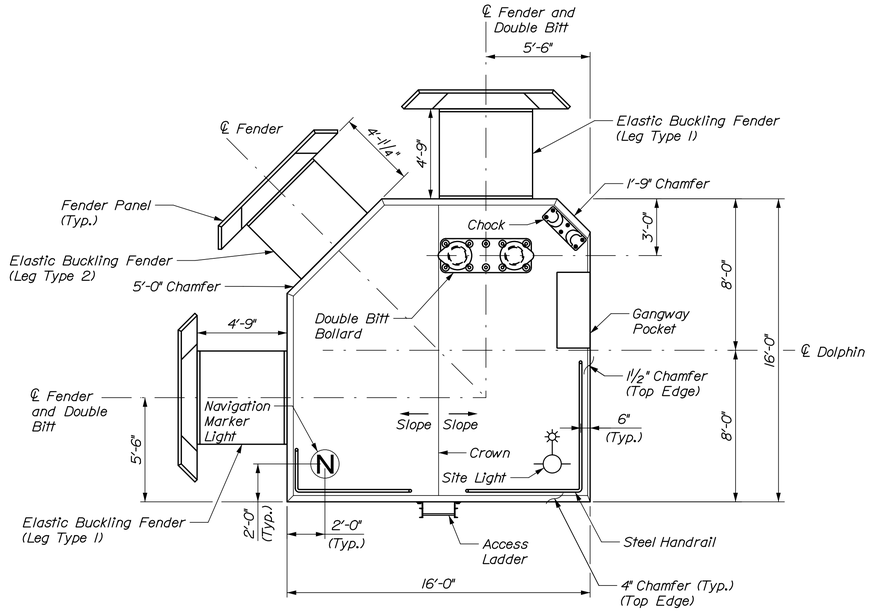
BASS HARBOR
FERRY TERMINAL

DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER
S04
8 OF 18

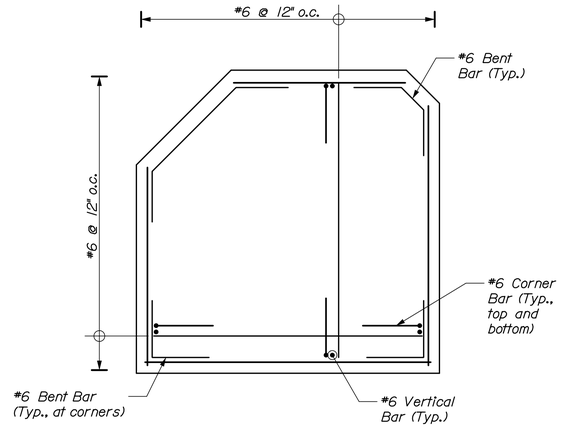
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Filename: 008_Dolphin Foundation Details.dgn Division: Username: Date:7/13/2020



TURNING DOLPHIN PLAN

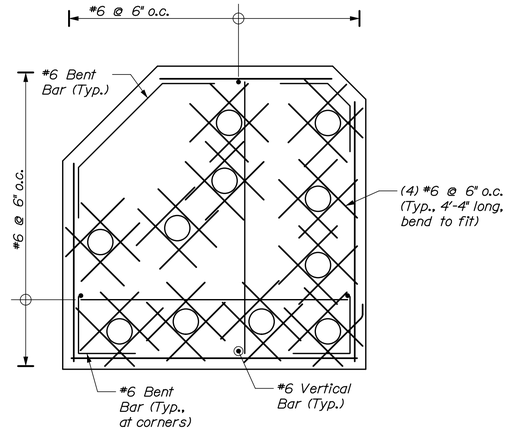
1/4" = 1'-0"



SECTION A-A

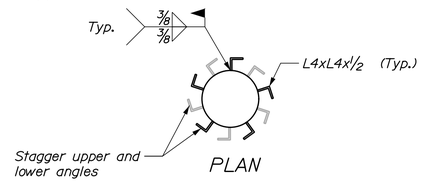
(Same as shown for El. 9.50 - 11.00, but with pile cutouts)

1/4" = 1'-0"

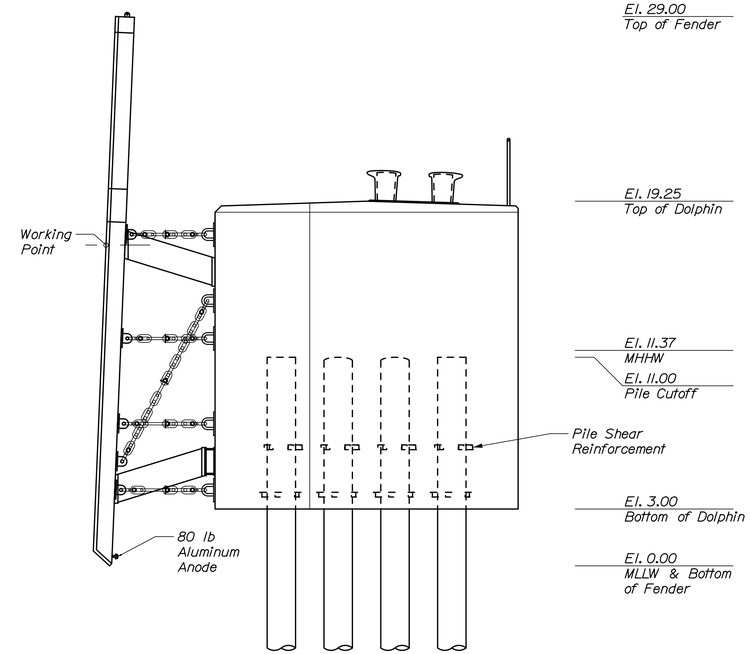


SECTION B-B

1/4" = 1'-0"



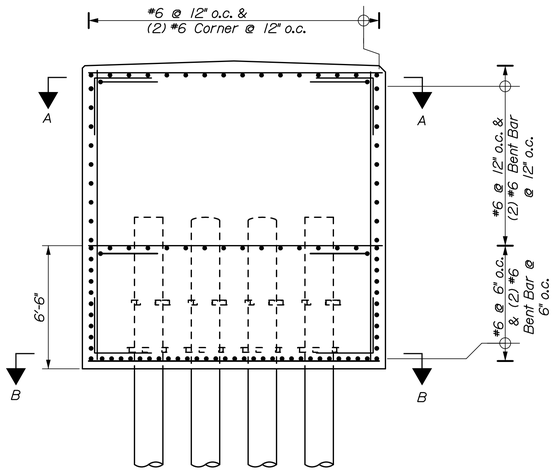
PLAN



TURNING DOLPHIN ELEVATION

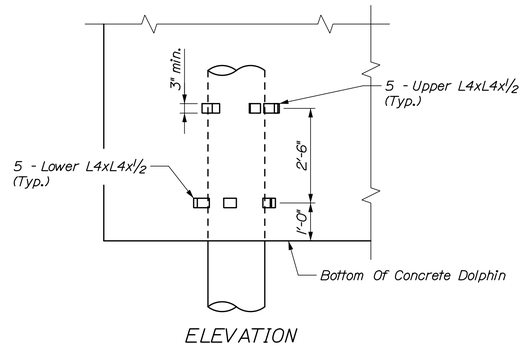
(Select fenders and chocks not shown for clarity)

1/4" = 1'-0"



TURNING DOLPHIN REINFORCING TYPICAL SECTION

1/4" = 1'-0"



ELEVATION

PILE SHEAR REINFORCEMENT

1/2" = 1'-0"

NOTES:

1. For anode details, see Sheet S04.
2. For double bitt and chock details, see Sheet S06.
3. For access ladder and handrail details, see Sheet S09.
4. For gangway pocket and transition plate detail, see Sheet S12.
5. All reinforcing shall be cut to maintain 2" clear from piles and 3" clear of concrete surfaces.
6. Reinforcing bars shall be adjusted to maintian 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be 1/4"/Ft and pitched as shown.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

	BY	DATE
DESIGNED	N. Willey	07\20
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	
DESIGN2-DETAILED2	C. Morin	
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		
PROJ. MANAGER	P. Bishop	

SIGNATURE

9209
P.E. NUMBER

DATE

BASS HARBOR
FERRY TERMINAL

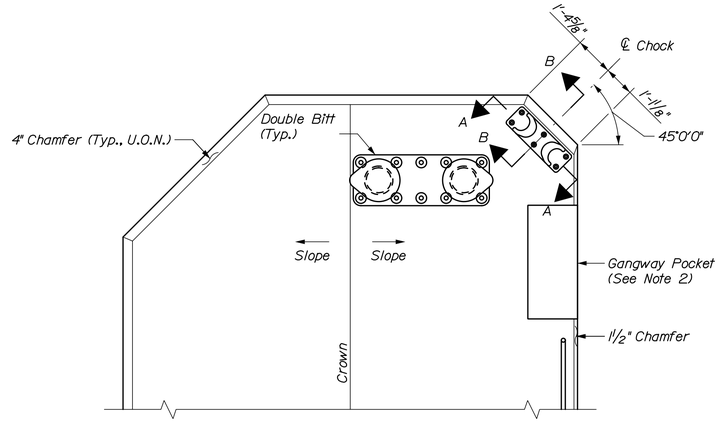
DOLPHIN PLAN, ELEVATION, AND DETAILS

SHEET NUMBER

S05

9 OF 18

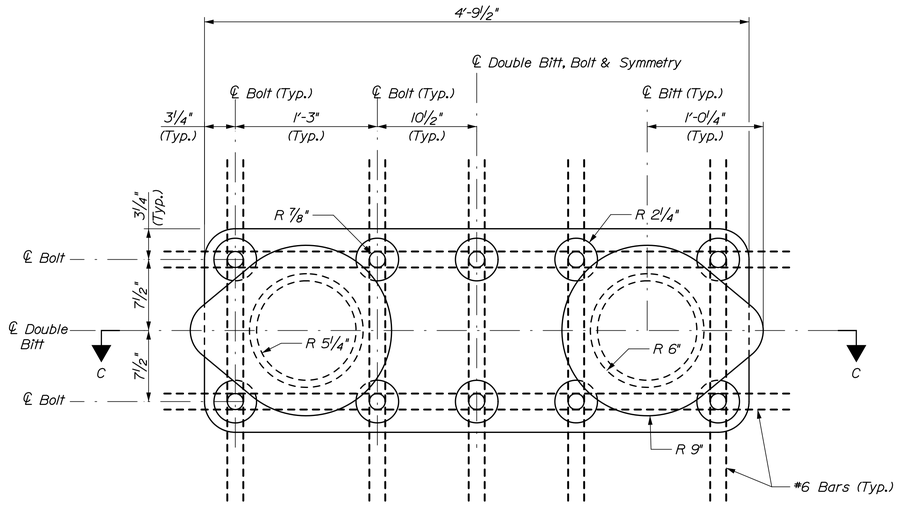
Filename: 009_Dolphin Plan and Elevation.dgn Division: Username: Date:7/13/2020



PLAN VIEW OF DOLPHIN

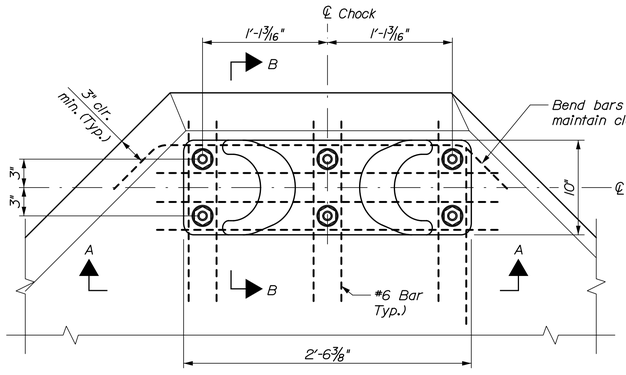
(Hand rails, lights, and fenders not shown for clarity)

3/8" = 1'-0"



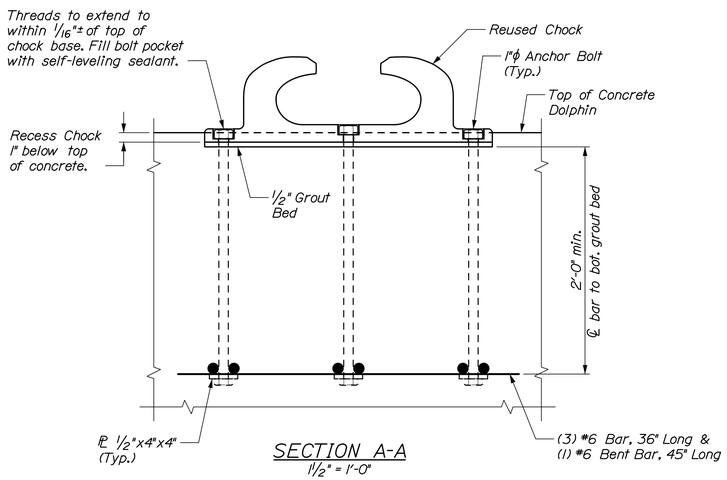
DOUBLE BITT PLAN

1 1/2" = 1'-0"



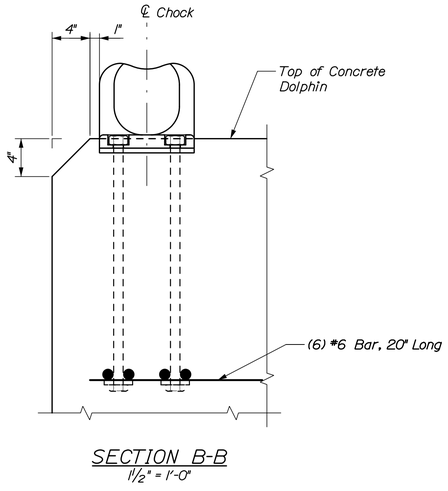
CHOCK PLAN AT CHAMFER

1 1/2" = 1'-0"



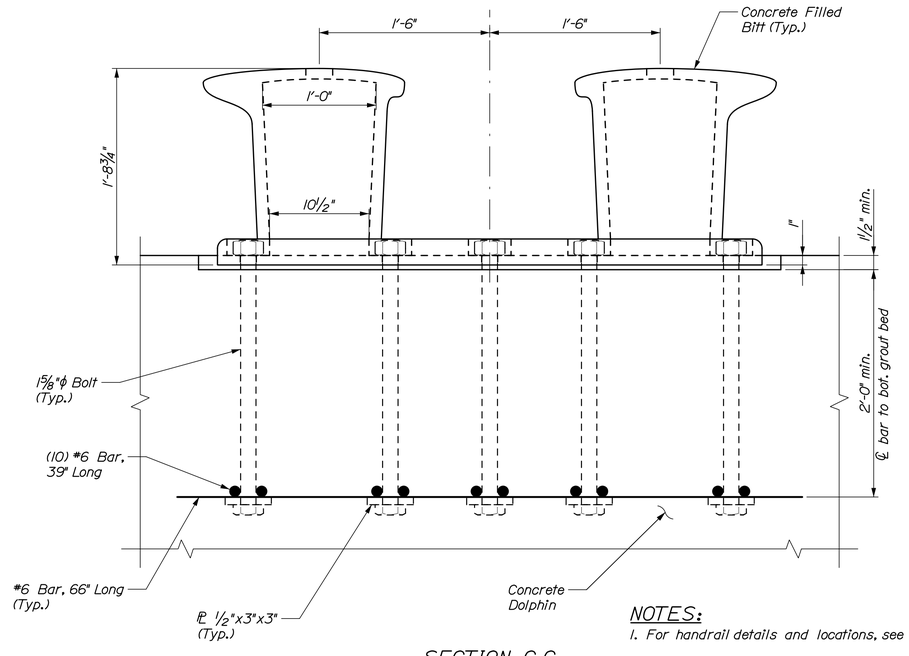
SECTION A-A

1 1/2" = 1'-0"



SECTION B-B

1 1/2" = 1'-0"



SECTION C-C

1 1/2" = 1'-0"

NOTES:

1. For handrail details and locations, see Sheet S07.
2. For gangway pocket dimensions, see Sheet S11.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

#0209

P.E. NUMBER

DATE

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
MOORING HARDWARE

SHEET NUMBER

S06

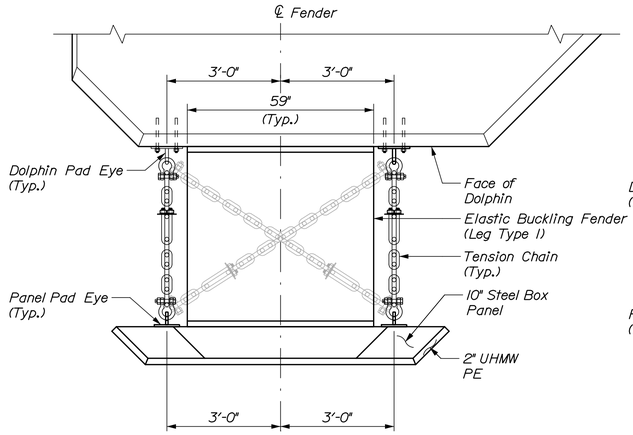
10 OF 18

Date:7/22/2020

Username:

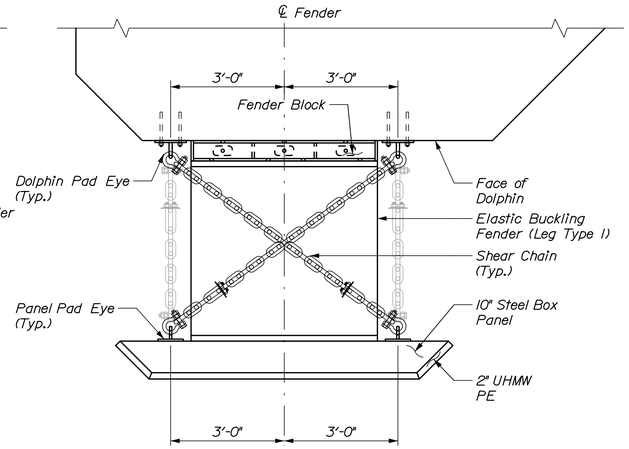
Division:

Filename: 010_Mooring Hardware.dgn



PLAN - TOP OF FENDER PANEL

(Type 1 Leg Shown)
1/2" = 1'-0"



PLAN - BOTTOM OF FENDER PANEL

(Type 1 Leg Shown)
1/2" = 1'-0"

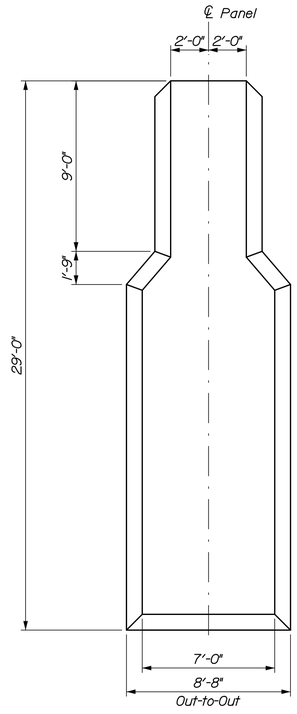
NOTES:

1. Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.

2. For fender block, panel pad eye, panel anode, dolphin pad eye and spacer plate details, see Sheet S08.

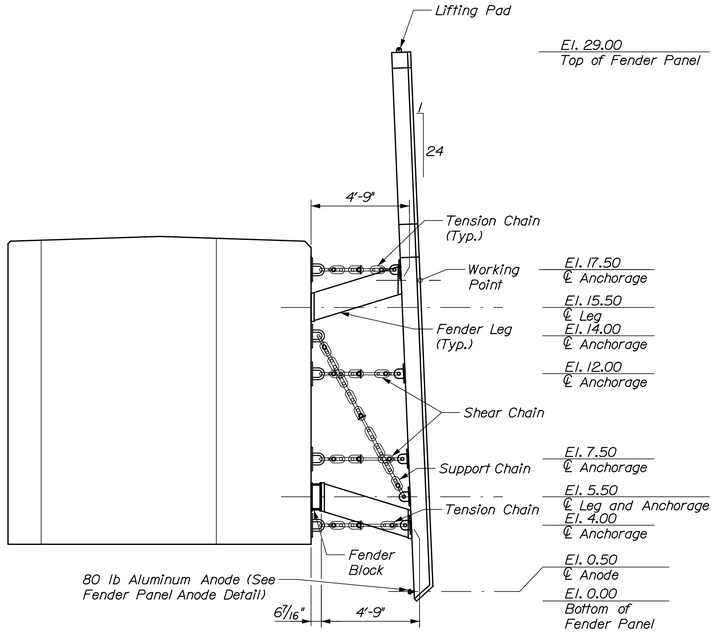
3. Elastic buckling fenders (Leg Type 1) shall be Trelleborg Compound B MV 1450x1500, or approved equal.

