



sanitation

Jessica S. Tisch
Commissioner

Sarah Dolinar

Director, SWM Environmental Compliance/Contracts

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Via Email

April 3, 2024

Denise Grattan, Div. of Environmental Permits
NYS Dept. of Environmental Conservation, Region 2
47-40 21st Street
Long Island City, NY 11101

Re: NYSDEC Permit 2-6106-00002/00022 Ren 4 (Permit)
Southwest Brooklyn Marine Transfer Station (MTS)
New York City Department of Sanitation (DSNY)
2023 Bulkhead Inspection Report

Dear Ms. Grattan:

On behalf of DSNY, this letter provides the 2023 Southwest Brooklyn MTS Bulkhead Inspection Report in compliance with Solid Waste Management Condition 24 of the above-referenced Permit. As required, the Report will be posted on the DSNY website within 7 days.

Please contact me with any questions.

Sincerely,

A handwritten signature in blue ink that reads "Sarah Dolinar".

Sarah Dolinar

Enclosure (1): 2023 Southwest Brooklyn MTS Bulkhead Inspection Report

c: S. Harte, J. McDonnell, J. Capo, J. Steinberg Albin, DSNY
M. Assi, S. Samuel, NYSDEC
A. Barna, Waste Management of New York, LLC

Savin Engineers, P.C.

MEMORANDUM

To: Anthony Barna Waste Management

From: David Han, P.E. Savin Engineers, P.C.

Cc: Jay Kaplan, Waste Management
Timothy Cheatham, P.E. Savin Engineers, P.C.
Edgar Espejo Savin Engineers, P.C.

Date: February 8, 2024

Re: Southwest Brooklyn Marine Transfer Station
2023 Bulkhead Fender System Inspection

As directed by Waste Management, the existing bulkhead fender system at the Southwest Brooklyn Marine Transfer Station (SWBMTS) was inspected for any deficiencies that may compromise the integrity of the fender system. Waste Management engaged Transit Corp to provide a visual dive inspection, with Savin oversight, of the structural elements of the existing North Bulkhead Fender system and the East Bulkhead Fender System at the SWBMTS. The inspection was performed on Saturday and Sunday, December 2–3, 2023. This inspection follows on a similar inspection performed in September 2022 (refer to the 10/12/2022 memorandum). A comparison of the conditions between the 2022 and 2023 inspections are made where applicable.

BACKGROUND

The existing Bulkhead Fender Systems are located on the South side of the SWBMTS, which were originally constructed circa 2012. See Attachment A for existing drawings provided.

The North Bulkhead Fender System is constructed primarily out of steel HP piles and framing and timber. A typical bay of the North Bulkhead Fender System consists of timber fender face boards approximately 10'-5" in height and 16'-0" wide and composed of fifteen individual 10" x 12" timber boards, of which the lower half is typically continuously submerged. These timber boards are anchored to three (3) W12x106 steel whalers using 1-inch diameter galvanized steel bolts. The whalers are anchored to two (2) HP12x84 steel piles with four (4) 1-inch diameter bolts at each whaler location and were driven approximately 15-feet below the mudline. There are 20 bays of the fender system described above running east-west along the pier.

The East Bulkhead Fender System is constructed primarily out of concrete filled steel king piles and steel sheet piles. The king piles are spaced approximately 8-feet on-center, total of 35, with continuous steel sheet pile between king piles. The sheet piles are typically continuously submerged. The top of the king piles include rubber fenders anchored with 1-1/4" diameter galvanized steel bolts. The East Bulkhead Fender System was not inspected during the 2022 inspection.

INSPECTION

The dive inspection was performed in accordance with all safety protocols (i.e. all barges removed from pier, safety life vest on at all times for anyone standing on pier, etc.). Prior to entering the water, all breathing equipment and meters were tested. The crew consisted of divers, spotters, and camera/radio/equipment operators. Savin watched the inspection live and communicated through the radio all the elements the diver needed to inspect. Savin also inspected portions of the North Bulkhead Fender System that were exposed and visible above the water level from the pier.

The inspection was visual in nature and no intrusive/destructive testing was undertaken and generally includes bolts, HP piles, steel whalers, sheeting piles, timber fenders, rubber fenders, etc. The inspection was a 50% level inspection wherein every other component was inspected for each type of element (e.g. for a 4-bolt connection assembly, 2 of the 4 bolts were inspected). The components inspected under this inspection are not necessarily the same components inspected and identified in the 2022 inspection. Repairs to the existing Bulkhead Fender System as a result of the 2022 inspection, if any, are unknown.

Observed deterioration and deficiencies were documented by photographs and fields notes and classified by the following categories:

- **Fair Condition:** Structurally sound and does not require replacement or repair,
- **Poor Condition:** Structure showing signs of deterioration that should be replaced or repaired,
- **Severe Condition:** Structure showing signs of significant deterioration and in need of replacement or repair,

As a numbering system for the North and Earth Bulkhead Fender Systems were not established on the drawings provided, for the purpose of the inspection and this memorandum, the fenders were numbered Fender #1 (west) to Fender #20 (east) for the North Bulkhead Fender System and Pile #1 (north) to Pile #35 (south) for the East Bulkhead Fender System.

