

SCHONEWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Frenchboro, Maine		Boring No.: MB-FBORO-102-18 WIN: 22202.00		
Driller: New England Boring Contractors	Elevation (ft.): -11.8 ft (mudline)	Core Barrel: N02 (wireline)	Operator: Enos / Shore	Return: 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: closed wash boring	Hammer Type: auto hammer	
Boring Location: per plan 18981	Coating ID/OD: HW to 35 #1; NW to 35.6 ft	Hammer Efficiency: 0.806	Auger ID/OD: n/a	Water Level: n/a		
Depth (ft.)	Sample No.	Pen./Roc. (in.)	Sample Depth (ft.)	Blows / 6 in. (N ₆₀)	Visual Description and Remarks	Lab. Testing Results
0	10	24/5	0.0 - 2.0	38-20-17-14	10: Brown grey, GRAVEL, trace to little fine to coarse sand, trace silt. RECENT MARINE SEDIMENT	
5	20	24/2	5.5 - 7.5	11-3-2-2	20: Grey, loose, silty fine to coarse SAND, trace fine gravel appears to be mostly wash.	
10	30	24/24	10.0 - 12.0	7-5-1-2	30: Brown grey, fine to medium SANDY ORGANIC SILT, little gravel, trace coarse sand with numerous shells.	
15	40	24/10	15.0 - 17.0	WDH/12"-2-2	40: Grey, soft, silty CLAY, little fine to medium sand with numerous shell fragments and occasional fine gravel and coarse sand.	
20	50	24/20	20.0 - 22.0	4-1-1/12"	50: Grey, v. loose, interbedded, silty fine to medium SAND with shells; silty CLAY with shells and random pieces of fine gravel and fine to medium SAND, little to some silt with shells.	

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. Page 1 of 3
* 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-102-18

SCHONEWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Frenchboro, Maine		Boring No.: MB-FBORO-102-18 WIN: 22202.00		
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Depth (ft.)	Sample No.	Pen./Roc. (in.)	Sample Depth (ft.)	Blows / 6 in. (N ₆₀)	Visual Description and Remarks	Lab. Testing Results
25	60	18/7	30.0 - 31.5	7-18-50/6"	60: Grey, silty fine to medium SAND, some gravel, trace coarse sand, TILL	
35	70	8/6	35.0 - 35.5	9-30/6"	70: Grey, silty GRAVEL, some fine to coarse sand.	
40	R2	60/60	40.6 - 45.6	ROD: 37"-62"	Top of bedrock at Elev. -31.4 ft. R1: Bedrock: Very hard, fresh, fine to medium grained, fine grey blottish-grey GRANITE. Close, typically low angle break at undulating, rough, fresh to discolored, and open with occasional fine infilling. (Davenport Granite Fluctuation) core times: 310/ 1145/ 1145/ 210/ 2105 minsec/ft ROCK QUALITY = POOR	UCT @: 26.19 ksi
45	R3	25/24	45.6 - 47.7	ROD: 16"-64"	R2: Similar to R1, except one near vertical infilled crack from 43.1 to 44.8 ft (barely rock altered along crack margin); moderately spaced breaks; and open fracture from 40.6 to 40.8 ft. - 1330/ 2145/ 2100/ 2105 minsec/ft ROCK QUALITY = FAIR	UCT @: 27.47 ksi
50	R4	54/53	47.7 - 52.2	ROD: 50"-93"	R3: Similar to R1, except close breaks below 47.0 ft. 210/ 1350/ - minsec/ft ROCK QUALITY = FAIR	
55					R4: Similar to R1, except widely spaced breaks. One near vertical infilled crack from 47.7 to 48.9 ft and one inclusion. - 2140/ 2155/ 2155/ - minsec/ft. ROCK QUALITY = EXCELLENT	

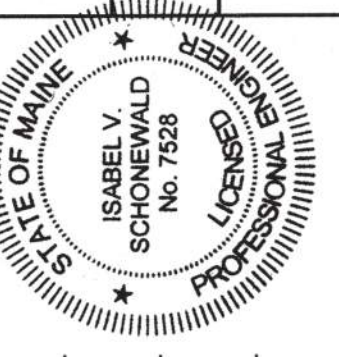
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top of outboard dolphin elev. 16.60 ft MLW
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Stratification lines represent approximate boundaries between soil types; transitions may be gradual. Page 2 of 3
* Water level readings have been made 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-102-18

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Depth (ft.)	Sample No.	Pen./Roc. (in.)	Sample Depth (ft.)	Blows / 6 in. (N ₆₀)	Visual Description and Remarks	Lab. Testing Results
55	R5	60/60	52.2 - 57.2	ROD: 50"-83"	R5: Similar to R4. One fracture zone at 52.2 ft. 4330/ 2145/ 2125/ 2140/ 2145 minsec/ft ROCK QUALITY = GOOD	
60	R6	60/60	57.2 - 62.2	ROD: 52"-87"	R6: Similar to R4. 2115/ 2125/ 2140/ 2140/ 2145 minsec/ft ROCK QUALITY = GOOD	

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. Page 3 of 3
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SIGNATURE: *G. Schonewald*
P.E. NUMBER: 7328
DATE: 5/29/19

PROJ. MANAGER	DATE
DESIGN-DETAILED	05/19
CHECKED-REVIEWED	05/19
DESIGN-DETAILED	
REVISIONS	
REVISIONS	
REVISIONS	
REVISIONS	
FIELD CHANGES	

FRENCHBORO
FERRY TERMINAL
BORING LOGS II

SHEET NUMBER

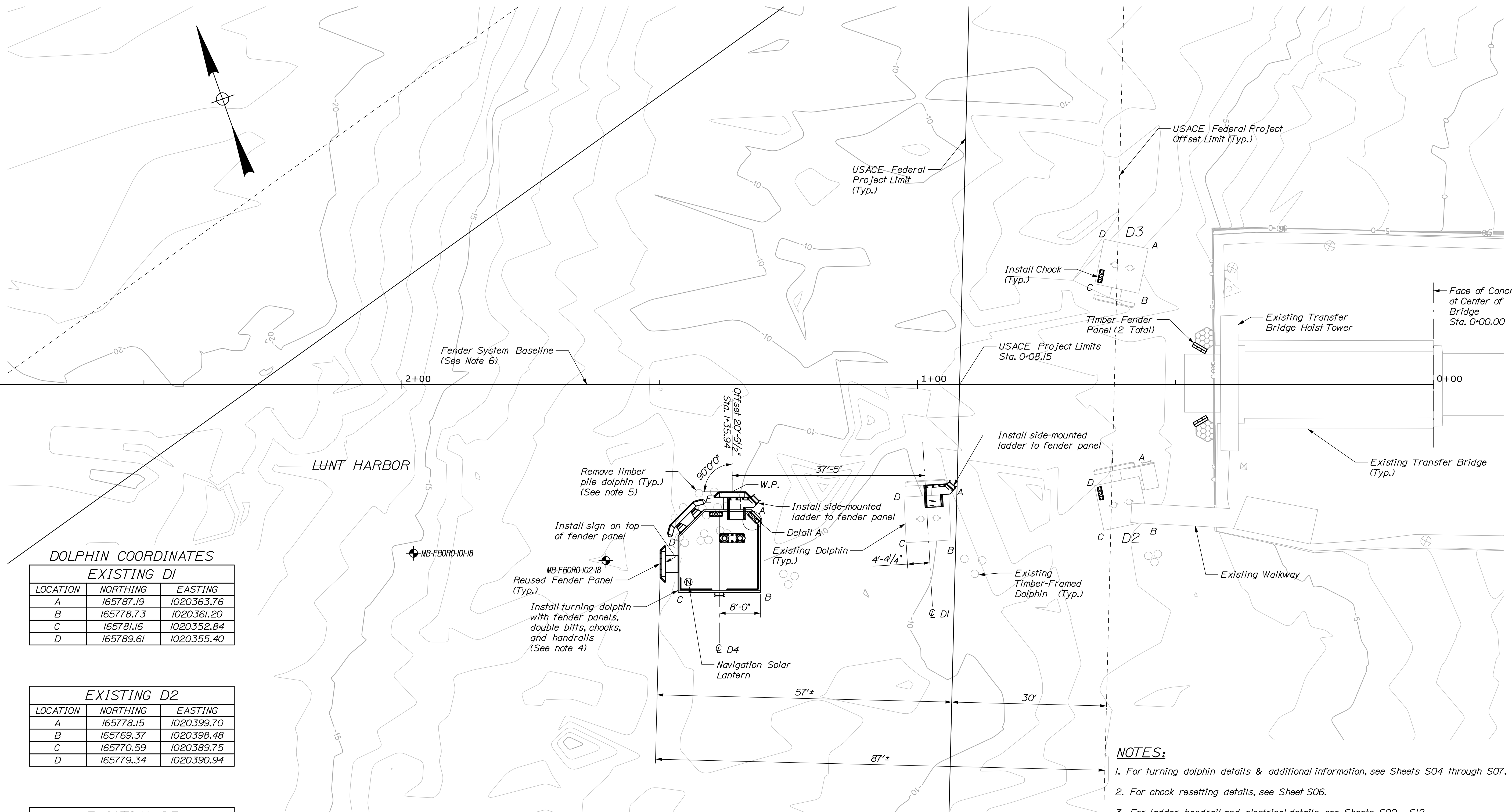
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Date: 7/10/2020

Username:

Division:

Filename: 006_Site Plan.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

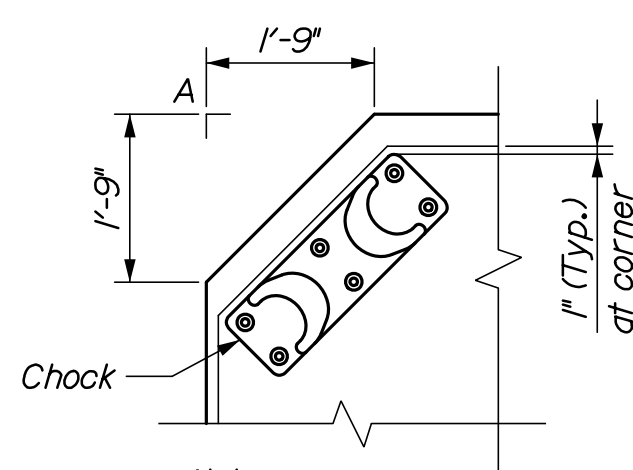
LOCATION	NORTHING	EASTING
A	165778.15	1020399.70
B	165769.37	1020398.48
C	165770.59	1020389.75
D	165779.34	1020390.94

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

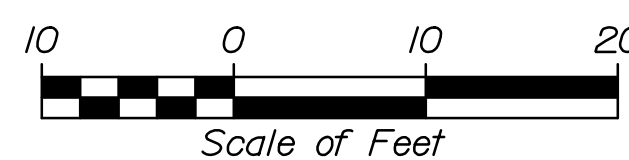
LOCATION	NORTHING	EASTING
A	165795.90	1020328.33
B	165780.53	1020323.87
C	165784.98	1020308.50
D	165795.55	1020311.57
E	165798.96	1020317.76



Note:
For chock position,
see Sheet S05.

SITE PLAN

1" = 10'-0"



NOTES:

- For turning dolphin details & additional information, see Sheets S04 through S07.
- For chock resetting details, see Sheet S06.
- For ladder, handrail and electrical details, see Sheets S09 - S12.
- 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.
- 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.
- Baseline was developed using information from 2013 As-built plans, Sheet S-3.
- 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.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

DATE
07/20
07/20
SIGNATURE
10209
P.E. NUMBER
DATE

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

FRENCHBORO
FERRY TERMINAL

SITE PLAN

SHEET NUMBER

S01

6 OF 17

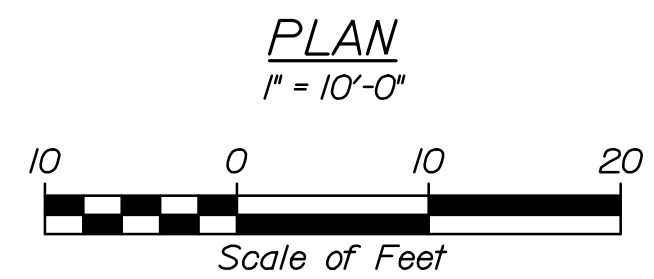
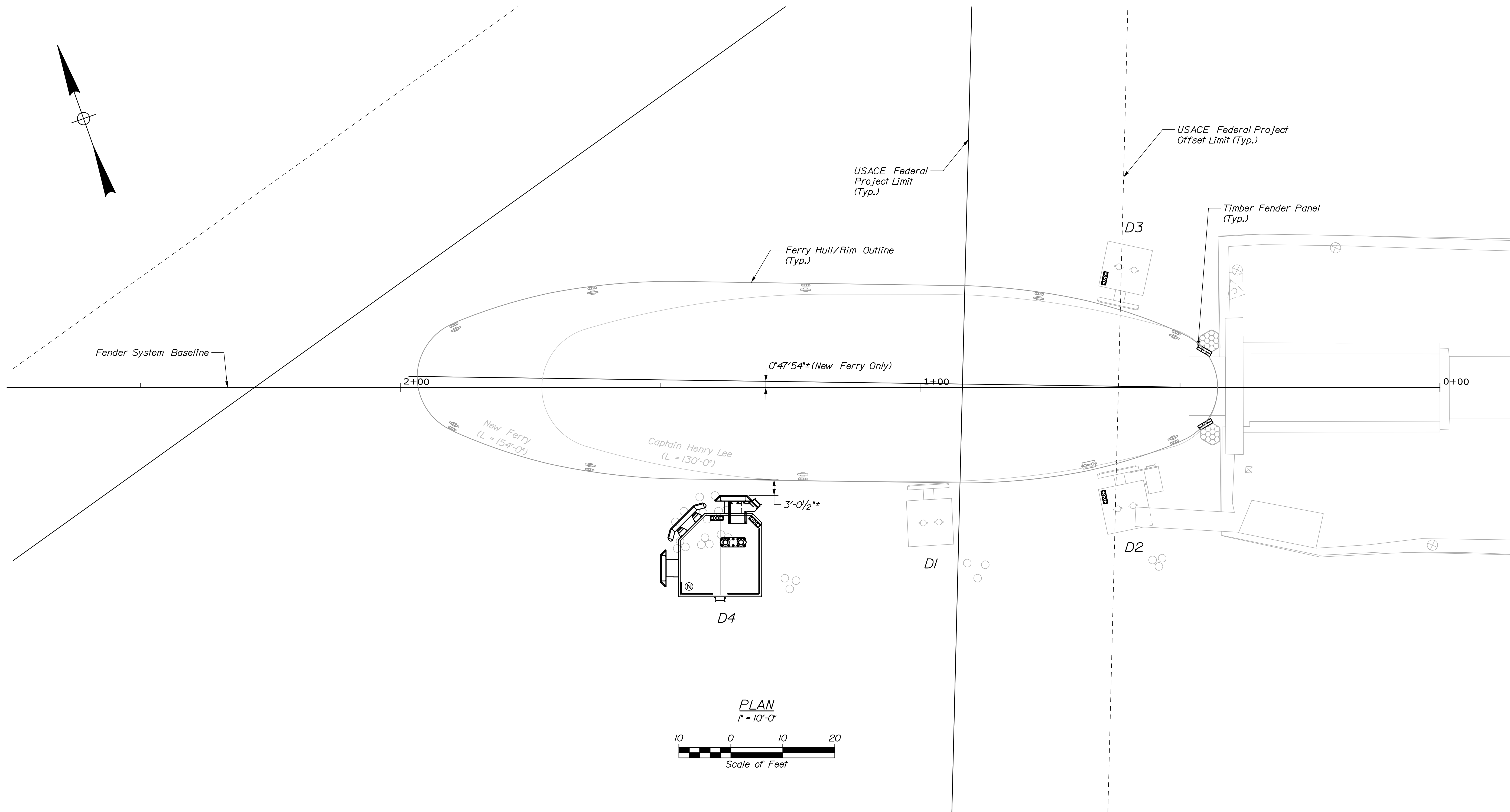


Date: 7/10/2020

Username:

Division:

Filename: 007_Berth Plan.dgn



- 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.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE 10209	
WIN 022202.00		P.E. NUMBER DATE	
PROJ. MANAGER	BY	DATE	
DESIGN-DETAILED N. Willey	P. Bishop	07/20	
CHECKED-REVIEWED C. Morin	C. Morin	07/20	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
FRENCHBORO FERRY TERMINAL		SHEET NUMBER	
BERTH PLAN		S02	
		7 OF 17	

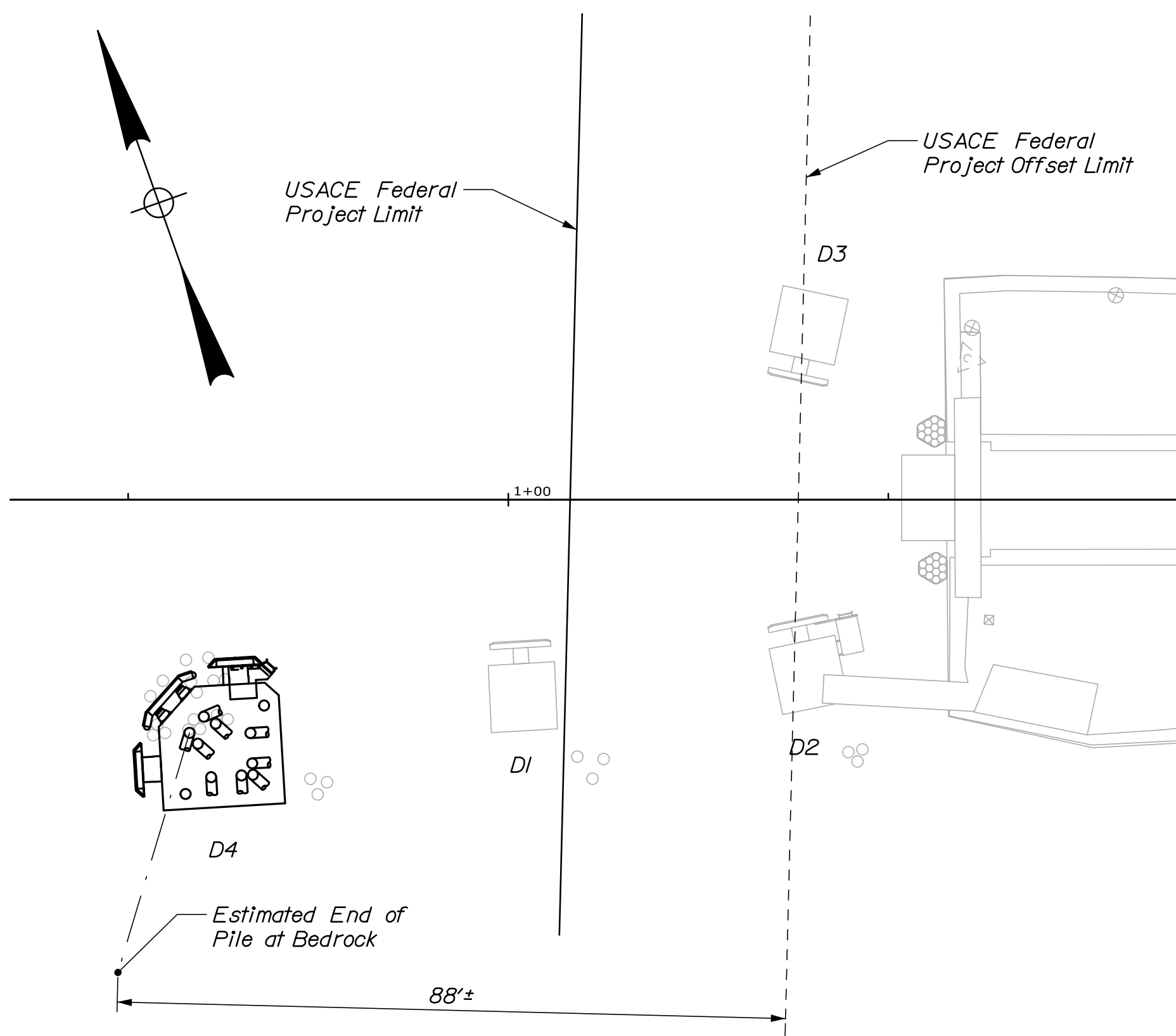


Date: 7/10/2020

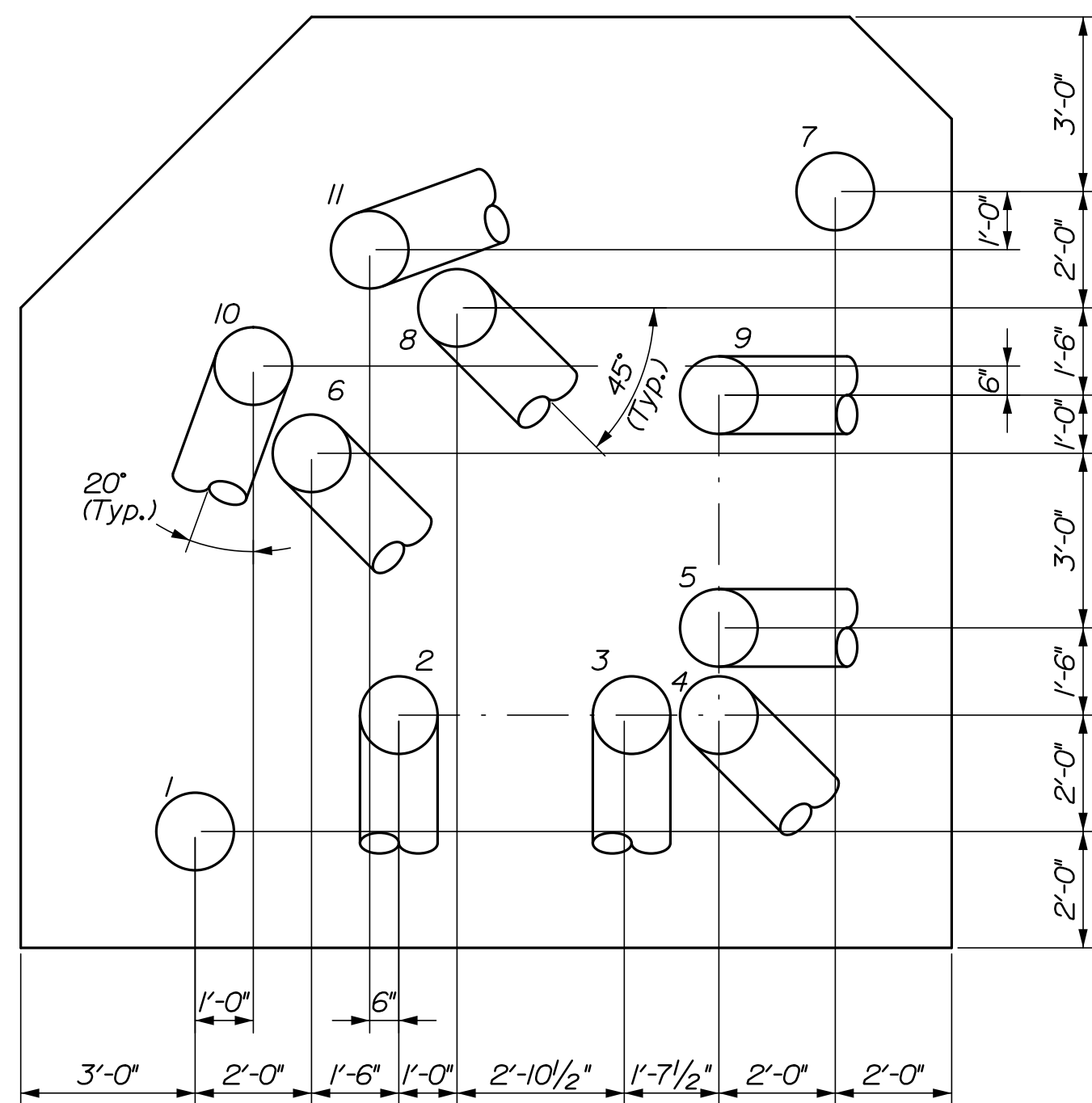
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Division:

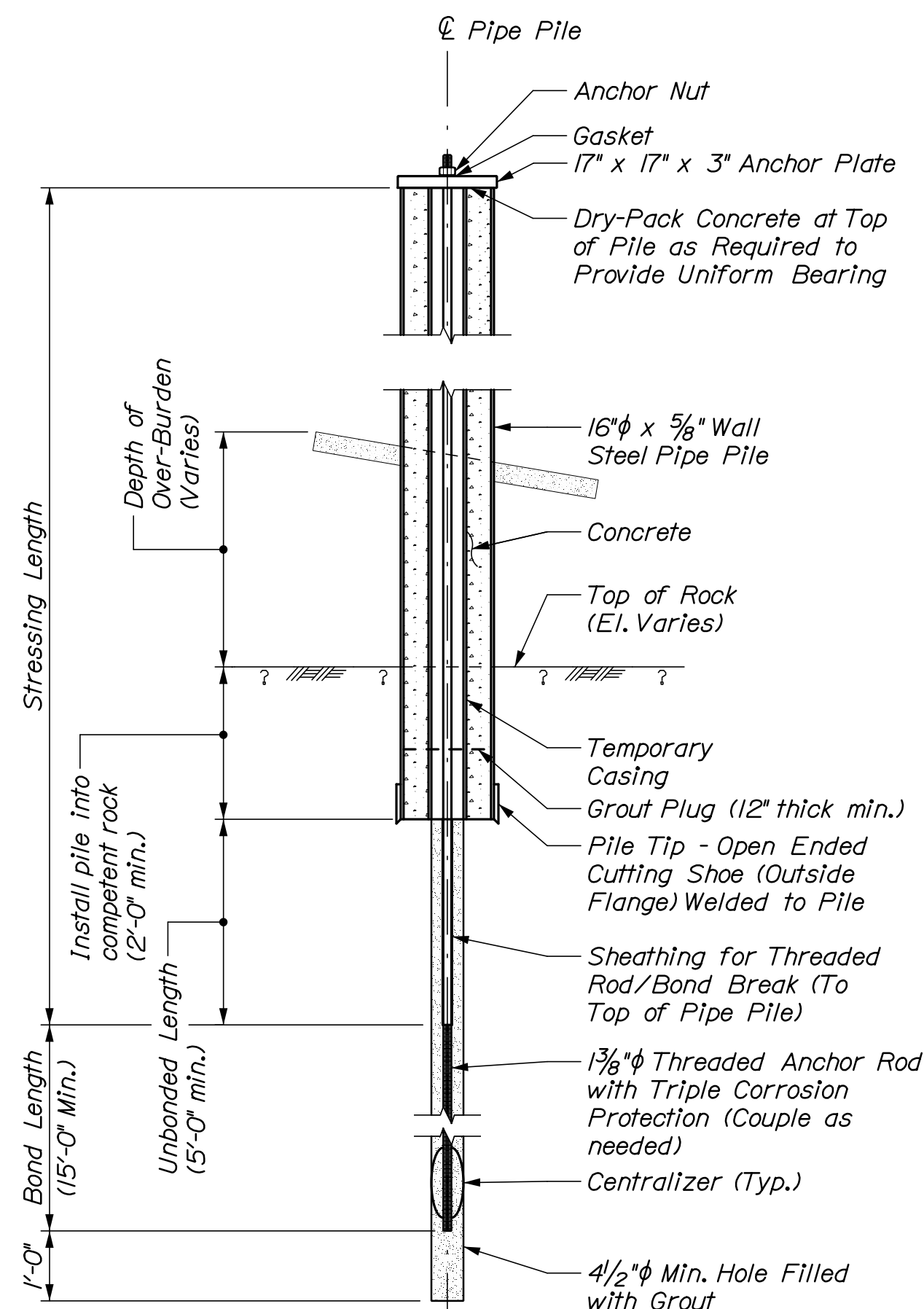
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PLAN
1/16" = 1'-0"



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:

- A length of 5' has been included for contingency to each estimated pile length to determine order length.
- All steel pipe piles shall have rock anchors. For rock anchors, see detail.
- All steel pipe piles shall have aluminum anodes.
- For anode details, see Sheet S04.
- 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:

- Advance pipe pile open ended using drilling methods to top of competent rock and socket into competent rock per detail.
- Pile shall be cut off at final top elevation to perform anchor load test. Refer to structural drawings for top of pile elevations.
- 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.
- Install temporary casing with centralizers as needed until it is seated into the grout plug to bedrock at the bottom of pile.
- Insert rock anchor drill casing and drill bit into temporary casing and drill anchor hole. Minimum length of anchor hole per the detail.
- Clean and flush rock cuttings from anchor hole. Do not allow drill cuttings to enter the pipe pile.
- Install triple corrosion protected anchor, sheathing and centralizers, preassembled to the required dimensions.
- 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.
- Install anchor plate at top of anchor with hex nut and hardened washer.
- Verify that pile head is restrained from moving laterally by fixing the pile head to the pile template, falsework or other appropriate means.
- 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.
- 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.
- 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.
- 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:

- 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.
- 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

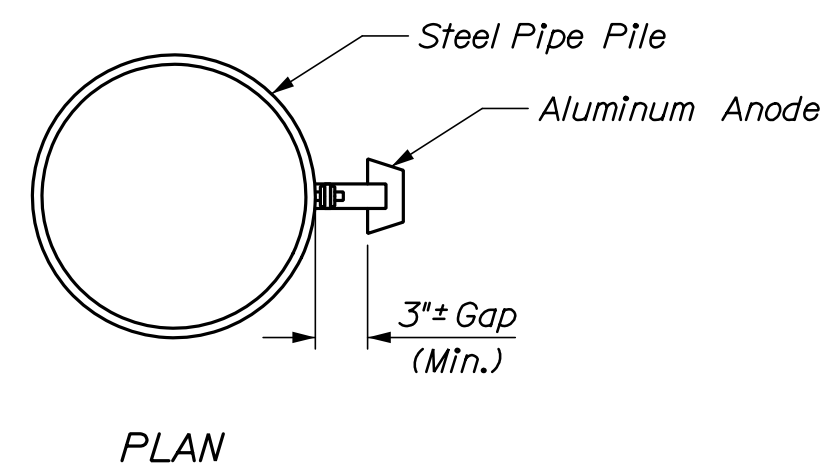
PROJ. MANAGER: N. Willey
DESIGN-DETAILED: C. Morr
CHECKED-REVIEWED: C. Morr
DESIGN-DETAILED: C. Morr
REVISIONS: 1, 2, 3, 4
FIELD CHANGES

BY: P. Bishop, C. Morr
DATE: 07/20, 07/20
SIGNATURE: 10209
P.E. NUMBER: 10209
DATE

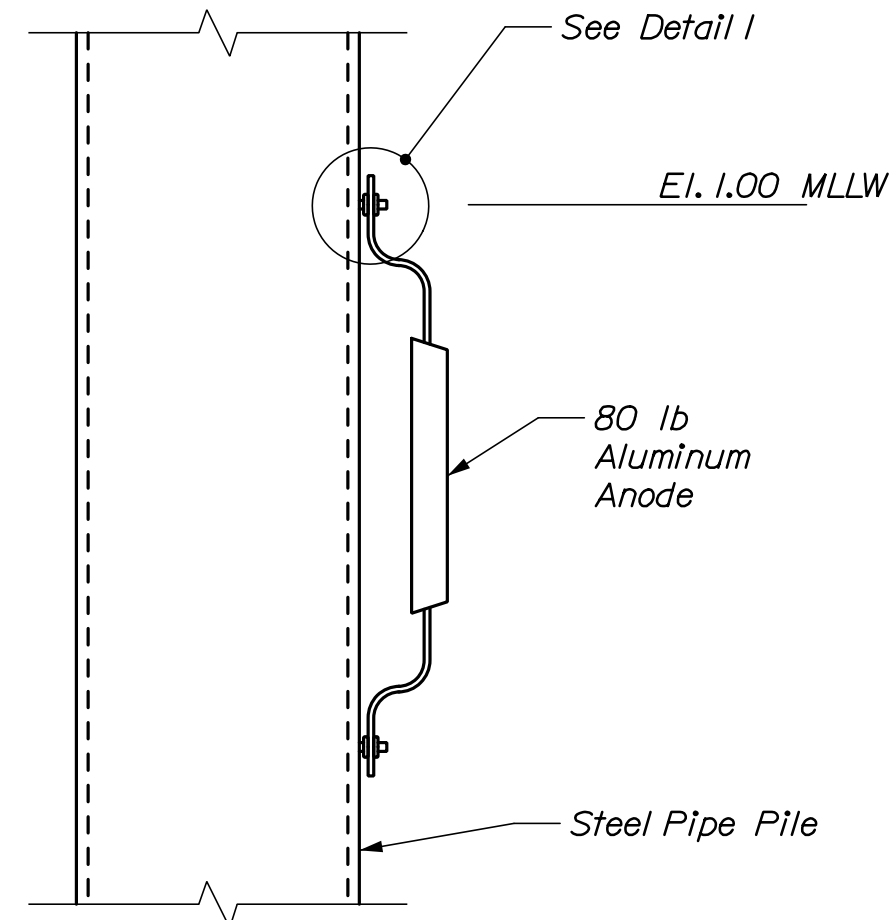
FRENCHBORO FERRY TERMINAL
DOLPHIN FOUNDATION PLAN

SHEET NUMBER
S03
8 OF 17





PLAN

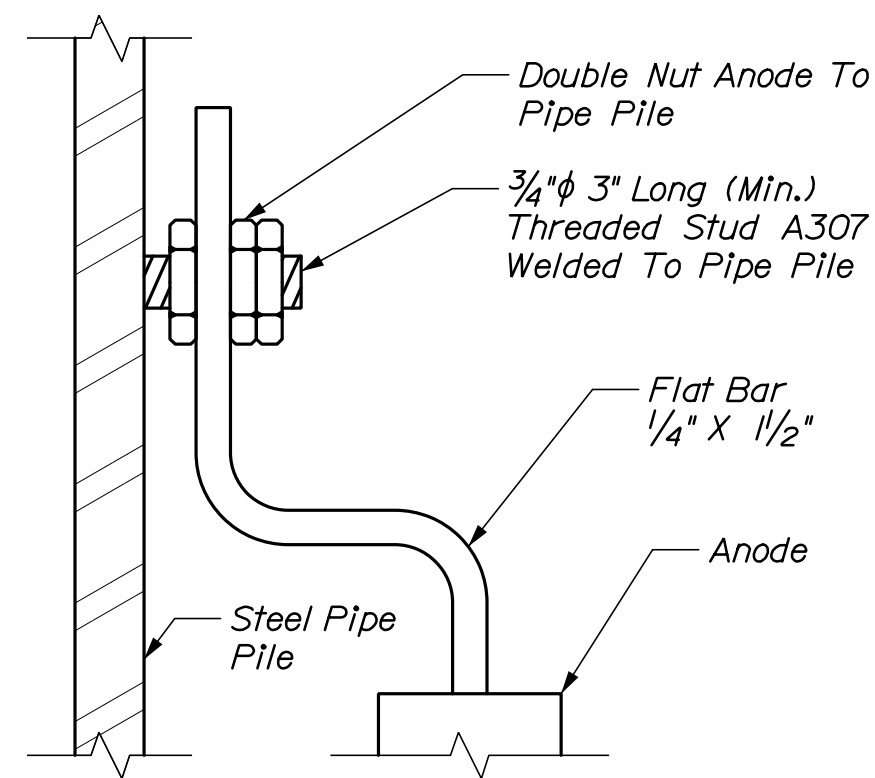


ELEVATION

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

ANODE DETAIL

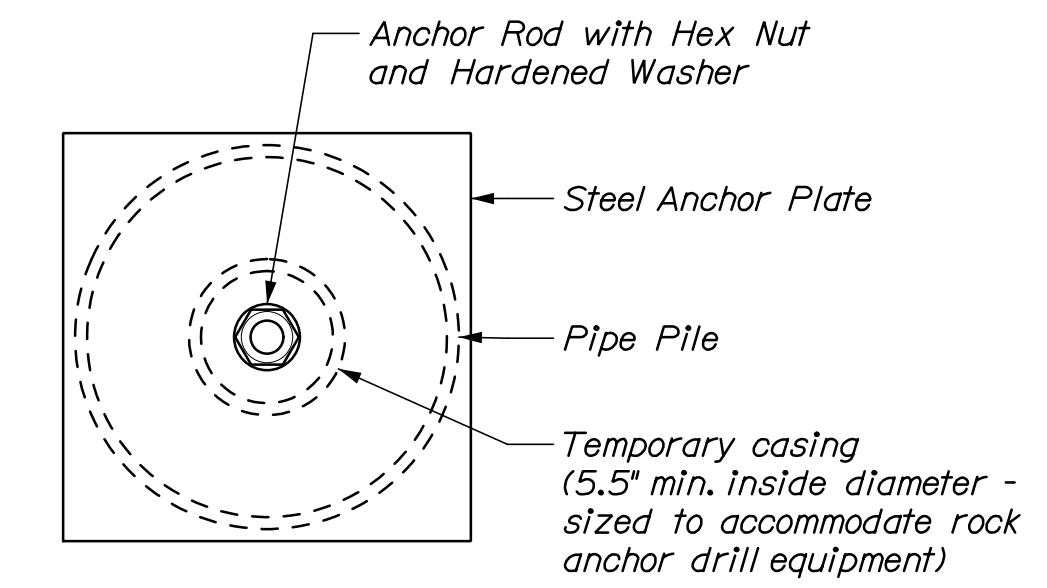
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DETAIL I

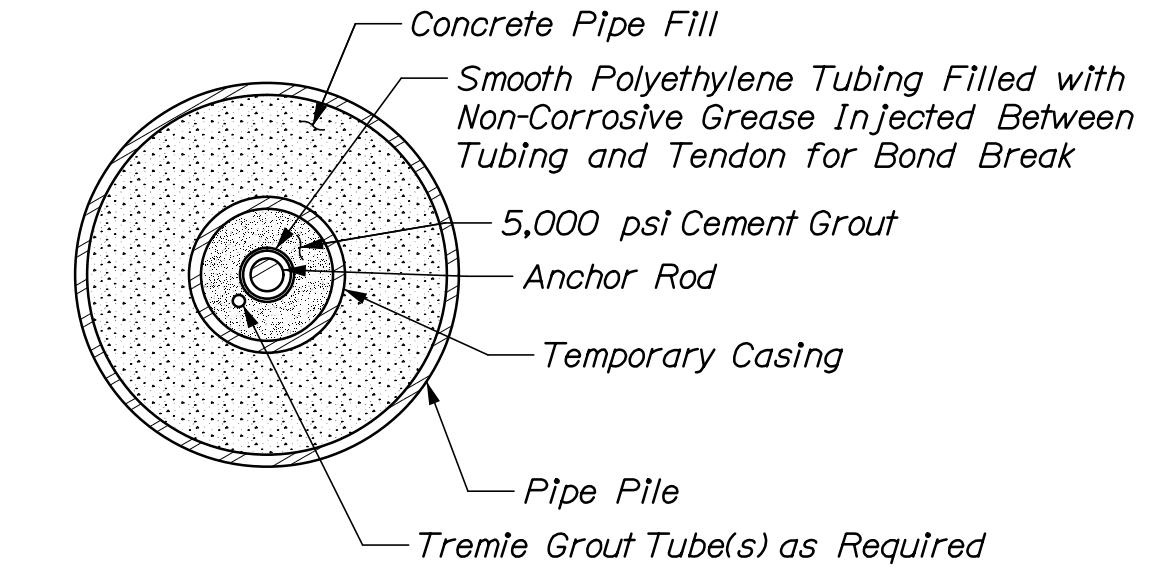
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Note: Studs and hardware shall be A307.



TOP OF PILE DETAIL

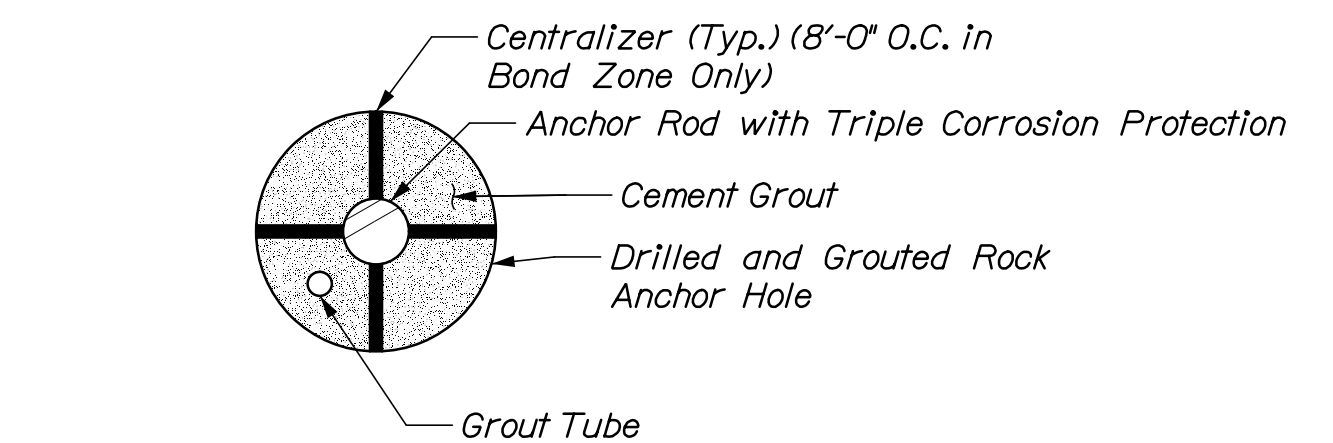
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ROCK ANCHOR SECTION

(UNBONDED ZONE)

N.T.S.



ROCK ANCHOR SECTION

(BOND ZONE)

N.T.S.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	BY	DATE	SIGNATURE
	N. Willey	C. Morin	P. Bishop	07/20	
			C. Morin	07/20	
	DESIGN-DETAILED				
	REVISIONS 1				
	REVISIONS 2				
	REVISIONS 3				
	REVISIONS 4				
	FIELD CHANGES				

FRENCHBORO
FERRY TERMINAL
DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER

S04

9 OF 17

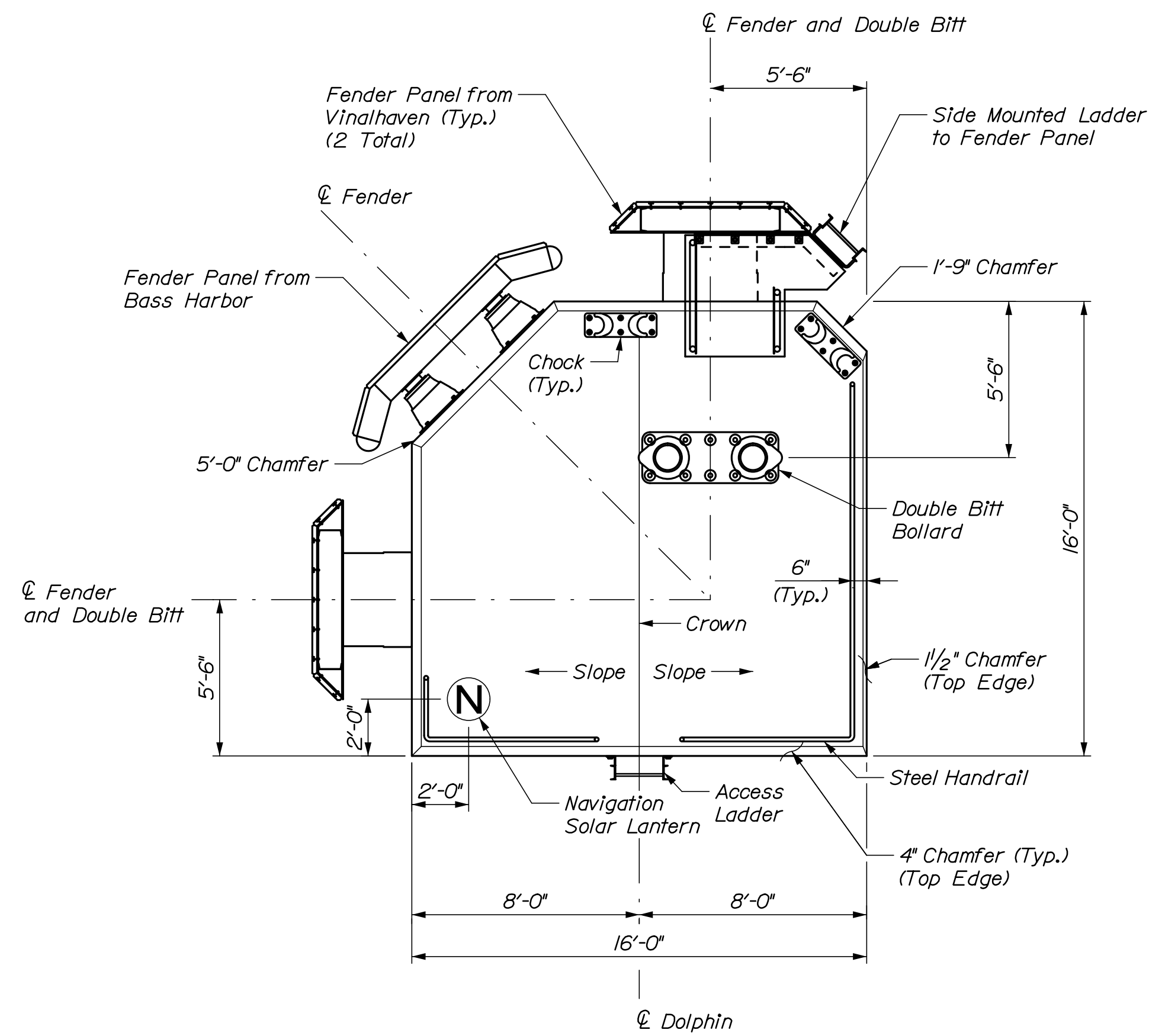


Date: 7/10/2020

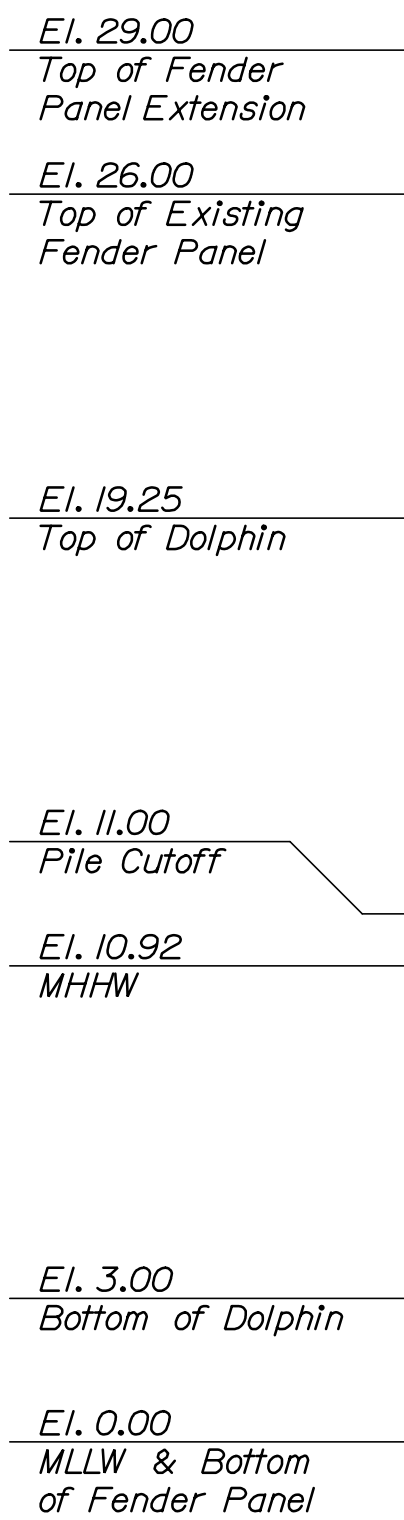
Username:

Division:

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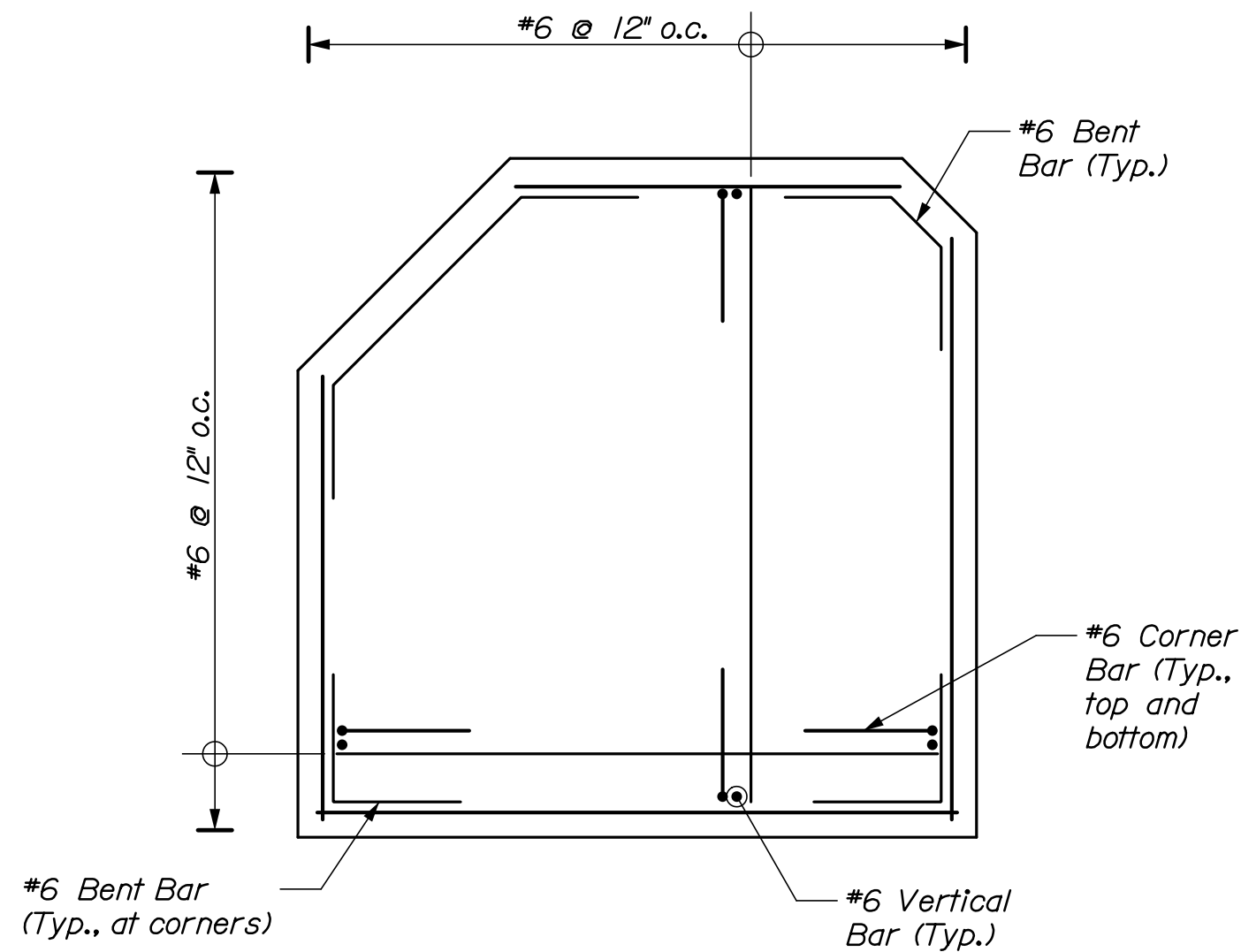


**TURNING DOLPHIN
PLAN**
1/4" = 1'-0"

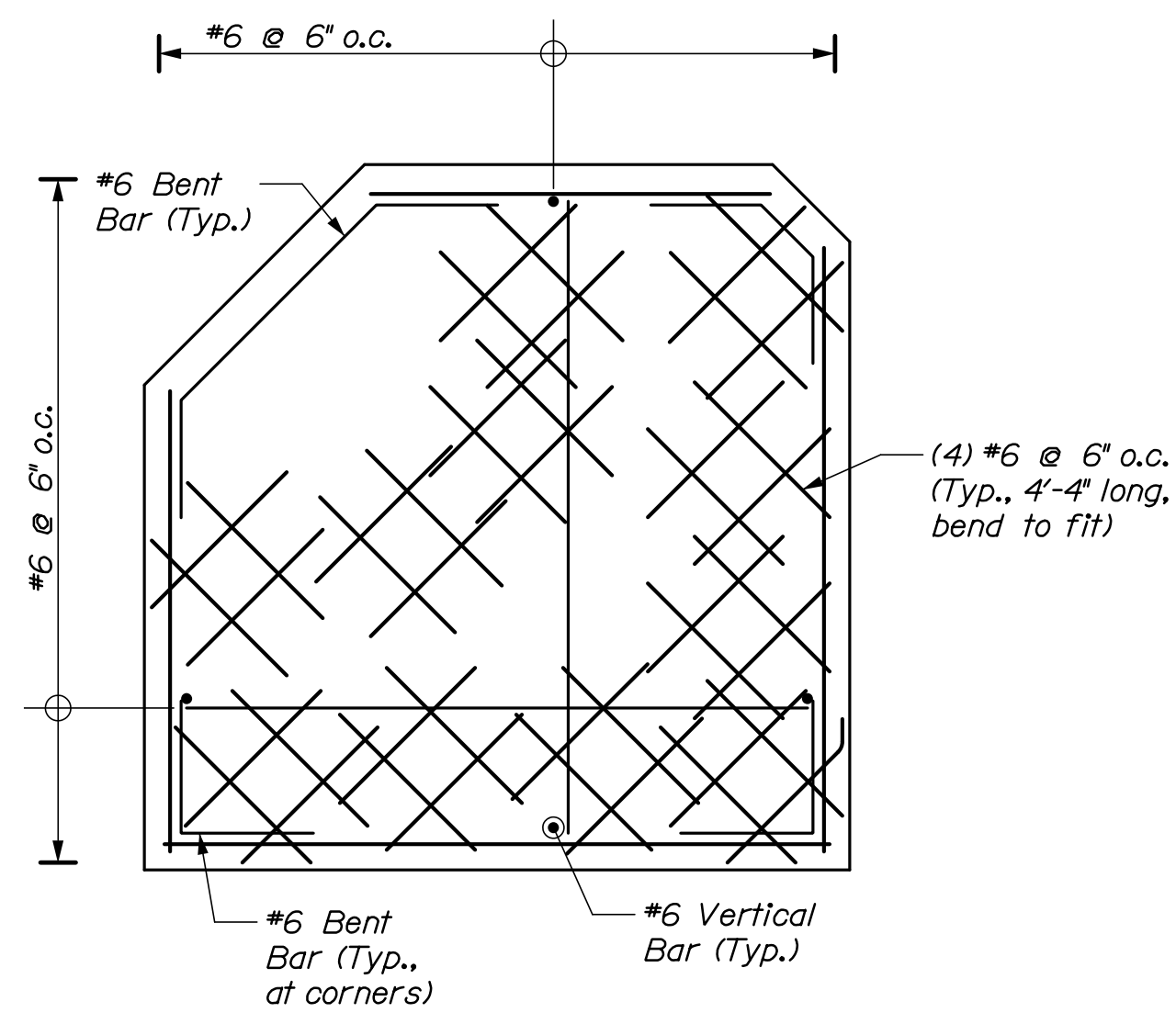


**TURNING DOLPHIN
ELEVATION**

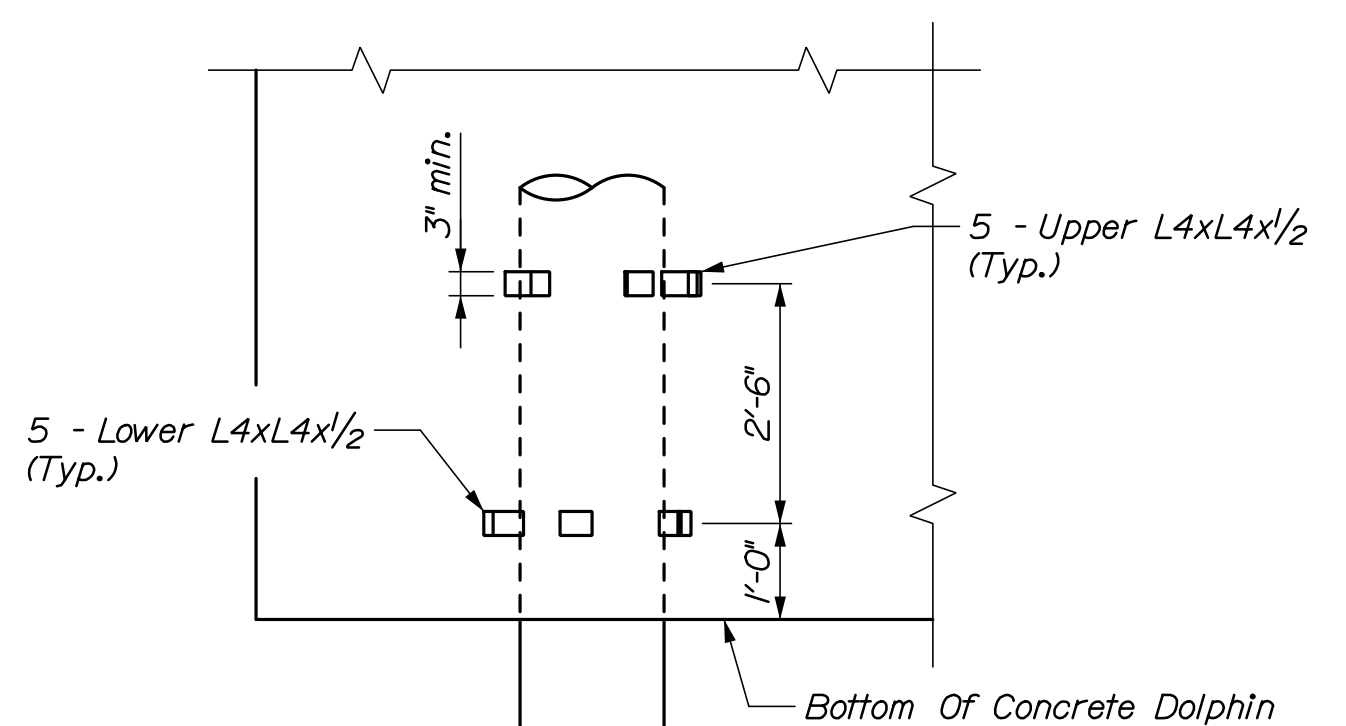
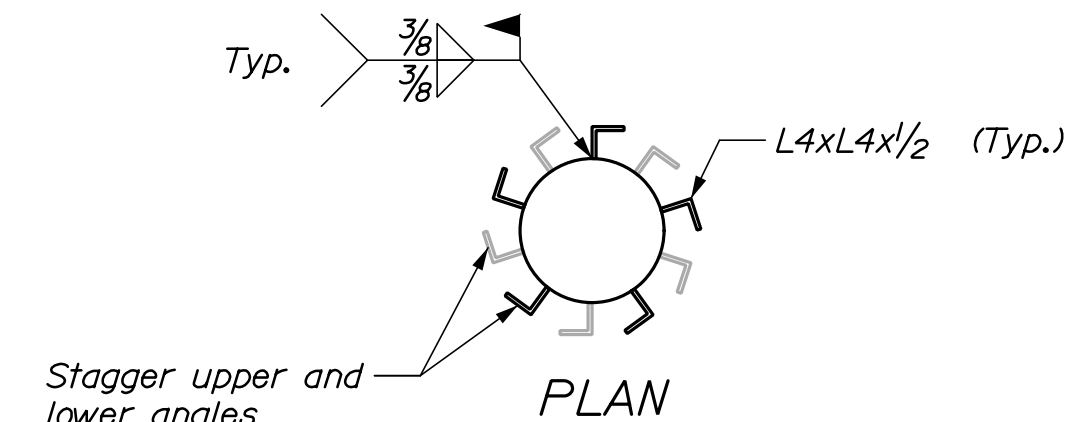
(Select fenders and chocks not shown for clarity)
1/4" = 1'-0"



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"



PILE SHEAR REINFORCEMENT

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 maintain 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be 1/4" per foot and pitched as shown.

TURNING DOLPHIN REINFORCING TYPICAL SECTION
1/4" = 1'-0"

PROJ. MANAGER	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED N. Willey	07/20		10209	
CHECKED-REVIEWED C. Morin	07/20			
DESIGN-DETAILED				
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

BY	DATE	SIGNATURE	P.E. NUMBER	DATE
P. Bishop				
C. Morin				

FRENCHBORO
FERRY TERMINAL
**DOLPHIN PLAN,
ELEVATION, AND DETAILS**

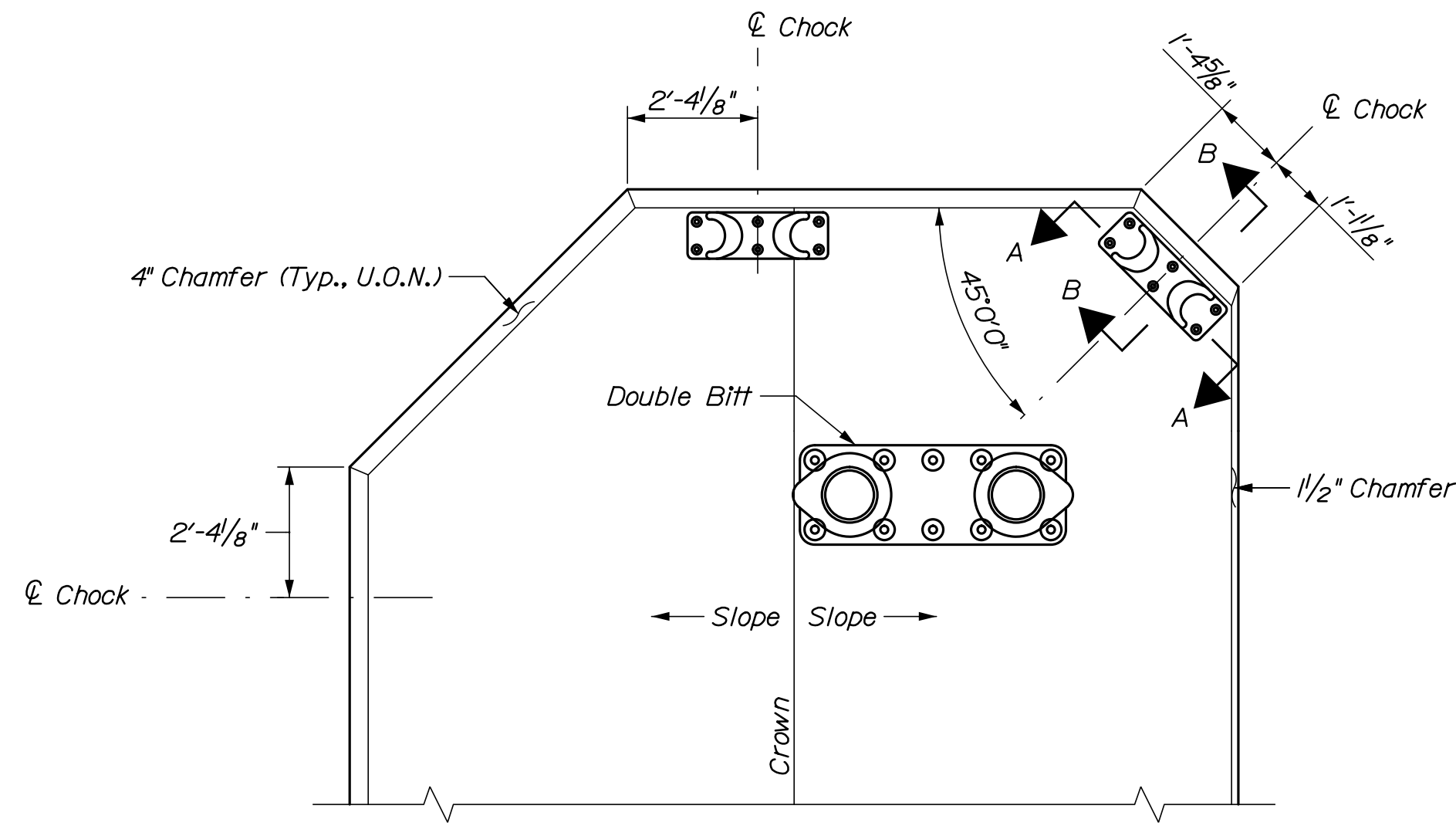


Date: 7/22/2020

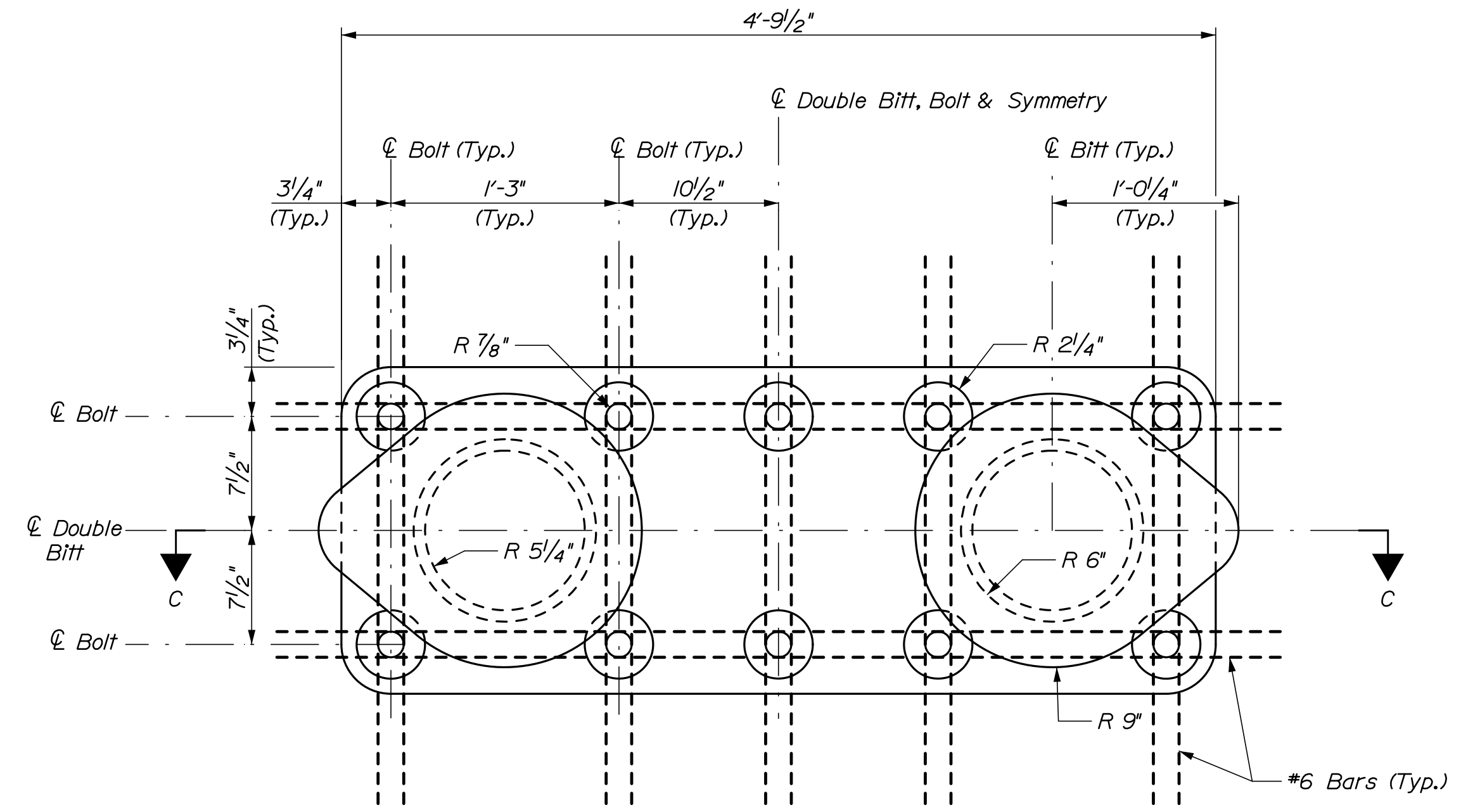
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Division:

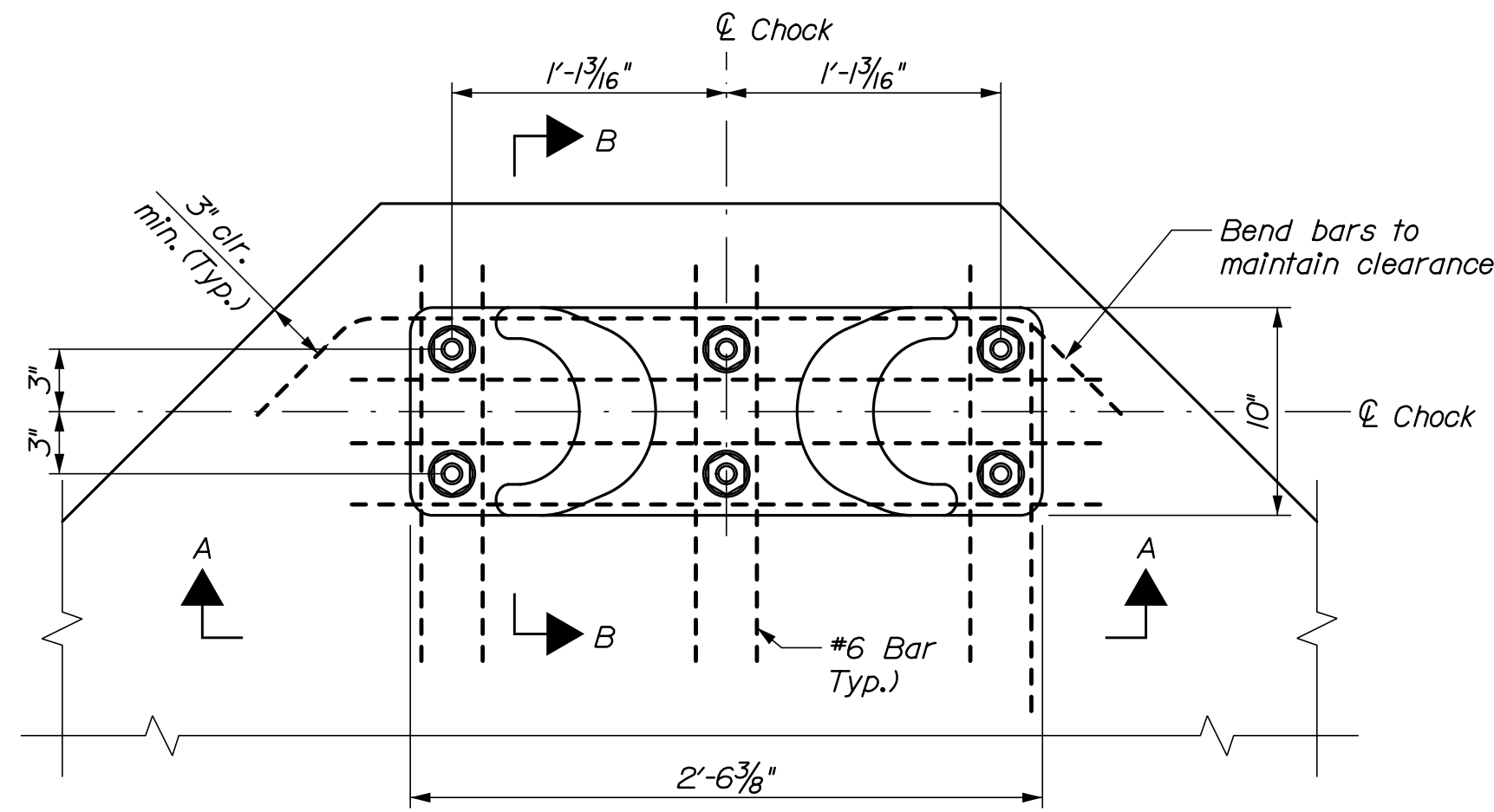
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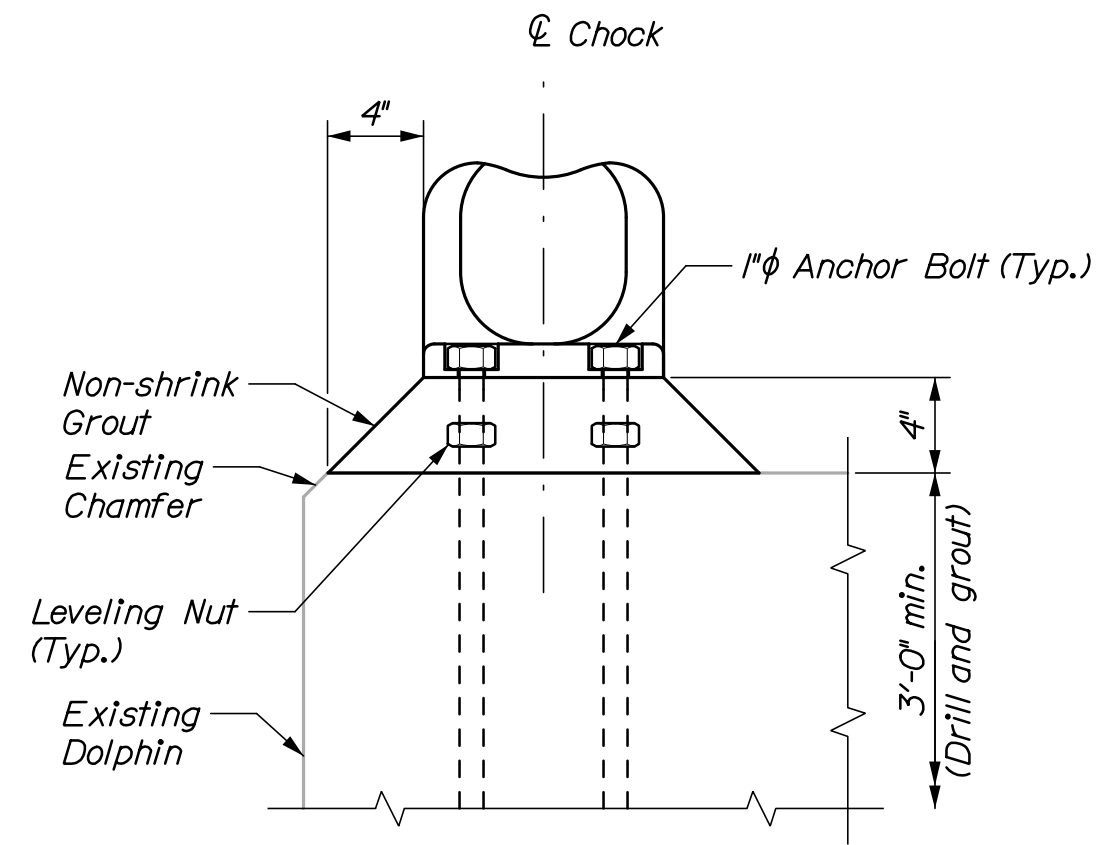
PLAN VIEW OF PROPOSED DOLPHIN
 (Hand rails, lights, and fenders not shown for clarity)
 3/8" = 1'-0"



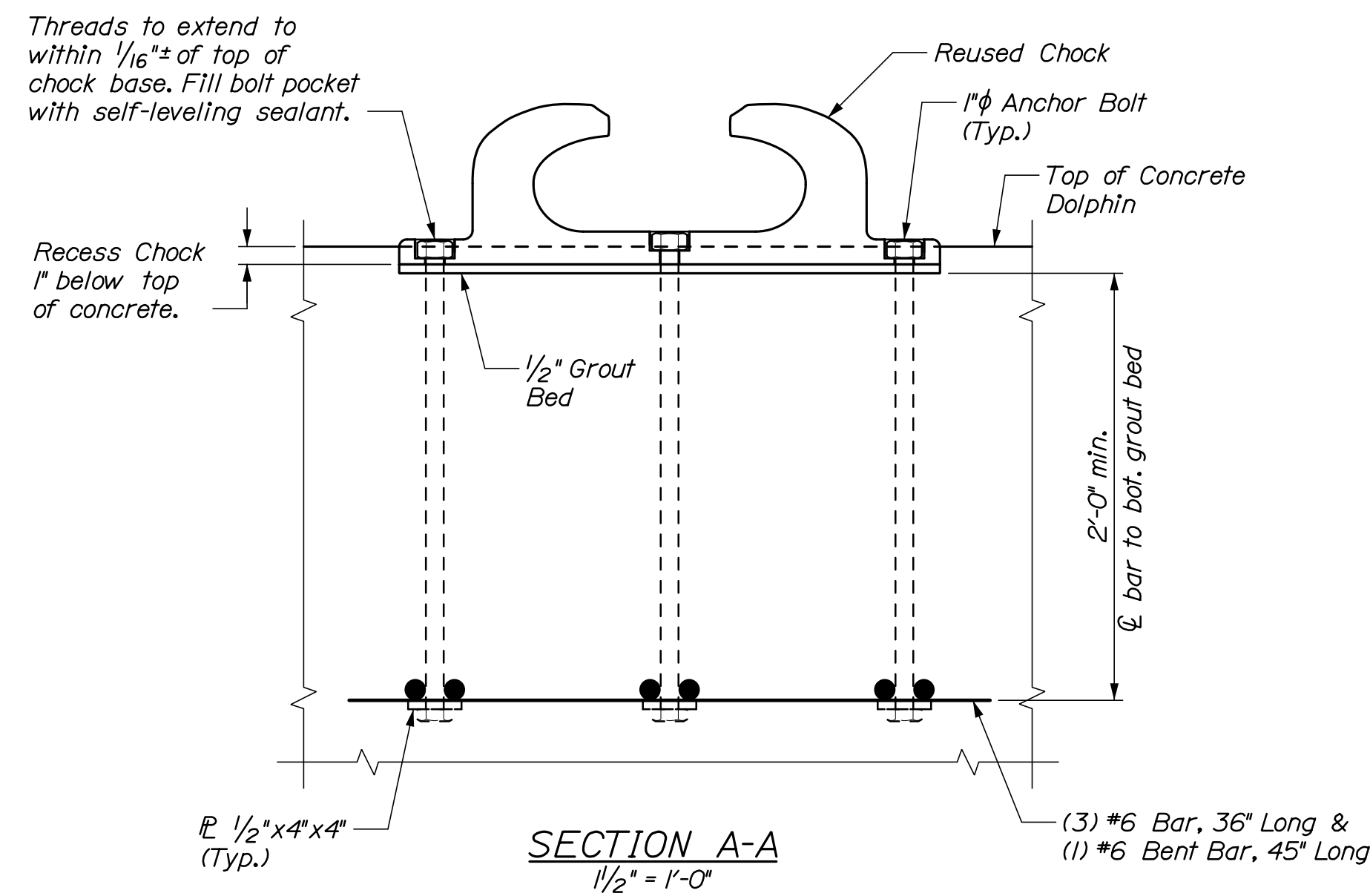
DOUBLE BITT PLAN
 1/2" = 1'-0"



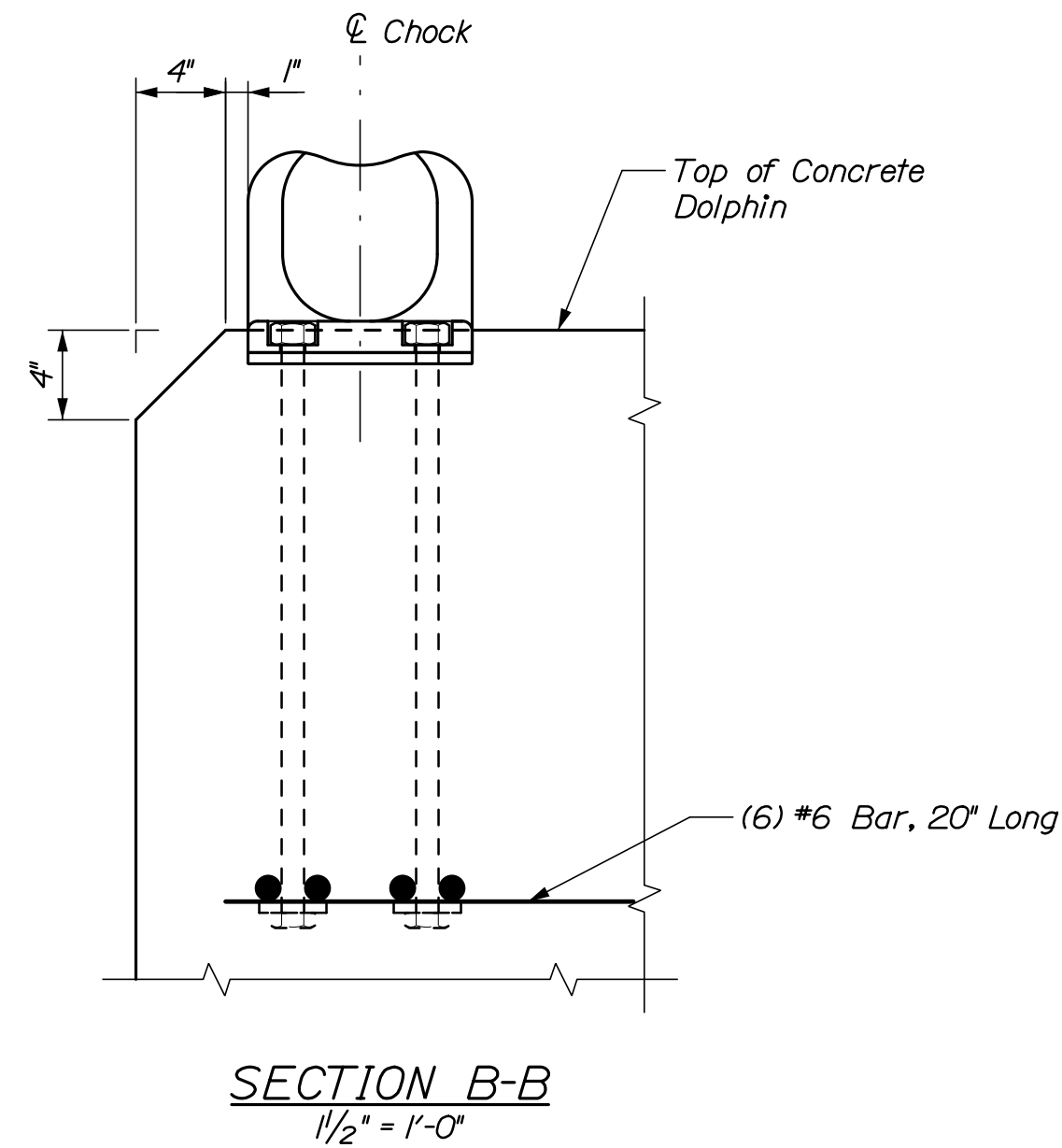
CHOCK PLAN AT CHAMFER
 1/2" = 1'-0"