4. Elastic buckling fenders (Leg Type 2) shall be Trelleborg Compound B MV 1250x1500, or approved equal.



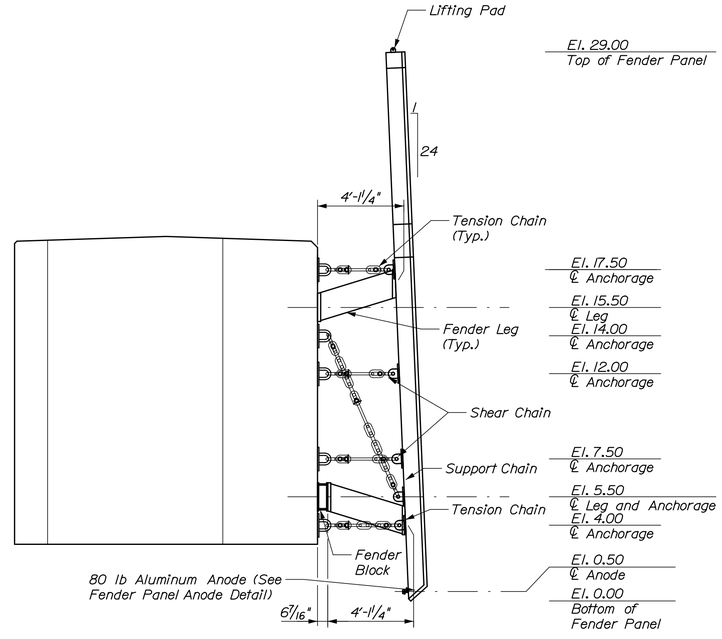
FENDER PANEL

1/4" = 1'-0"



ELEVATION - FENDER PANEL WITH LEG TYPE 1

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



ELEVATION - FENDER PANEL WITH LEG TYPE 2

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

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

	BY	DATE
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
PROJ. MANAGER	N. Willey	
DESIGN2-DETAILED2	C. Morin	
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

10209
P.E. NUMBER

DATE

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM 1

SHEET NUMBER

S07

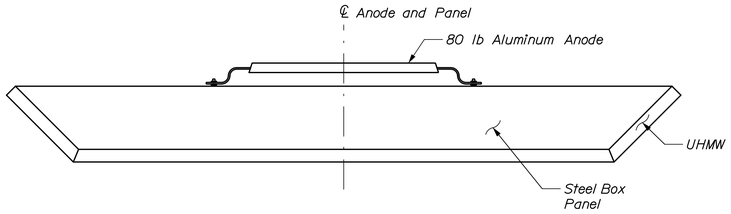
11 OF 18

Filename: 011_Fender System 1.dgn Username: Division: Date:7/13/2020

Filename: 012_Fender System II.dgn Username: Division: Date:7/13/2020

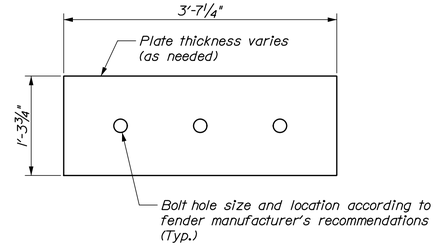
NOTES:

1. For anode attachment details, see Sheet S04.



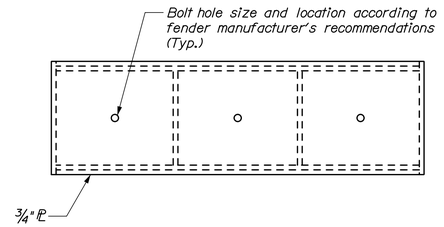
FENDER PANEL ANODE DETAIL

1" = 1'-0"

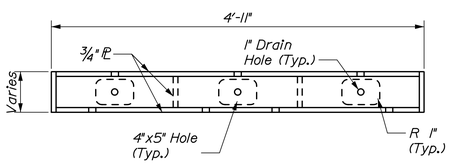


TYPE I PANEL SPACER PLATE DETAIL

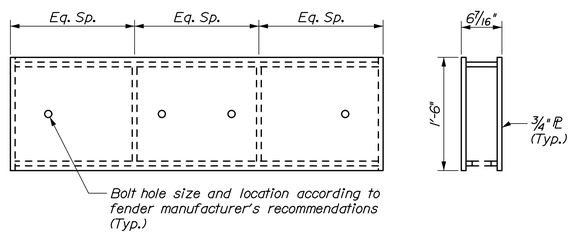
1" = 1'-0"



FRONT ELEVATION



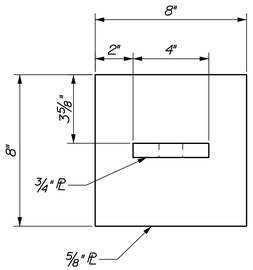
PLAN

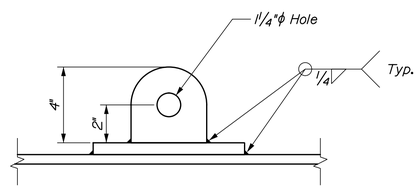


BACK ELEVATION SECTION

STEEL FENDER BLOCK

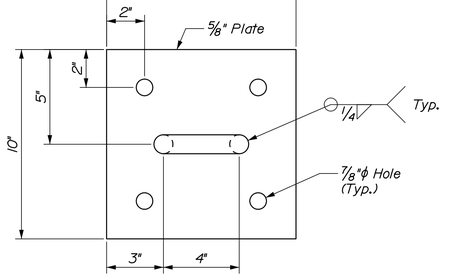
1" = 1'-0"

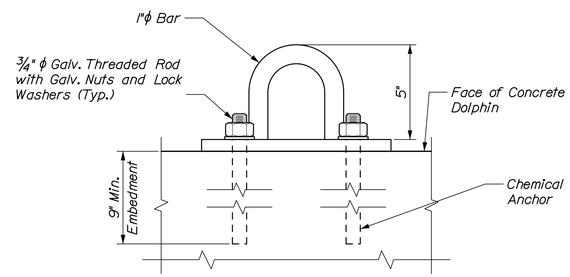




PANEL PAD EYE DETAIL

3" = 1'-0"





DOLPHIN PAD EYE DETAIL

3" = 1'-0"

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
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	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

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P.E. NUMBER

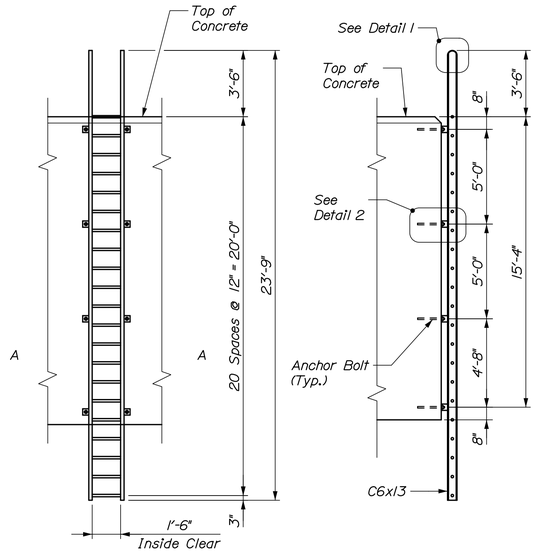
DATE

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM II

SHEET NUMBER

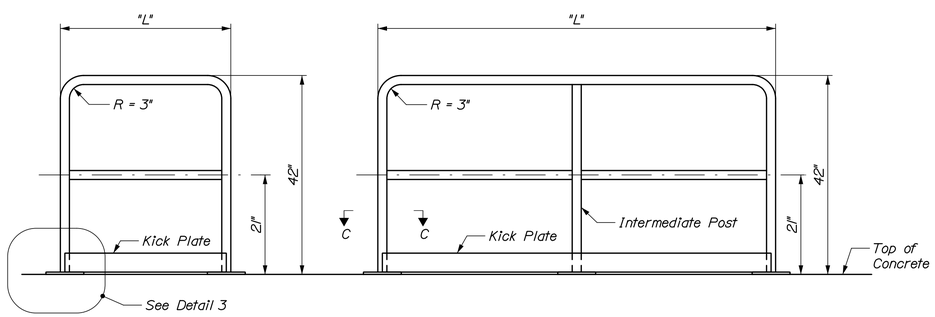
S08



ELEVATION SECTION

DOLPHIN ACCESS LADDER

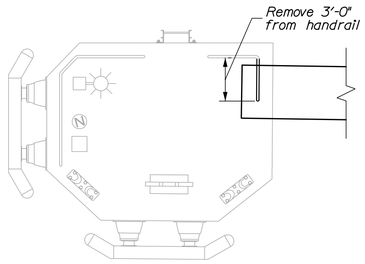
1/4" = 1'-0"



Type 1 Type 2

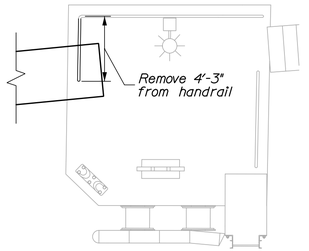
HANDRAIL DETAIL

1" = 1'-0"



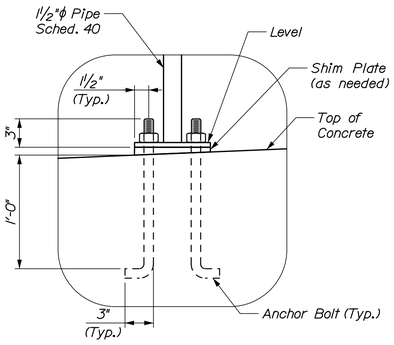
DI HANDRAIL MODIFICATION PLAN

1" = 5'-0"



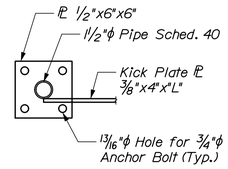
D2 HANDRAIL MODIFICATION PLAN

1" = 5'-0"



DETAIL 3

(Applies to all railing mounting locations. Kick plate not shown for clarity)
1 1/2" = 1'-0"

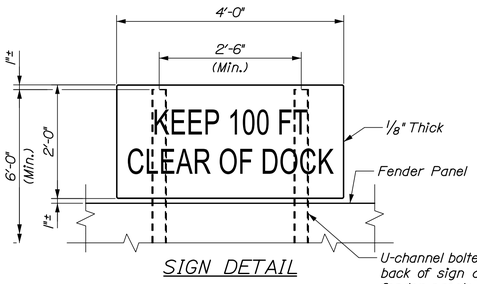


SECTION B-B

1 1/2" = 1'-0"

SECTION A-A

1 1/2" = 1'-0"



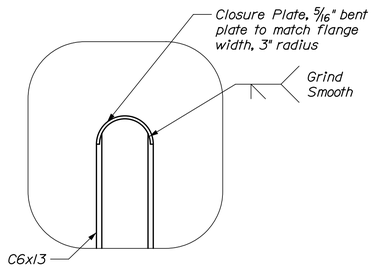
SIGN DETAIL

3/4" = 1'-0"

TABLE 1
HANDRAIL SUMMARY TABLE

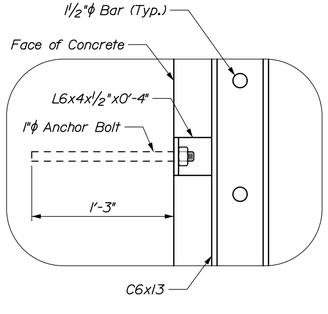
Dolphin	Location	Identification
D7	SE	T2 - 12'-11" - 3
D7	SW	T2 - 8'-4" - 2

Railing Identification: T2 - L - X
Type — Length — Inter. Post Quantity



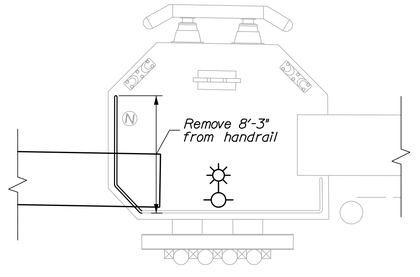
DETAIL 1

(Typical for all ladders)
1 1/2" = 1'-0"



DETAIL 2

(Typical all ladder mounting locations)
1 1/2" = 1'-0"



D6 HANDRAIL MODIFICATION PLAN

1" = 5'-0"

NOTES:

1. The access ladder shall be designed by the Contractor for a 350 Lb concentrated vertical load acting at any point on the ladder. The ladder shall conform with all applicable provisions of OSHA regulations for ladders and with dimensions shown on the drawings. The ladder assembly shall be hot-dip galvanized after fabrication.

2. Where handrail posts or line guard anchorages are removed, fill with Sika Flex 1A self leveling sealant, or approved equal.

3. Contractor shall grind smooth, cap ends of cut handrails, and galvanize exposed steel.

4. For additional details on chock setting, see Sheet S06.

5. 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.

6. All steel components for ladder, handrails, and sign supports shall be hot-dip galvanized.

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STATE OF MAINE
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PROJ. MANAGER		
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DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

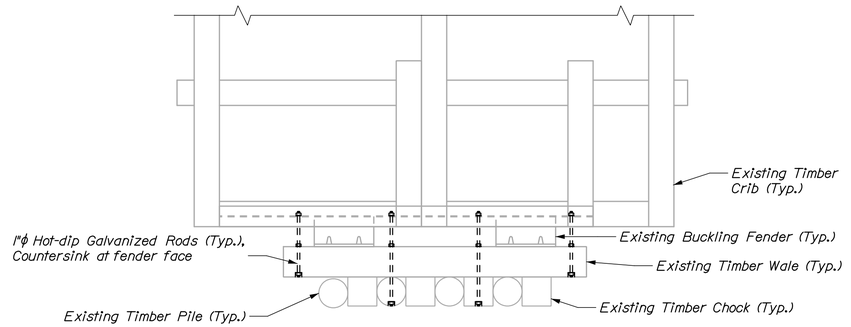
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BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
MISCELLANEOUS I

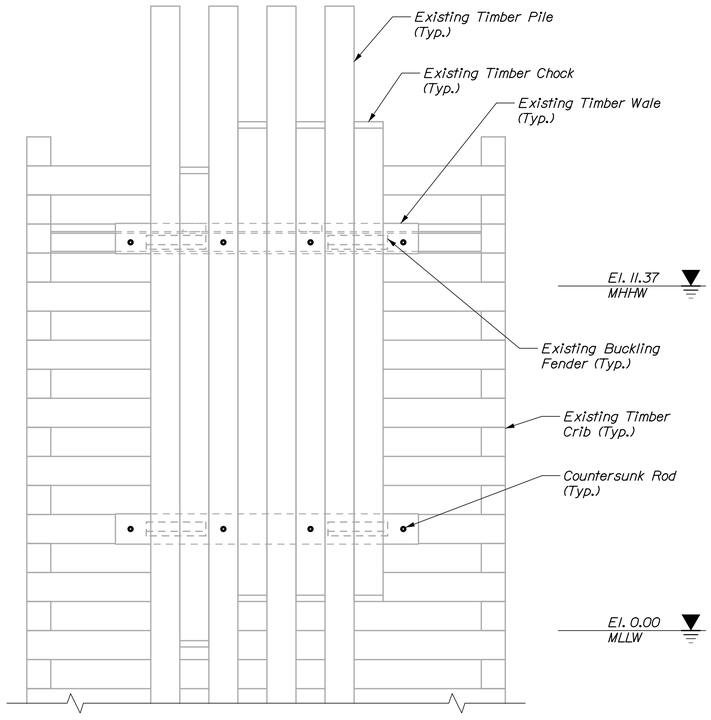
SHEET NUMBER
S09
13 OF 18

Filename: 013_Miscellaneous Details 1.dgn Division: Username: Date:7/13/2020



REMAINING CRIB STRUCTURE REPAIR PLAN

3/8" = 1'-0"



REMAINING CRIB STRUCTURE REPAIR ELEVATION

3/8" = 1'-0"

NOTES:

1. Bolts drilled through the lower fender attachment may be angled to avoid rock fill.

STATE OF MAINE
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WIN
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	BY	DATE
PROJ. MANAGER	N. Willey	
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
9209
P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
MISCELLANEOUS II

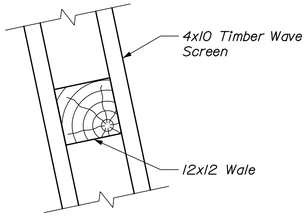
SHEET NUMBER

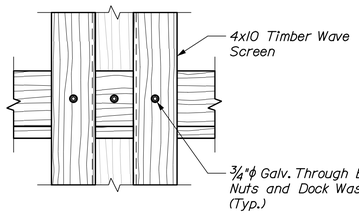
S10

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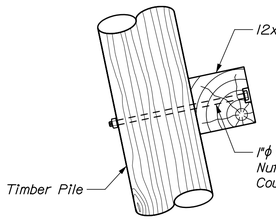
HNTB

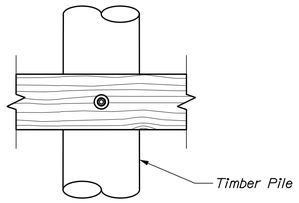
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SCREEN CONNECTIONS





WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/4" = 1'-0"

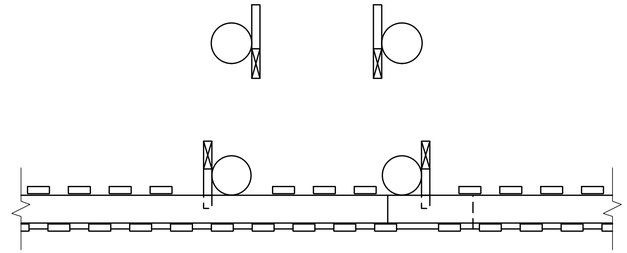
ASSEMBLY

1/4" PLATE DETAIL

Note: Dimensions shown similar to pile point manufactured by Associated Pile & Fitting. Pile point size shall be compatible with pile tip dimensions. Contractor shall confirm pile tip size prior to ordering or fabricating pile point.

TIMBER PILE POINT DETAIL

3" = 1'-0"



WAVE SCREEN PLAN VIEW

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

NOTES:

1. All threaded rods for timber connections are 1" dia. galv. with nuts and dock washers A307, 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 facing towards the Pen shall be installed at a batter of 4 horiz. on 12 vert. All timber battered piles for wave screens with timber wales and planks facing away from the Pen 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.

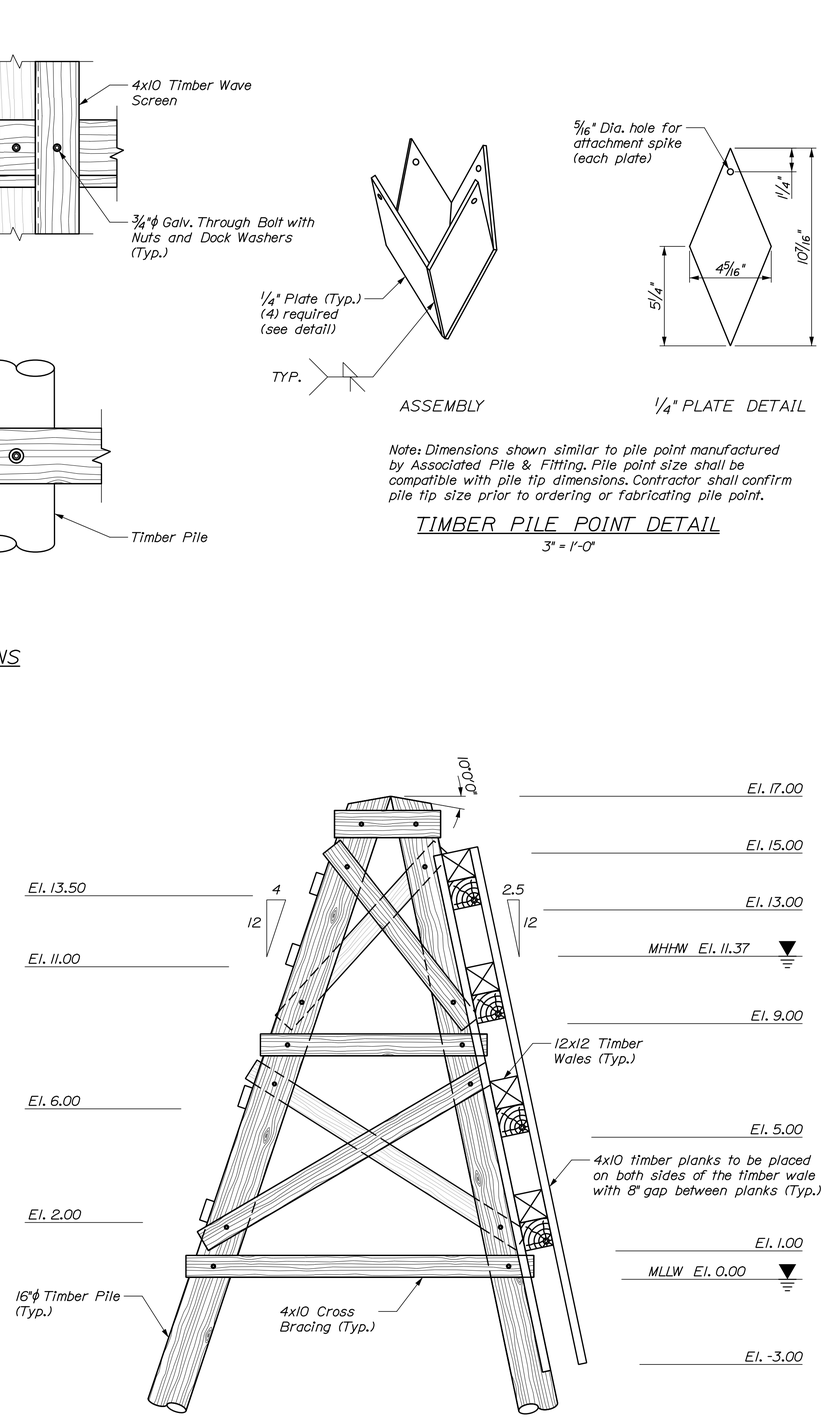
6. All timber construction shall conform to the national design specification for wood construction of the American Forest and Paper Association.

7. Field treat all cut and drilled timber surfaces with two coats of preservative containing copper napthanate solution (min. 2% metallic solution) per specifications.

8. Wave screens shall be 6" minimum clear from dolphins.

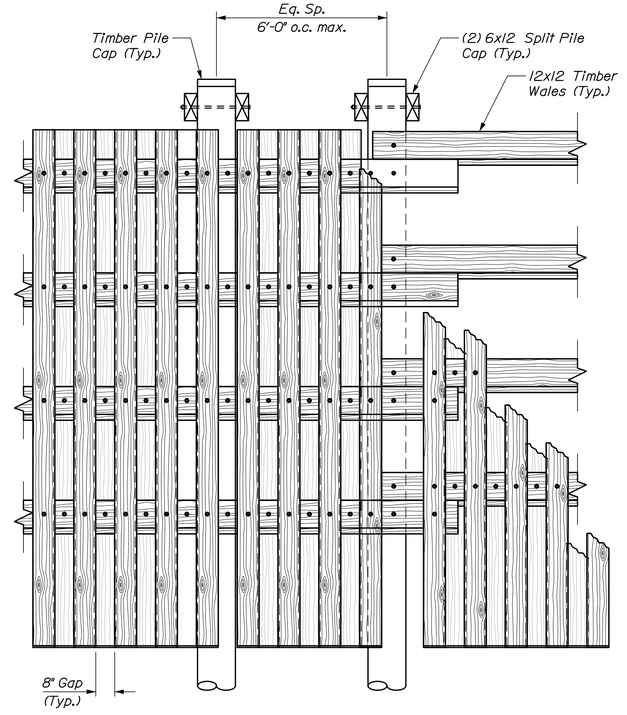
9. Contractor shall take care while installing timber piles to avoid conflict with steel pipe piles.