FINDINGS

The inspection began on December 2nd, 2023 starting with the East Bulkhead Fender System. It is noted the inspection for the East Bulkhead Fender System terminated at Pile 24 due to the maximum limit of the diver's umbilical cable. The remaining East Bulkhead Fender System beyond Pile 24 was not inspected. Fenders 20 and 19 of the North Bulkhead Fender System were inspected on this day.

The inspection continued on December 3rd, 2023 for the North Bulkhead Fender System, beginning from Fender 1 through Fender 18. Refer to Attachment B for photos.

Findings associated with the East Bulkhead Fender System are as follows:

EAST BULKHEAD FENDER SYSTEM		
Pile Number	Findings	Condition
Pile #1	<ul style="list-style-type: none">• One (1) bolt missing for the connection between rubber fender to pile.	Poor
Pile #2	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #3	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #4	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed	Fair
Pile #5	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #6	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #7	<ul style="list-style-type: none">• Four (4) loose bolts observed on the North side of the pile.• One (1) loose bolt observed on the South side of pile.• Bent sheeting at the south side of the pile.	Severe
Pile #8	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #9	<ul style="list-style-type: none">• One (1) loose bolt observed on the North side of Pile.• Rubber fender was observed with deterioration.	Poor
Pile #10	<ul style="list-style-type: none">• Rubber fender was observed with deterioration.	Poor
Pile #11	<ul style="list-style-type: none">• Rubber fender was observed with deterioration.	Poor
Pile #12	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #13	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair
Pile #14	<ul style="list-style-type: none">• No significant deficiencies/ deterioration observed.	Fair

EAST BULKHEAD FENDER SYSTEM (continued)		
Pile Number	Findings	Condition
Pile #15	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #16	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #17	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #18	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #19	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #20	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #21	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #22	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #23	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile #24	<ul style="list-style-type: none"> Rubber fender was observed with deterioration. 	Poor
Piles #25 through #35	<ul style="list-style-type: none"> Visual inspection not performed due to diver umbilical cord limitation. 	

As the East Bulkhead Fender System was not inspected during the 2022 inspection, a comparison of conditions was not performed.

Findings associated with the North Bulkhead Fender System are as follows:

NORTH BULKHEAD FENDER SYSTEM			
Fender #1	UNDERWATER INSPECTION		
	Element	Findings	Condition
	Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler to Pile Connection	<ul style="list-style-type: none"> Missing one (1) bolt nut at connection to HP Pile. Minor corrosion at top whaler. 	Poor
	Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Pile 1	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair

Pile 2	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair
Bulkhead	<ul style="list-style-type: none"> • Spalling of concrete above Bulkhead. • Exposed rebar. • Loose washer plate at bolt to concrete. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> • Loose washer (typical throughout) 	Poor
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> • Minor surface corrosion observed at shackle. 	Fair
Pile 3	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair
Pile 4	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair
Bulkhead	<ul style="list-style-type: none"> • Loose washer plate at bolt to concrete. 	Fair
SURFACE INSPECTION		
Steel cap plate on top of timber fenders missing five (5) bolts and ten (10) bolts loose.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> • Minor rot/decay at one (1) of the 10"x12" boards. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Pile 5	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair

Pile 6	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair
Bulkhead	<ul style="list-style-type: none"> • Missing two (2) nut and washer at concrete connection. • Exposed rebar. • Concrete deck underside – bottom cover spalled with rebar chairs exposed. • Minor spalls/divots in concrete surface. 	Poor
SURFACE INSPECTION		
Steel cap plate on top of timber fenders missing.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Pile 7	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. 	Fair
Pile 8	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. • Missing bolts at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> • Minor concrete spalls, 6"x6" and 8"x8". 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> • Minor rot/decay at one (1) of the 10"x12" boards. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> • No significant deficiencies/deterioration observed. 	Fair

Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 9	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Missing bolts at connection to rubber fender. 	Poor
Pile 10	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Missing bolts at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 11	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
Pile 12	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Missing bolts at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> 12" long vertical crack at concrete, approximately 3" wide. Concrete spall approximately 8" x 3" x 4" deep. Exposed rebar. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> Vertical split at one (1) of the 10"x12" boards. 	Poor

Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> Loose washer at shackle gusset plate anchor bolt. 	Poor
Pile 13	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washer at connection to rubber fender. 	Poor
Pile 14	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 2' x 2' x 3" deep. Concrete spall approximately 4" x 4" x 2" deep. Exposed rebar. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 15	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Pile 16	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 8" x 8" x 6" deep. Concrete spall approximately 3" x 3" x 3" deep. Concrete spall approximately 3" x 3" 	Poor

	x 4" deep with exposed rebar.	
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

	UNDERWATER INSPECTION		
	Element	Findings	Condition
Fender #9	Timber Fender	<ul style="list-style-type: none"> Vertical split at bottom of one (1) of the 10"x12" boards. 	Poor
	Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Pile 17	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
	Pile 18	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Top of pile bent/deformed. 	Poor
	Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 4' x 3' x 3" deep. Concrete spall approximately 8" x 3" x 2" deep. Concrete spall approximately 3' x 1' x 4" deep with exposed rebar. Concrete spall approximately 10" x 16" x 2" deep. 	Poor
	SURFACE INSPECTION		
No significant deficiencies / deterioration observed.			