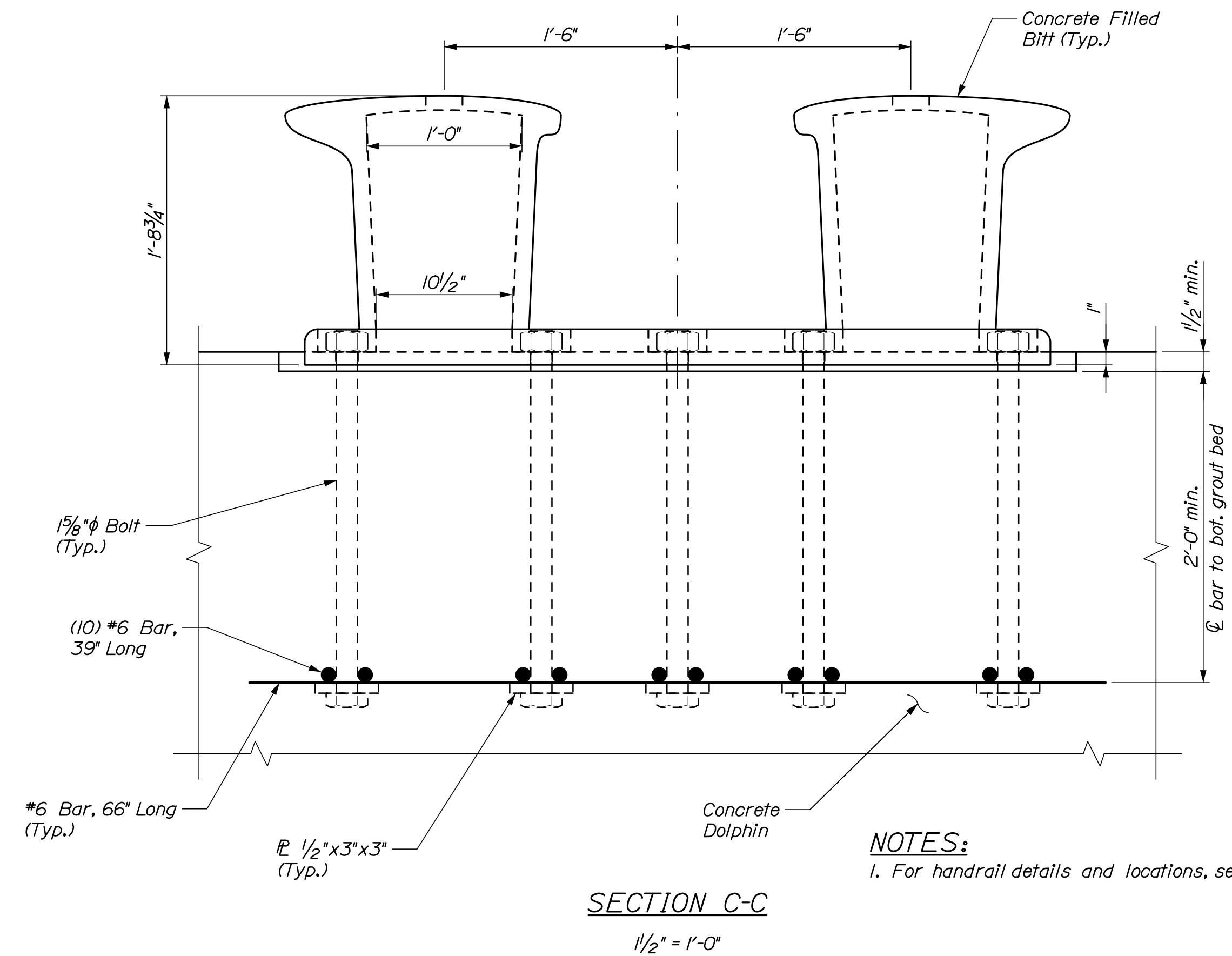
EXISTING CONCRETE CHOCK DETAIL
 1/2" = 1'-0"



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



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



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

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

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
022202.00

PROJ. MANAGER	BY	DATE	SIGNATURE
DESIGN-DETAILED N. Willey	P. Bishop	07/20	
CHECKED-REVIEWED C. Morr	C. Morr	07/20	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
MOORING HARDWARE

SHEET NUMBER

S06

11 OF 17

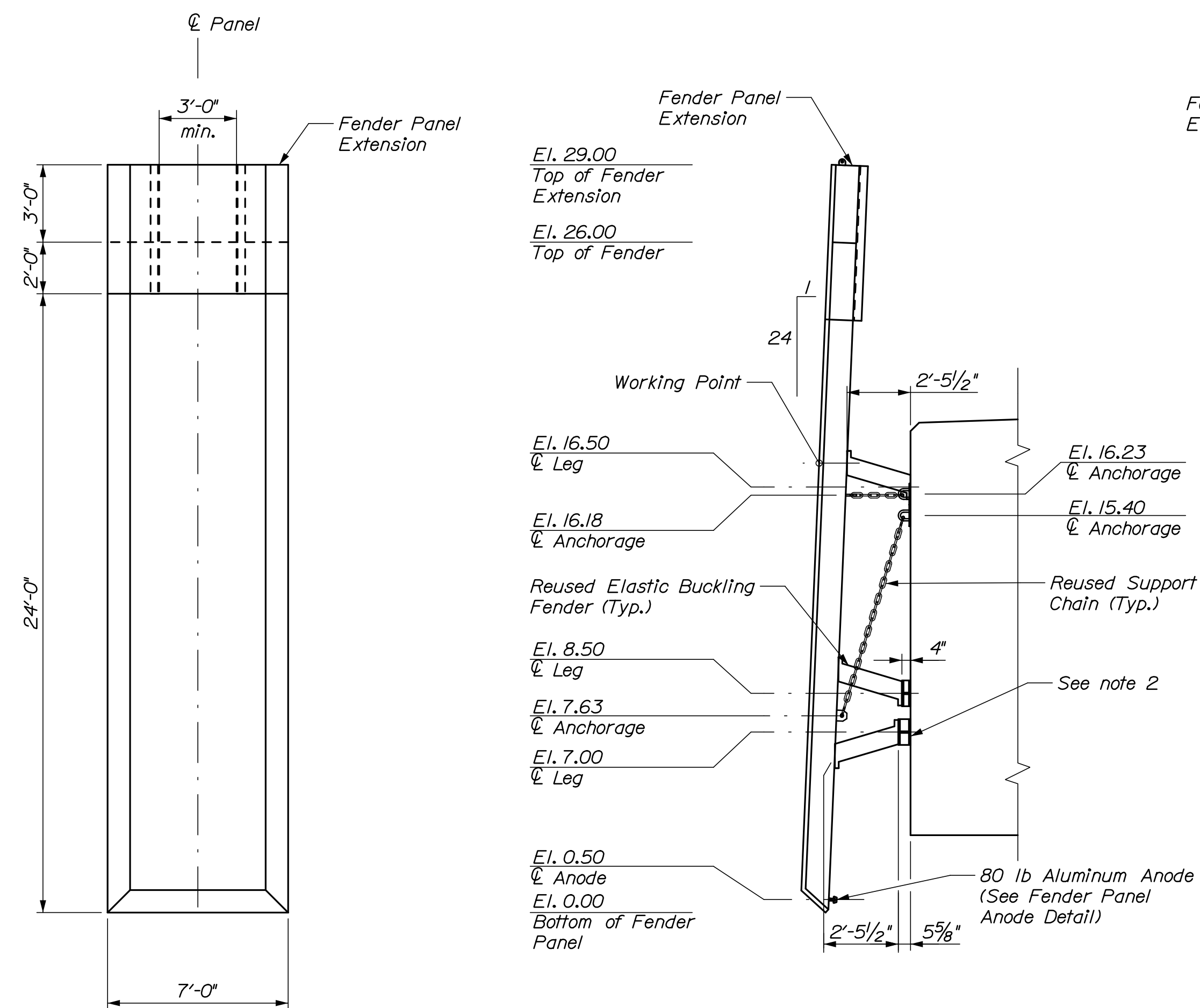
HNTB

Date: 7/10/2020

Username:

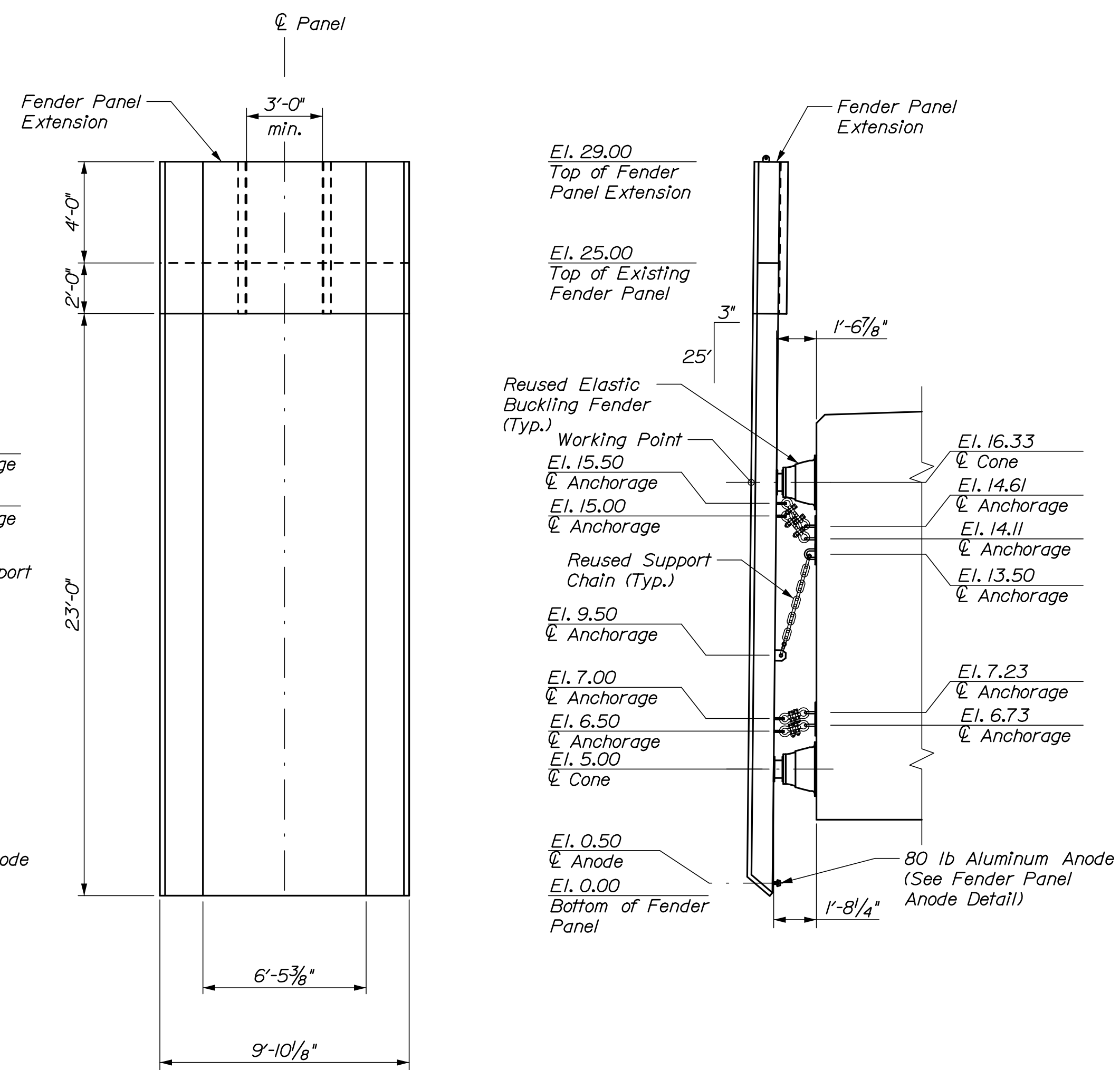
Division:

Filename: 012_Fender System 1.dgn



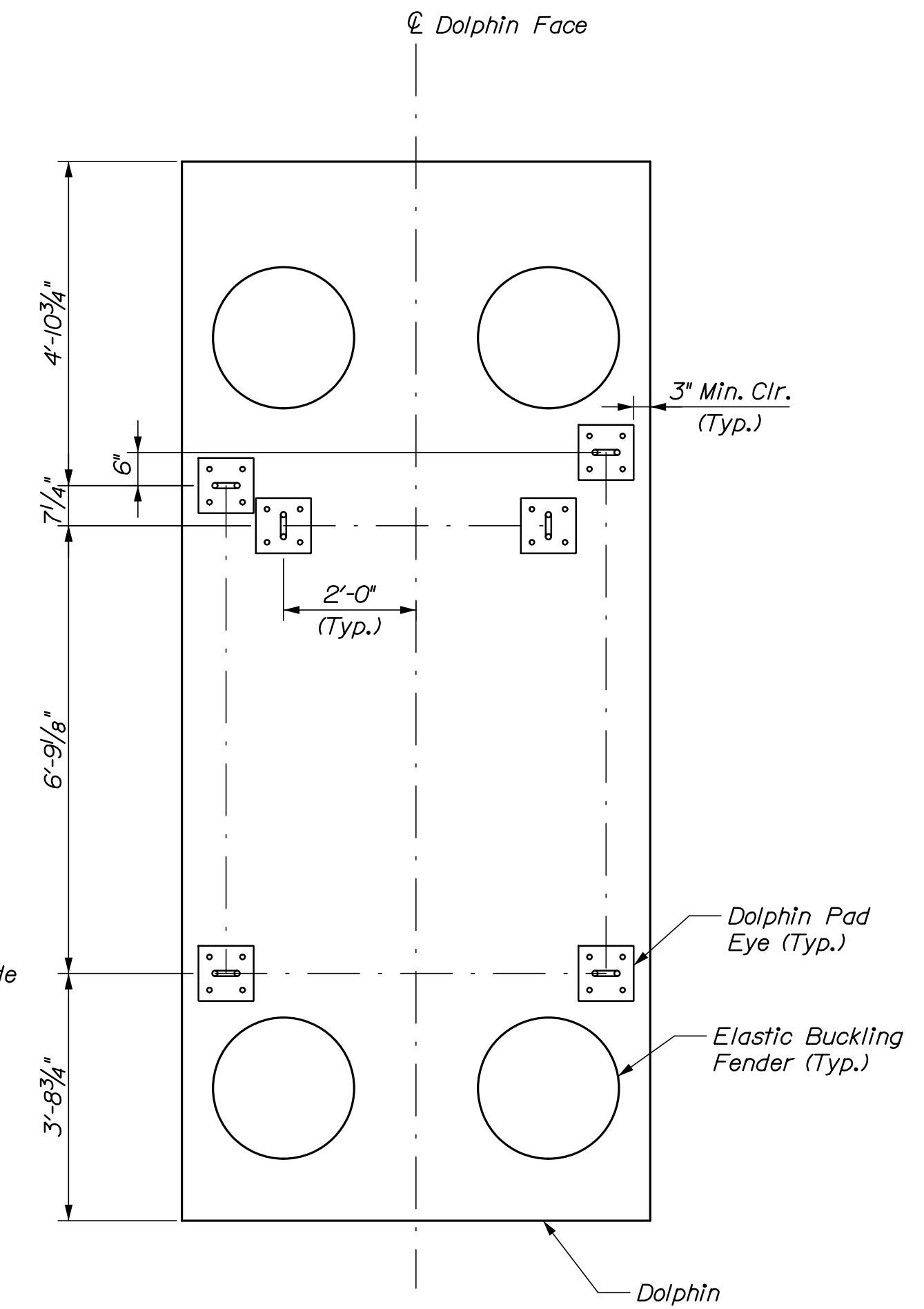
EXISTING PANEL
(FROM VINALHAVEN)
1/4" = 1'-0"

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

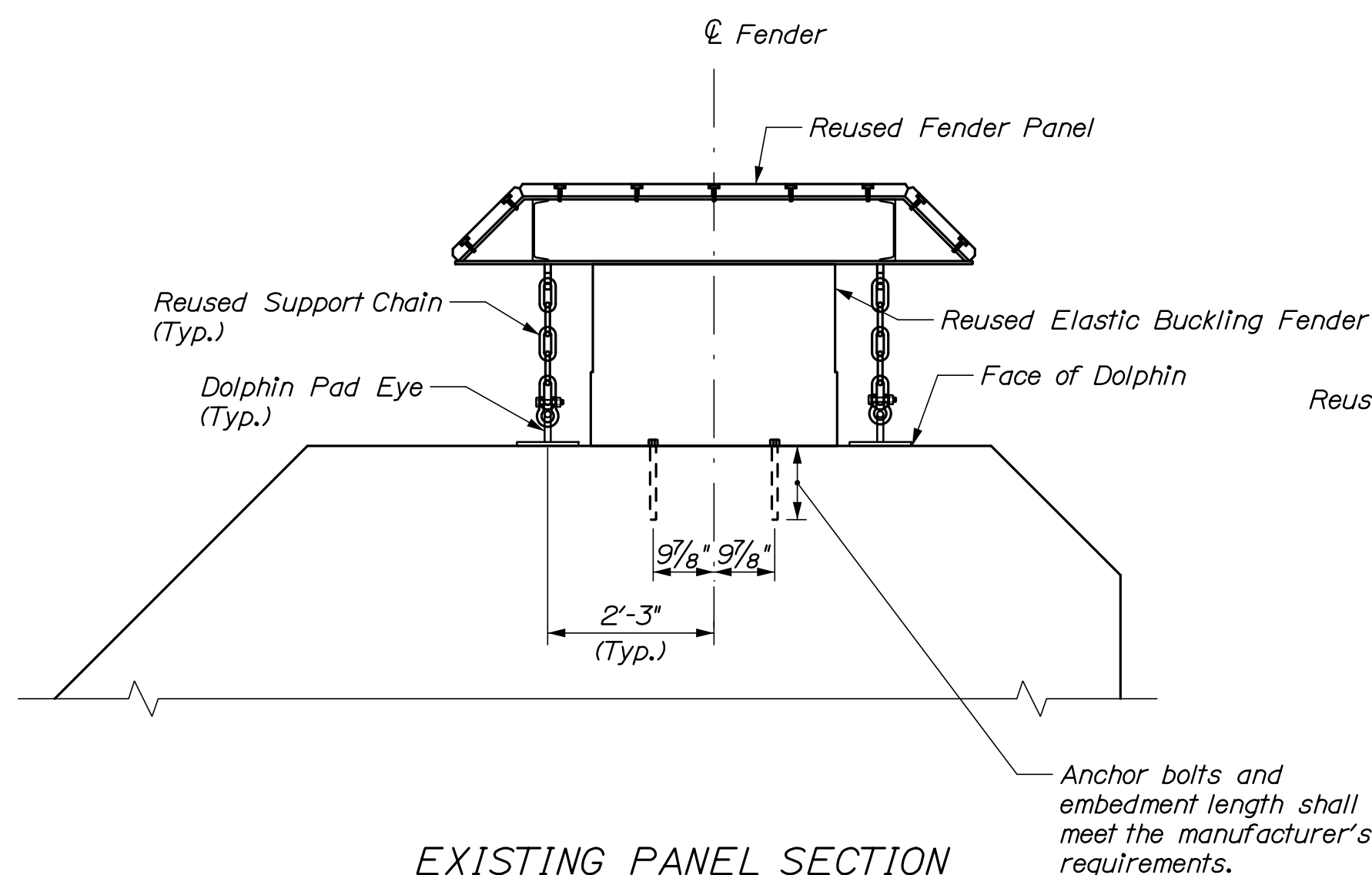


EXISTING PANEL
(FROM BASS HARBOR)
1/4" = 1'-0"

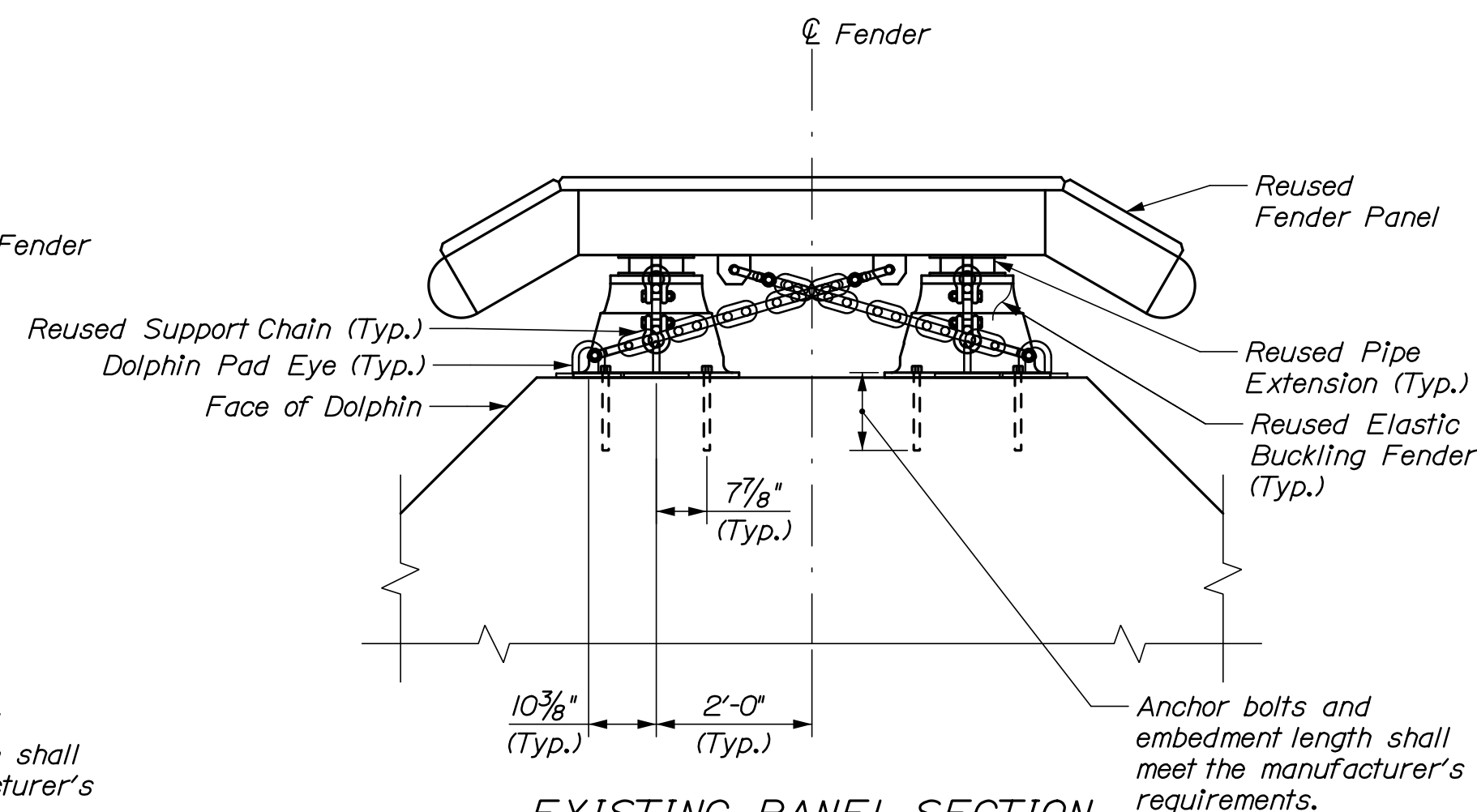
EXISTING PANEL ELEVATION
(FROM BASS HARBOR)
(Foundation piles and hardware not shown for clarity)
1/4" = 1'-0"



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

- 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.
- Existing steel fender blocks from Vinalhaven dolphin DI shall not be used.
- Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
- For dolphin pad eye, panel anode and steel fender block details, see Sheet S08.
- Contractor to replace broken or bent chain links, dog bones, or chain tensioner in kind.
- Contractor shall remove obstructions or modify detail for panel extension.

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
N. Willey	P. Bishop	C. Morin	C. Morin					
BY	DATE	SIGNATURE	P.E. NUMBER	DATE				
P. Bishop	07/20		10209					

SHEET NUMBER

S07



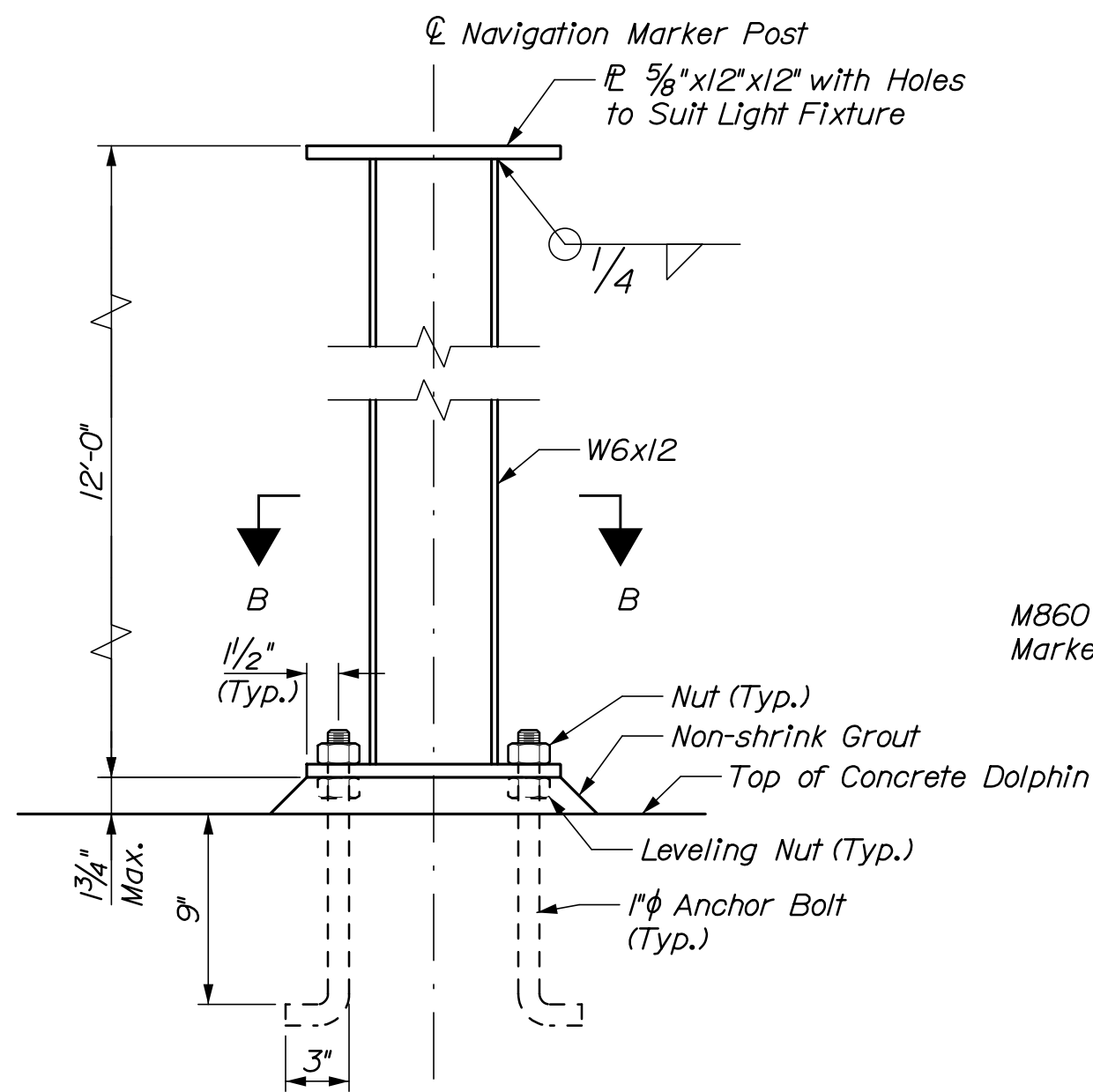
WIN
022202.00

Date: 7/10/2020

Username:

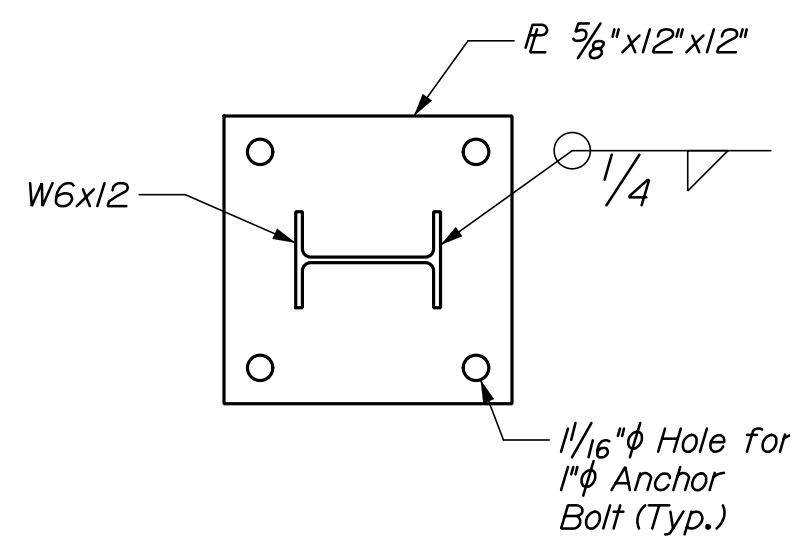
Division:

Filename: 014_Miscellaneous Details.dgn



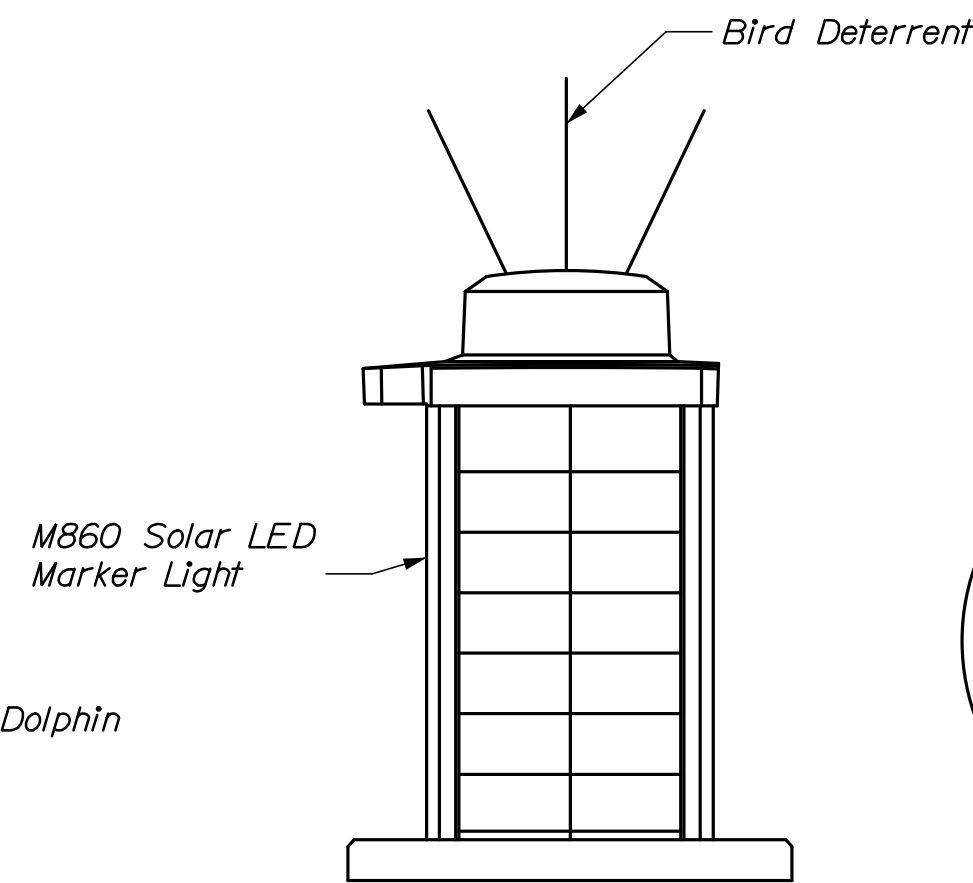
NAVIGATION MARKER INSTALLATION DETAIL

1/2" = 1'-0"



SECTION B-B

1/2" = 1'-0"



ELEVATION

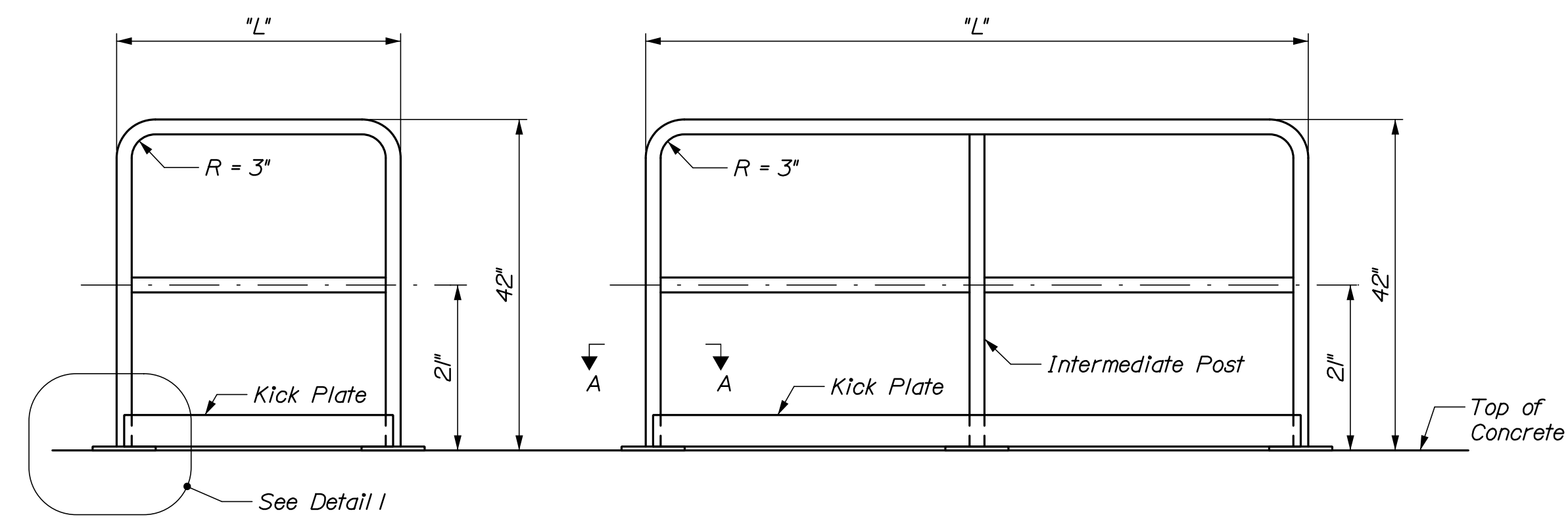
BOTTOM

SOLAR LANTERN DETAIL

3" = 1'-0"

TABLE 1
LANTERN SUMMARY TABLE

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



Type 1
Handrail

Type 2
Handrail

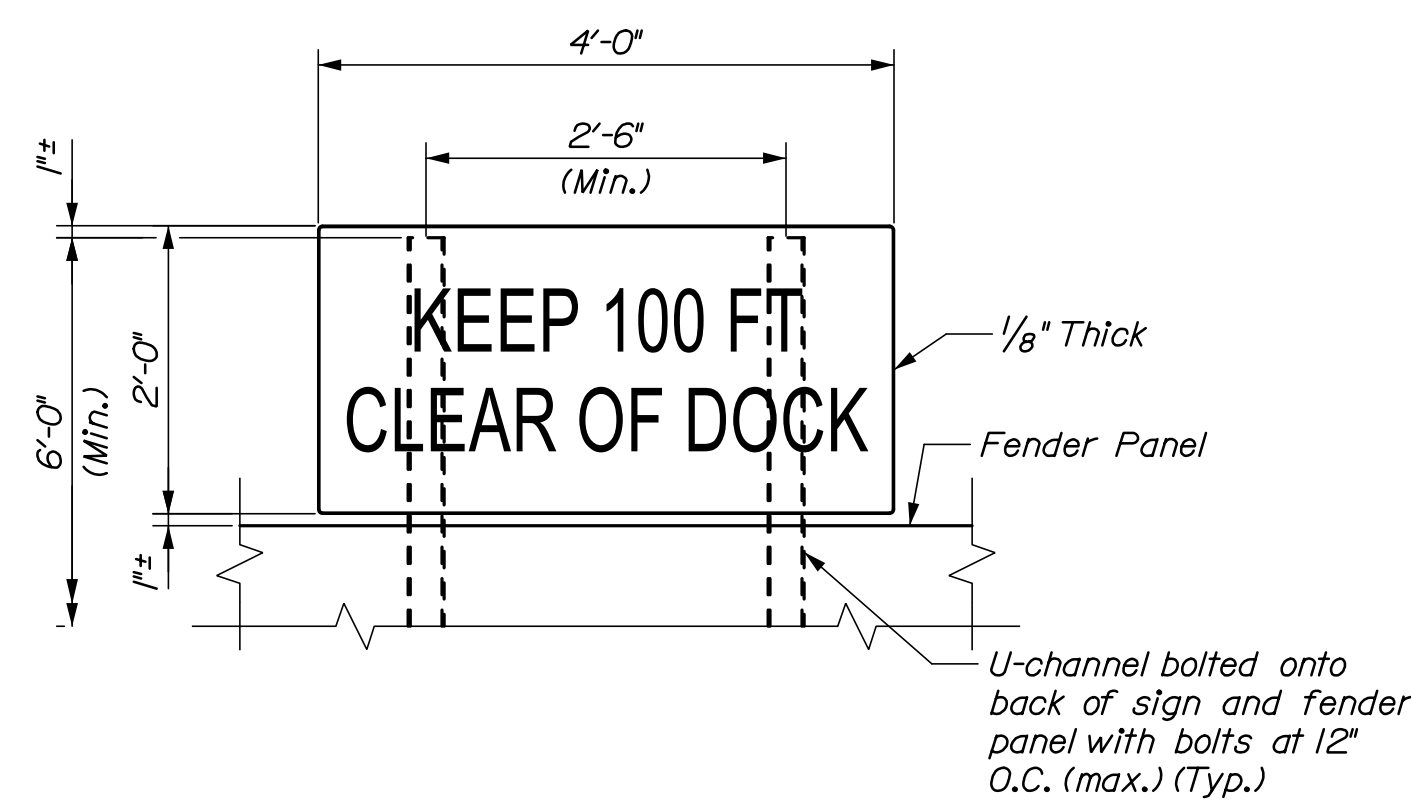
HANDRAIL DETAIL

3/4" = 1'-0"

TABLE 1
HANDRAIL SUMMARY TABLE

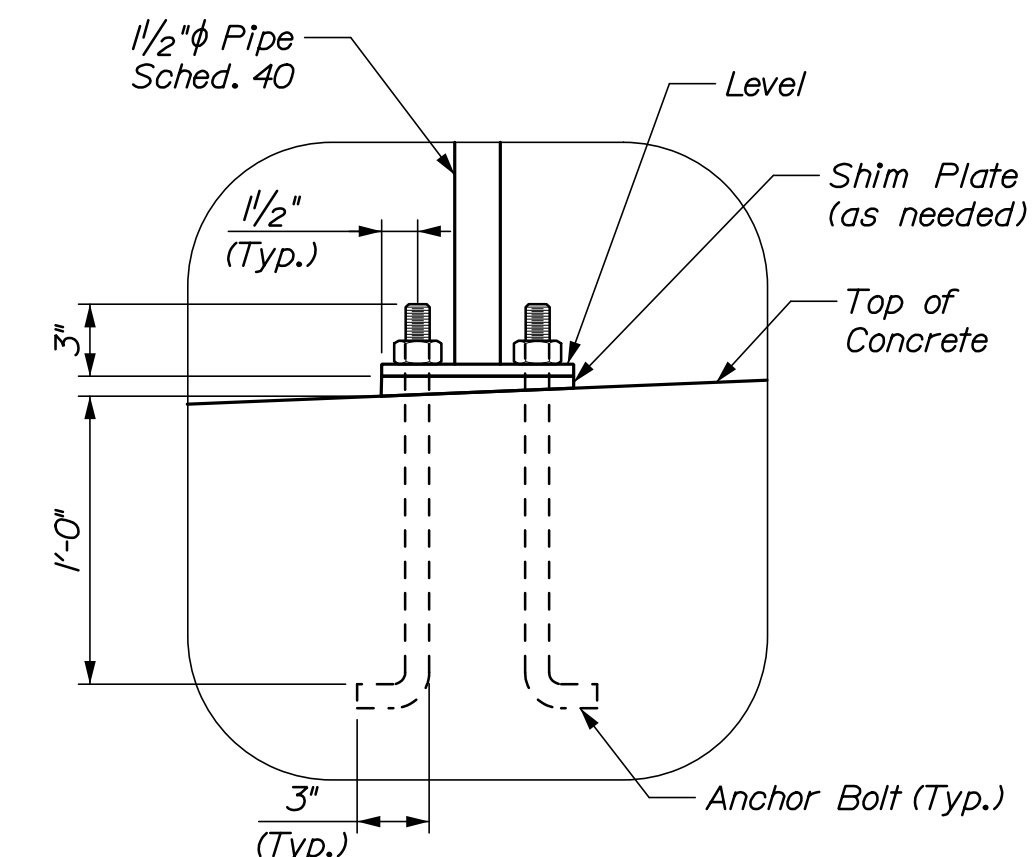
Dolphin	Location	Identification
D4	S	T2 - 8'-2" - 1
D4	S	T2 - 18'-6" - 3

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



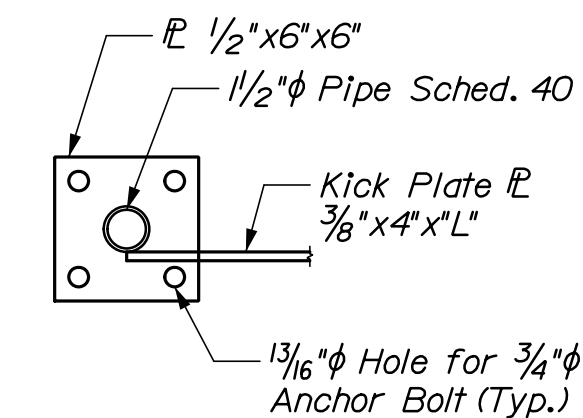
SIGN DETAIL

3/4" = 1'-0"



DETAIL 1

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

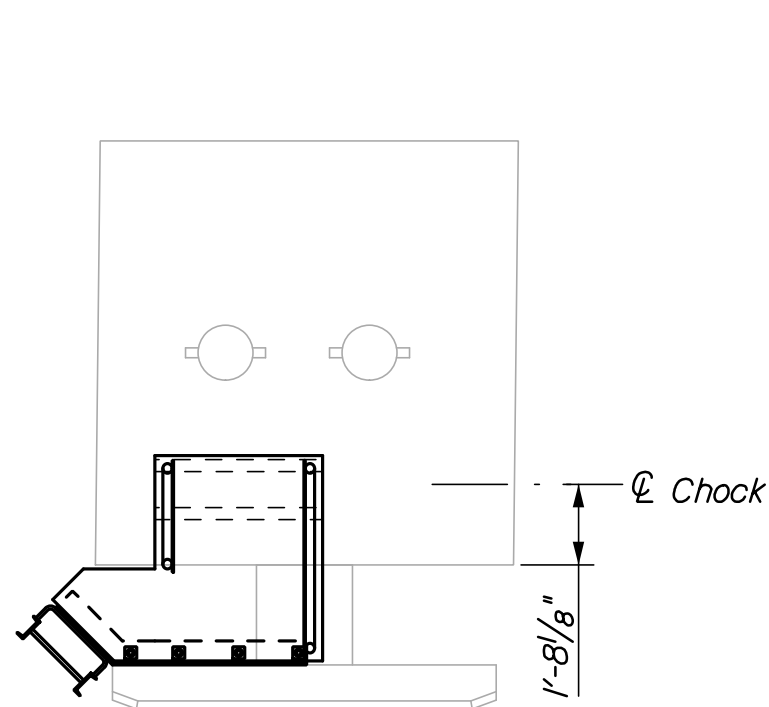


SECTION A-A

1/2" = 1'-0"

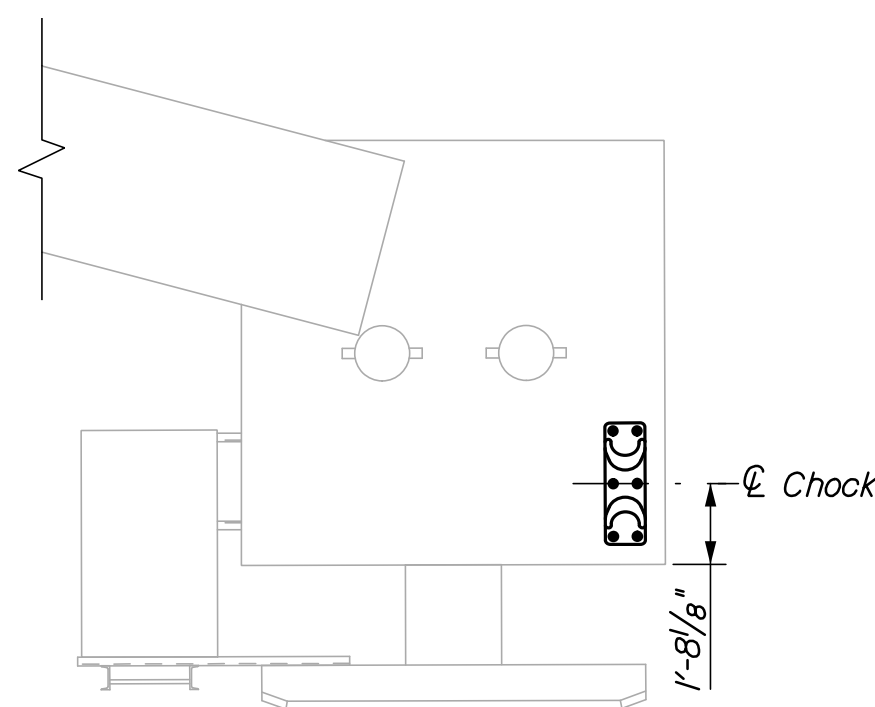
NOTES:

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



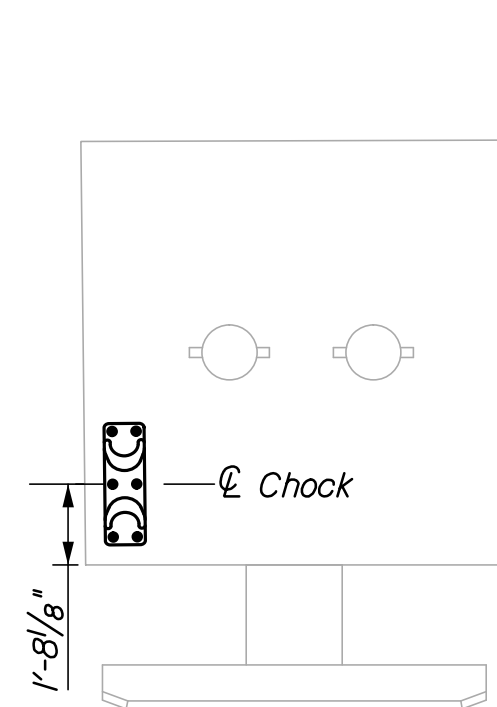
D1 CHOCK PLAN

1/4" = 1'-0"



D2 CHOCK PLAN

1/4" = 1'-0"



D3 CHOCK PLAN

1/4" = 1'-0"

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

Date: 7/10/2020

Username:

Division:

Filename: 016_Miscellaneous Details III.dgn

El. 31.00

A

A

El. 19.25
Top of Dolphin

B

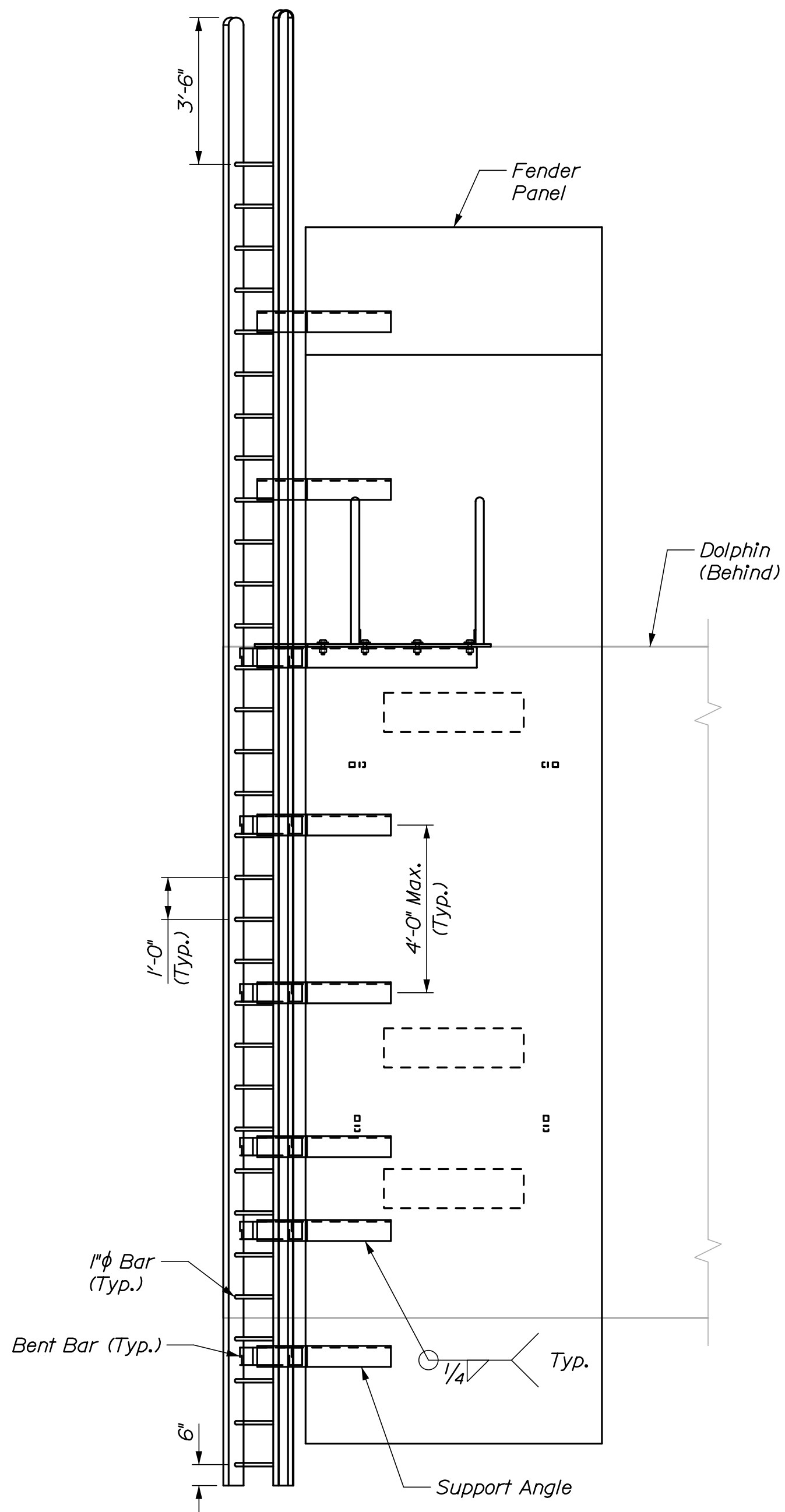
B

El. -2.00
Bottom of Ladder

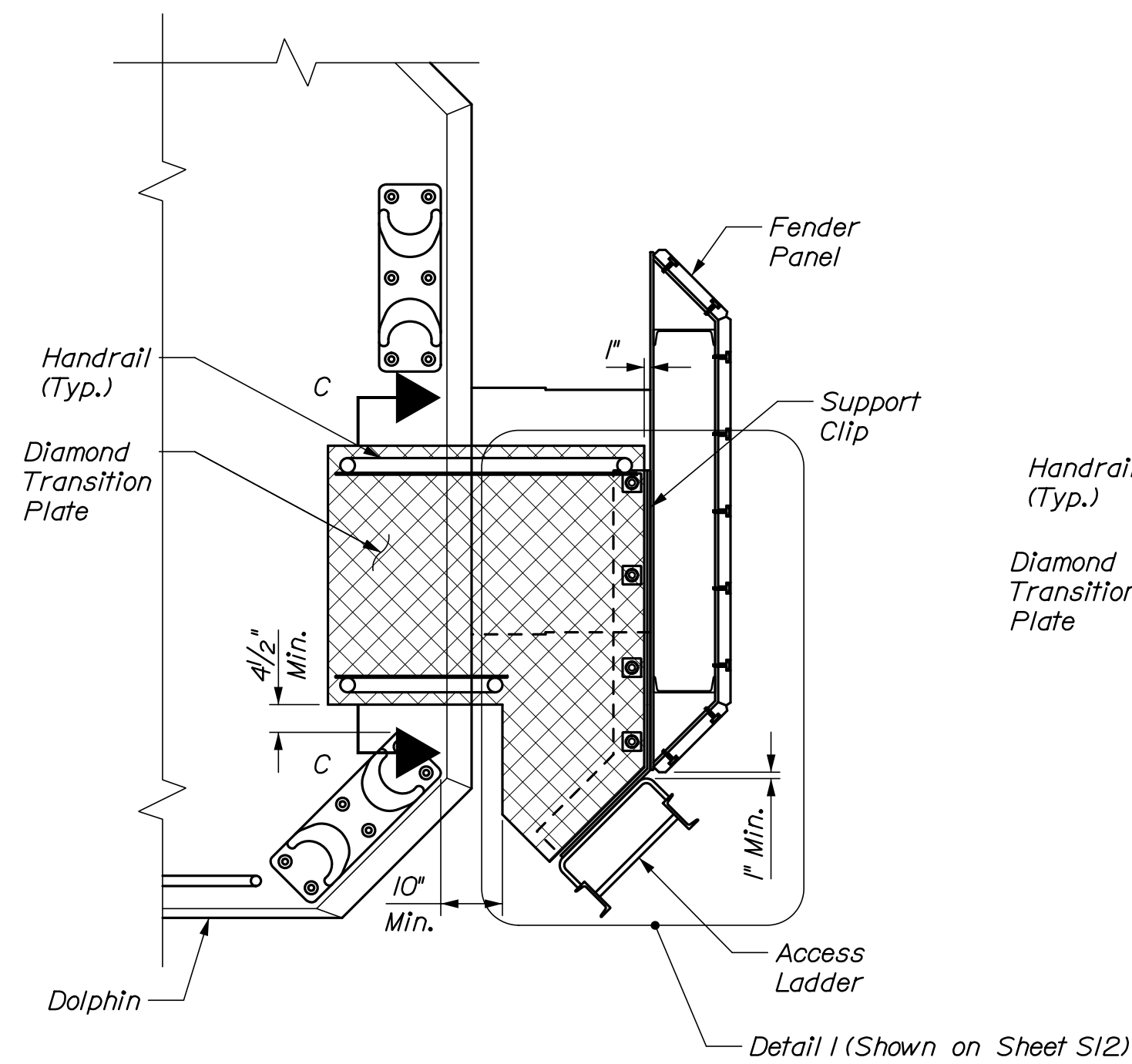
SIDE ELEVATION

FENDER ACCESS LADDER

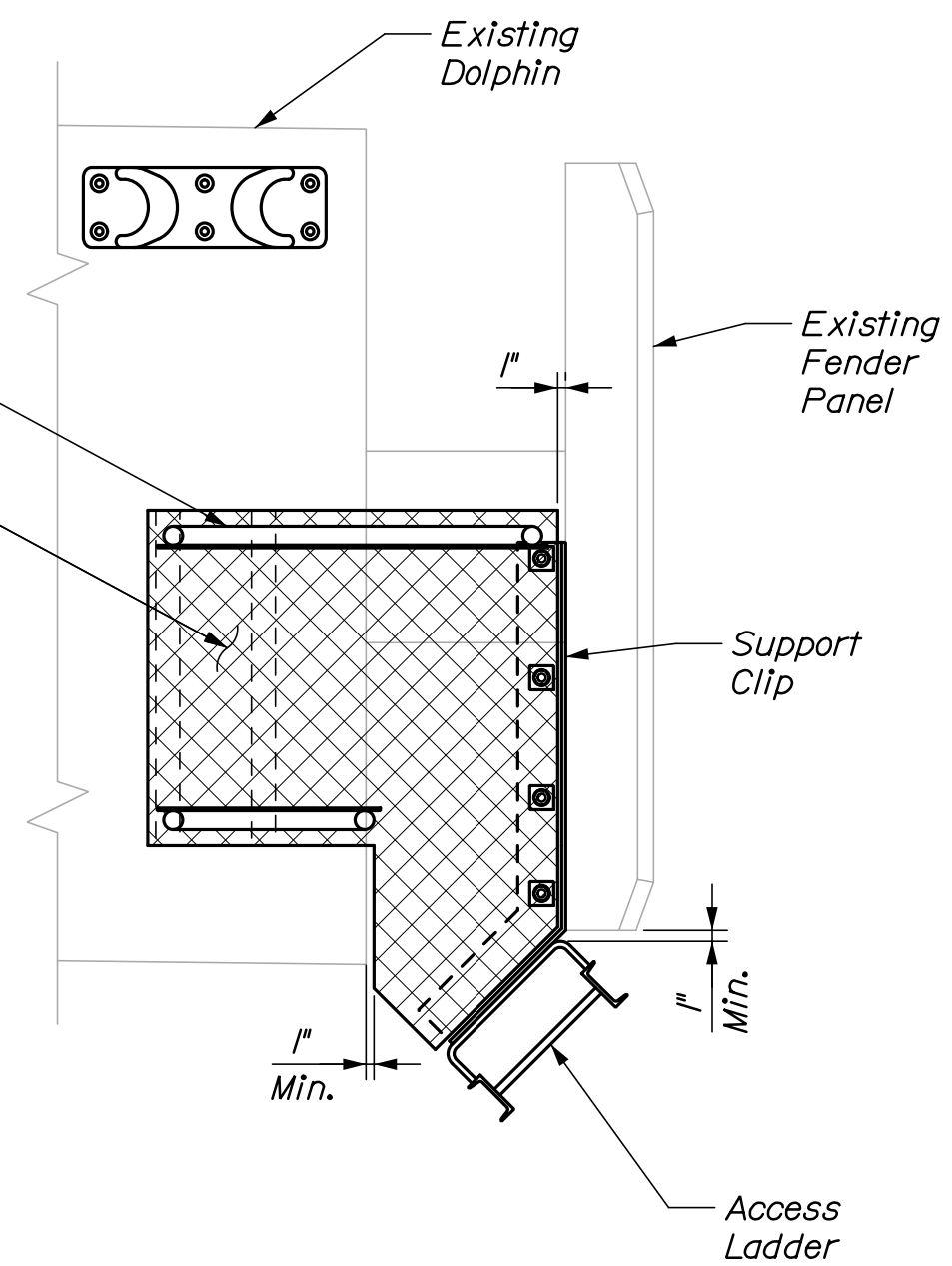
(D4 shown, D1 similar)
3/8" = 1'-0"



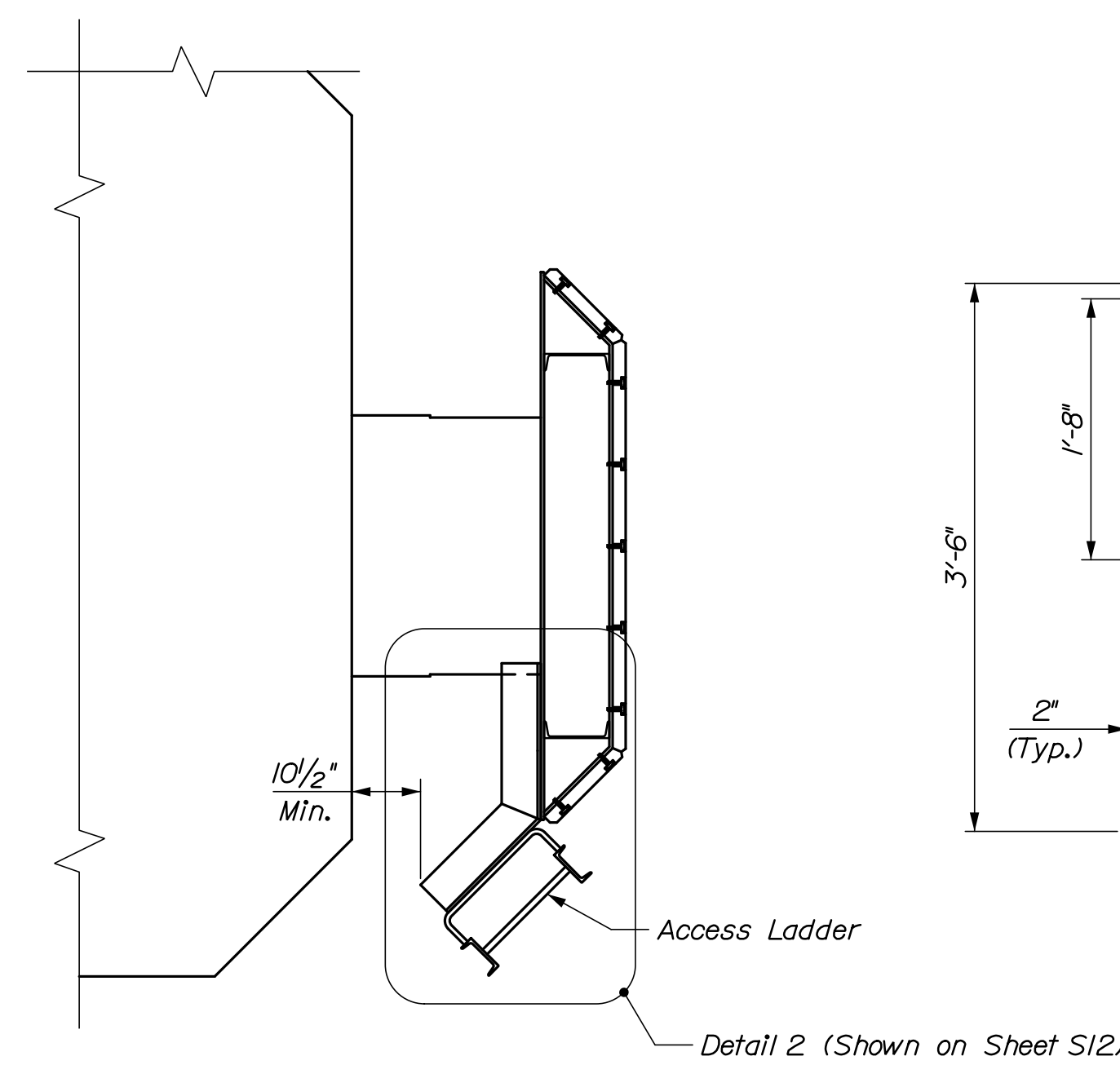
FRONT ELEVATION
(Dolphin D4 shown screened for clarity, D1 similar)



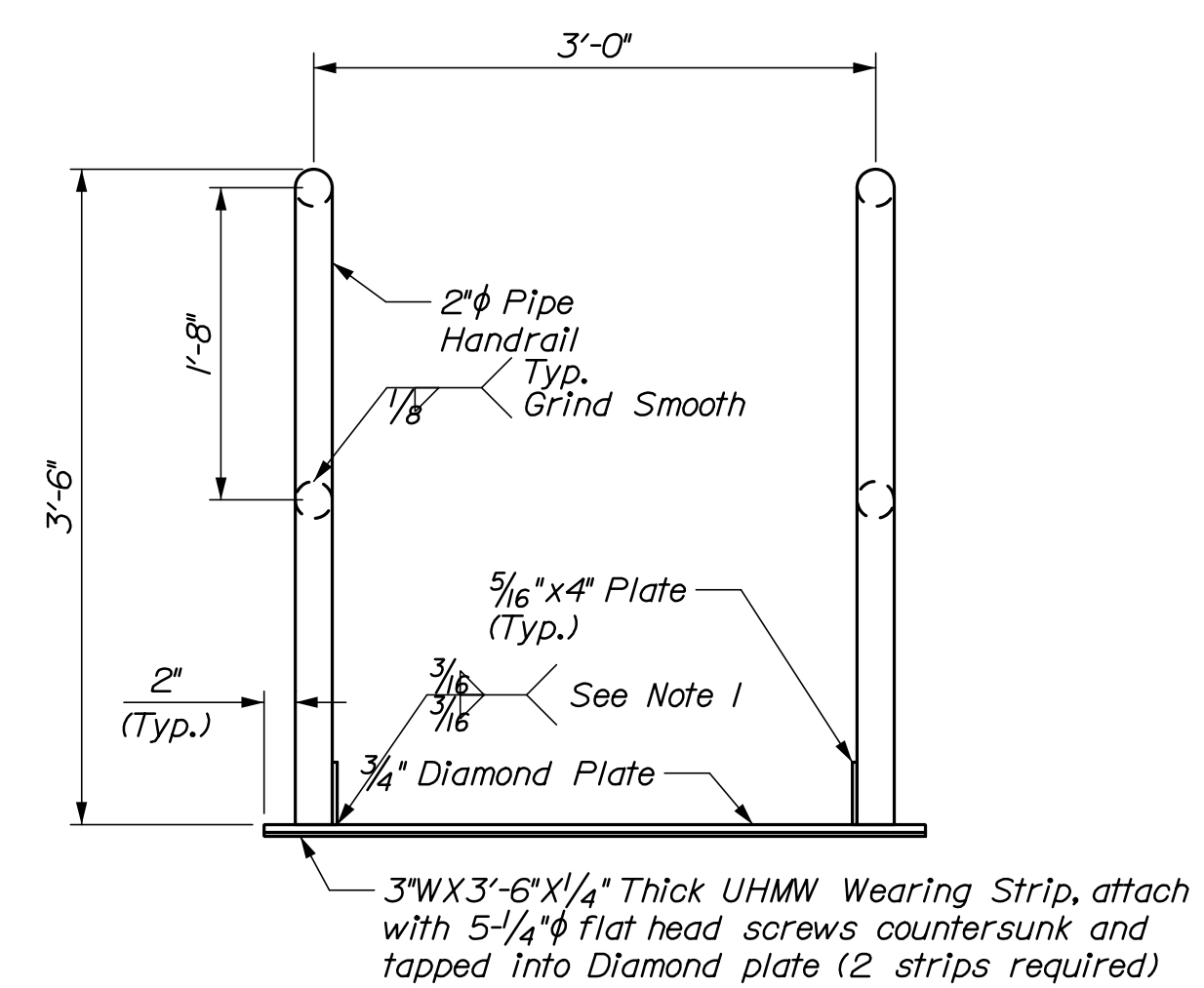
D4 SECTION A-A
1/2" = 1'-0"



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



SECTION B-B
(D4 shown, D1 similar)
1/2" = 1'-0"



SECTION C-C
(D4 shown, D1 similar)
1/2" = 1'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

DATE: 07/20
BY: P. Bishop, C. Morin
DESIGNED: N. Willey, C. Morin
CHECKED: P. Bishop, C. Morin
DESIGNED: N. Willey, C. Morin
REVISIONS: 1, 2, 3, 4
FIELD CHANGES

SIGNATURE: 10209
P.E. NUMBER
DATE

FRENCHBORO
FERRY TERMINAL
DOLPHIN DETAILS
LADDERS II

SHEET NUMBER
S11
16 OF 17



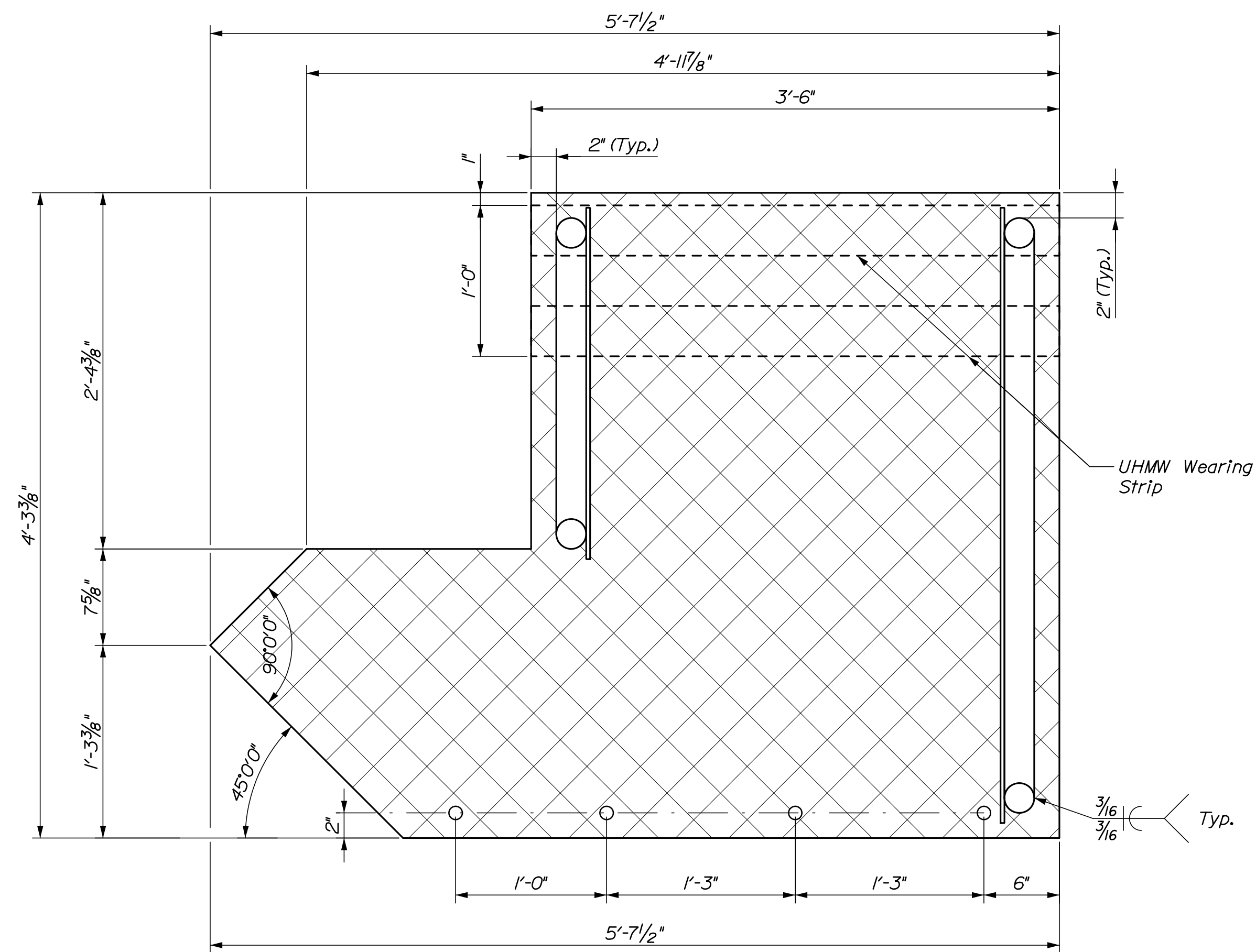
WIN
022202.00

Date: 7/10/2020

Username:

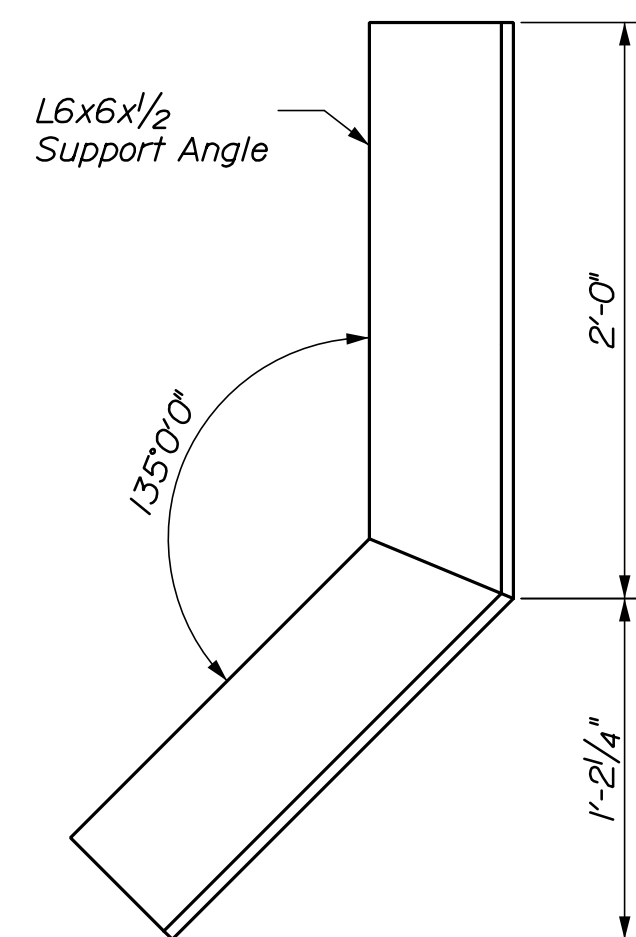
Division:

Filename: 017_Miscellaneous Details IV.dgn



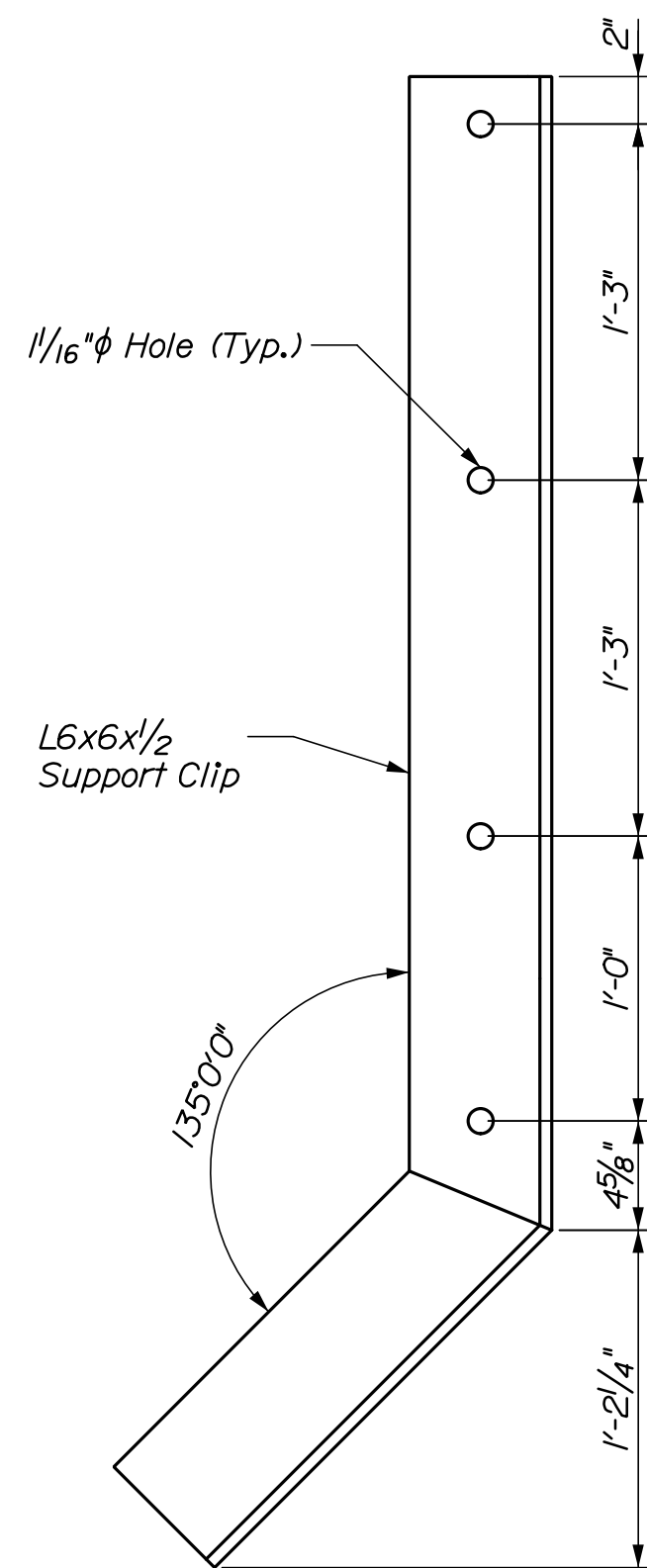
DIAMOND TRANSITION PLATE DETAIL

1/2" = 1'-0"



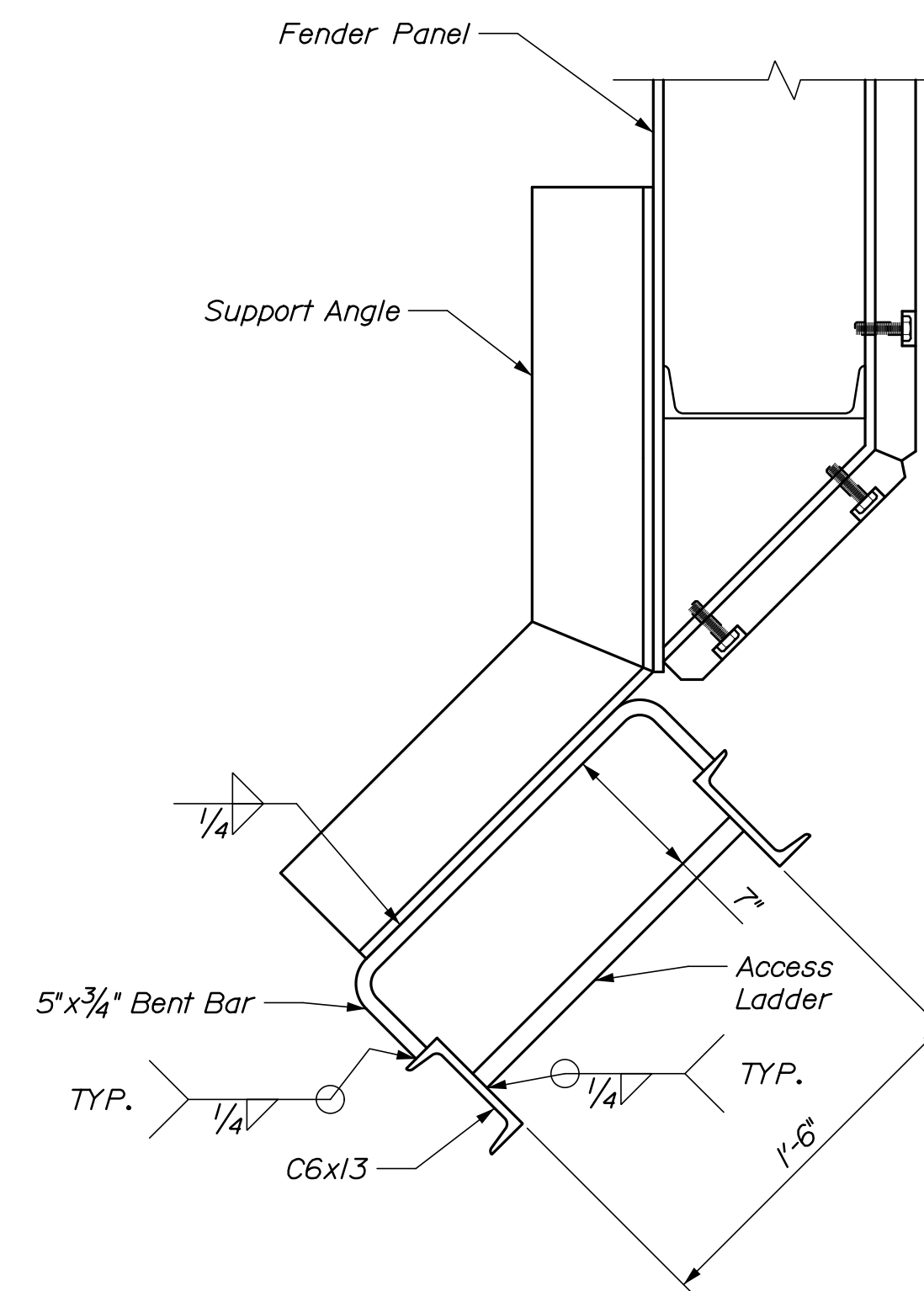
SUPPORT ANGLE DETAIL

1/2" = 1'-0"



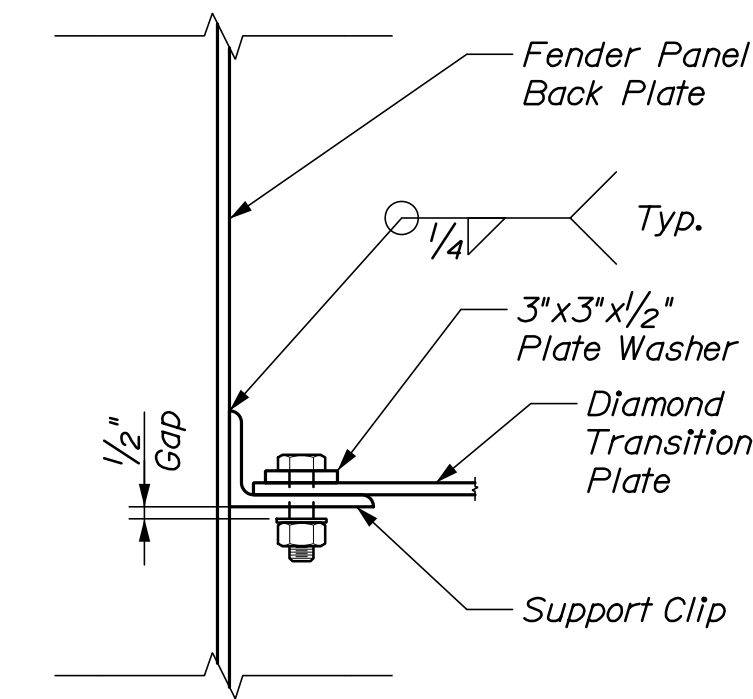
SUPPORT CLIP DETAIL

1/2" = 1'-0"