10. Timber pile cap shall be white with flat top.



WAVE SCREEN END ELEVATION

3/8" = 1'-0"



WAVE SCREEN FRONT ELEVATION

3/8" = 1'-0"

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

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#0209
P.E. NUMBER
DATE

	BY	DATE
	P. Bishop	07\20
	C. Morin	07\20

PROJ. MANAGER	N. Willey
DESIGN-DETAILED	C. Morin
CHECKED-REVIEWED	
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

BASS HARBOR
FERRY TERMINAL

WAVE SCREEN
PLAN AND ELEVATION

SHEET NUMBER

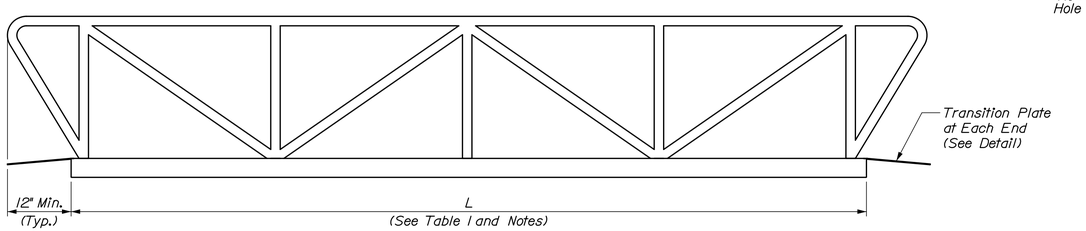
S11

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Date:7/13/2020

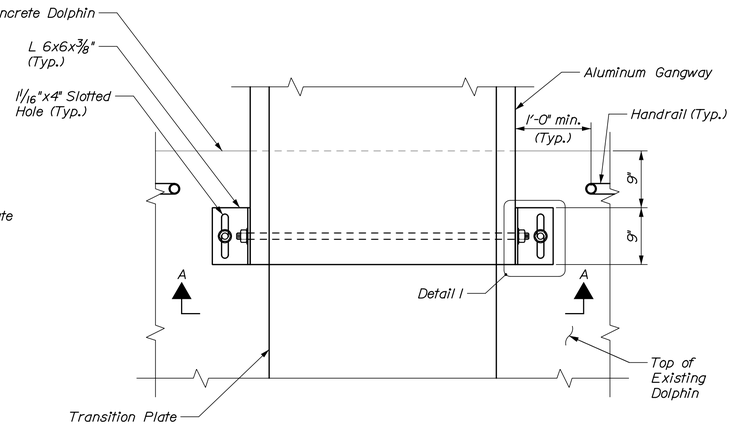
Username:

Filename: 015_Wave Screen Plan and Elevation.dgn Division:



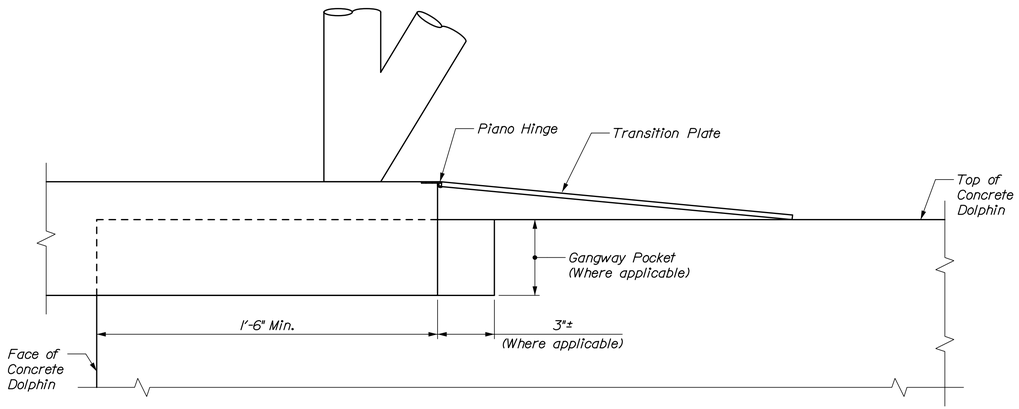
GANGWAY ELEVATION

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



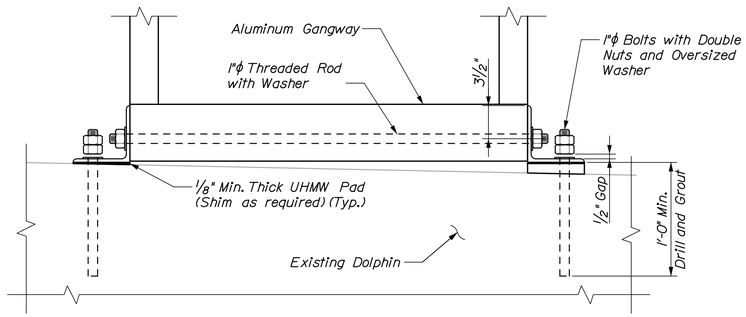
EXISTING DOLPHIN GANGWAY CONNECTION

1" = 1'-0"



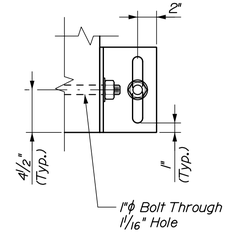
TRANSITION PLATE DETAIL

3" = 1'-0"



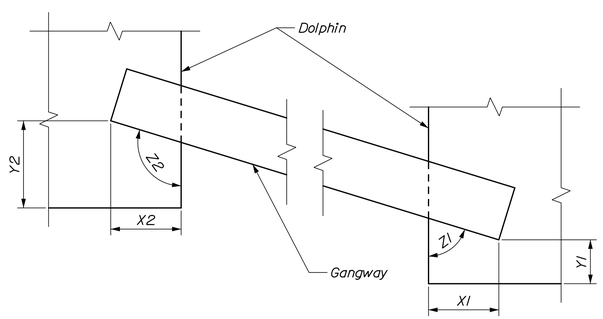
SECTION A-A

1 1/2" = 1'-0"



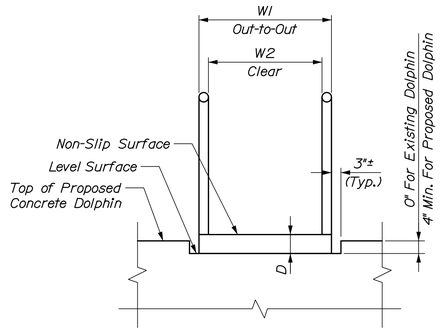
DETAIL I

1 1/2" = 1'-0"



GANGWAY LAYOUT

N.T.S.



PROPOSED DOLPHIN GANGWAY TYPICAL SECTION

1/2" = 1'-0"

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"	30'-0"	D6	2'-2"	0'-10"	45°40'	D7	1'-6"	8'-0"	90°0'
G2	42"	36"	6"	38'-0"	D2	2'-0"	2'-6"	83°31'	D1	2'-0"	1'-6"	89°34'

NOTES:

1. See Sheet G02 for design loads.
2. Gangway shall be truss type constructed, fabricated of aluminum grade 6061-T6 marine alloy.
3. Gangway length shall be confirmed or adjusted once dolphins are constructed.
4. Contractor shall field verify dimensions of dolphins for pocket sizes and distances between dolphins.
5. Install bolt through gangway prior to installing bolts into existing concrete.
6. Contractor shall provide UHMW shims at gangway ends.
7. A kick plate is not required along the bottom of the rail posts.

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
#0209

P.E. NUMBER

DATE

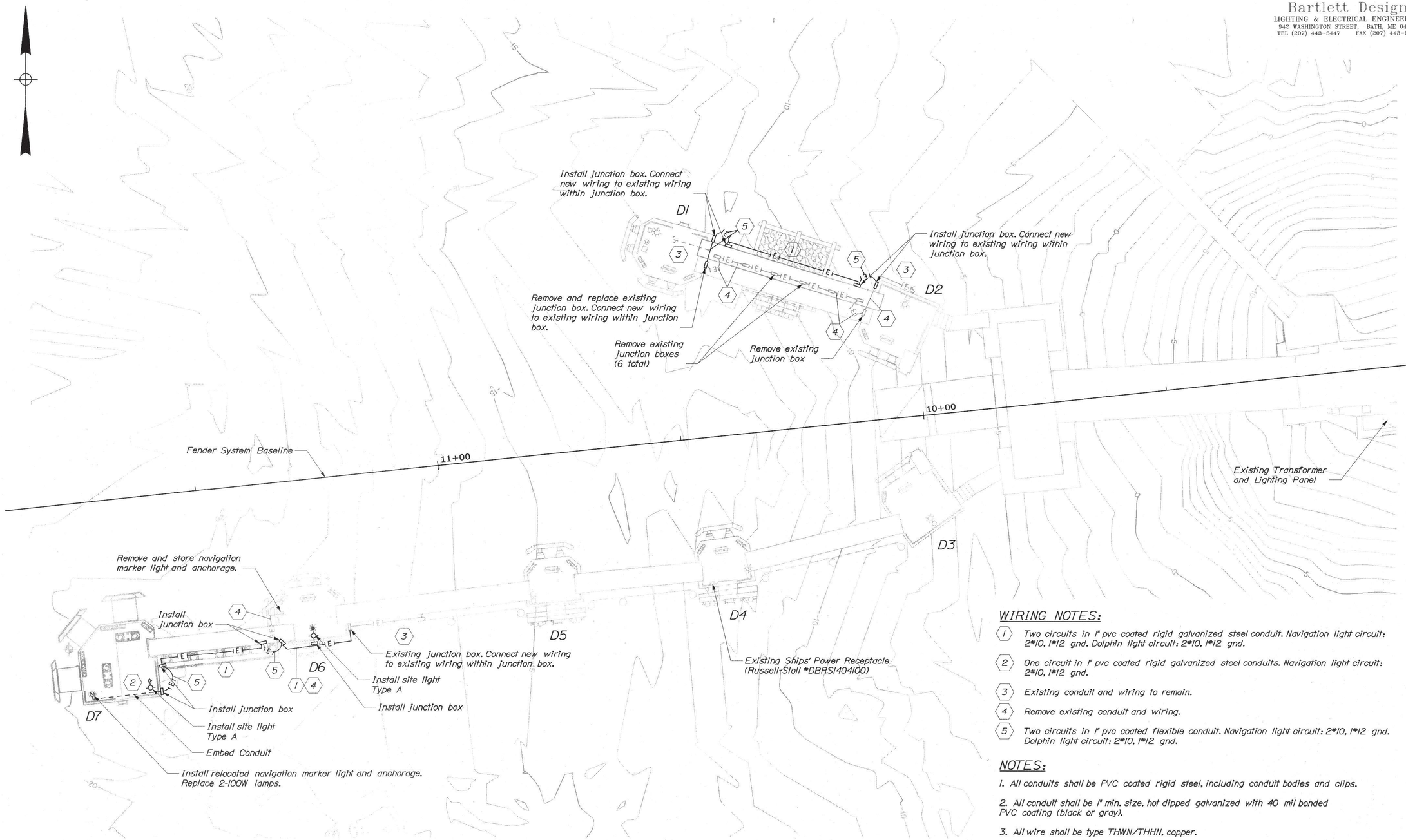
BASS HARBOR
FERRY TERMINAL

GANGWAY
PLAN AND ELEVATION

SHEET NUMBER
S12
16 OF 18

Filename: 016_Gangway Plan and Elevation.dgn Division: Username: Date:7/13/2020

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET, BATH, ME 04530
TEL (207) 443-6447 FAX (207) 443-5560



PLAN
1" = 10'-0"
10 0 10 20
Scale of Feet

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.

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.

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DEPARTMENT OF TRANSPORTATION

WIN
023476.00

STATE OF MAINE — LAWRENCE E. BARTLETT No. 7928 — LICENSED PROFESSIONAL ENGINEER

Lawrence E. Bartlett
SIGNATURE

P.E. NUMBER
7928

DATE
5/30/2019

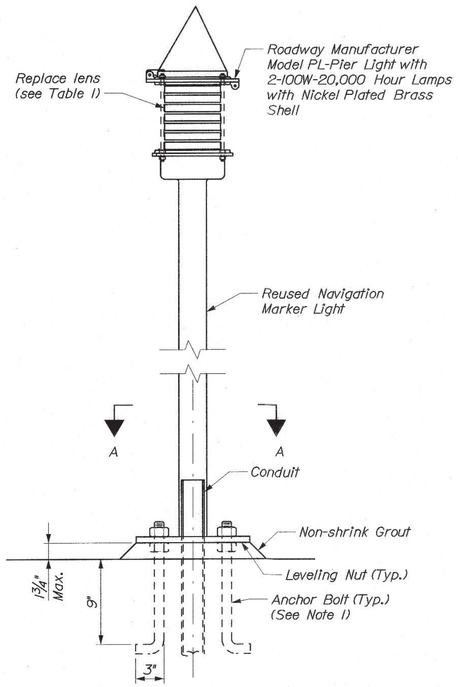
	BY	DATE
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CHECKED-REVIEWED	C. Morin	05\19
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

BASS HARBOR
FERRY TERMINAL

ELECTRICAL PLAN

SHEET NUMBER
E01
17 OF 18

Username:
Date:5/30/2019
Division:
Filename: ...\017_Electrical Plan.dgn

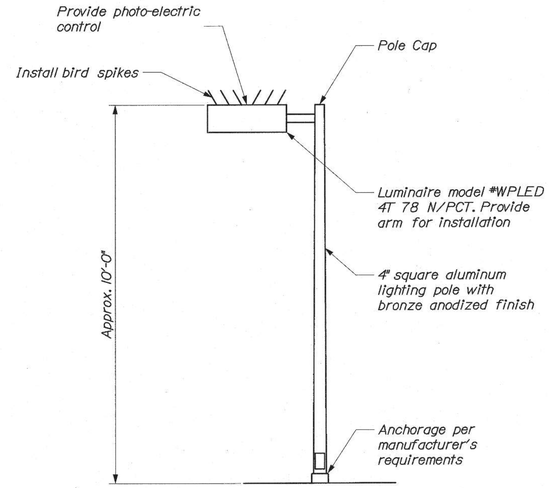


NAVIGATION MARKER INSTALLATION DETAIL

N.T.S.

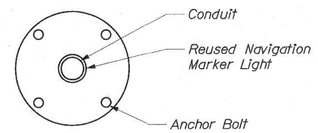
TABLE I
NAVIGATIONAL MARKER LENS
REPLACEMENT SUMMARY

Location	# of Light Opening	Lamp Size	Lens
Dolphin D7	In Kind	2-100W A-19	In Kind



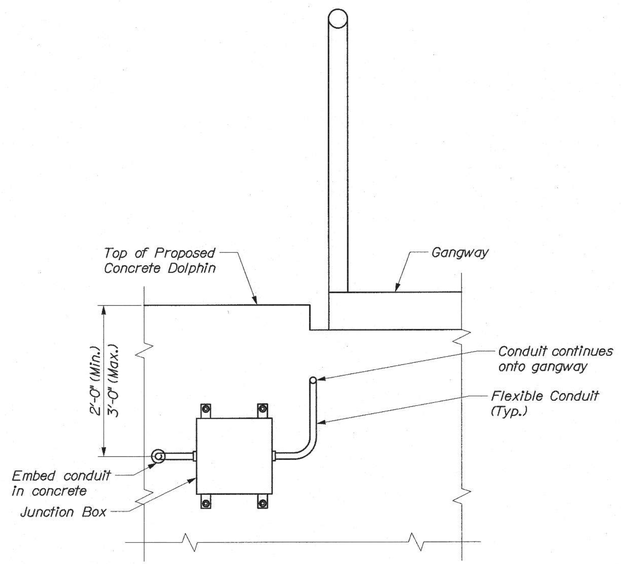
SITE LIGHT TYPE A DETAIL

N.T.S.



SECTION A-A

N.T.S.



EMBEDDED CONDUIT JUNCTION BOX DETAIL

1" = 1'-0"

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.

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

STATE OF MAINE · LAWRENCE E. BARTLETT · No. 7928 · LICENSED PROFESSIONAL ENGINEER

Lawrence E. Bartlett
SIGNATURE

P.E. NUMBER
7928

DATE
5/30/2019

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	L. Bartlett	P. Bishop	05\19
CHECKED-REVIEWED	C. Morin	C. Morin	05\19
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BASS HARBOR
FERRY TERMINAL

ELECTRICAL DETAILS

SHEET NUMBER

E02

18 OF 18

Username:

Date:5/30/2019

Division:

Filename: ...\018_Electrical Details.dgn

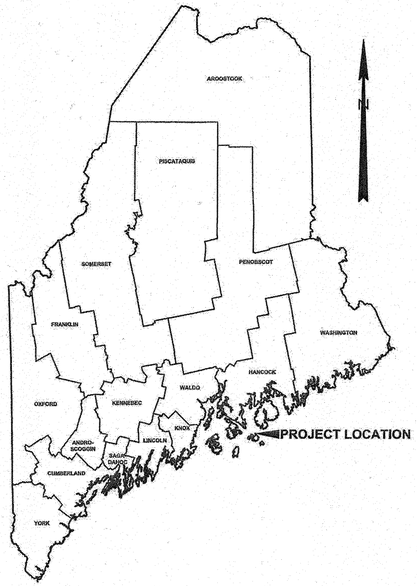
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

TOWN OF SWAN'S ISLAND
HANCOCK COUNTY

SWAN'S ISLAND FERRY TERMINAL

FENDER SYSTEM MODIFICATIONS

FEDERAL PROJECT NO. 02348000
MAINEDOT WIN: 023480.00



INDEX OF SHEETS

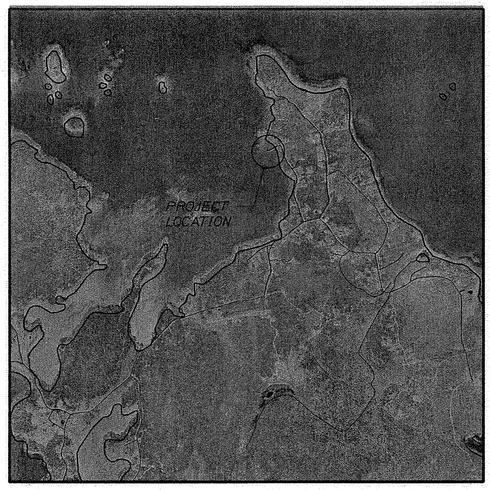
SHEET	NO.	TITLE
GENERAL		
G01	1	TITLE SHEET
G02	2	GENERAL NOTES AND DESIGN CRITERIA
G03	3	EXISTING CONDITIONS
G04	4	BORING LOGS
MARINE PLANS		
S01	5	SITE PLAN
S02	6	BERTH PLAN
S03	7	DOLPHIN FOUNDATION PLAN
S04	8	DOLPHIN FOUNDATION DETAILS
S05	9	DOLPHIN PLAN, ELEVATION, AND DETAILS
S06	10	DOLPHIN DETAILS MOORING HARDWARE
S07	11	DOLPHIN DETAILS FENDER SYSTEM I
S08	12	DOLPHIN DETAILS FENDER SYSTEM II
S09	13	DOLPHIN DETAILS MISCELLANEOUS
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 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:

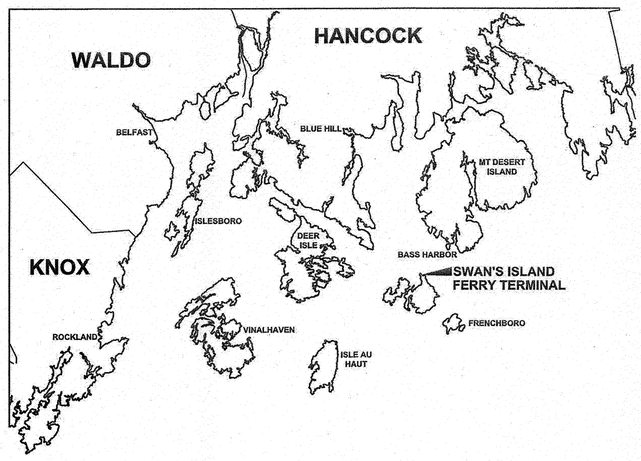
GENERAL PLANS	G04	GEOTECHNICAL BORING LOGS	SCHONEWALD ENGINEERING
ELECTRICAL PLANS	E01-E02	ELECTRICAL DESIGN	BARTLETT DESIGN, INC.



LOCATION MAP

1/2 0 1/2 1

Scale in Miles



WIN 023480.00 FEDERAL PROJECT NO. 02348000

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE 7-24-2020

COMMISSIONER: [signature] — DATE 7-23-2020

CHIEF ENGINEER: Jaye Vael Taylor

STATE OF MAINE — CRAIG R. MORIN 10209 — LICENSED PROFESSIONAL ENGINEER

SIGNATURE [signature] — P.E. NUMBER 10209 — DATE 07/13/20

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELE GORNEAU II
DESIGNER	CRAIG R. MORIN, P.E.
CONSULTANT	HNTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SWAN'S ISLAND FERRY TERMINAL
FENDER SYSTEM MODIFICATIONS
SWAN'S ISLAND — HANCOCK COUNTY

TITLE SHEET

SHEET NUMBER

G01

1 OF 18

HNTB

Date:7/7/2020
Username:
Division:
Filename: 001_Title.dgn

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 accomodations off-site for their field office, lay down area, restroom facilities, etc.

SPECIFICATIONS AND CODES

1. Project specifications titled, "Special Provisions For: Swan's Island Ferry Terminal Fender System Modifications", dated May 31, 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:
El. (NGVD) = El. (MLLW) - 9.28 ft

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

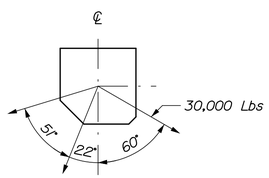
BERTHING LOADS

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

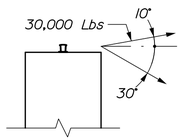
* Includes 1.4 load factor

MOORING LOADS

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



PLAN



PLAN

FENDER NOTES

1. All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.

2. Contractor's steel manufacturer shall design the fender panels for the indicated loads.

3. 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.

4. Anchors shall be set by template.

DOLPHIN/FENDER DESIGN LOADS

Design 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).

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

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

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. 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.