	UNDERWATER INSPECTION		
	Element	Findings	Condition
Fender #10	Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Timber to Whaler Connection	<ul style="list-style-type: none"> Loose washers at bolt (typical throughout). 	Poor
	Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
	Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/ 	Fair

	deterioration observed.	
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile 19	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Pile 20	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 12" x 12" x 2" deep. Concrete spall approximately 2' x 6' x 3" deep. 4' long horizontal crack at concrete. 	Poor
SURFACE INSPECTION		
Steel cap plate on top of timber fenders missing nuts and washers at multiple locations.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> Loose washers at bolt (typical throughout). 	Poor
Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> Loose washers at bolt (typical throughout). 	Poor
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile 21	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Pile 22	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. 	Poor
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 3' x 3' x 2" deep. Exposed rebar continuous on underside of concrete. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> Significant movement of one (1) timber fender board due to missing bolts (top and bottom) at whaler connection. 	Poor
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 23	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Pile 24	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 6" x 2" x 2" deep. Concrete spall approximately 8" x 4" x 2" deep. 	Poor
SURFACE INSPECTION		
Steel cap plate on top of timber fenders missing nuts and washers at multiple locations.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair

Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 25	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Pile 26	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 12" x 6" x 2" deep, typical at 3 locations. 4' long vertical crack at concrete, approximately 4" wide. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> Loose washers at bolt (typical throughout). 	Poor
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> Loose nut and washers at bolt (typical throughout). 	Poor
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Pile 27	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose and broken washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Pile 28	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose and broken washers at connection to rubber fender. Missing nut, bolt and washer at 	Poor

Fender #14

	multiple locations for rubber fender connection.	
Bulkhead	<ul style="list-style-type: none"> Minor concrete spall approximately 2" x 2" x 2" deep, typical at 2 locations. 	Fair
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> Loose washers at bolt (typical throughout). 	Poor
Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Pile 29	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
Pile 30	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 5" x 3" x 2" deep. Concrete spall approximately 2' x 6" x 2" deep. Exposed rebar continuous on underside of concrete. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair

Pile 31	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. • Loose and broken washers at connection to rubber fender. • Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Pile 32	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. • Loose and broken washers at connection to rubber fender. • Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Bulkhead	<ul style="list-style-type: none"> • Concrete spall approximately 8" x 2" x 6" deep. • Concrete spall approximately 14" x 3" x 2" deep. • 3' long horizontal crack at concrete, approximately 2" wide. • Exposed rebar continuous on underside of concrete. 	Poor
SURFACE INSPECTION		
No significant deficiencies / deterioration observed.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> • No significant deficiencies/ deterioration observed. 	Fair
Pile 33	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. • Loose washers at connection to rubber fender. • Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
Pile 34	<ul style="list-style-type: none"> • Minor corrosion at top of pile. • Coating still intact. • Loose washers at connection to 	Poor

	<ul style="list-style-type: none"> rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	
Bulkhead	<ul style="list-style-type: none"> Concrete spall approximately 12" x 12" x 2" deep. Concrete spall approximately 2" x 4" x 6" deep. Concrete spall approximately 6" x 3" x 3" deep. 	Poor
SURFACE INSPECTION		
Significant movement observed of entire fender system due to missing nuts and bolts identified at piles.		

UNDERWATER INSPECTION		
Element	Findings	Condition
Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Whaler to Pile Connection	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/deterioration observed. 	Fair
Fender #18	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. Loose washers at connection to rubber fender. Missing nut, bolt and washer at multiple locations for rubber fender connection. 	Poor
	<ul style="list-style-type: none"> 2' long horizontal crack at concrete, approximately 2" wide. Exposed rebar continuous on underside of concrete. 	Poor
	SURFACE INSPECTION	
No significant deficiencies / deterioration observed.		

Fender #19	UNDERWATER INSPECTION		
	Element	Findings	Condition
	Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler to Pile Connection	<ul style="list-style-type: none"> Loose washers at bolt at bottom waler. 	Poor
	Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Pile 37	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
	Pile 38	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
	Bulkhead	<ul style="list-style-type: none"> Concrete deck underside – bottom cover spalled with rebar chairs exposed. 	Fair
SURFACE INSPECTION			
No significant deficiencies / deterioration observed.			

Fender #20	UNDERWATER INSPECTION		
	Element	Findings	Condition
	Timber Fender	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Timber to Whaler Connection	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Whaler to Pile Connection	<ul style="list-style-type: none"> Loose washers and nuts at bolt (typical throughout). 	Poor
	Tie Rods & Chain Bracing	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
	Pile 39	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
	Pile 40	<ul style="list-style-type: none"> Minor corrosion at top of pile. Coating still intact. 	Fair
	Bulkhead	<ul style="list-style-type: none"> No significant deficiencies/ deterioration observed. 	Fair
SURFACE INSPECTION			
No significant deficiencies / deterioration observed.			

Based on the inspection findings presented above for the North Bulkhead Fender System, the conditions are generally the same and as expected in comparison to the previous 2022 inspection, with the exception of the following locations/elements:

1. Concrete Bulkhead – In general, the concrete shows additional signs of deterioration (i.e. spalls, exposed rebar, etc.) throughout the full length of the North Bulkhead Fender System,
2. Bolted Connections – In general, many of the bolted connections between steel whaler to pile and pile to rubber fender/concrete bulkhead were missing, loose or broken,
3. Fender #12 – Significant movement of timber fenders due to missing bolts of timber fender to steel whaler,
4. Fender #17 – Significant movement of entire fender system due to missing bolts of rubber fender to concrete bulkhead,

RECOMMENDATIONS

All locations where there are missing or corroded bolts should have new bolts installed; and areas where bolts are loose, bolts should be properly tightened and replaced in kind if necessary. For improved longevity of the bolts, the following may be considered:

- Use of 316 stainless steel marine grade hardware (in lieu of hot-dipped galvanized based on drawings provided).
- Use of lock nuts or lock washers or a combination of.