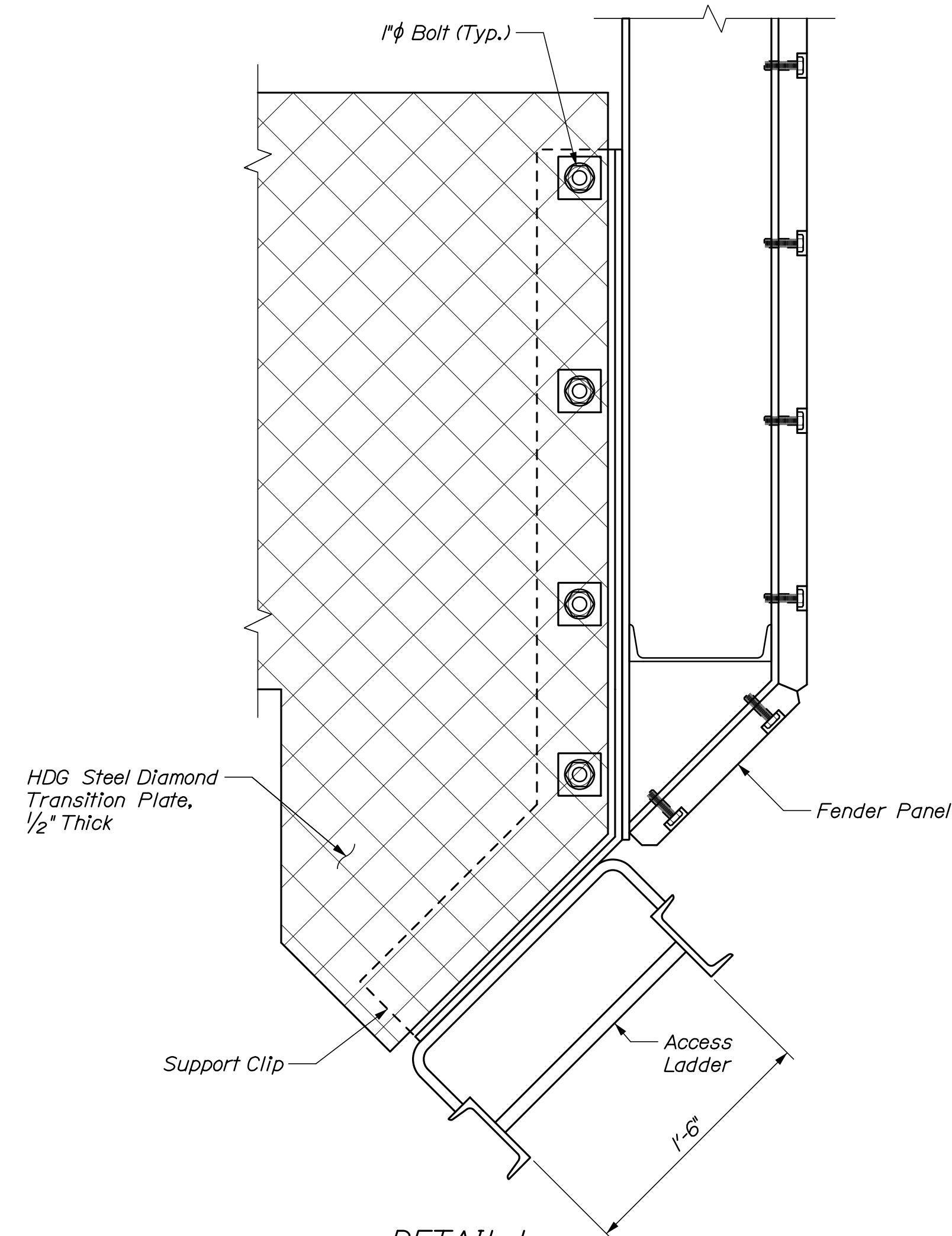
DETAIL 2

1/2" = 1'-0"



SUPPORT CLIP ATTACHMENT DETAIL

1/2" = 1'-0"



DETAIL 1

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

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



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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

BY
P. Bishop
C. Morin

DATE
07/20
07/20

SIGNATURE
10209

P.E. NUMBER
DATE

FRENCHBORO
FERRY TERMINAL

DOLPHIN DETAILS
LADDERS III

SHEET NUMBER
S12
17 OF 17

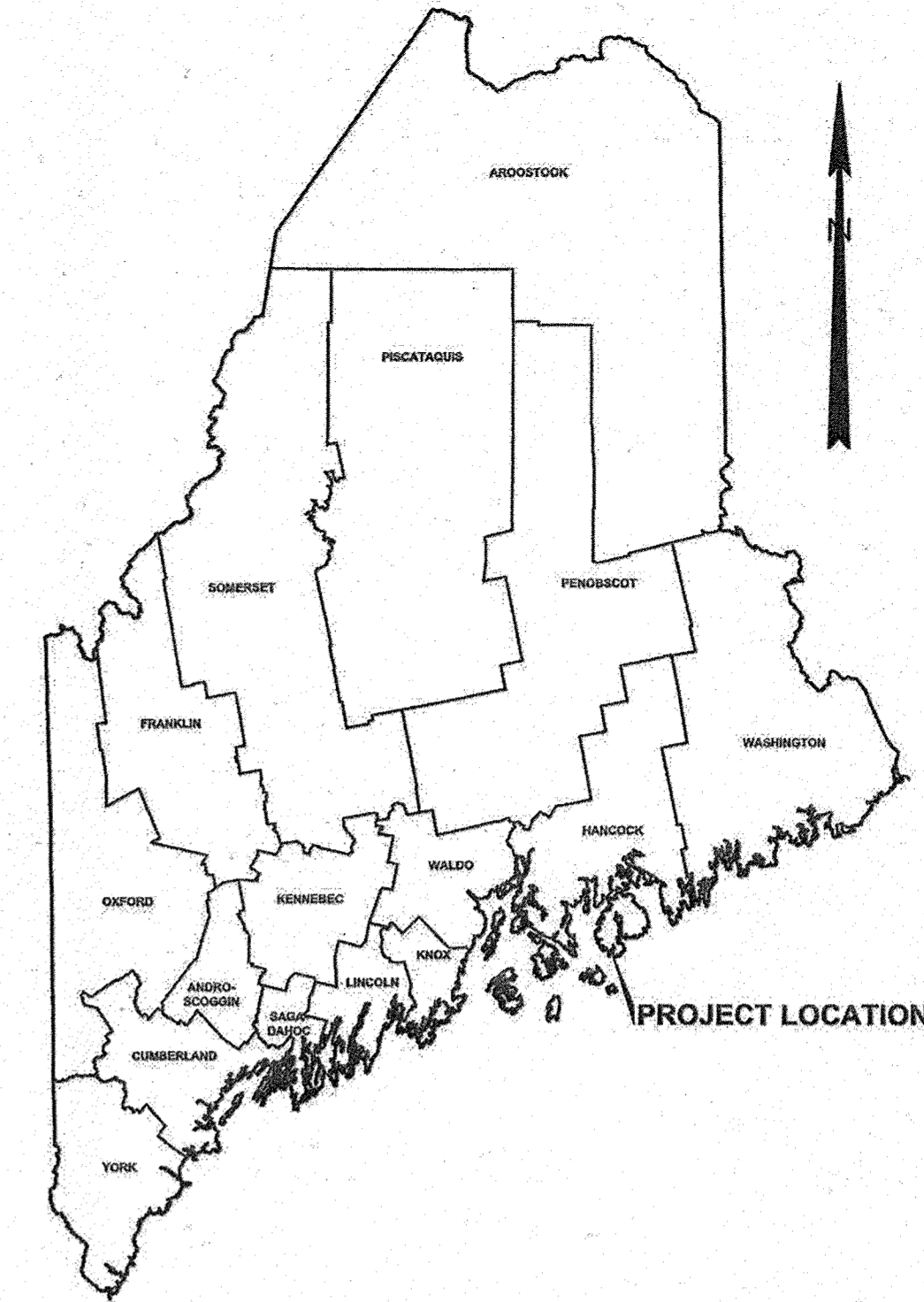
WIN
022202.00

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

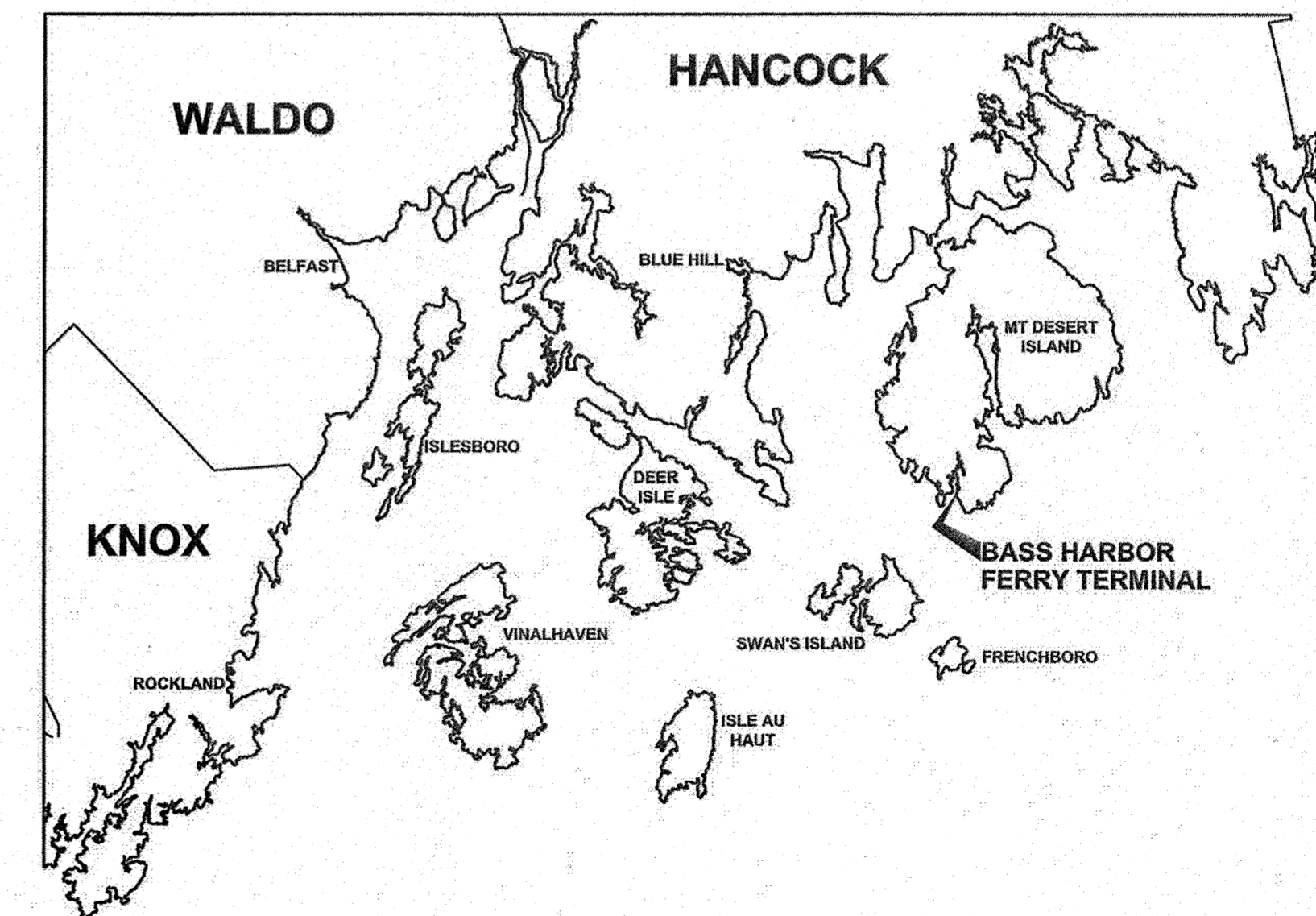
E01	17	ELECTRICAL PLAN
E02	18	ELECTRICAL DETAILS

THE PROFESSIONAL ENGINEER WHOSE STAMP APPEARS ON THIS COVER SHEET BEARS RESPONSIBILITY FOR THE FOLLOWING SHEETS WITHIN THIS DRAWING SET:

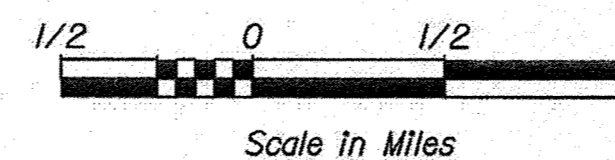
GENERAL PLANS	G01-G03
STRUCTURAL PLANS	S01-S12

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

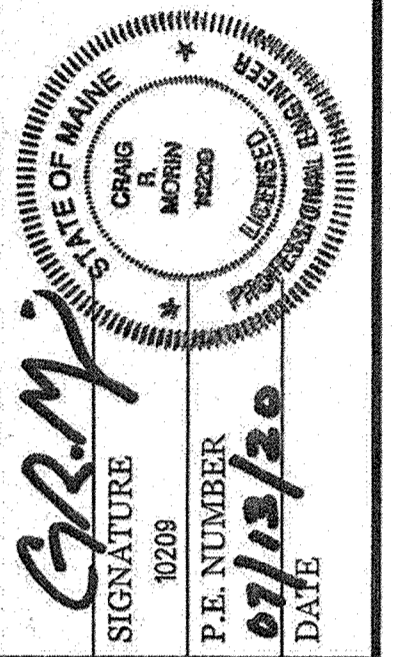
GENERAL PLANS	G04	GEOTECHNICAL BORING LOGS	SCHONEWALD ENGINEERING
ELECTRICAL PLANS	E01-E02	ELECTRICAL DESIGN	BARTLETT DESIGN, INC.



LOCATION MAP



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	DATE 7/24/20
APPROVED	COMMISSIONER: [Signature]
	CHIEF ENGINEER: [Signature]



PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	AURELLE CORNEAU II
DESIGNER	CRAG R. MORIN, P.E.
CONSULTANT	HNTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

BASS HARBOR FERRY TERMINAL FENDER SYSTEM MODIFICATIONS	HANCOCK COUNTY
BASS HARBOR	TITLE SHEET

SHEET NUMBER
G01
1 OF 18



FEDERAL PROJECT NO. 02347600
WIN 023476.00

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

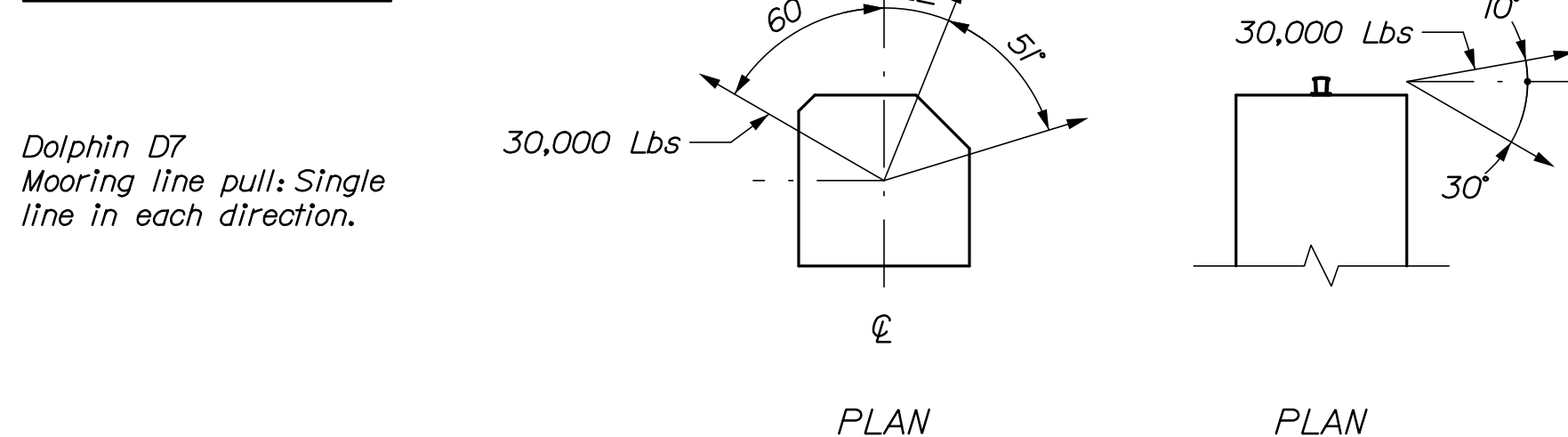
SURVEY CONTROL

- 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

Table with 6 columns: Dolphin, Berthing Velocity (Ship Velocity, to Fender), App. Angle, Energy to Fender, Minimum Fender Design Energy, Max. Reaction on Dolphin. Rows include Turning Dolphins: Normal, Turning Dolphins: Extreme, and a note: * Includes 1.4 load factor

MOORING LOADS



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" dia, 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 = 80F
2. Railings: Aluminum Pedestrian Vertical 50 plf, Horizontal 50 plf (acting simultaneously)
3. Tidal ranges (elevations in feet):

Table titled 'Bass Harbor Tidal Datums' with columns for NGVD29, MSL, MLW, MLLW, and STND. Rows include Top of Dolphin, Highest Observed Tide, MHHW, MHW, NGVD29**, MSL, MLW, MLLW, Lowest Observed Tide, and STND (Station Datum).

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

LEGEND:

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

ABBREVIATIONS:

- CY Cubic Yard
EA Each
EL Elevation In Feet
HSS Hollow Structural Sections
ID Inside Diameter
K (KIP) 1000 Pounds
LBS Pounds
LF Linear Feet
MAX. Maximum
MIN. Minimum
NA Not Applicable
N.T.S. Not To Scale
OC On Center
PSF Pounds Per Square Foot
R Radius
REF Reference
SCHED. 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 psf
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

DATE: 07/20
BY: P. Bishop, C. Morin
SIGNATURE: 10209
P.E. NUMBER:
DATE:

PROJ. MANAGER: N. Willey, C. Morin
DESIGN-DETAILED:
CHECKED-REVIEWED:
DESIGN-DETAILED:
REVISIONS: 1, 2, 3, 4
FIELD CHANGES:

BASS HARBOR FERRY TERMINAL
GENERAL NOTES AND DESIGN CRITERIA

SHEET NUMBER

G02

2 OF 18



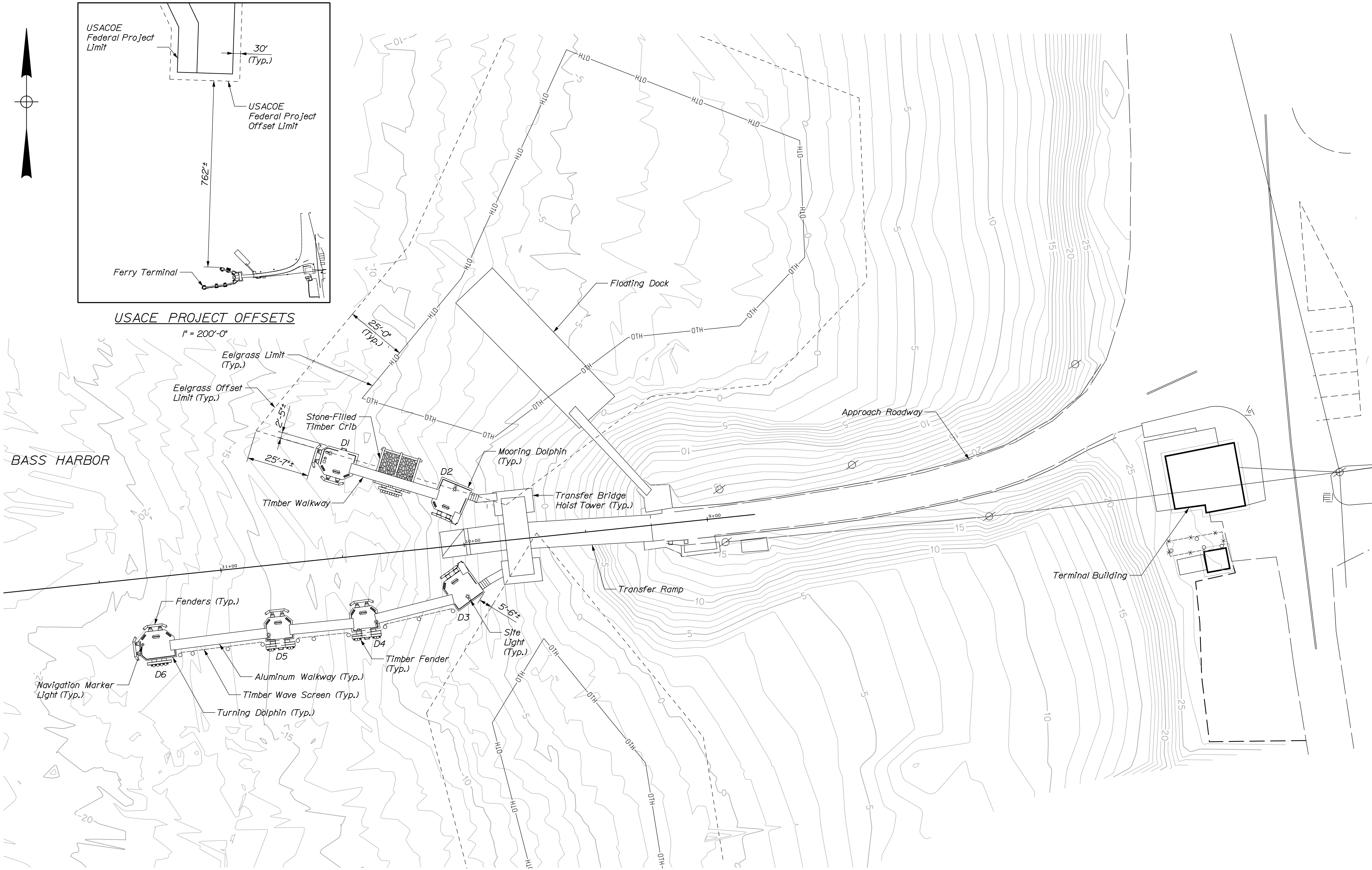
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Date: 7/13/2020

Username:

Division:

Filename: 003_Existing Conditions.dgn

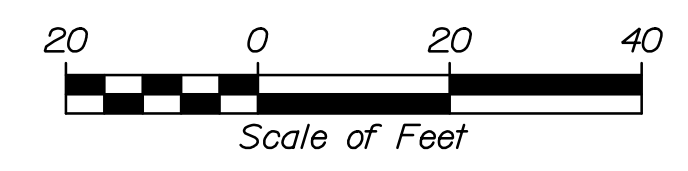


USACE PROJECT OFFSETS

1" = 200'-0"

SITE PLAN

1" = 20'-0"



NOTES:

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



STATE OF MAINE
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PROJ. MANAGER	DATE
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CHECKED-REVIEWED	07/20
DESIGN-DETAILED	SIGNATURE
REVISIONS 1	10209
REVISIONS 2	P.E. NUMBER
REVISIONS 3	DATE
REVISIONS 4	
FIELD CHANGES	

BY	DATE
P. Bishop	07/20
C. Morin	

BASS HARBOR
FERRY TERMINAL

EXISTING CONDITIONS

SHEET NUMBER

G03

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WIN
023476.00

DOLPHIN COORDINATES

EXISTING D1		
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

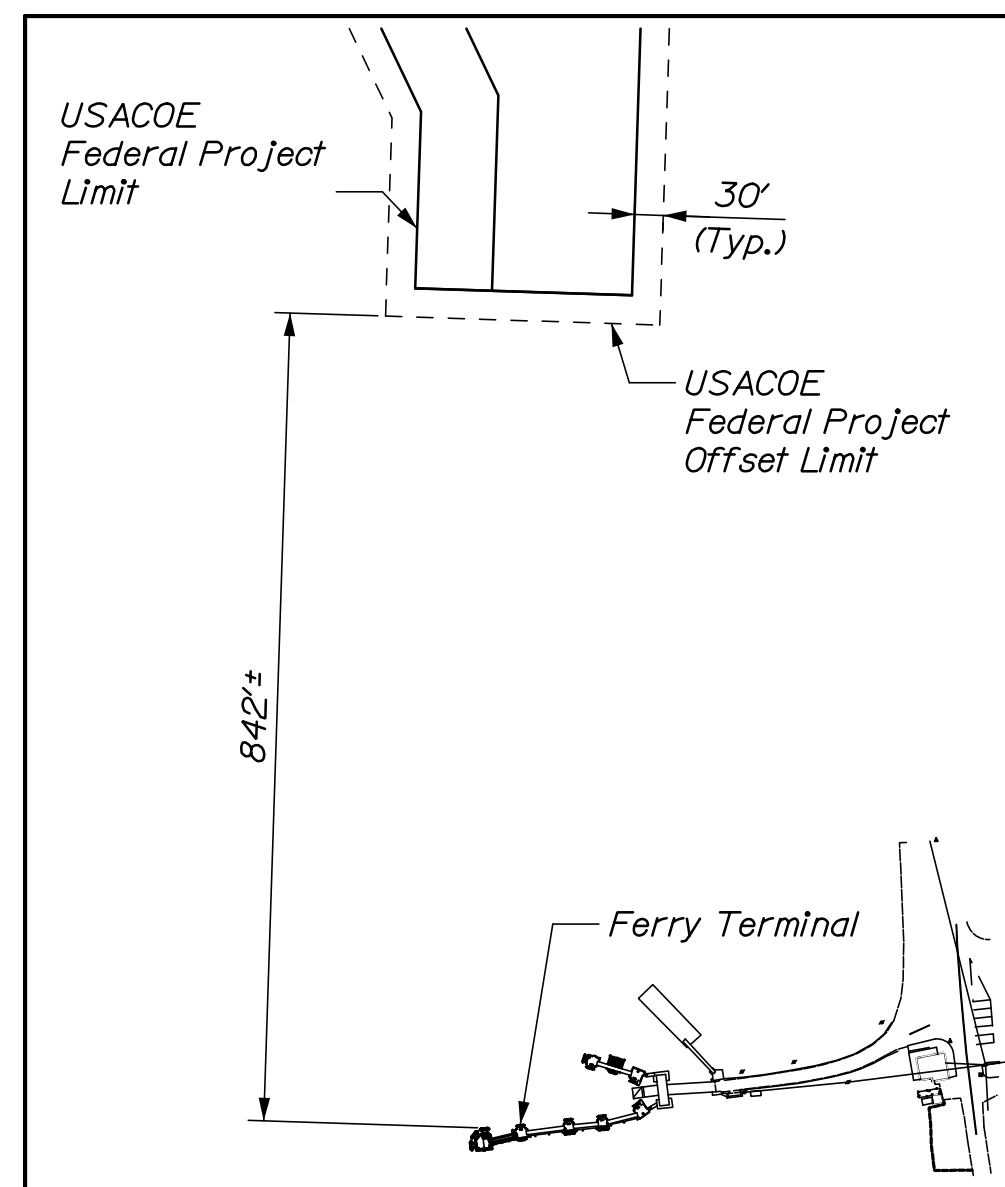
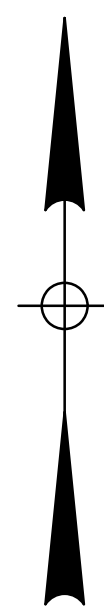
EXISTING D3		
LOCATION	NORTHING	EASTING
A	207129.11	1023915.84
B	207118.50	1023923.39
C	207110.74	1023912.78
D	207121.52	1023905.10

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

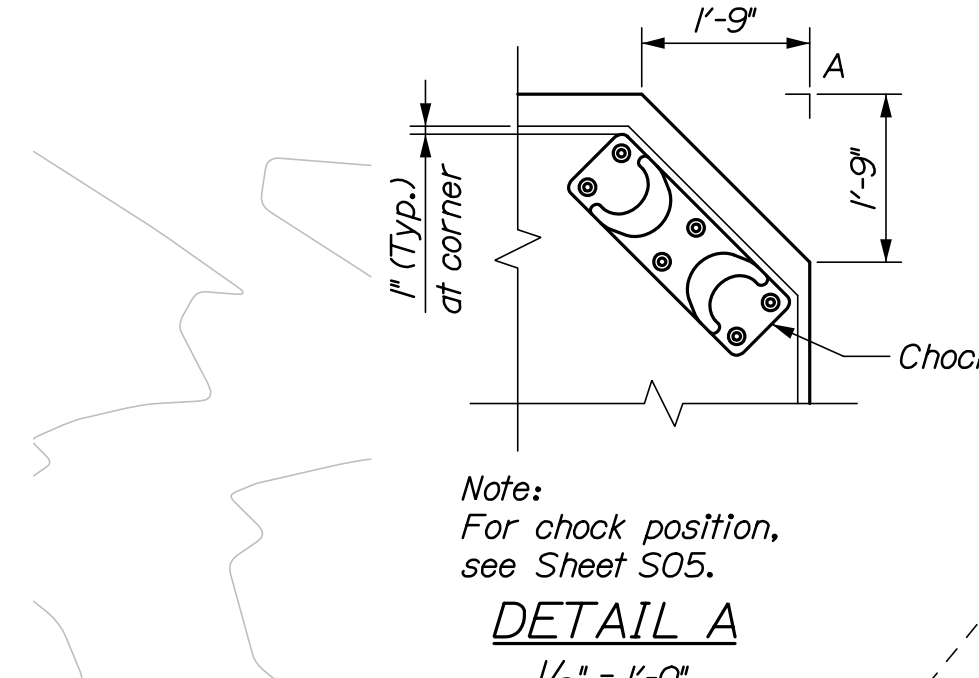
EXISTING D5		
LOCATION	NORTHING	EASTING
A	207109.10	1023844.55
B	207099.57	1023845.44
C	207098.35	1023834.01
D	207107.88	1023832.93

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

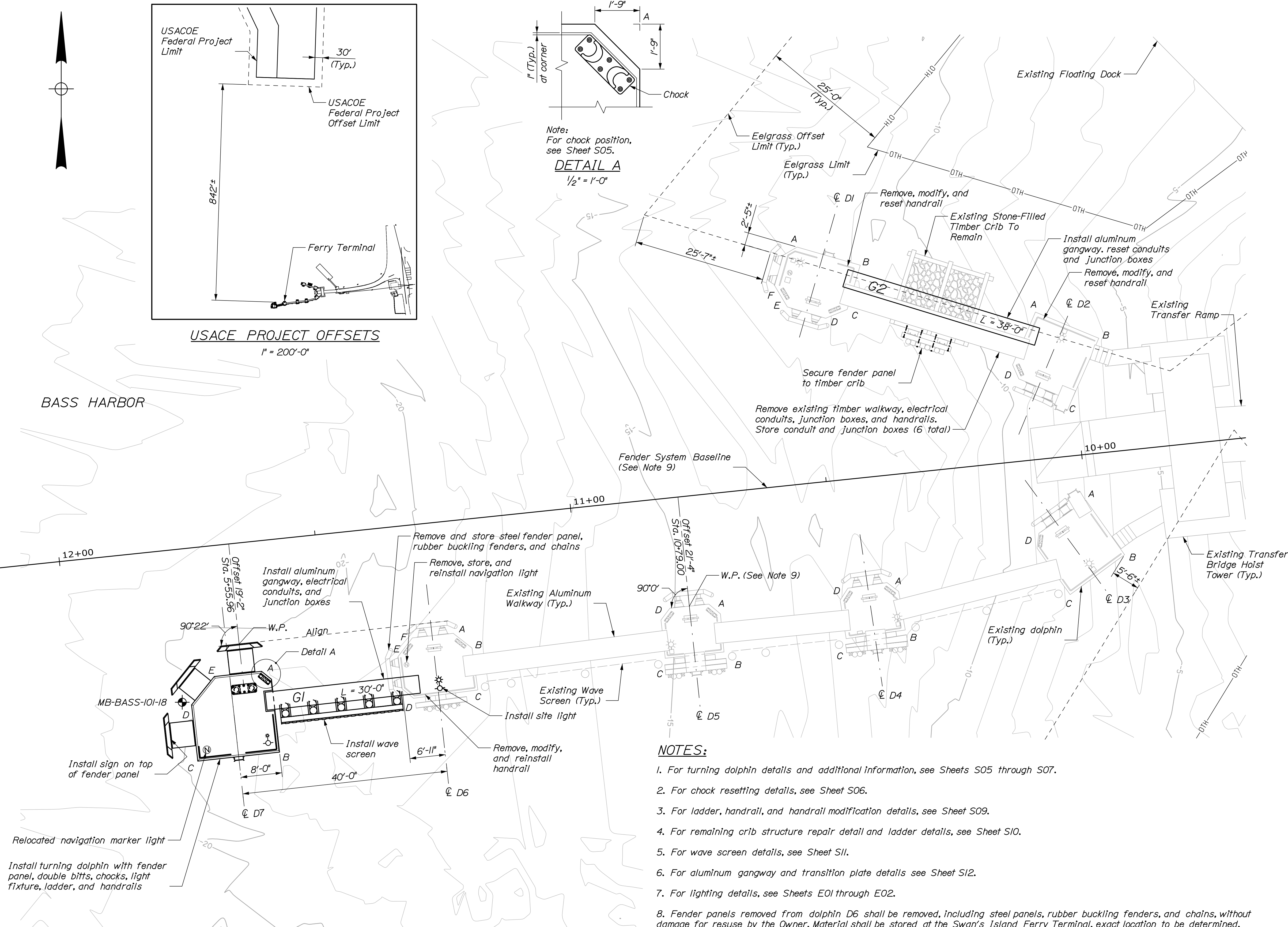


USACE PROJECT OFFSETS
1" = 200'-0"



Note:
For chock position,
see Sheet S05.

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



- NOTES:**
- For turning dolphin details and additional information, see Sheets S05 through S07.
 - For chock resetting details, see Sheet S06.
 - For ladder, handrail, and handrail modification details, see Sheet S09.
 - For remaining crib structure repair detail and ladder details, see Sheet S10.
 - For wave screen details, see Sheet S11.
 - For aluminum gangway and transition plate details see Sheet S12.
 - For lighting details, see Sheets E01 through E02.
 - Fender panels removed from dolphin D6 shall be removed, including steel panels, rubber buckling fenders, and chains, without damage for reuse 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.
 - 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).
 - 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.
 - Eelgrass limits are approximate boundaries, based on a June 27, 2019 dive survey by MaineDOT.

SITE PLAN

1" = 10'-0"



Date: 7/13/2020

Username:

Division:

Filename: 005_Site Plan.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PROJ. MANAGER: N. Willey
DESIGN-DETAILED: C. Morr
CHECKED-REVIEWED: C. Morr
DESIGNS-DETAILED: C. Morr
REVISIONS: 1, 2, 3, 4
FIELD CHANGES

BY: P. Bishop, C. Morr
DATE: 07/20, 07/20
SIGNATURE: 10209
P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL
SITE PLAN

SHEET NUMBER

S01

5 OF 18

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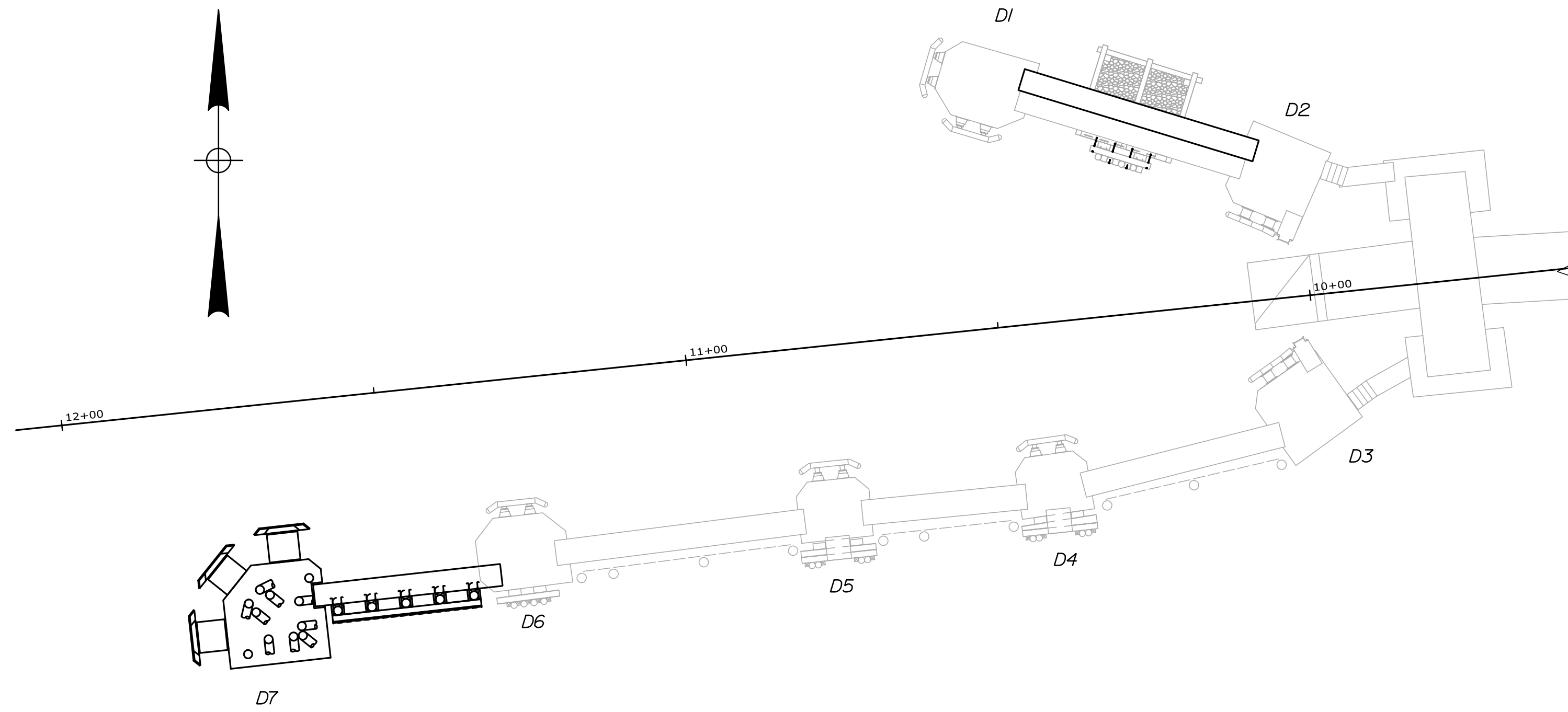


Date: 7/13/2020

Username:

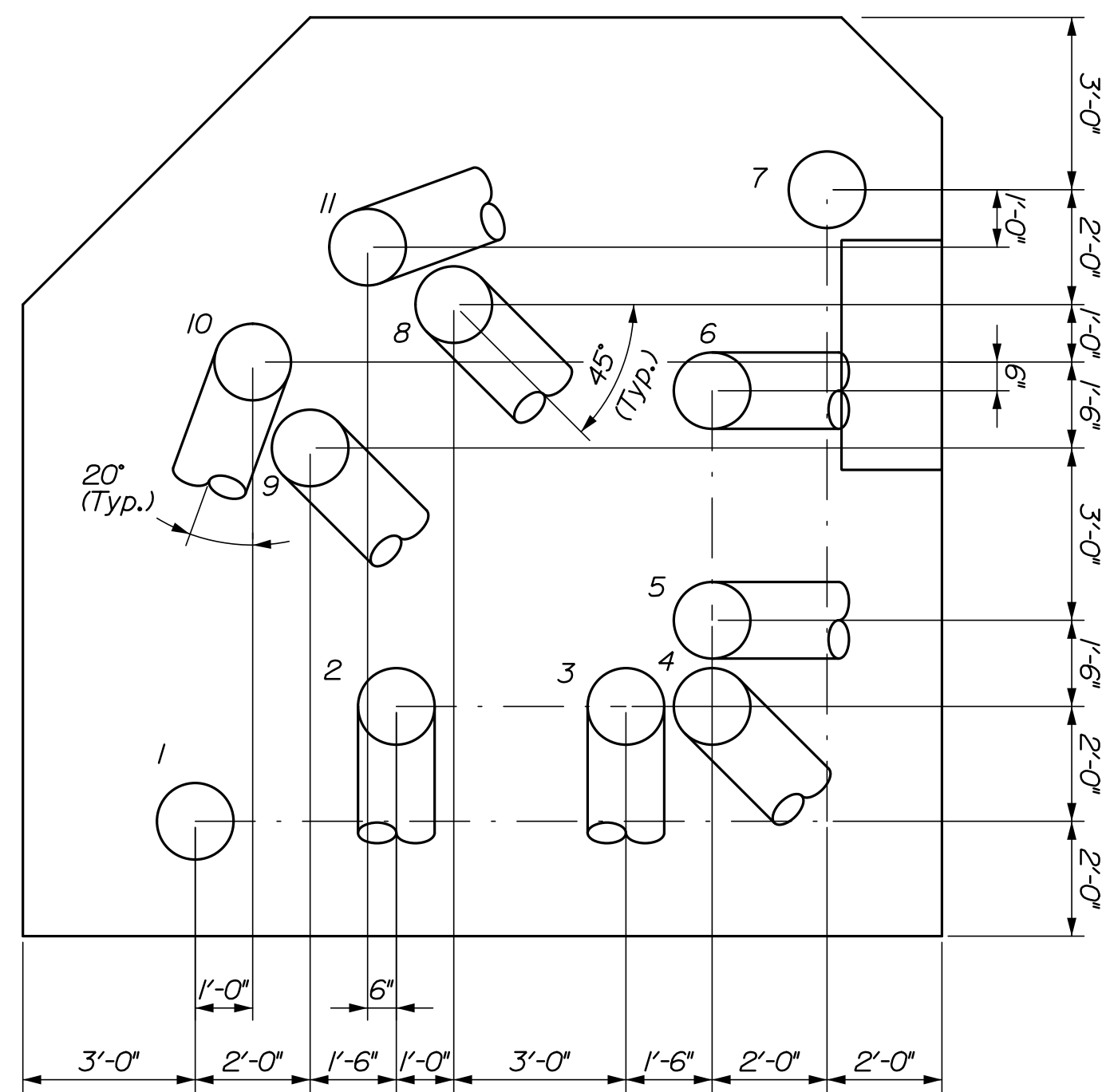
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PLAN

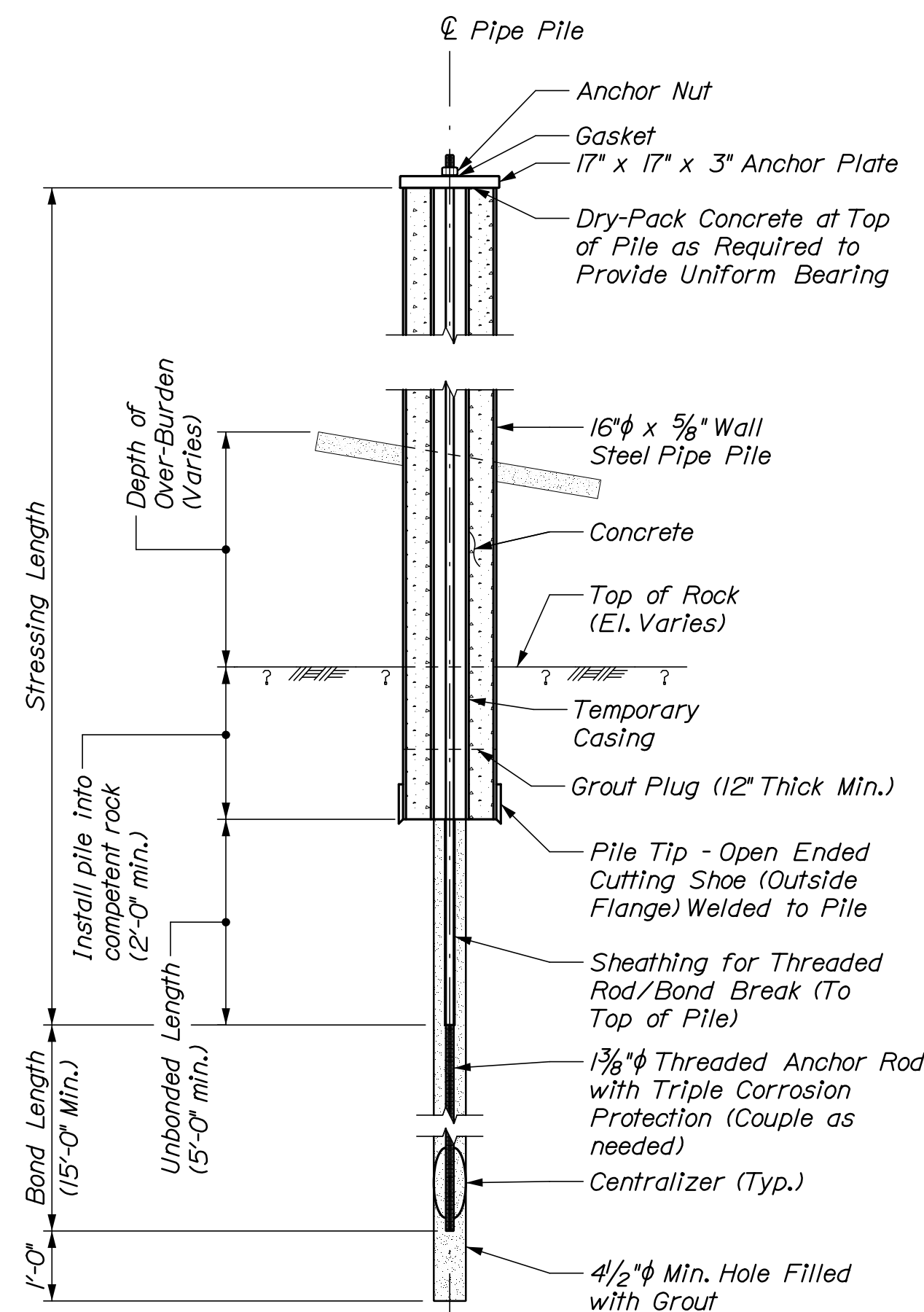
1/16" = 1'-0"



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

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

BY
P. Bishop
C. Morin

DATE
07/20
07/20

SIGNATURE
10209

P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL

DOLPHIN
FOUNDATION PLAN

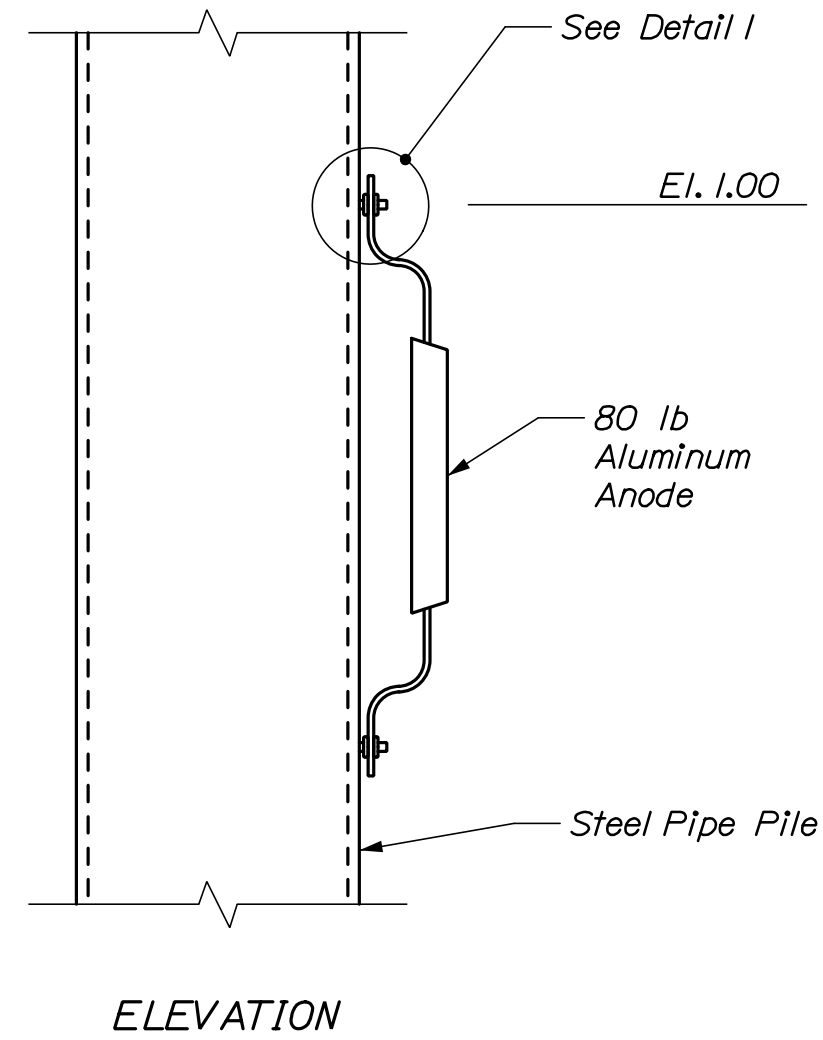
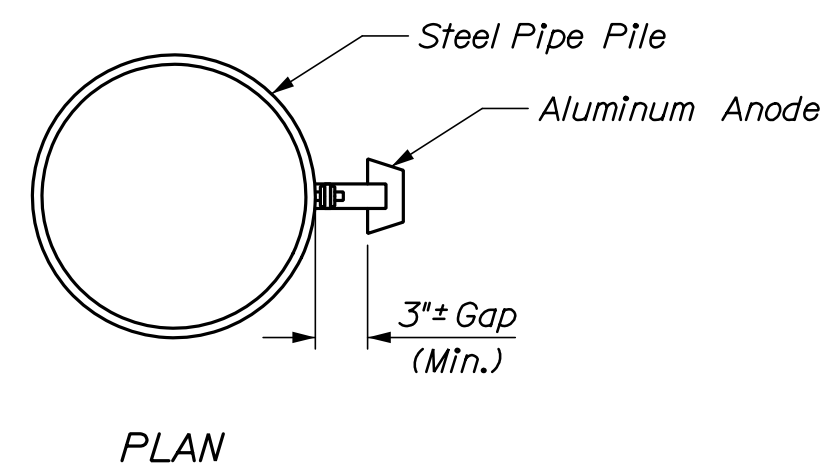
SHEET NUMBER

S03

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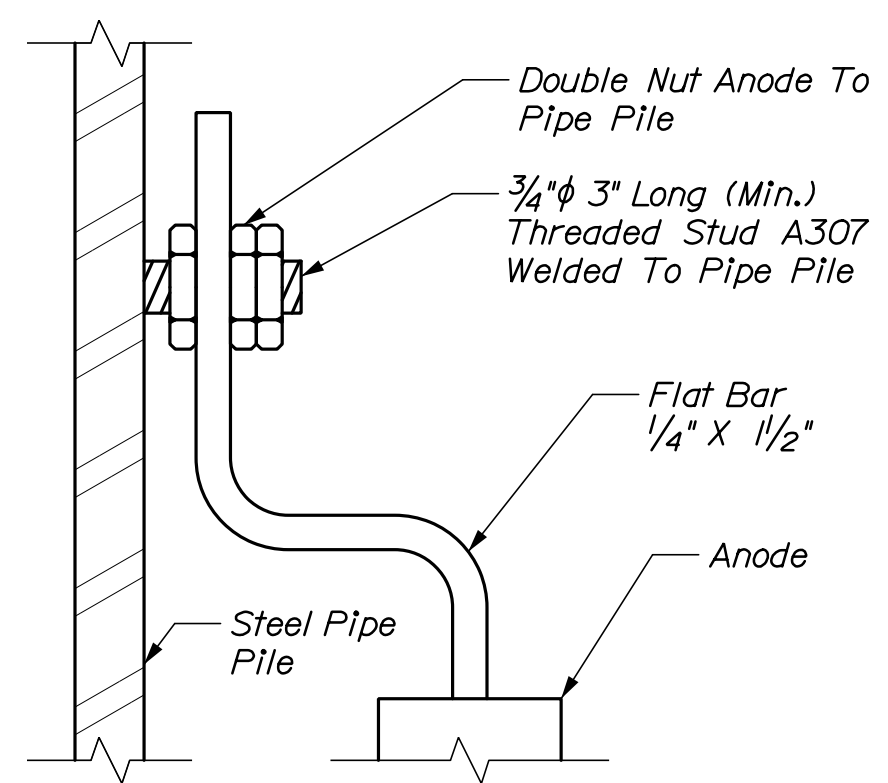


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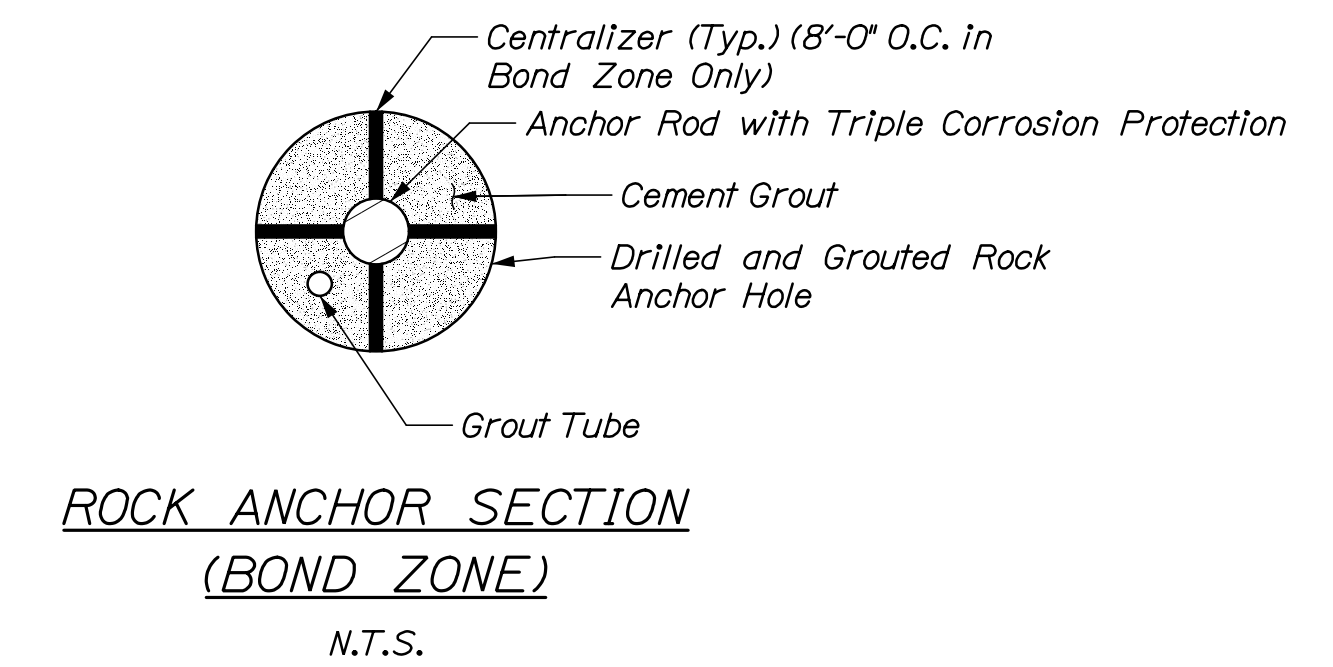
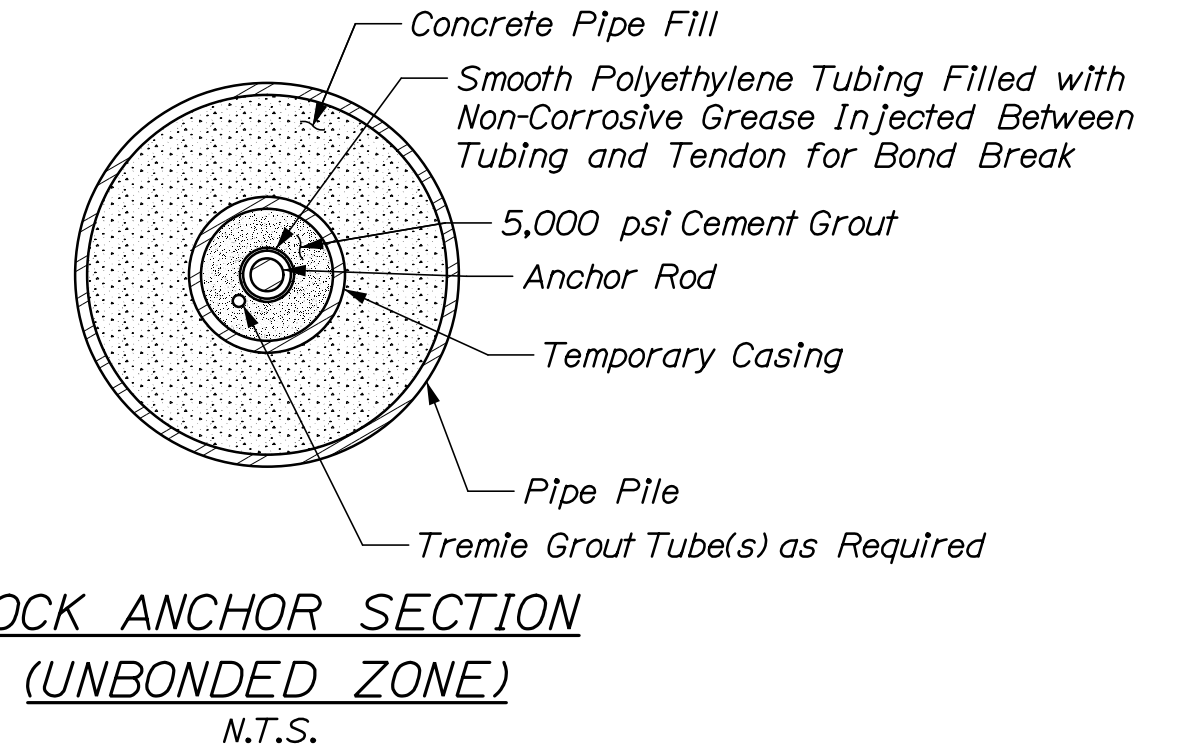
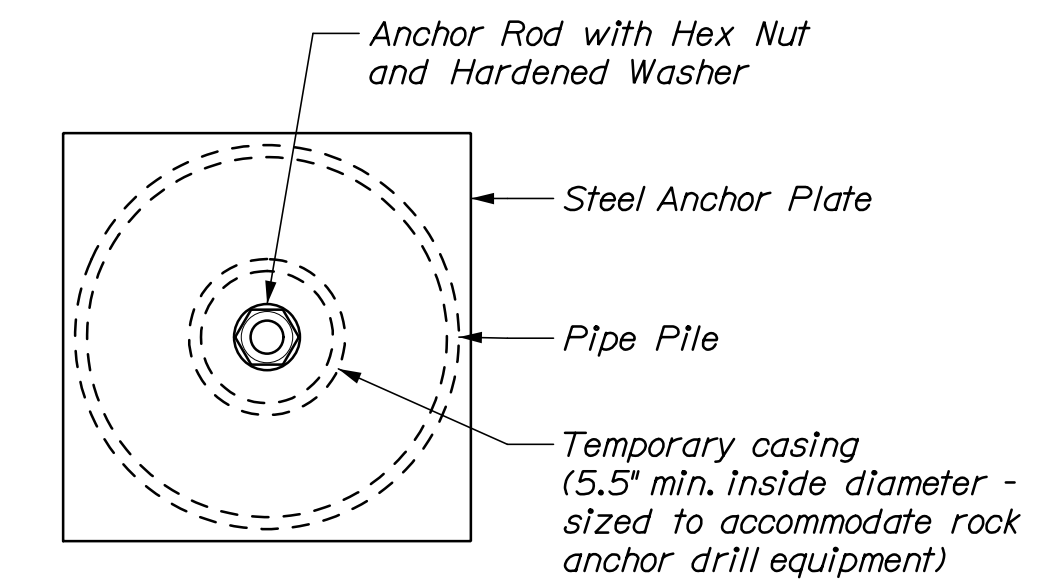


Note: Anode shall be positioned along the inshore face of piles.

ANODE DETAIL
N.T.S.



Note: Studs and hardware shall be A307.
N.T.S.



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

PROJ. MANAGER	BY	DATE	SIGNATURE
DESIGN-DETAILED	N. Willey	07/20	
CHECKED-REVIEWED	P. Bishop	07/20	
DESIGN-DETAILED	C. Morin		
REVISIONS 1			10209
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BASS HARBOR
FERRY TERMINAL
DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER

S04

8 OF 18

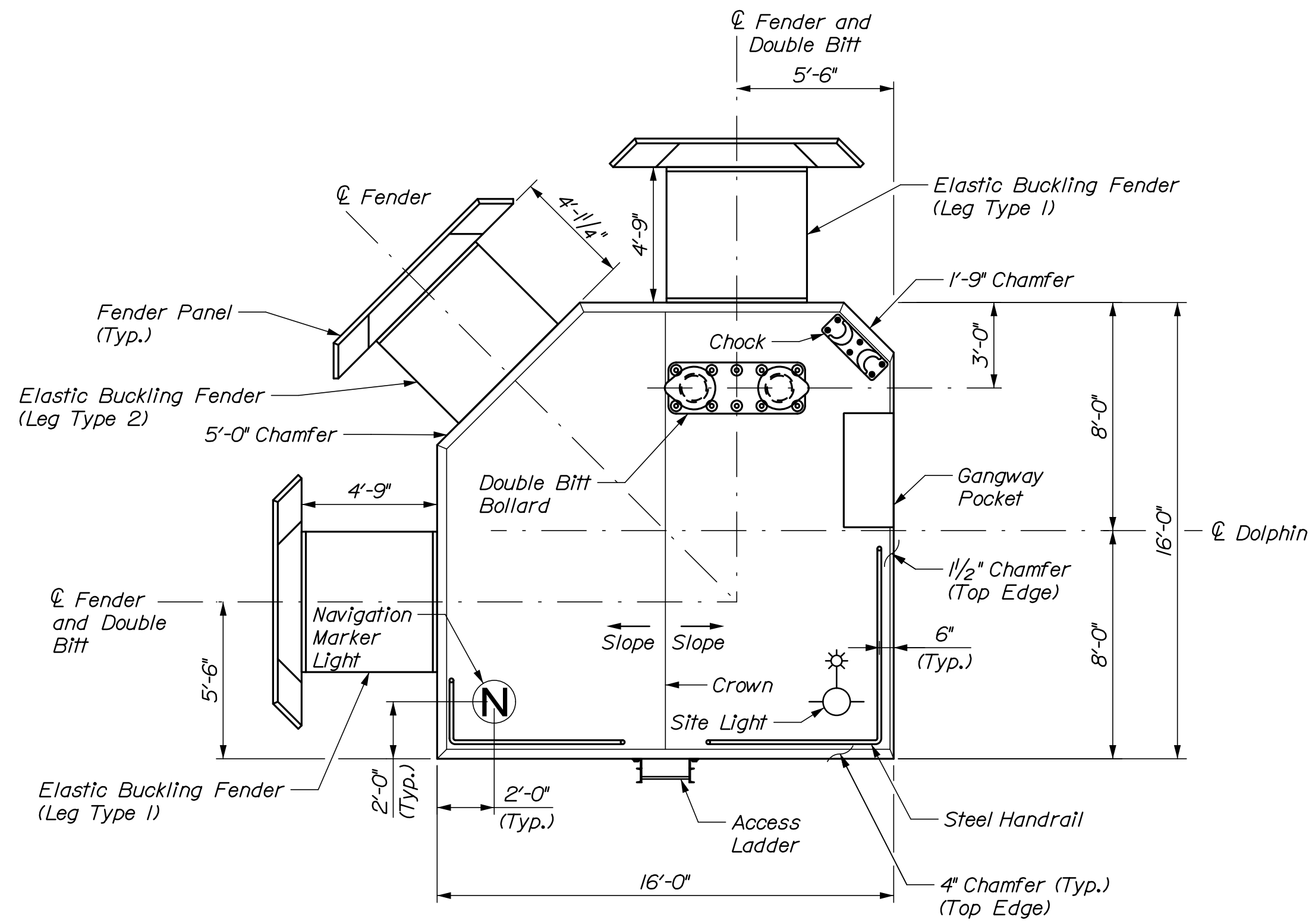
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Date: 7/13/2020

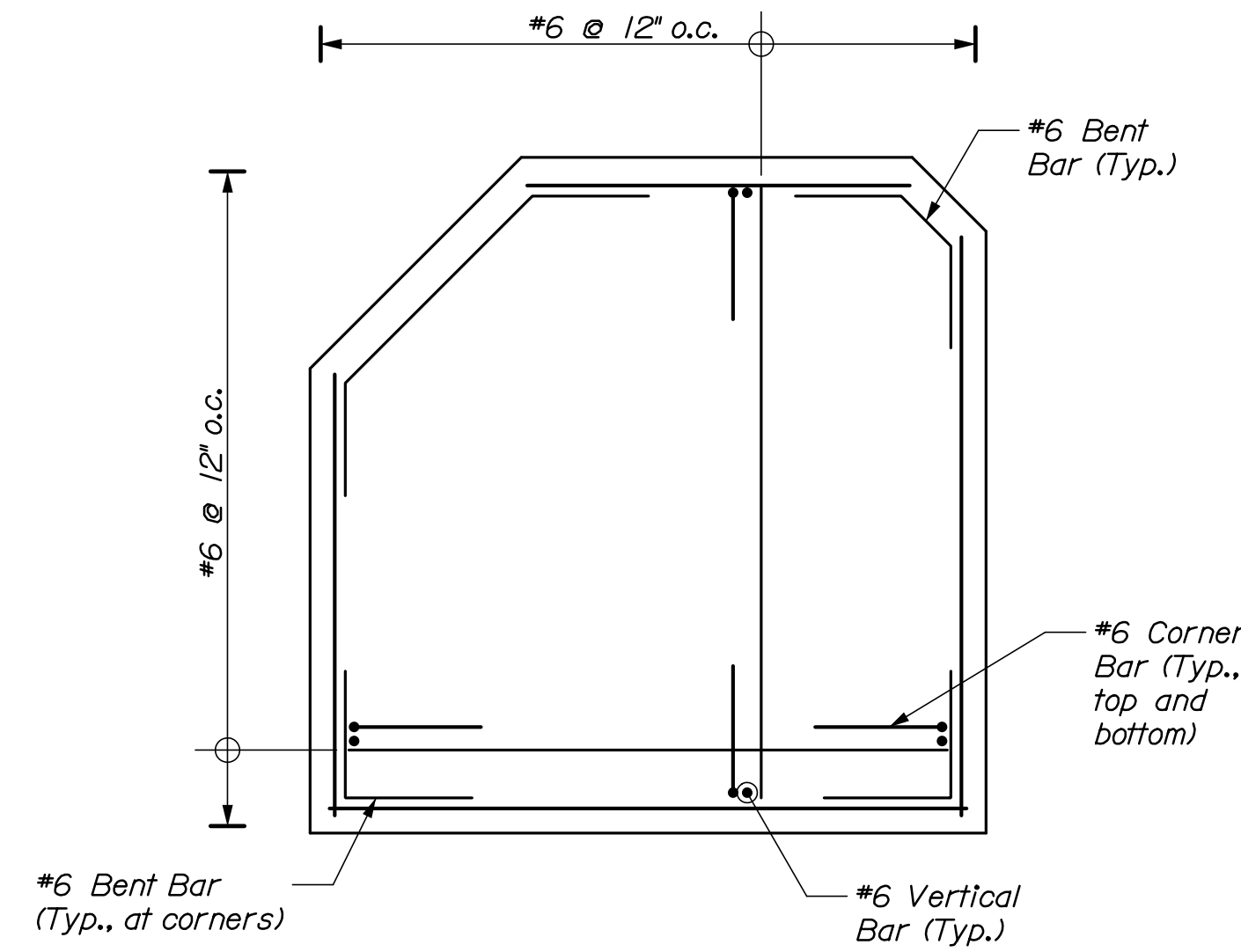
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Division:

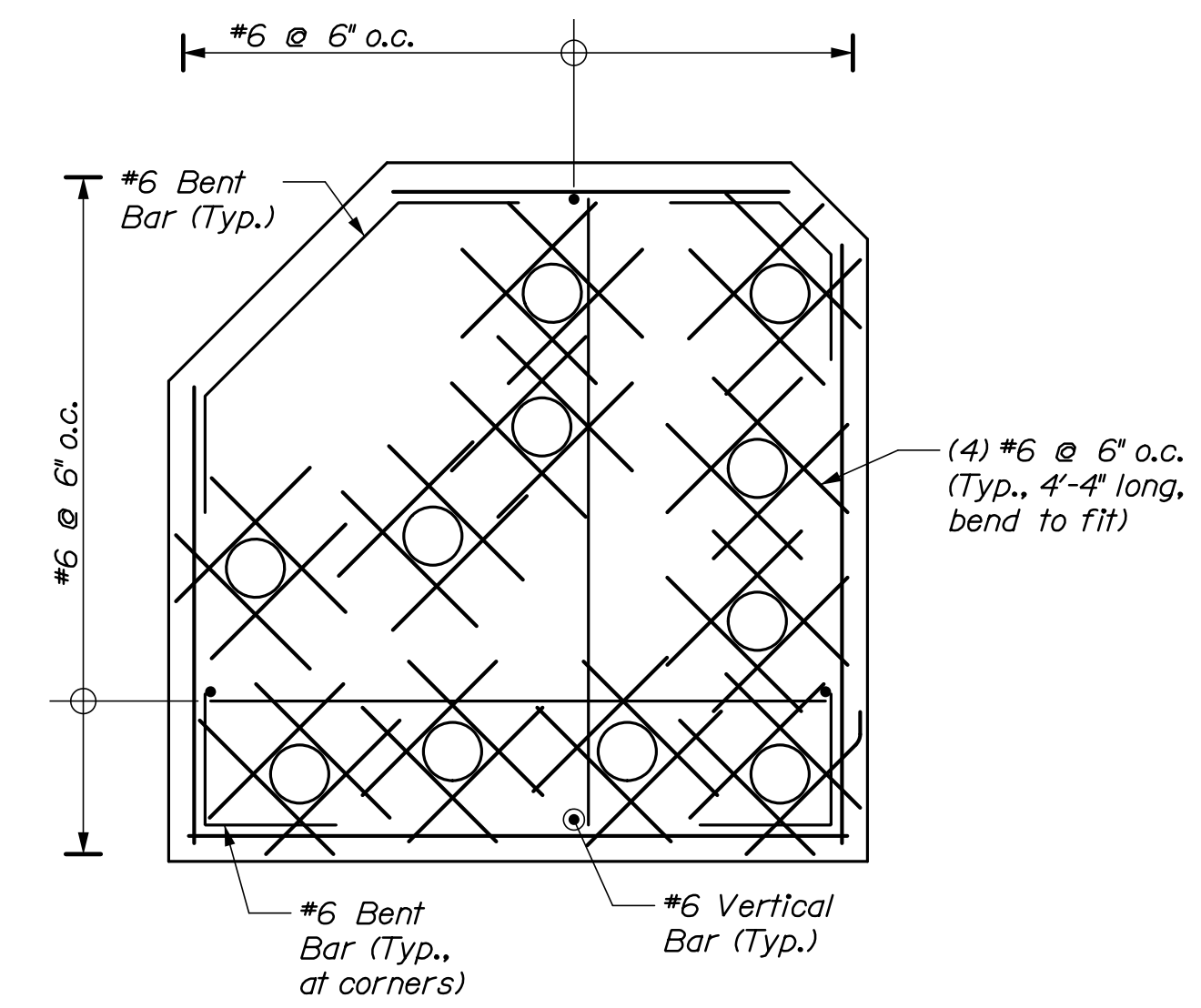
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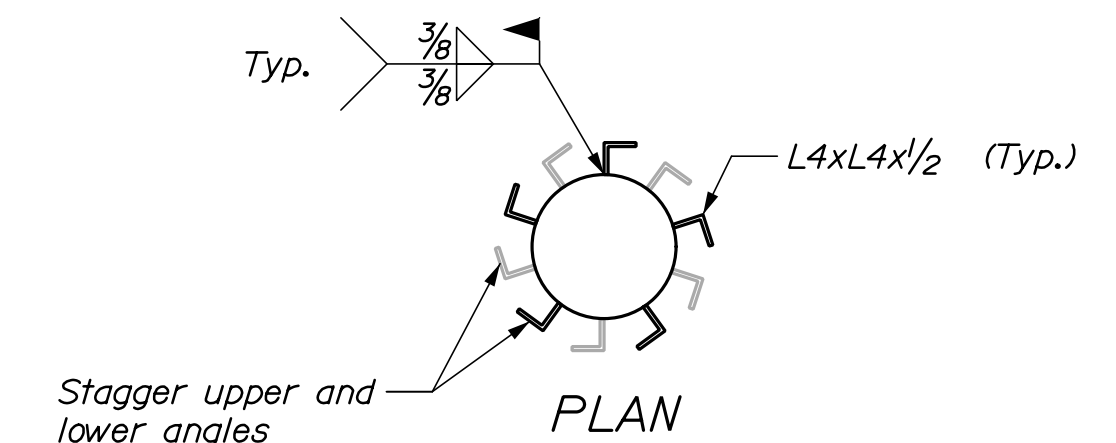
**TURNING DOLPHIN
PLAN**
1/4" = 1'-0"



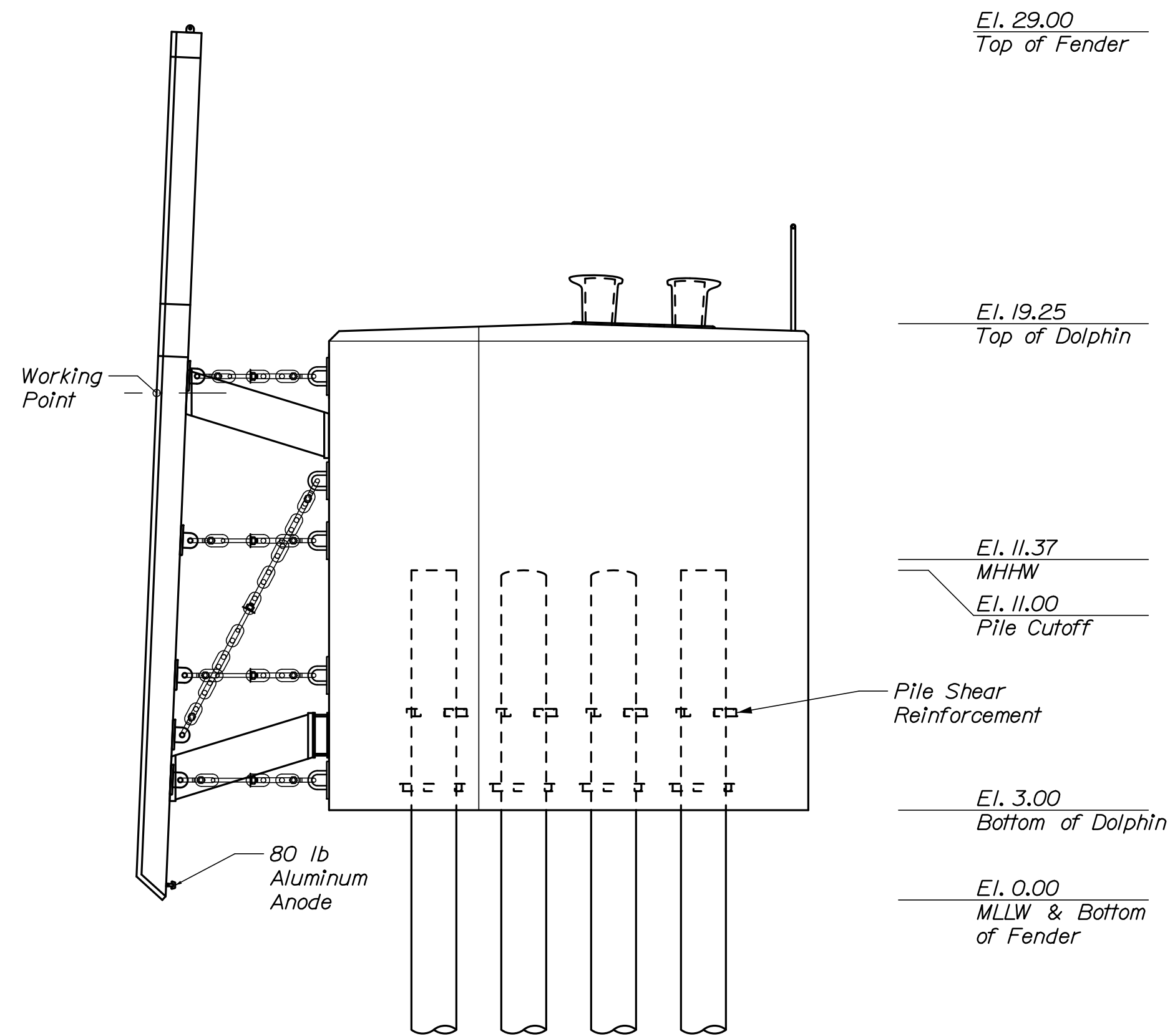
SECTION A-A
(Same as shown for El. 9.50 - 11.00, but with pile cutouts)
1/4" = 1'-0"



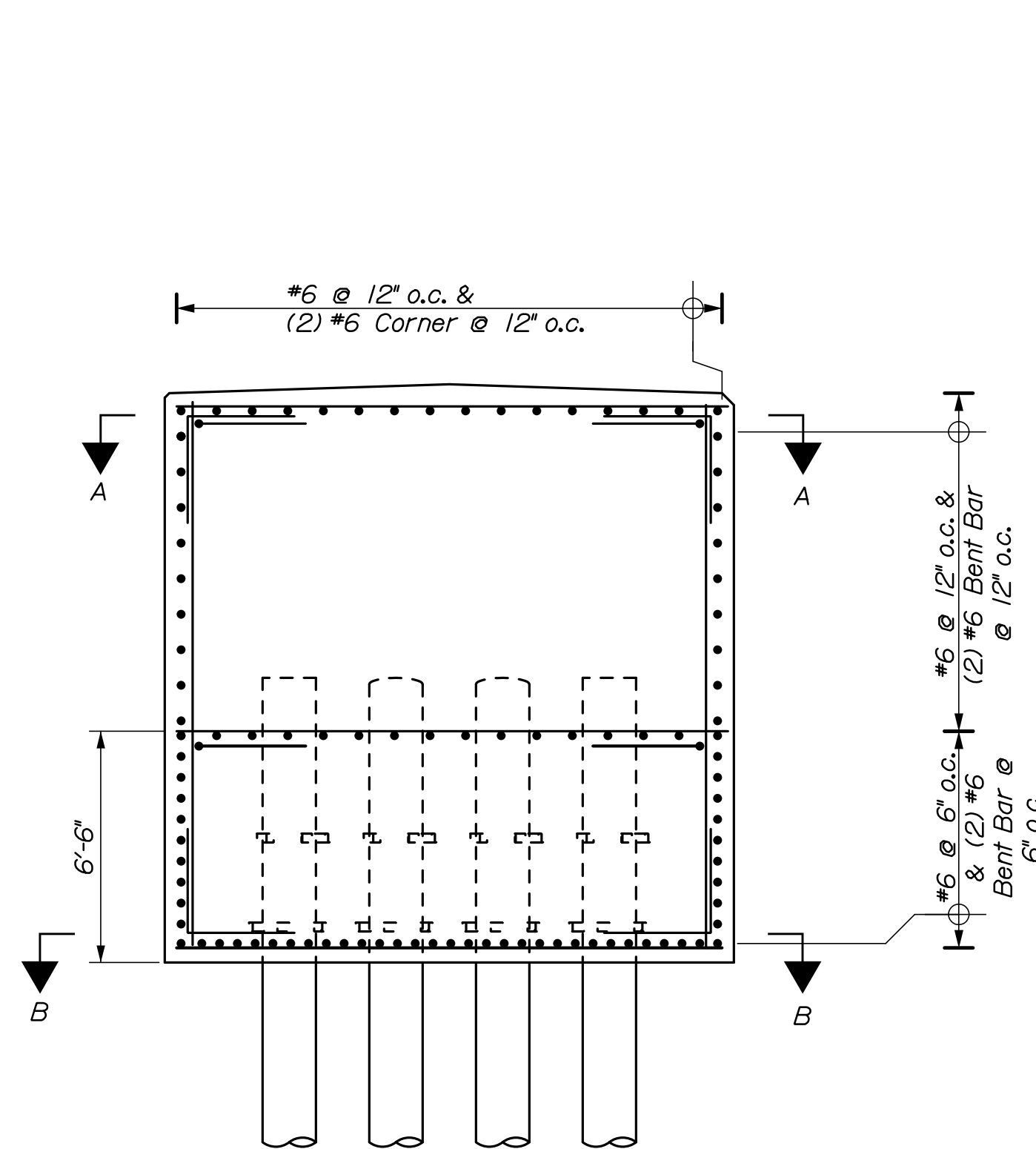
SECTION B-B
1/4" = 1'-0"



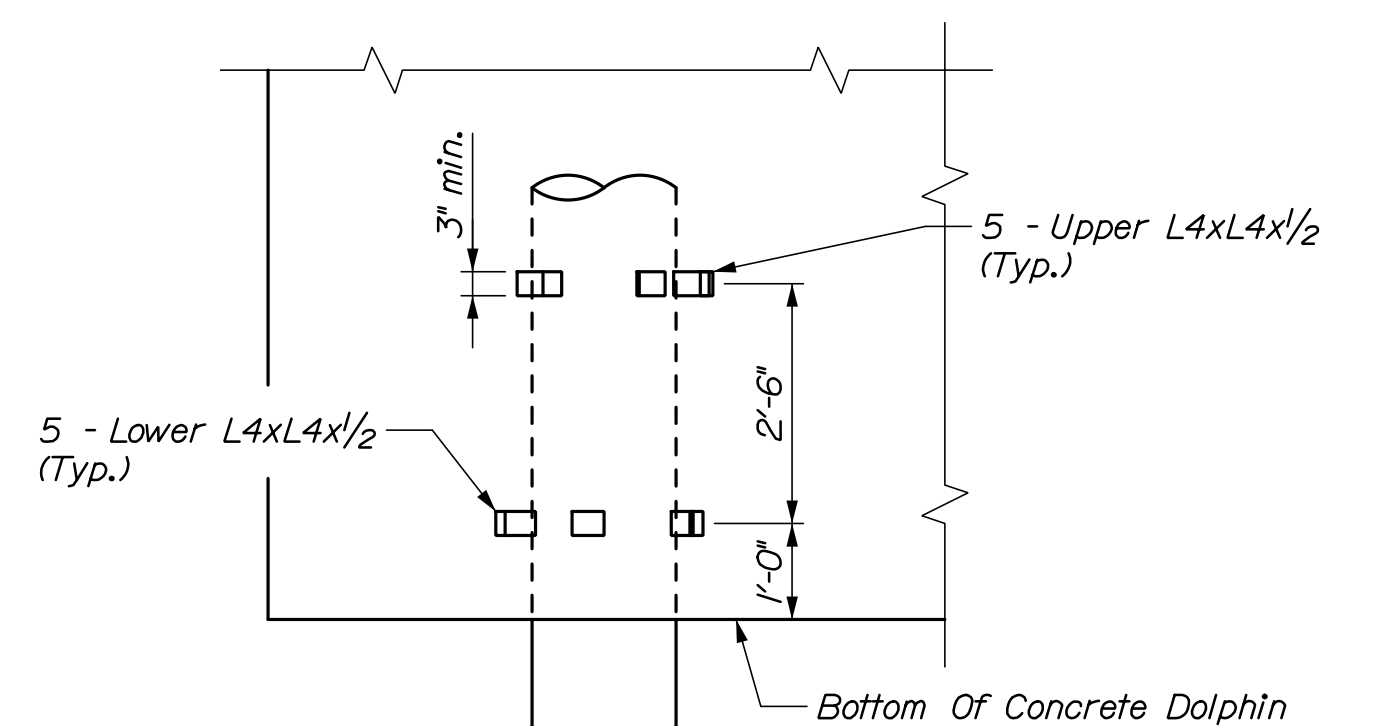
PLAN



**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 maintain 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be 1/4"/Ft and pitched as shown.