6. The distance from the side of any pile to the nearest edge of concrete shall not be less than 9".

7. 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

1. 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

1. 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
2. Railings:
   - Aluminum Pedestrian: Vertical 50 plf; Horizontal 50 plf (acting simultaneously)
3. Tidal ranges (elevations in feet):

Swan's Island	Tidal Datums				
	NGVD29	MSL	MLW	MLLW	STND
Top of Dolphin*	9.12	12.94	18.04	18.40	19.31
Highest Observed Tide	6.93	10.75	15.85	16.21	17.12
MHHW	1.64	5.46	10.56	10.92	11.83
MHW	1.23	5.05	10.15	10.51	11.42
NGVD29**	0.00	3.82	8.92	9.28	10.19
MSL	-3.82	0.00	5.10	5.46	6.37
MLW	-8.92	-5.10	0.00	0.36	1.27
MLLW	-9.28	-5.46	-0.36	0.00	0.91
Lowest Observed Tide	-10.19	-6.37	-1.27	-0.91	0.00
STND (Station Datum)	-12.19	-8.37	-3.27	-2.91	-2.00

* Along top edge of dolphin at corner nearest pen.

** NGVD29 conversion taken from archive project drawings.

Station ID: 8413825, Swans Island, 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
- ϕ 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
N.T.S.	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
USACOE	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 for steel connections shall conform to ASTM A325 and be hot-dip galvanized in accordance with ASTM A153. Set anchor bolts by template only. All bolts and nuts for timber connections shall conform to ASTM A307 and be hot-dip galvanized.

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 cemtitious 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.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
DESIGNED - DETAILED	P. Bishop	07\20
CHECKED - REVIEWED	C. Morin	07\20
DESIGN2 - DETAILED2		
DESIGN3 - DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		
PROJ. MANAGER	N. Willey	

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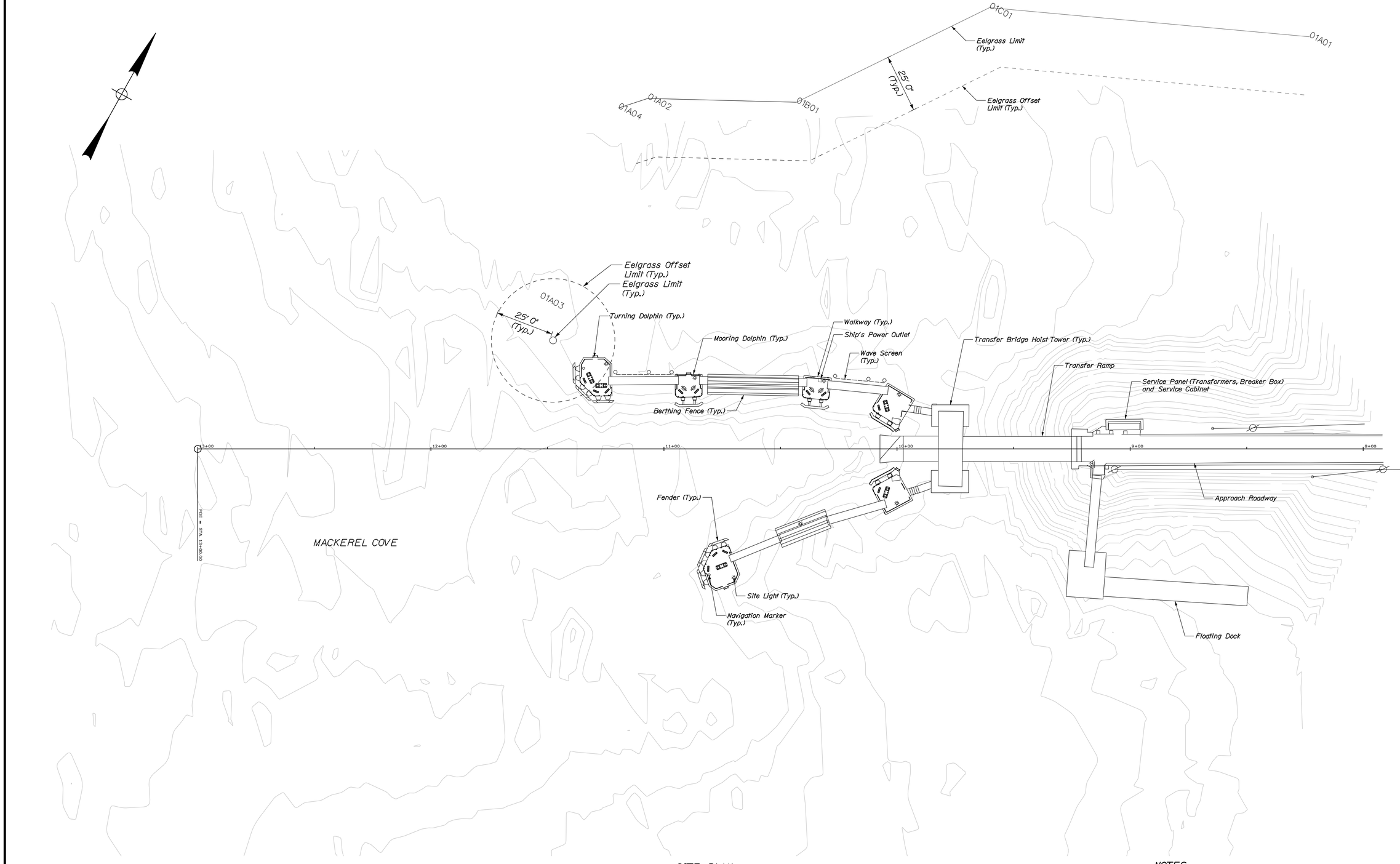
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SWAN'S ISLAND
FERRY TERMINAL

GENERAL NOTES AND
DESIGN CRITERIA

SHEET NUMBER
G02
2 OF 18

Date:7/13/2020
Username:
Division:
Filename: 002_General Notes.dgn



SITE PLAN

1" = 20'-0"

20 0 20 40

Scale of Feet

NOTES:

1. For existing electrical details, see Sheet E01.

2. Eelgrass limits are approximated boundaries based on dive surveys conducted in November 2019 and July 2020 dive survey by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

9209
P.E. NUMBER

DATE

SWAN'S ISLAND
FERRY TERMINAL

EXISTING CONDITIONS

SHEET NUMBER

G03

3 OF 18

Filename: 003_Existing Conditions.dgn Division: Username: Date:11/6/2020

Date:5/29/2019

Username:

Division:

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

SCHONEWALD ENGINEERING ASSOCIATES, Inc.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Swans Island, Maine

Boring No.: MB-SWAN-101-18
WIN: 023480.00

Driller:	New England Boring Contractors	Elevation (ft.): -12.4 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/13/18; 0845-1300	Drilling Method: cased wash boring	Hammer Type: Automatic
Boring Location:	per plan (83A)1 see remarks	Casing ID/OD1: HW to 7.1 ft / NW to 7.8 ft	Hammer Efficiency: 0.906
		Auger ID/OD1: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (ft.)	Sample Depth (ft.)	Blows / (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N-60	Casting Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0							PUSH			RECENT MARINE SEDIMENTS (organic muck)	
							WOH			2.7 ft: Gravel and cobbles noted.	
5	1D	24/8	5.0 - 7.0	8-9-14-9	23	35	32			1D: Brown, m. dense, Silty GRAVEL, little to some fine to coarse sand with chunks of granite; grading to Grey, Silty GRAVEL, some fine to coarse sand with chunks of basalt.	
							50/5"			7.1 ft: HW refusal. Roller cone to 7.7 ft. Spin NW casing to 7.8 ft.	
	R1	44/41	7.8 - 11.5	RQD: 11"=25%			NQ2	-19.8		7.4 Top of bedrock at Elev. -19.8 ft. R1: Bedrock: Very hard, typically fresh, aphanitic to fine grained, dark green grey BASALT with calcsilicate veins throughout and few zones of high lime concentration. Close, low angle and moderately dipping breaks; undulating, rough, fresh to discolored, and open with lime infilling. Open fractures from 8.9 to 9.1 ft. (Castine Formation) Core times: 3:20/ 3:00/ 2:30/ - minsec/ft ROCK QUALITY = VERY POOR TO POOR	
10			sample 10.1-10.5								UCT qp= 16.36 ksi
	R2	60/60	11.5 - 16.5	RQD: 36"=60%						R2: Similar to R1, except fractures from 11.9 to 12.2 and 13.7 to 13.9 ft. 2:50/ 2:05/ 2:20/ 2:15/ 2:10 minsec/ft ROCK QUALITY = FAIR	
15			sample 14.2-14.7								UCT qp= 15.90 ksi
	R3	60/60	16.5 - 21.5	RQD: 48"=80%						R3: Similar to R1, except close to moderately spaced breaks. 2:30/ 2:15/ 2:15/ 2:15/ 2:45 minsec/ft ROCK QUALITY = GOOD	
20											
	R4	60/60	21.5 - 26.5	RQD: 45"=75%						R4: Similar to R1, except close to moderately spaced, low angle breaks. One 1-inch thick, moderately dipping quartzite inclusion at 22.7 ft; open fracture from 25.3 to 25.5 ft. 2:20/ 2:10/ 2:20/ 2:20/ 2:40 minsec/ft ROCK QUALITY = FAIR TO GOOD	
25											

Remarks:
8/13/18: 0838 hrs: 16.9' top turn dolphin #1 to water: 7.7' barge deck to water: 21.0' barge deck to mudline
top of turn dolphin #1: elev. 17.75 ft MLLW
38' center of turn dolphin #1 to borehole: approx. 1.5' northerly of line along northerly rail of walkway between turn dolphin #1 and side dolphin #1.

Stratification 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.

SCHONEWALD ENGINEERING ASSOCIATES, Inc.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Swans Island, Maine

Boring No.: MB-SWAN-102-18
WIN: 023480.00

Driller:	New England Boring Contractors	Elevation (ft.): -15.0 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/9/18; 1430-8/10/18; 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location:	per plan (83B)1 see remarks	Casing ID/OD1: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906
		Auger ID/OD1: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (ft.)	Sample Depth (ft.)	Blows / (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N-60	Casting Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0	1D	24/8	0.0 - 2.0	WOH/18"-1	---		PUSH			1D: Grey brown, v. soft, ORGANIC SILT, some fine sand with shells; gravel on top of spoon. RECENT MARINE SEDIMENTS	
								-19.0		4.0 4.0 ft: Apparent change to olive grey, marine silt-clay.	
5	2D	24/24	5.0 - 7.0	2-3-4-4	7	11	63 RC			2D: Olive brown, slightly mottled grading to olive grey, m. stiff, SILT, some clay grading to Clayey SILT, MARINE SILT-CLAY CRUST	
								-23.5		8.5 3D: Dark grey with black, v. soft, Silty CLAY, trace very fine sand, MARINE SILT-CLAY	
10	3D	24/24	10.0 - 12.0	WOH/24"	---		PUSH				
15	4D	24/11	15.0 - 17.0	WOH/18"-1	---		RC			4D: Dark grey, v. soft, Silty CLAY.	
20											
25	5D	13/8	24.0 - 25.1	WOH-1-50/1"			RC			Dark grey, Silty CLAY; changing at 24.8 ft to:	

Remarks:
8/9/18: 1420 hrs: 16.0' top turn dolphin #2 to water: 7.7' barge deck to water: 24.5' barge deck to mudline
top of turn dolphin #2: elev. 17.77 ft MLLW
40' center of turn dolphin #2 to borehole: approx. on line along southerly rail of walkway between turn dolphin #2 and southerly berthing fence.

Stratification 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.

SCHONEWALD ENGINEERING ASSOCIATES, Inc.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Swans Island, Maine

Boring No.: MB-SWAN-102-18
WIN: 023480.00

Driller:	New England Boring Contractors	Elevation (ft.): -15.0 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/9/18; 1430-8/10/18; 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location:	per plan (83B)1 see remarks	Casing ID/OD1: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906
		Auger ID/OD1: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (ft.)	Sample Depth (ft.)	Blows / (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N-60	Casting Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
50	R6	60/60	50.1 - 55.1	RQD: 28"=47%						R6: Similar rock to R1 with zones of significant lime and potassium feldspar concentrations. Close to moderately spaced, low angle to moderately dipping breakst typically fresh with occasional mud infilling. 1:10/ 1:35/ 2:10/ 2:55/ 2:45 minsec/ft ROCK QUALITY = POOR TO FAIR	
55	R7	58/58	55.1 - 59.9	RQD: 56"=97%				-74.9		R7: Similar to R6, except breaks are moderately spaced and low angle. 1:55/ 2:00/ 2:05/ 2:20/~ minsec/ft. ROCK QUALITY = EXCELLENT	
60										Bottom of Exploration at 59.9 feet below ground surface.	
65											
70											

Remarks:
8/9/18: 1420 hrs: 16.0' top turn dolphin #2 to water: 7.7' barge deck to water: 24.5' barge deck to mudline
top of turn dolphin #2: elev. 17.77 ft MLLW
40' center of turn dolphin #2 to borehole: approx. on line along southerly rail of walkway between turn dolphin #2 and southerly berthing fence.

Stratification 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.

SCHONEWALD ENGINEERING ASSOCIATES, Inc.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Swans Island, Maine

Boring No.: MB-SWAN-101-18
WIN: 023480.00

Driller:	New England Boring Contractors	Elevation (ft.): -12.4 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/13/18; 0845-1300	Drilling Method: cased wash boring	Hammer Type: Automatic
Boring Location:	per plan (83A)1 see remarks	Casing ID/OD1: HW to 7.1 ft / NW to 7.8 ft	Hammer Efficiency: 0.906
		Auger ID/OD1: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (ft.)	Sample Depth (ft.)	Blows / (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N-60	Casting Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
25	R5	60/60	26.5 - 31.5	RQD: 34"=57%						R5: Similar to R1, except close to moderately spaced, low angle breaks. Near vertical fracture from 30.2 to 30.8 ft along granitic inclusion. 2:05/ 2:10/ 1:55/ 2:00/ 2:20 minsec/ft ROCK QUALITY = FAIR	
30	R6	31/30	31.5 - 34.1	RQD: 8"=26%						R6: Similar to R1, except predominately low angle breaks. ~/ 2:00/ ~ minsec/ft ROCK QUALITY = VERY POOR TO POOR	
								-46.5		34.1 Bottom of Exploration at 34.1 feet below ground surface.	
35											
40											
45											
50											

Remarks:
8/13/18: 0838 hrs: 16.9' top turn dolphin #1 to water: 7.7' barge deck to water: 21.0' barge deck to mudline
top of turn dolphin #1: elev. 17.75 ft MLLW
38' center of turn dolphin #1 to borehole: approx. 1.5' northerly of line along northerly rail of walkway between turn dolphin #1 and side dolphin #1.

Stratification 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.

SCHONEWALD ENGINEERING ASSOCIATES, Inc.

PROJECT: Fender System Modifications, Maine State Ferry Terminal
LOCATION: Swans Island, Maine

Boring No.: MB-SWAN-102-18
WIN: 023480.00

Driller:	New England Boring Contractors	Elevation (ft.): -15.0 ft (mudline)	Core Barrel: NQ2 (wireline)
Operator:	Enos / Shore	Datum: MLW	Sampler: standard split spoon
Logged By:	Schonewald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches
Date Start/Finish:	8/9/18; 1430-8/10/18; 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location:	per plan (83B)1 see remarks	Casing ID/OD1: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906
		Auger ID/OD1: n/a	Water Level*: n/a

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
N-uncorrected = N value
N_{60} = N value corrected for hammer efficiency
hammer efficiency = calculated hammer efficiency
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)

ADDITIONAL DEFINITIONS:
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA=solid stem auger/HSA=hollow stem auger/RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
MC = water content, percent
#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Rec./Rec. (ft.)	Sample Depth (ft.)	Blows / (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N-60	Casting Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
25	R1	60/60	25.3 - 30.3	RQD: 21"=35%			NQ2	-40.1		1D: Grey, Silty GRAVEL, little to some Sand. TILL 25.1 25.1 ft: Split-spoon and HW casing refusal. Top of bedrock at Elev. -40.1 ft. R1: Bedrock: Very hard, typically fresh, aphanitic to fine grained, green grey BASALT with numerous calcsilicate veins thicker veins (1/8-inch) typically moderately dipping and weathered. Very close to close, typically low angle breaks; undulating, occasionally blocky, rough, typically discolored, and open with mud infilling. (Castine Formation) Core times: 2:45/ 2:25/ 2:55/ 1:50/ 1:50 minsec/ft ROCK QUALITY = POOR	
30	R2	60/60	30.3 - 35.3	RQD: 30"=50%						R2: Similar to R1, except close to moderately spaced, low angle to moderately dipping breaks; fresh to discolored and open with occasional mud infilling. 1:30/ 1:25/ 1:15/ 1:25/ 1:40 minsec/ft ROCK QUALITY = POOR TO FAIR	
			sample 33.5-34.1								UCT qp= 12.63 ksi
35	R3	57/57	35.3 - 40.1	RQD: 25"=44% sample 35.5-36.2						R3: Similar to R1, except zones of high lime concentration and close, low angle breaks typically discolored with mud infilling. 1:30/ 1:25/ 1:30/ 2:00/ ~ minsec/ft ROCK QUALITY = POOR	UCT qp= 7.89 ksi
			sample 38.5-39.0								UCT qp= 6.70 ksi
40	R4	60/60	40.1 - 45.1	RQD: 46"=77%						R4: Similar to R1, except moderately spaced, moderately dipping breakst typically fresh with occasional mud infilling. Occasional breaks along potassium feldspar-rich granite inclusions. 2:50/ 2:10/ 2:05/ 2:30/ 2:15 minsec/ft ROCK QUALITY = FAIR TO GOOD	
45	R5	60/60	45.1 - 50.1	RQD: 37"=62%						R5: Similar to R4, except breaks are close to moderately spaced. 1:50/ 1:45/ 1:45/ 1:25/ 1:15 minsec/ft ROCK QUALITY = FAIR	
50											

Remarks:
8/9/18: 1420 hrs: 16.0' top turn dolphin #2 to water: 7.7' barge deck to water: 24.5' barge deck to mudline
top of turn dolphin #2: elev. 17.77 ft MLLW
40' center of turn dolphin #2 to borehole: approx. on line along southerly rail of walkway between turn dolphin #2 and southerly berthing fence.

Stratification 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, Swan's Island, Maine, MaineDOT WIN 023480.00," dated May 2019 and prepared by Schonewald Engineering Associates, Inc. The report is available on the MaineDOT website.

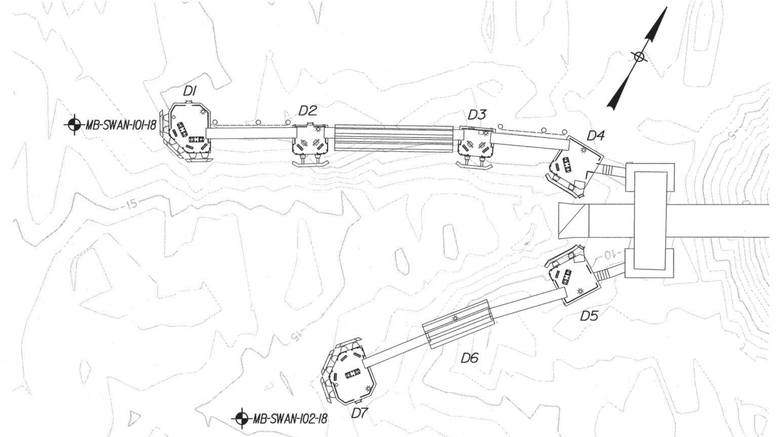
2. Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for 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-SWAN-101-18	187497.56	1004101.54
MB-SWAN-102-18	187439.61	1004197.27



KEY PLAN
1" = 25'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 023480.00

ISABEL V. SCHONEWALD No. 7528 — STATE OF MAINE — LICENSED PROFESSIONAL ENGINEER

SIGNATURE
7528
P.E. NUMBER
5/29/19
DATE

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	N. Willey	05.19
CHECKED-REVIEWED	C. Morin	05.19
DESIGN-DETAILED2		
DESIGN-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND FERRY TERMINAL

BORING LOGS

SHEET NUMBER
G04
4 OF 18

HNTB

DOLPHIN COORDINATES

EXISTING DI		
LOCATION	NORTHING	EASTING
A	187518.94	1004125.14
B	187511.34	1004145.32
C	187507.47	1004138.63
D	187509.71	1004130.46
E	187525.71	1004137.15

EXISTING D2		
LOCATION	NORTHING	EASTING
A	187538.14	1004174.69
B	187529.81	1004179.33
C	187523.90	1004169.29
D	187532.48	1004164.54

EXISTING D3		
LOCATION	NORTHING	EASTING
A	187563.79	1004223.83
B	187554.91	1004227.43
C	187550.29	1004216.89
D	187558.99	1004212.99