Hop dipped galvanized steel cap plate at timber fenders should be installed at Fender #3. The balance of steel cap plates with missing hardware (i.e. bolts, nuts, etc.) should be properly tightened and replaced in kind if necessary.

Areas of steel corrosion (e.g. steel whaler, HP piles) should be wire-brushed clean to remove corrosion and coated with a compatible protective coating suitable for the marine environment.

Timber fender boards that were identified to be split or rotted should be replaced in-kind. For improved longevity of the timber fender boards, the following may be considered:

- Use of a protective polymer coating (Hydrocote Polyshield, or similar) on the timber fender boards. It is noted routine maintenance/re-application of the polymer coating will continue to be required.
- Use of rubber fenders in lieu of timber fenders, similar to the rubber fenders used at the East Bulkhead Fender System.

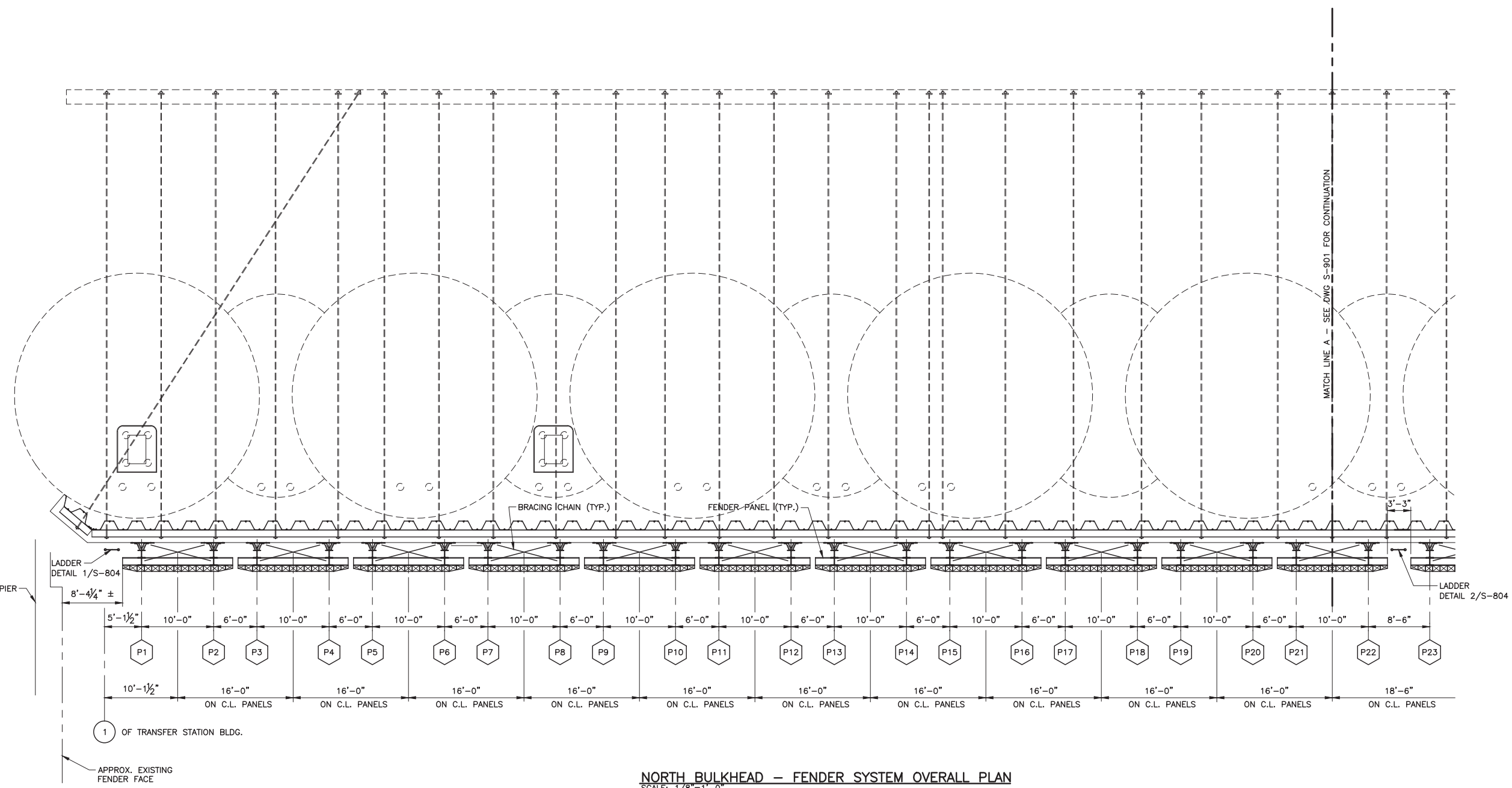
Deteriorated rubber fenders (at East Bulkhead Fender System only) should be replaced in kind. For improved longevity of the rubber fenders, the following may be considered:

- Use of a UHMW-PE (Ultra High Molecular Weight Polyethylene) face plate affixed to the rubber arch fender. These face plates may protect the rubber arch fender, while being replaceable in the event of impact damage or deterioration.