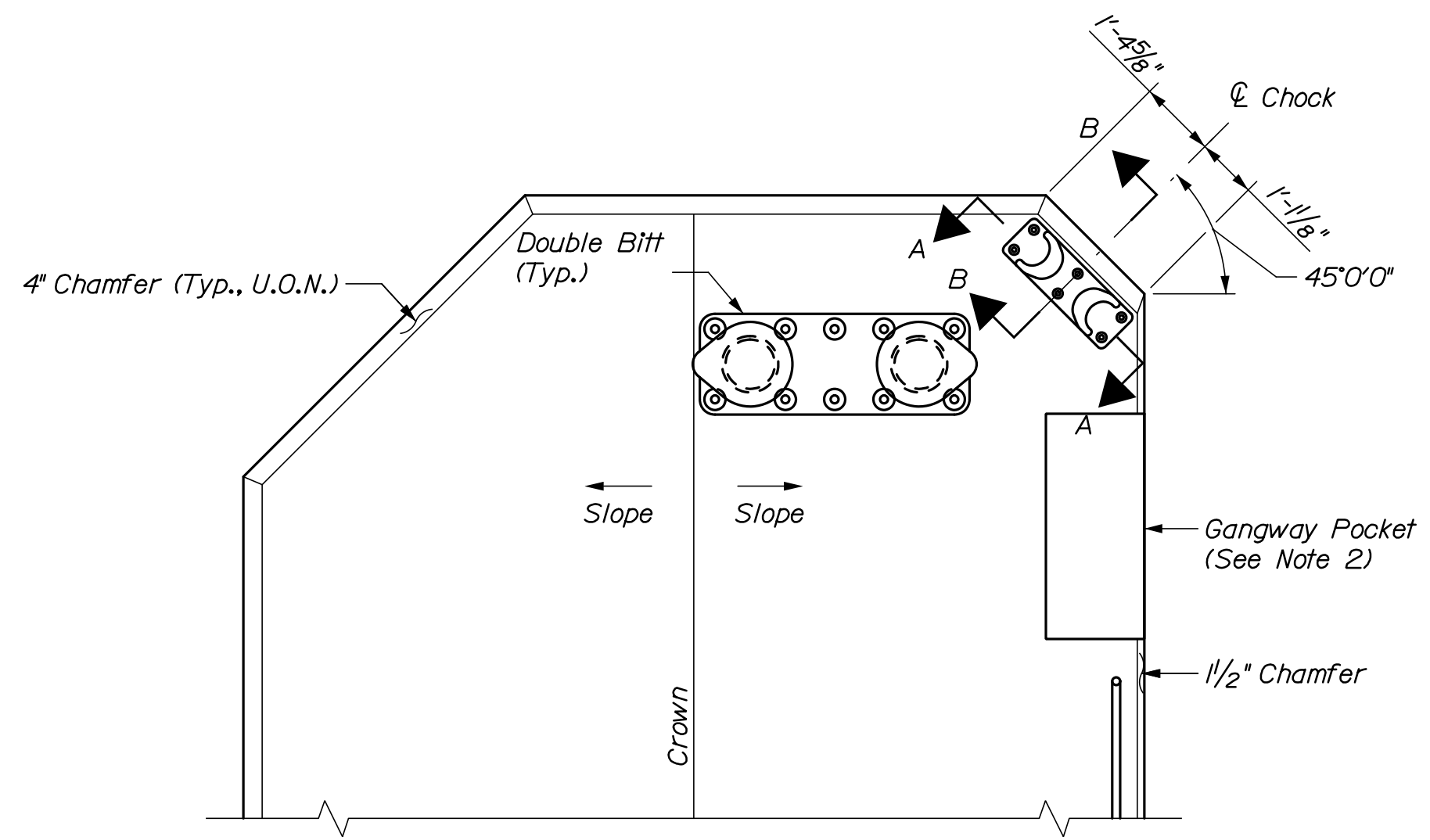
PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED N. Willey	P. Bishop	07/20			
CHECKED-REVIEWED C. Morin	C. Morin	07/20		10209	
DESIGN-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

Date: 7/22/2020

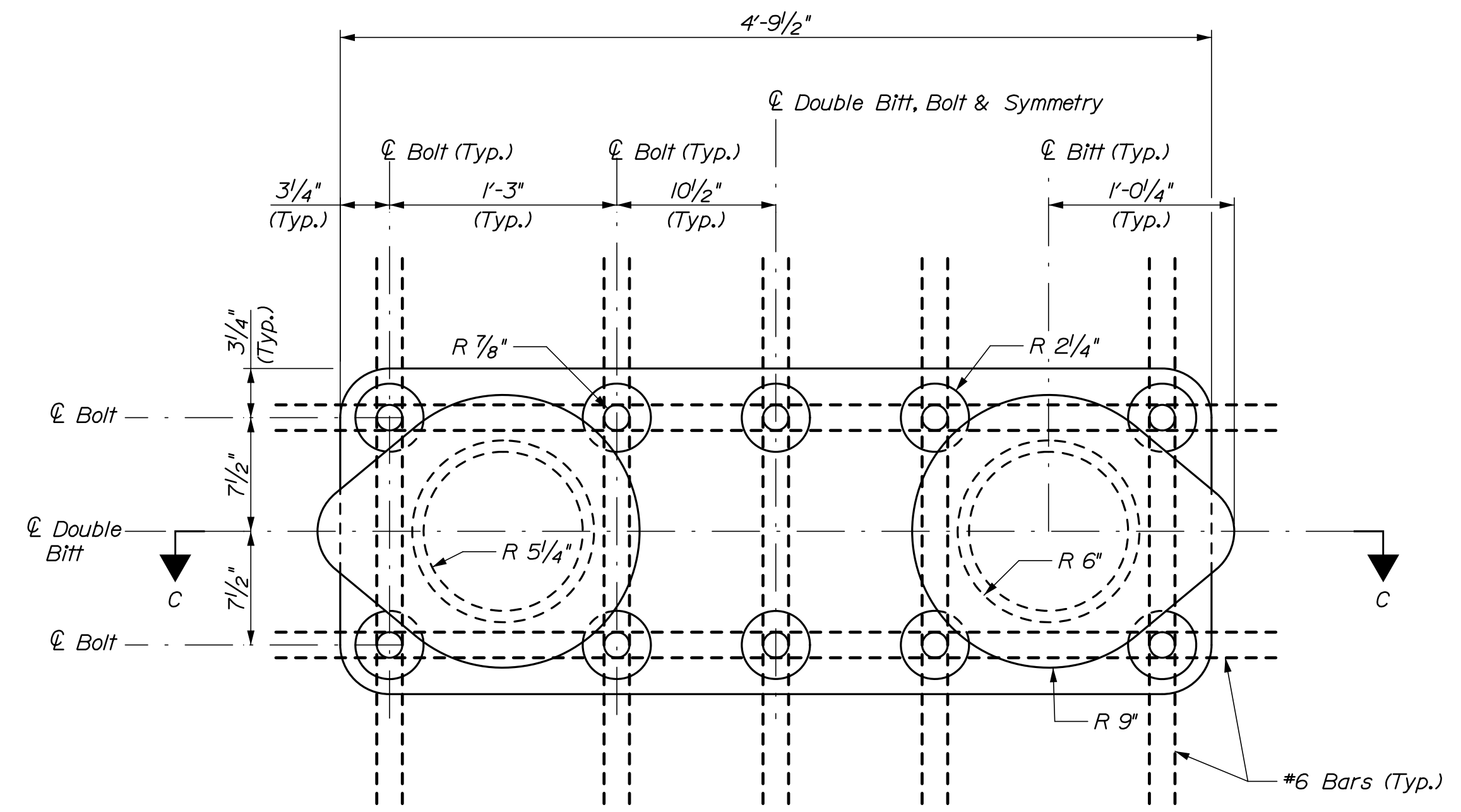
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Division:

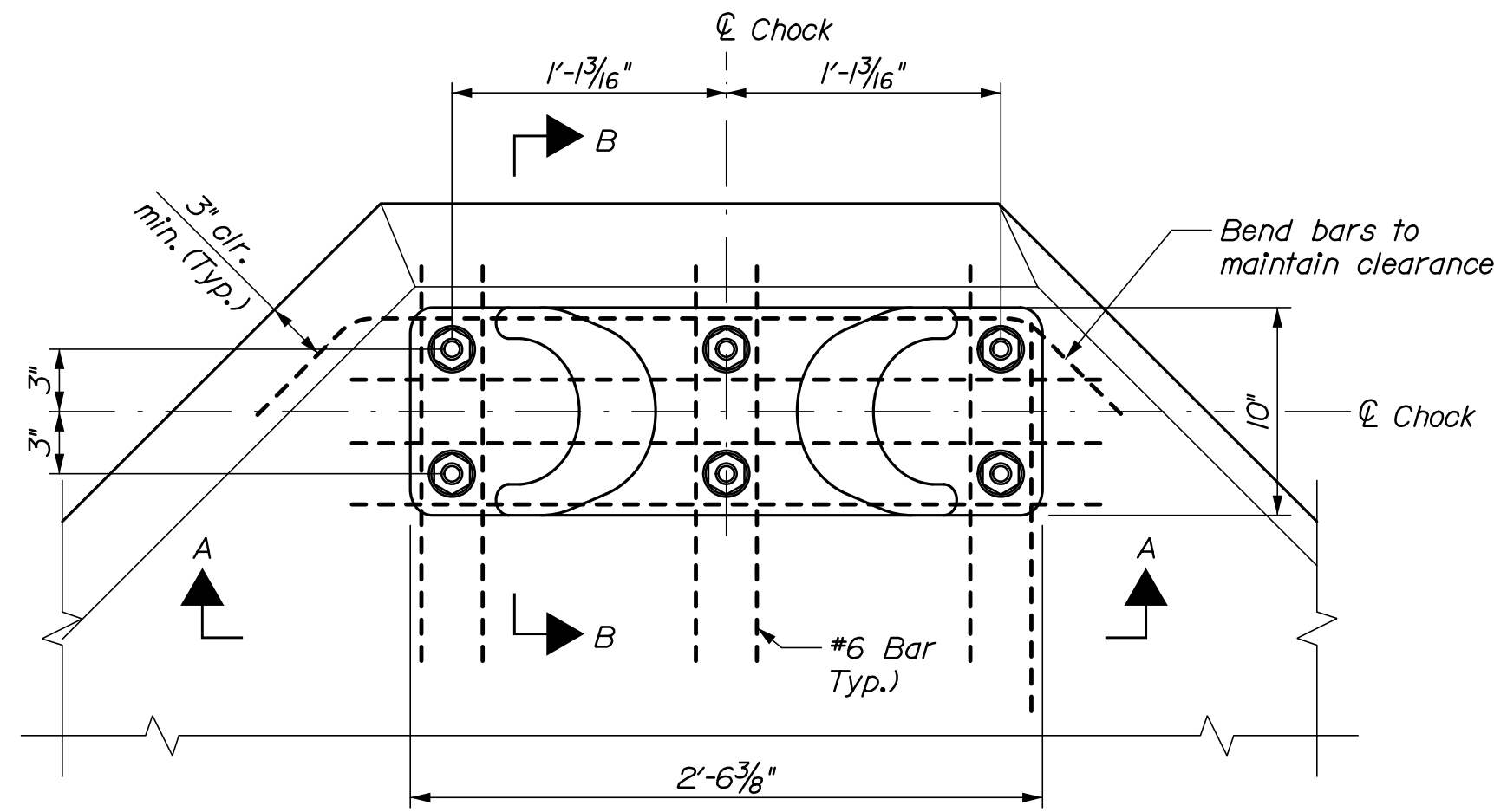
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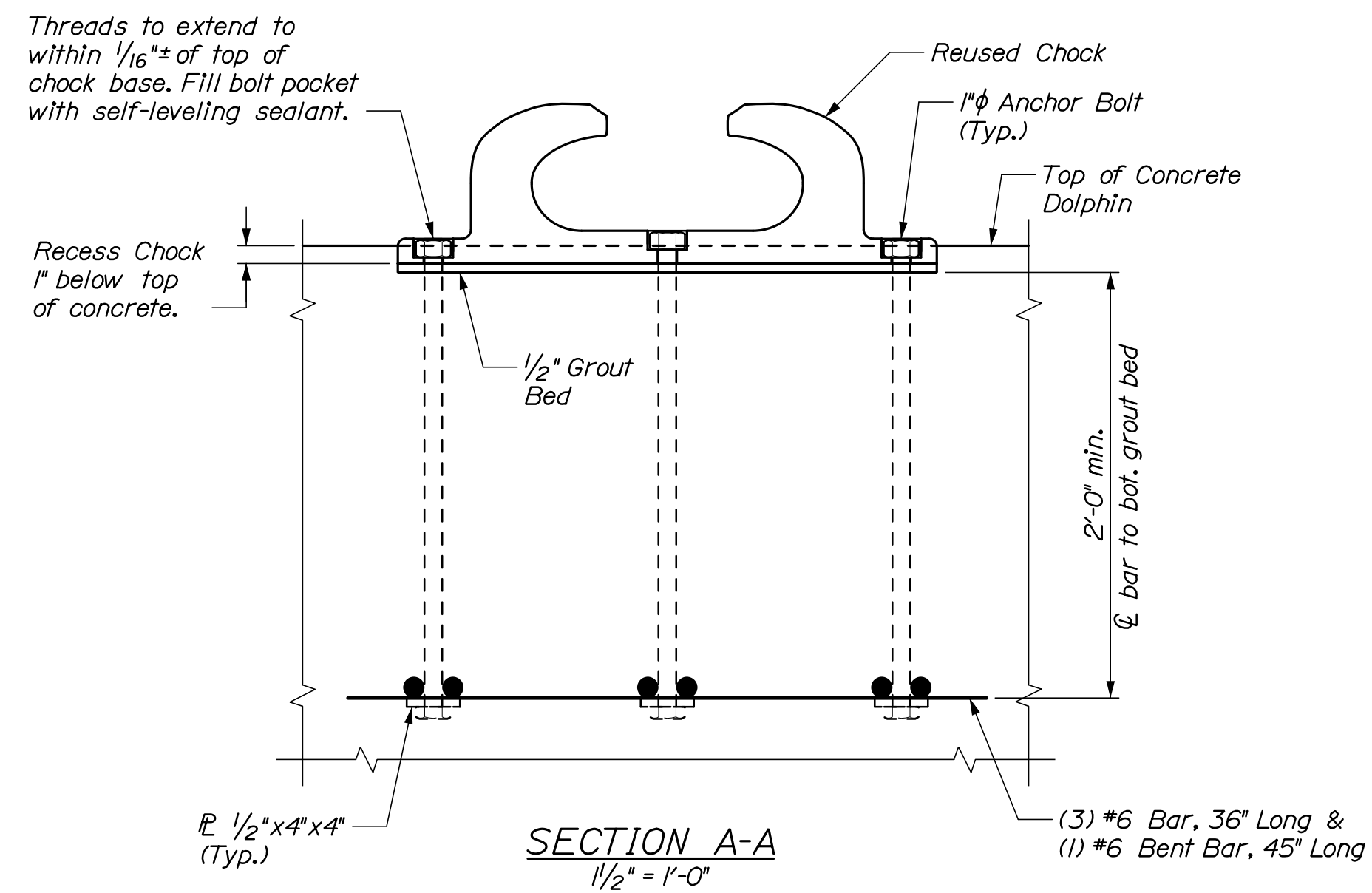
PLAN VIEW OF DOLPHIN
 (Hand rails, lights, and fenders not shown for clarity)
 $\frac{3}{8}'' = 1'-0''$



DOUBLE BITT PLAN
 $1/2'' = 1'-0''$

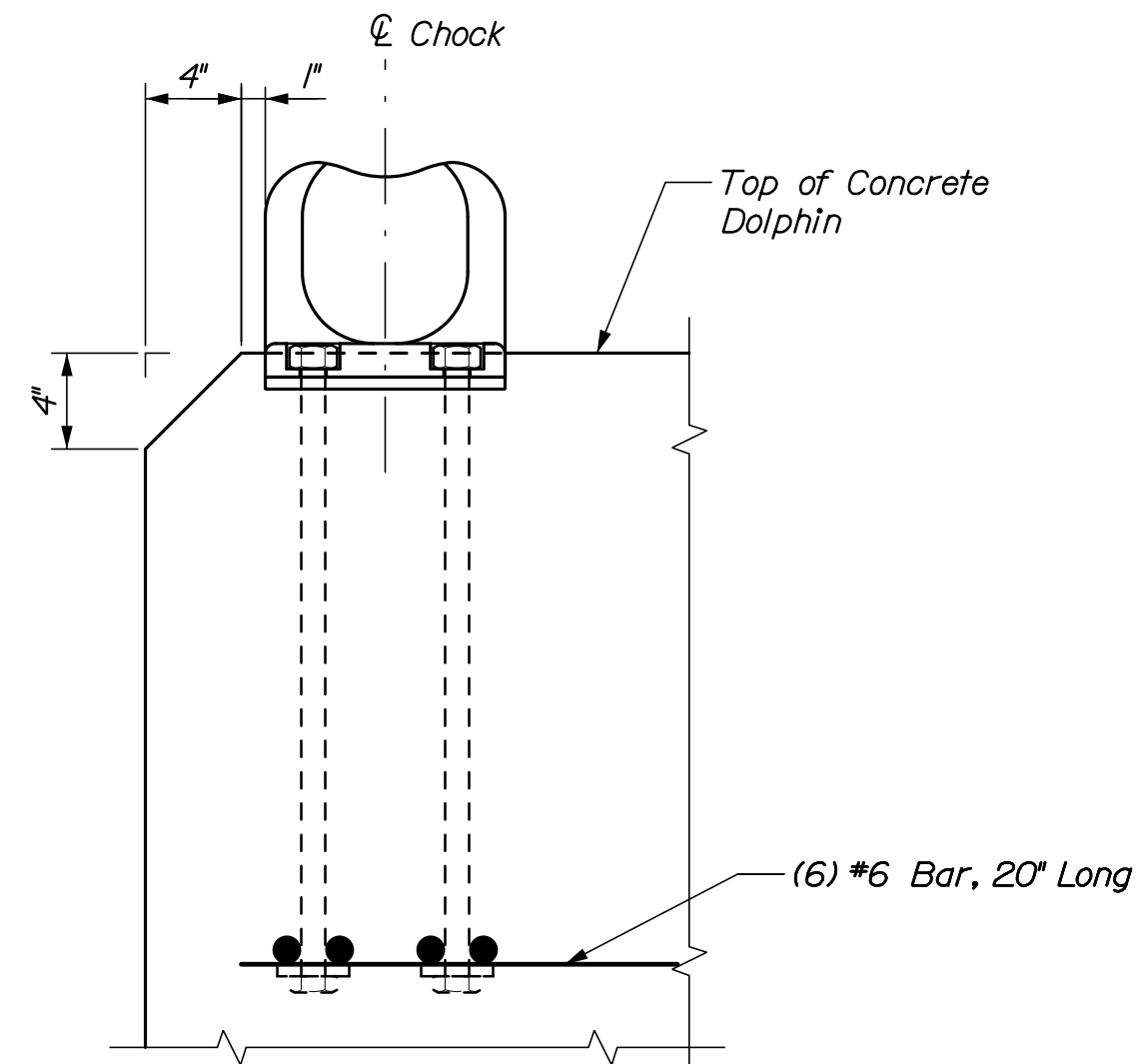


CHOCK PLAN AT CHAMFER
 $1/2'' = 1'-0''$

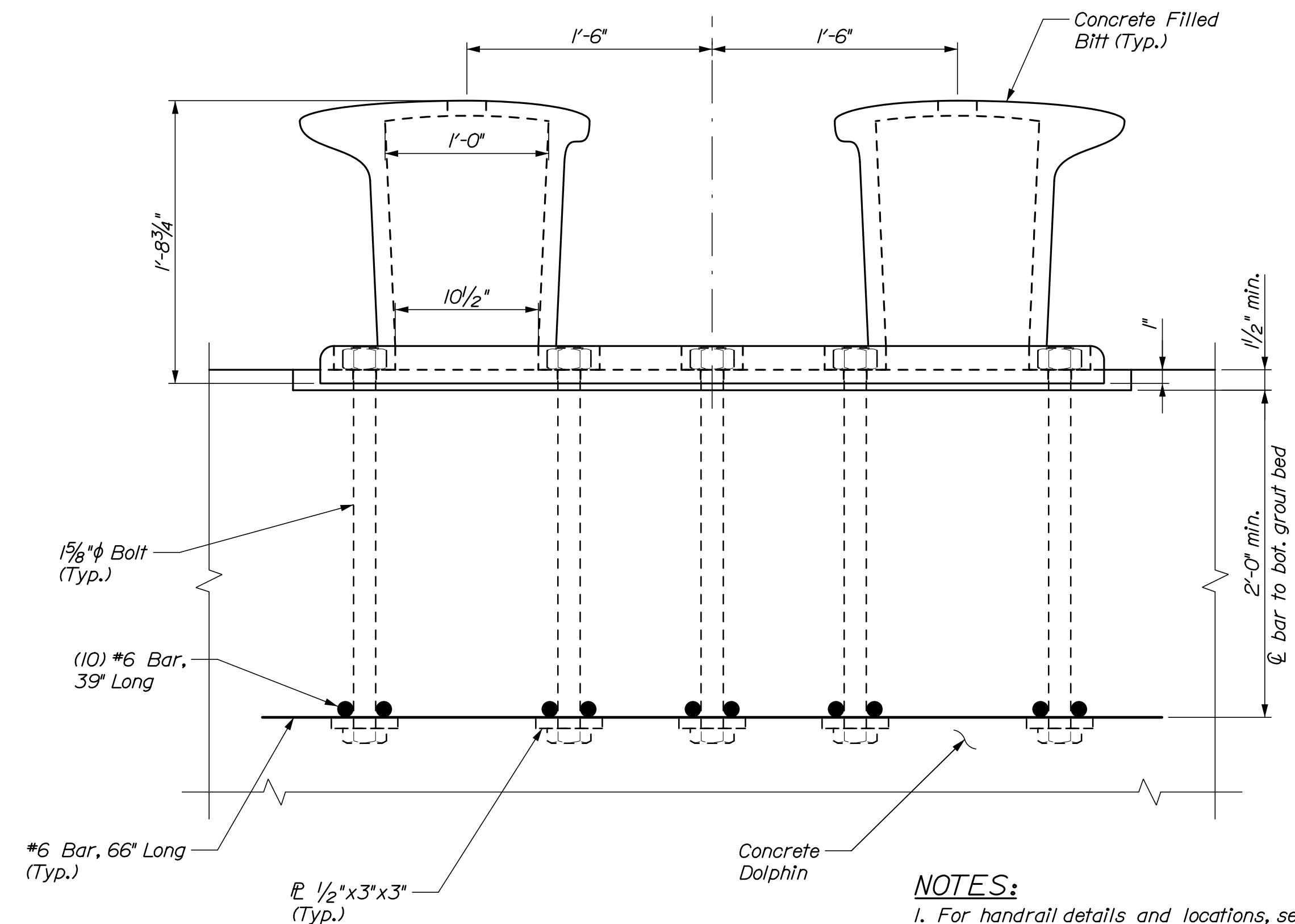


SECTION A-A
 $1/2'' = 1'-0''$

(3) #6 Bar, 36" Long &
 (1) #6 Bent Bar, 45" Long



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



SECTION C-C
 $1/2'' = 1'-0''$

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

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

DATE: 07/20
 BY: P. Bishop, C. Morin
 SIGNATURE: 10209
 P.E. NUMBER: 10209
 DATE:

PROJ. MANAGER: N. Willey
 DESIGN-DETAILED: C. Morin
 CHECKED-REVIEWED: C. Morin
 DESIGNS-DETAILED: C. Morin
 REVISIONS: 1, 2, 3, 4
 FIELD CHANGES:

BASS HARBOR
 FERRY TERMINAL

DOLPHIN DETAILS
 MOORING HARDWARE

SHEET NUMBER

S06

10 OF 18

HNTB

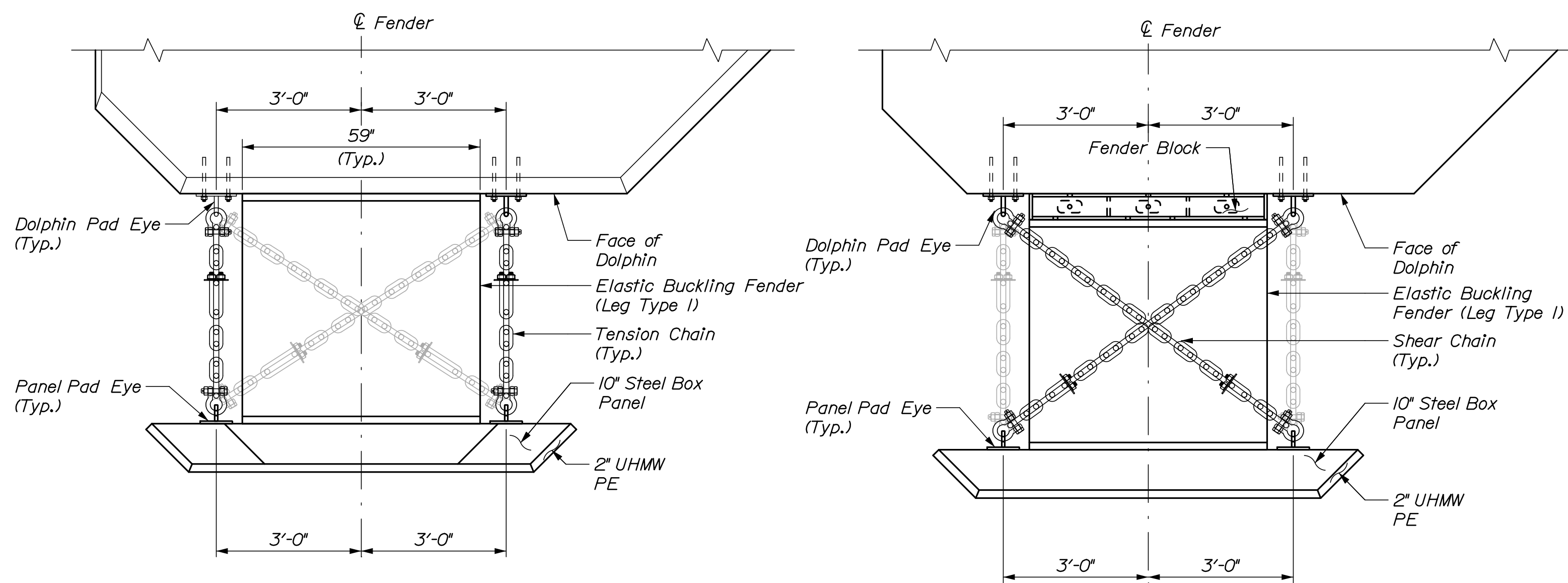
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Date: 7/13/2020

Username:

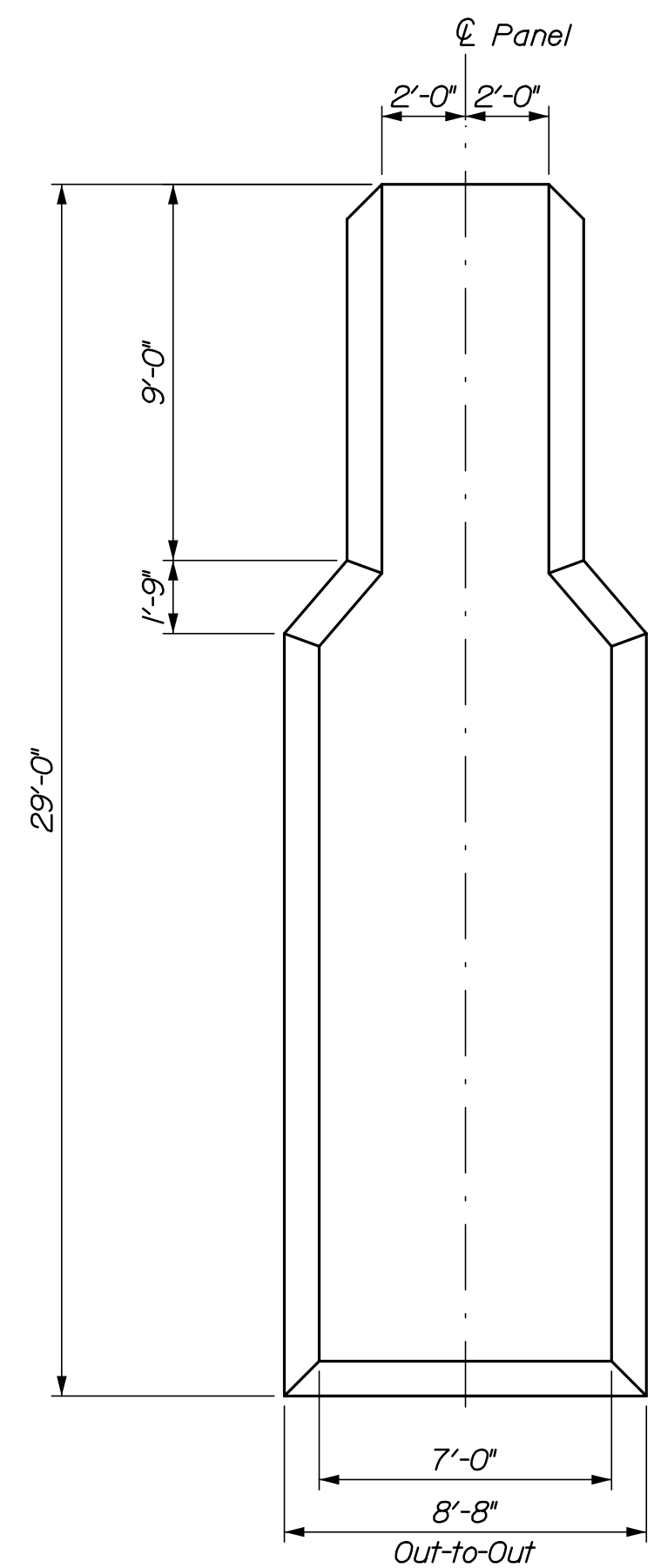
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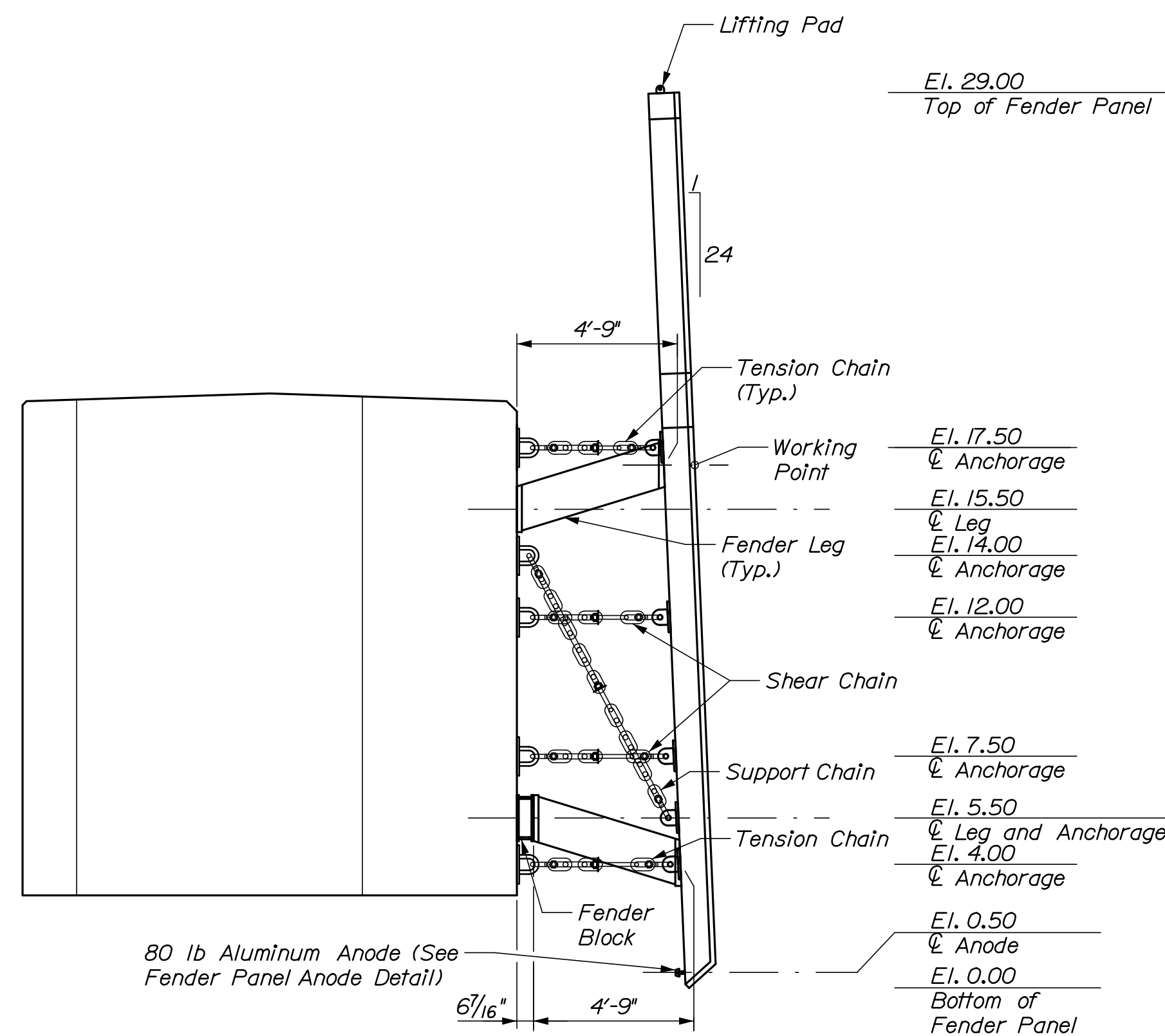


PLAN - TOP OF FENDER PANEL
(Type 1 Leg Shown)
1/2" = 1'-0"

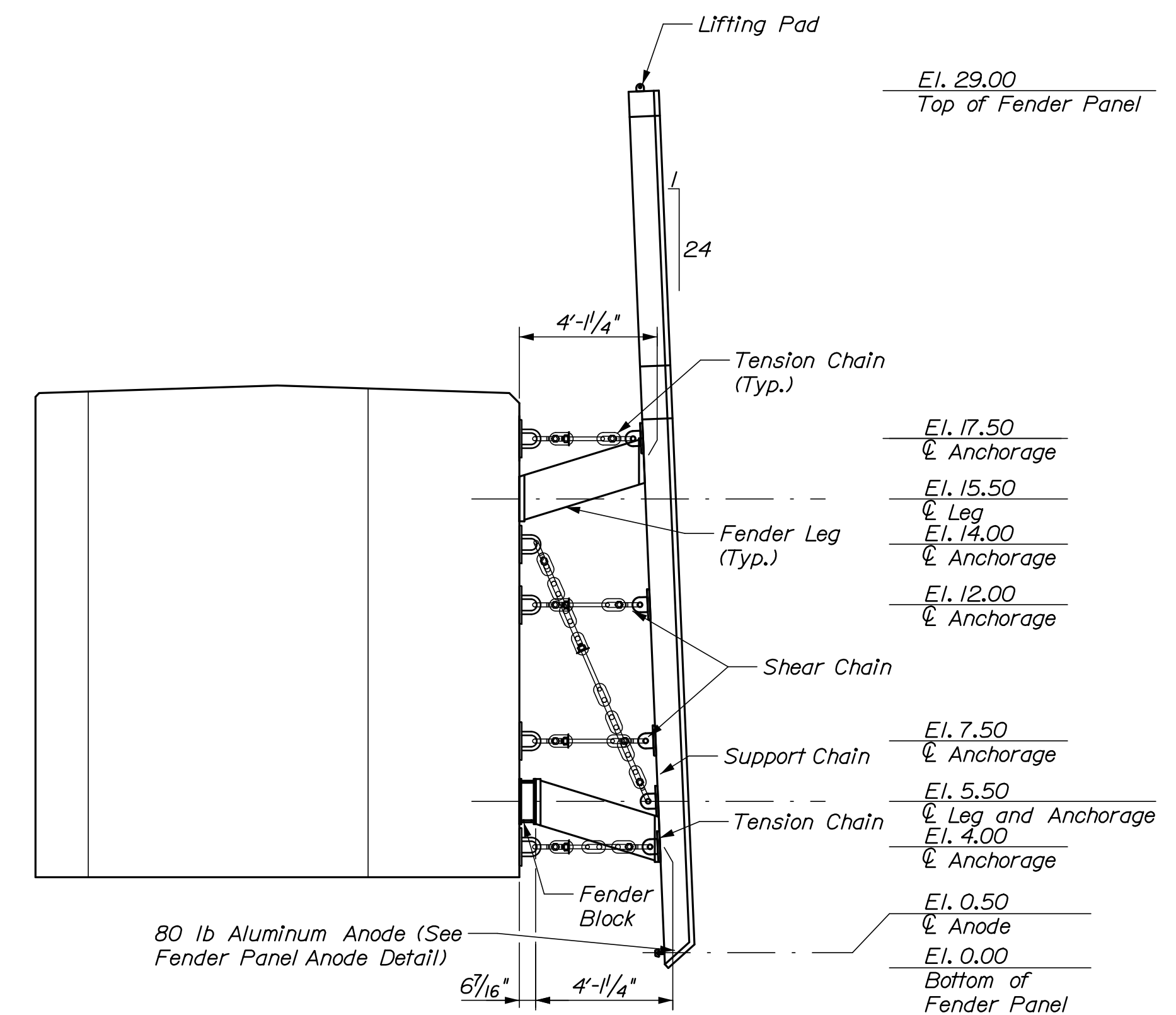
PLAN - BOTTOM OF FENDER PANEL
(Type 1 Leg Shown)
1/2" = 1'-0"



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"

NOTES:

- Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
- For fender block, panel pad eye, panel anode, dolphin pad eye and spacer plate details, see Sheet S08.
- Elastic buckling fenders (Leg Type 1) shall be Trelleborg Compound B MV 1450x1500, or approved equal.
- Elastic buckling fenders (Leg Type 2) shall be Trelleborg Compound B MV 1250x1500, or approved equal.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023476.00

PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED N. Wiley	P. Bishop	07/20			
CHECKED-REVIEWED C. Morin	C. Morin	07/20		10209	
DESIGN-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM I

SHEET NUMBER

S07

11 OF 18

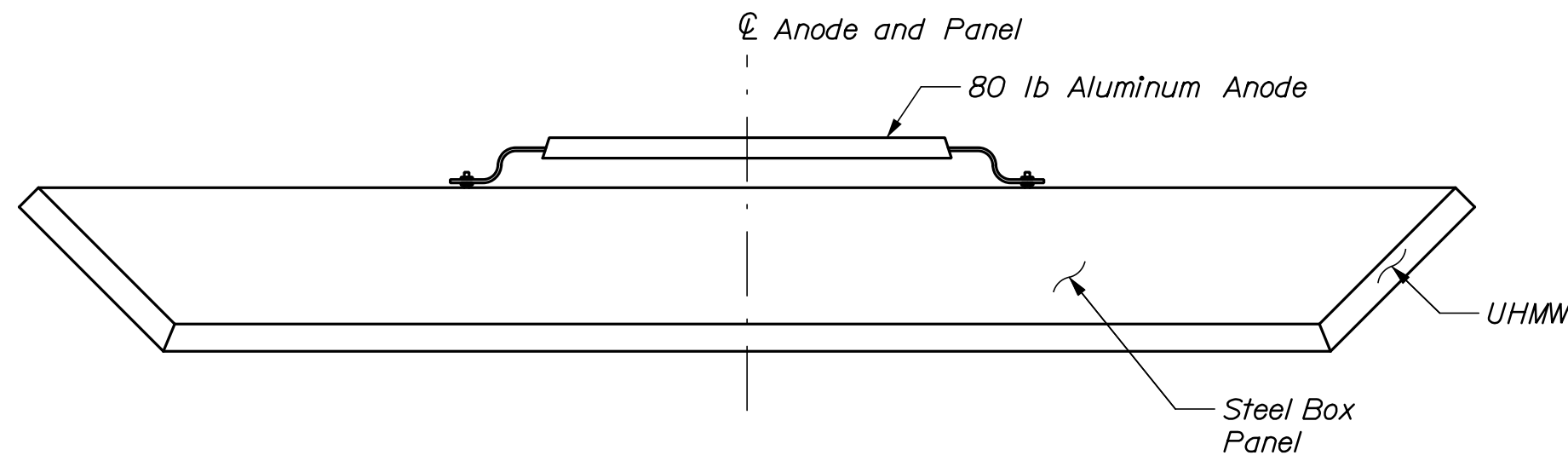


Date: 7/13/2020

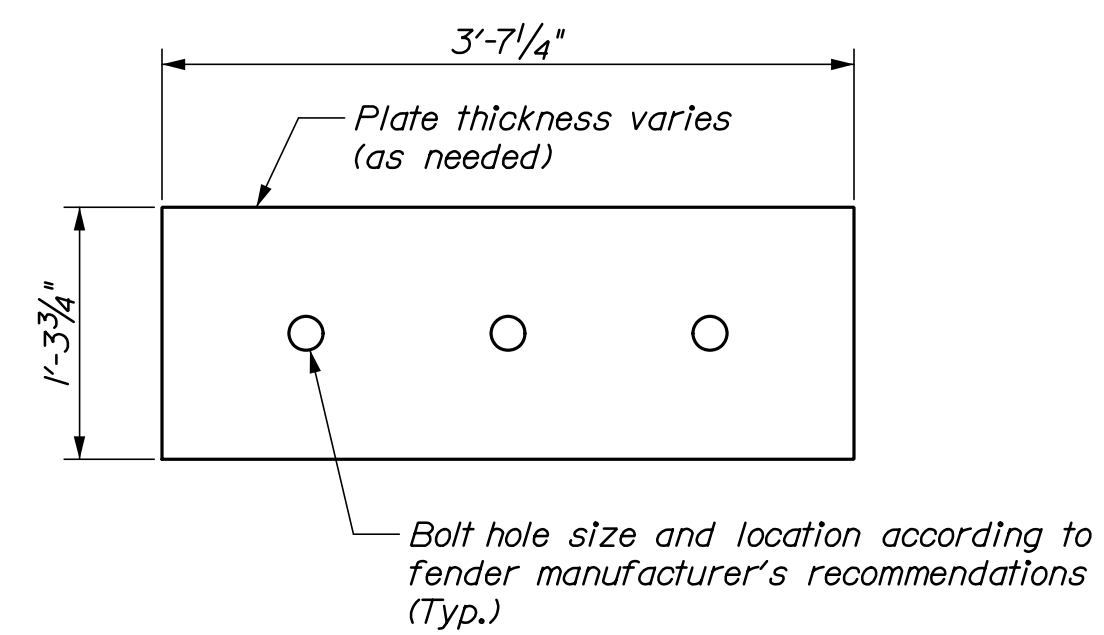
Username:

Division:

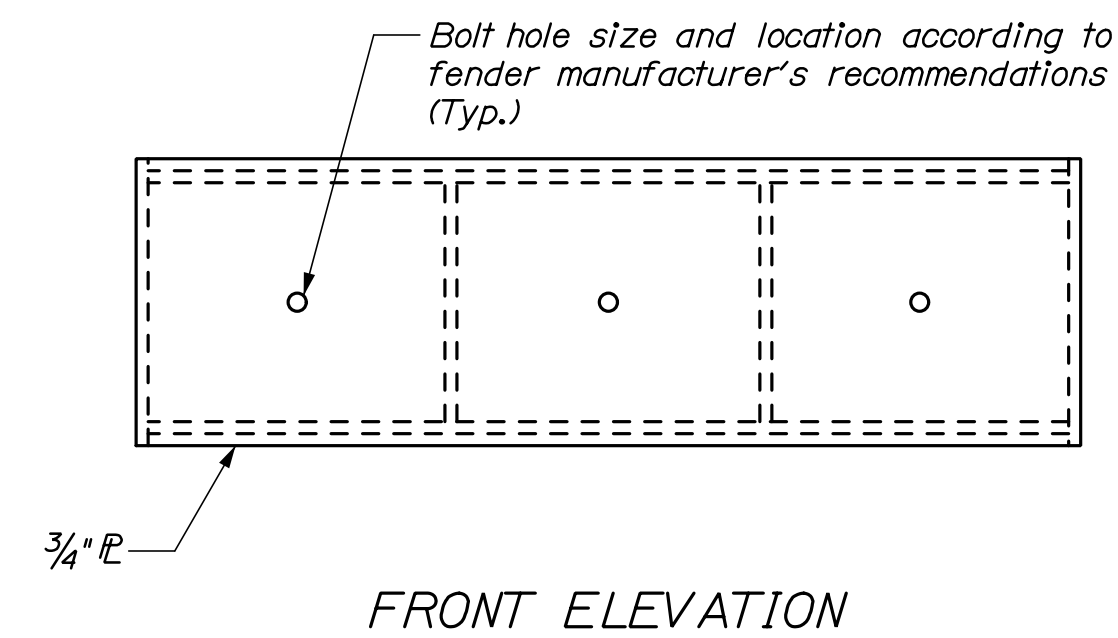
Filename: 012_Fender System II.dgn



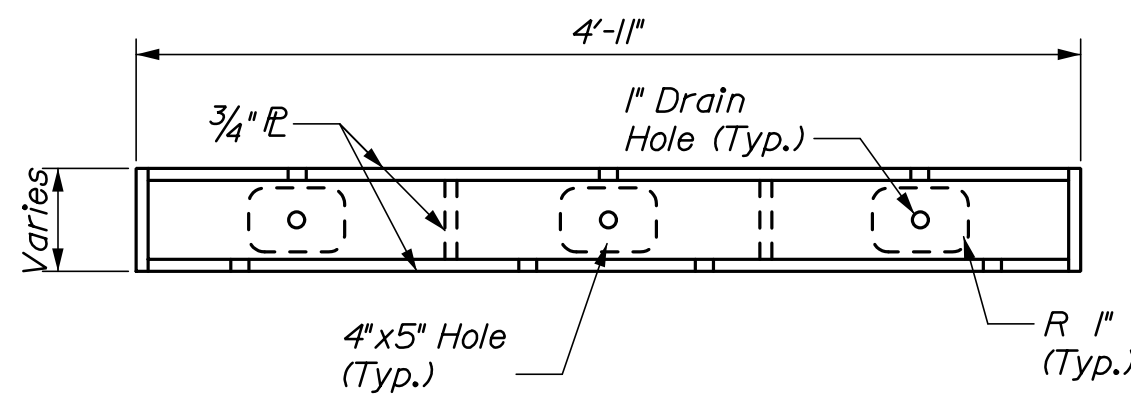
FENDER PANEL ANODE DETAIL
1" = 1'-0"



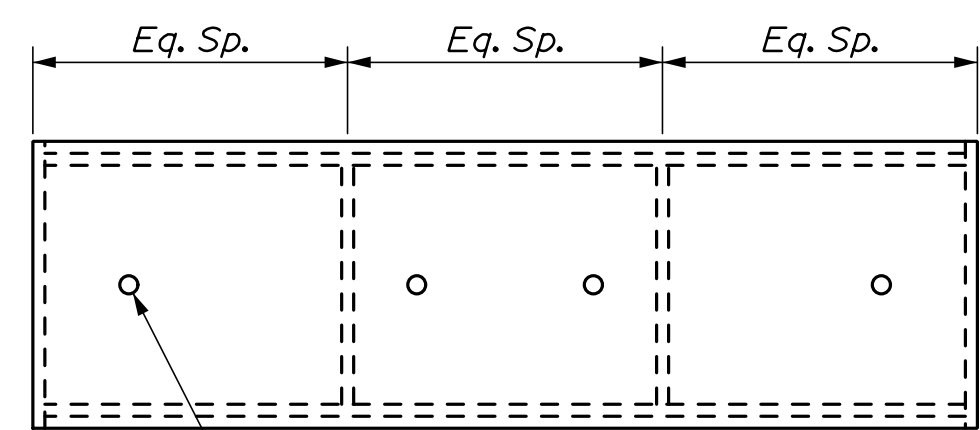
TYPE I PANEL SPACER PLATE DETAIL
1" = 1'-0"



FRONT ELEVATION

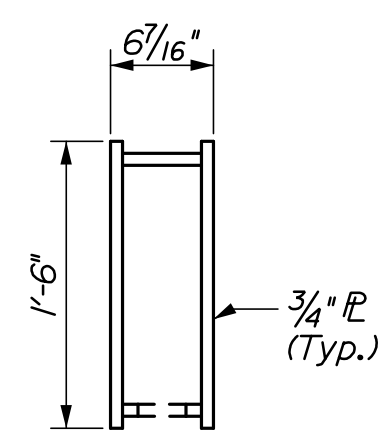


PLAN

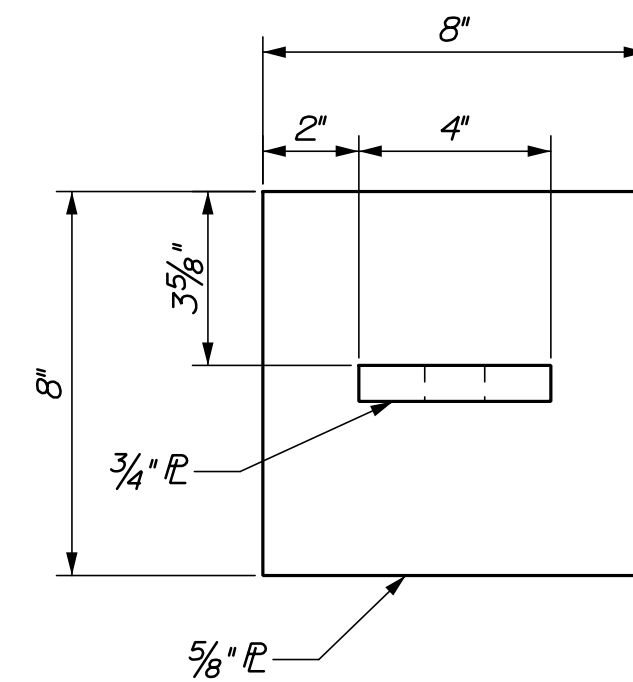


BACK ELEVATION

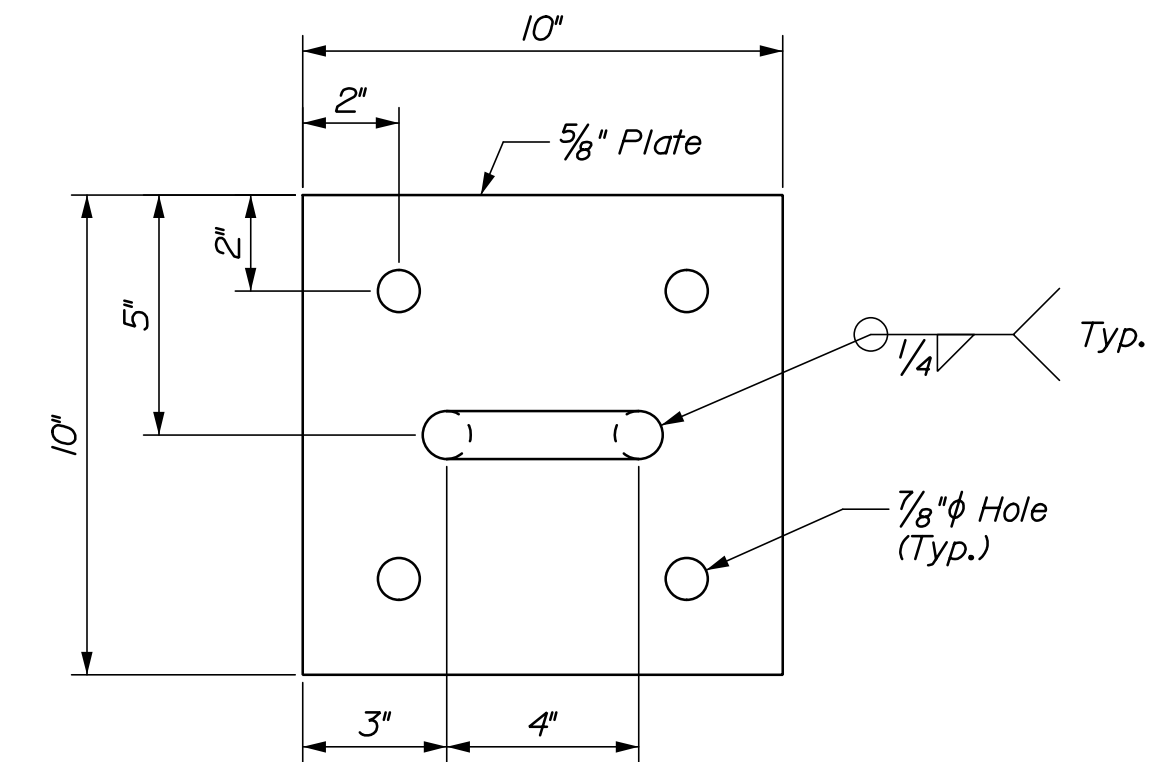
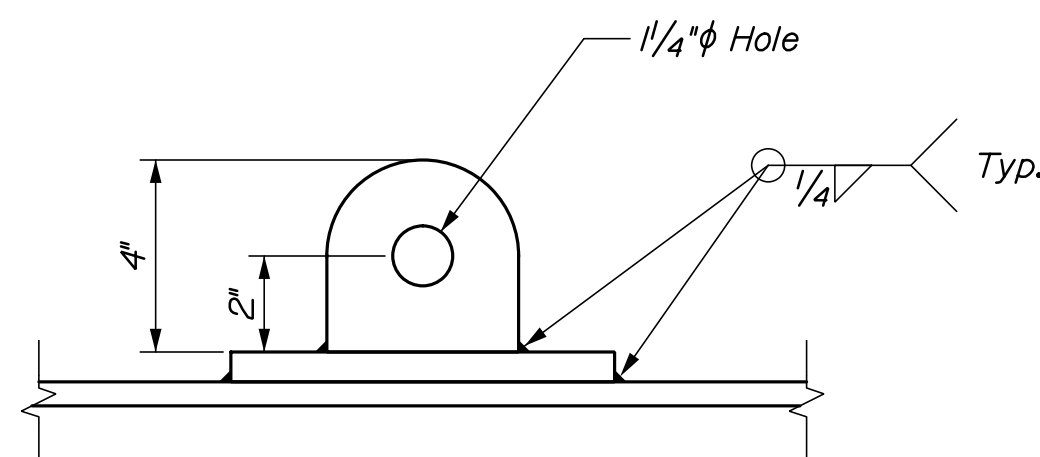
STEEL FENDER BLOCK
1" = 1'-0"



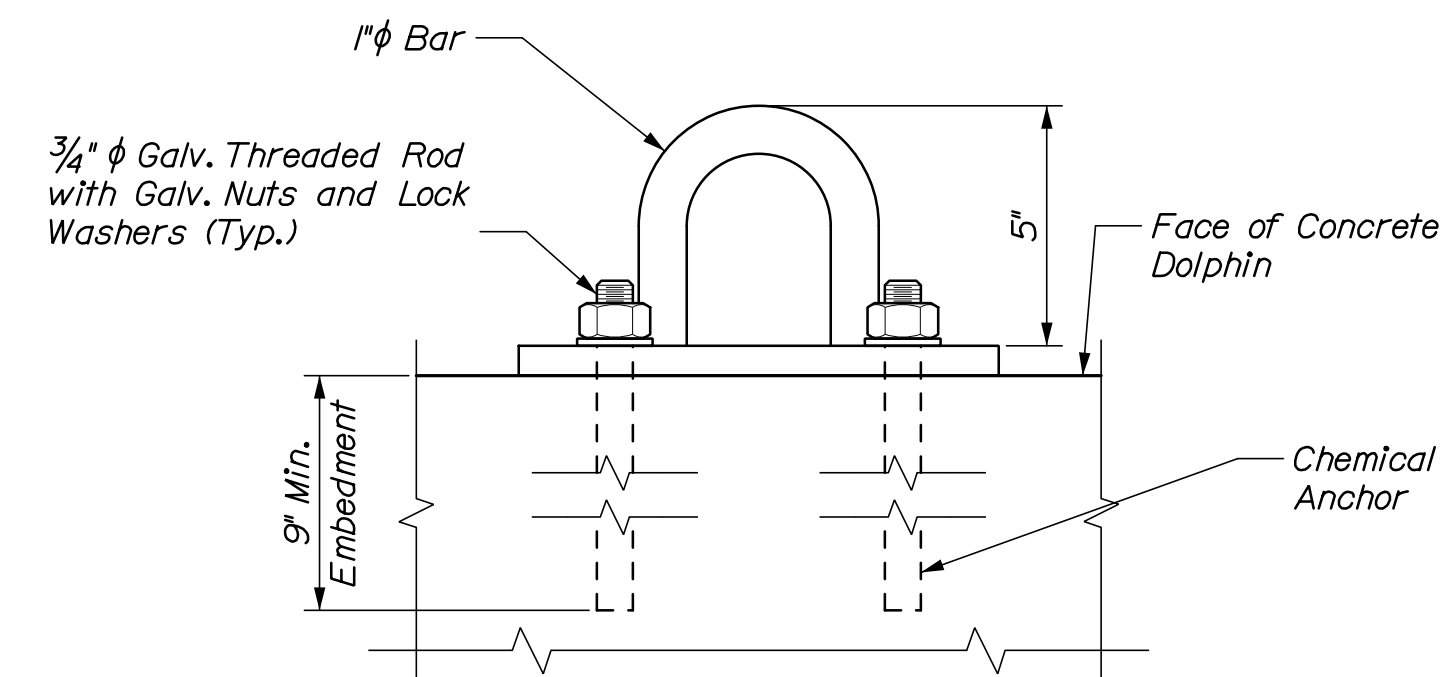
SECTION



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



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



NOTES:
1. For anode attachment details, see Sheet S04.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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

BY
P. Bishop
C. Morin

DATE
07/20
07/20

SIGNATURE
10209

P.E. NUMBER
DATE

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

BASS HARBOR
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM II

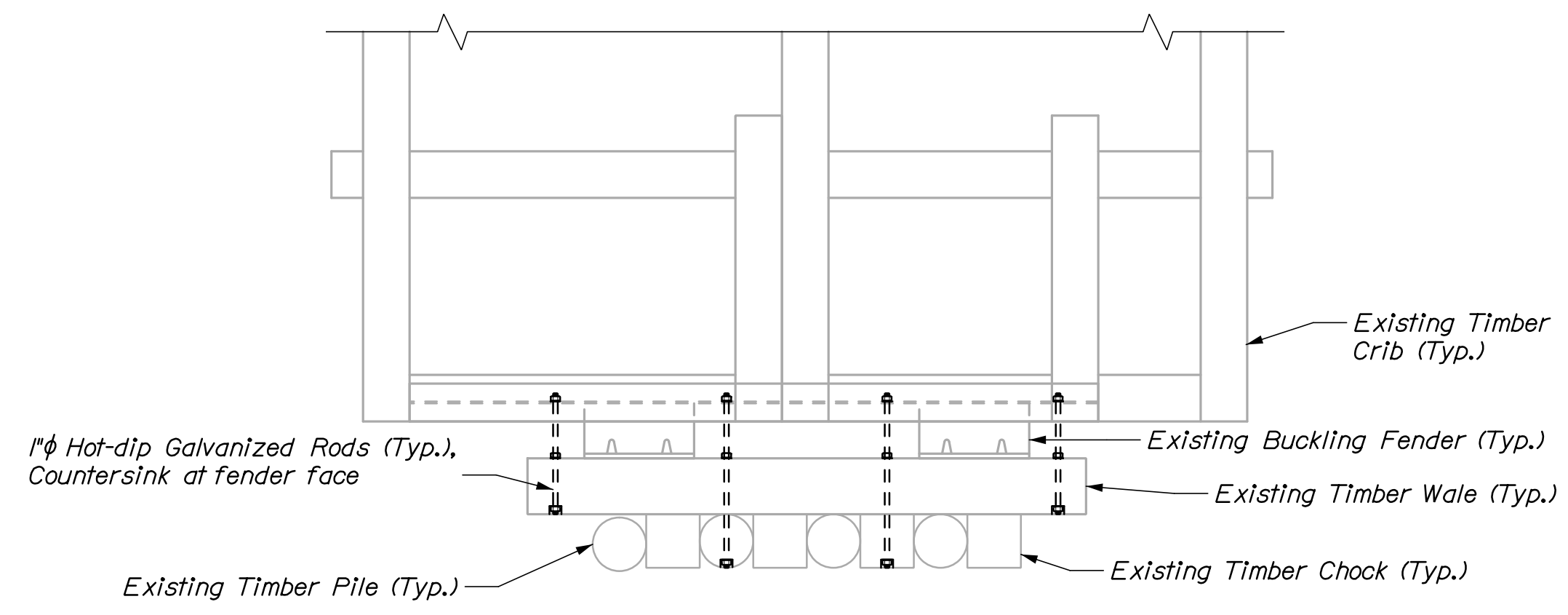
SHEET NUMBER

S08

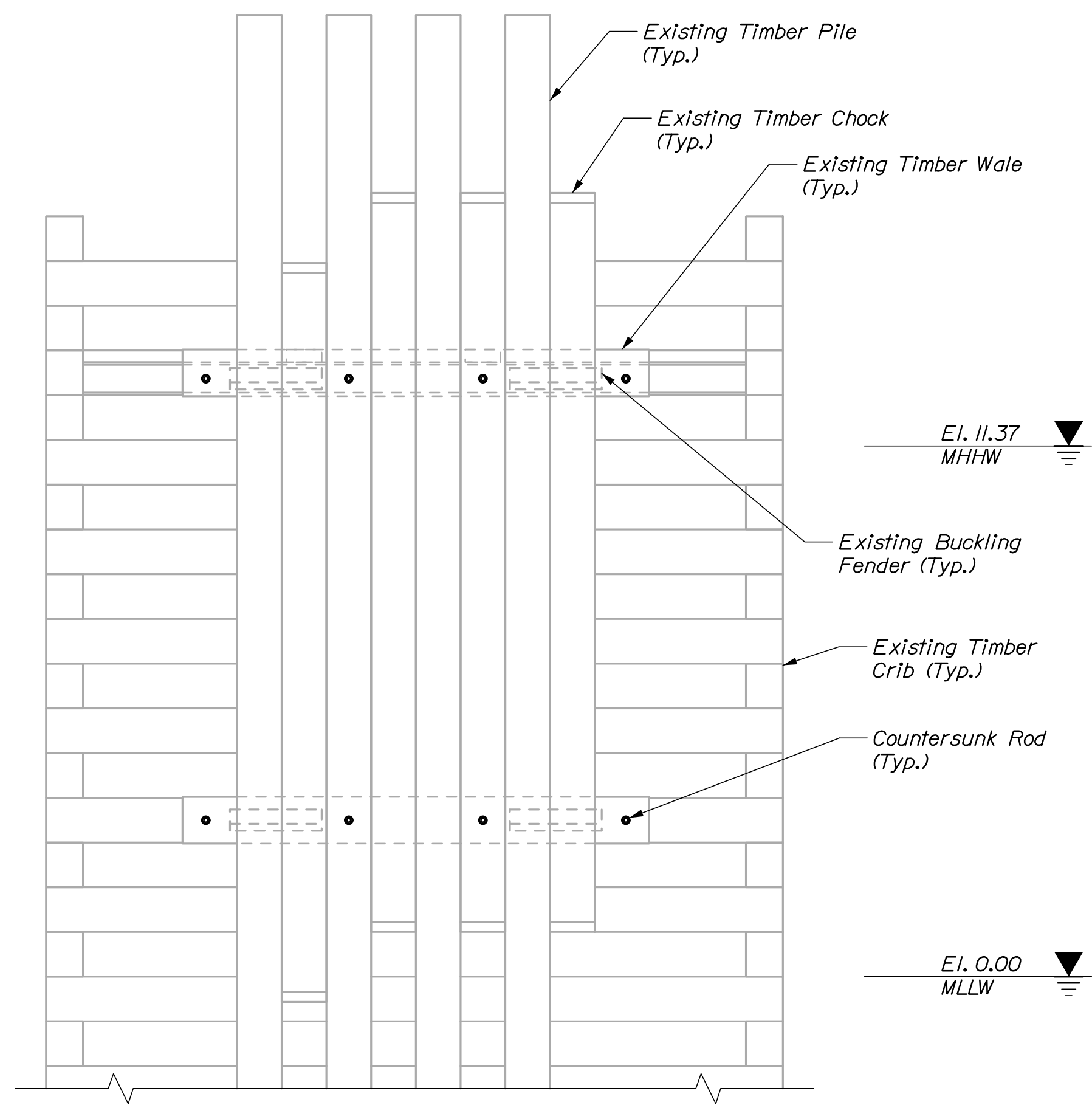
12 OF 18

WIN
023476.00

HNTB



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.

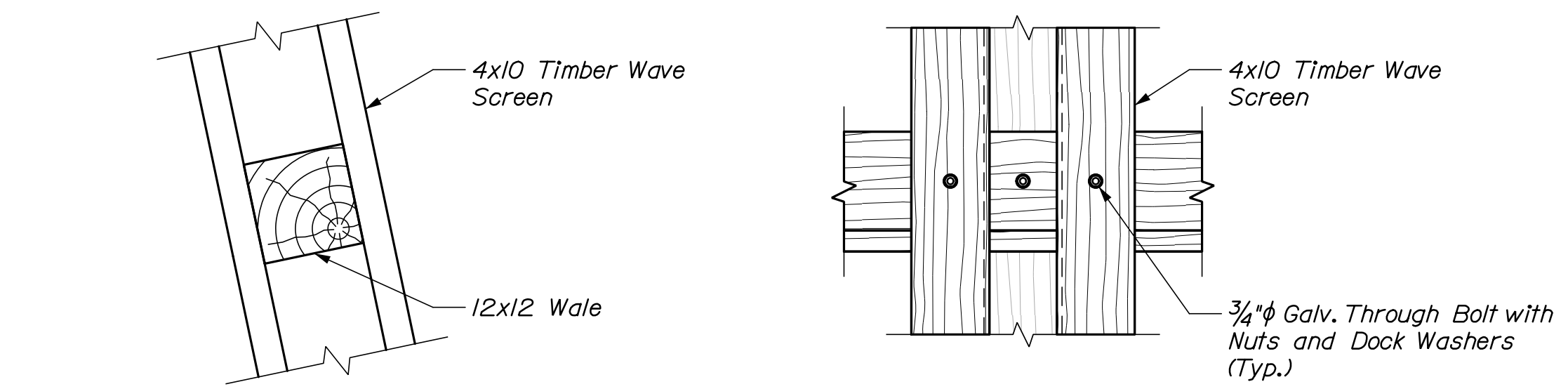
STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE 10/209	
BASS HARBOR FERRY TERMINAL		P.E. NUMBER 10209	
DOLPHIN DETAILS MISCELLANEOUS II		DATE	
SHEET NUMBER		DATE	
S10		WIN 023476.00	
14 OF 18		FIELD CHANGES	
PROJ. MANAGER	BY	DATE	
DESIGN-DETAILED N. Wiley	P. Bishop	07/20	
CHECKED-REVIEWED C. Morin	C. Morin	07/20	
DESIGN-DETAILED2			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			



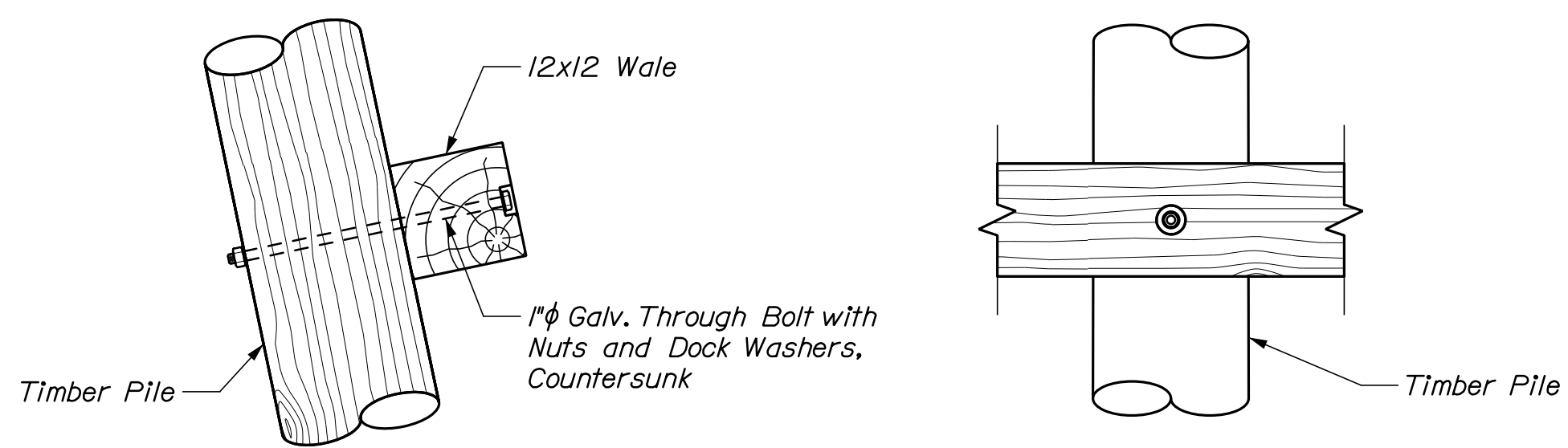
Date: 7/13/2020

Username:

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



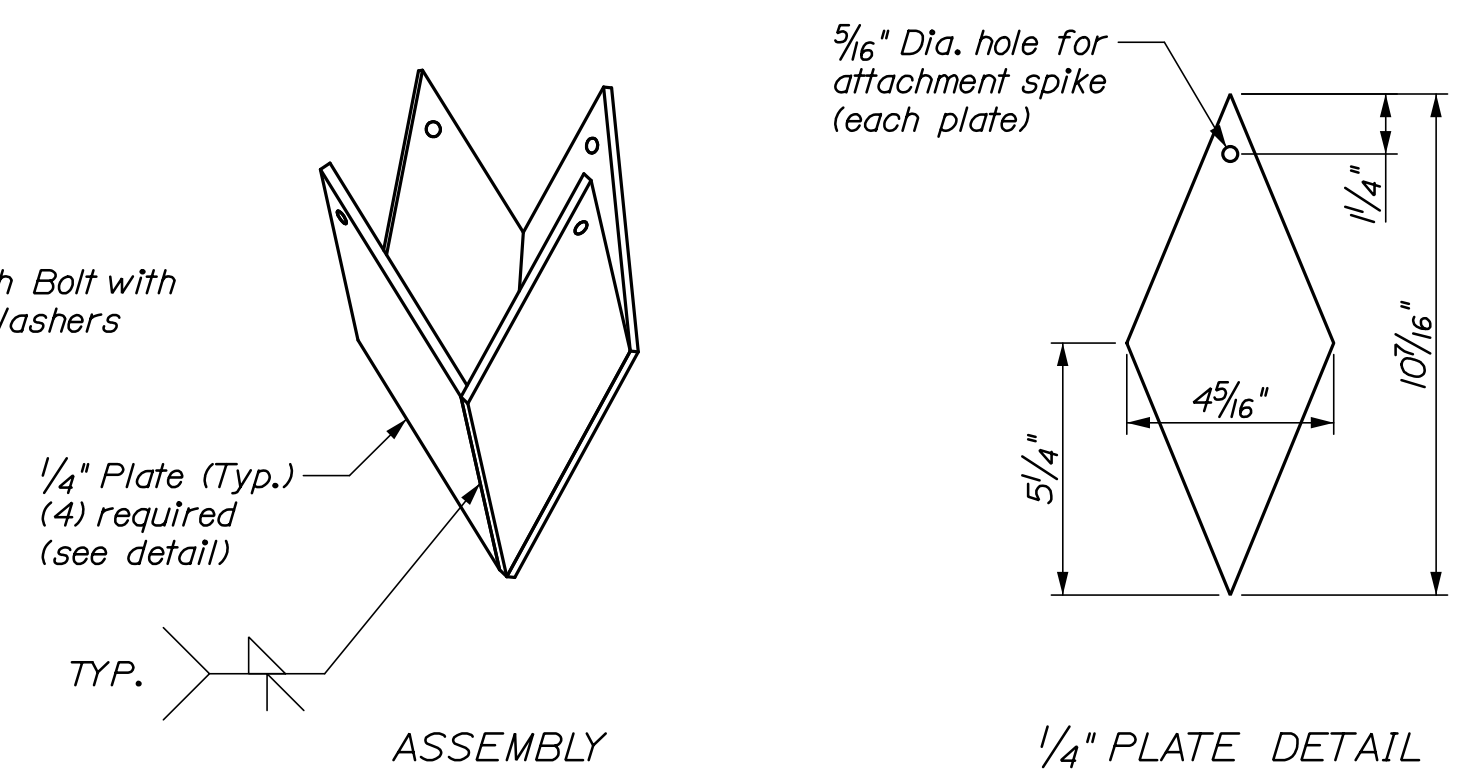
SCREEN CONNECTIONS



WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/4" = 1'-0"



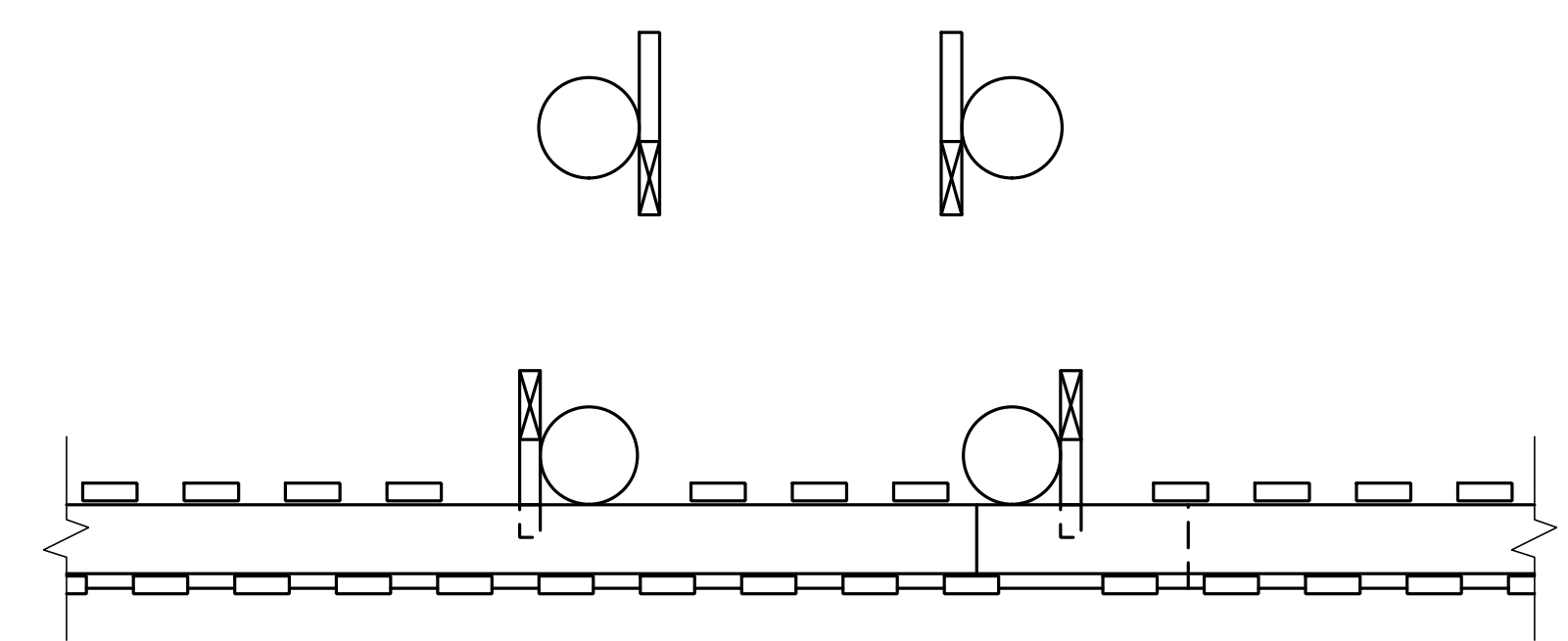
ASSEMBLY

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"

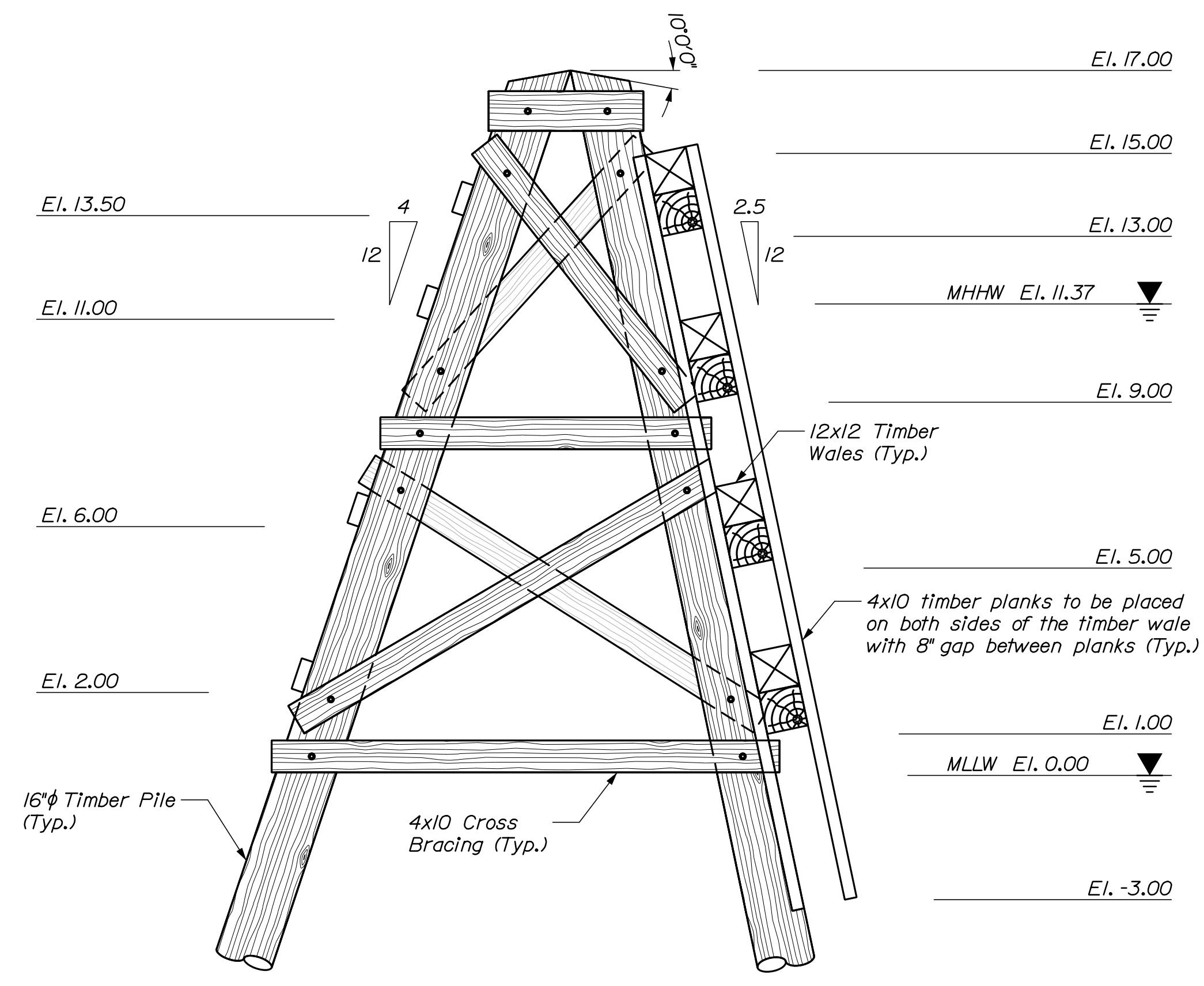


WAVE SCREEN PLAN VIEW

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

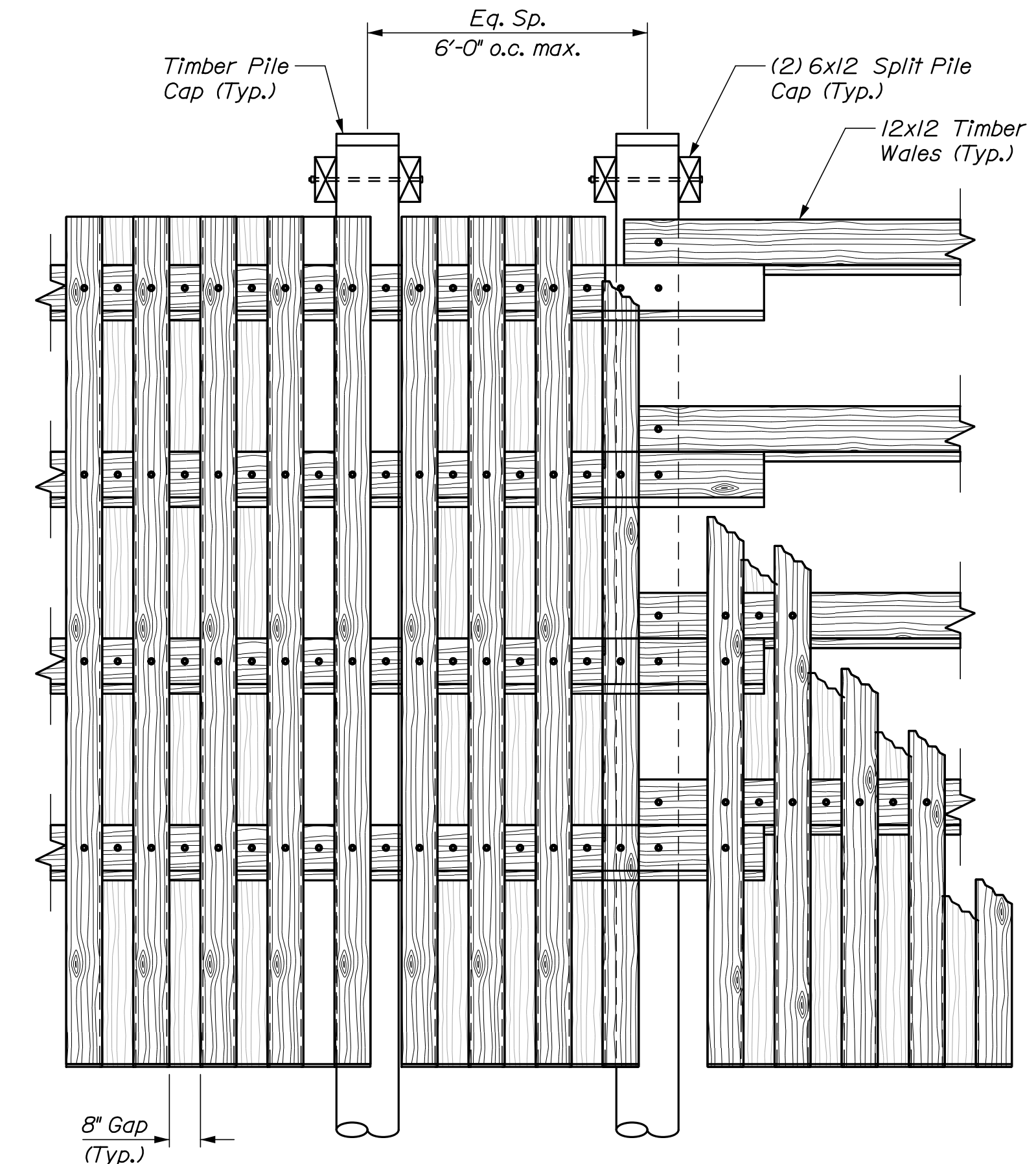
NOTES:

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 naphthanate 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"

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		WIN 023476.00																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DESIGN-DETAILED N. Willey</td> <td style="width: 50%;">SIGNATURE 10209</td> </tr> <tr> <td>CHECKED-REVIEWED C. Morin</td> <td>P.E. NUMBER</td> </tr> <tr> <td>DESIGN-DETAILED</td> <td>DATE</td> </tr> <tr> <td>REVISIONS 1</td> <td></td> </tr> <tr> <td>REVISIONS 2</td> <td></td> </tr> <tr> <td>REVISIONS 3</td> <td></td> </tr> <tr> <td>REVISIONS 4</td> <td></td> </tr> <tr> <td colspan="2">FIELD CHANGES</td> </tr> </table>	DESIGN-DETAILED N. Willey	SIGNATURE 10209	CHECKED-REVIEWED C. Morin	P.E. NUMBER	DESIGN-DETAILED	DATE	REVISIONS 1		REVISIONS 2		REVISIONS 3		REVISIONS 4		FIELD CHANGES		
DESIGN-DETAILED N. Willey	SIGNATURE 10209																	
CHECKED-REVIEWED C. Morin	P.E. NUMBER																	
DESIGN-DETAILED	DATE																	
REVISIONS 1																		
REVISIONS 2																		
REVISIONS 3																		
REVISIONS 4																		
FIELD CHANGES																		
BASS HARBOR FERRY TERMINAL	WAVE SCREEN PLAN AND ELEVATION																	
SHEET NUMBER S11																		
15 OF 18																		

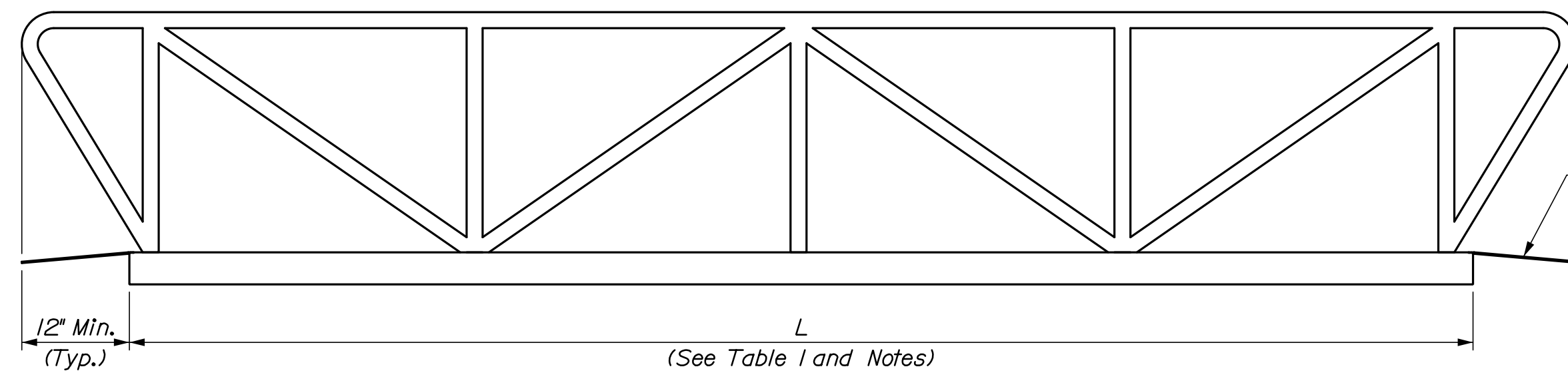


Date: 7/13/2020

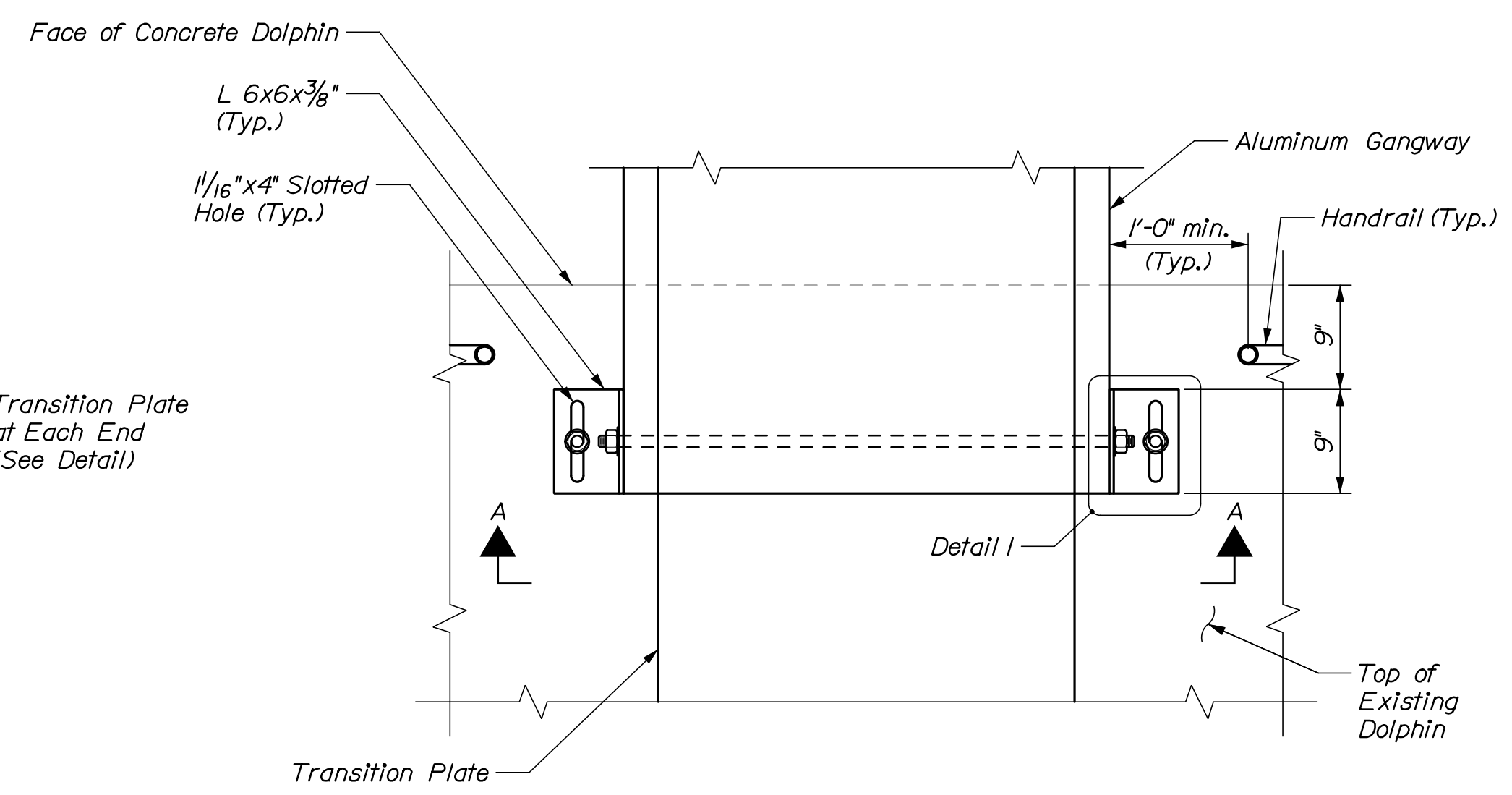
Username:

Division:

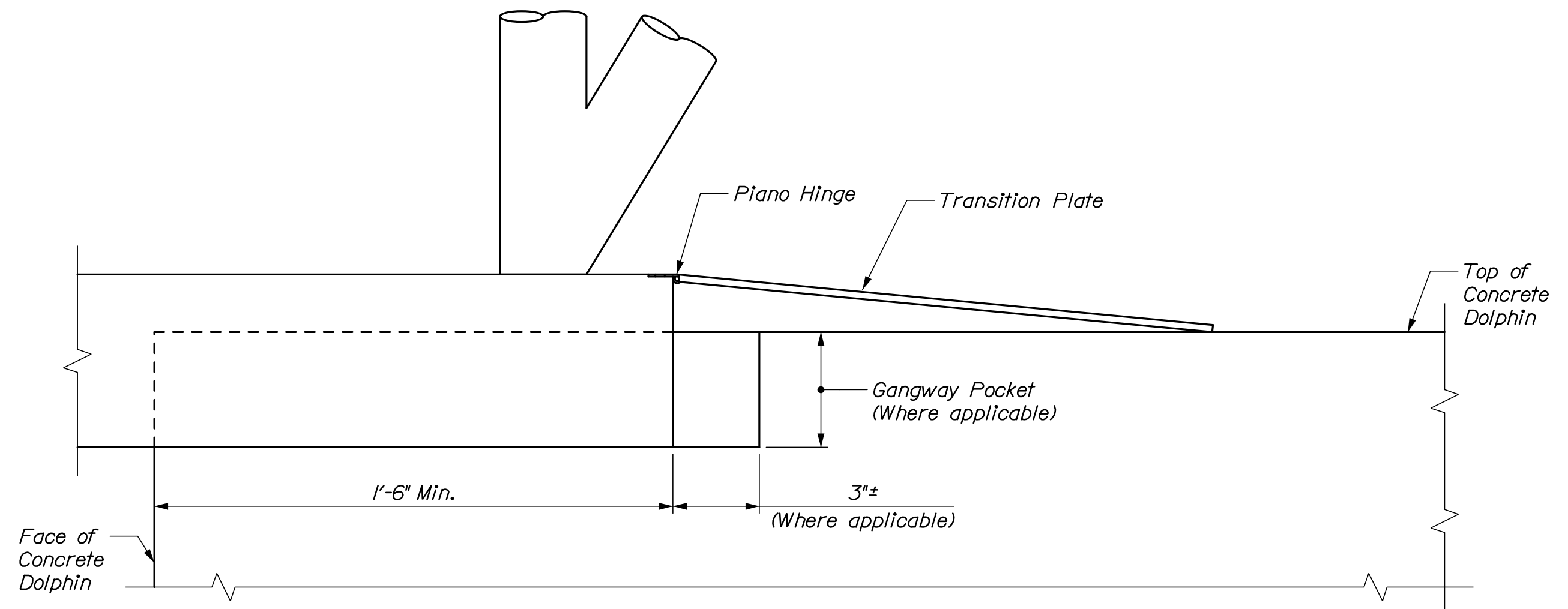
Filename: 016_Gangway Plan and Elevation.dgn



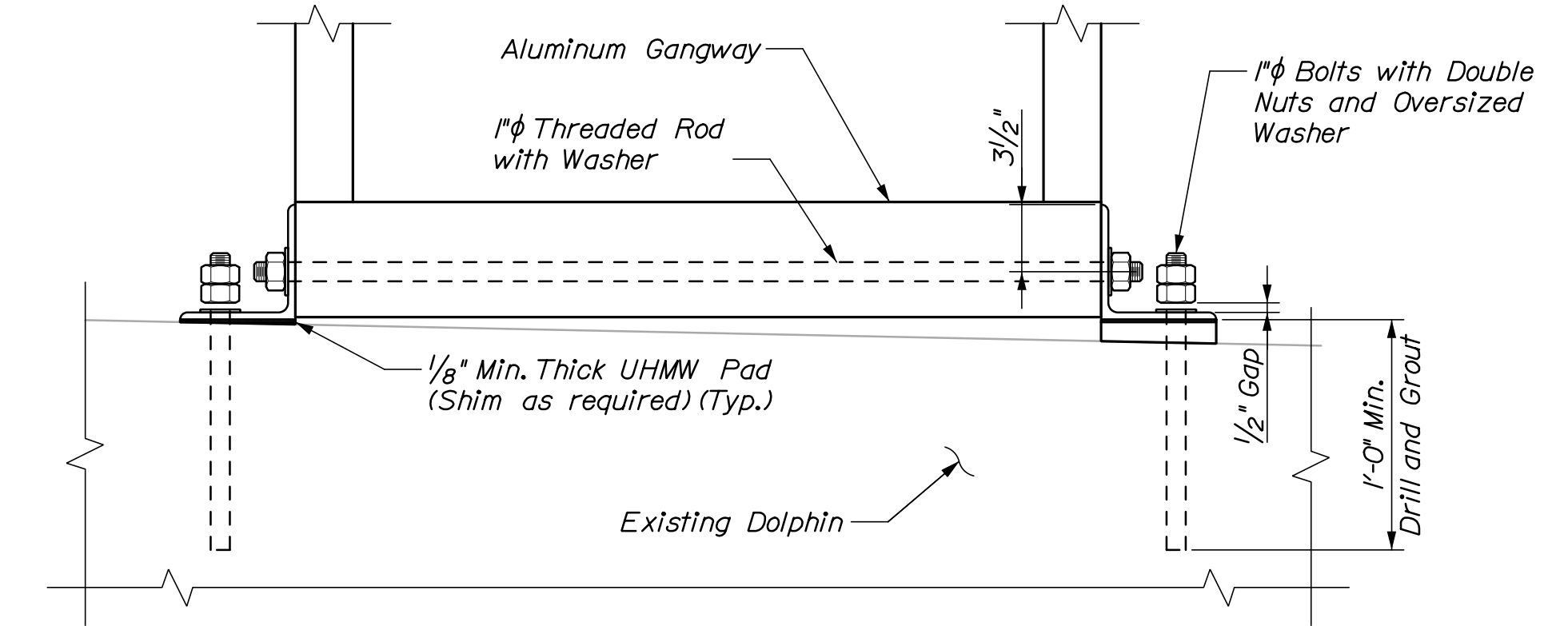
GANGWAY ELEVATION
(Schematically Shown)
1/2" = 1'-0"



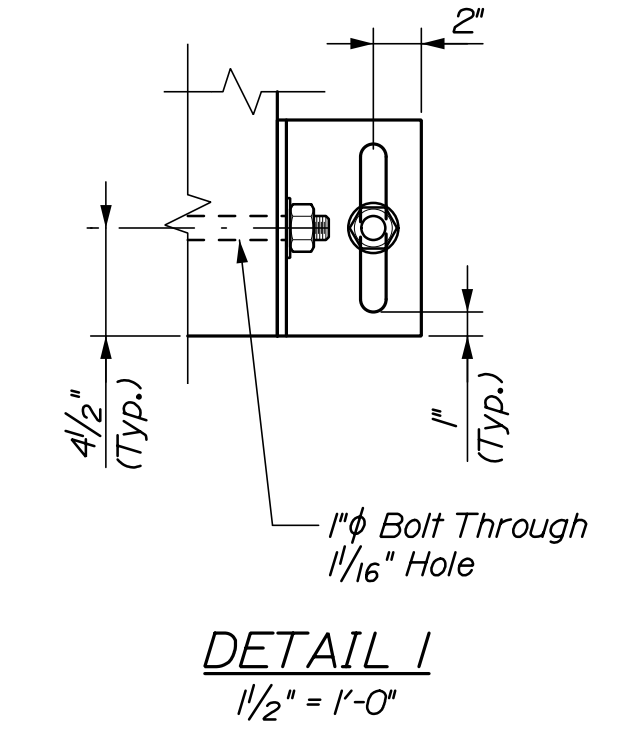
EXISTING DOLPHIN GANGWAY CONNECTION
1" = 1'-0"



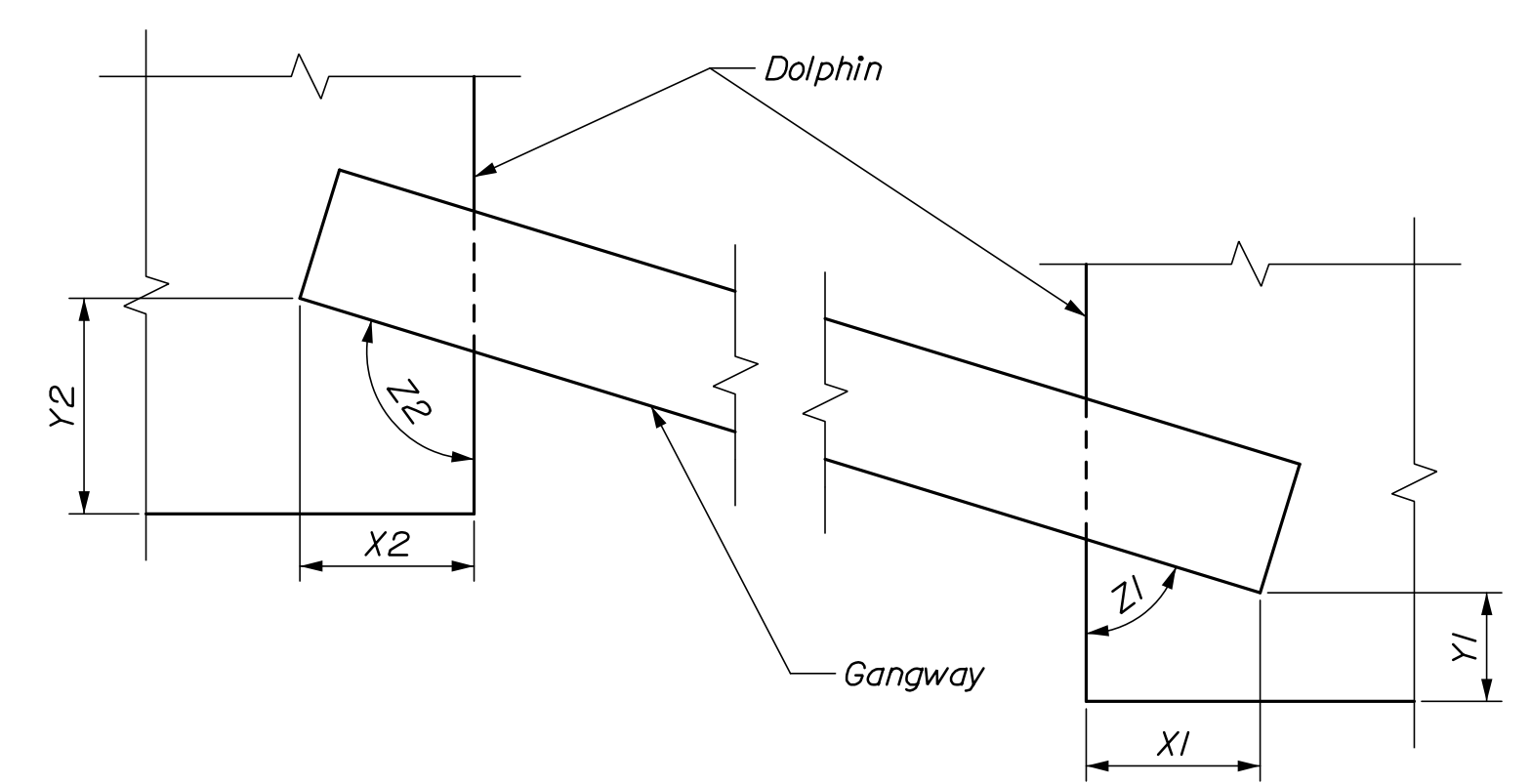
TRANSITION PLATE DETAIL
3" = 1'-0"



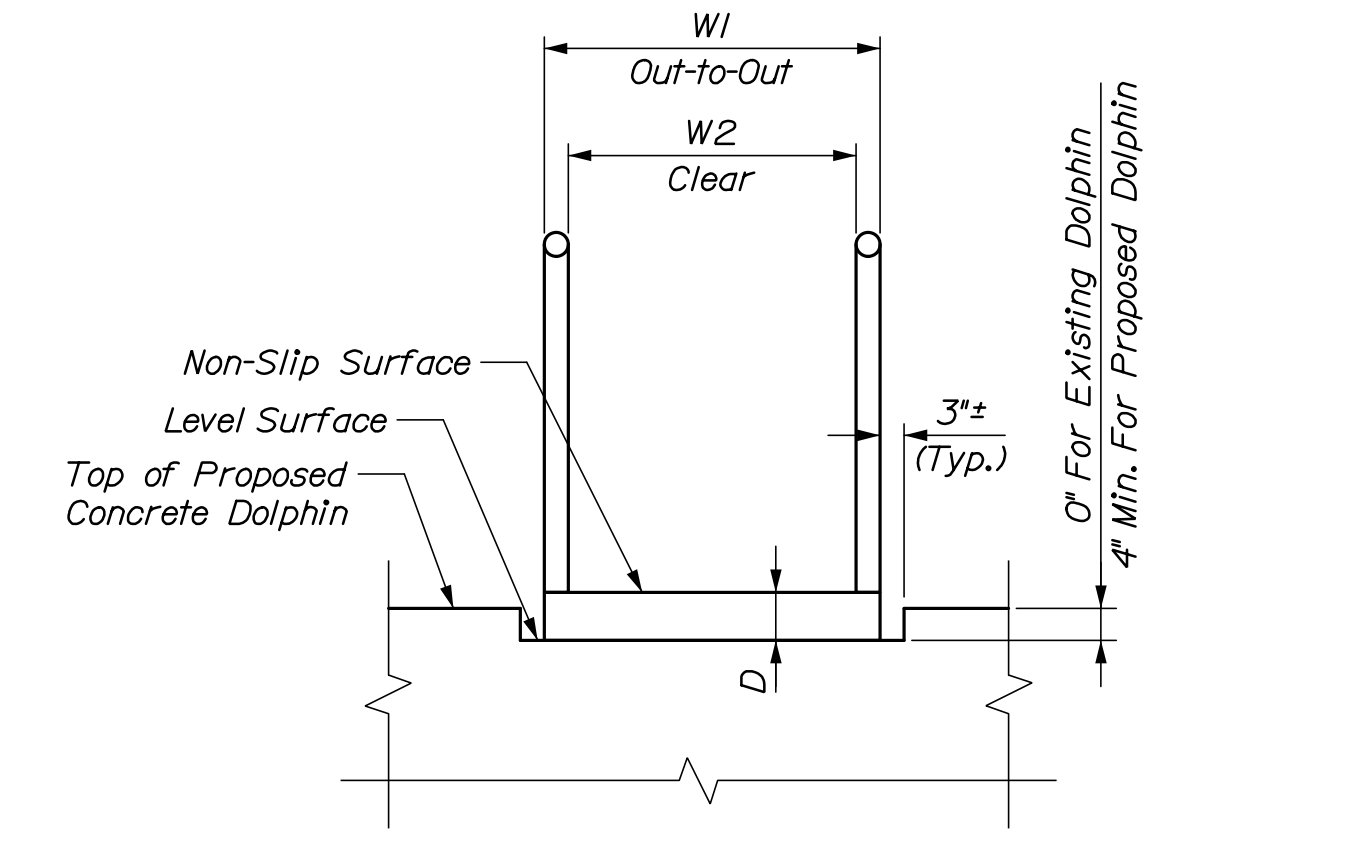
SECTION A-A
1/2" = 1'-0"



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



GANGWAY LAYOUT
N.T.S.



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

**TABLE I
GANGWAY DIMENSIONS**

Gangway I.D.	Dimensions											
	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"	9'-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.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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

DATE
07/20
07/20

BY
P. Bishop
C. Morin

SIGNATURE
10209

P.E. NUMBER
DATE

BASS HARBOR
FERRY TERMINAL

**GANGWAY
AND ELEVATION**

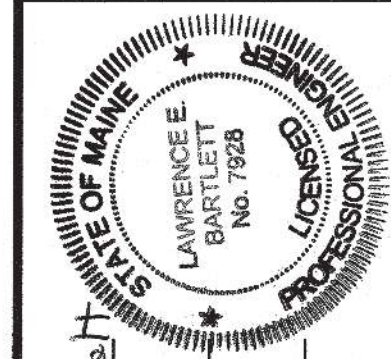
SHEET NUMBER

S12

16 OF 18



WIN
023476.00



Lawrence E. Bartlett
 SIGNATURE
 P.E. NUMBER 7928
 DATE 5/30/2019

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

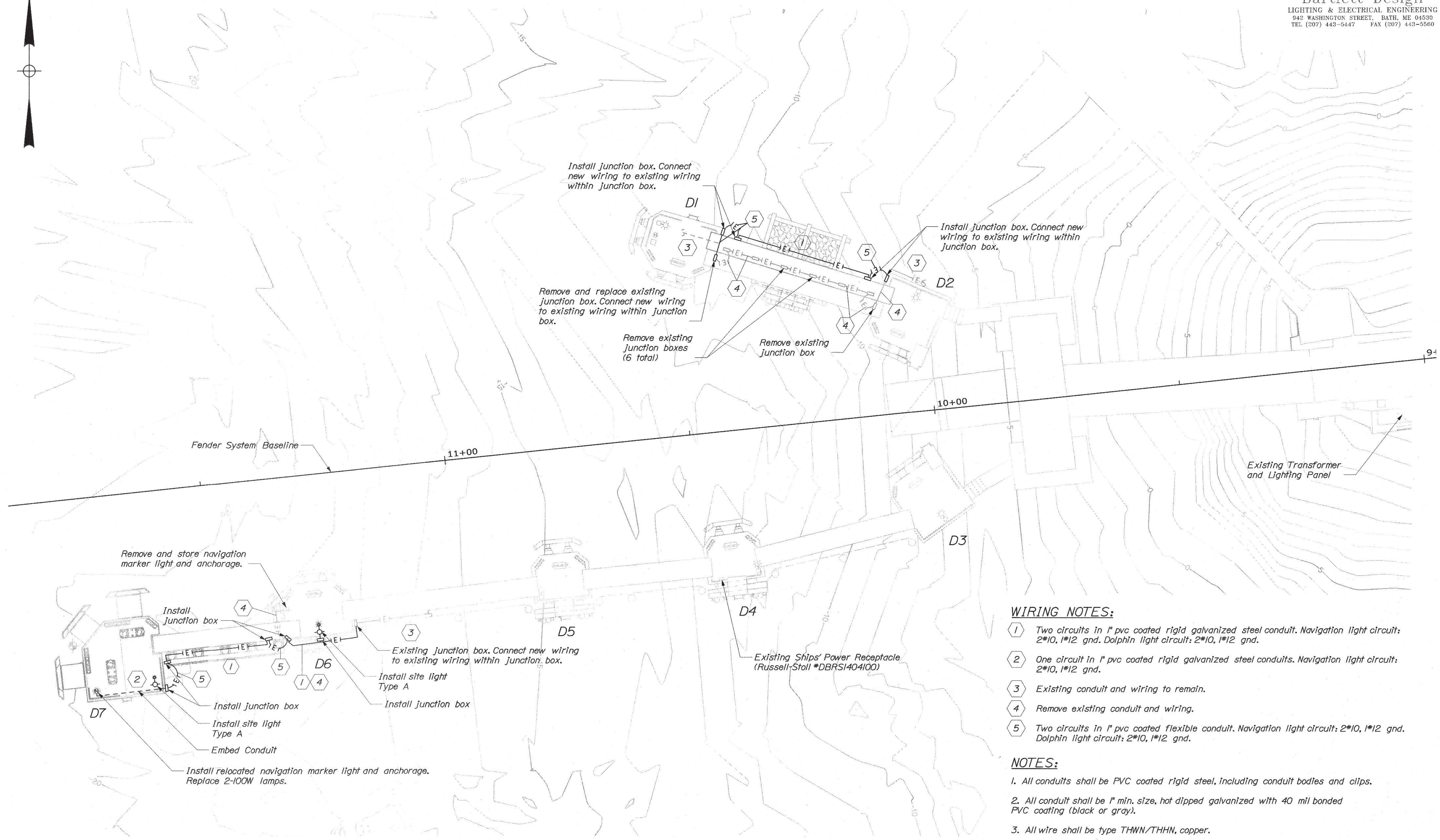
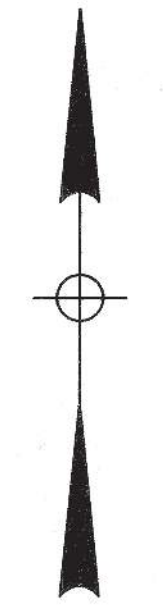
BASS HARBOR
 FERRY TERMINAL
 ELECTRICAL PLAN

SHEET NUMBER

E01

17 OF 18

WIN
 023476.00



WIRING NOTES:

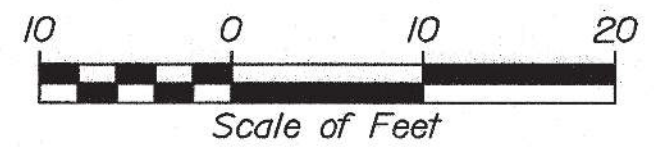
- 1 Two circuits in 1" pvc coated rigid galvanized steel conduit. Navigation light circuit: 2*10, 1*12 gnd. Dolphin light circuit: 2*10, 1*12 gnd.
- 2 One circuit in 1" pvc coated rigid galvanized steel conduits. Navigation light circuit: 2*10, 1*12 gnd.
- 3 Existing conduit and wiring to remain.
- 4 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.

PLAN

1" = 10'-0"



Date: 5/30/2019

Username:

Division:

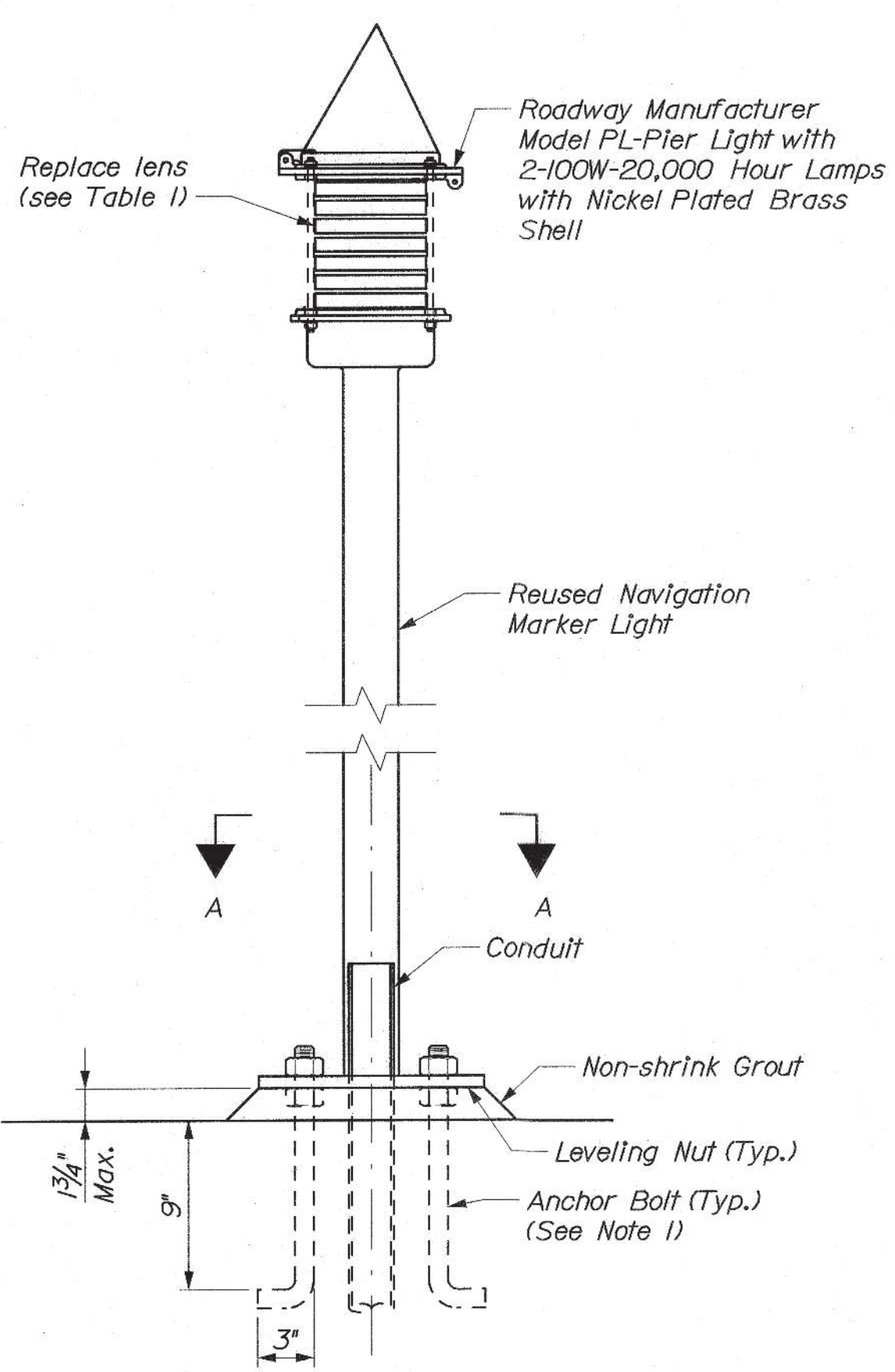
Filename: ...017_ElectricalPlan.dgn

Date: 5/30/2019

Username:

Division:

Filename: ... \018_Electrical Details.dgn



NAVIGATION MARKER INSTALLATION DETAIL
N.T.S.

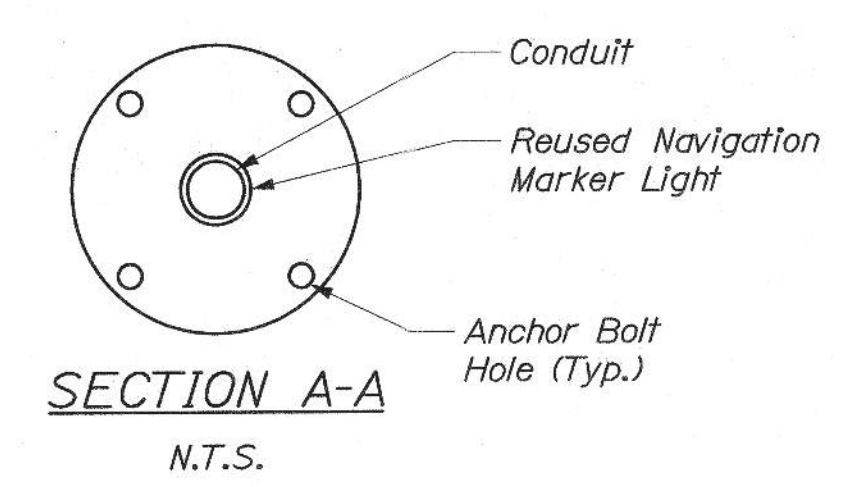
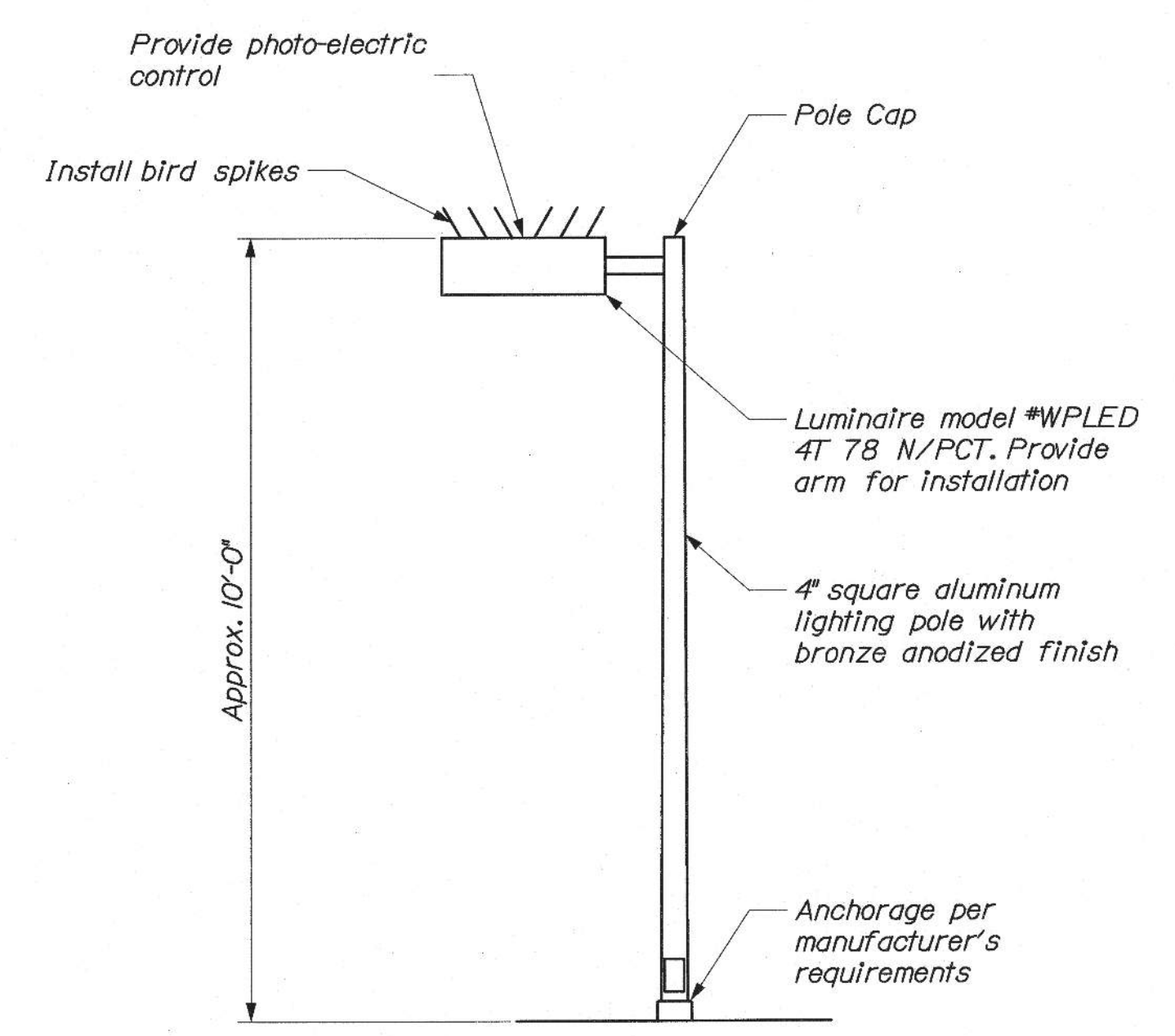
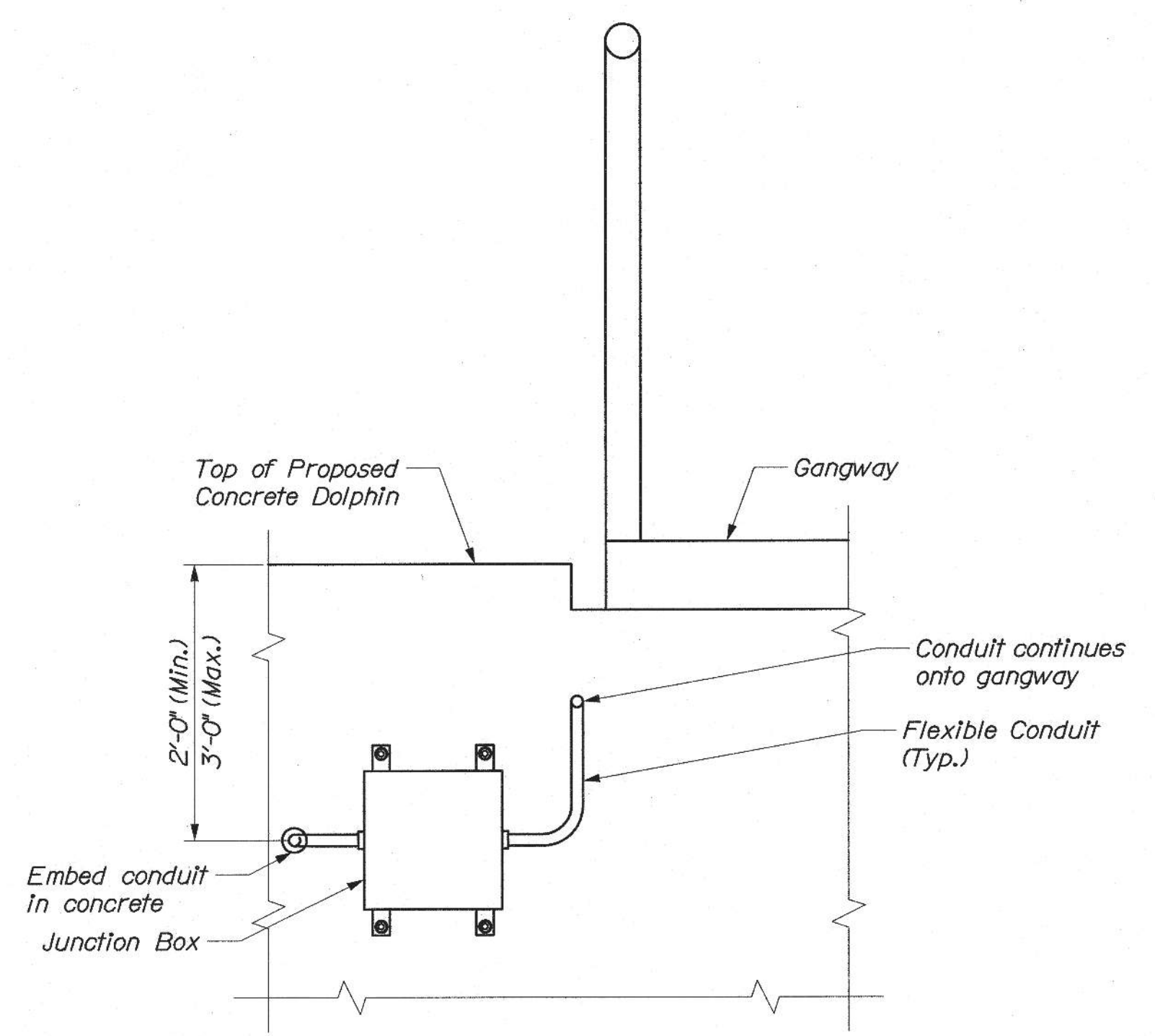


TABLE 1
NAVIGATIONAL MARKER LENS
REPLACEMENT SUMMARY

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.



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		WIN 023476.00
		LAWRENCE C. DOWD SIGNATURE P.E. NUMBER 7528 DATE 5/30/2019
PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	L. Barlett	05/18
CHECKED-REVIEWED	P. Bishop	05/19
DESIGN-DETAILED	C. Morr	
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		
BASS HARBOR FERRY TERMINAL		ELECTRICAL DETAILS
SHEET NUMBER		E02
		18 OF 18

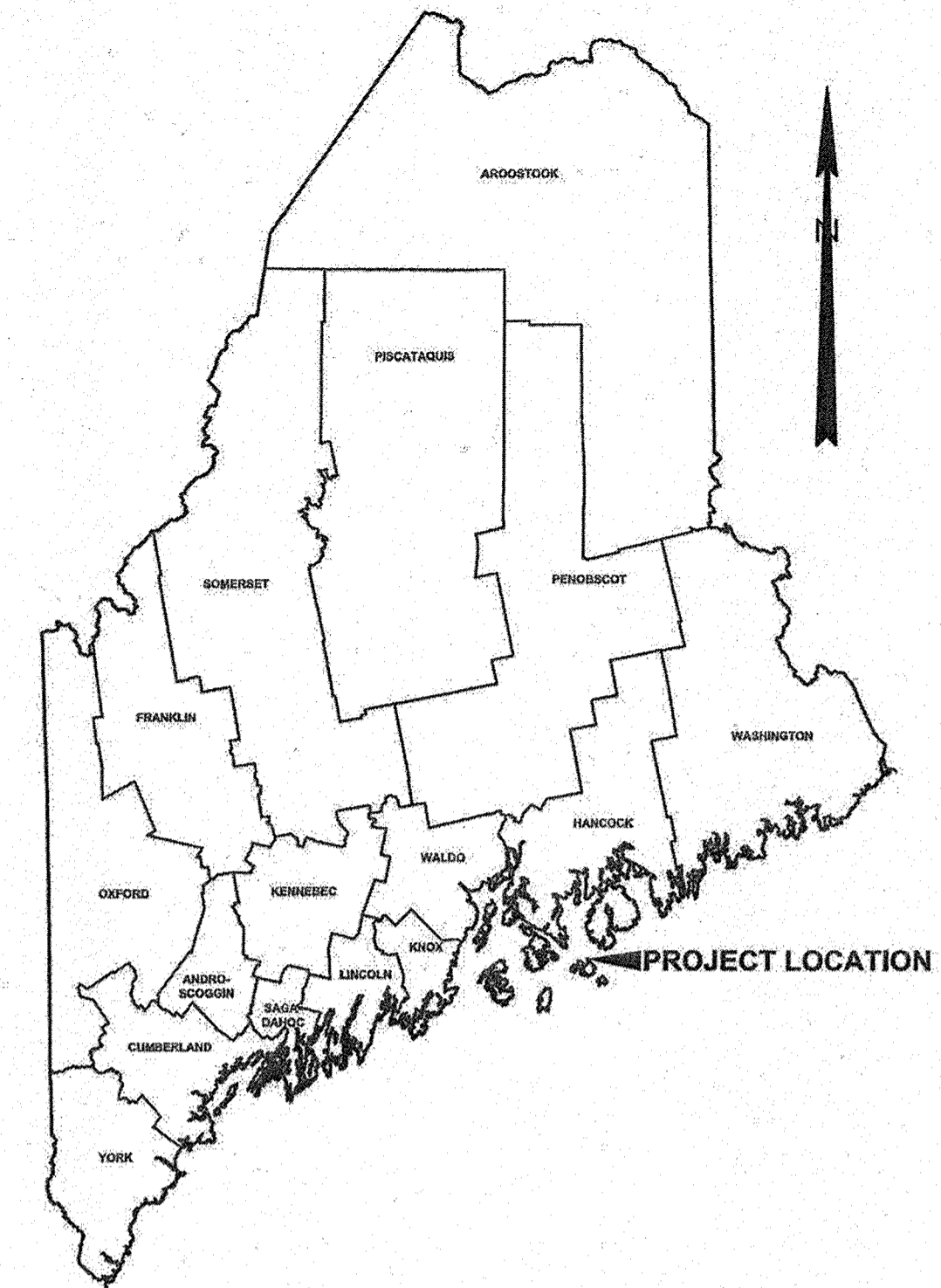


STATE OF MAINE DEPARTMENT OF TRANSPORTATION



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

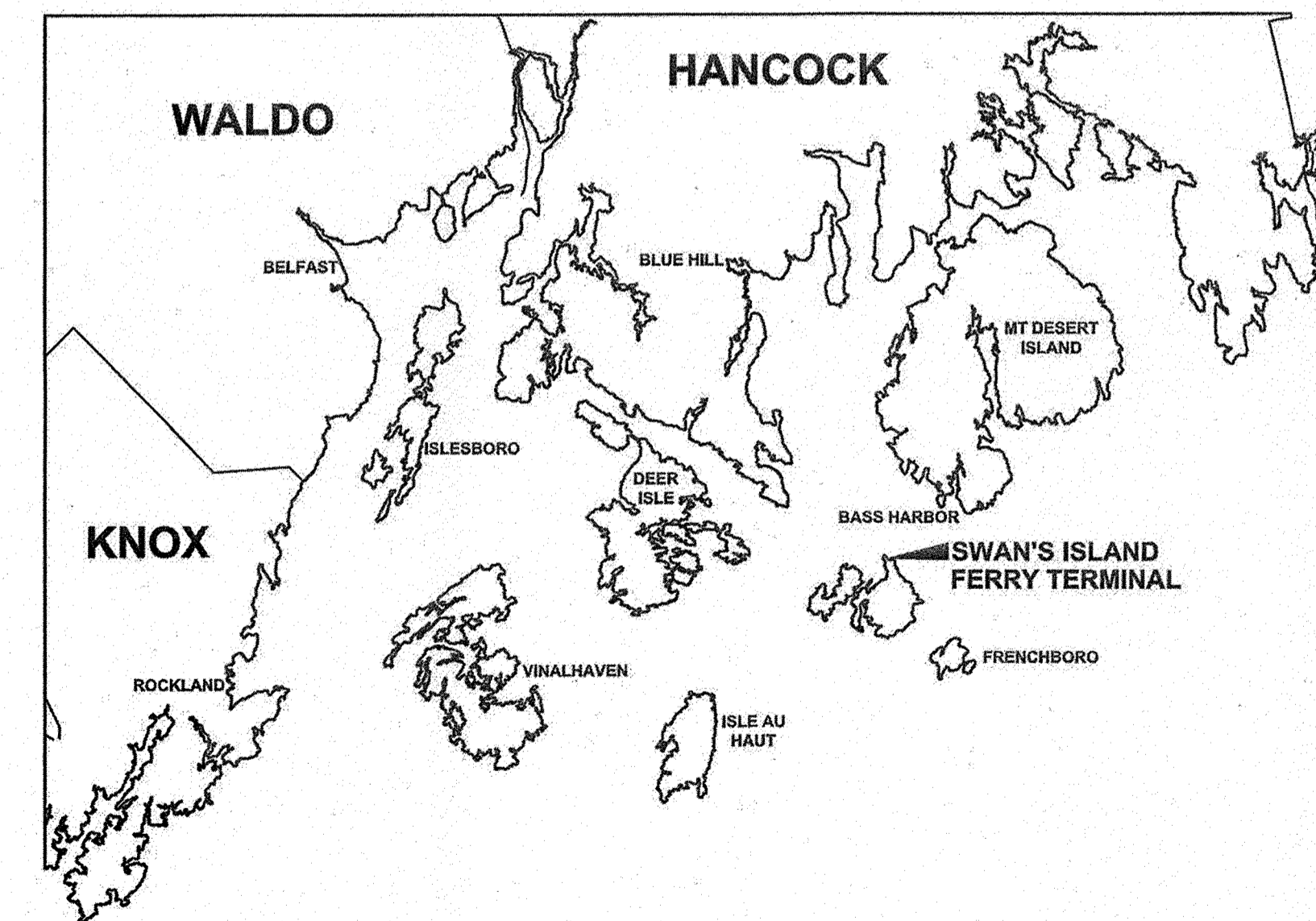
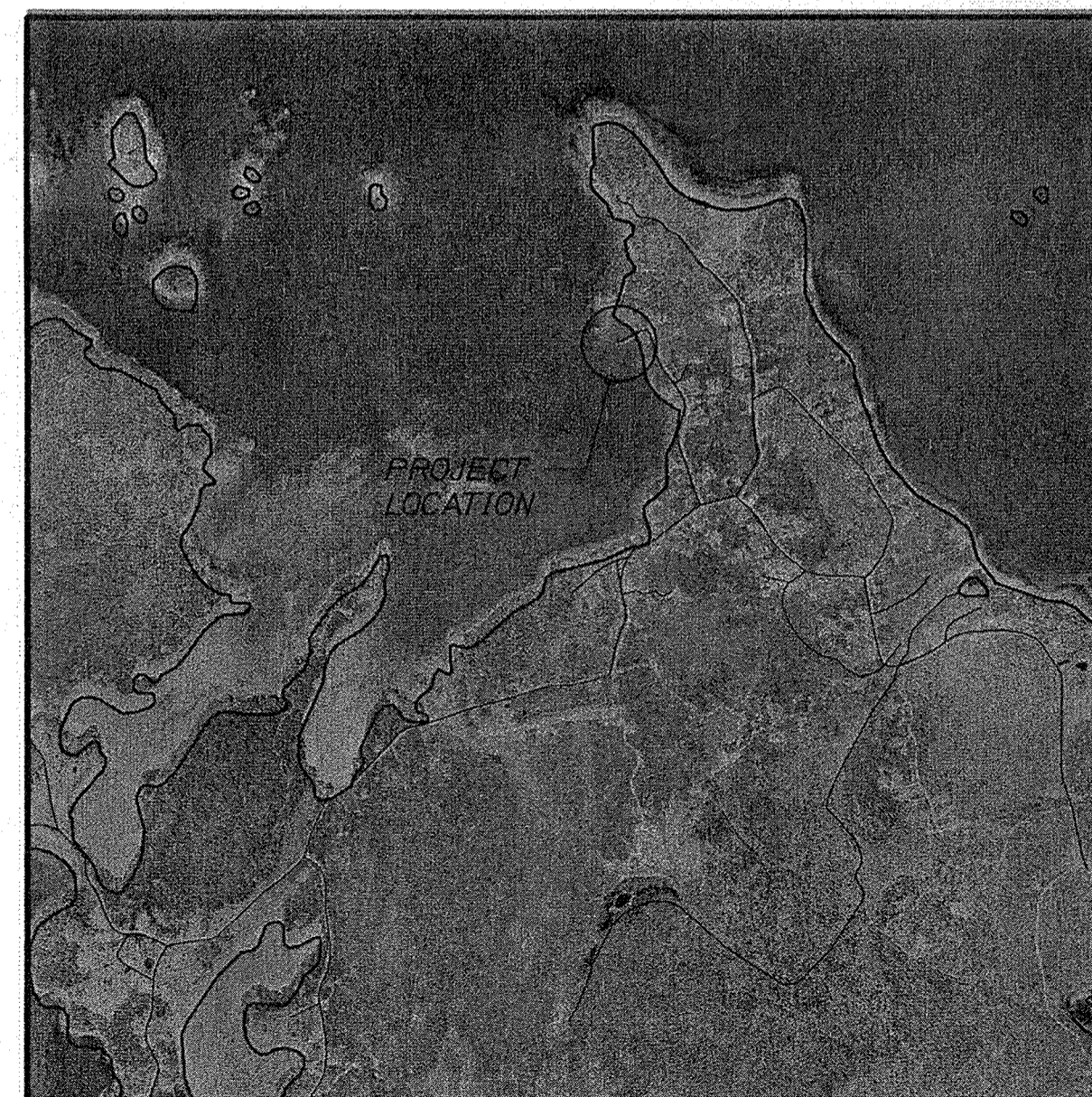
E01	17	ELECTRICAL PLAN
E02	18	ELECTRICAL DETAILS

THE PROFESSIONAL ENGINEER WHOSE STAMP APPEARS ON THIS COVER SHEET BEARS RESPONSIBILITY FOR THE FOLLOWING SHEETS WITHIN THIS DRAWING SET:

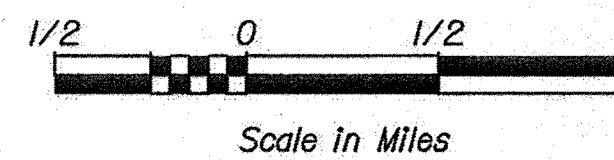
GENERAL PLANS	G01-G03
STRUCTURAL PLANS	S01-S12

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



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	DATE 7-23-2020
APPROVED <i>[Signature]</i>	
COMMISSIONER: <i>[Signature]</i>	
CHIEF ENGINEER: <i>[Signature]</i>	

STATE OF MAINE
CRAG R. MORIN, P.E.
10289
PROFESSIONAL ENGINEER
07/15/20
DATE

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	AUREL CORNEAU II
DESIGNER	CRAG R. MORIN, P.E.
CONSULTANT	HNTB CORPORATION
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

SWAN'S ISLAND FERRY TERMINAL FENDER SYSTEM MODIFICATIONS	HANCOCK COUNTY
SWAN'S ISLAND	TITLE SHEET

WIN 023480.00 FEDERAL PROJECT NO. 02348000

SHEET NUMBER
G01
1 OF 18



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.

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

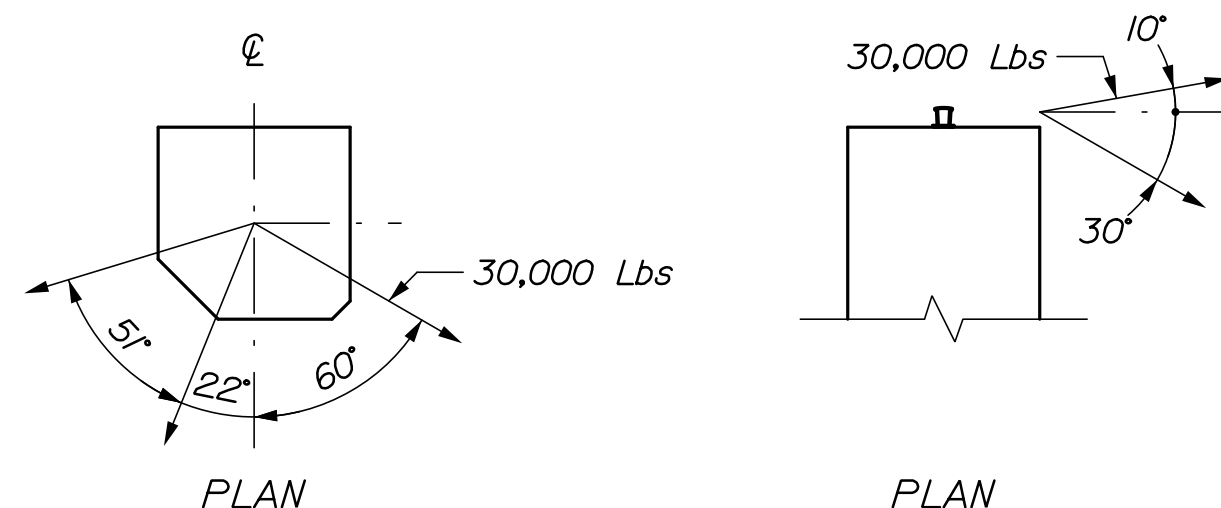
- 1. Vertical control for marine structures is in reference to MLLW (Mean Lower Low Water). To convert to National Geodetic Vertical Datum (NGVD), use the following formula:
E1 (NGVD) = E1 (MLLW) - 9.28 ft
2. Horizontal control is the Maine state plane coordinate system (east zone), NAD 27.

BERTHING LOADS

Table with 6 columns: Dolphin, Berthing Velocity (Ship Velocity, to Fender), App. Angle, Energy to Fender, Minimum Fender Design Energy, Max. Reaction on Dolphin. Rows include Turning Dolphins: Normal and Extreme.

MOORING LOADS

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



FENDER NOTES

- 1. All dimensions, details and existing conditions shall be verified by the Contractor prior to construction.
2. Contractor'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" dia, 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):

Table titled 'Tidal Datums' for Swan's Island. Columns: NGVD29, MSL, MLW, MLLW, STND. Rows: Top of Dolphin, Highest Observed Tide, MHHW, MHW, NGVD29**, MSL, MLW, MLLW, Lowest Observed Tide, STND (Station Datum).

* Along top edge of dolphin at corner nearest pen. Station ID: 8413825, Swans Island, ME Tidal Epoch: 1983-2001
** NGVD29 conversion taken from archive project drawings.

LEGEND:

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

ABBREVIATIONS:

- CY Cubic Yard
EA Each
EL Elevation In Feet
HSS Hollow Structural Sections
ID Inside Diameter
K (KIP) 1000 Pounds
LBS Pounds
LF Linear Feet
MAX. Maximum
MIN. Minimum
NA Not Applicable
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 psf
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 023480.00

Table with columns: BY, DATE, SIGNATURE, P.E. NUMBER, DATE. Rows for P. Bishop and C. Morin.

SWAN'S ISLAND FERRY TERMINAL GENERAL NOTES AND DESIGN CRITERIA

SHEET NUMBER

G02

2 OF 18

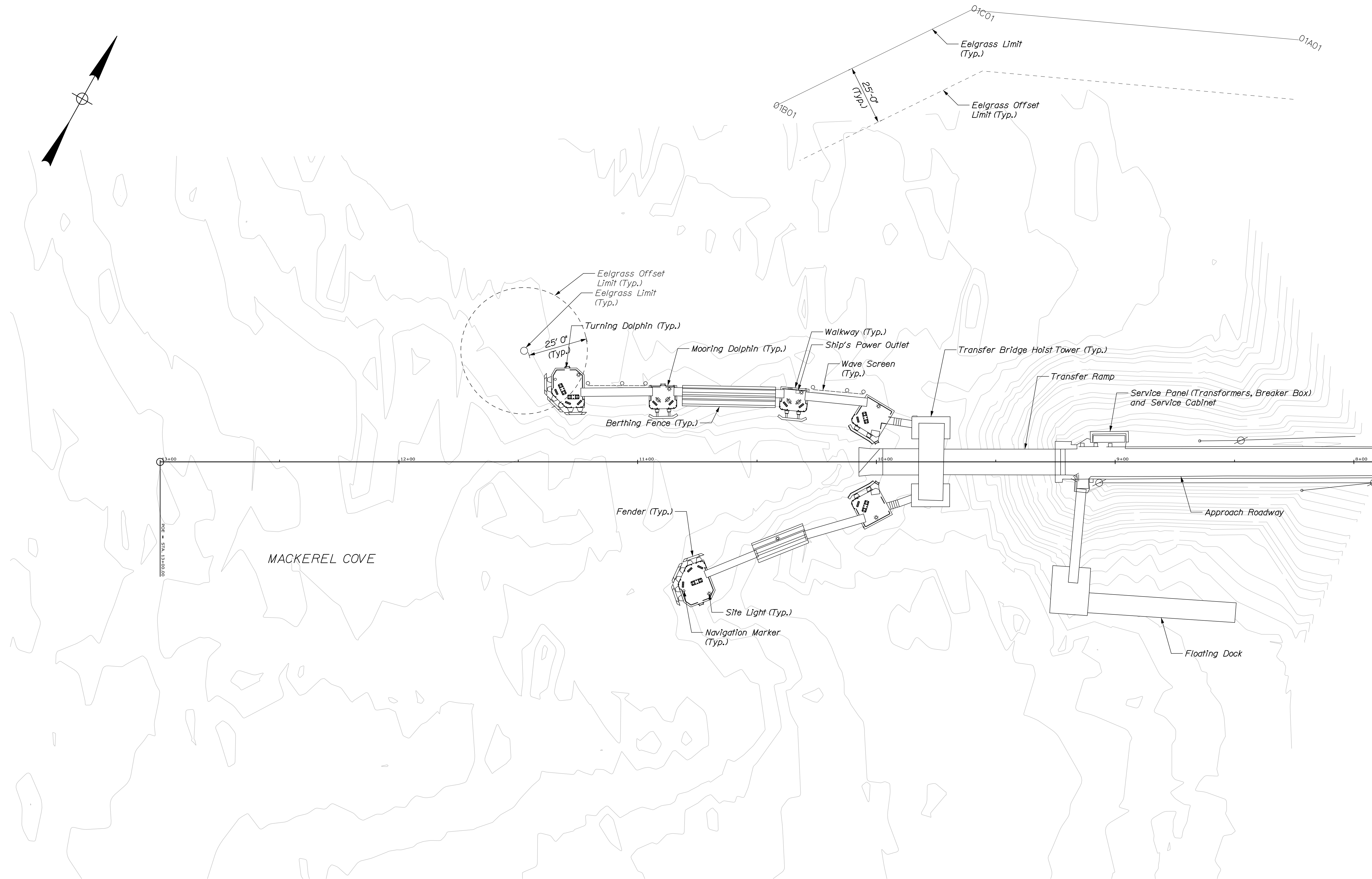
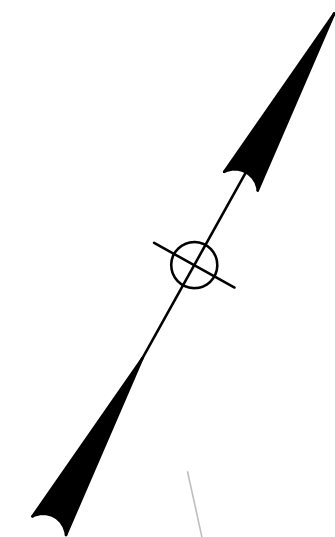


Date: 7/13/2020

Username:

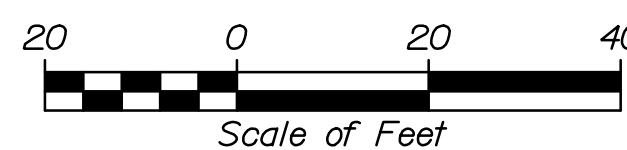
Division:

Filename: 003_Existing Conditions.dgn



SITE PLAN

1" = 20'-0"



NOTES:

1. For existing electrical details, see Sheet E01.
2. Eelgrass limits are approximated boundaries based on a November 2019 dive survey by MaineDOT.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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

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

SIGNATURE
10209
P.E. NUMBER
DATE

SWAN'S ISLAND
FERRY TERMINAL

EXISTING CONDITIONS

SHEET NUMBER
G03
3 OF 18

WIN
023480.00



SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal 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: N02 (wireline)	Operator: Enos / Shore	Datum: MLLW	Sampler: standard split spoon
Logged By: Schonwald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	Date Start/Finish: 8/13/181 0845-1300	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location: per plan (B301) see remarks	Casing ID/OD: HW to 7.1 ft / NW to 7.8 ft	Hammer Efficiency: 0.906	Auger ID/OD: n/a	Water Level: n/a	
<p>IN-SITU SAMPLING AND TESTING: B = Split Spoon Sample U = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample M = Unsuccessful Thin Wall Tube Sample attempt V = In-situ Vane Shear Test W = Unsuccessful In-situ Vane Shear Test attempt R = Rock Core Sample RQD = Rock Quality Designation (%)</p> <p>ADDITIONAL DEFINITIONS: Unrecorded = n/a value N/A = not recorded</p> <p>SOILS ADEQUATELY DESCRIBED BY THE FOLLOWING TEST RESULTS: L = Liquid Limit / Plasticity Index W = Water Content, percent U = Percent Free from grain size analysis UC = Unconfined Compressive Strength of rock</p>					
Sample No.	Pre-Record (In.)	Sample Depth (ft.)	Blow (1/8 in.) Strength (lb/ft ²)	Unrecorded	Lab. Testing Results
10	24/8	0.0 - 2.0	WDH/18"-1	PUSH	
20	24/24	5.0 - 7.0	2-3-4-4	T 11	
30	24/24	10.0 - 12.0	WDH/24"	PUSH	
40	24/11	15.0 - 17.0	WDH/18"-1	RC	
50	13/8	24.0 - 25.1	WDH-1-50/1"	RC	
<p>Visual Description and Remarks: RECENT MARINE SEDIMENTS (organic silt) 2.7 ft: Gravel and cobbles noted. 10: 10:1 Brown, m. dense, Silty GRAVEL, little to some fine to coarse sand with chunks of granitic grading to grey, silty GRAVEL, some fine to coarse sand with chunks of basalt. 11: 11:1 NW refusal. Roller cone to 7.7 ft. Split NW casing to 7.8 ft. 12: Top of bedrock at Elev. -19.8 ft. 13: Bedrock: Very hard, typically fresh, ophanitic to fine grained, dark green grey BASALT with occasional white, throughout and few zones of fine, line concentration, close, low angle and moderately dipping breaks undulating, rough, fresh to discolored, and open with lime infilling. Open fracture from 8.9 to 9.1 ft. (Costline Formation) Core finesst 2100/ 2100/ 2100/ - minsec/ft ROCK QUALITY = VERY POOR TO POOR R2: Similar to R1, except close to moderately spaced breaks. 2100/ 2100/ 2100/ 2100/ 2145 minsec/ft ROCK QUALITY = FAIR R3: Similar to R1, except close to moderately spaced breaks. 2100/ 2100/ 2100/ 2100/ 2145 minsec/ft ROCK QUALITY = GOOD R4: Similar to R1, except close to moderately spaced, low angle breaks. One 1-inch thick, moderately dipping zone at the inclusion at 22.7 ft. open fracture from 25.1 to 25.5 ft. 2100/ 2100/ 2100/ 2100/ 2140 minsec/ft ROCK QUALITY = FAIR TO GOOD</p>					
<p>Remarks: 8/13/181 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.</p>					
<p>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.</p>					

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal 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: N02 (wireline)	Operator: Enos / Shore	Datum: MLLW	Sampler: standard split spoon
Logged By: Schonwald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	Date Start/Finish: 8/13/181 0845-1300	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location: per plan (B301) see remarks	Casing ID/OD: HW to 7.1 ft / NW to 7.8 ft	Hammer Efficiency: 0.906	Auger ID/OD: n/a	Water Level: n/a	
<p>IN-SITU SAMPLING AND TESTING: B = Split Spoon Sample U = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample M = Unsuccessful Thin Wall Tube Sample attempt V = In-situ Vane Shear Test W = Unsuccessful In-situ Vane Shear Test attempt R = Rock Core Sample RQD = Rock Quality Designation (%)</p> <p>ADDITIONAL DEFINITIONS: Unrecorded = n/a value N/A = not recorded</p> <p>SOILS ADEQUATELY DESCRIBED BY THE FOLLOWING TEST RESULTS: L = Liquid Limit / Plasticity Index W = Water Content, percent U = Percent Free from grain size analysis UC = Unconfined Compressive Strength of rock</p>					
Sample No.	Pre-Record (In.)	Sample Depth (ft.)	Blow (1/8 in.) Strength (lb/ft ²)	Unrecorded	Lab. Testing Results
RS	60/60	25.5 - 31.5	ROD: 34"-61%		
RE	31/30	31.5 - 34.1	ROD: 8"-02%		
<p>Visual Description and Remarks: 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. 2100/ 2100/ 2100/ 2100/ 2120 minsec/ft ROCK QUALITY = FAIR R6: Similar to R1, except predominately low angle breaks. 2100/ - minsec/ft ROCK QUALITY = VERY POOR TO POOR Bottom of Exploration at 34.1 feet below ground surface.</p>					
<p>Remarks: 8/13/181 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.</p>					
<p>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.</p>					

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal 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: N02 (wireline)	Operator: Enos / Shore	Datum: MLLW	Sampler: standard split spoon
Logged By: Schonwald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	Date Start/Finish: 8/9/181 1430-8/10/181 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location: per plan (B301) see remarks	Casing ID/OD: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906	Auger ID/OD: n/a	Water Level: n/a	
<p>IN-SITU SAMPLING AND TESTING: B = Split Spoon Sample U = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample M = Unsuccessful Thin Wall Tube Sample attempt V = In-situ Vane Shear Test W = Unsuccessful In-situ Vane Shear Test attempt R = Rock Core Sample RQD = Rock Quality Designation (%)</p> <p>ADDITIONAL DEFINITIONS: Unrecorded = n/a value N/A = not recorded</p> <p>SOILS ADEQUATELY DESCRIBED BY THE FOLLOWING TEST RESULTS: L = Liquid Limit / Plasticity Index W = Water Content, percent U = Percent Free from grain size analysis UC = Unconfined Compressive Strength of rock</p>					
Sample No.	Pre-Record (In.)	Sample Depth (ft.)	Blow (1/8 in.) Strength (lb/ft ²)	Unrecorded	Lab. Testing Results
10	24/8	0.0 - 2.0	WDH/18"-1	PUSH	
20	24/24	5.0 - 7.0	2-3-4-4	T 11	
30	24/24	10.0 - 12.0	WDH/24"	PUSH	
40	24/11	15.0 - 17.0	WDH/18"-1	RC	
50	13/8	24.0 - 25.1	WDH-1-50/1"	RC	
<p>Visual Description and Remarks: 10: 10:1 Grey brown, v. soft, GRANULIC SILT, some fine sand with shells gravel on top of spoon. RECENT MARINE SEDIMENTS 4.0 ft: Apparent change to olive grey, marine silt-clay. 20: Olive brown, slightly mottled grading to olive grey, m. stiff, SILT, some clay grading to clayey SILT. MARINE SILT-CLAY CRUST 30: Dark grey with black, v. soft, Silty CLAY, trace very fine sand, MARINE SILT-CLAY 40: Dark grey, v. soft, Silty CLAY. Dark grey, Silty CLAY changing at 24.6 ft to:</p>					
<p>Remarks: 8/9/181 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. 17.71 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.</p>					
<p>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.</p>					

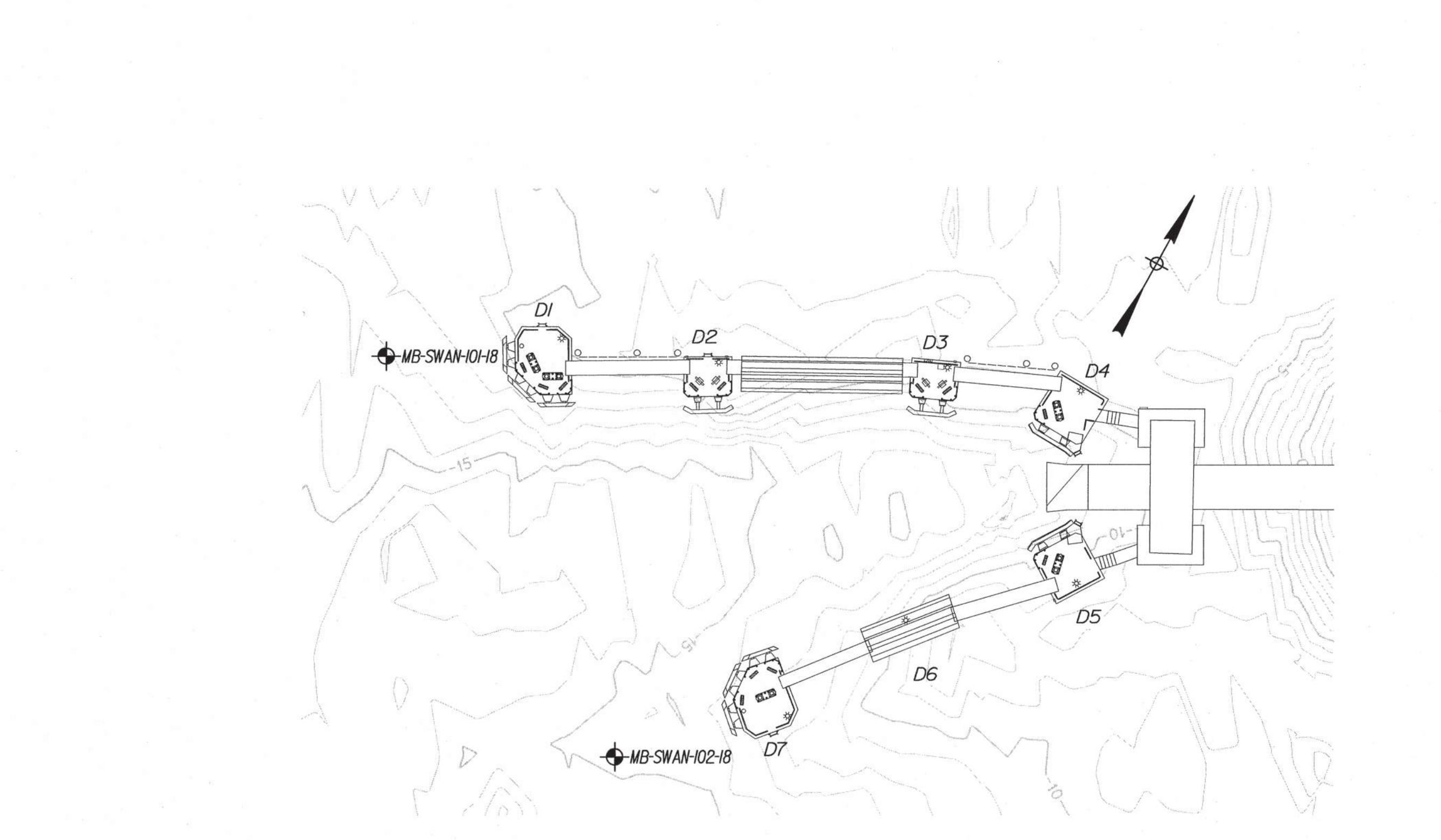
SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal Swans Island, Maine		Boring No.: MB-SWAN-102-18 WIN: 023480.00	
Driller: New England Boring Contractors	Elevation (ft.): -15.0 ft (mudline)	Core Barrel: N02 (wireline)	Operator: Enos / Shore	Datum: MLLW	Sampler: standard split spoon
Logged By: Schonwald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	Date Start/Finish: 8/9/181 1430-8/10/181 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location: per plan (B301) see remarks	Casing ID/OD: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906	Auger ID/OD: n/a	Water Level: n/a	
<p>IN-SITU SAMPLING AND TESTING: B = Split Spoon Sample U = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample M = Unsuccessful Thin Wall Tube Sample attempt V = In-situ Vane Shear Test W = Unsuccessful In-situ Vane Shear Test attempt R = Rock Core Sample RQD = Rock Quality Designation (%)</p> <p>ADDITIONAL DEFINITIONS: Unrecorded = n/a value N/A = not recorded</p> <p>SOILS ADEQUATELY DESCRIBED BY THE FOLLOWING TEST RESULTS: L = Liquid Limit / Plasticity Index W = Water Content, percent U = Percent Free from grain size analysis UC = Unconfined Compressive Strength of rock</p>					
Sample No.	Pre-Record (In.)	Sample Depth (ft.)	Blow (1/8 in.) Strength (lb/ft ²)	Unrecorded	Lab. Testing Results
R1	60/60	25.3 - 30.3	ROD: 21"-05%	N02	
R2	60/60	30.3 - 35.3	ROD: 30"-00%		
<p>Visual Description and Remarks: R1: Grey, Silty GRAVEL, little to some sand, till 25.1 ft: Split-spoon and HW casing refusal. Top of bedrock at Elev. -40.1 ft. R1: Bedrock: Very hard, typically fresh, ophanitic to fine grained, green grey BASALT with numerous ophiolite 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. (Costline Formation) Core finesst 2145/ 2155/ 2155/ 1150/ 1150 minsec/ft ROCK QUALITY = POOR R2: Similar to R1, except close to moderately spaced, low angle to moderately dipping breaks fresh to discolored and open with occasional mud infilling. 1130/ 1125/ 1130/ 1125/ 1140 minsec/ft ROCK QUALITY = POOR TO FAIR R3: Similar to R1, except zones of high lime concentration and close, low angle breaks typically discolored with mud infilling. 1130/ 1125/ 1130/ 2100/ - minsec/ft ROCK QUALITY = POOR R4: Similar to R1, except moderately spaced, moderately dipping breaks typically fresh with occasional mud infilling. Occasional breaks along potassium feldspar-granite inclusions. 2100/ 2100/ 2100/ 2100/ 2115 minsec/ft ROCK QUALITY = FAIR TO GOOD R5: Similar to R4, except breaks are close to moderately spaced. 1150/ 1145/ 1145/ 1125/ 1115 minsec/ft ROCK QUALITY = FAIR</p>					
<p>Remarks: 8/9/181 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. 17.71 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.</p>					
<p>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.</p>					

SCHONWALD ENGINEERING ASSOCIATES, INC.		PROJECT: Fender System Modifications Maine State Ferry Terminal 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: N02 (wireline)	Operator: Enos / Shore	Datum: MLLW	Sampler: standard split spoon
Logged By: Schonwald	Rig Type: Mobile Drill B-53	Hammer Wt./Fall: 140 lbs / 30 inches	Date Start/Finish: 8/9/181 1430-8/10/181 1030	Drilling Method: cased wash boring	Hammer Type: auto hammer
Boring Location: per plan (B301) see remarks	Casing ID/OD: HW to 25.1 ft / NW to 25.3 ft	Hammer Efficiency: 0.906	Auger ID/OD: n/a	Water Level: n/a	
<p>IN-SITU SAMPLING AND TESTING: B = Split Spoon Sample U = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample M = Unsuccessful Thin Wall Tube Sample attempt V = In-situ Vane Shear Test W = Unsuccessful In-situ Vane Shear Test attempt R = Rock Core Sample RQD = Rock Quality Designation (%)</p> <p>ADDITIONAL DEFINITIONS: Unrecorded = n/a value N/A = not recorded</p> <p>SOILS ADEQUATELY DESCRIBED BY THE FOLLOWING TEST RESULTS: L = Liquid Limit / Plasticity Index W = Water Content, percent U = Percent Free from grain size analysis UC = Unconfined Compressive Strength of rock</p>					
Sample No.	Pre-Record (In.)	Sample Depth (ft.)	Blow (1/8 in.) Strength (lb/ft ²)	Unrecorded	Lab. Testing Results
R6	60/60	50.1 - 55.1	ROD: 28"-07%		
R7	58/58	55.1 - 59.9	ROD: 56"-09%		
<p>Visual Description and Remarks: R6: Similar to R1 with zones of significant lime and potassium feldspar concentrations. Close to moderately spaced, low angle to moderately dipping breaks typically fresh with occasional mud infilling. 1110/ 1135/ 2100/ 2100/ 2155/ 2145 minsec/ft ROCK QUALITY = POOR TO FAIR R7: Similar to R6, except breaks are moderately spaced and low angle. 1150/ 2100/ 2100/ 2100/ - minsec/ft ROCK QUALITY = EXCELLENT Bottom of Exploration at 59.9 feet below ground surface.</p>					
<p>Remarks: 8/9/181 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. 17.71 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.</p>					
<p>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.</p>					

GEOTECHNICAL NOTES:

- The geotechnical report for the project is entitled "Geotechnical Design Report, Fender System Modifications, Maine State Ferry Terminal, Swans Island, Maine, MaineDOT WIN 023480.00," dated May 2019 and prepared by Schonwald Engineering Associates, Inc. The report is available on the MaineDOT website.
- Geotechnical information furnished or referenced in this plan set is for the Bidders' and Contractors' use. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the time of construction. The Department shall not be responsible for the Bidders' and Contractors' interpretations of, or conclusions drawn from, the geotechnical information. The boring logs contained in the plan set and the referenced report present interpretive subsurface information collected at discrete locations. Data provided may not be representative of the subsurface conditions between widely-spaced boring locations.
- Grid north on the North American Datum 1983 (NAD83).
- Tidal datum is Mean Lower Low Water (MLLW).