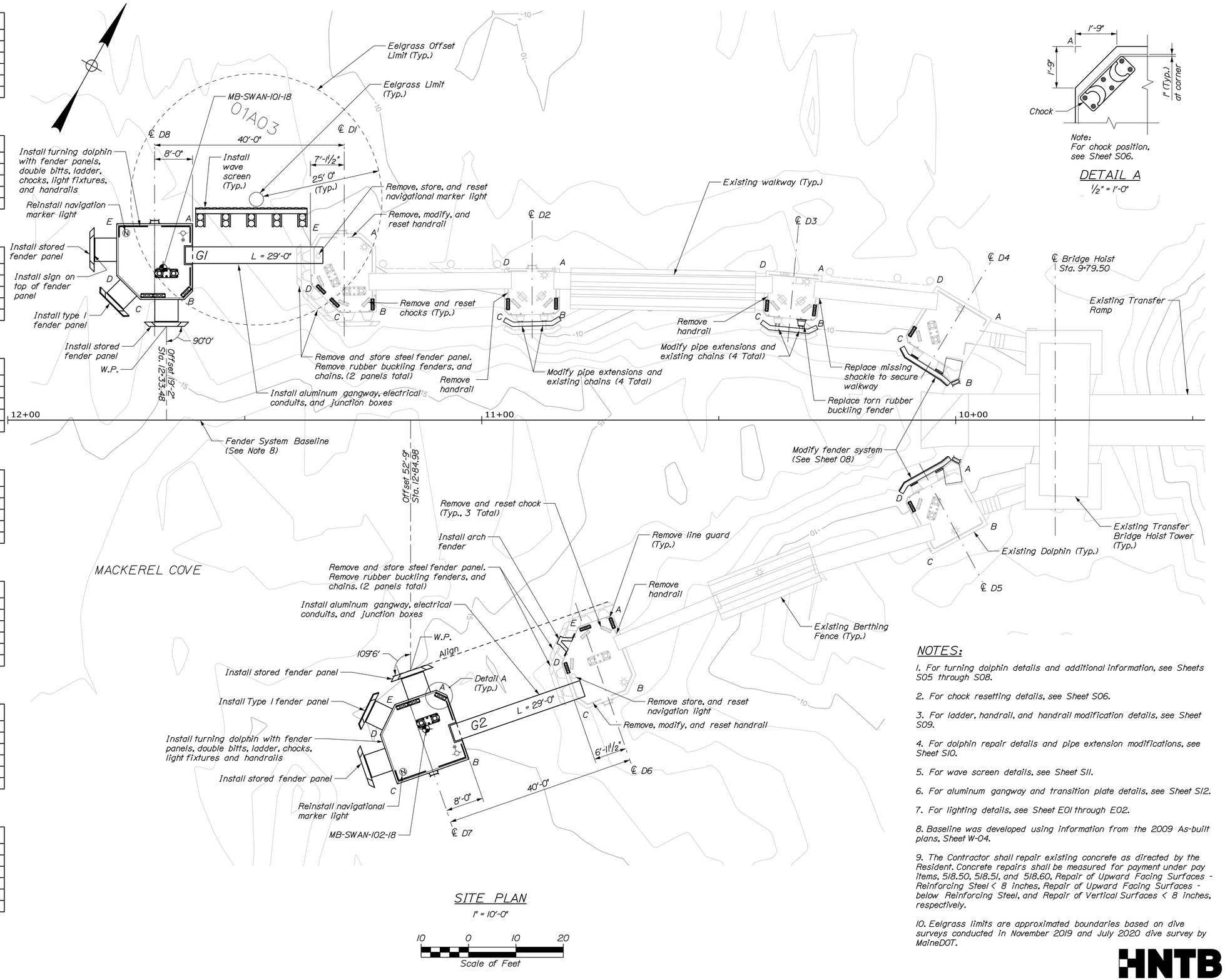
EXISTING D4		
LOCATION	NORTHING	EASTING
A	187573.23	1004259.46
B	187560.02	1004258.93
C	187560.18	1004245.37
D	187573.66	1004245.98

EXISTING D5		
LOCATION	NORTHING	EASTING
A	187541.78	1004268.87
B	187534.95	1004279.84
C	187523.85	1004272.69
D	187531.08	1004261.70

EXISTING D6		
LOCATION	NORTHING	EASTING
A	187479.83	1004220.00
B	187469.20	1004232.73
C	187458.39	1004223.56
D	187465.64	1004215.55
E	187474.08	1004214.86

PROPOSED D7		
LOCATION	NORTHING	EASTING
A	187449.13	1004196.37
B	187438.47	1004208.30
C	187426.54	1004197.64
D	187433.87	1004189.44
E	187440.92	1004189.04

PROPOSED D8		
LOCATION	NORTHING	EASTING
A	187508.76	1004102.40
B	187494.71	1004110.34
C	187489.43	1004100.57
D	187491.37	1004093.77
E	187500.98	1004088.42



Note:
For chock position, see Sheet S06.

DETAIL A
½" = 1'-0"

SITE PLAN
1" = 10'-0"

10 0 10 20
Scale of Feet

NOTES:

1. For turning dolphin details and additional information, see Sheets S05 through S08.
2. For chock resetting details, see Sheet S06.
3. For ladder, handrail, and handrail modification details, see Sheet S09.
4. For dolphin repair details and pipe extension modifications, see Sheet S10.
5. For wave screen details, see Sheet S11.
6. For aluminum gangway and transition plate details, see Sheet S12.
7. For lighting details, see Sheet E01 through E02.
8. Baseline was developed using information from the 2009 As-built plans, Sheet W-04.
9. 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.
10. Eelgrass limits are approximated boundaries based on dive surveys conducted in November 2019 and July 2020 dive survey by MaineDOT.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

PROJ. MANAGER	
DESIGN-DETAILED	N. Willey
CHECKED-REVIEWED	C. Morin
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

BY	DATE
P. Bishop	07\20
C. Morin	07\20

SIGNATURE
#0209
P.E. NUMBER
DATE

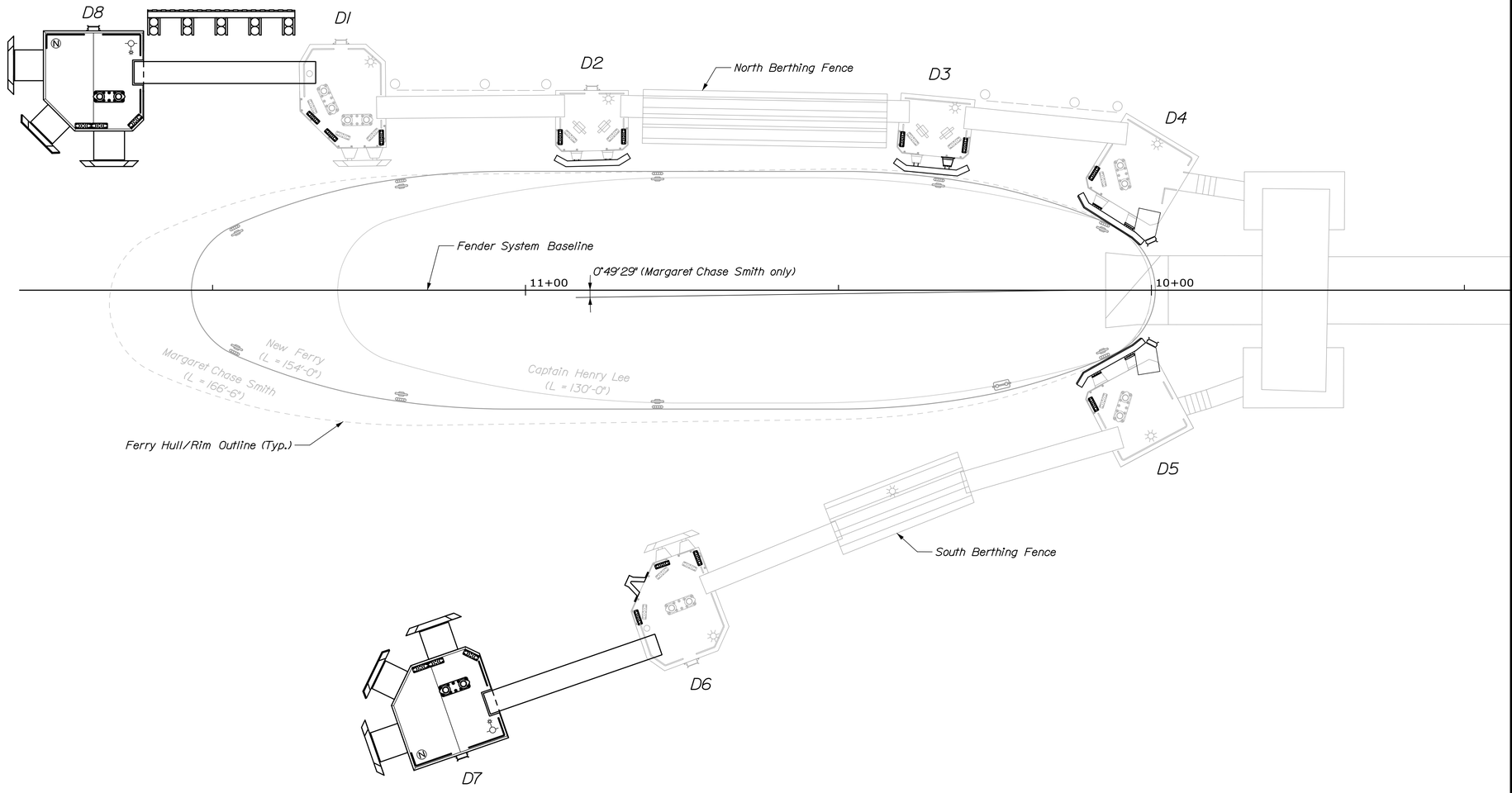
REVISIONS	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

SWAN'S ISLAND
FERRY TERMINAL

SITE PLAN

SHEET NUMBER
S01
5 OF 18

Date:11/6/2020
Username:
Division:
Filename: 005_Site Plan.dgn



PLAN

1" = 10'-0"

10 0 10 20

Scale of Feet

NOTES:

1. MV Captain Henry Lee is currently in operation. New Ferry is proposed. Margaret Chase Smith is shown for comparative purposes.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

SIGNATURE
#0209
P.E. NUMBER
DATE

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND
FERRY TERMINAL

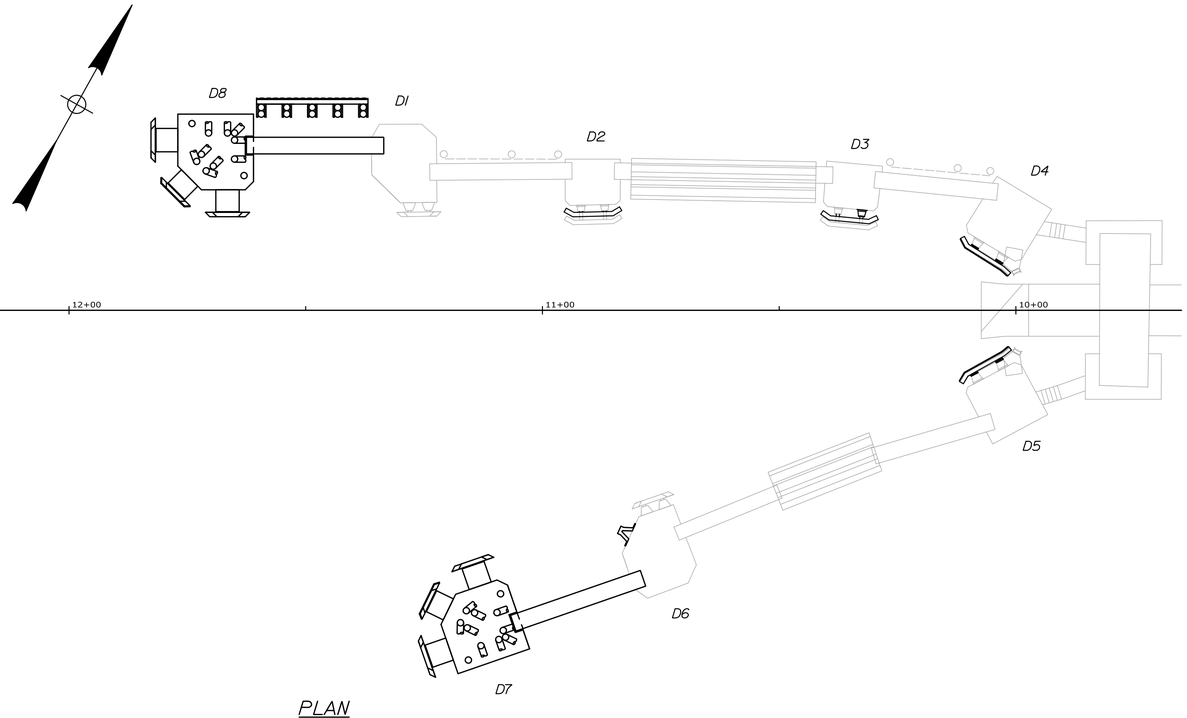
BERTH PLAN

SHEET NUMBER

S02

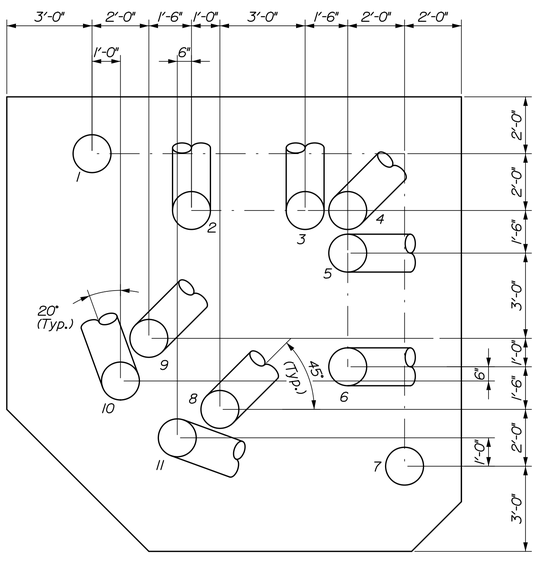
6 OF 18

Filename: 006_Berth Plan.dgn Division: Username: Date:7/13/2020



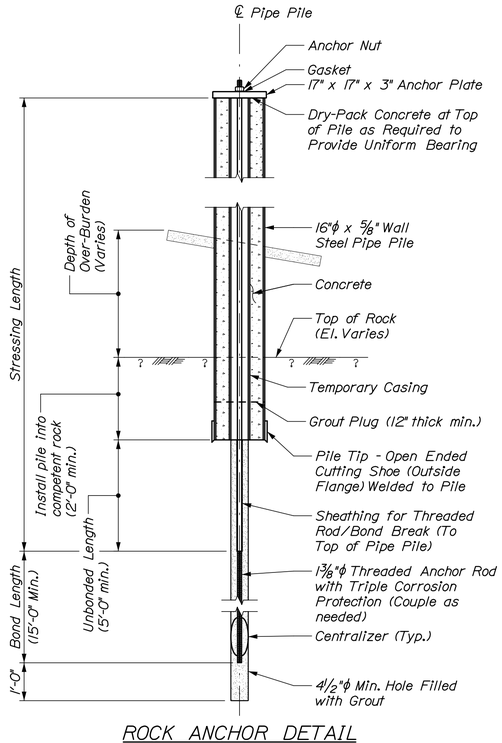
PLAN

1/16" = 1'-0"



FOUNDATION PLAN

(Dimensions shown at pile cut-off elevation, El. 11.00 ft)
(Dolphin D8 shown, D7 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	59	Vert.
	2	62	Batter 4:12
	3	62	Batter 4:12
	4	62	Batter 4:12
	5	62	Batter 4:12
	6	62	Batter 4:12
	7	59	Vert.
	8	62	Batter 4:12
	9	62	Batter 4:12
	10	59	Batter 2:12
	11	59	Batter 2:12
Turning Dolphin D8	1	39	Vert.
	2	41	Batter 4:12
	3	41	Batter 4:12
	4	41	Batter 4:12
	5	41	Batter 4:12
	6	41	Batter 4:12
	7	39	Vert.
	8	41	Batter 4:12
	9	41	Batter 4:12
	10	39	Batter 2:12
	11	39	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. For anode details, see Sheet S04.

5. 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 using drilling methods to top of competent rock and socket 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. Check tolerances. Inspect integrity of pipe pile. Resident shall accept pipe pile prior to grout plug installation. Install grout plug; 12" thick minimum.

4. Install temporary casing with centralizers as needed until it is seated into the grout plug to bedrock at the bottom of pile.

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). Release proof load and remove anchor plate.

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.

13. Re-install anchor plate at top of anchor with hex nut and hardened washer. Apply 110% of the max. pile tension load (see pile schedule). Lock off rock anchor.

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

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES	N. Willey	

SIGNATURE

9209
P.E. NUMBER

DATE

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN
FOUNDATION PLAN

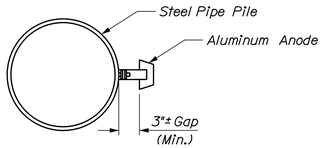
SHEET NUMBER

S03

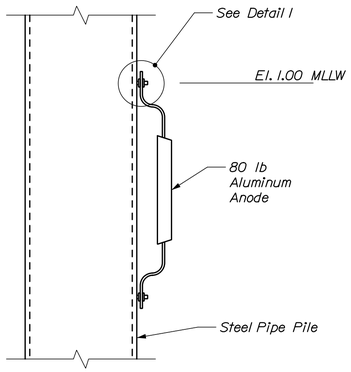
7 OF 18

HNTB

Filename: 007_Dolphin Foundation Plan.dgn Division: Username: Date:7/13/2020



PLAN

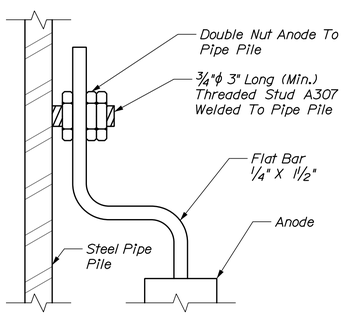


ELEVATION

Note: Anode shall be positioned along the inshore face of piles. Set top of Anode at +1.00 MLLW

ANODE DETAIL

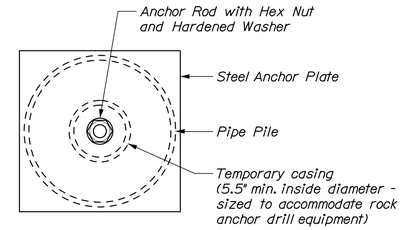
N.T.S.



DETAIL I

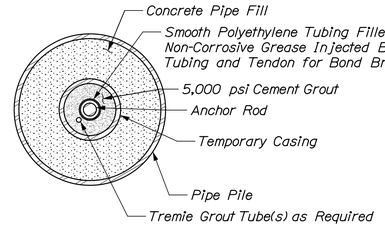
N.T.S.

Note: Studs and hardware shall be A307.



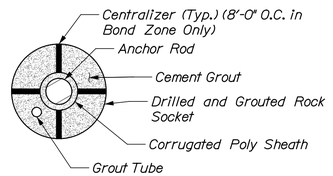
TOP OF PILE DETAIL

N.T.S.



ROCK ANCHOR SECTION
(UNBONDED ZONE)

N.T.S.



ROCK ANCHOR SECTION
(BOND ZONE)

N.T.S.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

SIGNATURE
#0209
P.E. NUMBER
DATE

	BY	DATE
DESIGNED	P. Bishop	07\20
DETAILED	C. Morin	07\20
CHECKED	N. Willey	
REVIEWED	C. Morin	
DESIGN2	D2	
DETAILED2		
DESIGN3	D3	
DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

PROJ. MANAGER

SWAN'S ISLAND
FERRY TERMINAL

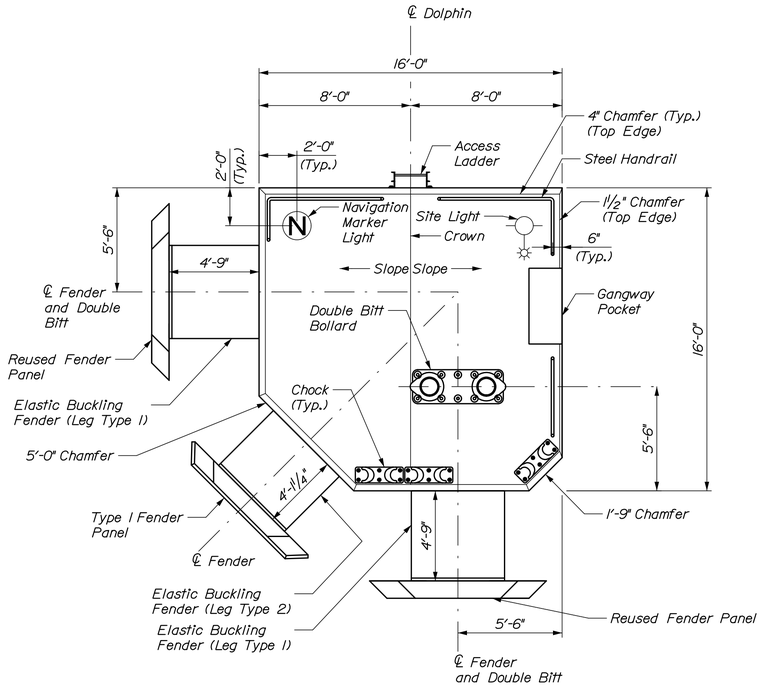
DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER

S04

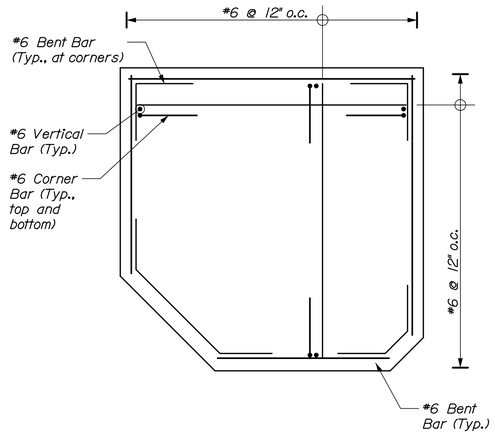
8 OF 18

Filename: 008_Dolphin Foundation Details.dgn Division: Username: Date:7/13/2020



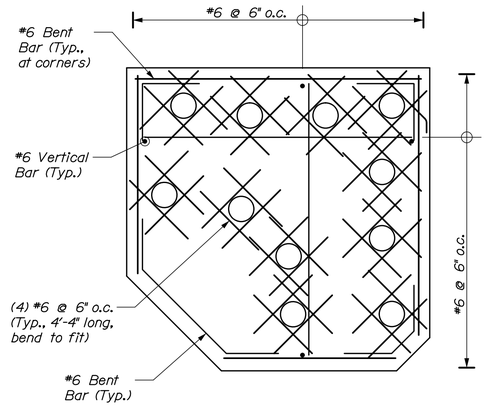
TURNING DOLPHIN PLAN

(Dolphin D8 shown, D7 mirror image horizontally)
1/4" = 1'-0"



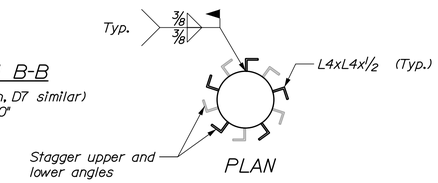
SECTION A-A

(Dolphin D8 shown, D7 similar)
(Same as shown for El. 9.50 - 11.00,
but with pile cutouts)
1/4" = 1'-0"