All concrete spalls with exposed rebar should be repaired by wire-brushing corrosion from the reinforcing steel and patched with a cementitious repair product suitable for underwater applications. All cracks on the concrete bulkhead should be injected with epoxy injection, or similar, suitable for underwater applications. The observed deterioration appears to be a result of environmental factors related to the marine environment. For improved longevity of the concrete pier and related elements, the following may be considered:

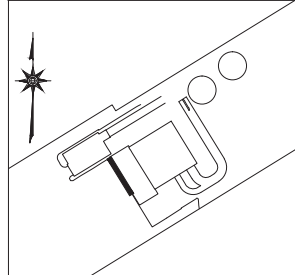
- Use of an epoxy based protective coating suitable for underwater applications (Diver-cote, or similar) on concrete surfaces. It is noted routine maintenance/re-application of the epoxy coating will continue to be required.

ATTACHMENT A
EXISTING DRAWINGS

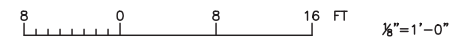


NORTH BULKHEAD – FENDER SYSTEM OVERALL PLAN
SCALE: 1/8"=1'-0"

NYC DOB NO.



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IT IS A VIOLATION OF SECTION 2209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.



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DESIGNED: JK	APPROVED:
DRAWN: BL	
CHECKED: JK	

NO.	DATE	APPD	REVISION
10	JAN 2013	JK	CONFORMED DRAWING
1	SEPT 2012	JK	ADDENDUM NO 2

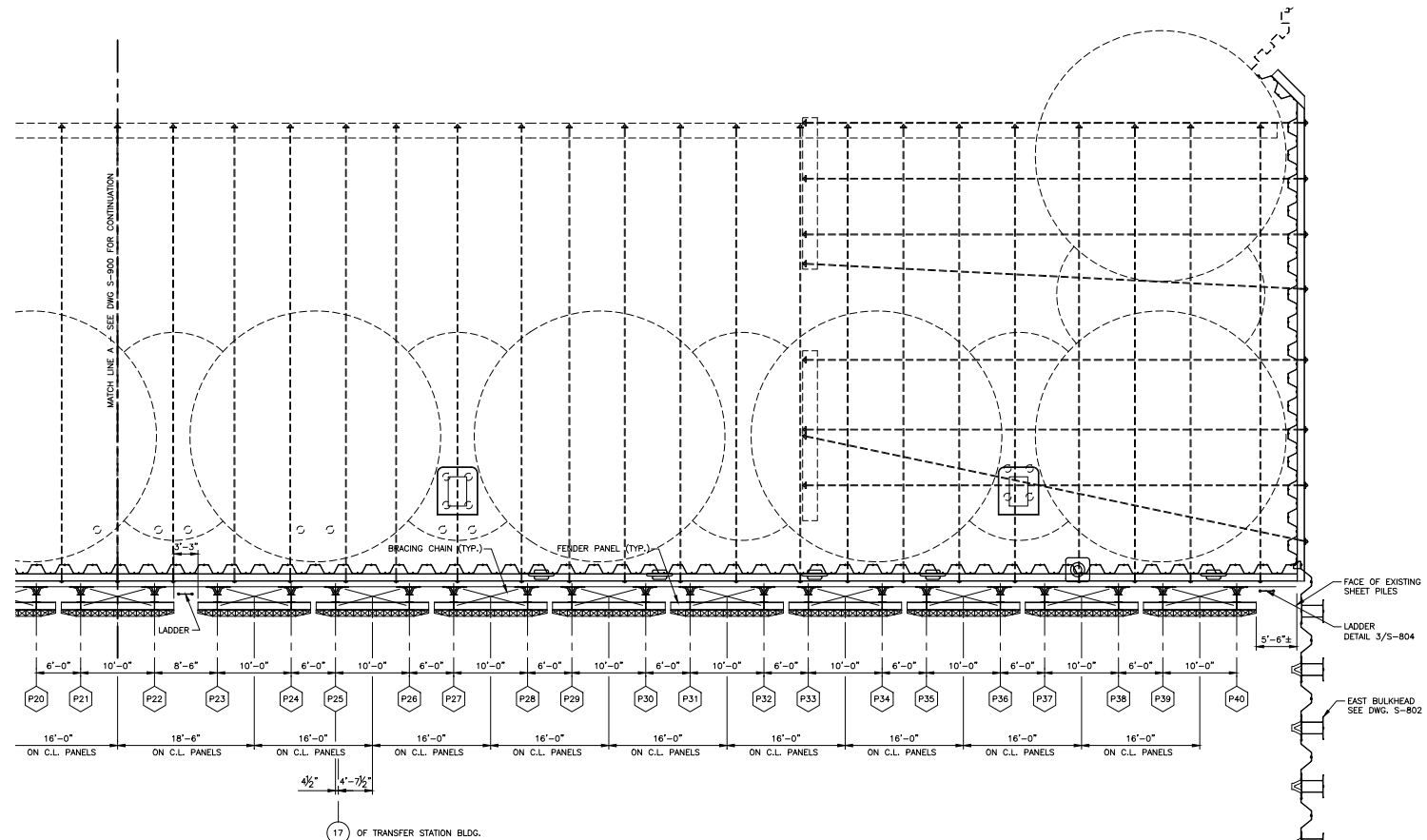
SCALE

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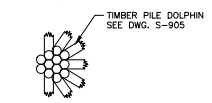
FOR NEW YORK CITY
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MARINE EXPORT OF SOLID WASTE
SOUTHWEST BROOKLYN
MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL
FENDER SYSTEM PARTIAL PLAN - SHEET 1