BORING COORDINATES		
Location	Northing	Easting
MB-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

SWAN'S ISLAND FERRY TERMINAL BORING LOGS

SHEET NUMBER G04 4 OF 18

WIN 023480.00

ISABEL V. SCHONWALD No. 7528 PROFESSIONAL ENGINEER LICENSED IN MAINE

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGNED-DATE	REVISIONS	DATE
N. Wilby	P. Bishop	C. Morin	05/19	1	
				2	
				3	
				4	
				FIELD CHANGES	

DOLPHIN COORDINATES

EXISTING D1

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

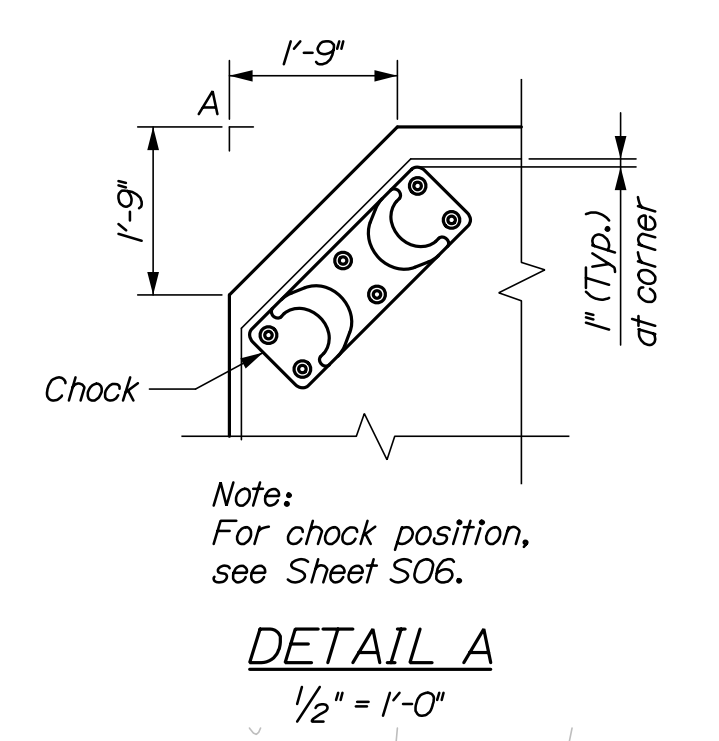
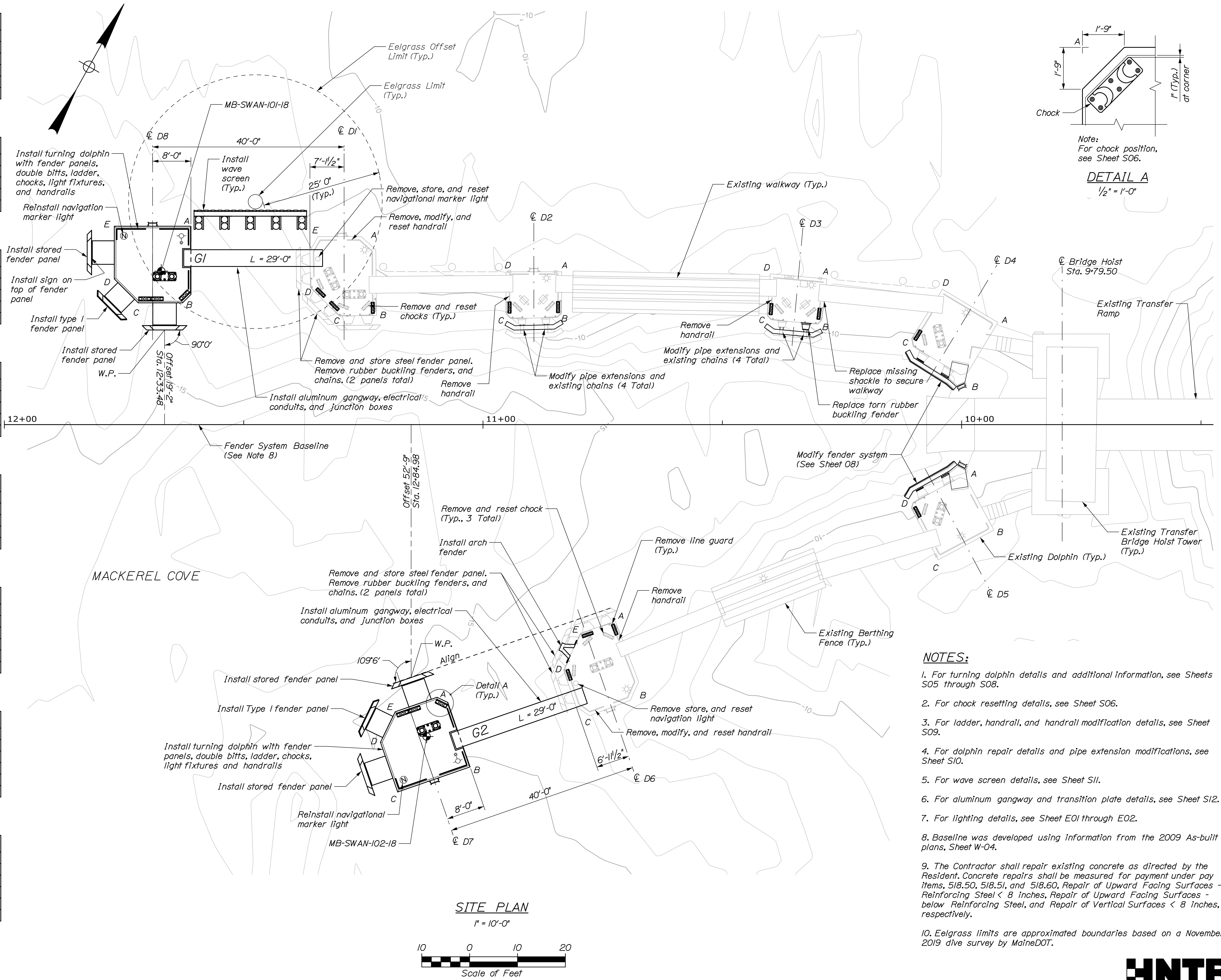
LOCATION	NORTHING	EASTING
A	187479.83	1004220.00
B	187469.20	1004232.73
C	187458.39	1004223.56
D	187465.64	1004215.55
E	187474.08	1004214.86

PROPOSED D7

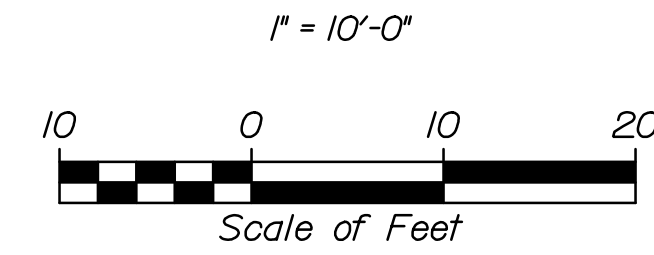
LOCATION	NORTHING	EASTING
A	187449.13	1004196.37
B	187438.47	1004208.30
C	187426.54	1004197.64
D	187433.87	1004189.44
E	187440.92	1004189.04

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



SITE PLAN



- 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 a November 2019 dive survey by MaineDOT.

Date: 7/13/2020

Username:

Division:

Filename: 005_Site Plan.dgn

DATE	BY	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
07/20	P. Bishop	N. Willey	C. Morin						
07/20	C. Morin								

SIGNATURE	P.E. NUMBER	DATE
	10209	

SHEET NUMBER

S01



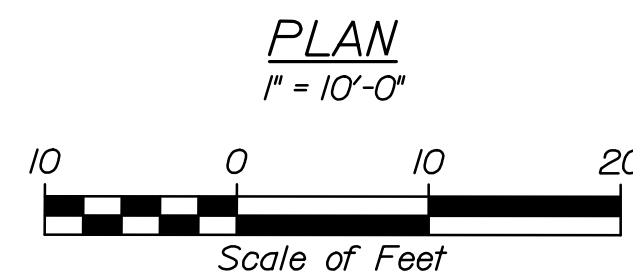
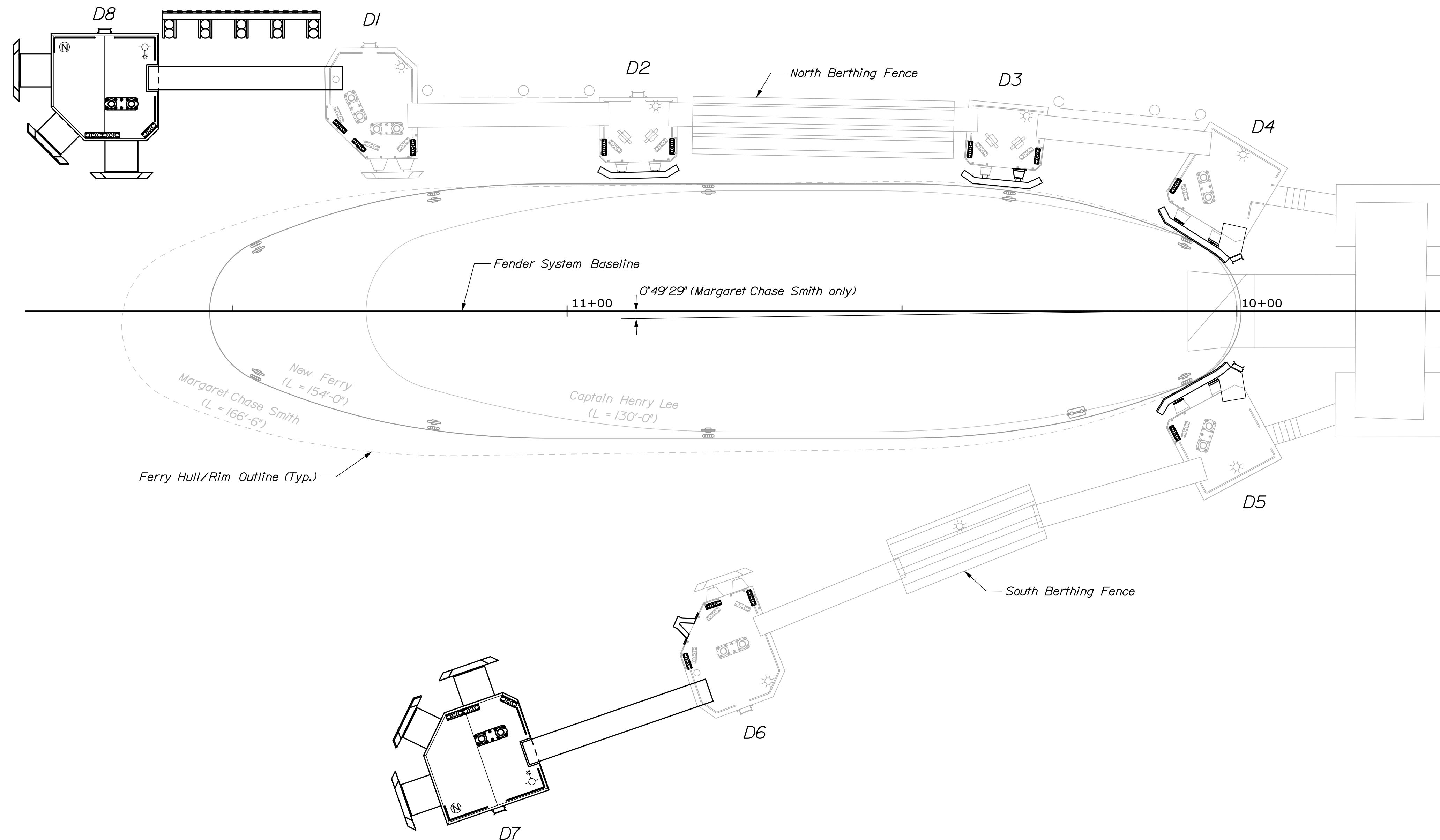
WIN
023480.00

Date: 7/13/2020

Username:

Division:

Filename: 006_Berth Plan.dgn



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

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

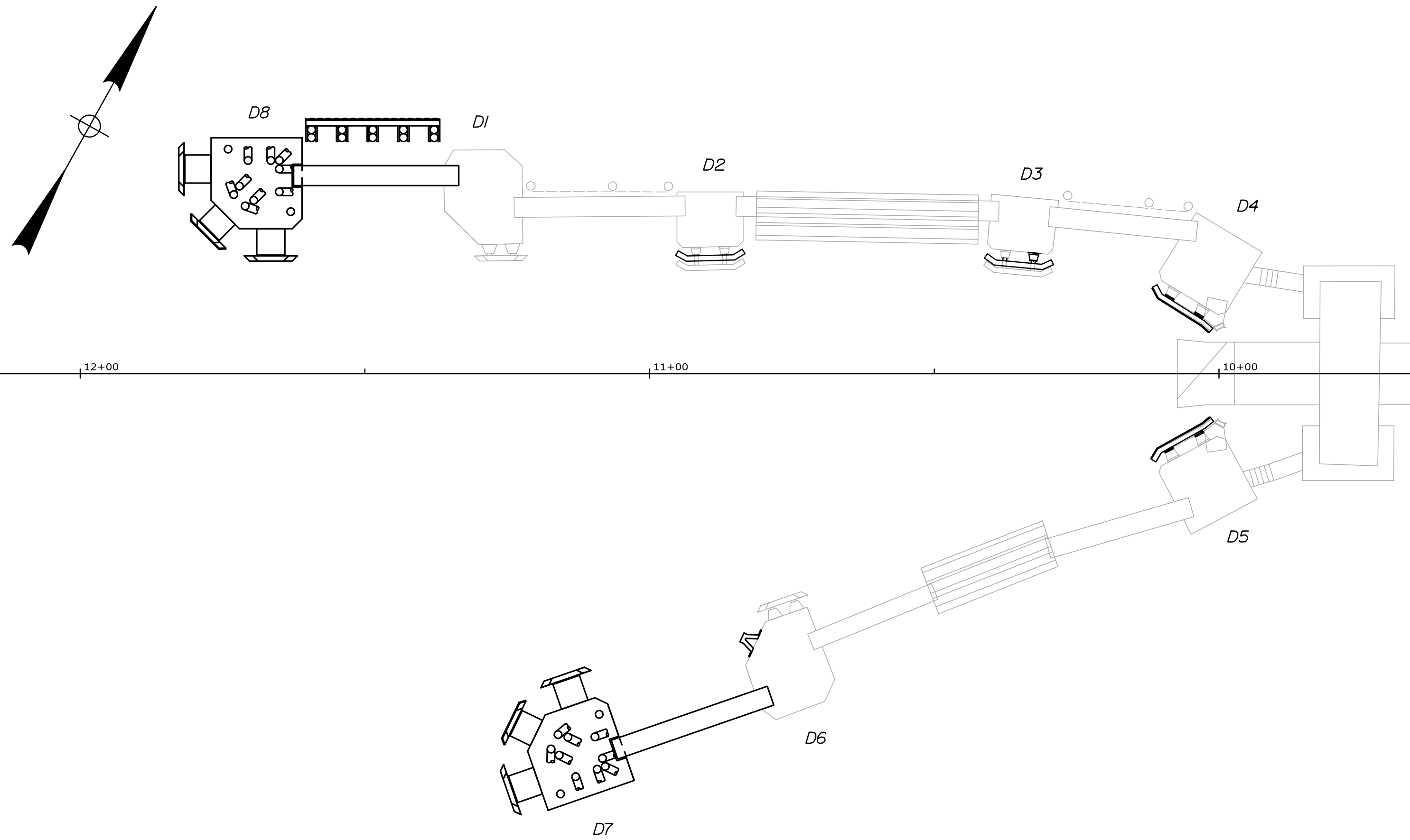
WIN
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PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	N. Willey	07/20
CHECKED-REVIEWED	P. Bishop	07/20
DESIGN-DETAILED	C. Morin	
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND
 FERRY TERMINAL
 BERTH PLAN

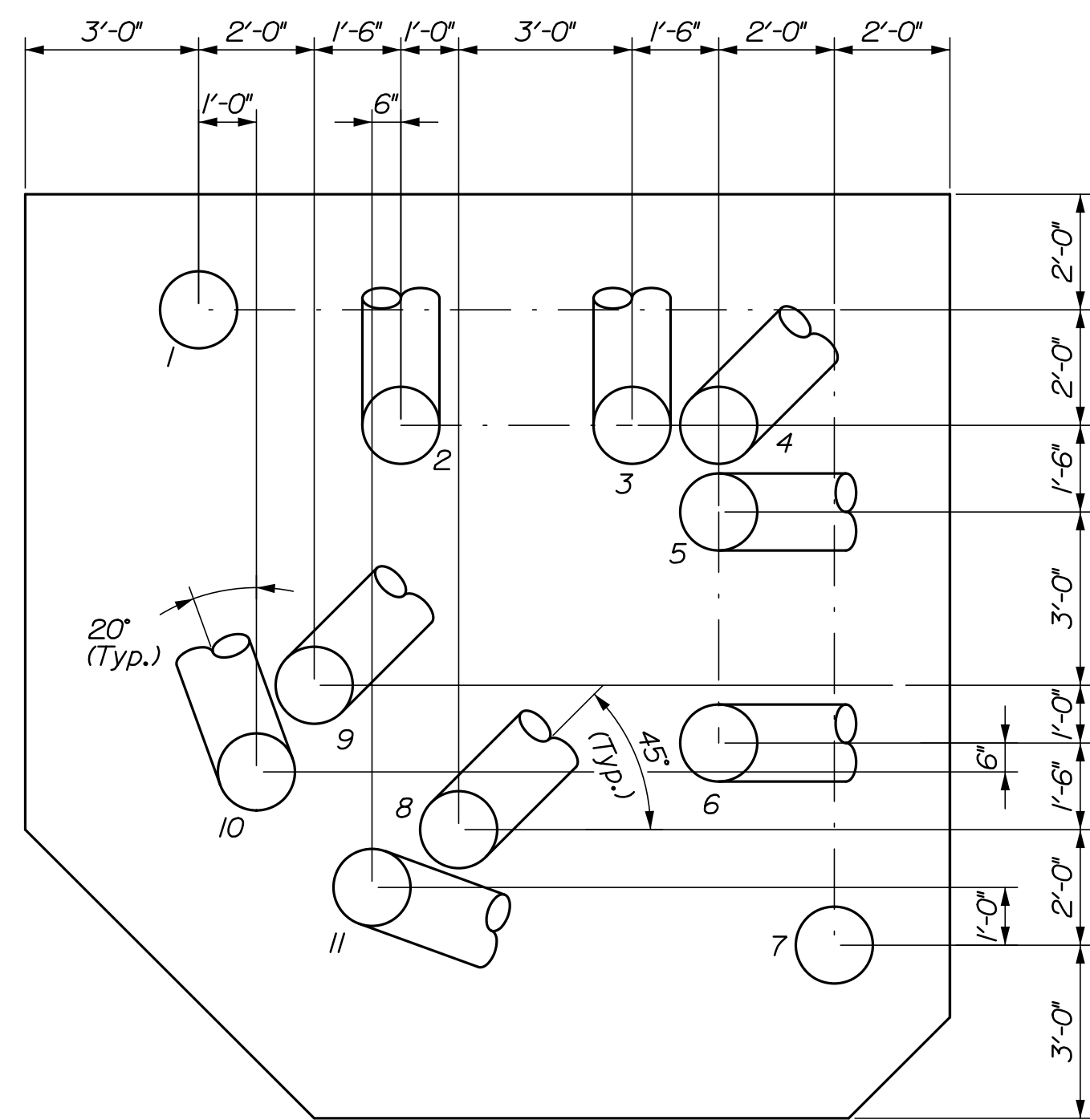
SHEET NUMBER
S02
 6 OF 18





PLAN

1/16" = 1'-0"

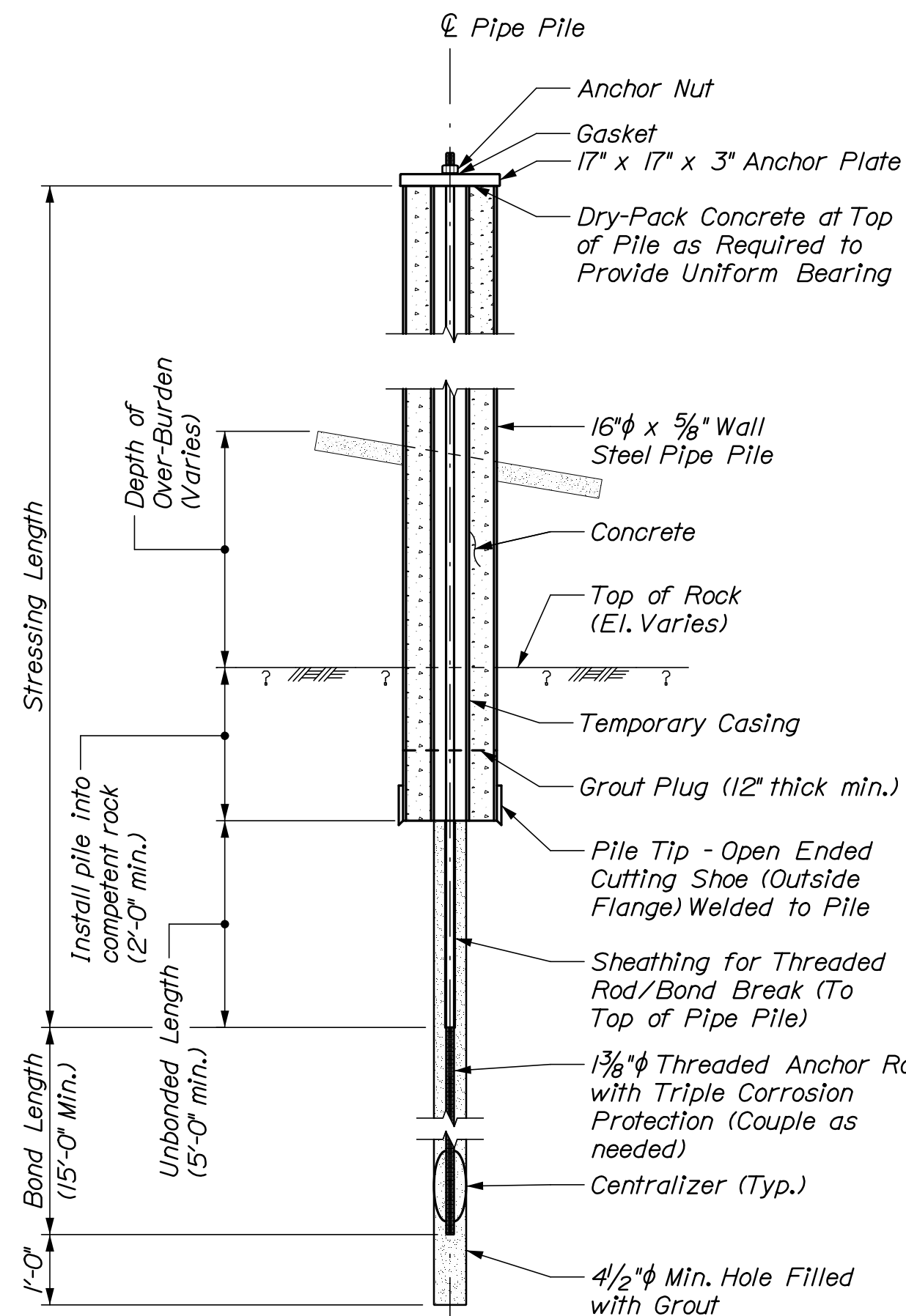


FOUNDATION PLAN

(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:

- A length of 5' has been included for contingency to each estimated pile length to determine order length.
- All steel pipe piles shall have rock anchors. For rock anchors, see detail.
- All steel pipe piles shall have aluminum anodes.
- For anode details, see Sheet S04.
- 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:

- Advance pipe pile open ended using drilling methods to top of competent rock and socket into competent rock per detail.
- Pile shall be cut off at final top elevation to perform anchor load test. Refer to structural drawings for top of pile elevations.
- 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.
- Install temporary casing with centralizers as needed until it is seated into the grout plug to bedrock at the bottom of pile.
- Insert rock anchor drill casing and drill bit into temporary casing and drill anchor hole. Minimum length of anchor hole per the detail.
- Clean and flush rock cuttings from anchor hole. Do not allow drill cuttings to enter the pipe pile.
- Install triple corrosion protected anchor, sheathing and centralizers, preassembled to the required dimensions.
- 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.
- Install anchor plate at top of anchor with hex nut and hardened washer.
- Verify that pile head is restrained from moving laterally by fixing the pile head to the pile template, falsework or other appropriate means.
- 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.
- 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.
- 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:

- 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.
- 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.

Date: 7/13/2020

Username:

Division:

Filename: 007_Dolphin Foundation Plan.dgn

STATE OF MAINE
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PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
REVISIONS 1
REVISIONS 2
REVISIONS 3
FIELD CHANGES

DATE
07/20
07/20

BY
P. Bishop
C. Morin

SIGNATURE
10209

P.E. NUMBER
DATE

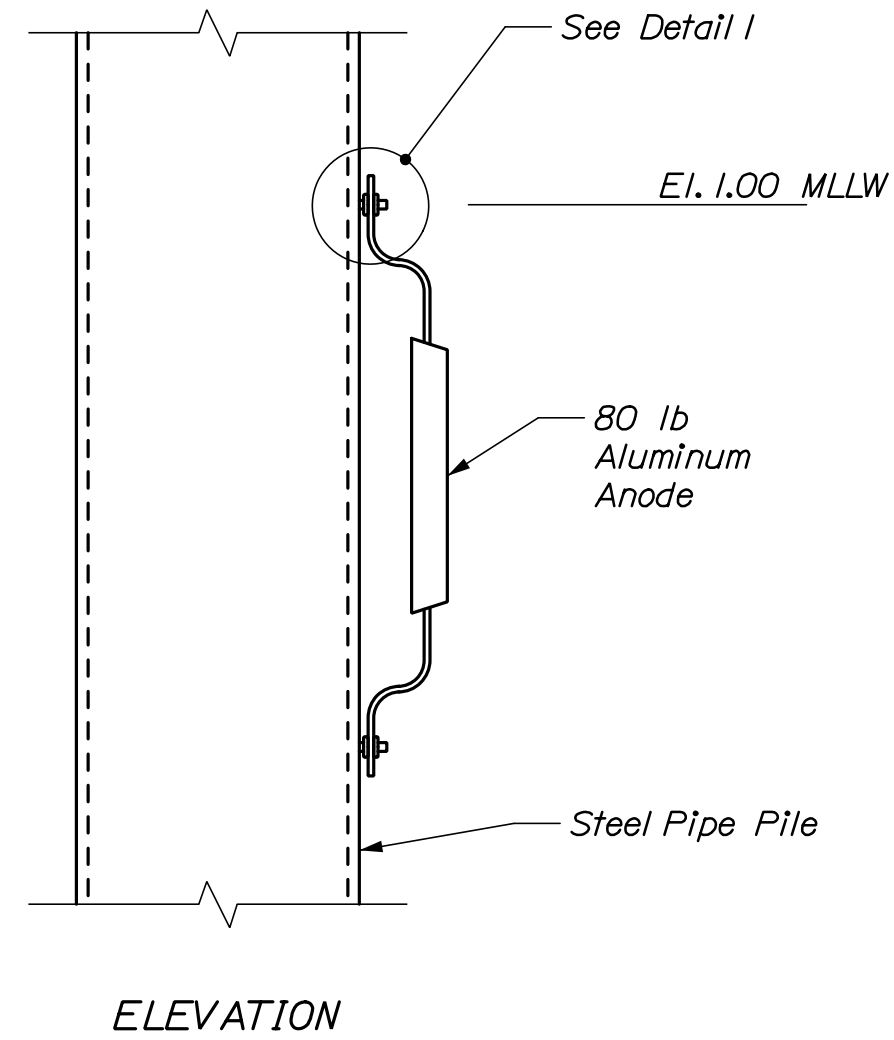
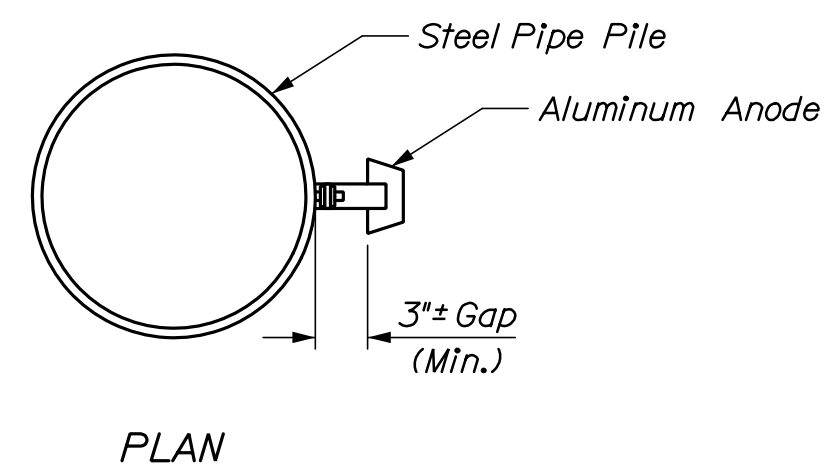
SWAN'S ISLAND
FERRY TERMINAL
DOLPHIN
FOUNDATION PLAN

SHEET NUMBER

S03

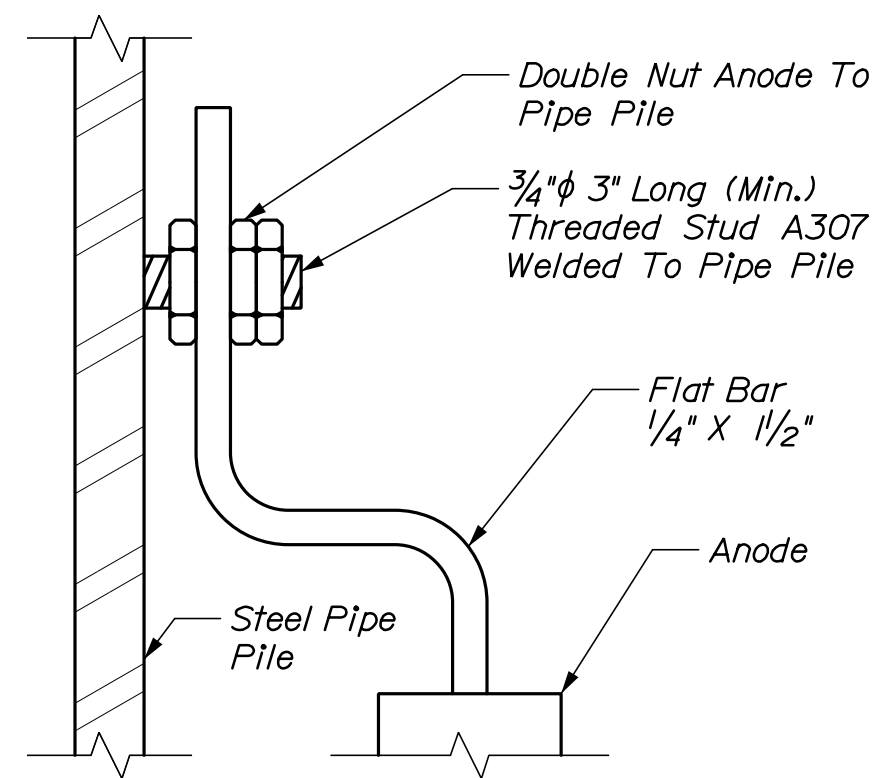
7 OF 18





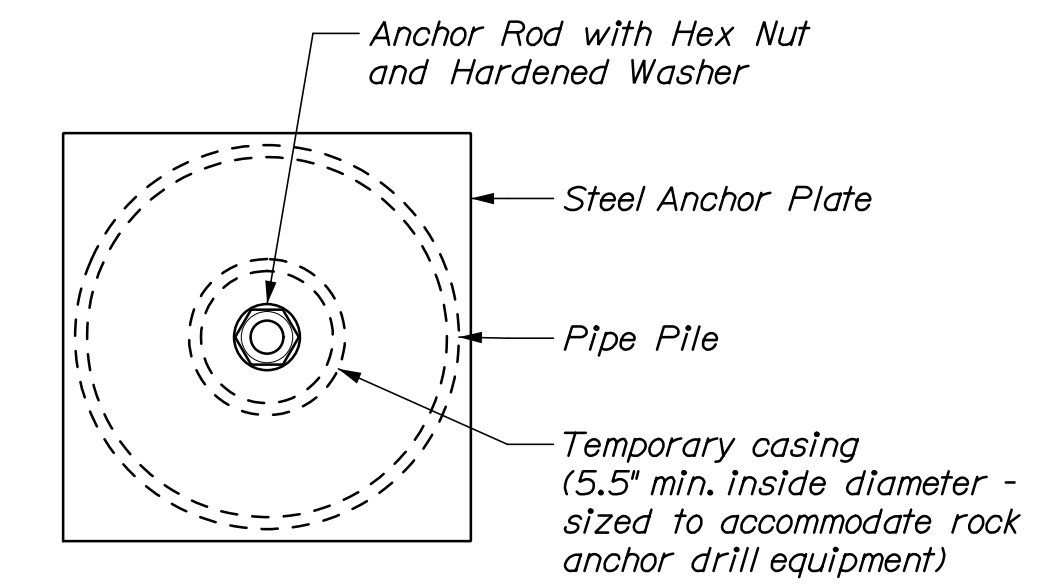
Note: Anode shall be positioned along the inshore face of piles. Set top of Anode at +1.00 MLLW

ANODE DETAIL
N.T.S.

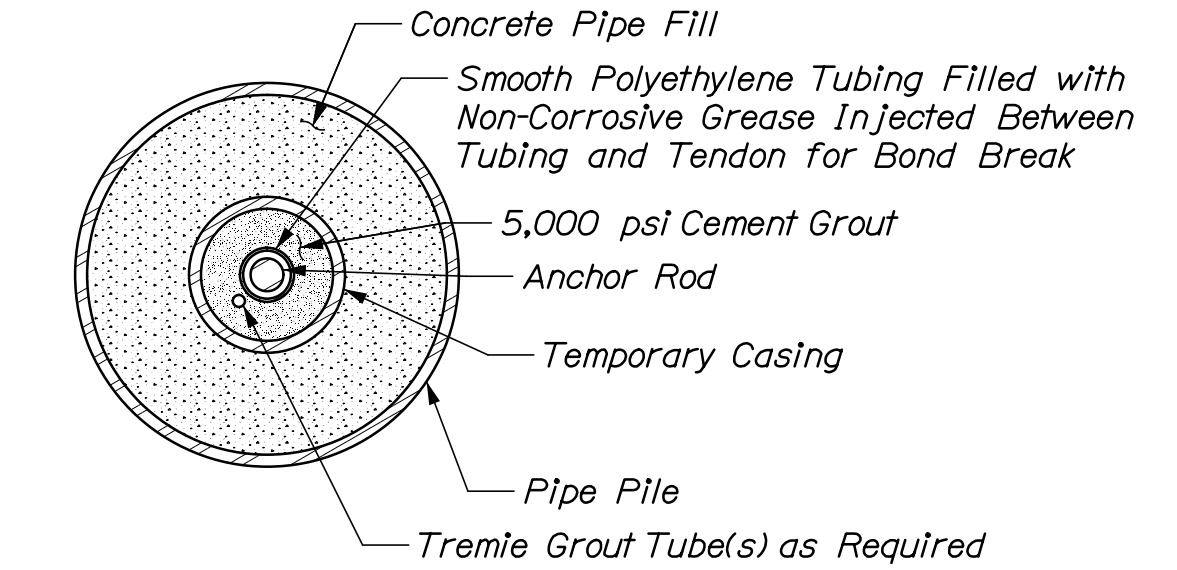


Note: Studs and hardware shall be A307.

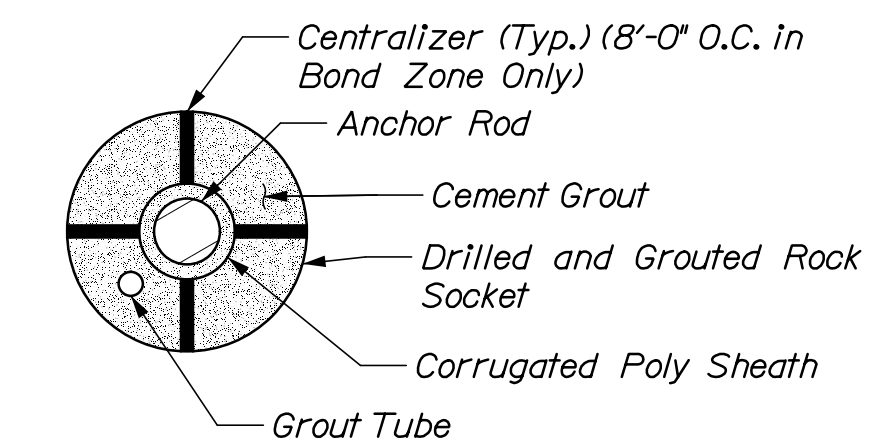
N.T.S.



N.T.S.



N.T.S.



N.T.S.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN
023480.00

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	BY	DATE	SIGNATURE
N. Willey	C. Morin	P. Bishop	C. Morin	07/20	10/209
DESIGN-DETAILED	DESIGN-DETAILED	DESIGN-DETAILED			
REVISIONS 1	REVISIONS 2	REVISIONS 3			
REVISIONS 4	REVISIONS 5	REVISIONS 6			
FIELD CHANGES					

SWAN'S ISLAND
FERRY TERMINAL
DOLPHIN FOUNDATION
DETAILS

SHEET NUMBER

S04

8 OF 18

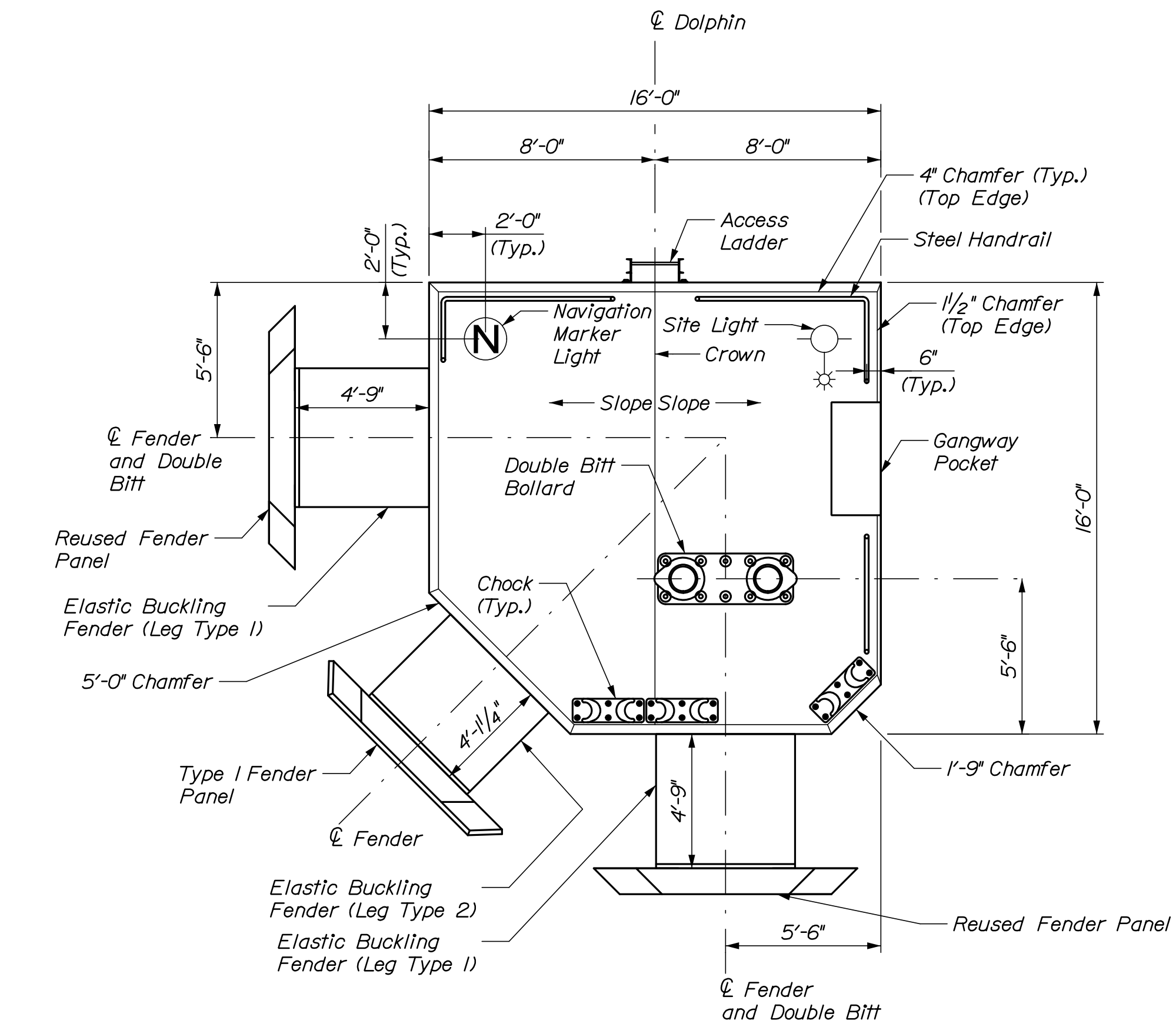


Date: 7/13/2020

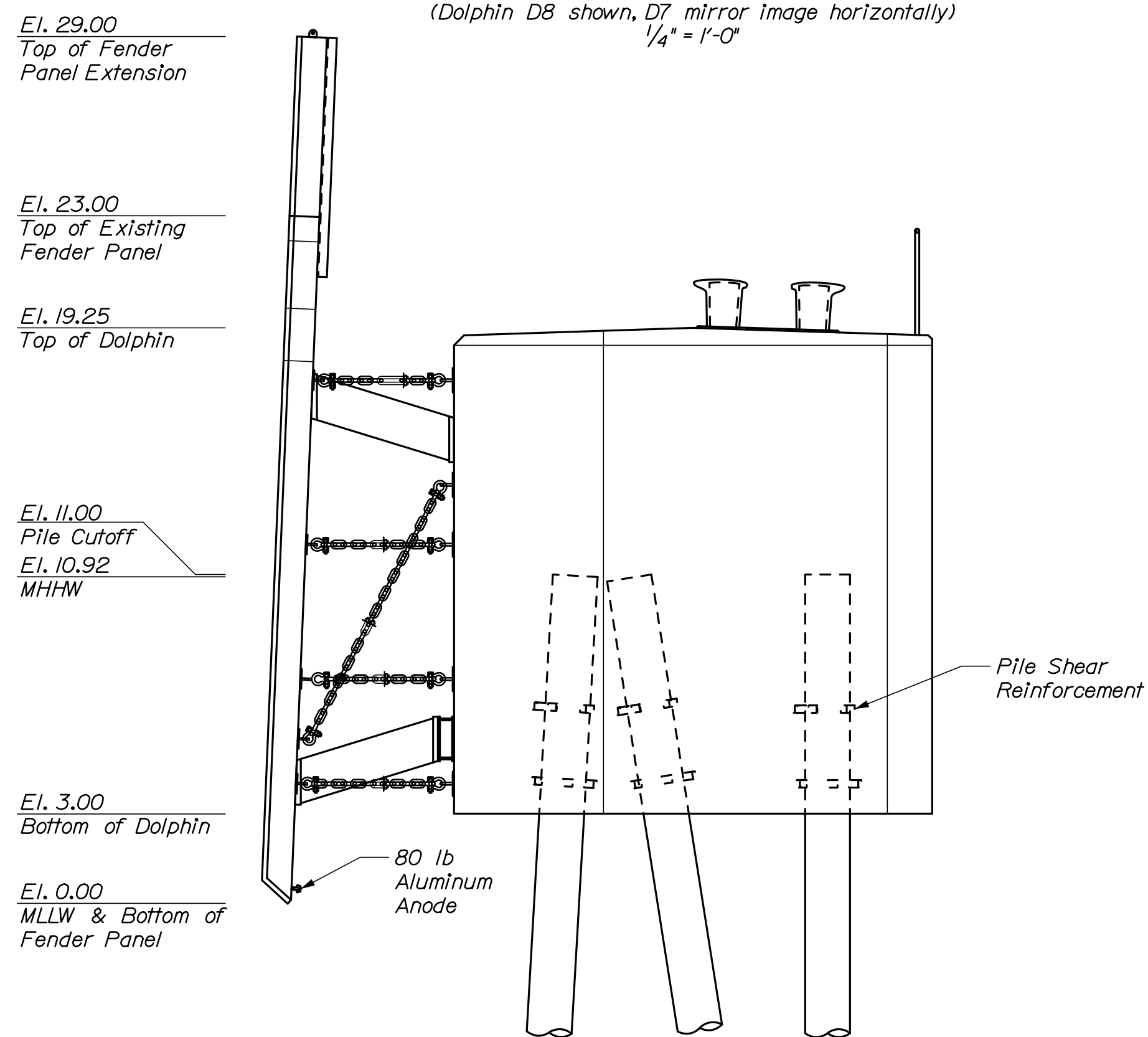
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Division:

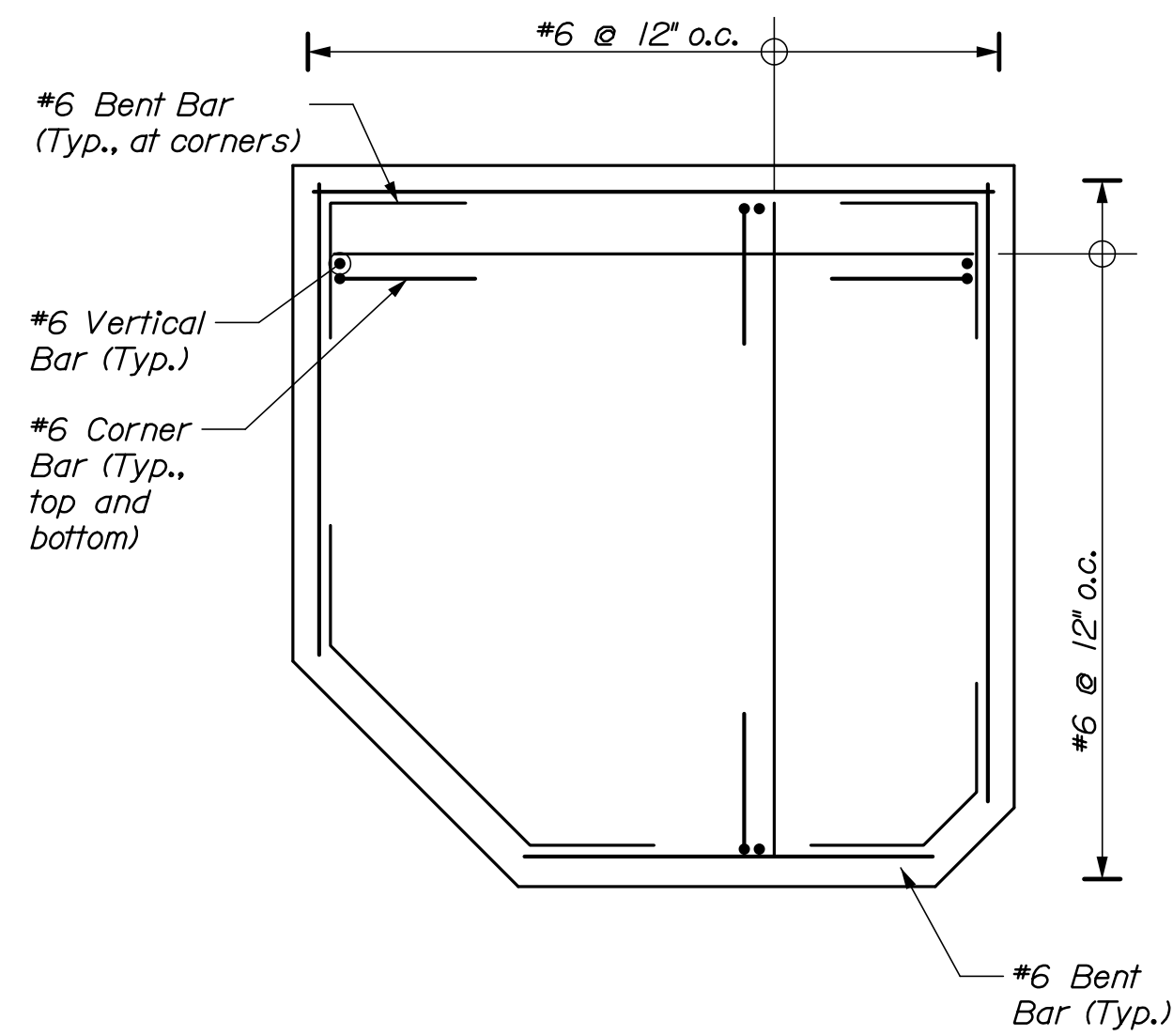
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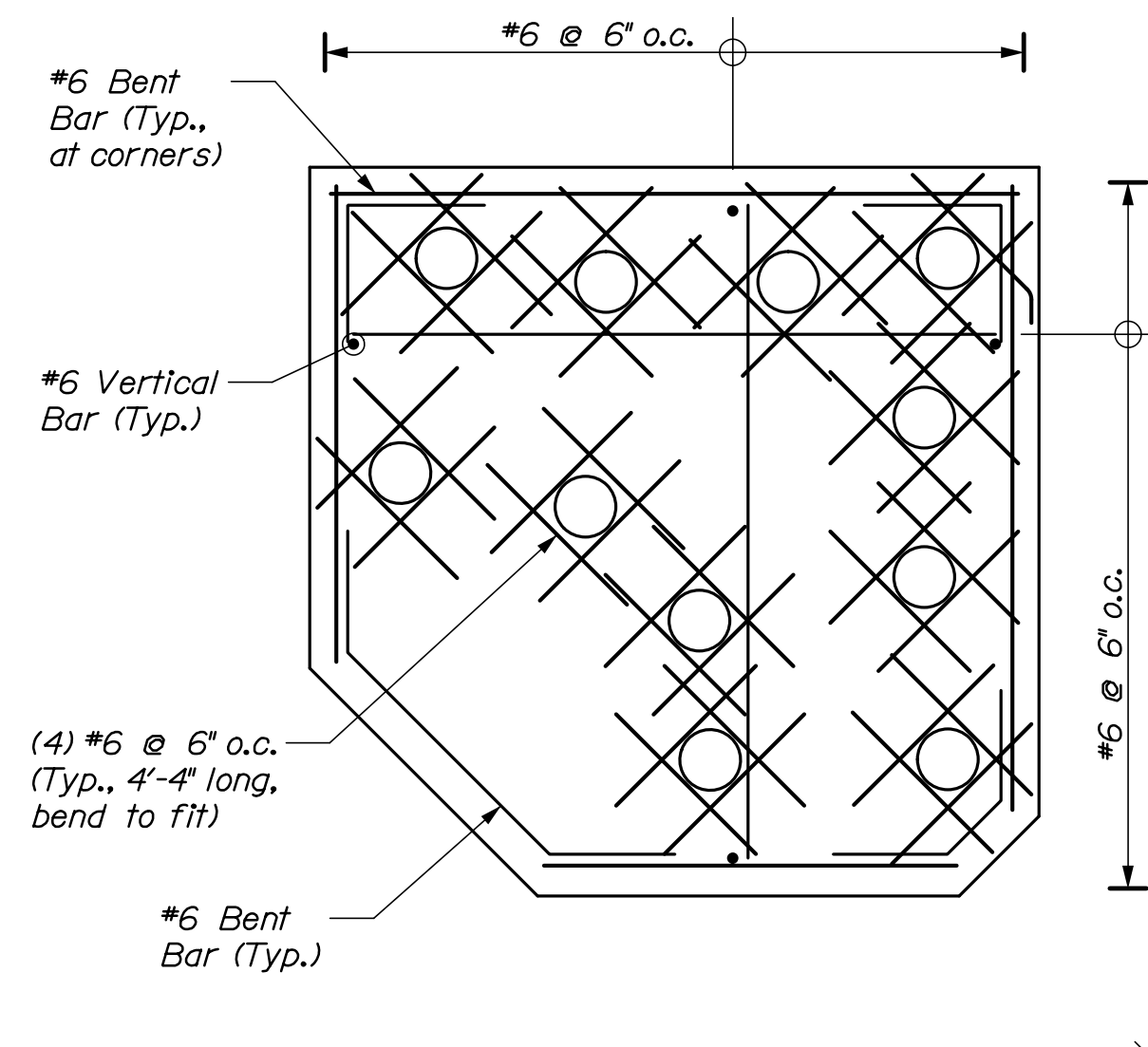
TURNING DOLPHIN PLAN
(Dolphin D8 shown, D7 mirror image horizontally)
 $1/4" = 1'-0"$



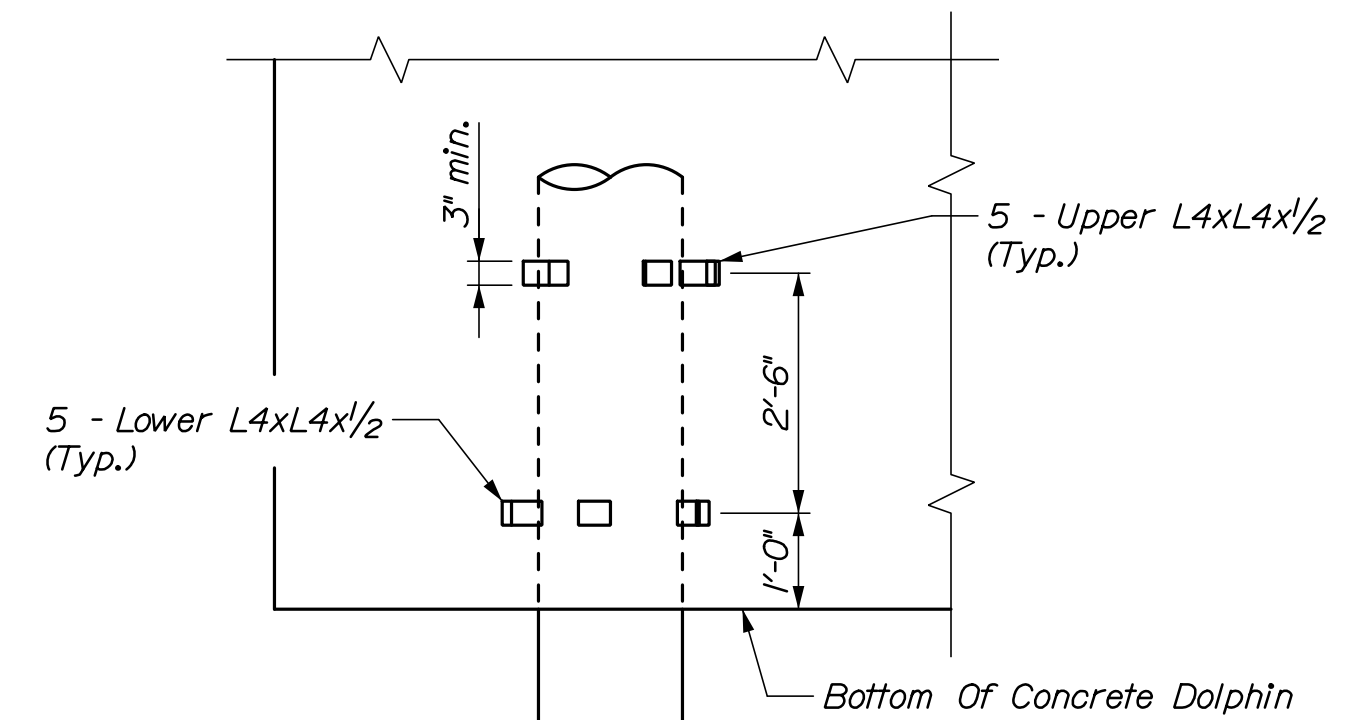
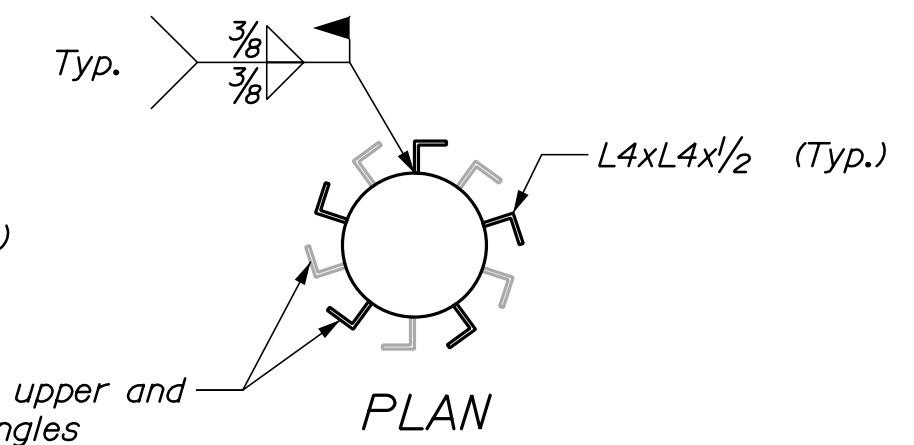
TURNING DOLPHIN ELEVATION
(Select fenders and chocks not shown for clarity)
 $1/4" = 1'-0"$



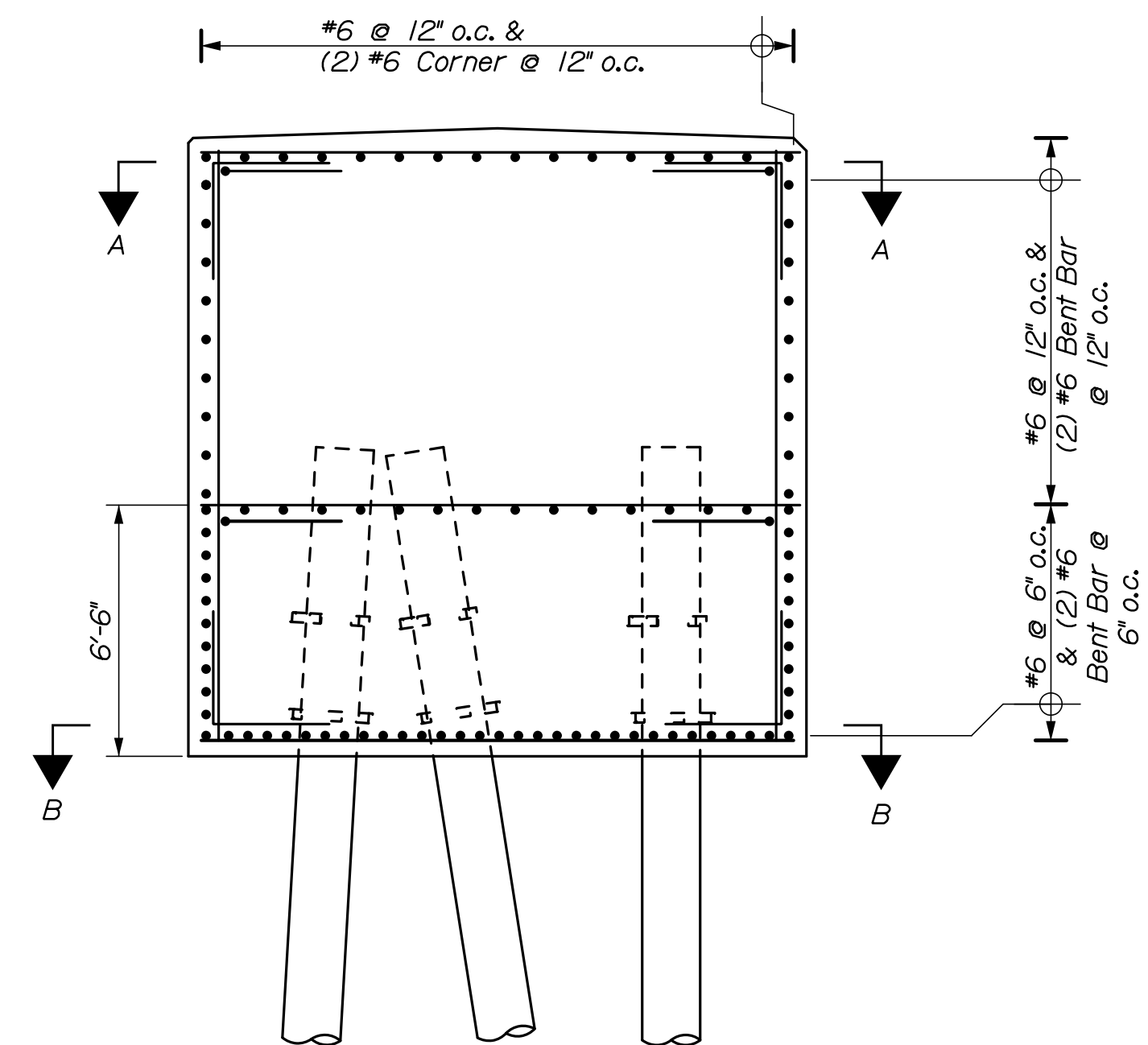
SECTION A-A
(Dolphin D8 shown, D7 similar)
(Same as shown for El. 9.50 - 11.00, but with pile cutouts)
 $1/4" = 1'-0"$



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



PILE SHEAR REINFORCEMENT ELEVATION
 $1/2" = 1'-0"$



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 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 maintain 1" clear from anchor rods.
7. Crown slope at top of dolphin shall be $1/4"$ per foot and pitched as shown.

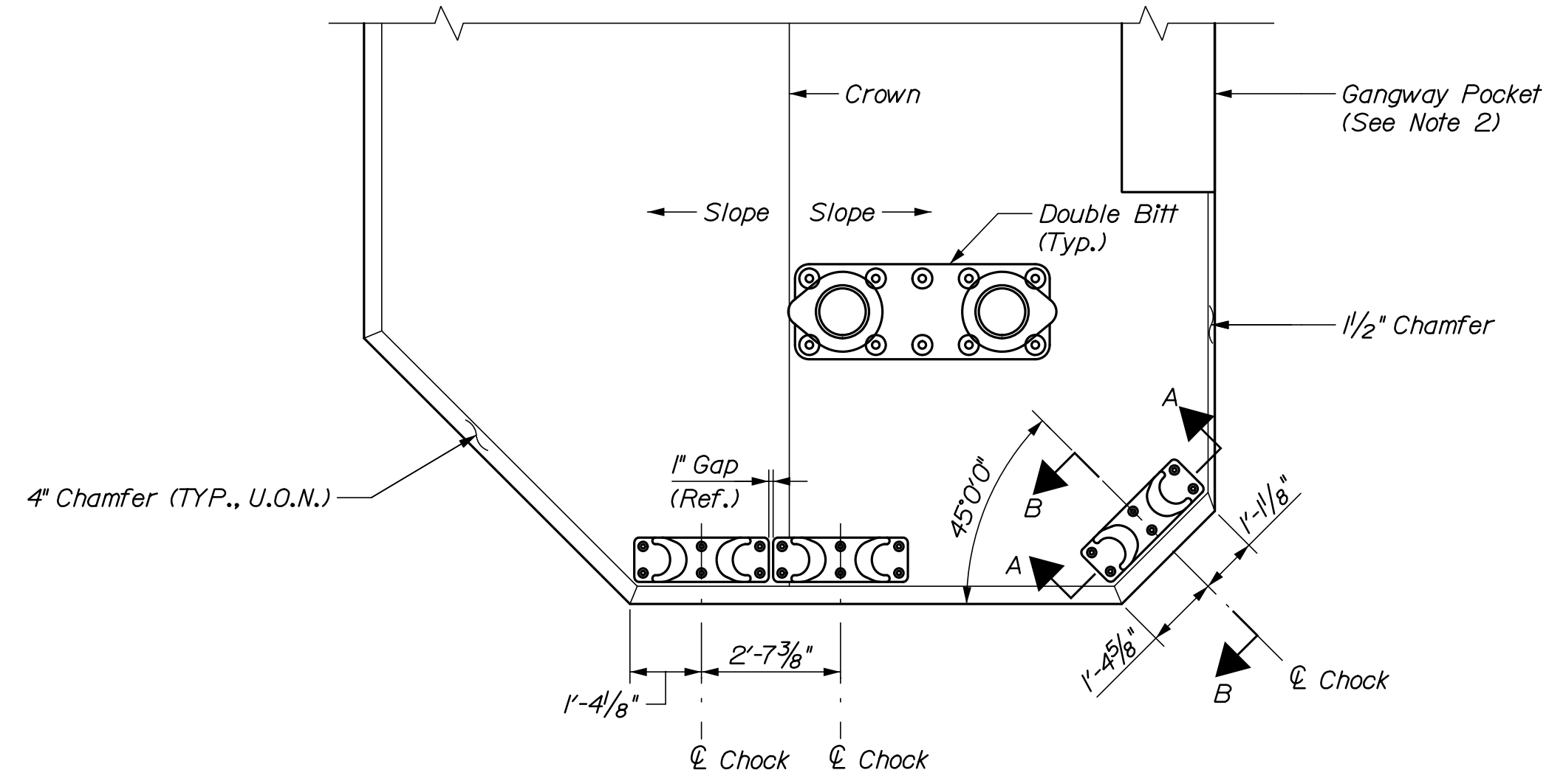
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DESIGN-DETAILED N. Willey	P. Bishop	07/20		10209	
CHECKED-REVIEWED C. Morr	C. Morr	07/20			
DESIGN-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

Date: 7/22/2020

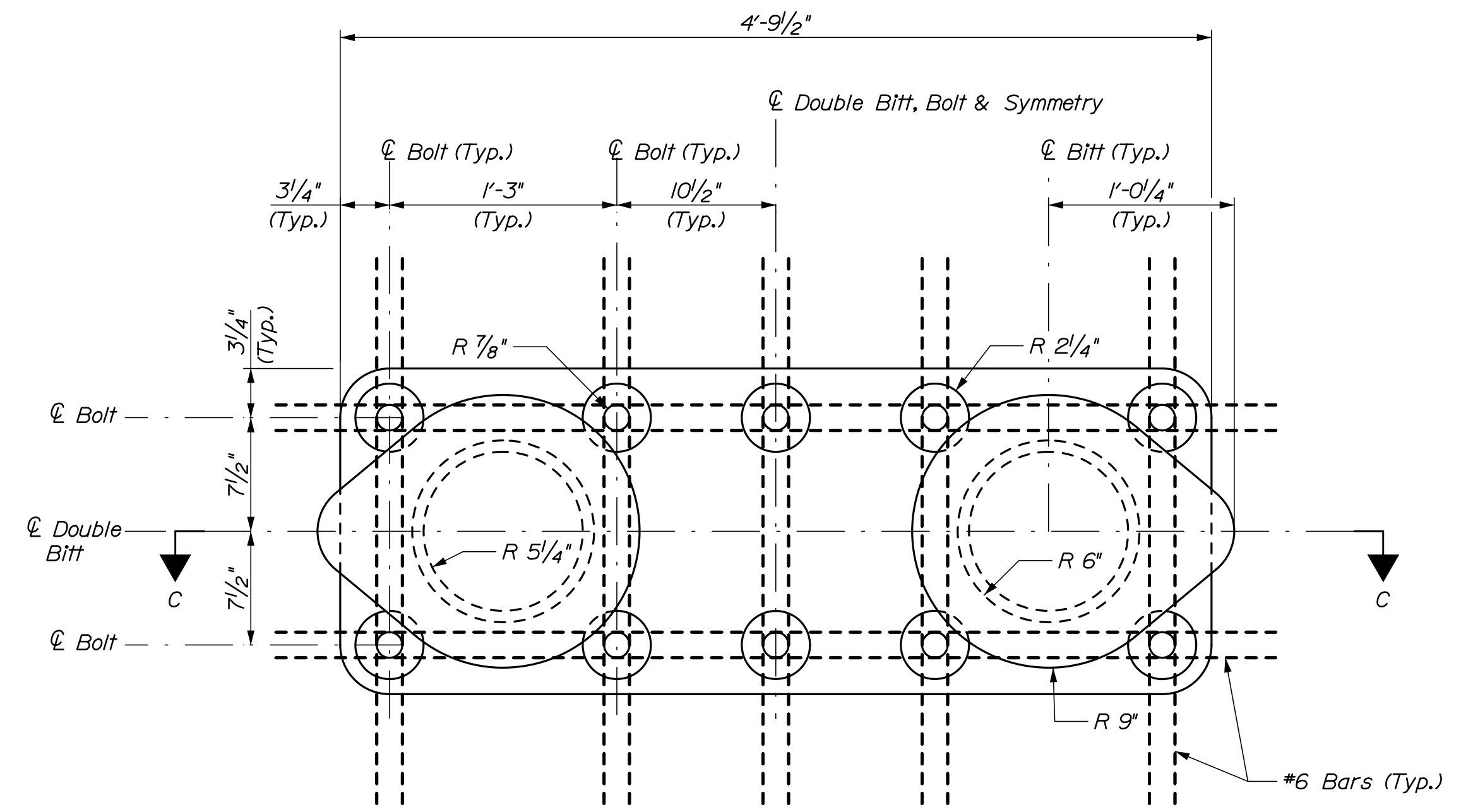
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Division:

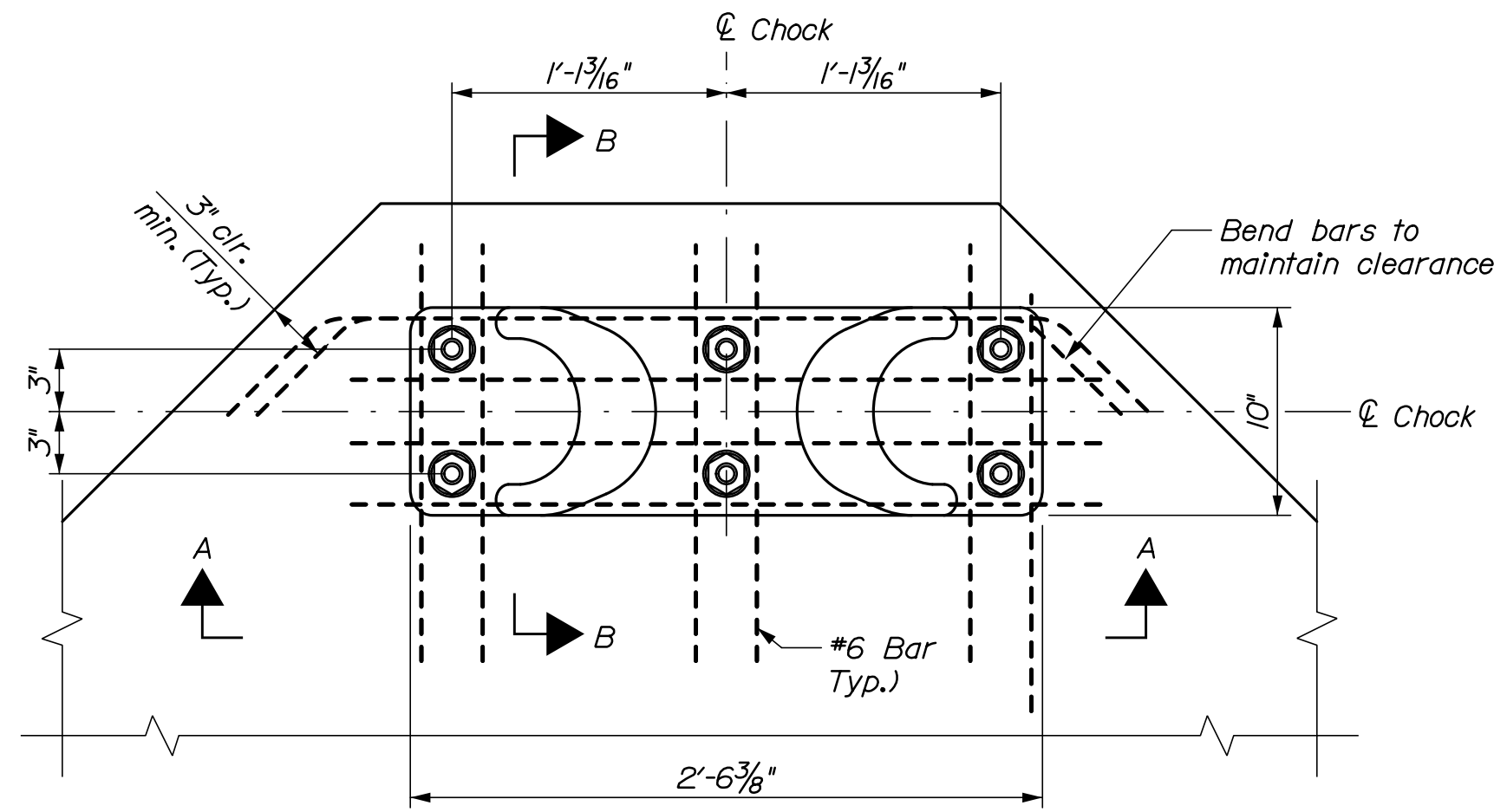
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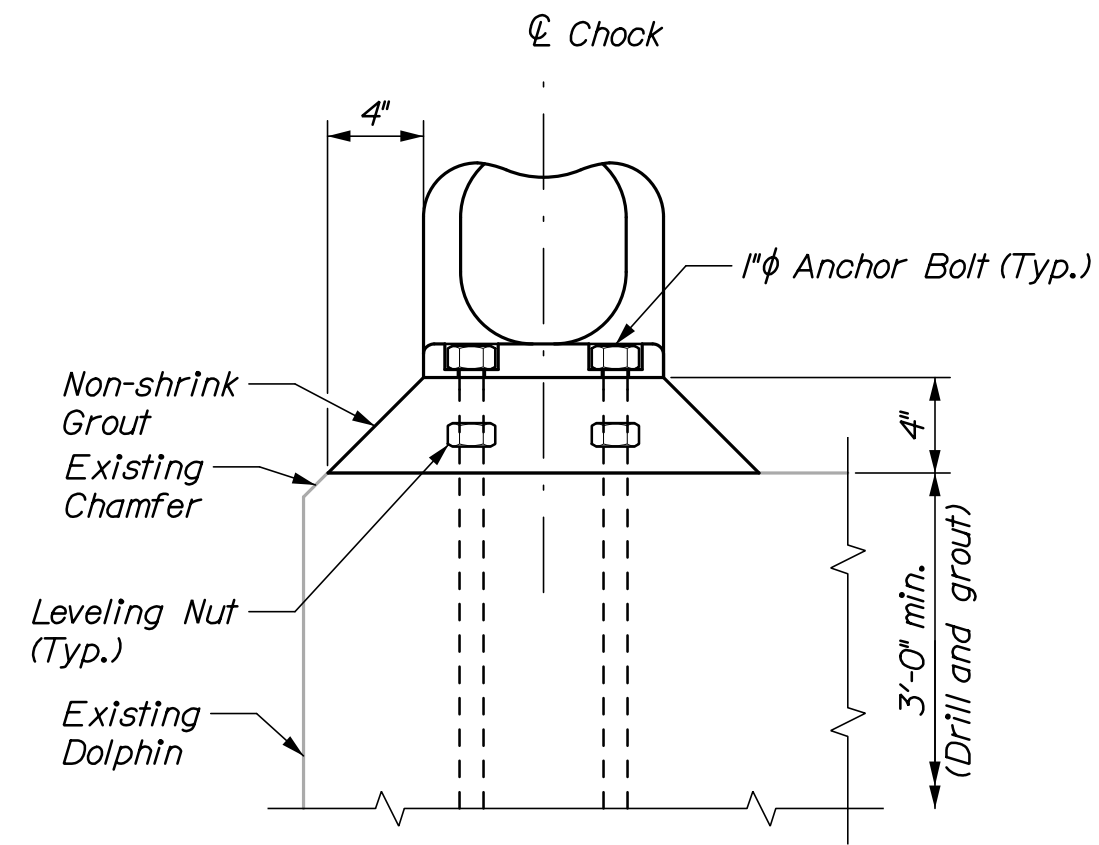
PLAN VIEW OF DOLPHIN
 (Hand rails, lights, and fenders not shown for clarity)
 3/8" = 1'-0"



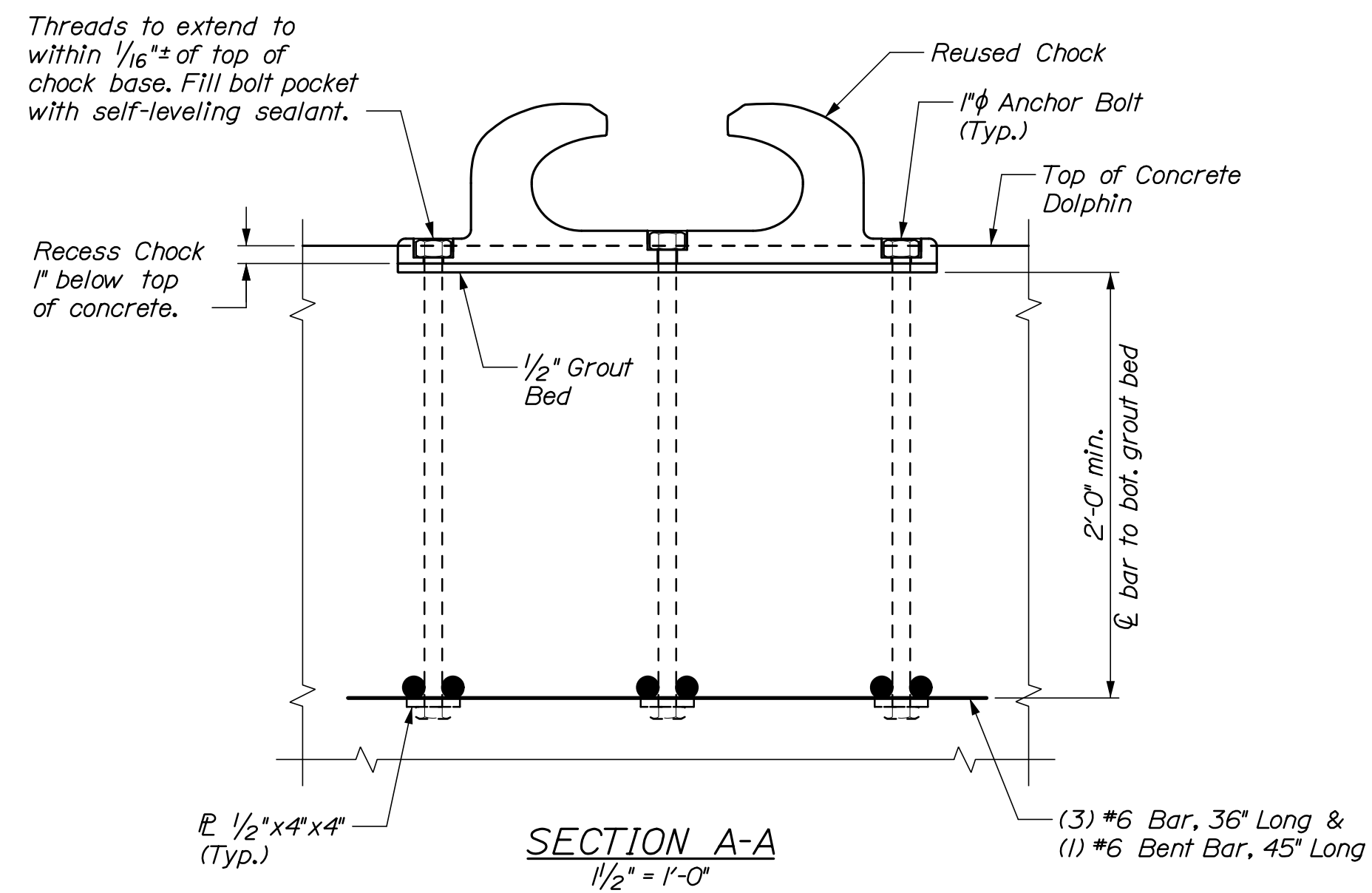
DOUBLE BITT PLAN
 1/2" = 1'-0"