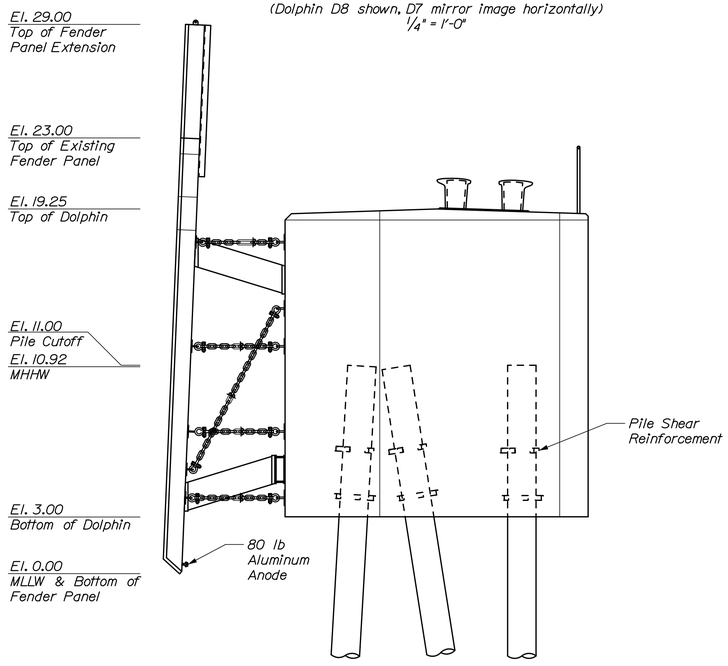


SECTION B-B

(Dolphin D8 shown, D7 similar)
1/4" = 1'-0"

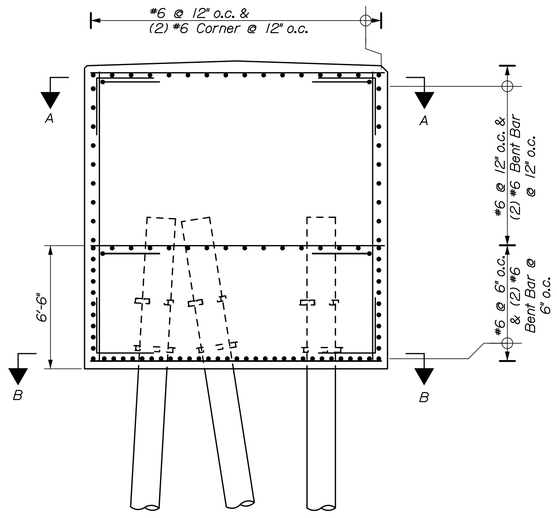


PLAN



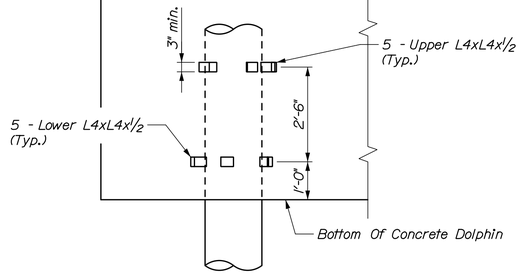
TURNING DOLPHIN ELEVATION

(Select fenders and chocks not shown for clarity)
1/4" = 1'-0"



TURNING DOLPHIN REINFORCING TYPICAL SECTION

1/4" = 1'-0"



ELEVATION

PILE SHEAR REINFORCEMENT

½" = 1'-0"

NOTES:

1. For anode details, see Sheet S04.
2. For double bitt and chock details, see Sheet S06.
3. For handrail and access ladder details, see Sheet S09.
4. For gangway pocket and transition plate detail, see Sheet S12.
5. All reinforcing shall be cut to maintain 2" clear from piles and 3" clear of concrete surfaces.
6. Reinforcing bars shall be adjusted to maintian 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be 1/4" per foot and pitched as shown.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
DESIGNED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20

SIGNATURE
9209
P.E. NUMBER
DATE

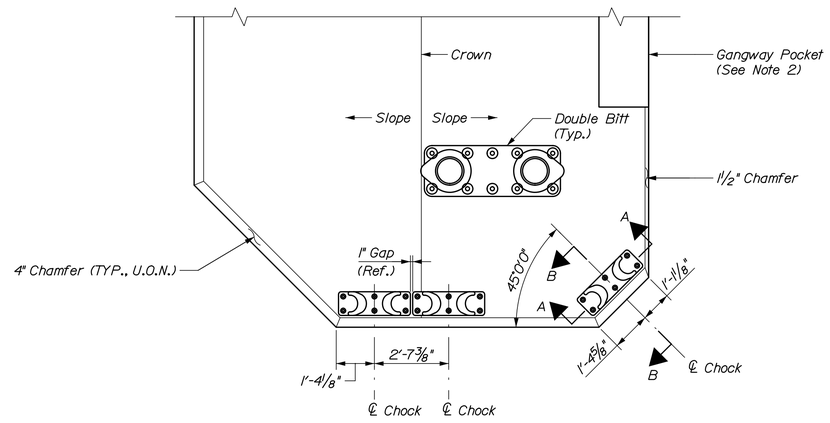
PROJ. MANAGER	
DESIGN-DETAILED	N. Willey
CHECKED-REVIEWED	C. Morin
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN PLAN,
ELEVATION, AND DETAILS

SHEET NUMBER
S05
9 OF 18

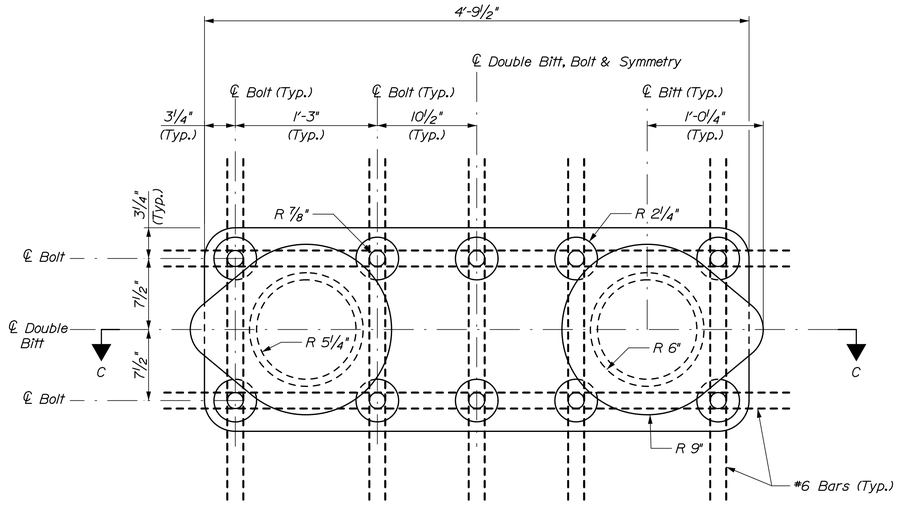
Filename: 009_Dolphin Plan and Elevation.dgn Division: Username: Date:7/13/2020



PLAN VIEW OF DOLPHIN

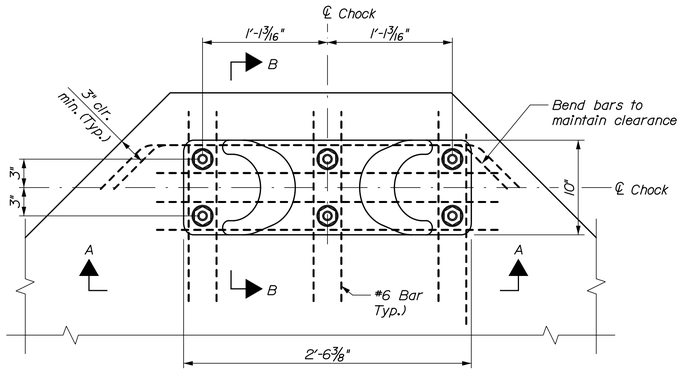
(Hand rails, lights, and fenders not shown for clarity)

⅜" = 1'-0"



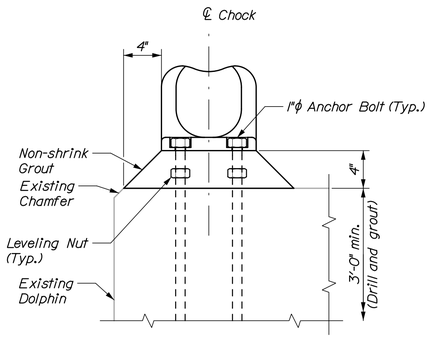
DOUBLE BITT PLAN

1½" = 1'-0"



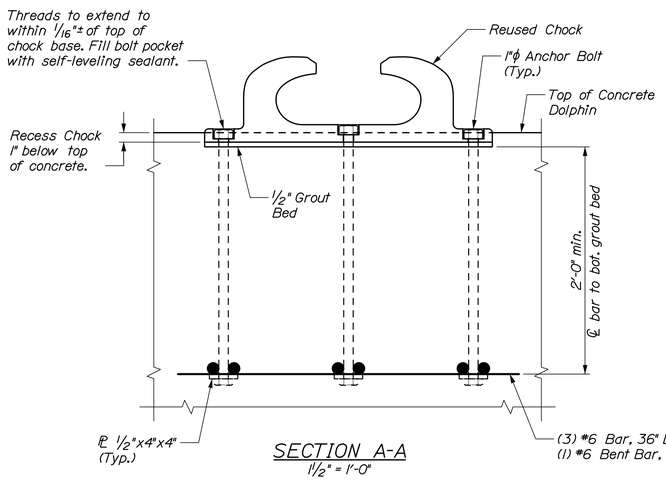
CHOCK PLAN AT CHAMFER

1½" = 1'-0"



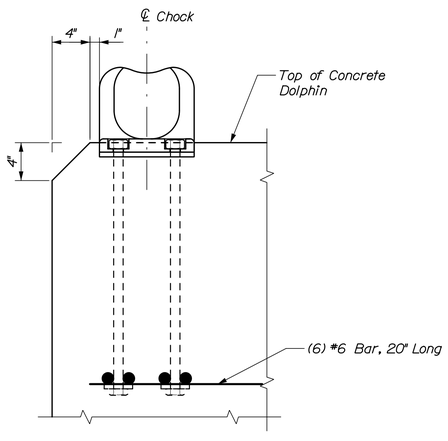
EXISTING CONCRETE CHOCK DETAIL

1½" = 1'-0"



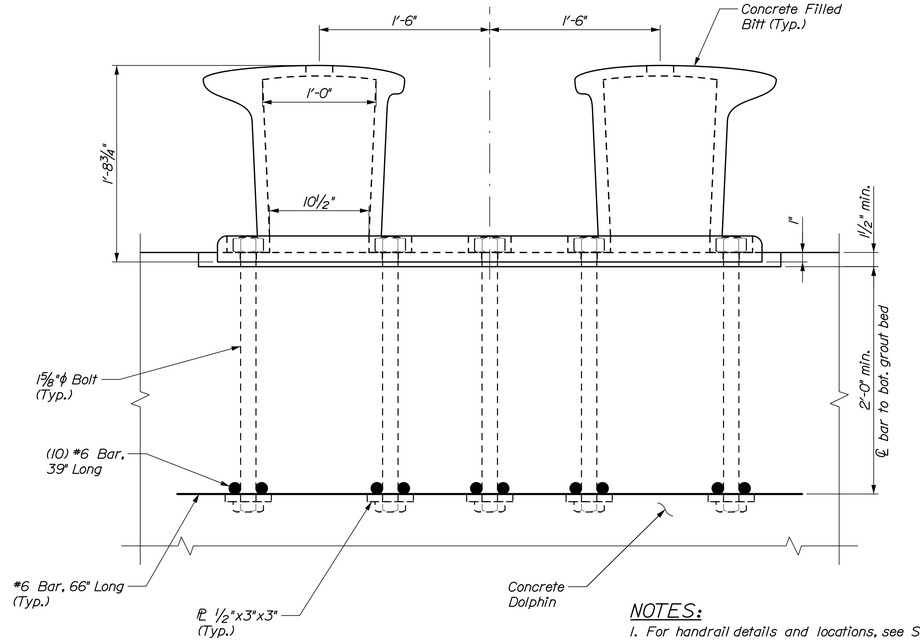
SECTION A-A

1½" = 1'-0"



SECTION B-B

1½" = 1'-0"



SECTION C-C

1½" = 1'-0"

NOTES:

1. For handrail details and locations, see Sheet S09.
2. For gangway pocket dimensions, see Sheet S12.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

9209

P.E. NUMBER

DATE

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN DETAILS
MOORING HARDWARE

SHEET NUMBER

S06

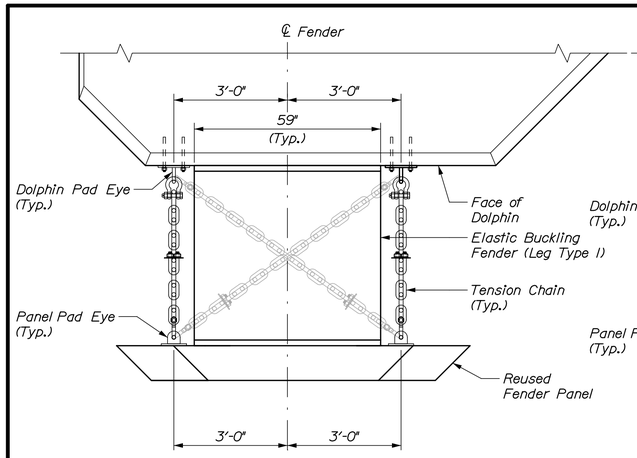
10 OF 18

Date:7/22/2020

Username:

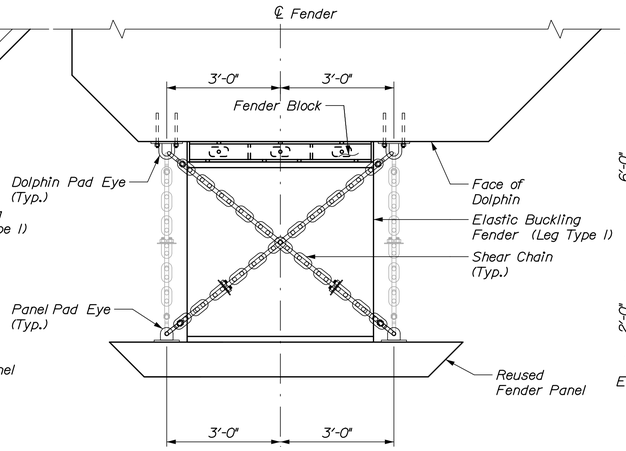
Division:

Filename: 010_Mooring Hardware.dgn



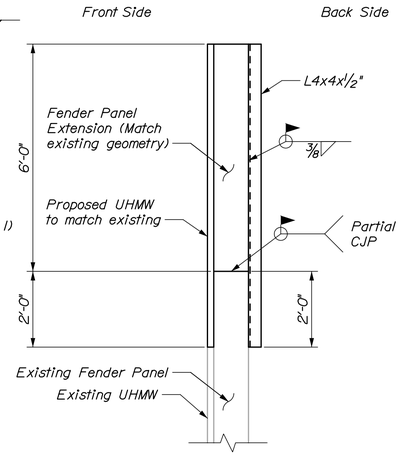
PLAN - TOP OF FENDER PANEL

(D7 Pen facing fender with Leg Type 1 shown, others similar)
1/2" = 1'-0"



PLAN - BOTTOM OF FENDER PANEL

(D7 Pen facing fender with Leg Type 1 shown, others similar)
1/2" = 1'-0"

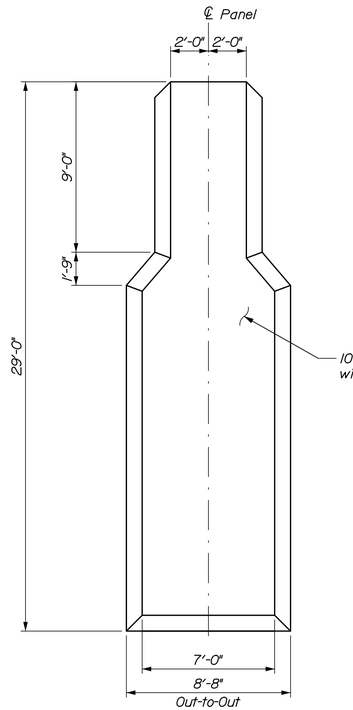


TYPICAL PANEL EXTENSION DETAIL

1/2" = 1'-0"

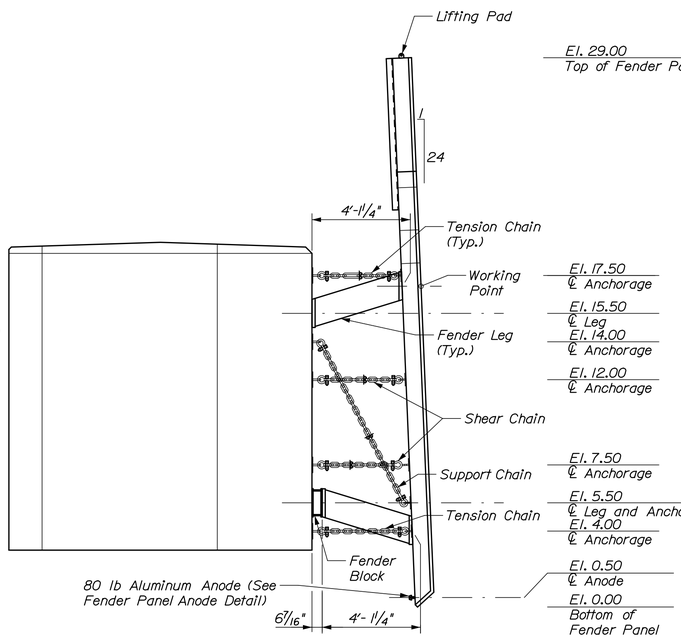
NOTES:

1. Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
2. For dolphin pad eye, panel pad eye, steel fender block, panel anode, and spacer plate details, see Sheet S08.
3. Contractor shall remove obstructions or modify detail for panel extension.
4. Elastic buckling fenders (Leg Type 1) shall be Trelleborg Compound B MV 1450x1500, or approved equal.
5. Elastic buckling fenders (Leg Type 2) shall be Trelleborg Compound B MV 1250x1500, or approved equal.
6. Contractor shall verify geometry and dimensions of existing panels based on field measurements.



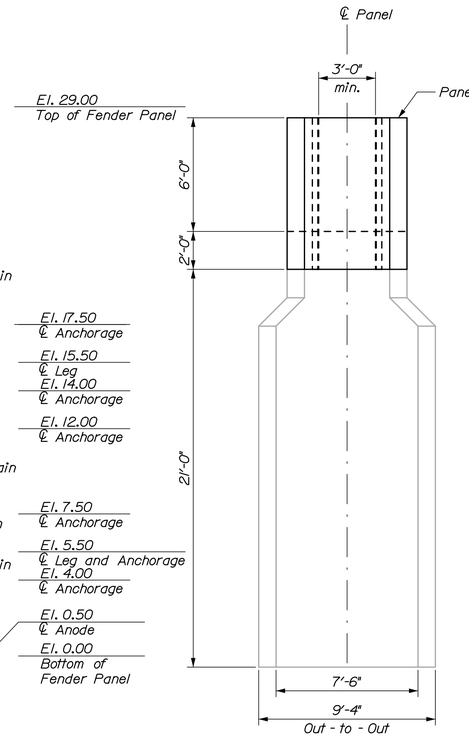
TYPE 1 PANEL

1/4" = 1'-0"



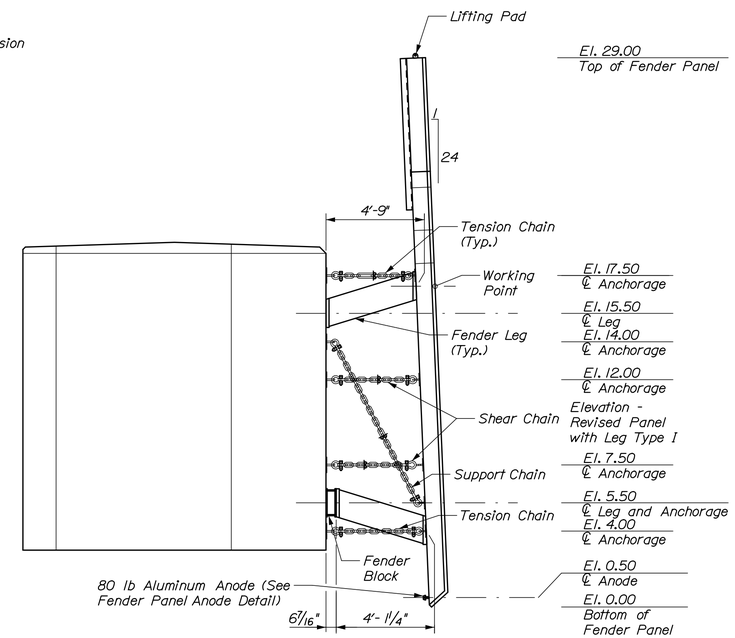
ELEVATION - TYPE 1 PANEL WITH LEG TYPE 2

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



REUSED PANEL

1/4" = 1'-0"



ELEVATION - REUSED PANEL WITH LEG TYPE 1

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

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

SIGNATURE

P.E. NUMBER
9209

DATE

BY	DATE
P. Bishop	07\20
C. Morin	07\20

PROJ. MANAGER	N. Willey
DESIGN-DETAILED	C. Morin
CHECKED-REVIEWED	
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

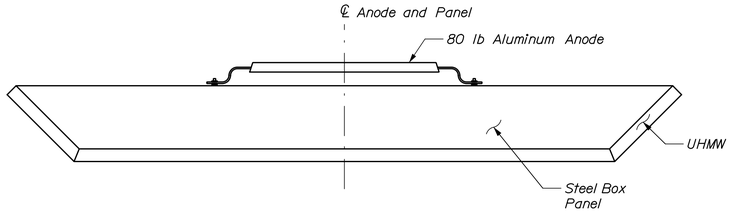
SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM 1