FILE NAME:	DSNYFS900_10
DWG:	S-900.10
SHEET NO.:	330 OF 708
DATE:	JUNE 2012

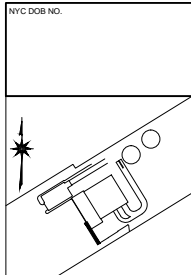


NORTH BULKHEAD -- FENDER SYSTEM OVERALL PLAN
SCALE: 1/8"=1'-0"



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8 0 8 16 FT
1/8"=1'-0"



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DRAWN: EF
CHECKED: JK

APPROVED:

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10	JAN 2013	JK	CONFORMED DRAWING
1	SEPT 2012	JK	ADDENDUM NO 2

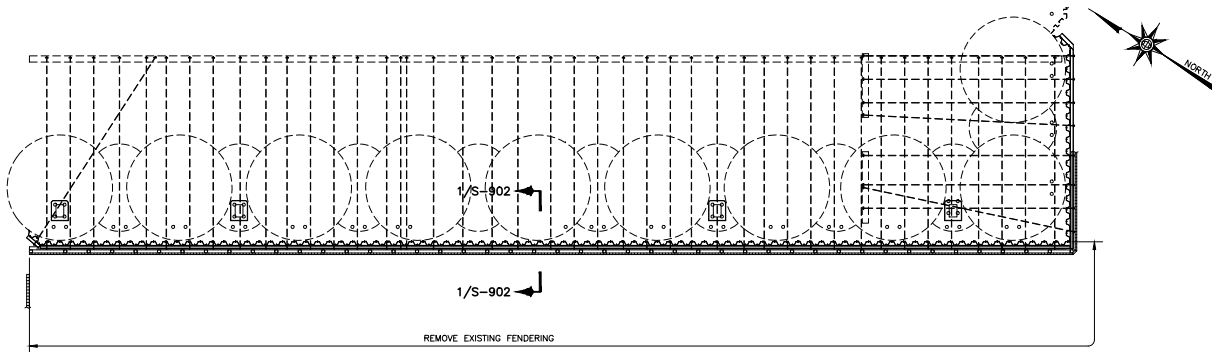
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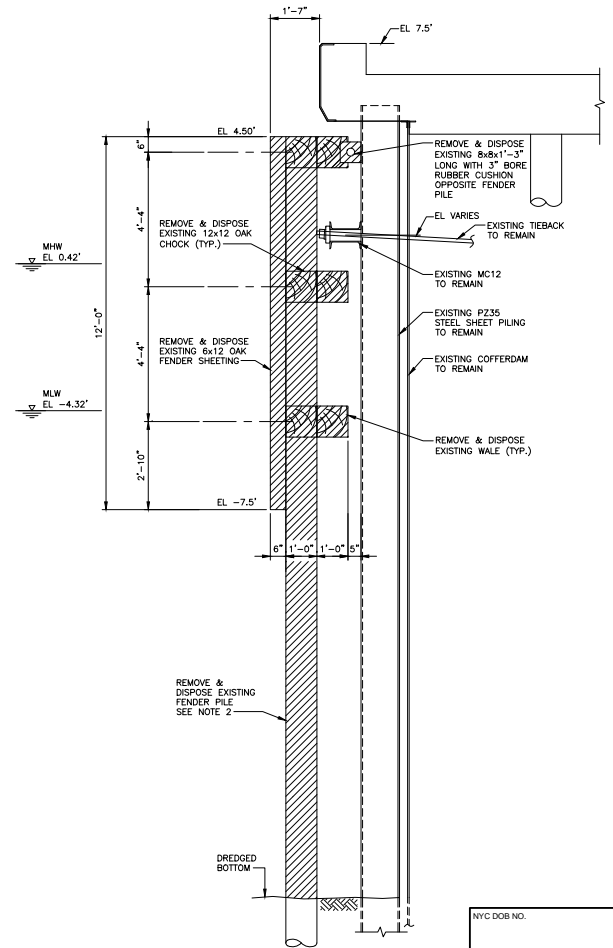
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MARINE EXPORT OF SOLID WASTE
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MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL
FENDER SYSTEM PARTIAL PLAN - SHEET 2

FILE NAME: DSNYS901_10
DWG: S-901.10
SHEET NO.: 331 OF 708
DATE: JUNE 2012



EXISTING FENDER SYSTEM AT NORTH BULKHEAD - DEMOLITION DETAILS
SCALE: 1"=20'



SECTION 1/S-902
SCALE: 1/2"=1'-0"

- NOTES:
- EXISTING DIMENSIONS & MEMBER SIZES SHALL BE FIELD VERIFIED.
 - EXTRACT PILES WHICH INTERFERE WITH NEW CONSTRUCTION, CUT OFF OTHER PILES AT OR BELOW PROJECT DREDGE DEPTH.