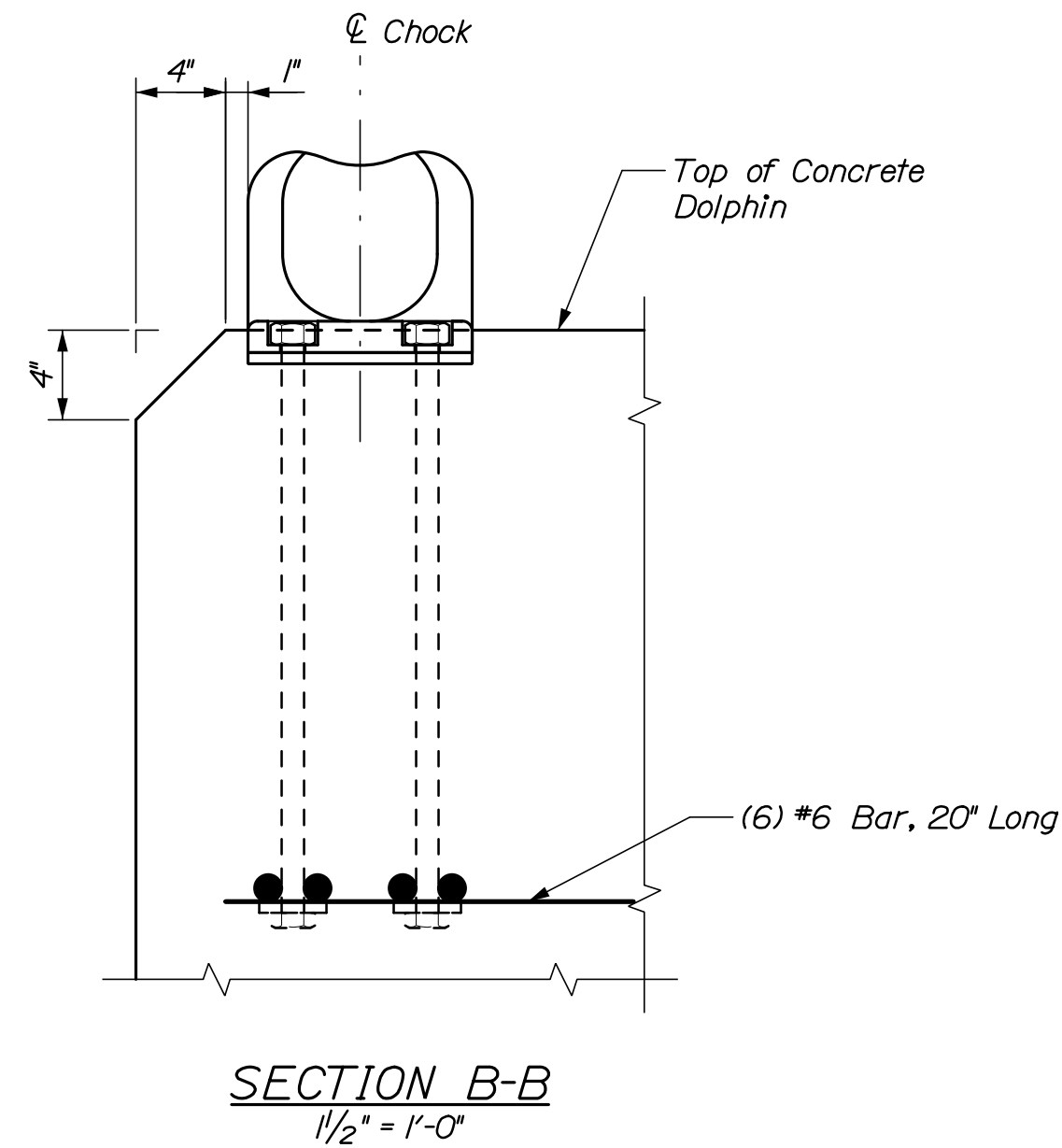
CHOCK PLAN AT CHAMFER
 1/2" = 1'-0"



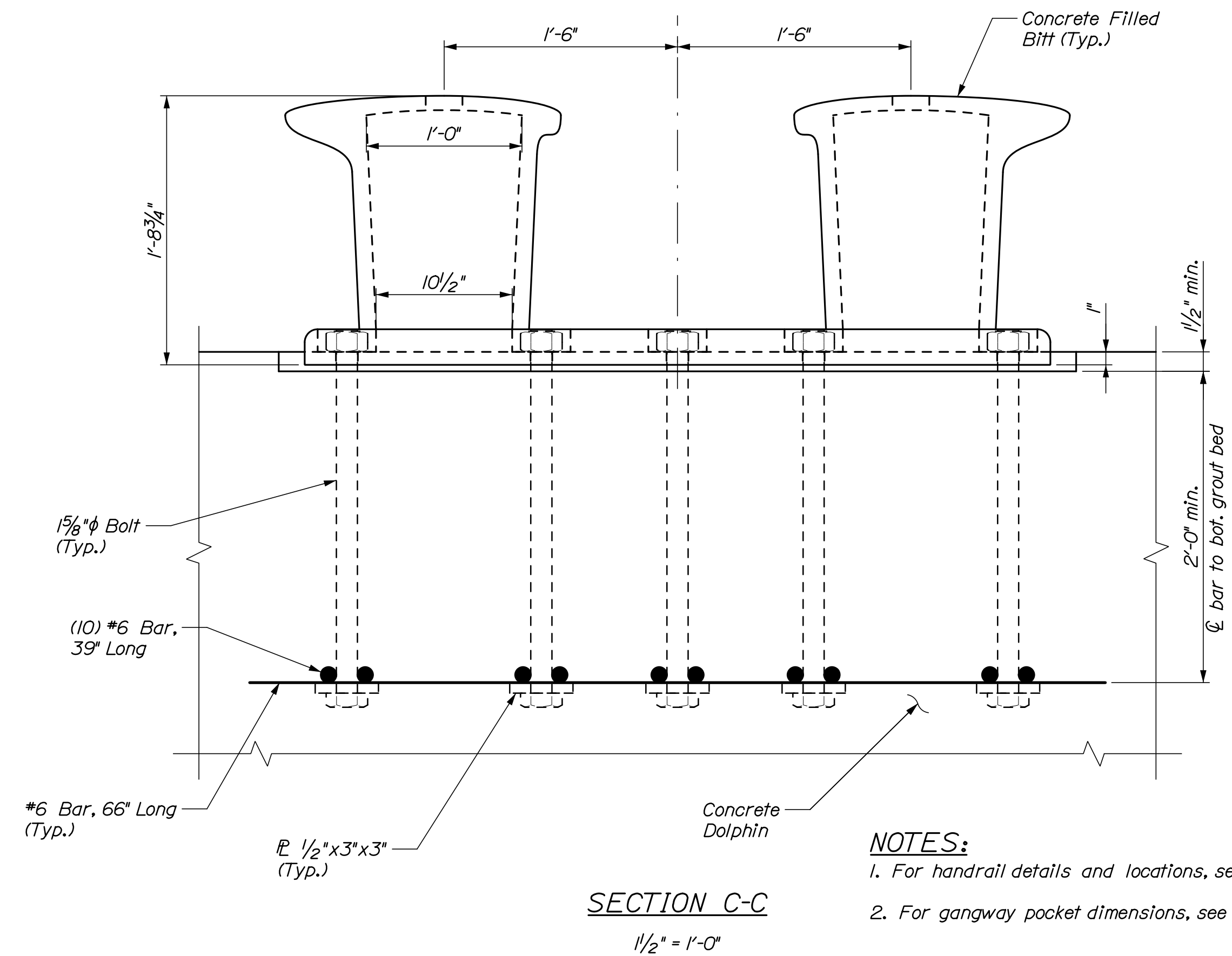
EXISTING CONCRETE CHOCK DETAIL
 1/2" = 1'-0"



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



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



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

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

PROJ. MANAGER	BY	DATE
N. Willey	P. Bishop	07/20
C. Morrill	C. Morrill	07/20

DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	REVISIONS
N. Willey	C. Morrill		1
			2
			3
			4

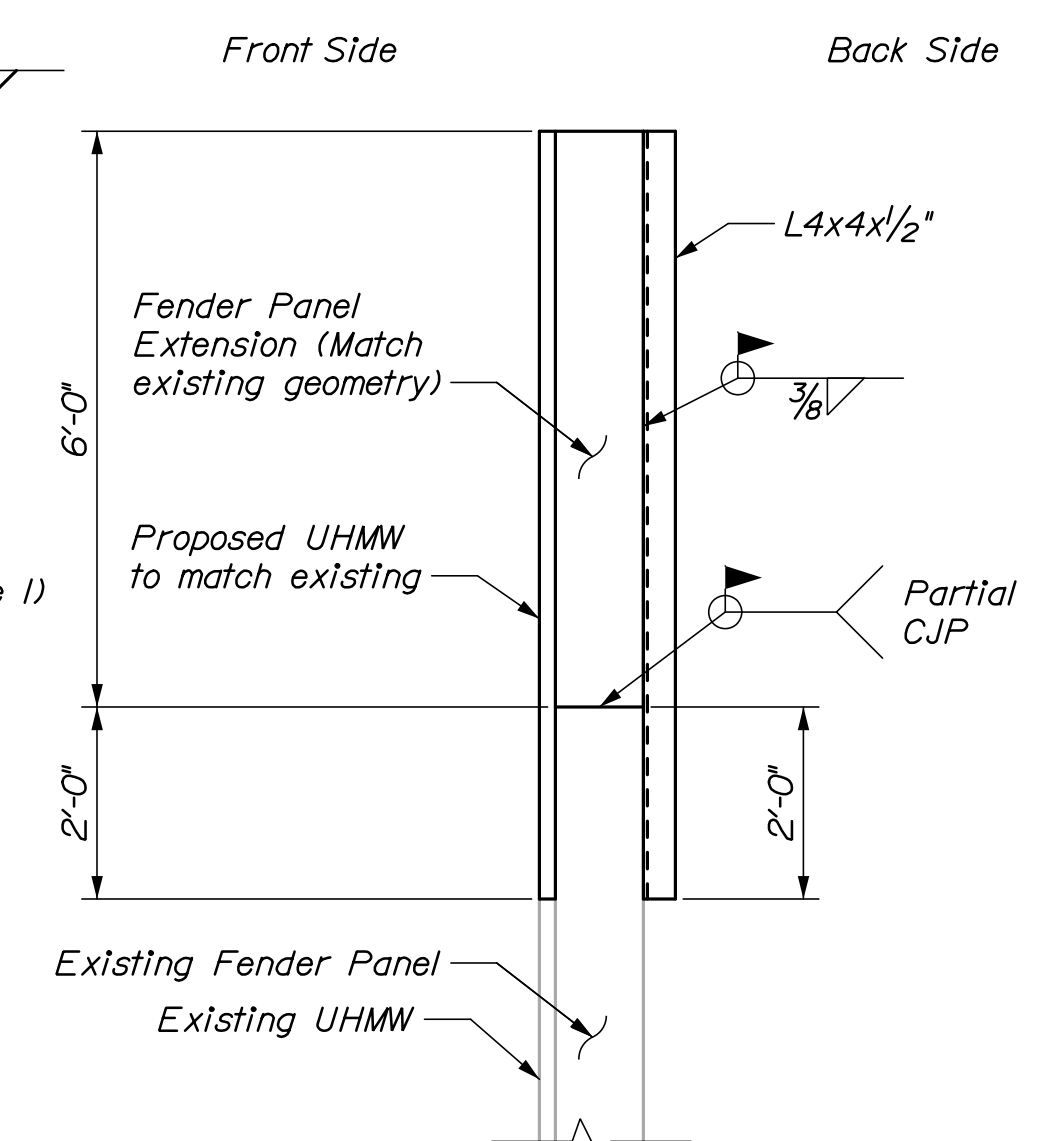
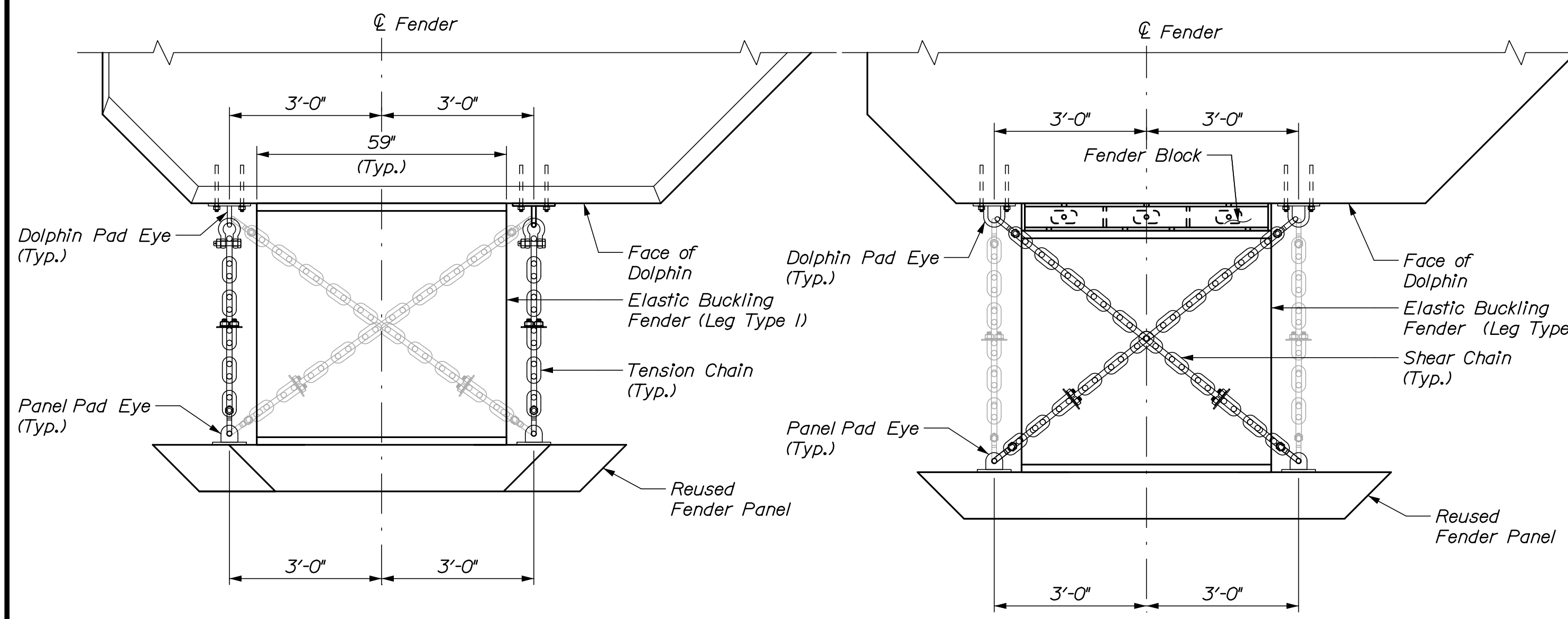
SIGNATURE	P.E. NUMBER	DATE
	10209	

Date: 7/13/2020

Username:

Division:

Filename: 011_Fender System 1.dgn

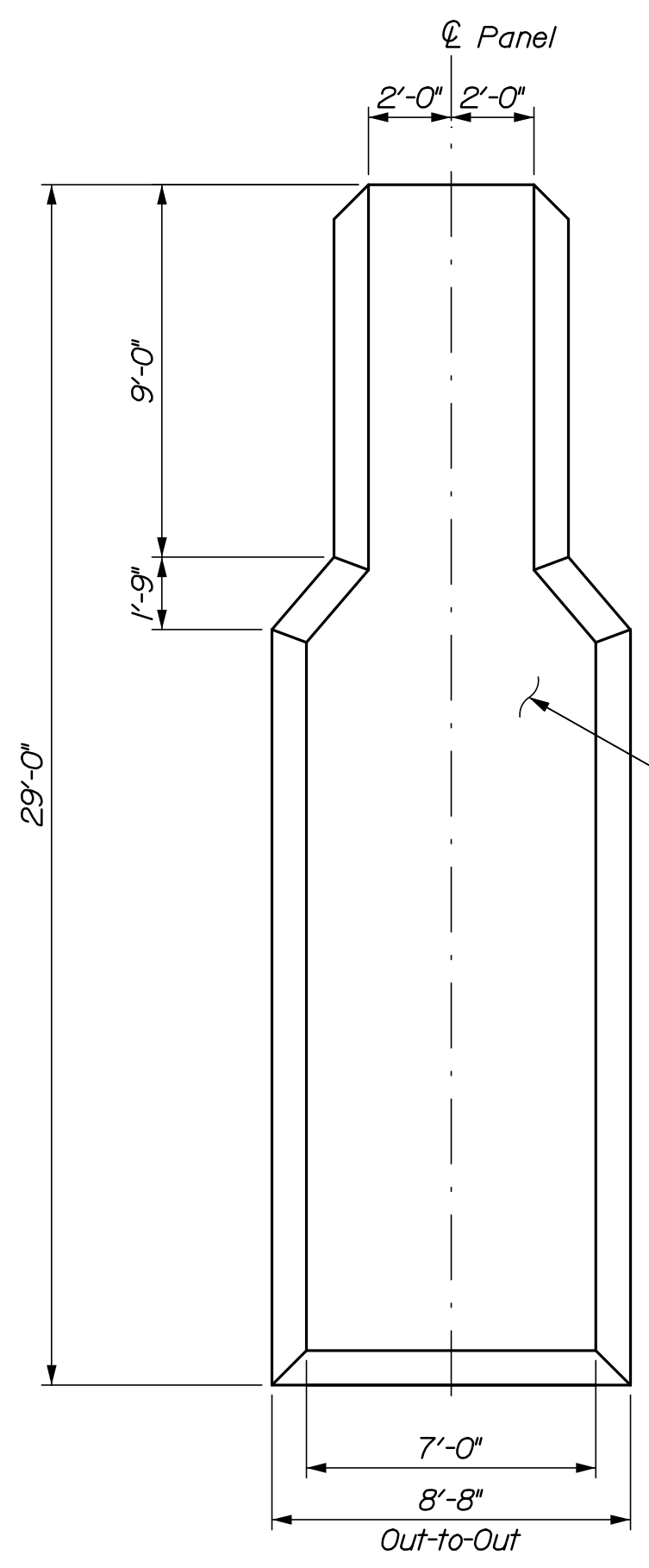


- NOTES:**
- Contractor shall use fender plate or fender block detail to maintain proposed fender panel alignment.
 - For dolphin pad eye, panel pad eye, steel fender block, panel anode, and spacer plate details, see Sheet S08.
 - Contractor shall remove obstructions or modify detail for panel extension.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

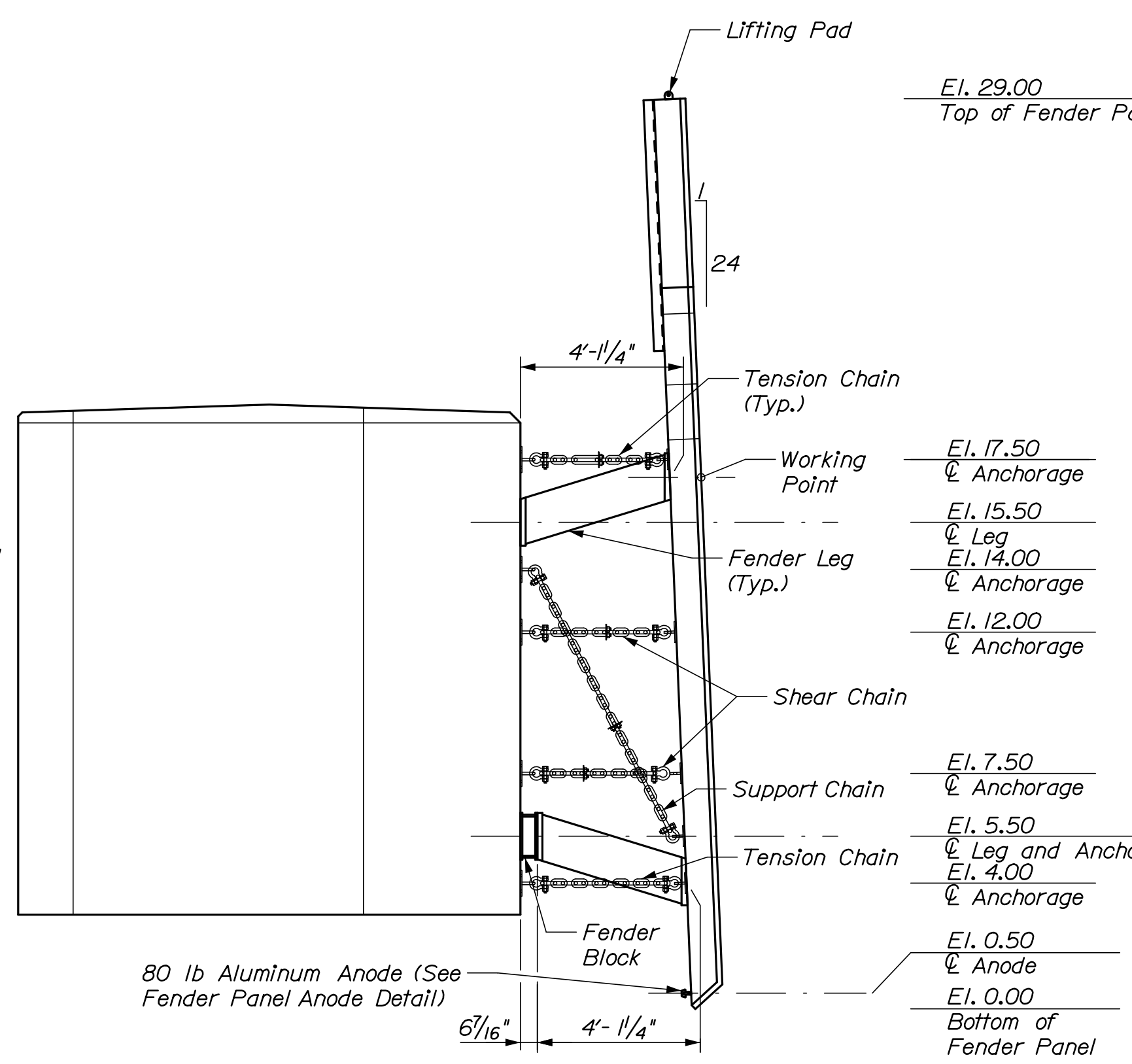
PLAN - TOP OF FENDER PANEL
(D7 Pen facing fender with Leg Type 1 shown, others similar)
1/2" = 1'-0"

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

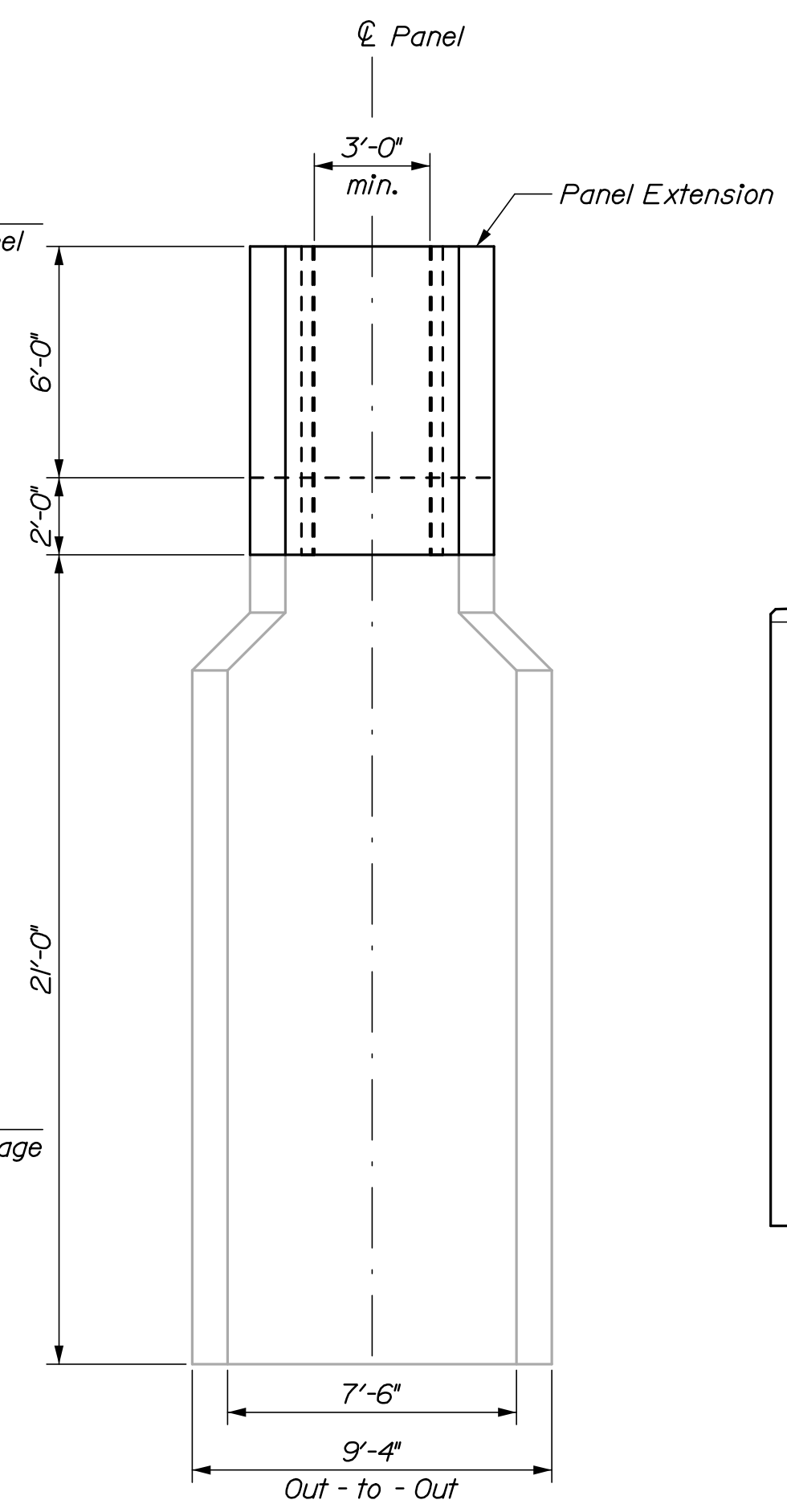
TYPICAL PANEL EXTENSION DETAIL
1/2" = 1'-0"



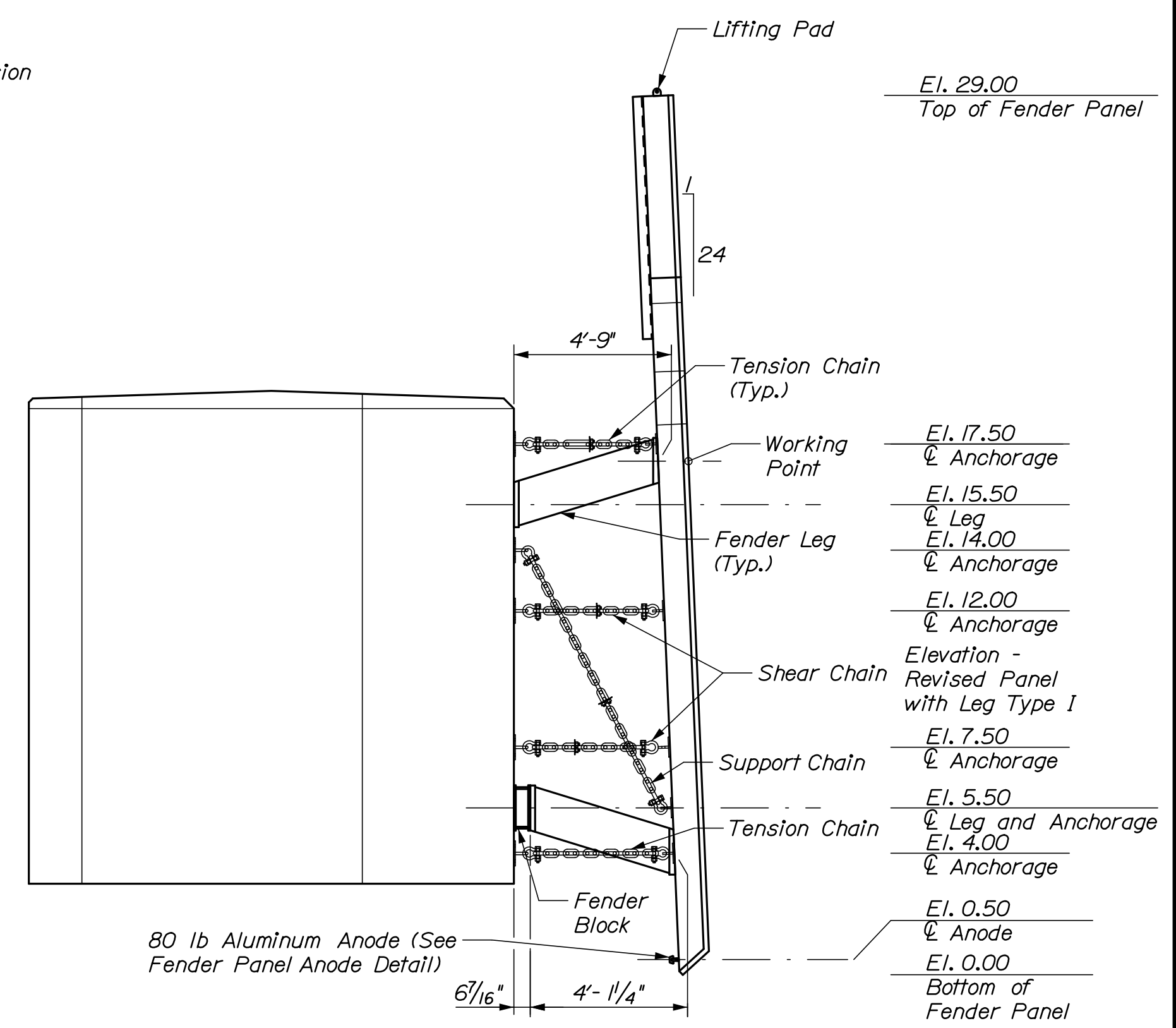
TYPE I PANEL
1/4" = 1'-0"



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

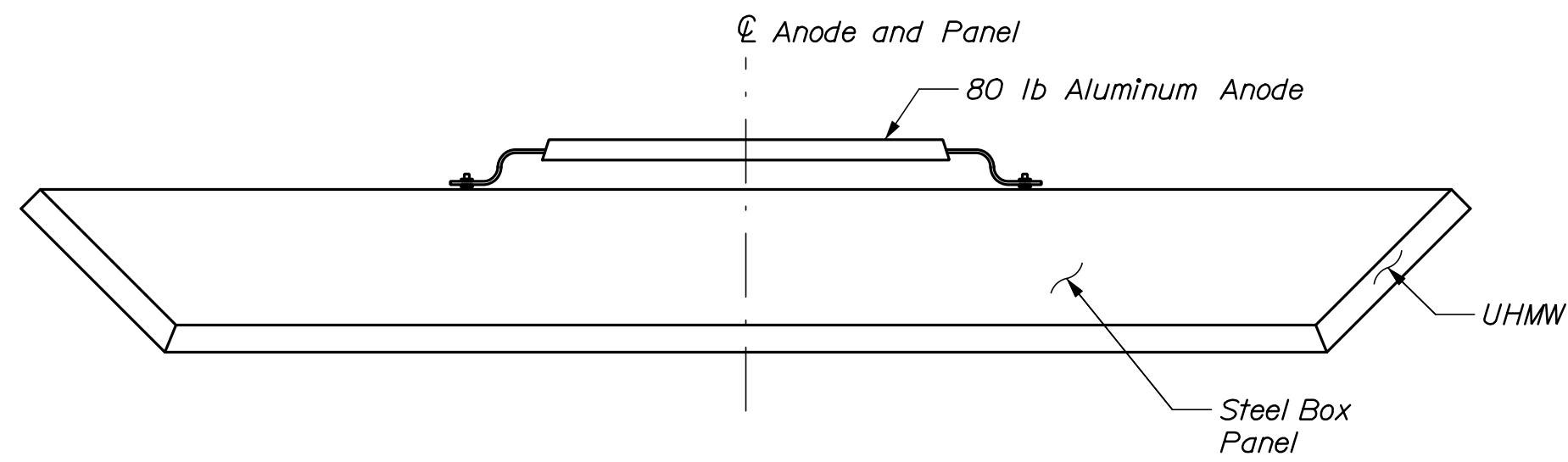
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN		023480.00	
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	SIGNATURE	P.E. NUMBER	DATE	
N. Willey	C. Morin	P. Bishop	C. Morin		10209		
REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4				
SWAN'S ISLAND FERRY TERMINAL				DOLPHIN DETAILS FENDER SYSTEM I			
SHEET NUMBER				S07			
				11 OF 18			

Date: 7/13/2020

Username:

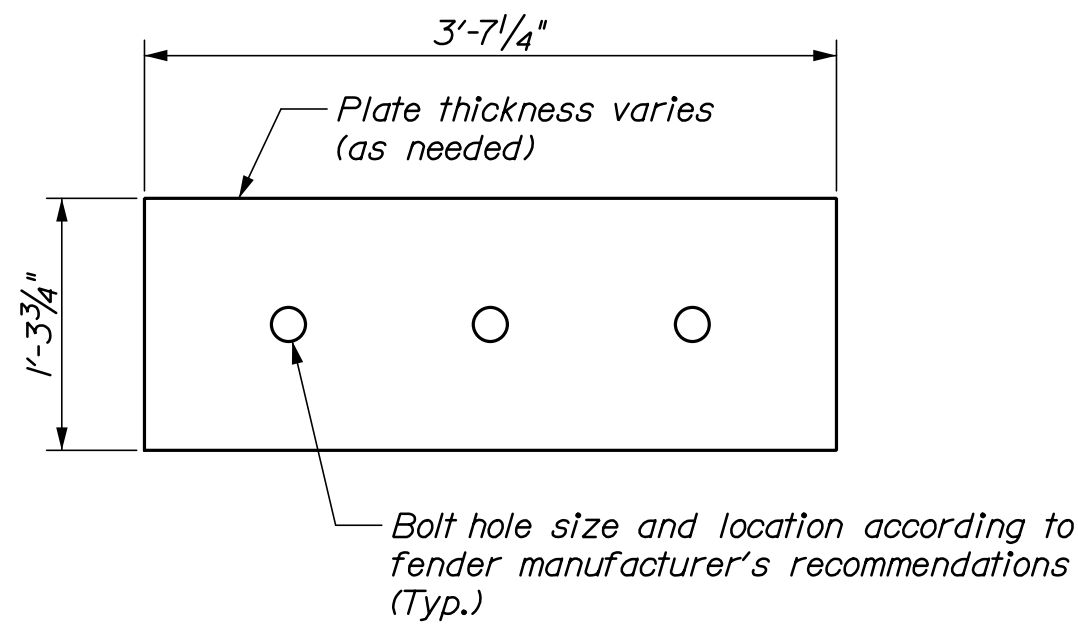
Division:

Filename: 012_Fender System 2.dgn



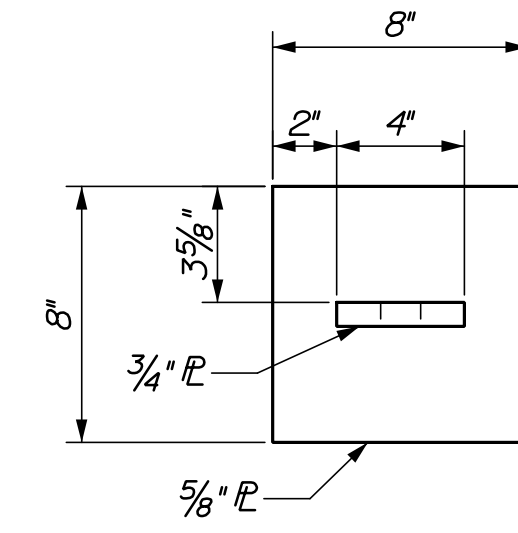
FENDER PANEL ANODE DETAIL

1" = 1'-0"



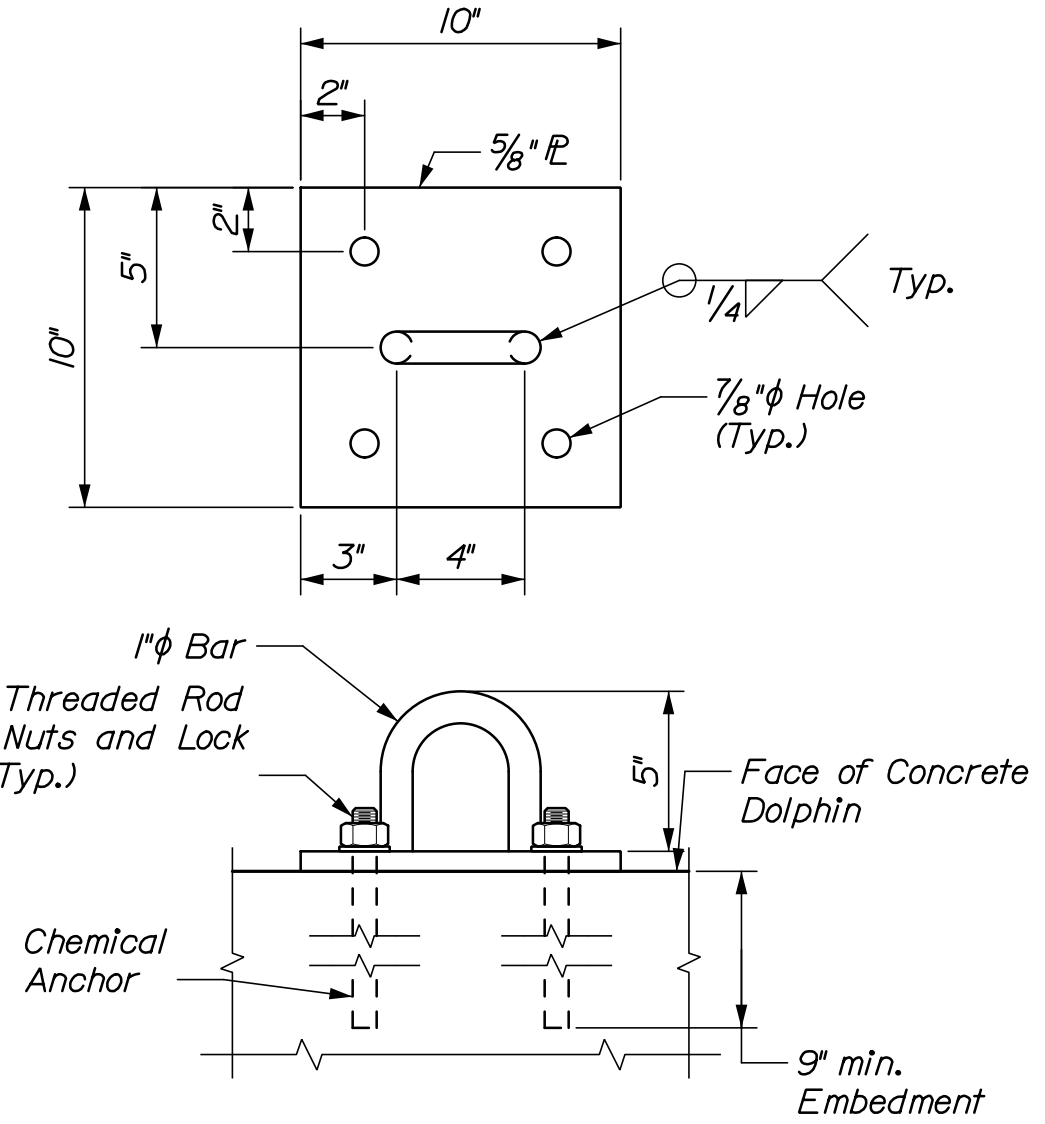
TYPE I PANEL SPACER PLATE DETAIL

1" = 1'-0"



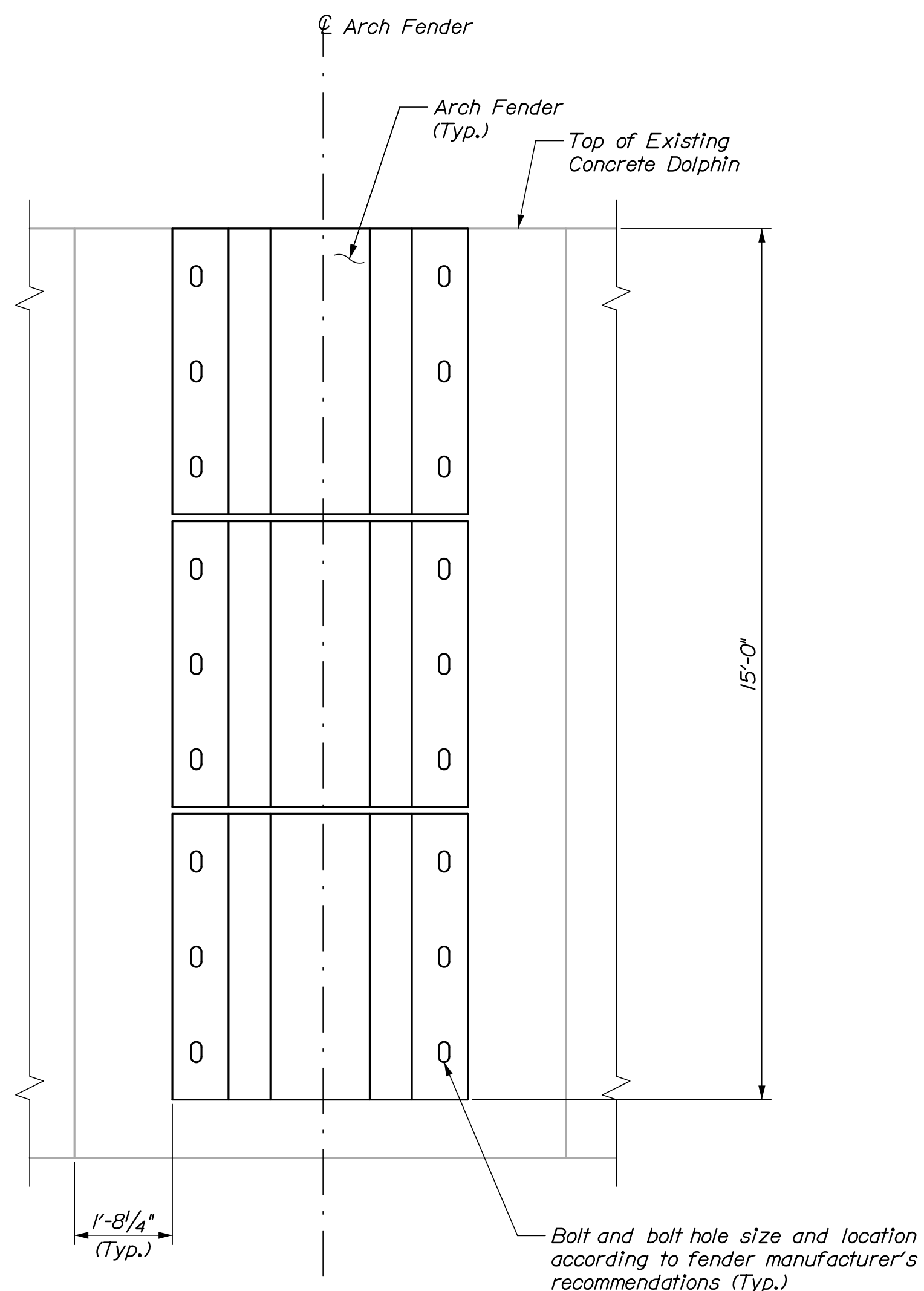
PANEL PAD EYE DETAIL

2" = 1'-0"



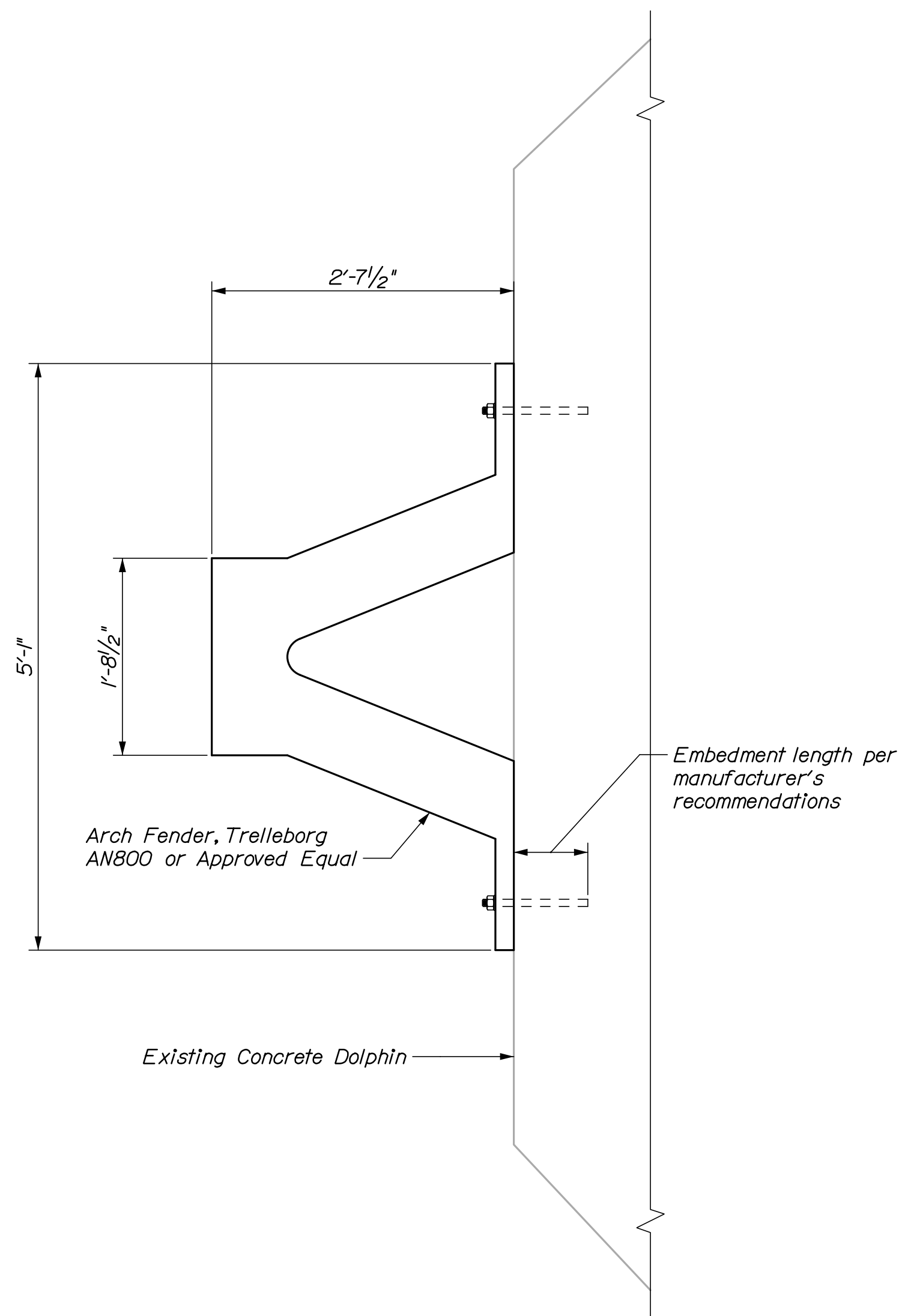
DOLPHIN PAD EYE DETAIL

2" = 1'-0"



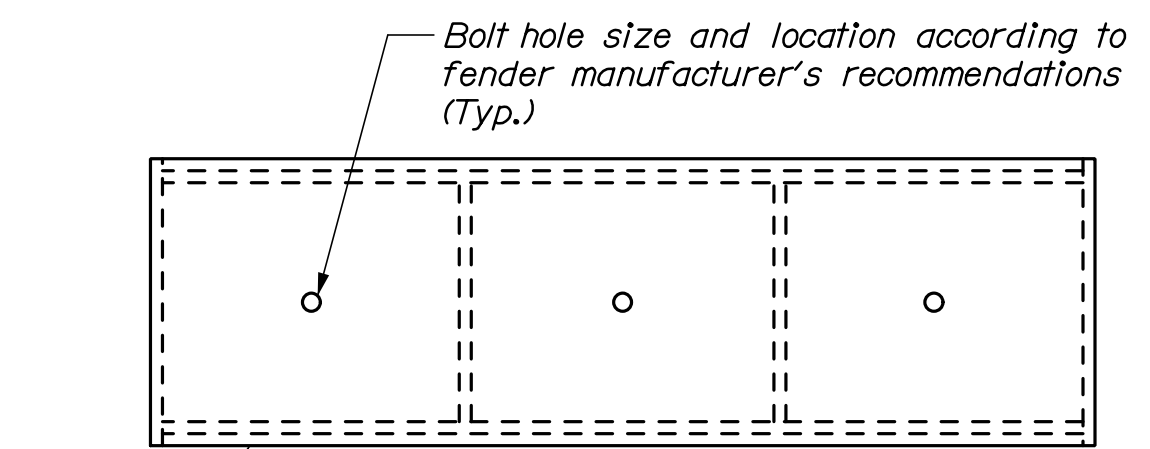
ELEVATION - ARCH FENDER

1" = 1'-0"

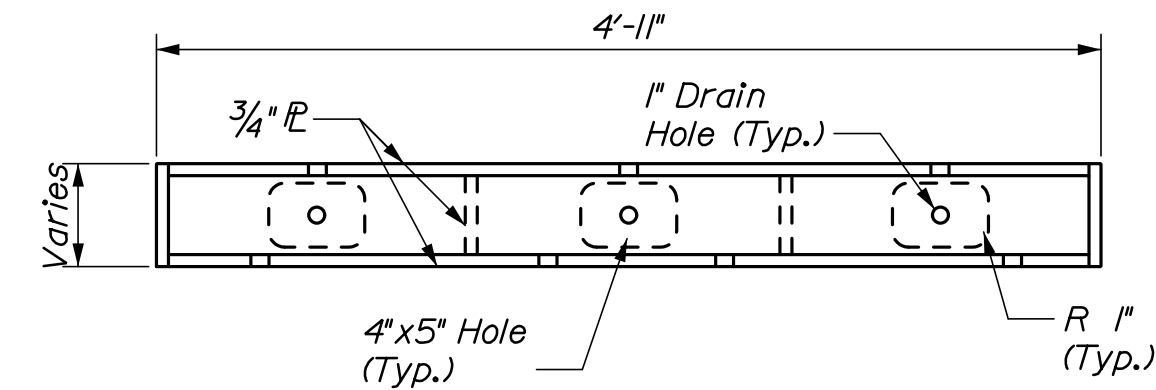


ARCH FENDER TYPICAL SECTION

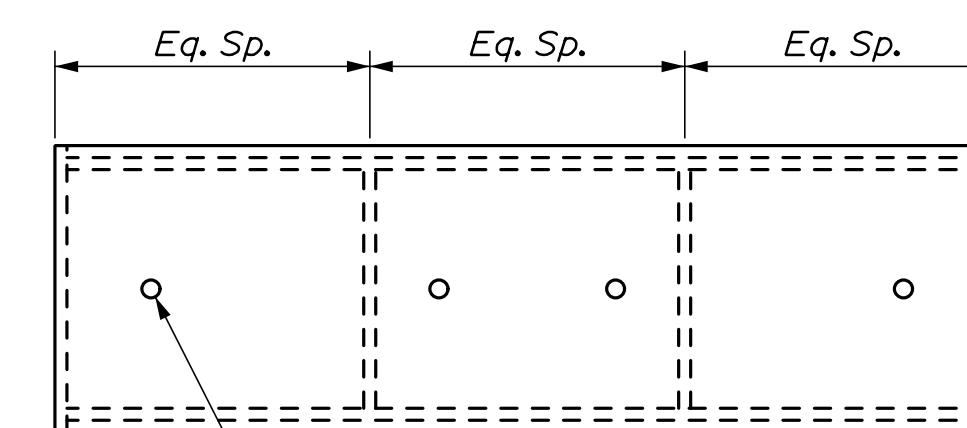
1" = 1'-0"



FRONT ELEVATION



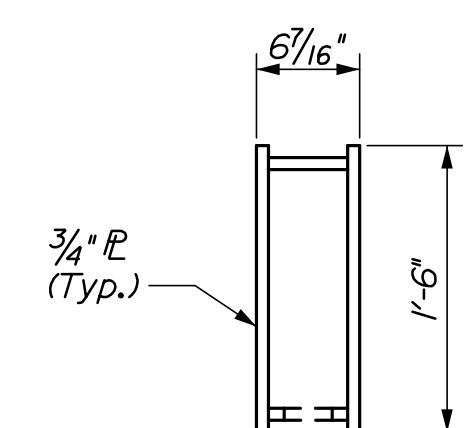
PLAN



BACK ELEVATION

STEEL FENDER BLOCK

1" = 1'-0"



SECTION

NOTES:

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

STATE OF MAINE
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PROJ. MANAGER	BY	DATE	SIGNATURE
N. Willey	P. Bishop	07/20	
C. Morin	C. Morin	07/20	
DESIGN-DETAILED			
CHECKED-REVIEWED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SWAN'S ISLAND
FERRY TERMINAL

DOLPHIN DETAILS
FENDER SYSTEM II

SHEET NUMBER

S08

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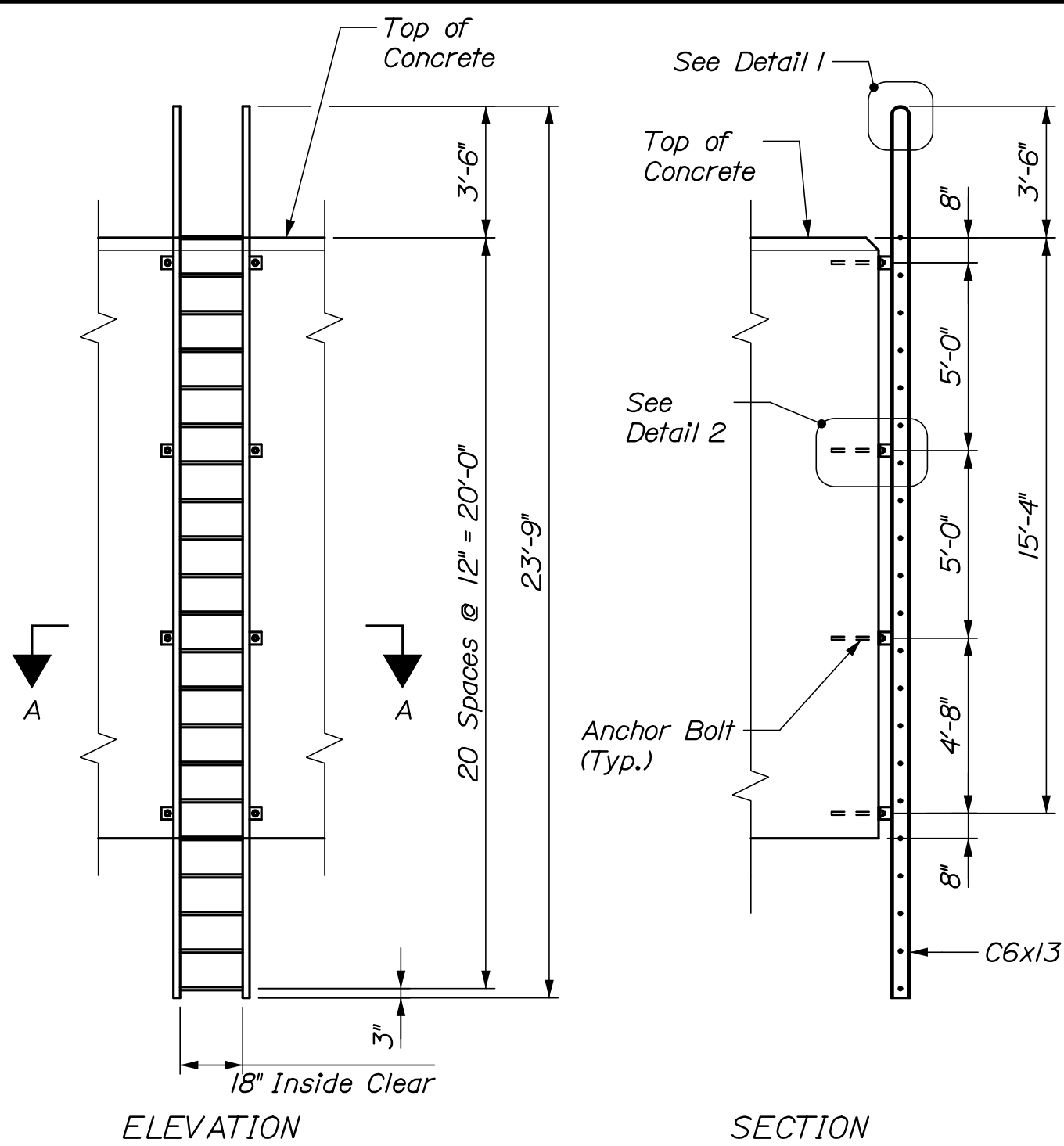


Date: 7/13/2020

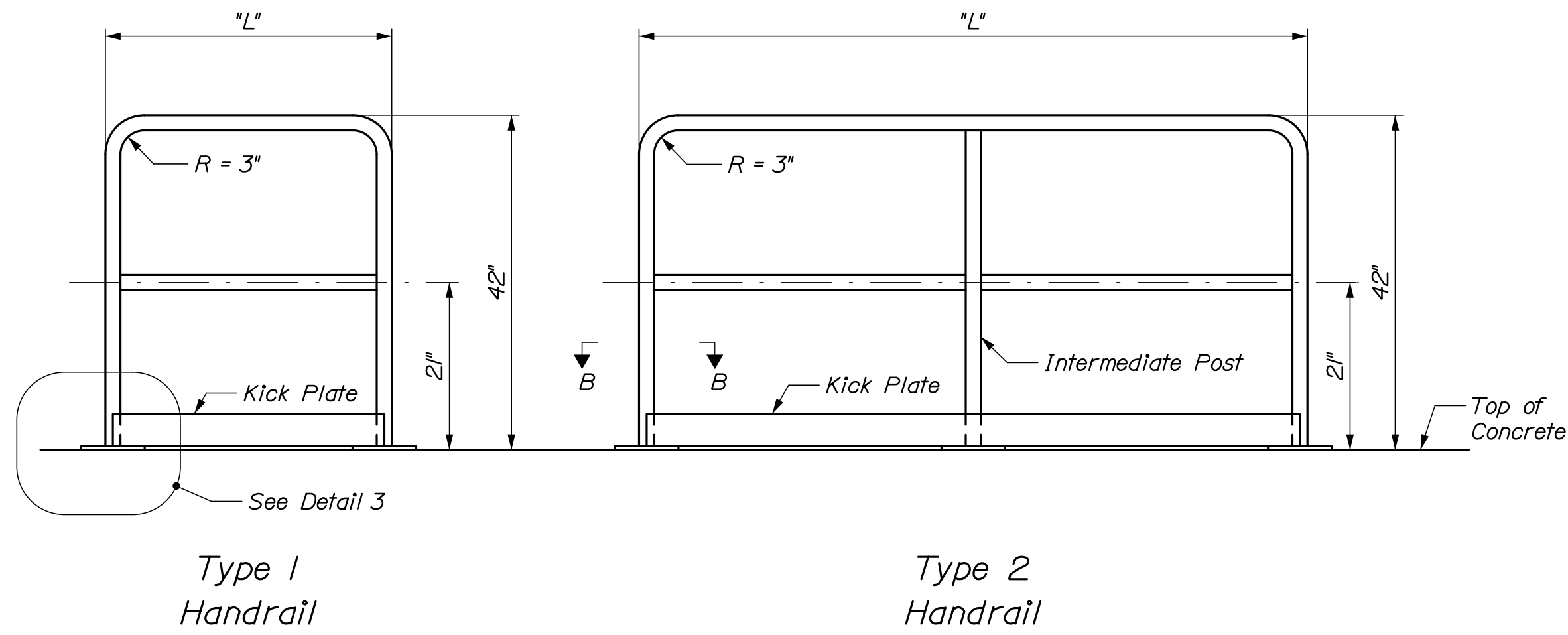
Username:

Division:

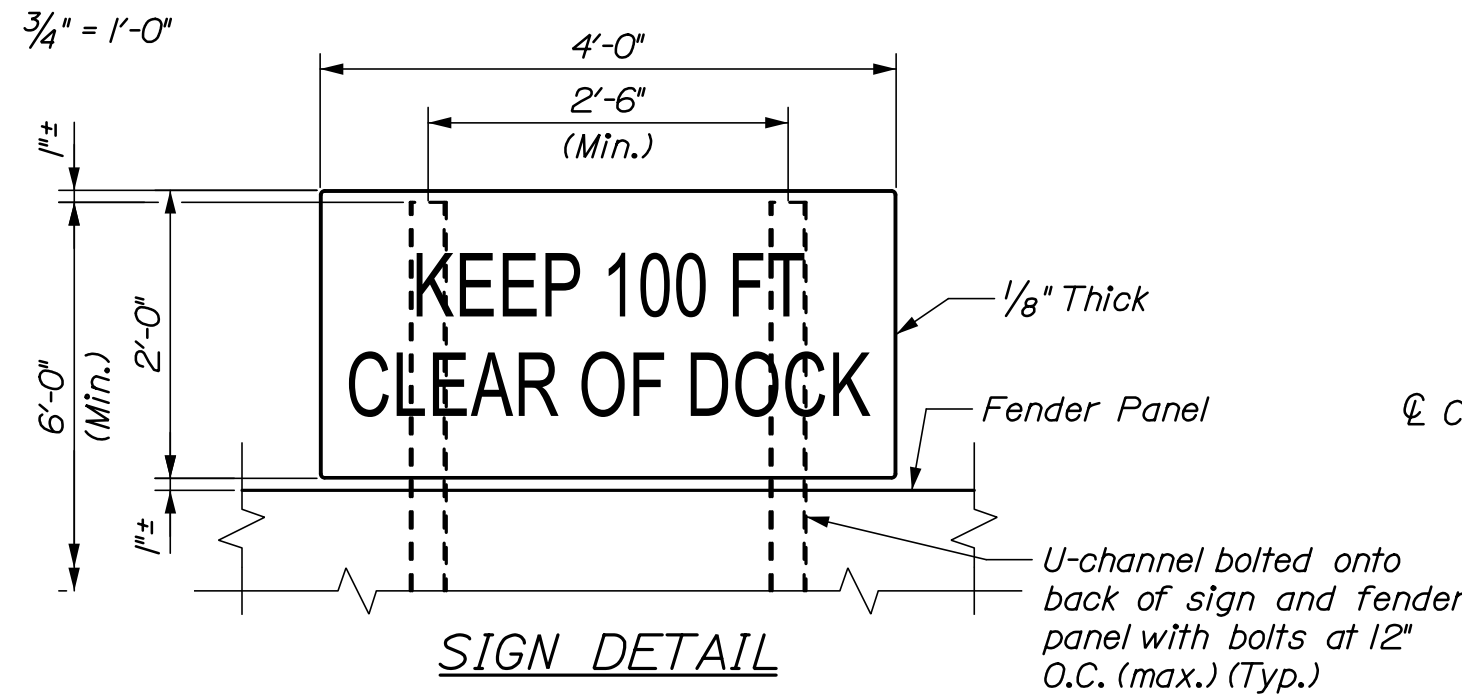
Filename: 013_Miscellaneous Details.dgn



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



HANDRAIL DETAIL



SIGN DETAIL

**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
T2	L	X

**TABLE 2
LINE GUARD REMOVAL SUMMARY**

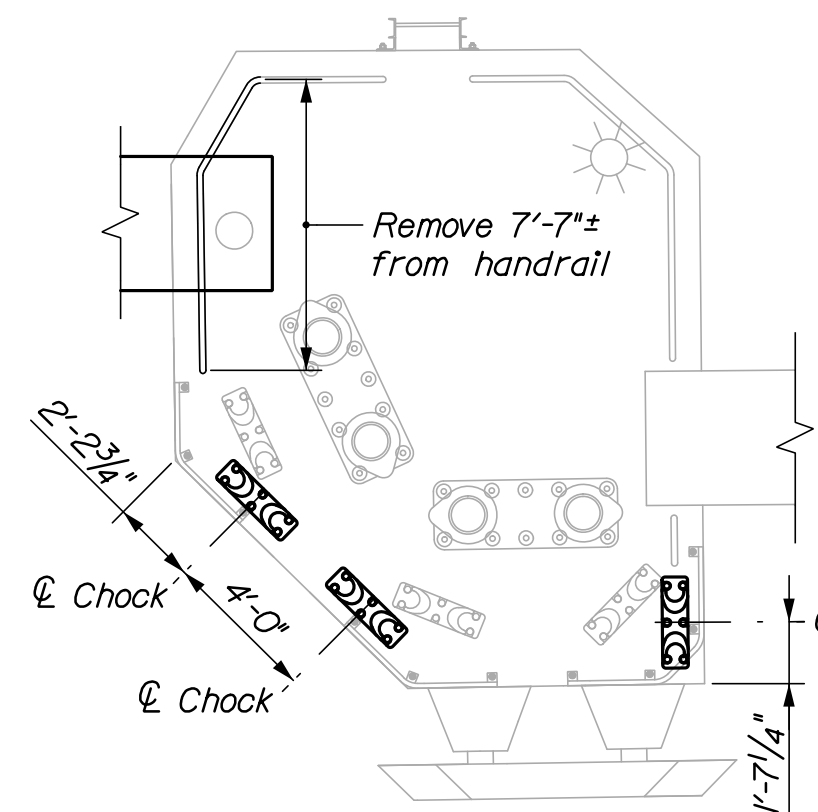
Dolphin	Length of Removal (ft)	No. of Bolts
D1	16	10
D2	13	8
D3	13	8
D4	7	4
D5	7	4
D6	16	10

NOTES:

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

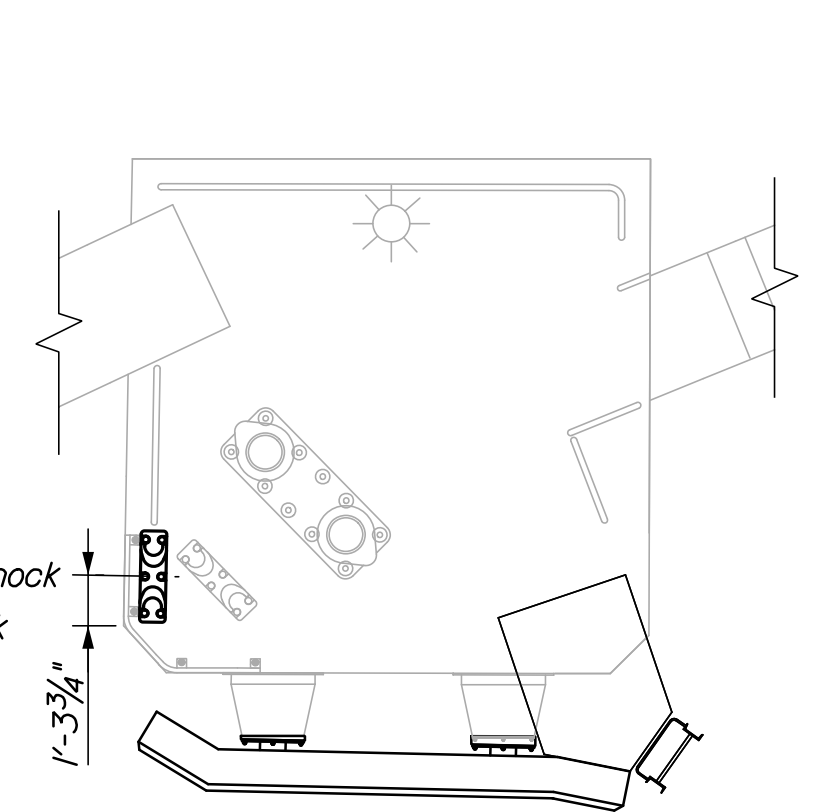
NOTES:

- 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.
- Where handrail posts or line guard anchorages are removed, fill with Sika Flex IA self leveling sealant, or approved equal.
- For additional details on chock setting, see Sheet S06.
- Contractor shall grind smooth, cap ends of cut handrails, and galvanize exposed steel.
- 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.
- All steel components for ladder, handrails, and sign supports shall be hot-dip galvanized.



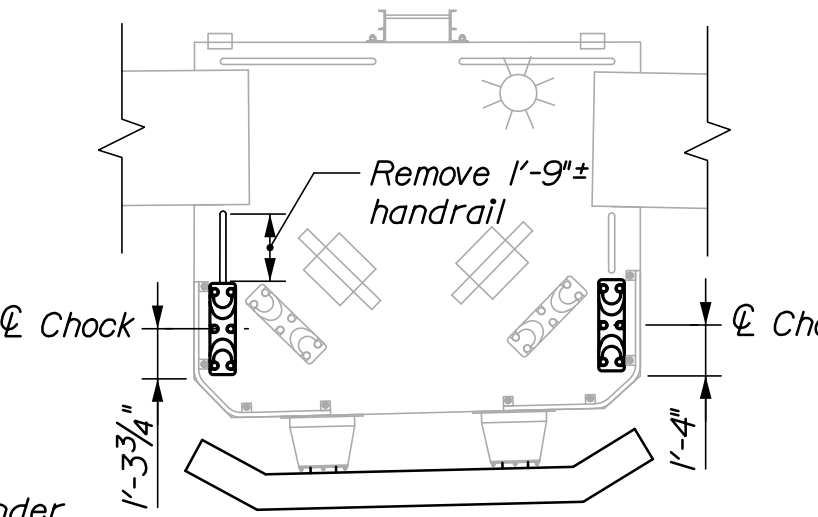
**D1 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



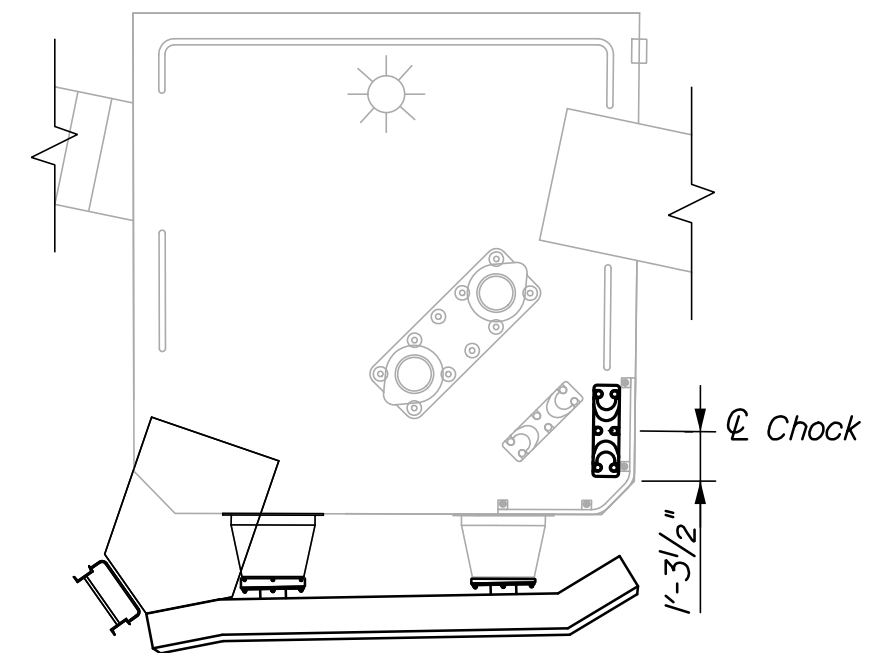
**D4 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



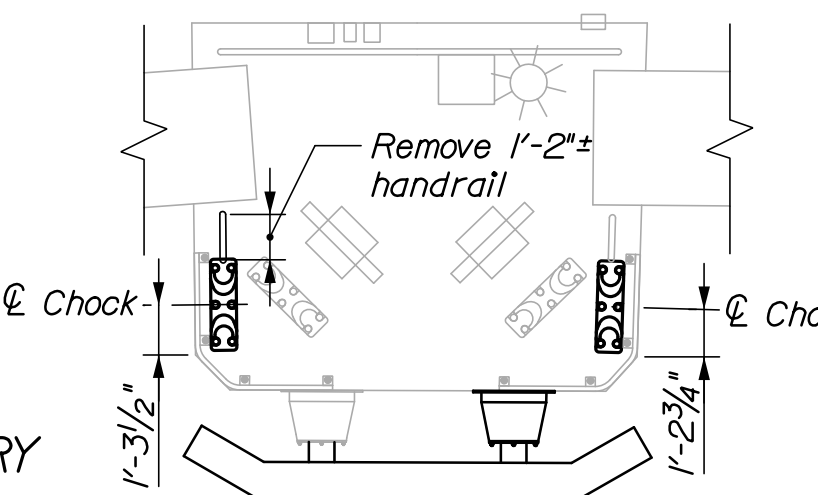
**D2 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



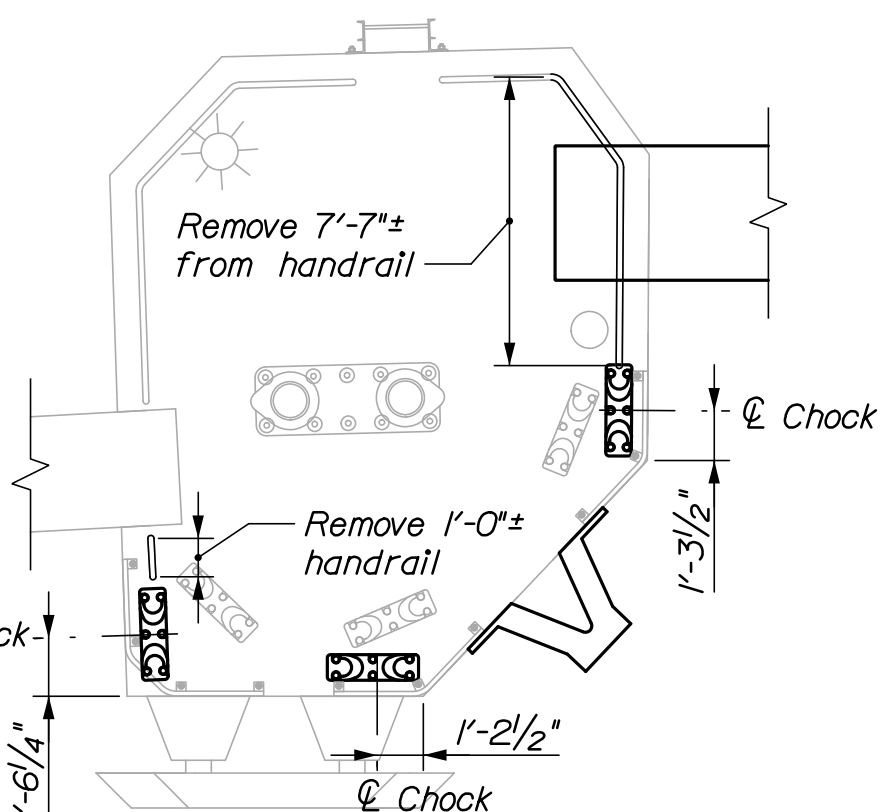
**D5 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



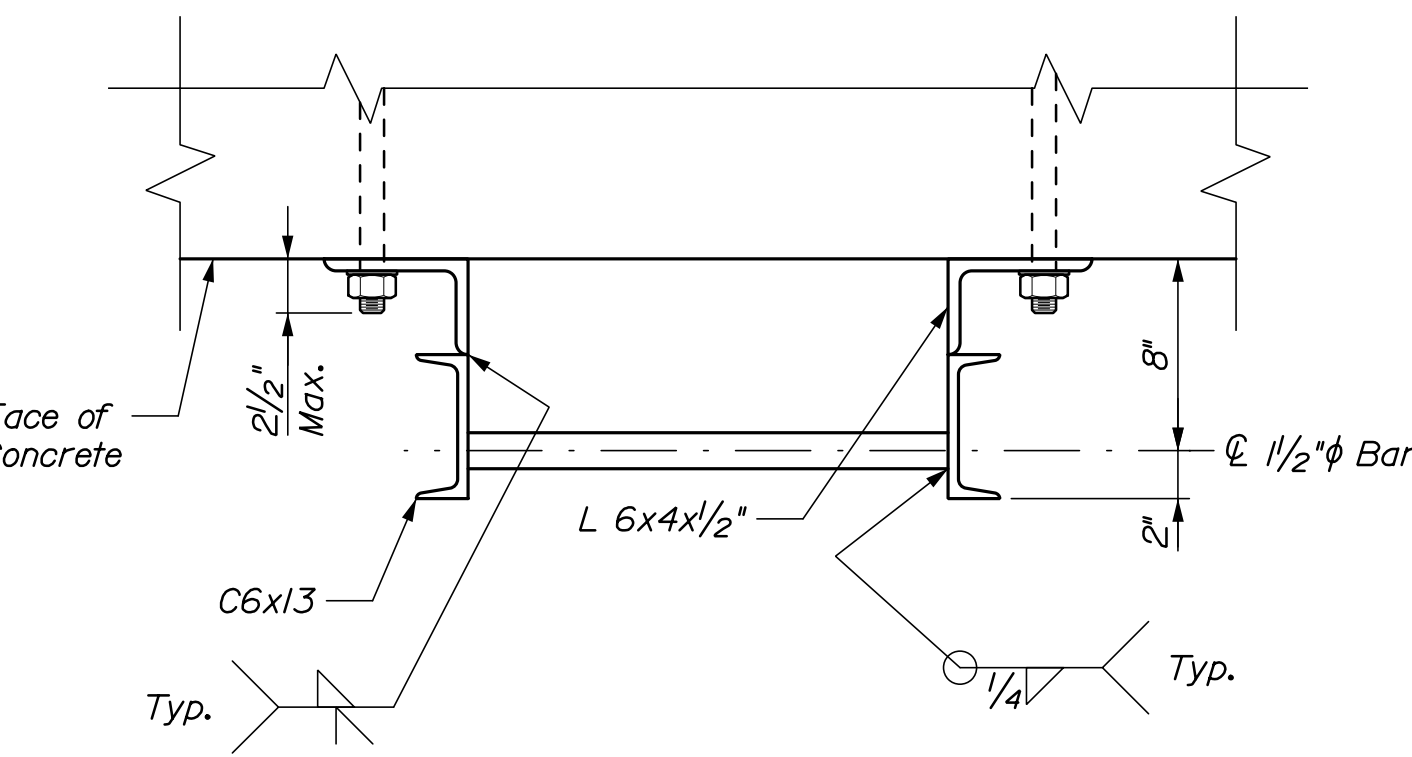
**D3 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



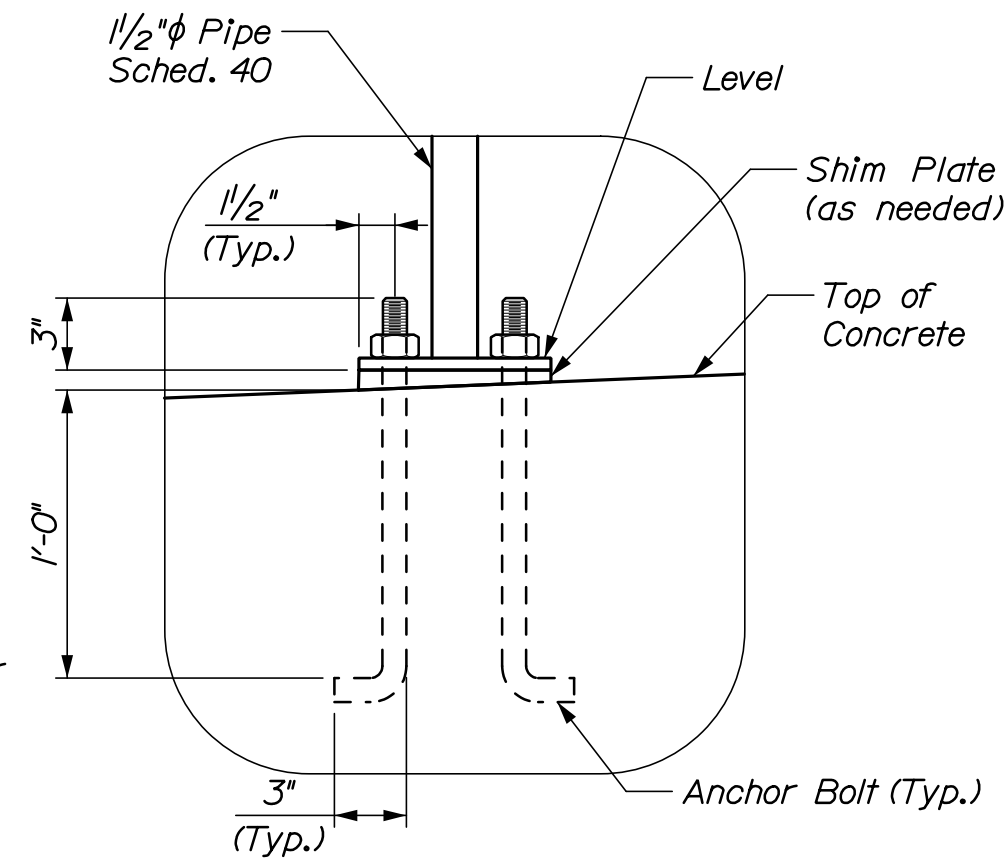
**D6 CHOCK
MODIFICATION PLAN**

1" = 5'-0"



SECTION A-A

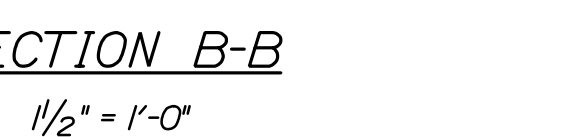
1/2" = 1'-0"



DETAIL 3

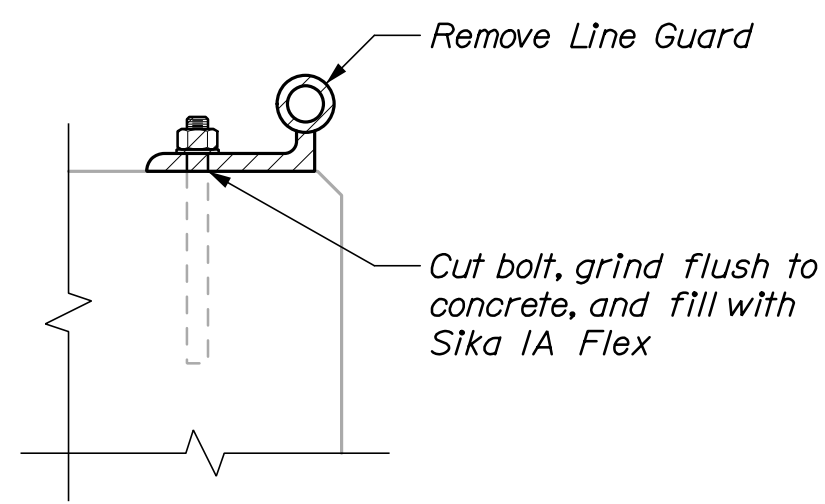
(Applies to all railing mounting locations. Kick plate not shown for clarity.)