SHEET NUMBER

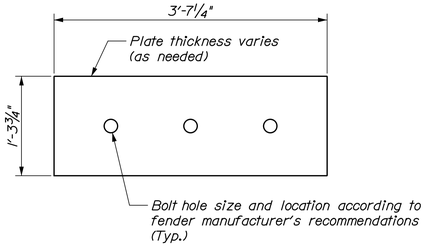
S07

Filename: 011_Fender System 1.dgn Division: Username: Date:7/13/2020



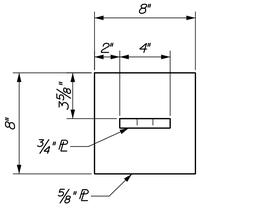
FENDER PANEL ANODE DETAIL

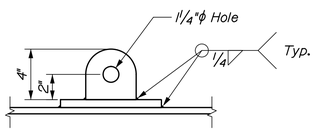
1" = 1'-0"



TYPE I PANEL SPACER PLATE DETAIL

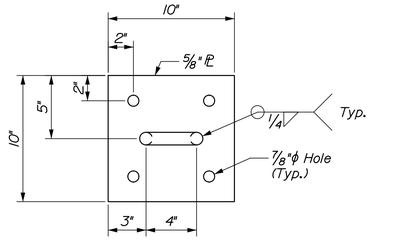
1" = 1'-0"

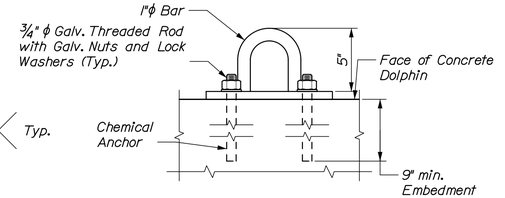




PANEL PAD EYE DETAIL

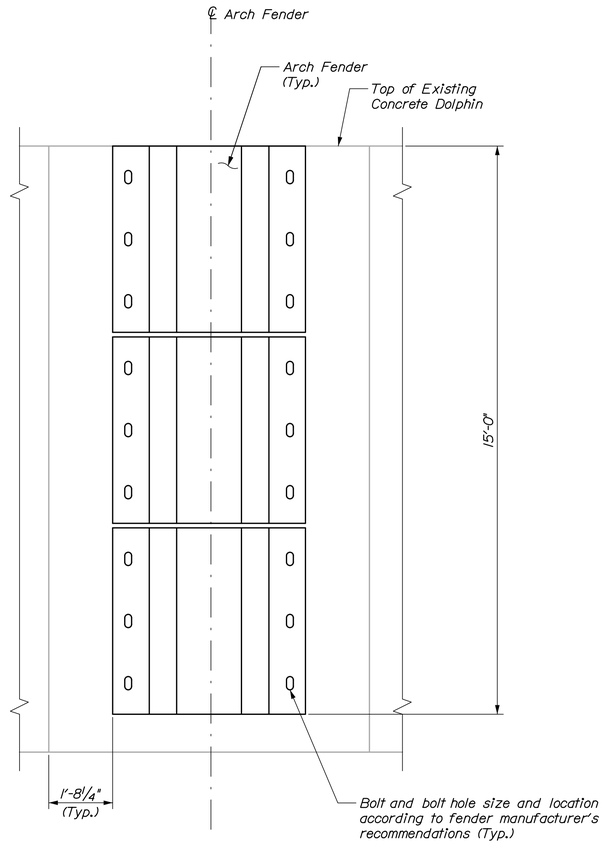
2" = 1'-0"





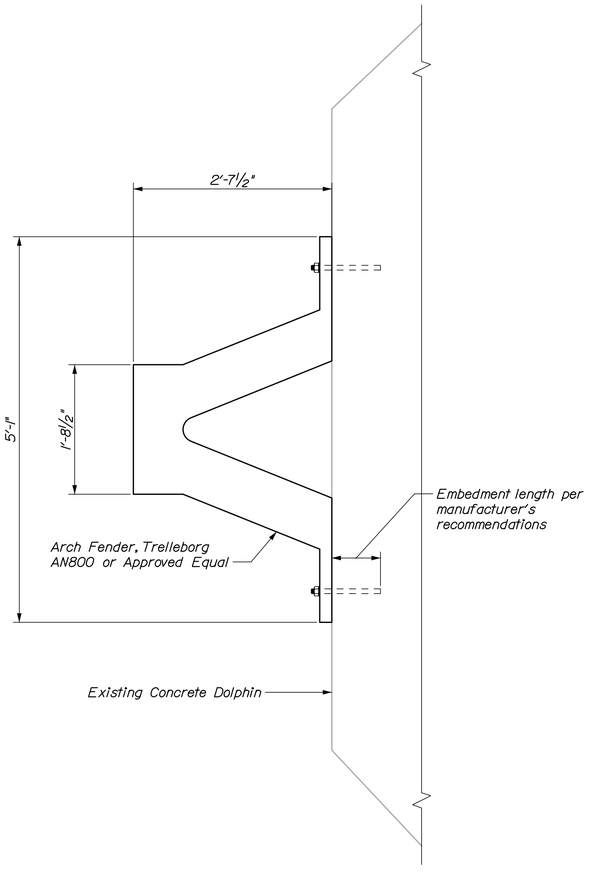
DOLPHIN PAD EYE DETAIL

2" = 1'-0"



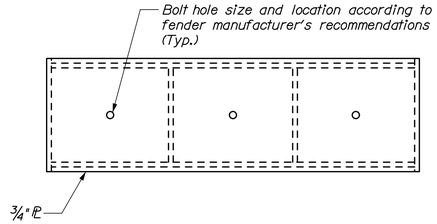
ELEVATION - ARCH FENDER

1" = 1'-0"

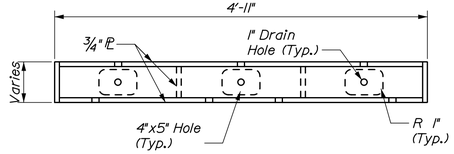


ARCH FENDER TYPICAL SECTION

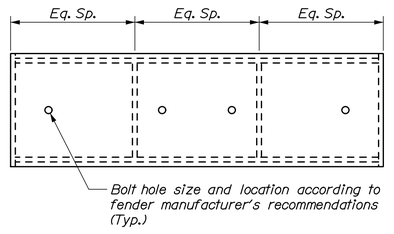
1" = 1'-0"



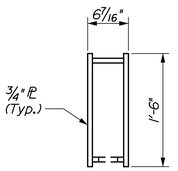
FRONT ELEVATION



PLAN



BACK ELEVATION



SECTION

STEEL FENDER BLOCK

1" = 1'-0"

NOTES:

1. For anode attachment details, see Sheet S04.
2. All steel hardware shall be hot-dip galvanized.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
DESIGNED	P. Bishop	07\20
DRAWN	C. Morin	07\20
CHECKED		
QUALITY CONTROL		
TRANSPORTATION ENGINEER		

SIGNATURE

P.E. NUMBER
19209

DATE

PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	
CHECKED-REVIEWED	C. Morin	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM II

SHEET NUMBER

S08

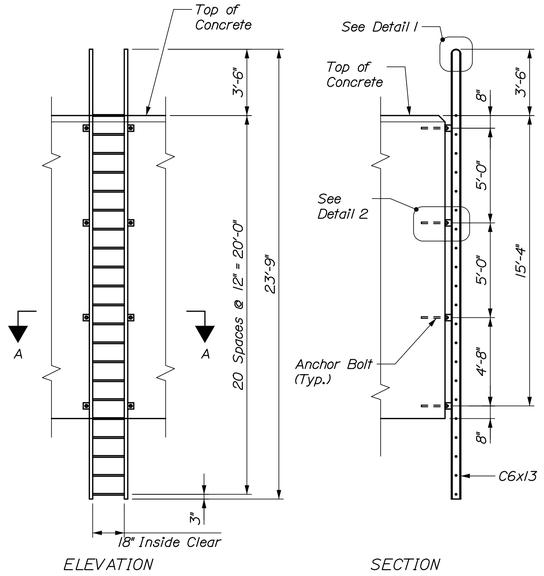
12 OF 18

Username:

Division:

Date:7/13/2020

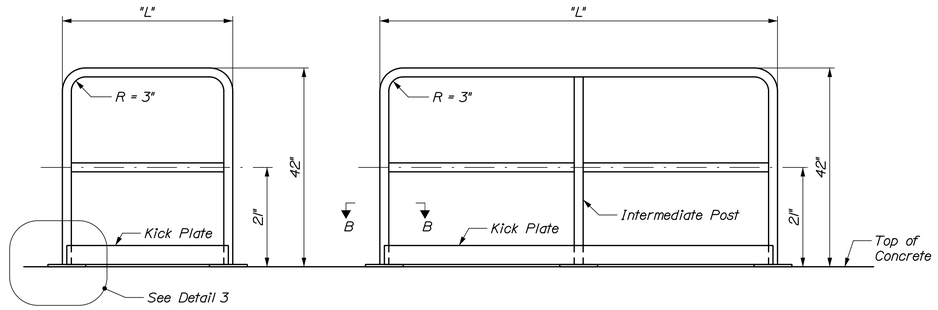
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ELEVATION

SECTION

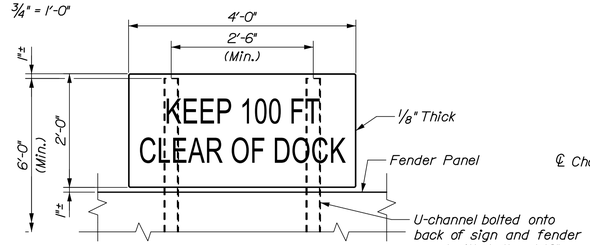
DOLPHIN ACCESS LADDER
1/4" = 1'-0"



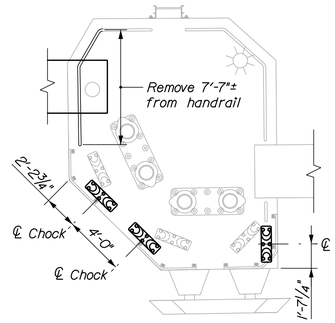
Type 1 Handrail

Type 2 Handrail

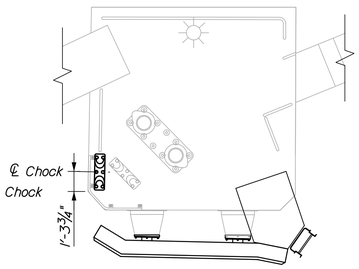
HANDRAIL DETAIL
3/4" = 1'-0"



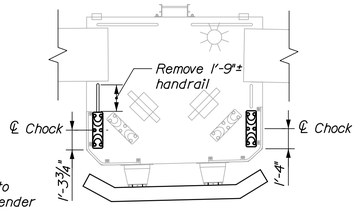
SIGN DETAIL
3/4" = 1'-0"



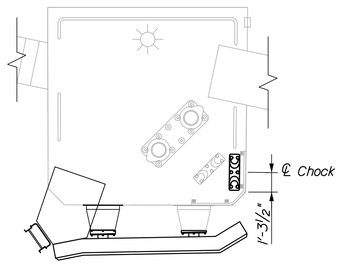
D1 CHOCK MODIFICATION PLAN
1" = 5'-0"



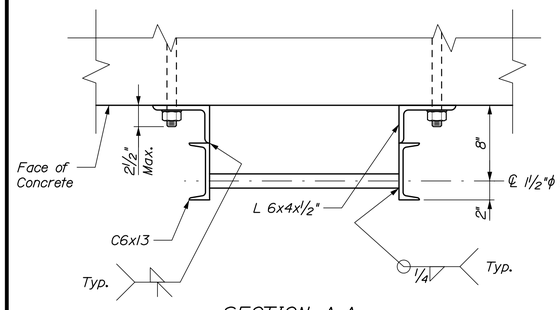
D4 CHOCK MODIFICATION PLAN
1" = 5'-0"



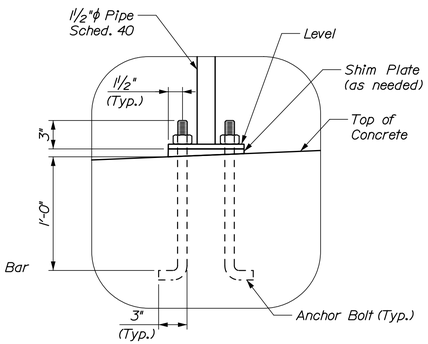
D2 CHOCK MODIFICATION PLAN
1" = 5'-0"



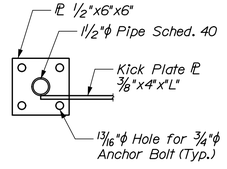
D5 CHOCK MODIFICATION PLAN
1" = 5'-0"



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



DETAIL 3
(Applies to all railing mounting locations, Kick plate not shown for clarity)
1 1/2" = 1'-0"

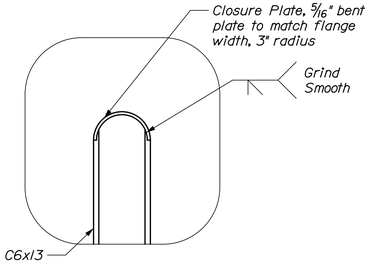


SECTION B-B
1 1/2" = 1'-0"

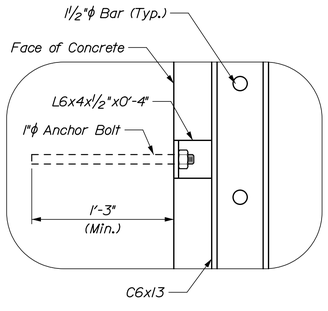
TABLE 1
HANDRAIL SUMMARY TABLE

Dolphin	Location	Identification
D7	S	T2 - 8'-2" - 2
D7	E	T2 - 9'-0" - 2
D7	N	T1 - 4'-2" - 0
D8	W	T2 - 8'-2" - 2
D8	N	T2 - 9'-4" - 2
D8	E	T1 - 3'-8" - 0

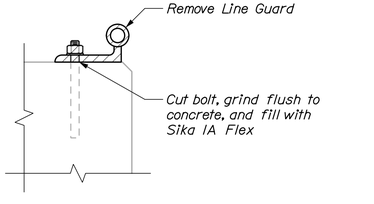
Railing Identification: T2 - L - X
- Type
- Length
- Inter. Post Quantity



DETAIL 1
(Typical for all ladders)
1 1/2" = 1'-0"



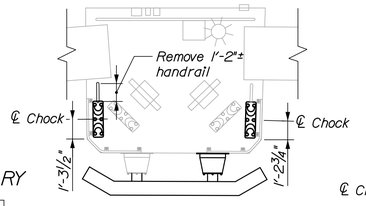
DETAIL 2
(Typical all ladder mounting locations)
1 1/2" = 1'-0"



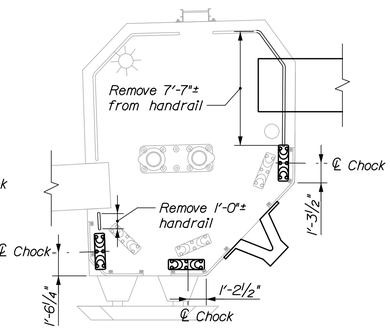
LINE GUARD REMOVAL DETAIL
1 1/2" = 1'-0"

TABLE 2
LINE GUARD REMOVAL SUMMARY

Dolphin	Length of Removal (ft)	No. of Bolts
D1	16	10
D2	13	8
D3	13	8
D4	7	4
D5	7	4
D6	16	10



D3 CHOCK MODIFICATION PLAN
1" = 5'-0"



D6 CHOCK MODIFICATION PLAN
1" = 5'-0"

NOTES:

1. The access ladder shall be designed by the Contractor for a 350 Lb concentrated vertical load acting at any point on the ladder. The ladder shall conform with all applicable provisions of OSHA regulations for ladders and with dimensions shown on the drawings. The ladder assembly shall be hot-dip galvanized after fabrication.
2. Where handrail posts or line guard anchorages are removed, fill with Sika Flex 1A self leveling sealant, or approved equal.
3. For additional details on chock setting, see Sheet S06.
4. Contractor shall grind smooth, cap ends of cut handrails, and galvanize exposed steel.
5. 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.
6. All steel components for ladder, handrails, and sign supports shall be hot-dip galvanized.

NOTES:

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

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

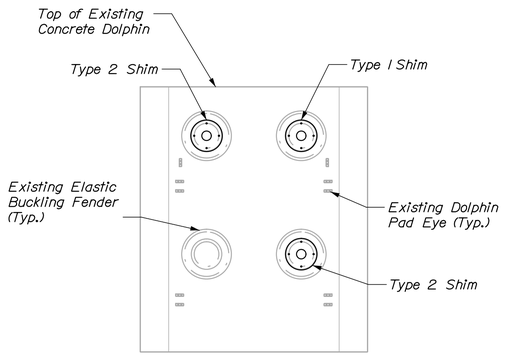
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#0209
P.E. NUMBER
DATE

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN DETAILS
MISCELLANEOUS

SHEET NUMBER
S09
13 OF 18

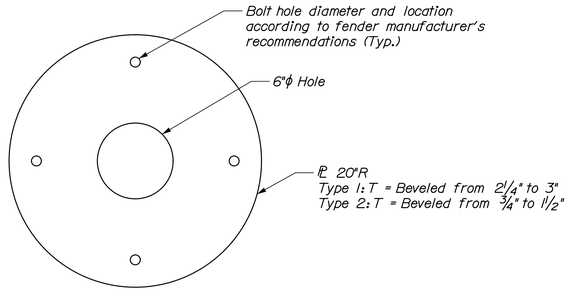
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Username:
Division:
Filename: 013_Miscellaneous Details.dgn



ELEVATION - DOLPHIN D4

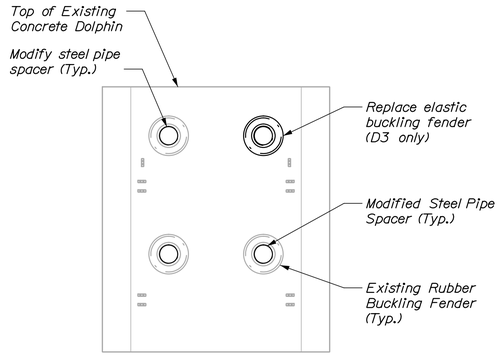
(Dolphin D5 opposite hand)

1/4" = 1'-0"



SHIM DETAIL

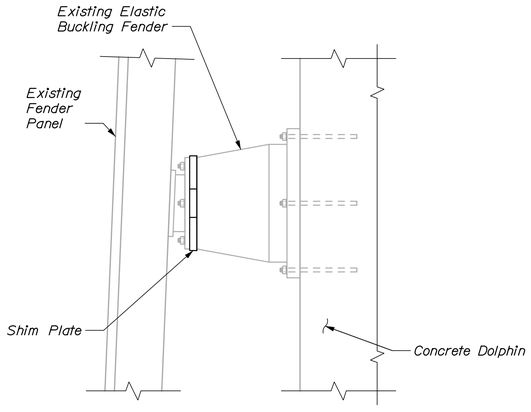
2" = 1'-0"



ELEVATION - DOLPHIN D2

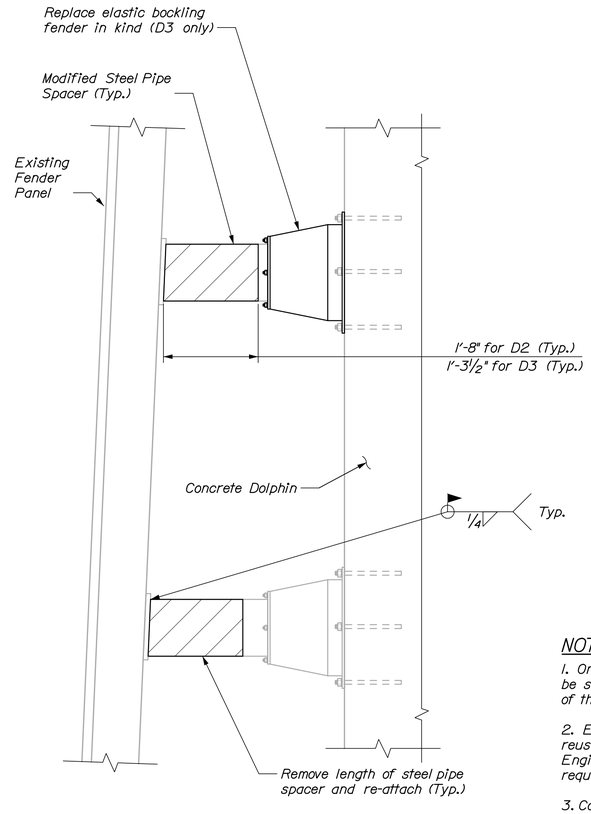
(Dolphin D2 shown, D3 similar)

1/4" = 1'-0"



TYPICAL DOLPHIN FENDER SHIM ATTACHMENT DETAIL

3/4" = 1'-0"



TYPICAL DOLPHIN D2 FENDER ATTACHMENT DETAIL

(Dolphin D2 shown, D3 similar)

3/4" = 1'-0"

NOTES:

1. On dolphins D2 and D3, support chains shall be shortened to accomodate the change in length of the steel pipe spacers.

2. 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.

3. Contractor shall field verify dimensions of steel pipe spacer.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

#0209

P.E. NUMBER

DATE

SWAN'S ISLAND
FERRY TERMINAL

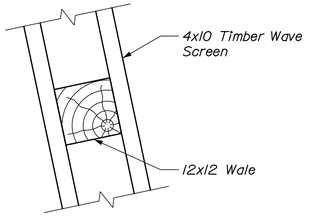
DOLPHIN REPAIR DETAILS

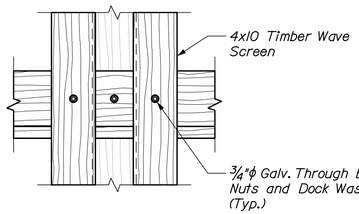
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S10

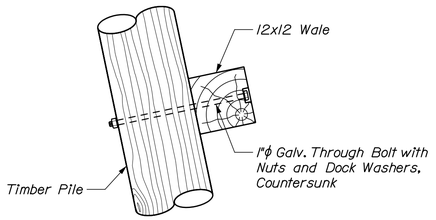
14 OF 18

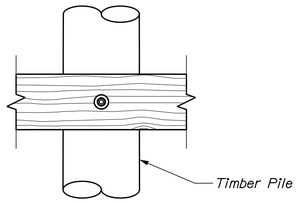
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SCREEN CONNECTIONS

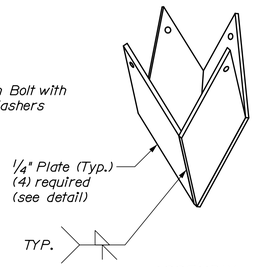




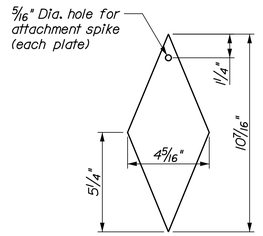
WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/4" = 1'-0"



ASSEMBLY

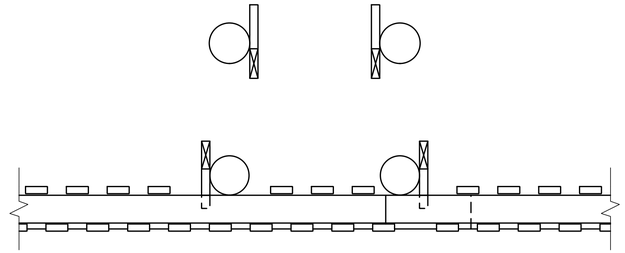


1/4" PLATE DETAIL

Note: Dimensions shown similar to pile point manufactured by Associated Pile & Fitting. Pile point size shall be compatible with pile tip dimensions. Contractor shall confirm pile tip size prior to ordering or fabricating pile points.