WARNING
IT IS A VIOLATION OF SECTION 2206.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THE DESIGNER, TO SEAL ANY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN AFFIXED, IF AN FIDELITY SEALING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ORIGINAL PROFESSIONAL SEAL, WITH TO THE FIDELITY SEAL, AND THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NYC DOB NO.

FILE NAME: DSNYFS902_10
DWG: **S-902.10**
SHEET NO.: 332 OF 708
DATE: JUNE 2012

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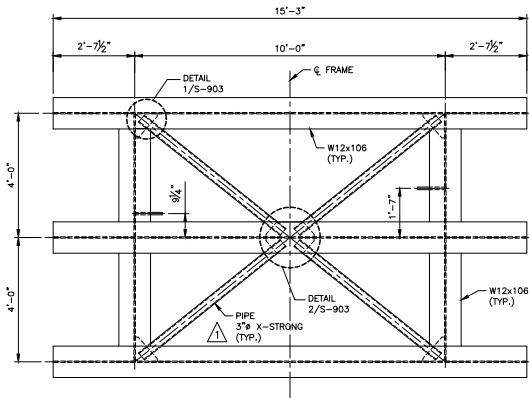
APPROVED:

NO.	DATE	APPD	REVISION
10	JAN 2013	JK	CONFORMED DRAWING

SCALE

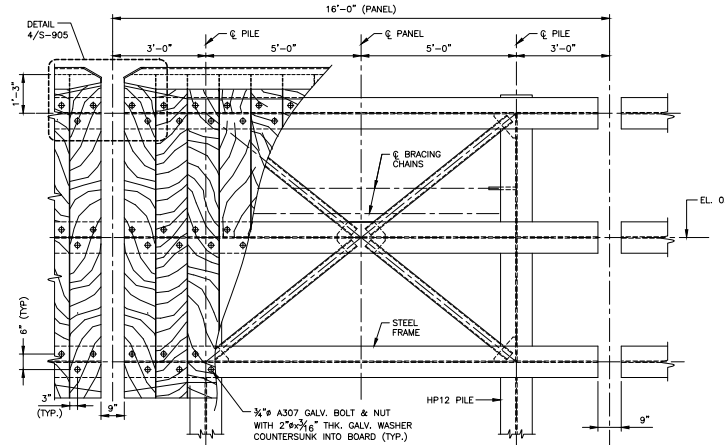
FOR NEW YORK CITY
DEPARTMENT OF SANITATION
MARINE EXPORT OF SOLID WASTE
SOUTHWEST BROOKLYN
MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL
EXISTING FENDER SYSTEM -
DEMOLITION DETAILS

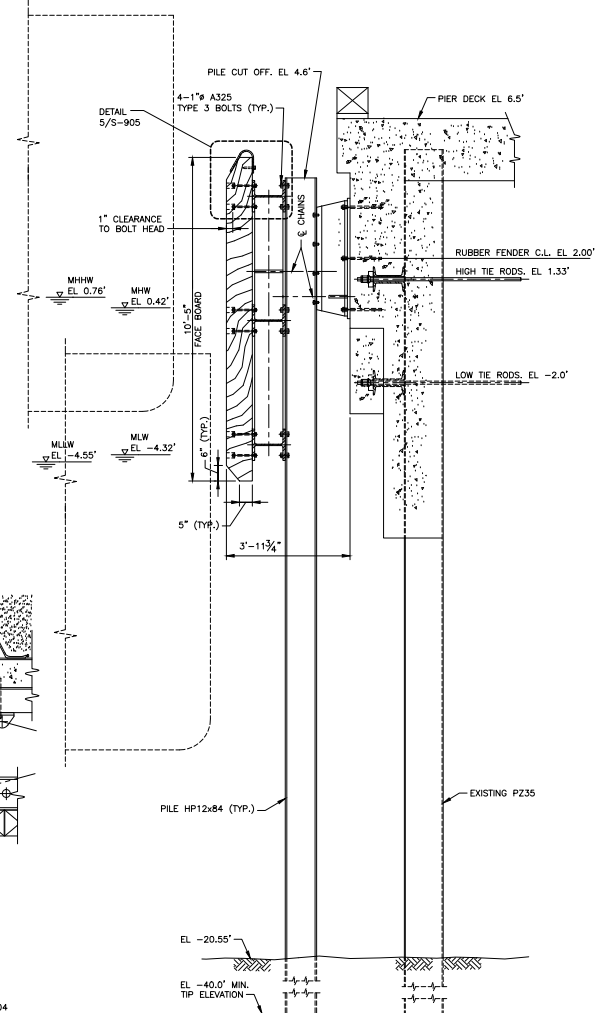


BOLT HOLES ARE NOT SHOWN.