1/2" = 1'-0"



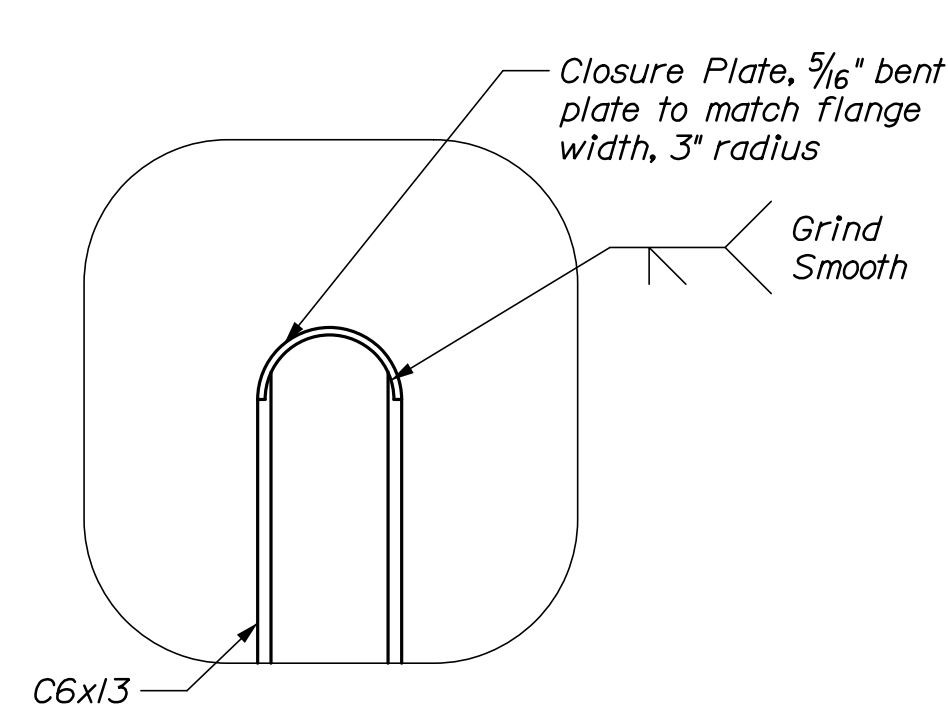
SECTION B-B

1/2" = 1'-0"



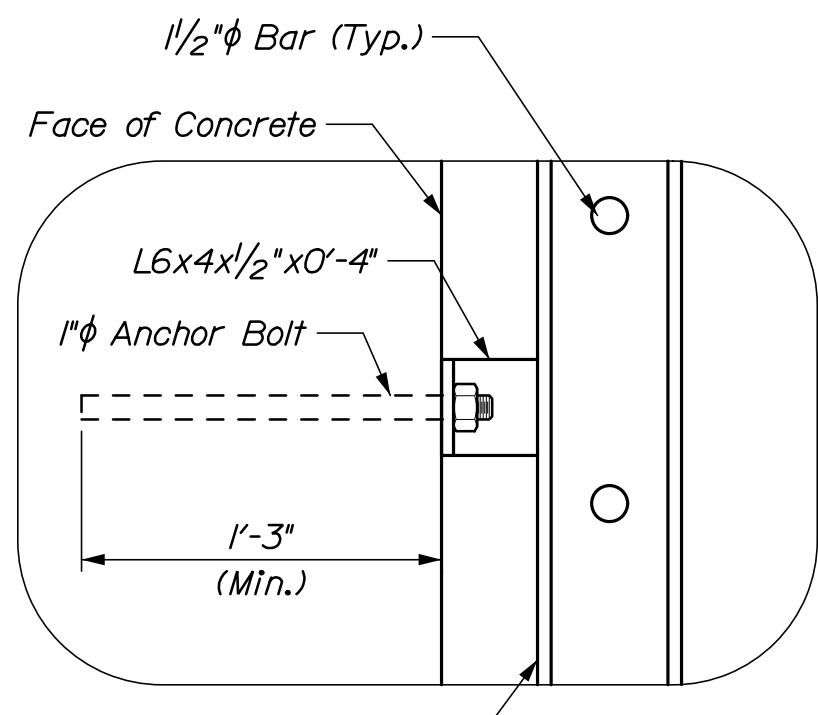
LINE GUARD REMOVAL DETAIL

1/2" = 1'-0"



DETAIL 1

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



DETAIL 2

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

PROJ. MANAGER	DATE	BY	DATE
N. Willey	07/20	P. Bishop	07/20
C. Morrill		C. Morrill	

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

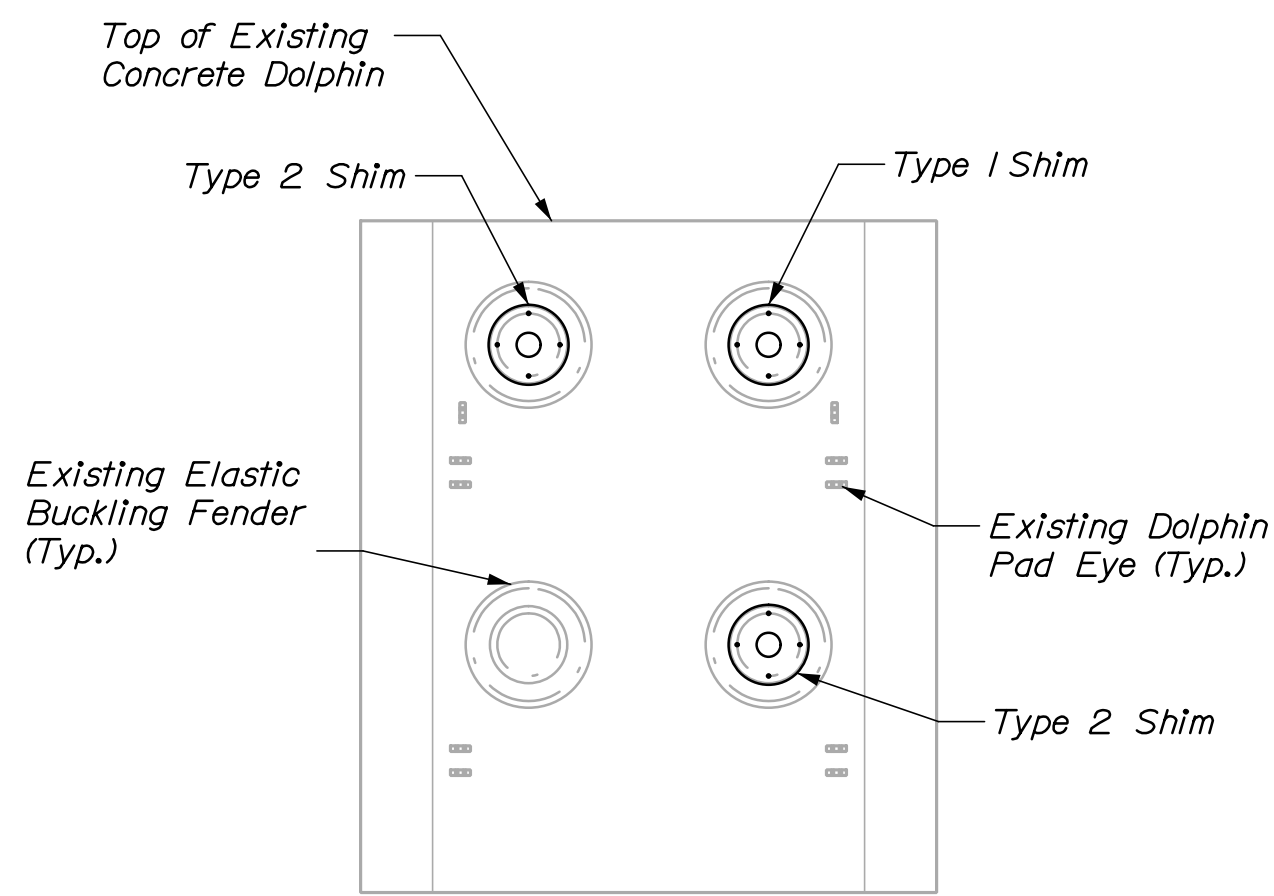
SWAN'S ISLAND
FERRY TERMINAL
DOLPHIN DETAILS
MISCELLANEOUS

Date: 7/13/2020

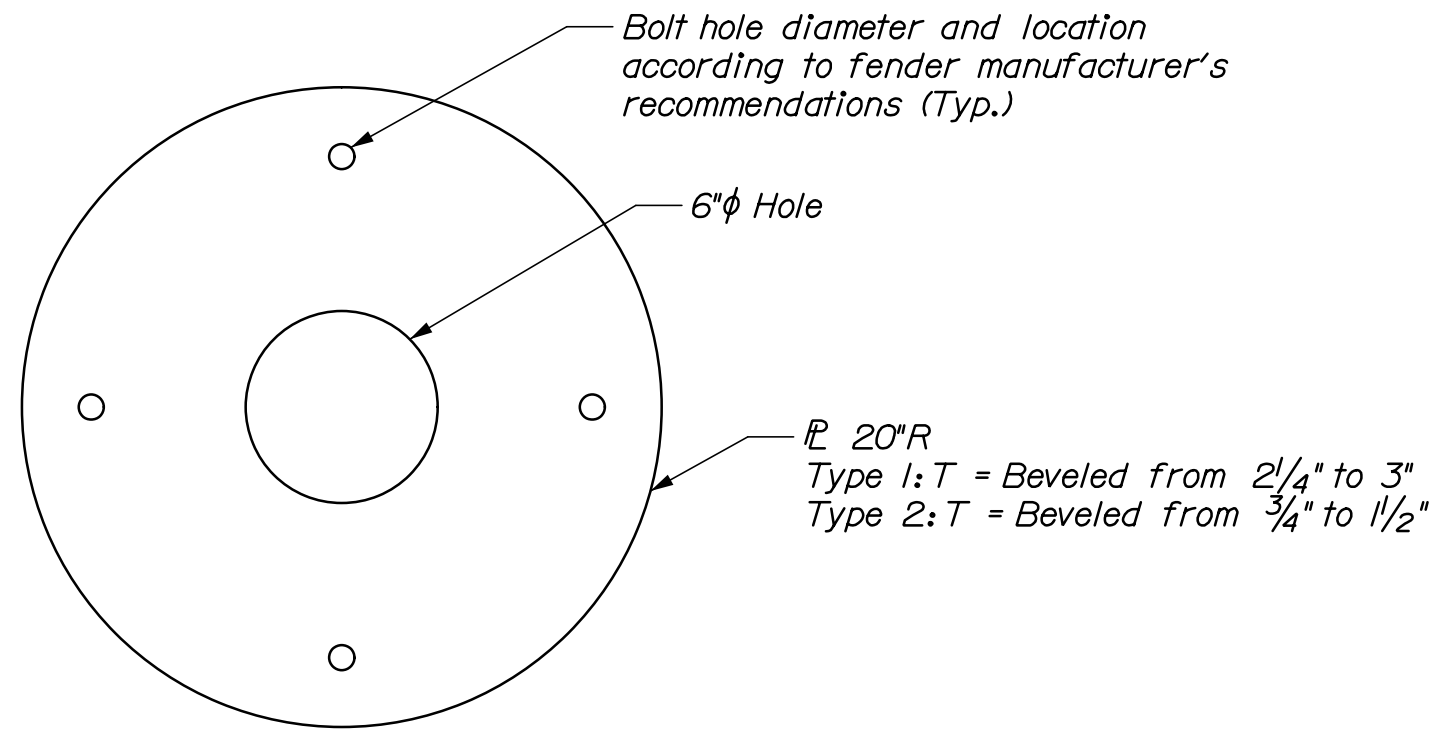
Username:

Division:

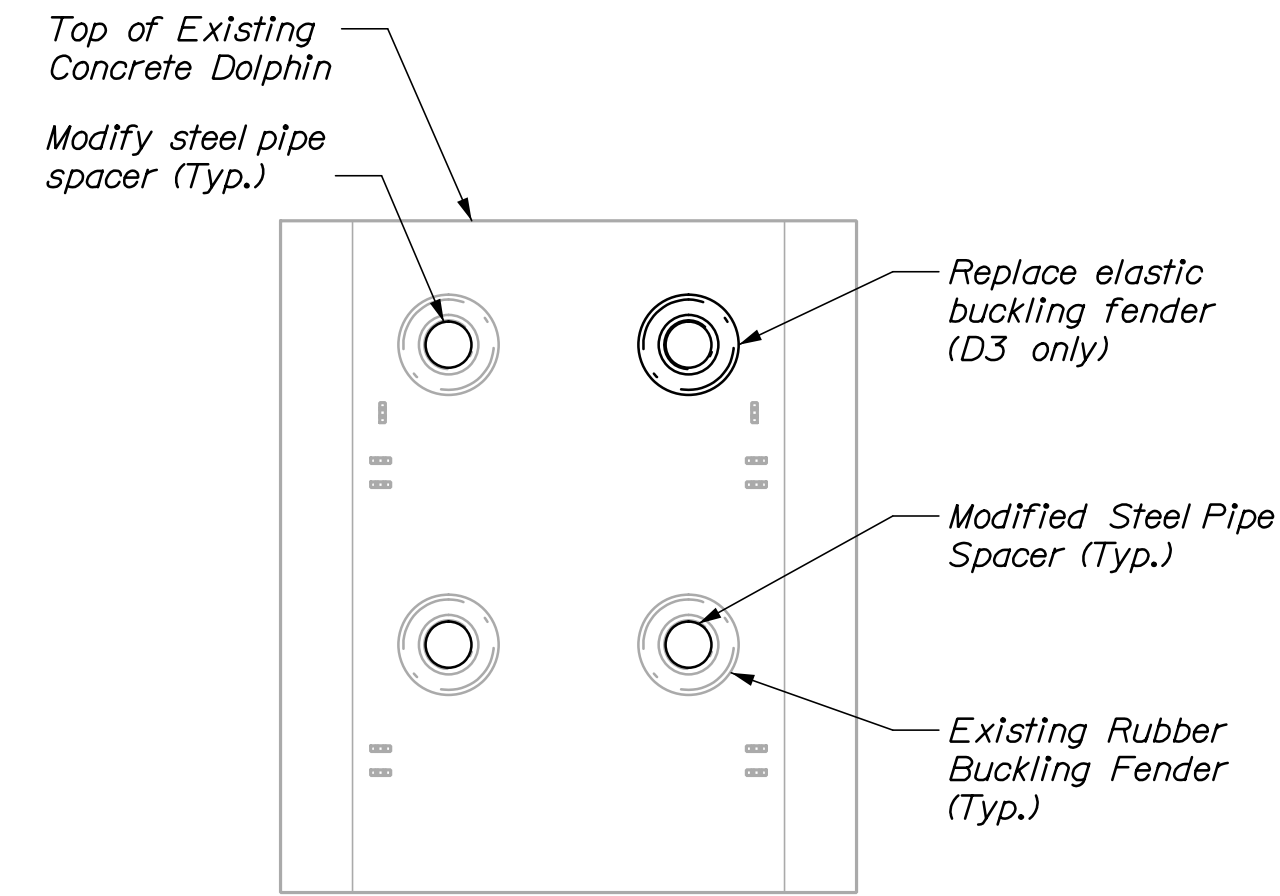
Filename: 014_Dolphin Repair Details.dgn



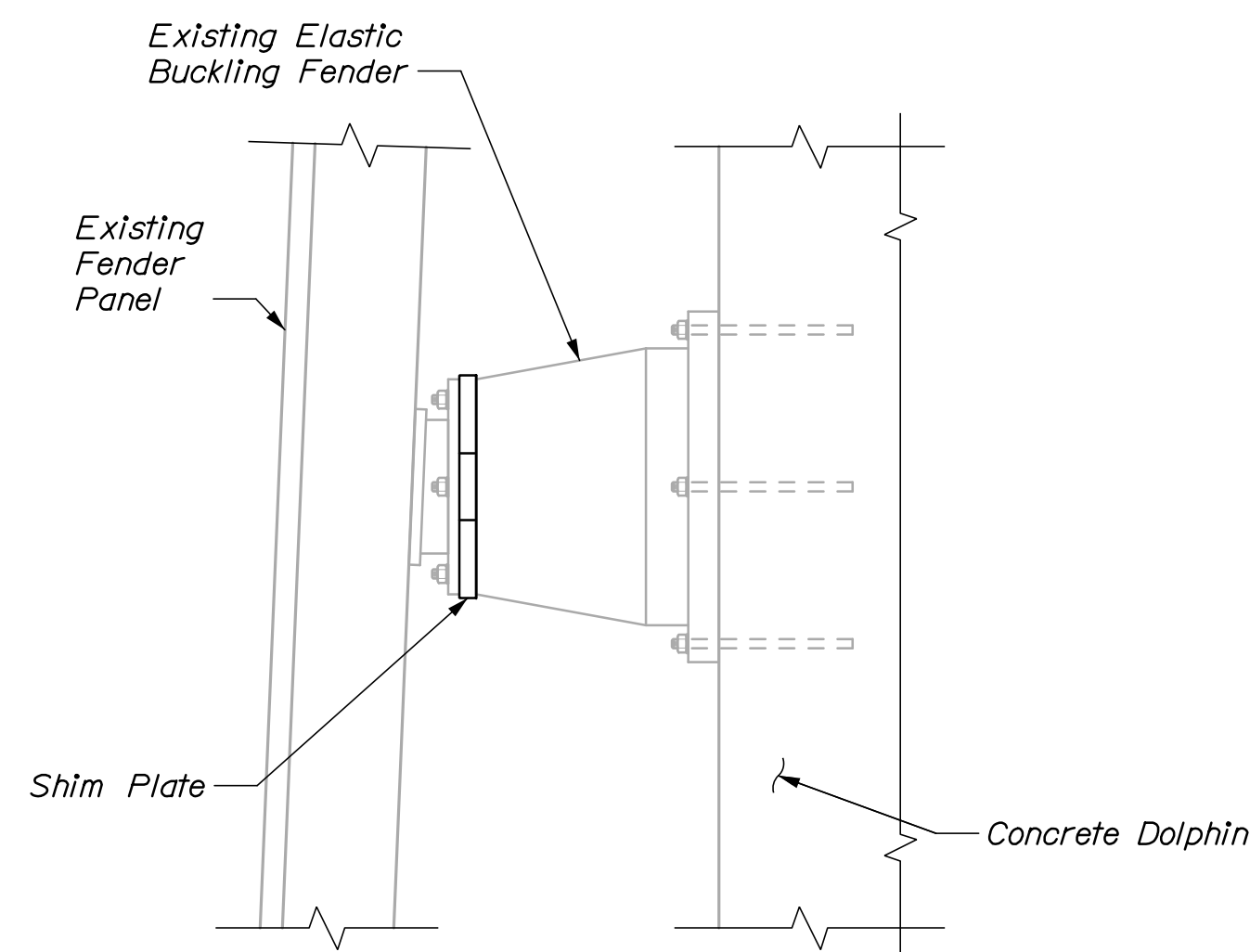
ELEVATION - DOLPHIN D4
 (Dolphin D5 opposite hand)
 1/4" = 1'-0"



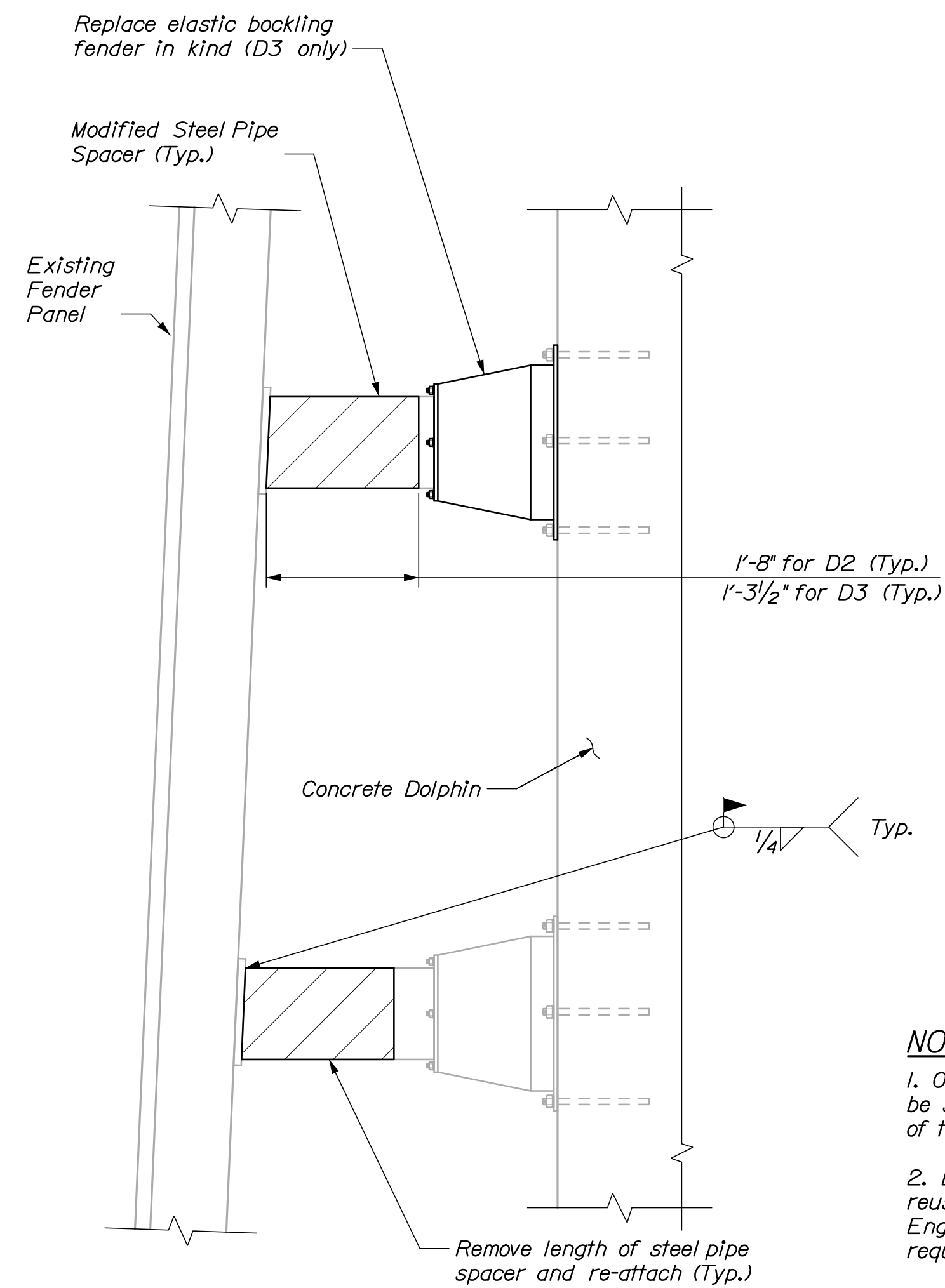
SHIM DETAIL
 2" = 1'-0"



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 accommodate 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.

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REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	
BY	SIGNATURE
P. Bishop	10/09
C. Morin	
N. Wiley	
C. Morin	
	P.E. NUMBER
	10209
	DATE

SWAN'S ISLAND
 FERRY TERMINAL
 DOLPHIN REPAIR DETAILS

SHEET NUMBER

S10

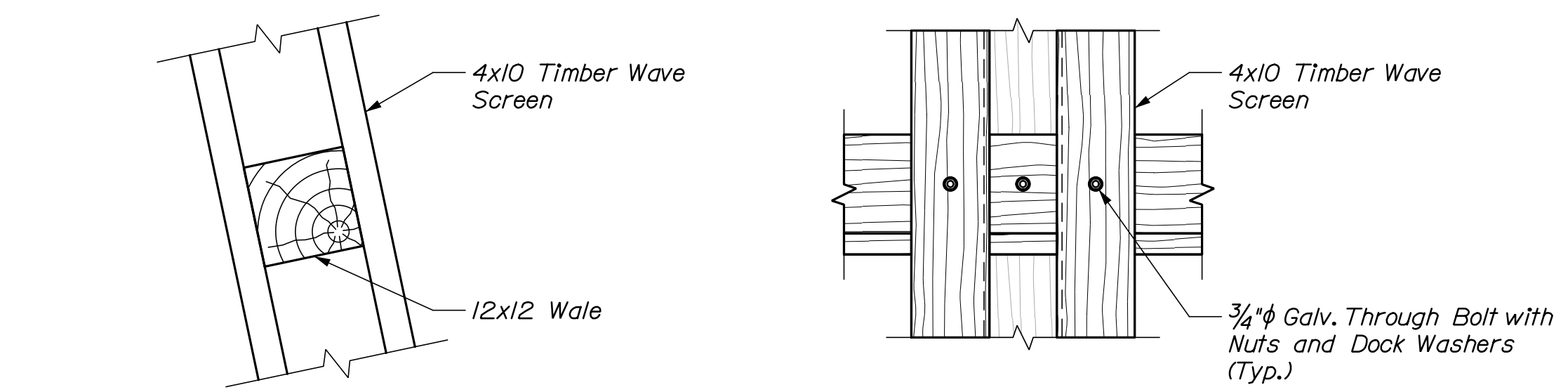
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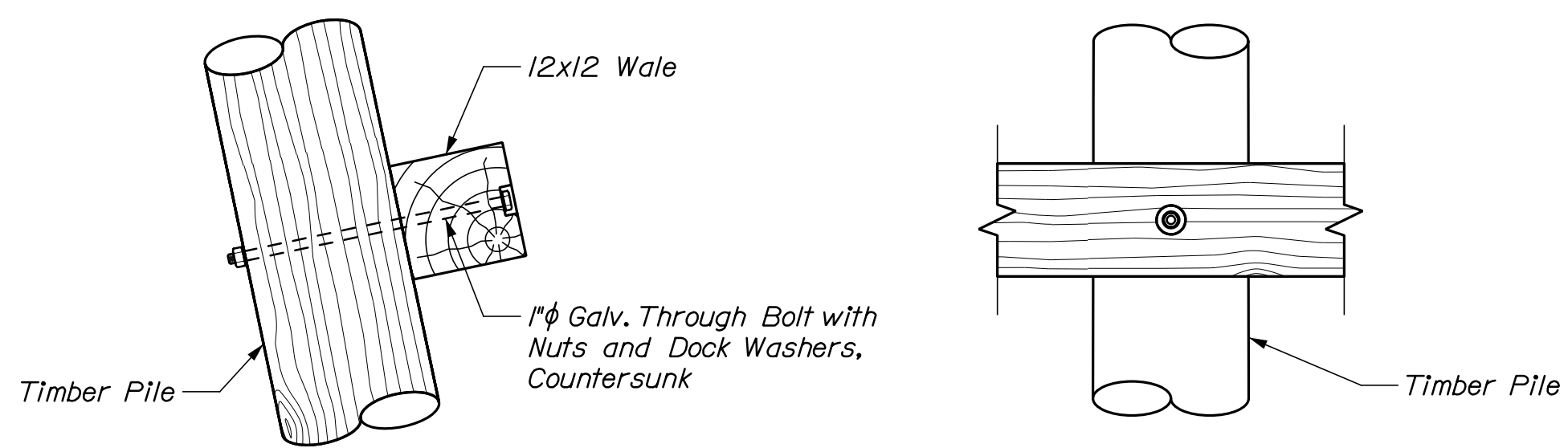
Date: 7/13/2020

Username:

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



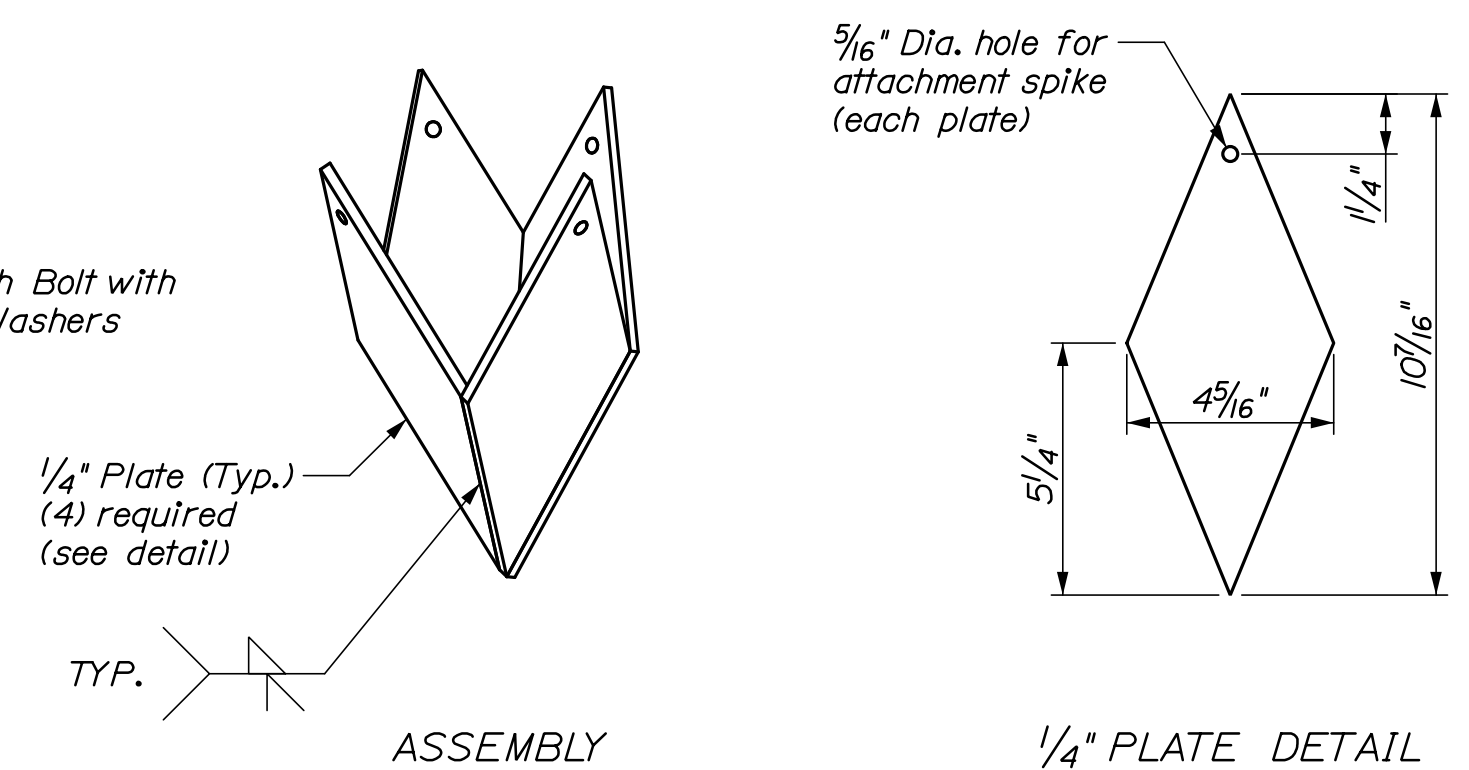
SCREEN CONNECTIONS



WALE CONNECTIONS

WAVE SCREEN CONNECTIONS

3/8" = 1'-0"



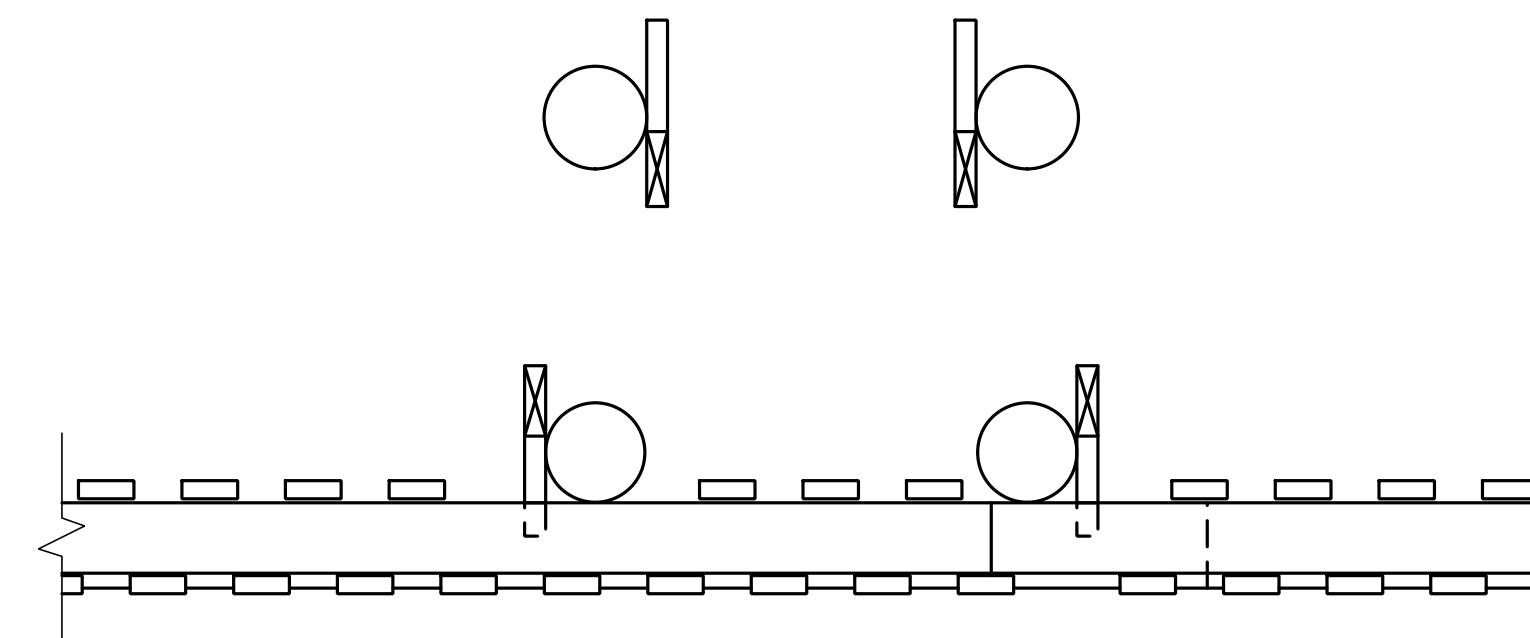
ASSEMBLY

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.

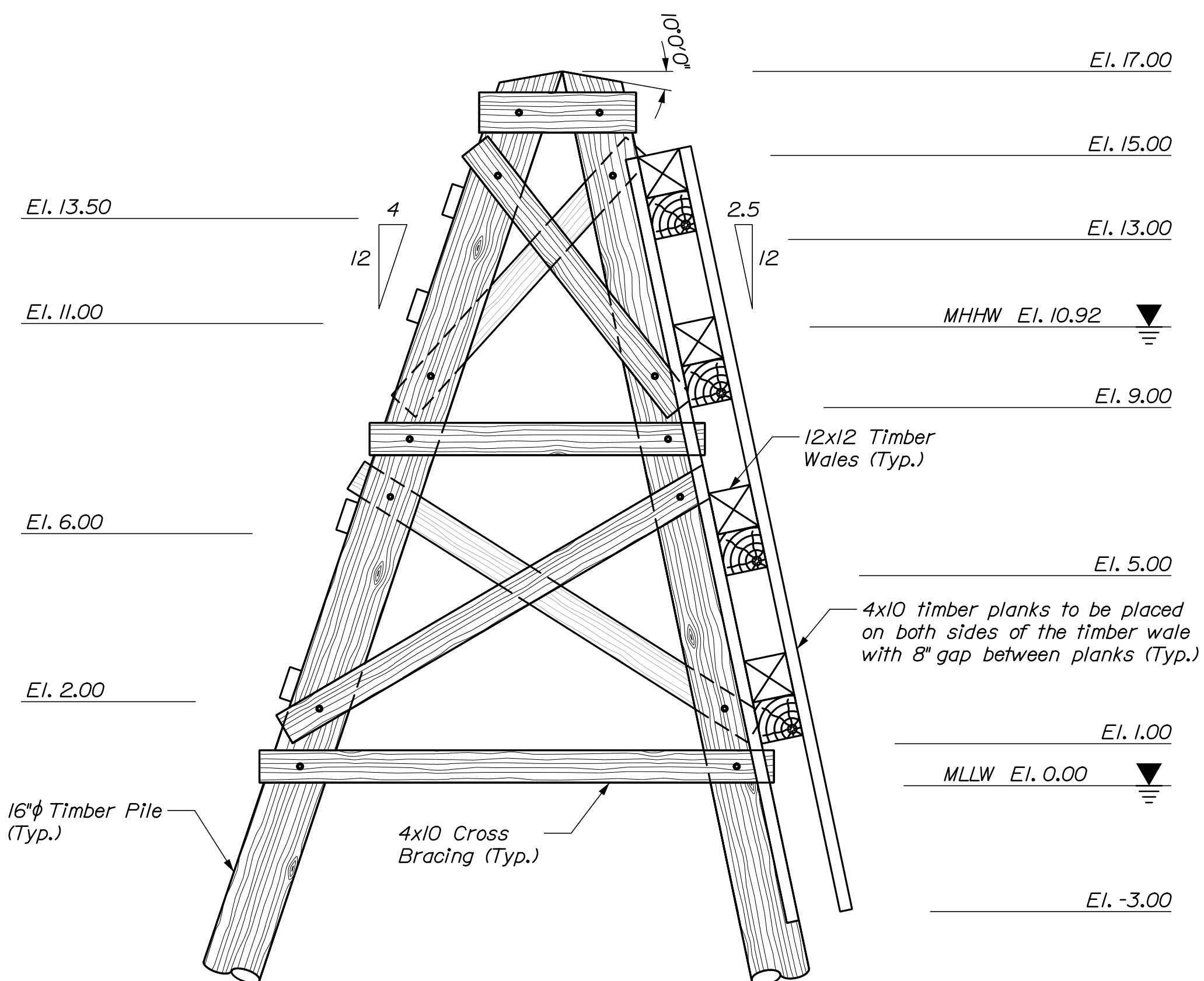
TIMBER PILE POINT DETAIL

3" = 1'-0"



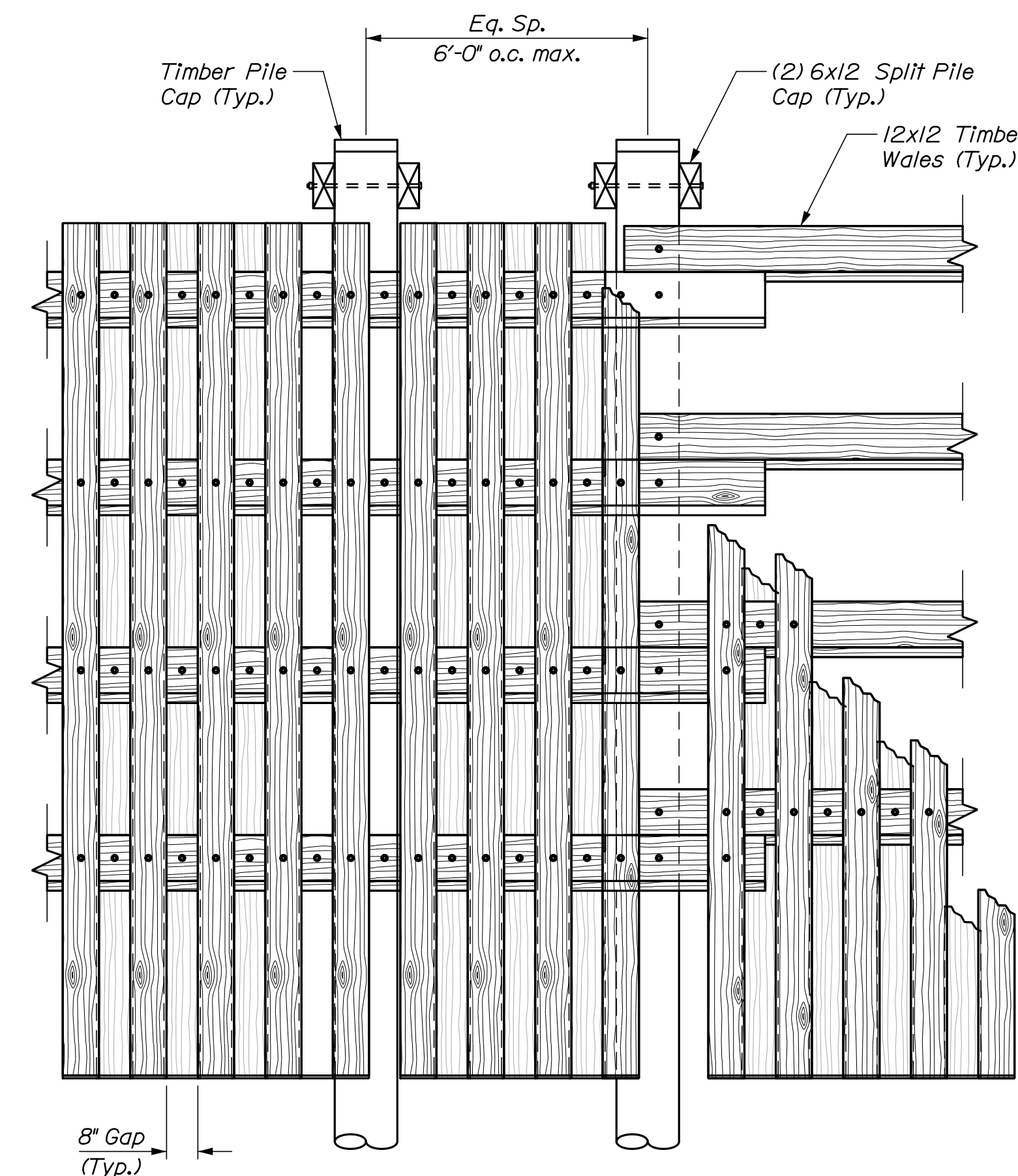
WAVE SCREEN PLAN VIEW

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



WAVE SCREEN END ELEVATION

3/8" = 1'-0"



WAVE SCREEN FRONT ELEVATION

3/8" = 1'-0"

NOTES:

- All threaded rods for timber connections are 1" dia. galv. with nuts and dock washers per ASTM A307, except where noted.
- All timber associated with wave screen shall be 2.5 cca treated.
- All timber vertical and batter piles shall have a driven capacity of 16 tons or a minimum embedment length of 20 feet. See timber pile point detail.
- All timber battered piles for wave screens 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.
- 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.
- All timber construction shall conform to the national design specification for wood construction of the American Forest and Paper Association.
- Field treat all cut and drilled timber surfaces with two coats of preservative containing copper naphthanate solution (min. 2% metallic solution) per specifications.
- Wave screens shall be 6' minimum clear from dolphins.
- Contractor shall take care while installing timber piles to avoid conflict with steel pipe piles.
- Timber pile cap shall be white with flat top.

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

BY	DATE	SIGNATURE	P.E. NUMBER	DATE
P. Bishop C. Morin	07/20 07/20		10209	

SWAN'S ISLAND
FERRY TERMINAL
**WAVE SCREEN
PLAN AND ELEVATION**

SHEET NUMBER

S11

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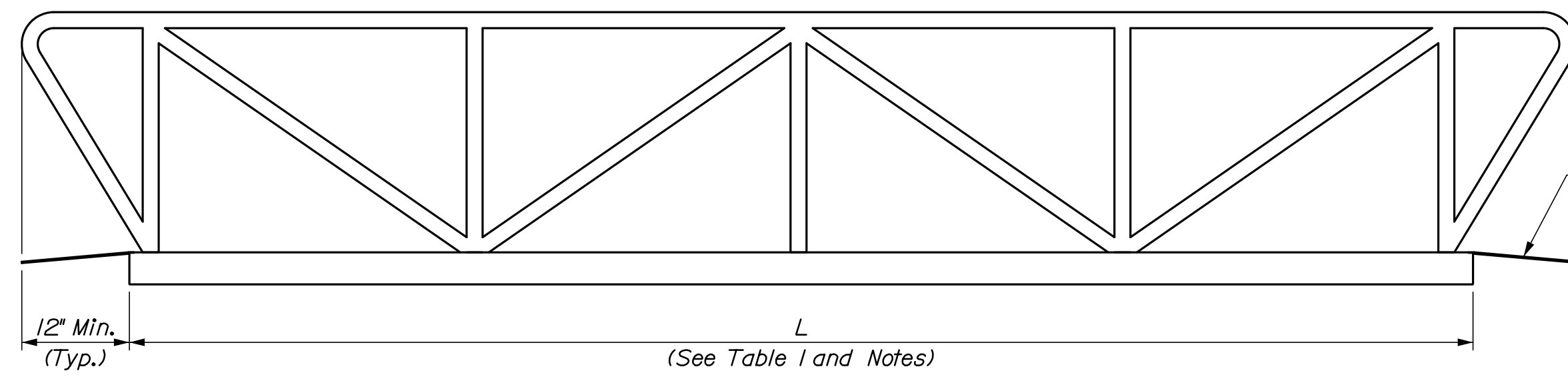


Date: 7/13/2020

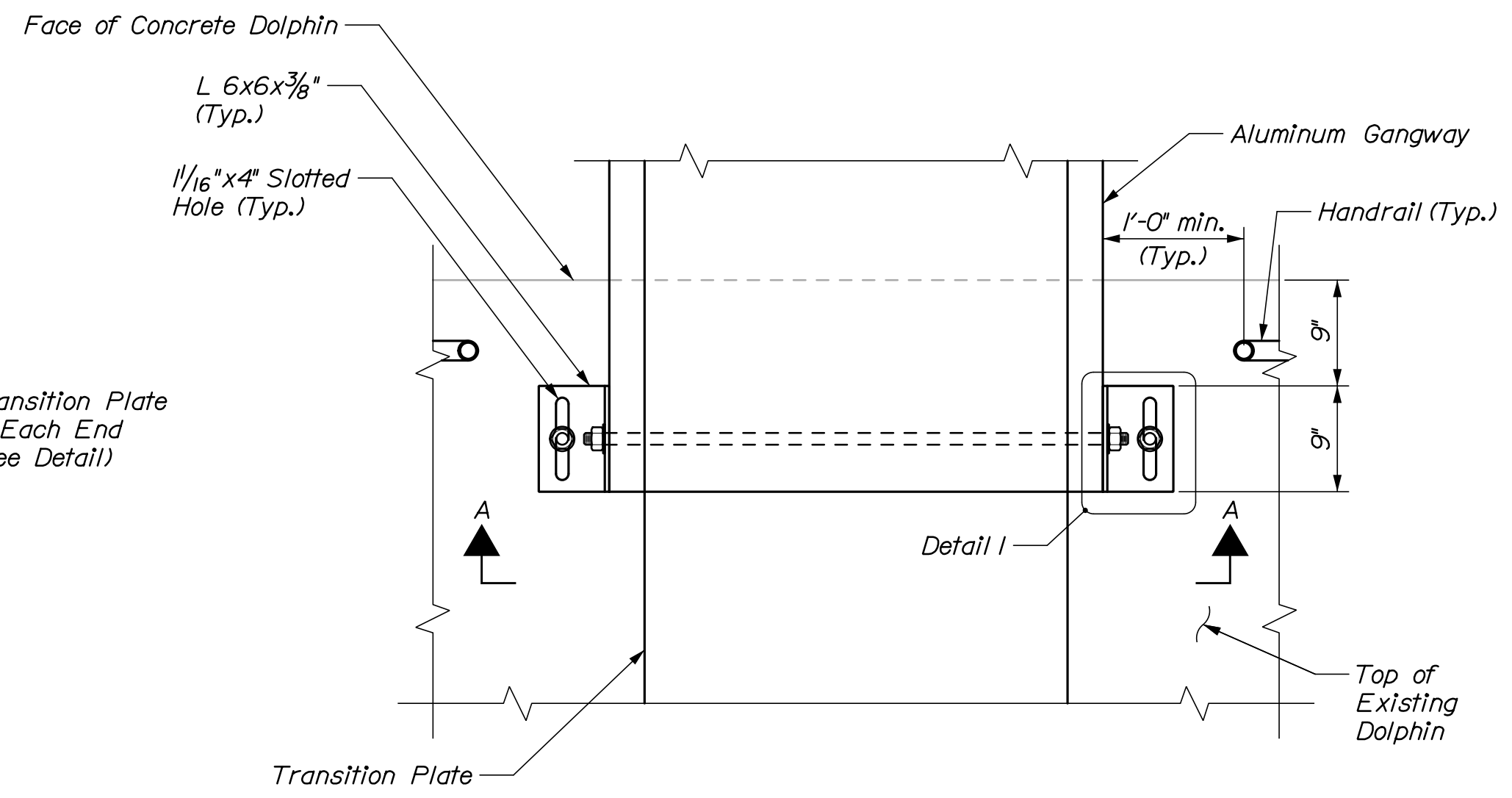
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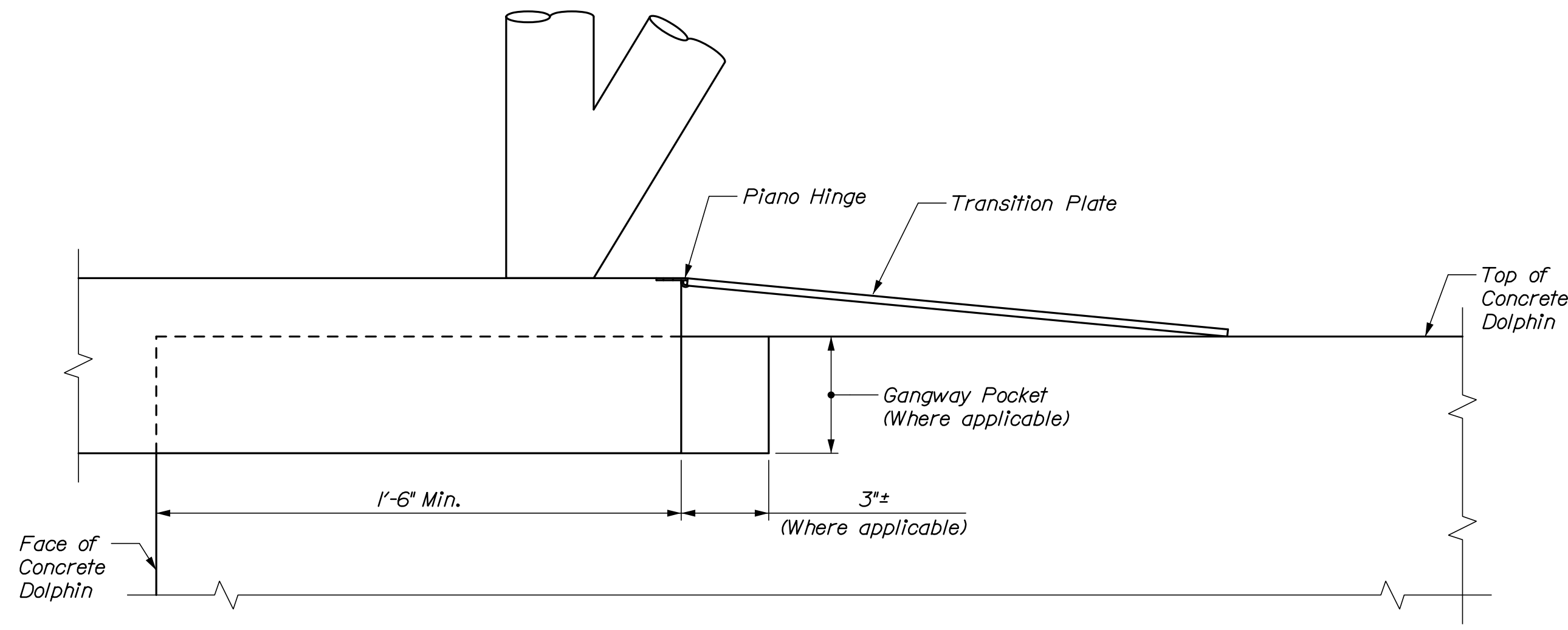
Filename: 016_Gangway Plan and Elevation.dgn



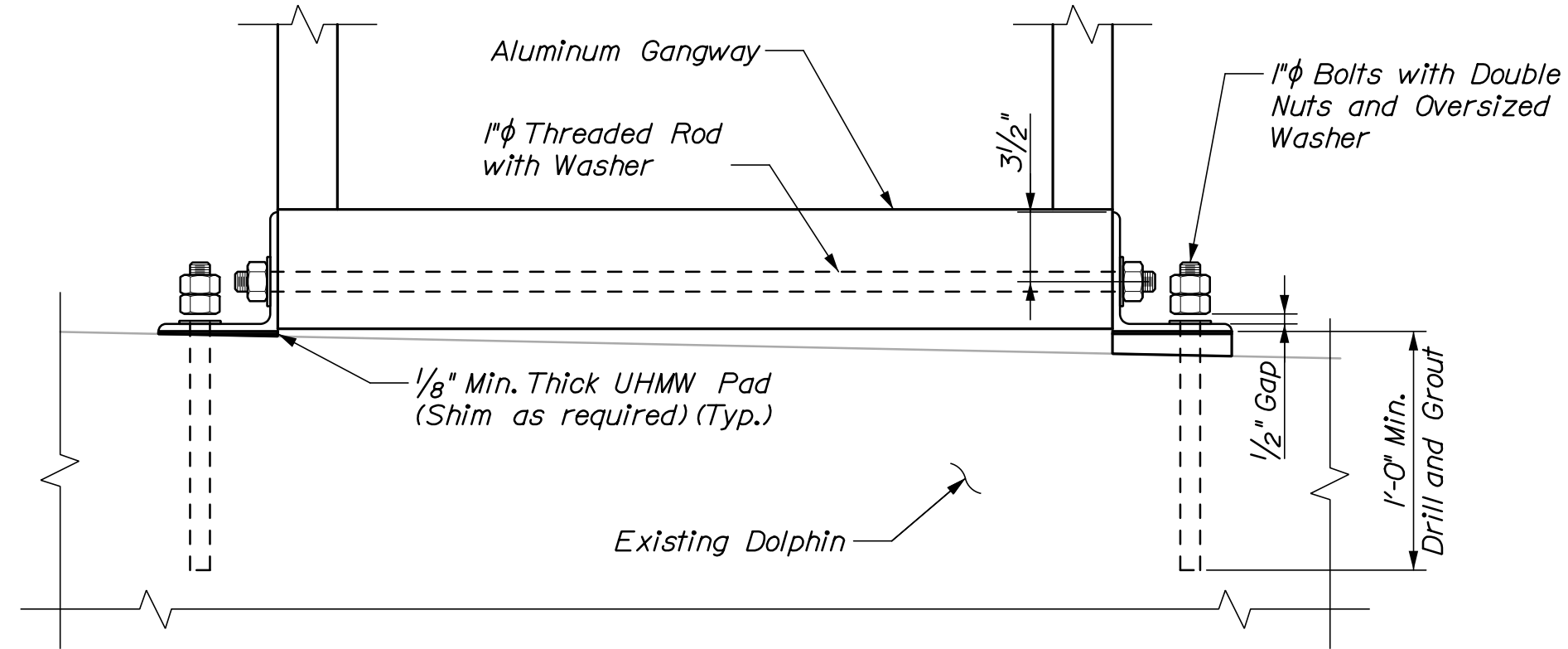
GANGWAY ELEVATION
(Schematically Shown)
1/2" = 1'-0"



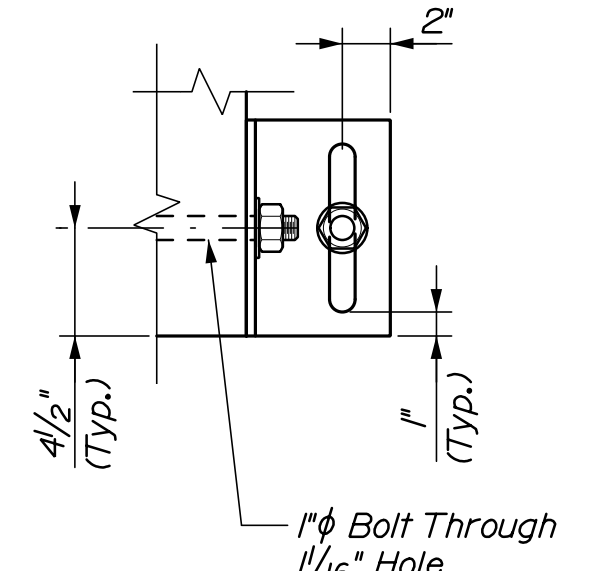
EXISTING DOLPHIN GANGWAY CONNECTION
1" = 1'-0"



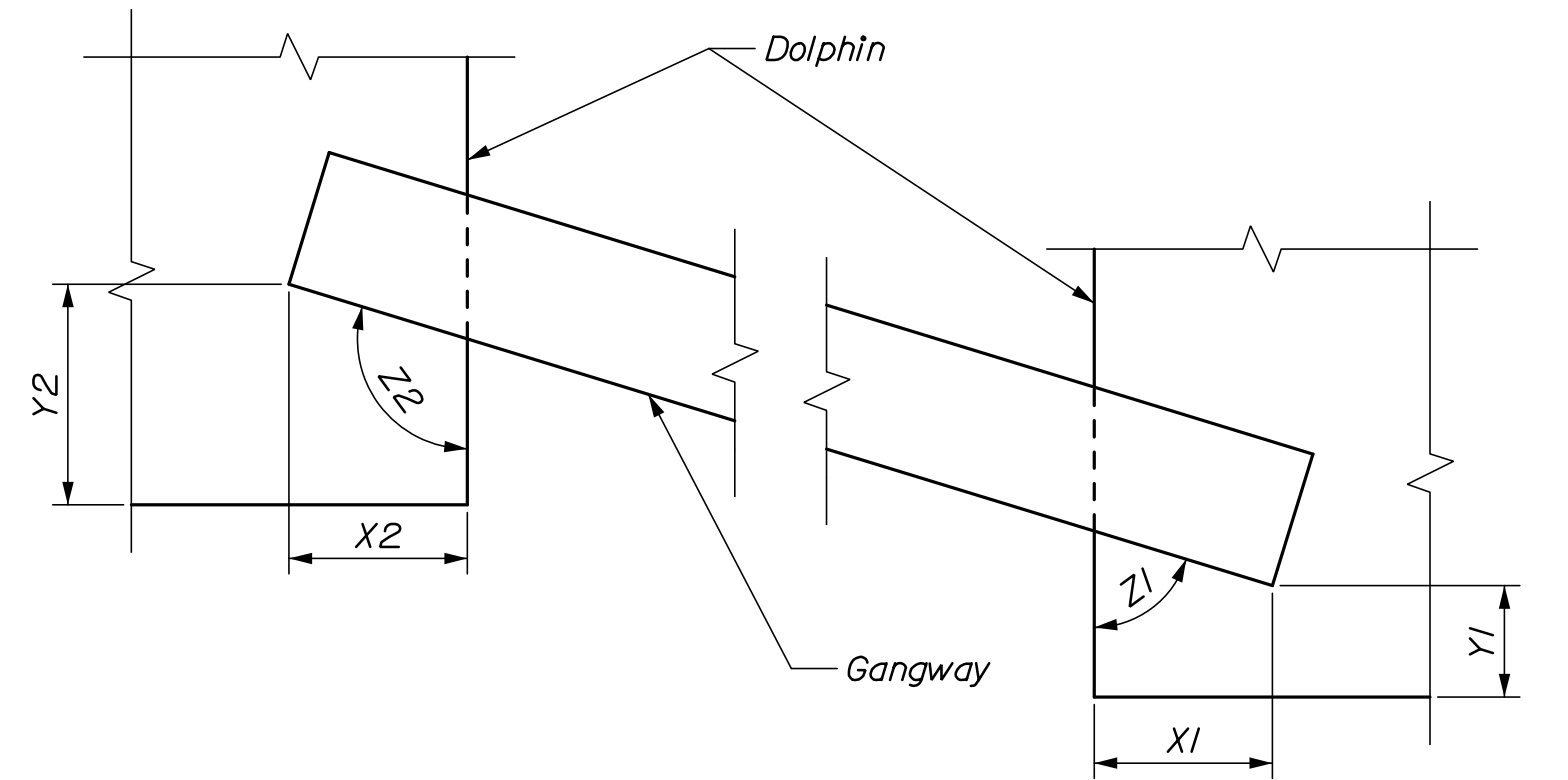
TRANSITION PLATE DETAIL
3" = 1'-0"



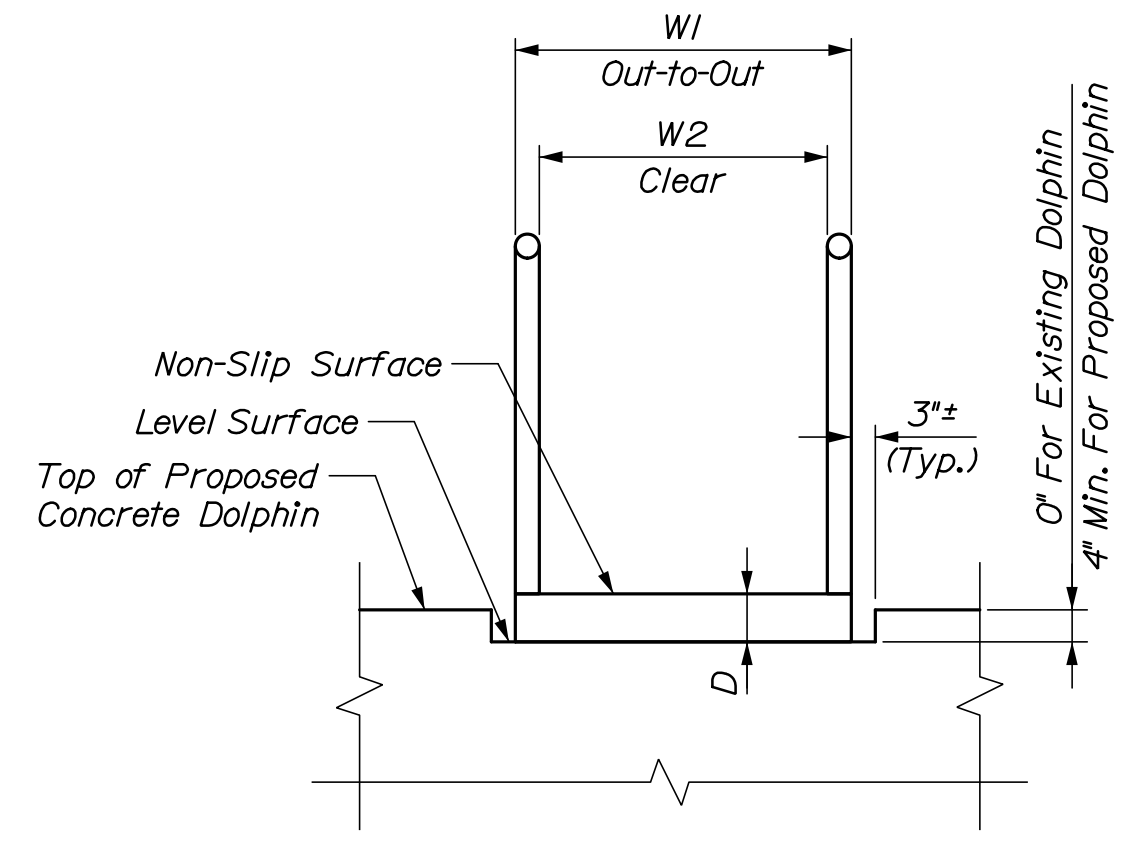
SECTION A-A
1/2" = 1'-0"



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



GANGWAY LAYOUT
N.T.S.



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

TABLE 1
GANGWAY DIMENSIONS

Gangway I.D.	Dimensions											
	W1	W2	D	L	Dolphin 1	X1	Y1	Z1	Dolphin 2	X2	Y2	Z2
G1	42"	36"	6"	29'-0"	D8	1'-6"	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"

STATE OF MAINE
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PROJ. MANAGER
DESIGN-DETAILED
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DESIGN-DETAILED
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REVISIONS 3
REVISIONS 4
FIELD CHANGES

DATE
07/20
07/20

BY
P. Bishop
C. Morin

SIGNATURE
10209

P.E. NUMBER
DATE

SWAN'S ISLAND
FERRY TERMINAL

**GANGWAY
AND ELEVATION**

SHEET NUMBER

S12

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Filename: ... \017_Electrical Plan.dgn

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET, BATH, ME 04630
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Lawrence S. Bartlett
SIGNATURE
P.E. NUMBER 7928
DATE 5/30/2019

PROJ. MANAGER	DATE	BY
L. Bartlett	05/19	P. Bishop
CHECKED-REVIEWED	05/19	C. Morr
DESIGN2-REVIEWED		
DESIGN3-REVIEWED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

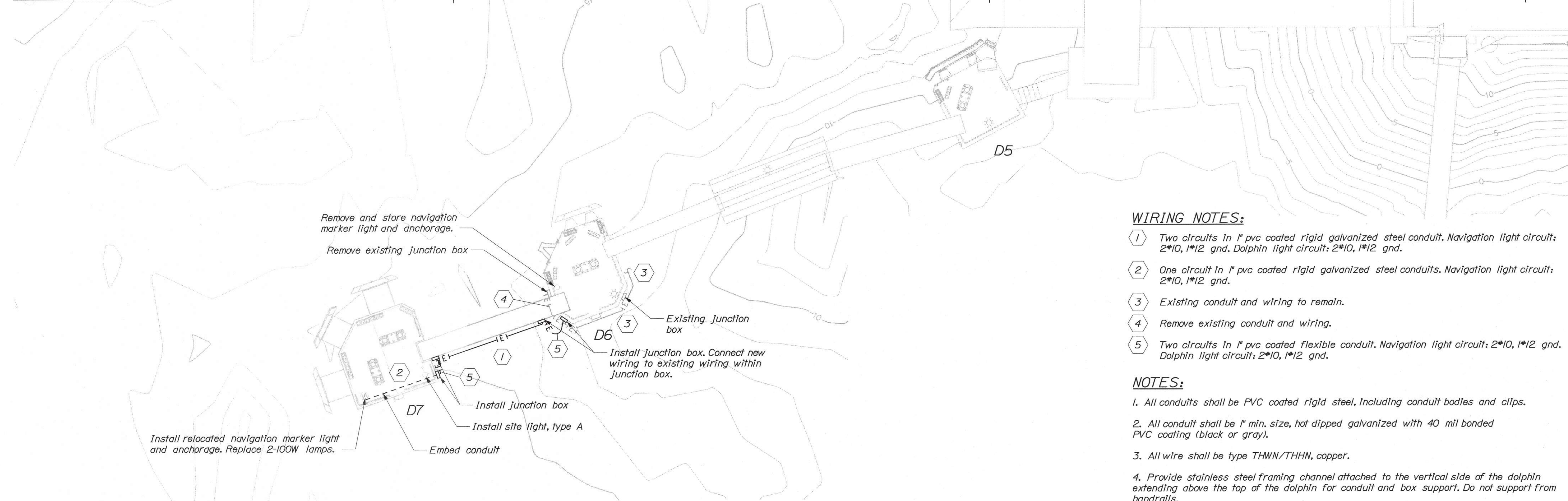
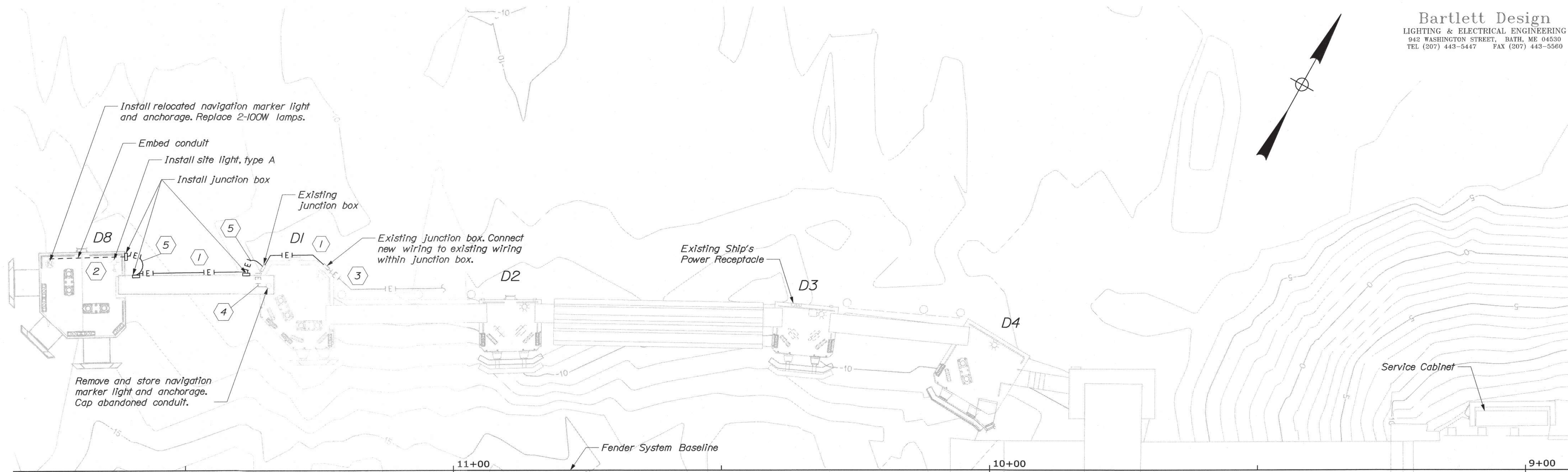
SWAN'S ISLAND
FERRY TERMINAL
ELECTRICAL PLAN

SHEET NUMBER

E01

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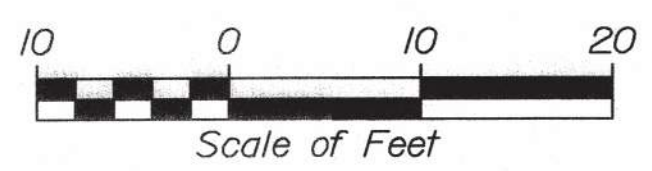
WIRING NOTES:

- 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 junction boxes and connectors to the equipment grounding conductor inside the box.

PLAN
1" = 10'-0"



Date: 5/30/2019

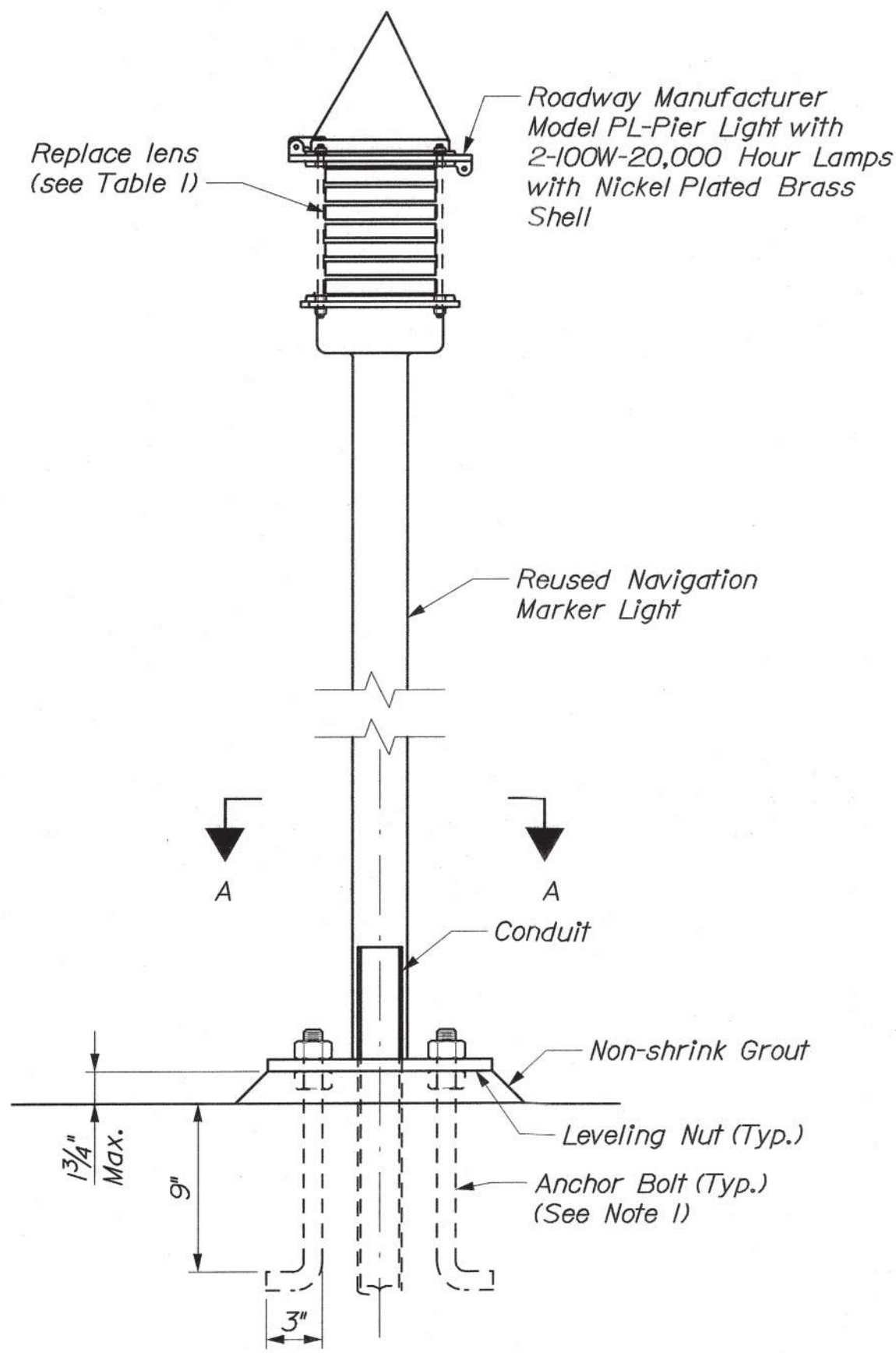
Username:

Division:

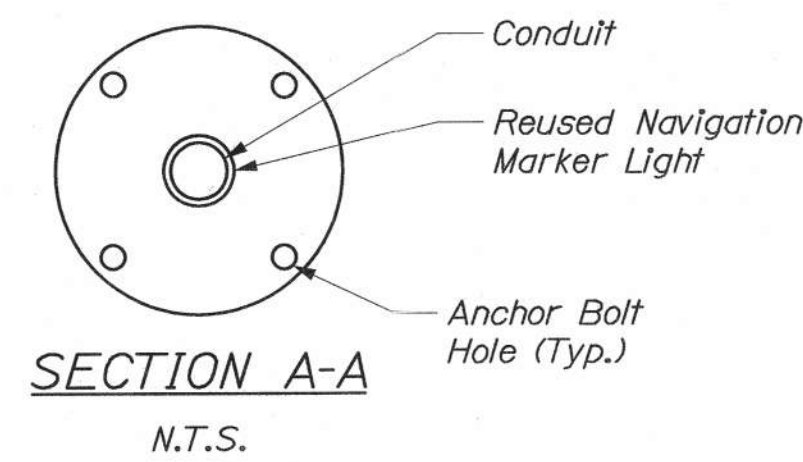
Filename: ... \018_ElectricalDetails.dgn

TABLE 1
NAVIGATIONAL MARKER LENS
REPLACEMENT SUMMARY

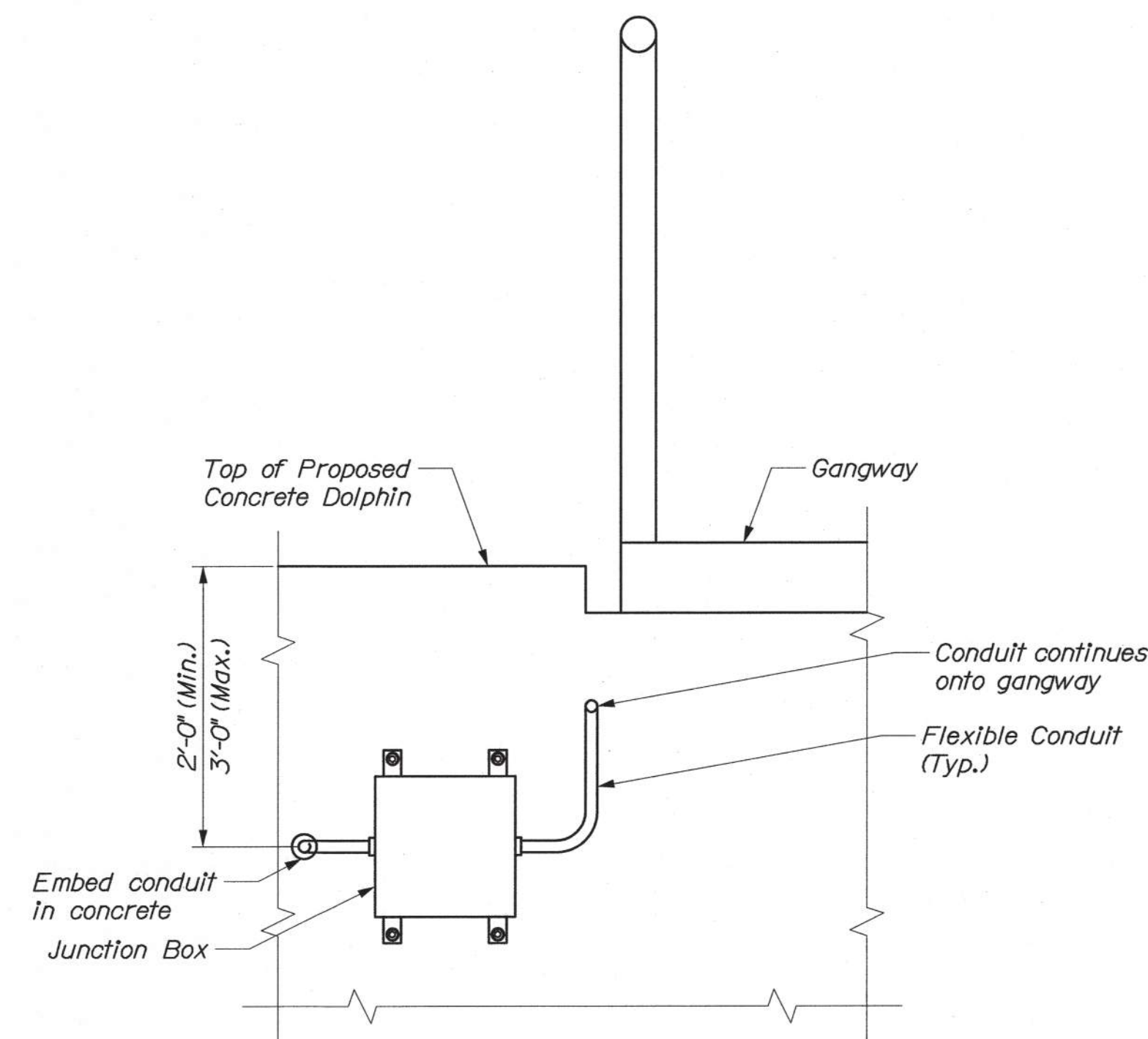
Location	° of Light Opening	Lamp Size	Lens
Dolphin D7	In Kind	2-100W A-19	In Kind
Dolphin D8	In Kind	2-100W A-19	In Kind



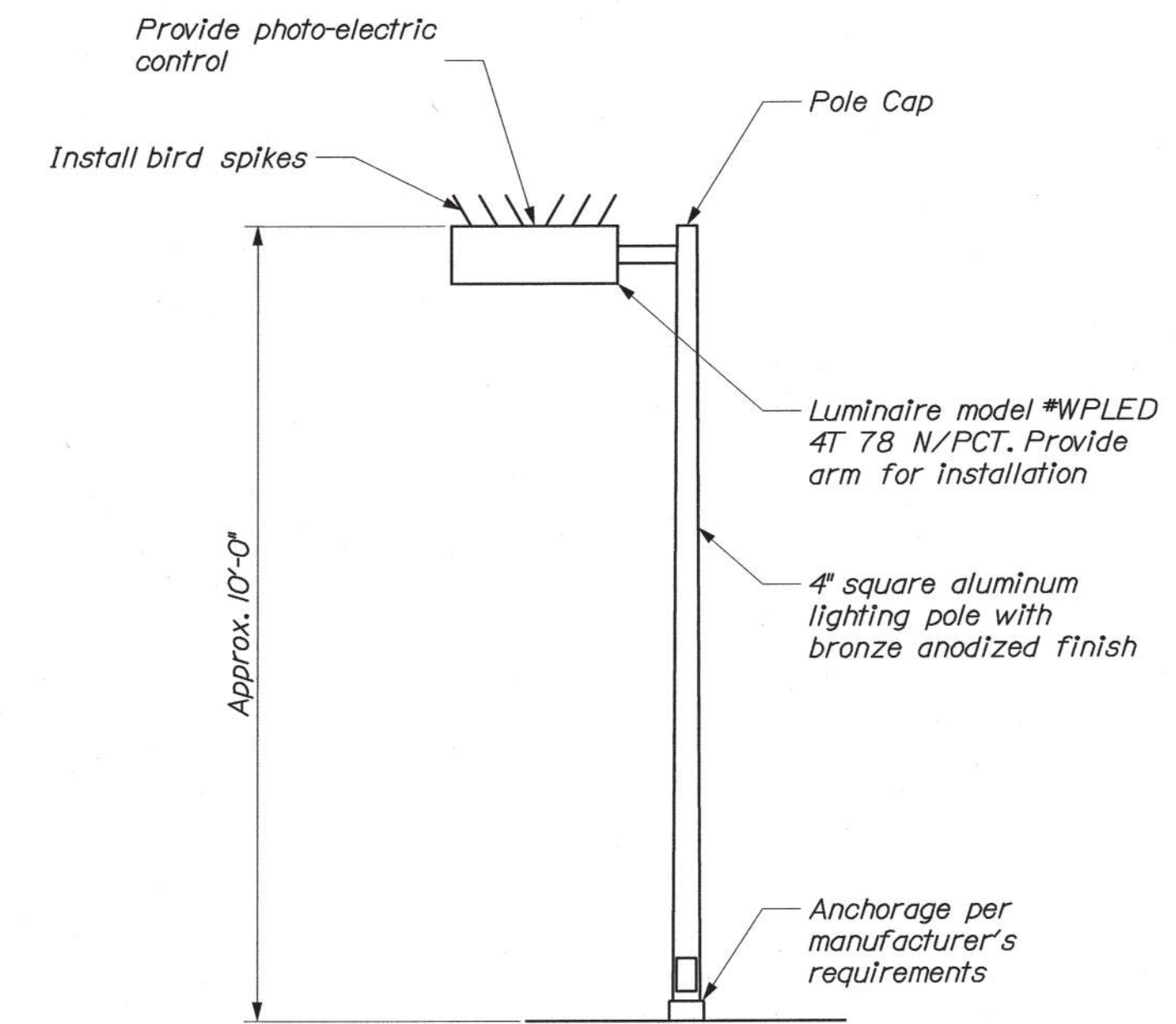
NAVIGATION MARKER INSTALLATION DETAIL
N.T.S.



SECTION A-A
N.T.S.



EMBEDDED CONDUIT JUNCTION BOX DETAIL
1" = 1'-0"

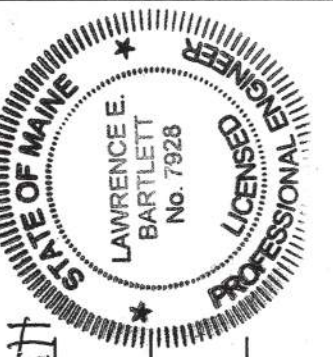


SITE LIGHT TYPE A DETAIL
N.T.S.

NOTES:

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

STATE OF MAINE
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L. Bartlett
SIGNATURE
P.E. NUMBER
7928
DATE
5/30/2019

PROJ. MANAGER	DATE	BY
DESIGN-DETAILED	05/19	P. Bishop
CHECKED-REVIEWED	05/19	C. Morin
DESIGN-DETAILED01		
DESIGN-DETAILED02		
REVISIONS 1		
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REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SWAN'S ISLAND
FERRY TERMINAL

ELECTRICAL DETAILS

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