TIMBER PILE POINT DETAIL

3" = 1'-0"



WAVE SCREEN PLAN VIEW

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

NOTES:

1. All threaded rods for timber connections are 1" dia. galv. with nuts and dock washers per ASTM A307, 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 facing towards the Pen shall be installed at a batter of 4 horiz. on 12 vert. All timber battered piles for wave screens with timber wales and planks facing away from the Pen 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 and branded in accordance with the specifications.

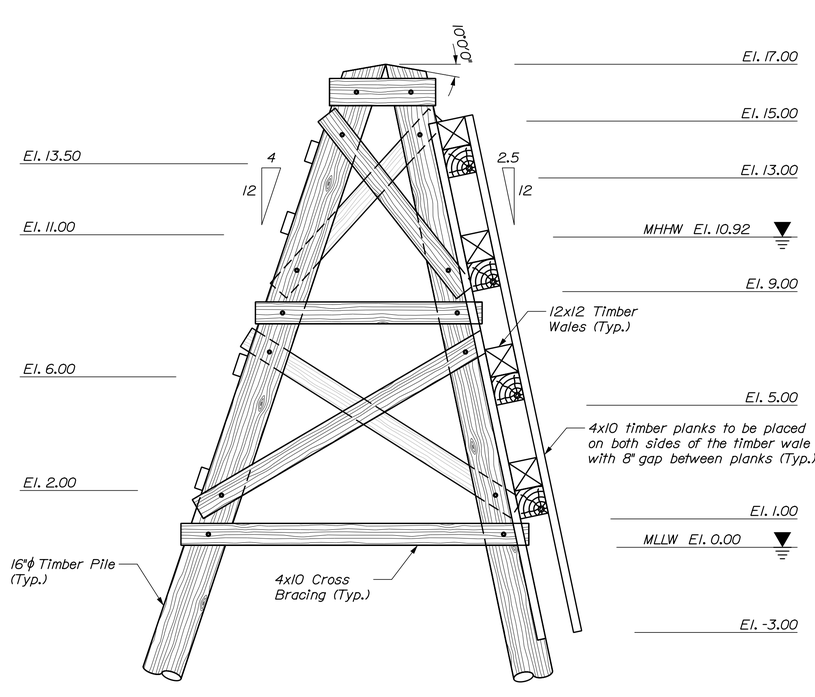
6. All timber construction shall conform to the national design specification for wood construction of the American Forest and Paper Association.

7. Field treat all cut and drilled timber surfaces with two coats of preservative containing copper napthanate solution (min. 2% metallic solution) per specifications.

8. Wave screens shall be 6" minimum clear from dolphins.

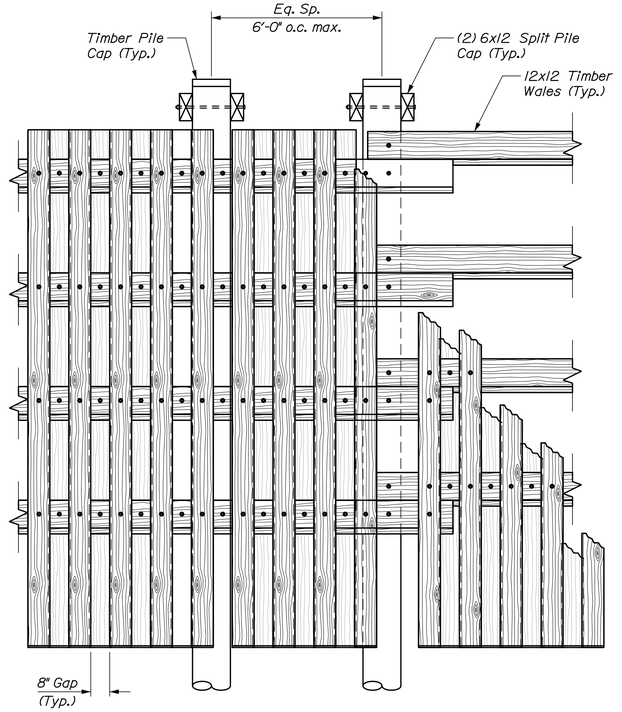
9. Contractor shall take care while installing timber piles to avoid conflict with steel pipe piles.

10. Timber pile cap shall be white with flat top.



WAVE SCREEN END ELEVATION

3/8" = 1'-0"



WAVE SCREEN FRONT ELEVATION

3/8" = 1'-0"

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	P. Bishop	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	N. Willey	
REVISIONS 2	C. Morin	
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

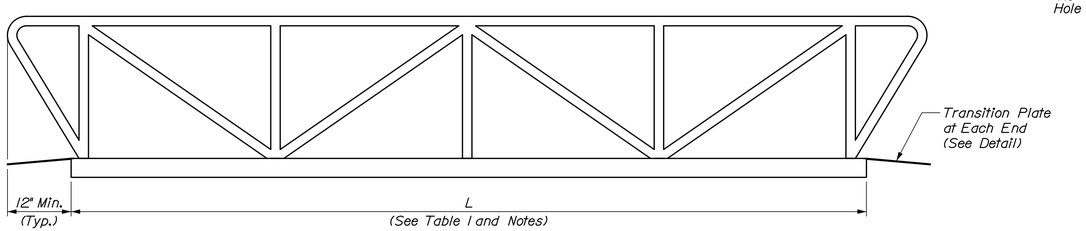
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#0209
P.E. NUMBER
DATE

SWAN'S ISLAND
FERRY TERMINAL

WAVE SCREEN
PLAN AND ELEVATION

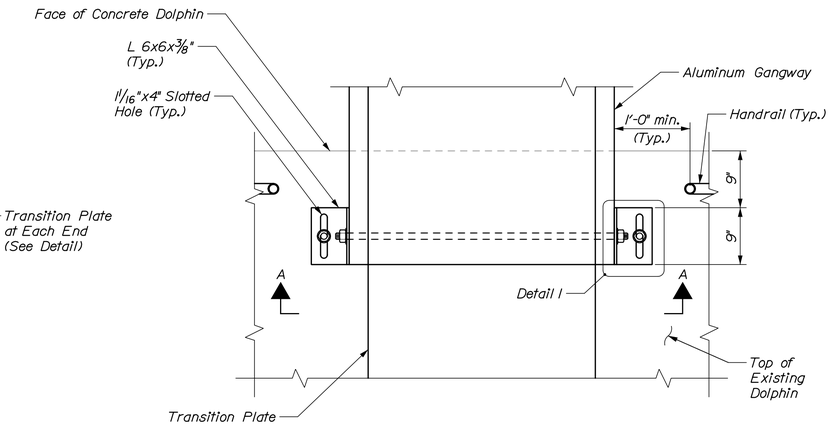
SHEET NUMBER
S11
15 OF 18

Filename: 015_Wave Screen Plan and Elevation.dgn Division: Username: Date:7/13/2020



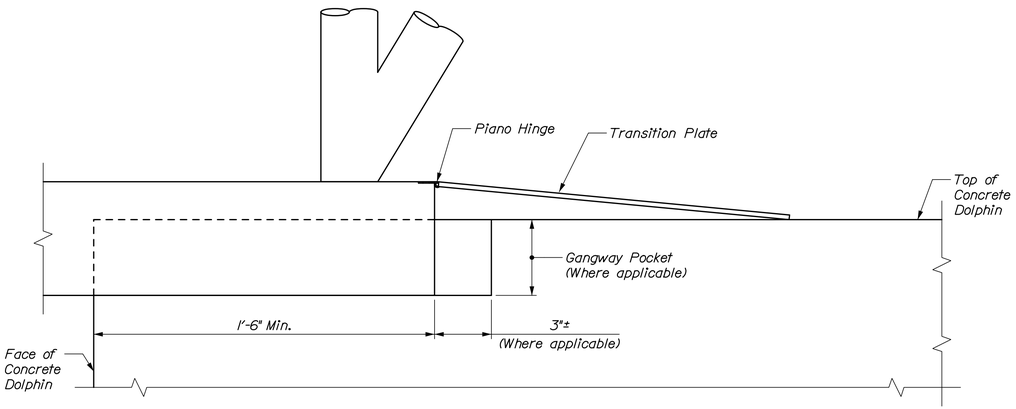
GANGWAY ELEVATION

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



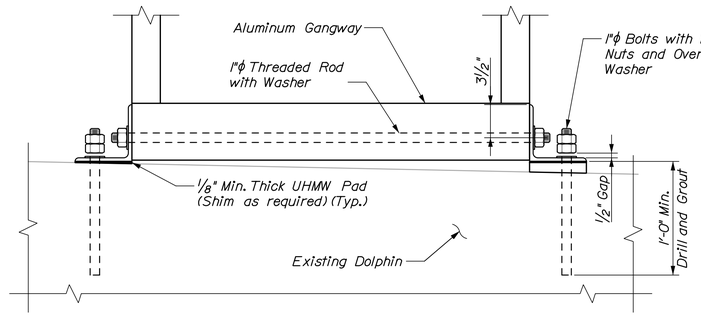
EXISTING DOLPHIN
GANGWAY CONNECTION

1" = 1'-0"



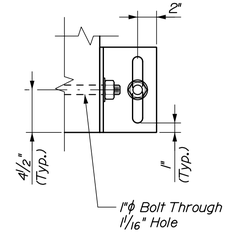
TRANSITION PLATE DETAIL

3" = 1'-0"



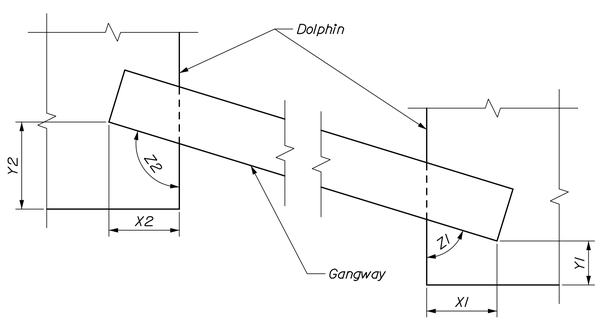
SECTION A-A

1 1/2" = 1'-0"



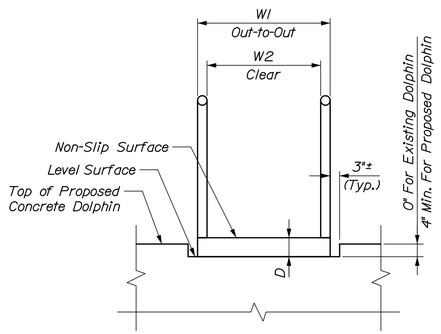
DETAIL I

1 1/2" = 1'-0"



GANGWAY LAYOUT

N.T.S.



PROPOSED DOLPHIN GANGWAY TYPICAL SECTION

1/2" = 1'-0"

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"	D8	1'-6"	4'-11"	90°0'	D1	7"	2'-9"	89°55'
G2	42"	36"	6"	29'-0"	D6	6"	2'-6"	90°22'	D7	1'-6"	4'-2"	90°0'

NOTES:

1. See Sheet G02 for design loads.
2. Gangway shall be truss type constructed, fabricated of aluminum grade 6061-T6 marine alloy.
3. Gangway length shall be confirmed or adjusted once dolphins are constructed.
4. Contractor shall field verify dimensions of dolphins for pocket sizes and distances between dolphins.
5. Install bolt through gangway prior to installing bolts into existing concrete.
6. Contractor shall provide shims at gangway ends as required.
7. A kick plate is not required along the bottom of the rail posts.

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DEPARTMENT OF TRANSPORTATION

WIN
023480.00

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	N. Willey	07\20
CHECKED-REVIEWED	C. Morin	07\20
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
#0209

P.E. NUMBER

DATE

SWAN'S ISLAND
FERRY TERMINAL

GANGWAY
PLAN AND ELEVATION

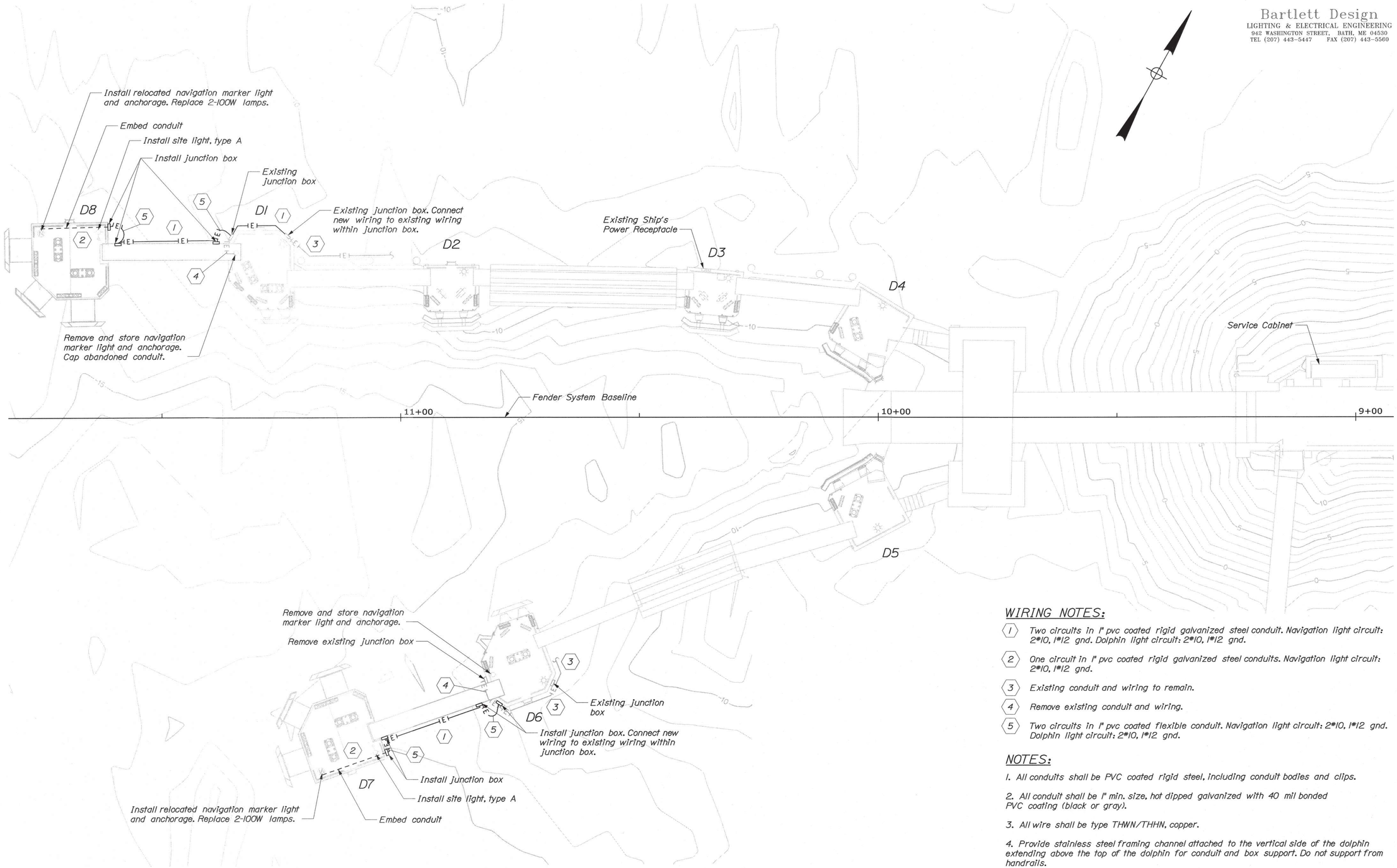
SHEET NUMBER

S12

16 OF 18

Filename: 016_Gangway Plan and Elevation.dgn Division: Username: Date:7/13/2020

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



PLAN
1" = 10'-0"

10 0 10 20
Scale of Feet

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.

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.

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DEPARTMENT OF TRANSPORTATION

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STATE OF MAINE · LAWRENCE E. BARTLETT No. 7928 · LICENSED PROFESSIONAL ENGINEER

Lawrence E. Bartlett
SIGNATURE

P.E. NUMBER
7928

DATE
5/30/2019

PROJ. MANAGER	L. Bartlett
DESIGN-DETAILED	
CHECKED-REVIEWED	
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

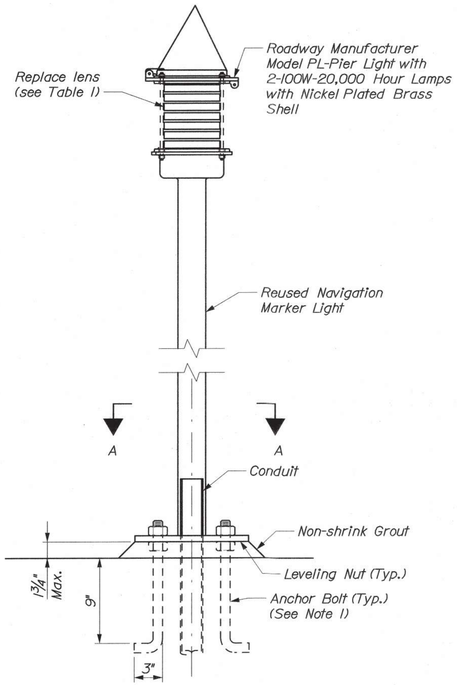
DATE	BY	REVISIONS
05\19	P. Bishop	1
05\19	C. Morin	2
		3
		4
		FIELD CHANGES

SWAN'S ISLAND
FERRY TERMINAL

ELECTRICAL PLAN

SHEET NUMBER
E01
17 OF 18

Filename: ...\017_Electrical Plan.dgn Division: Username: Date:5/30/2019



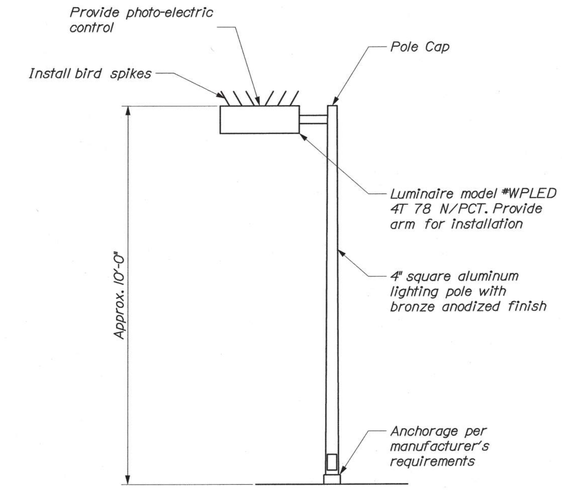
NAVIGATION MARKER INSTALLATION DETAIL

N.T.S.

TABLE I

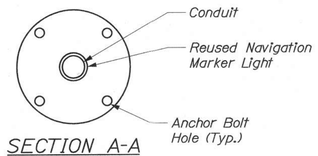
NAVIGATIONAL MARKER LENS REPLACEMENT SUMMARY

Location	# of Light Opening	Lamp Size	Lens
Dolphin D7	In Kind	2-100W A-19	In Kind
Dolphin D8	In Kind	2-100W A-19	In Kind



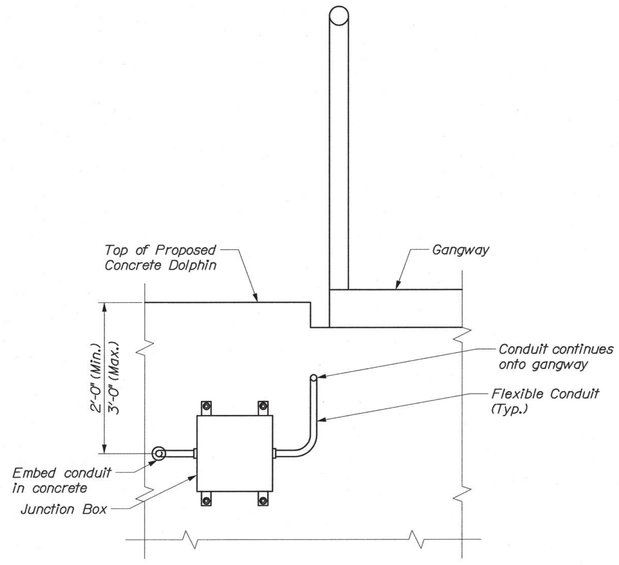
SITE LIGHT TYPE A DETAIL

N.T.S.



SECTION A-A

N.T.S.



EMBEDDED CONDUIT JUNCTION BOX DETAIL

1" = 1'-0"

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.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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STATE OF MAINE LICENSED PROFESSIONAL ENGINEER
LAWRENCE E. BARTLETT
No. 7926

Lawrence E. Bartlett
SIGNATURE

P.E. NUMBER
7926

DATE
5/30/2019

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	L. Bartlett	05\19
CHECKED-REVIEWED	P. Bishop	05\19
DESIGN2-DETAILED2	C. Morin	05\19
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND
FERRY TERMINAL

ELECTRICAL DETAILS

SHEET NUMBER

E02

18 OF 18

HNTB

Username:
Division:
Date:5/30/2019
Filename: ...\018_Electrical Details.dgn