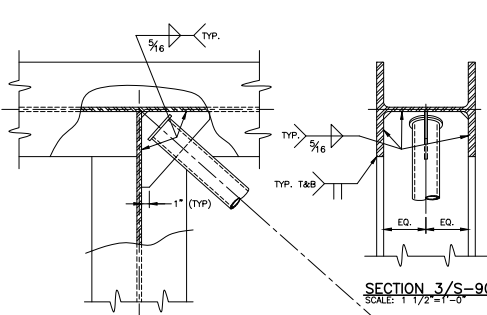
STEEL FRAME ELEVATION
SCALE: 1/2"=1'-0"



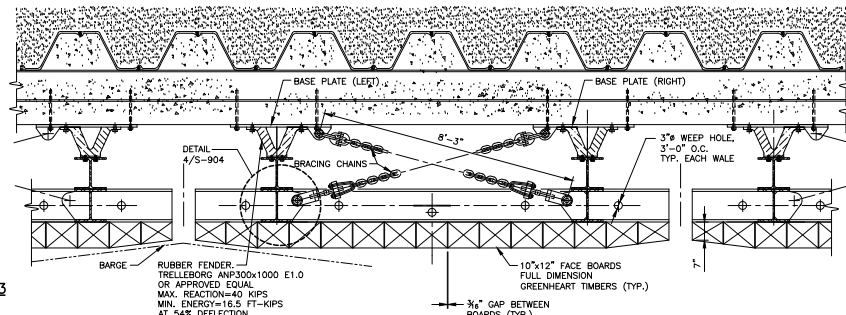
NORTH BULKHEAD - TYPICAL PANEL ELEVATION
SCALE: 1/2"=1'-0"



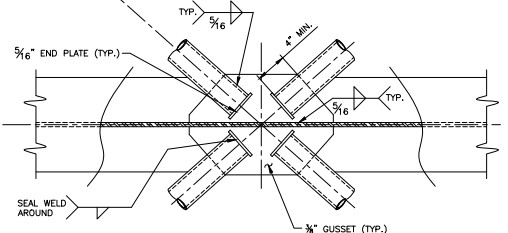
TYPICAL CROSS-SECTION
SCALE: 1/2"=1'-0"



DETAIL 1/S-903
SCALE: 1 1/2"=1'-0"



CROSS-SECTION AT MIDDLE WALE
SCALE: 1 1/2"=1'-0"



DETAIL 2/S-903
SCALE: 1 1/2"=1'-0"

NOTE:
FOR BASE PLATE DETAILS SEE DWG. S-904



WARNING
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NYC DOB NO.
FILE NAME: DSNYS903_10
DWG: S-903.10
SHEET NO.: 333 OF 708
DATE: JUNE 2012

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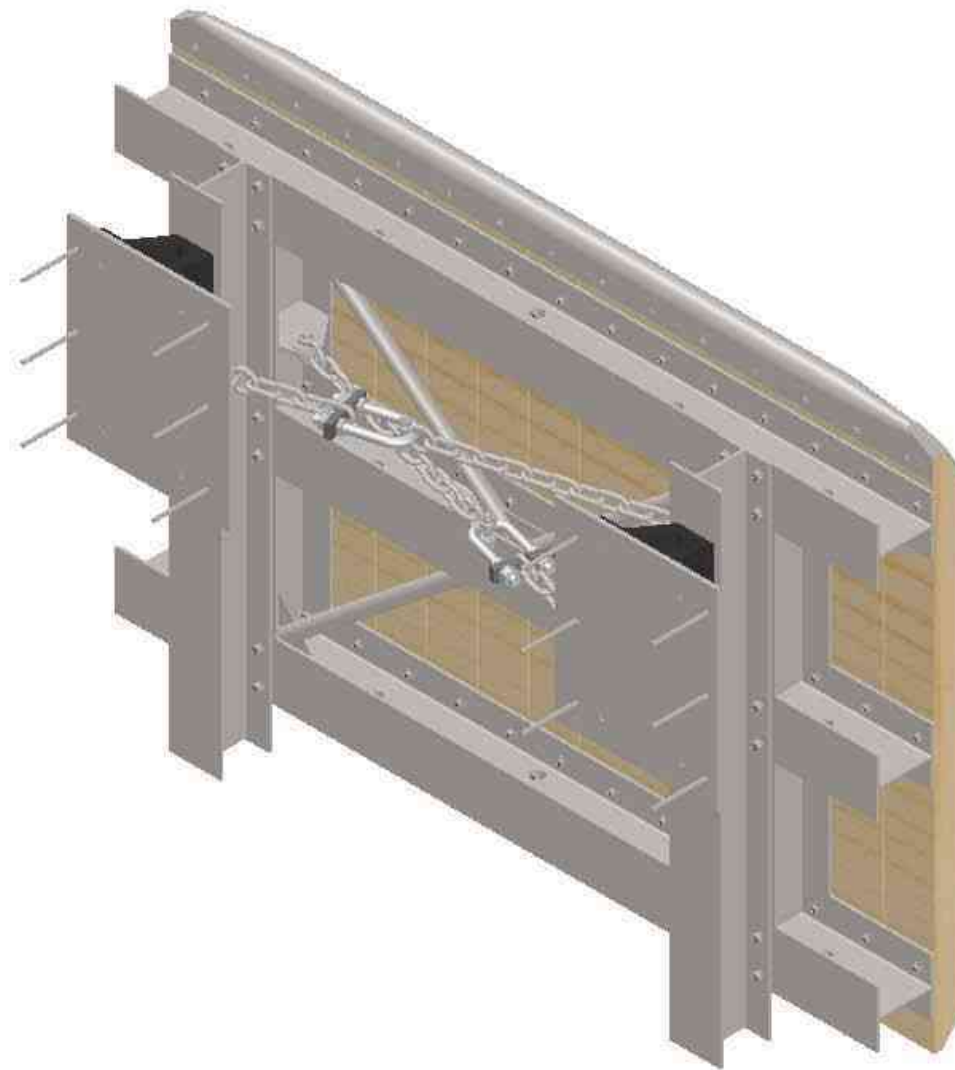
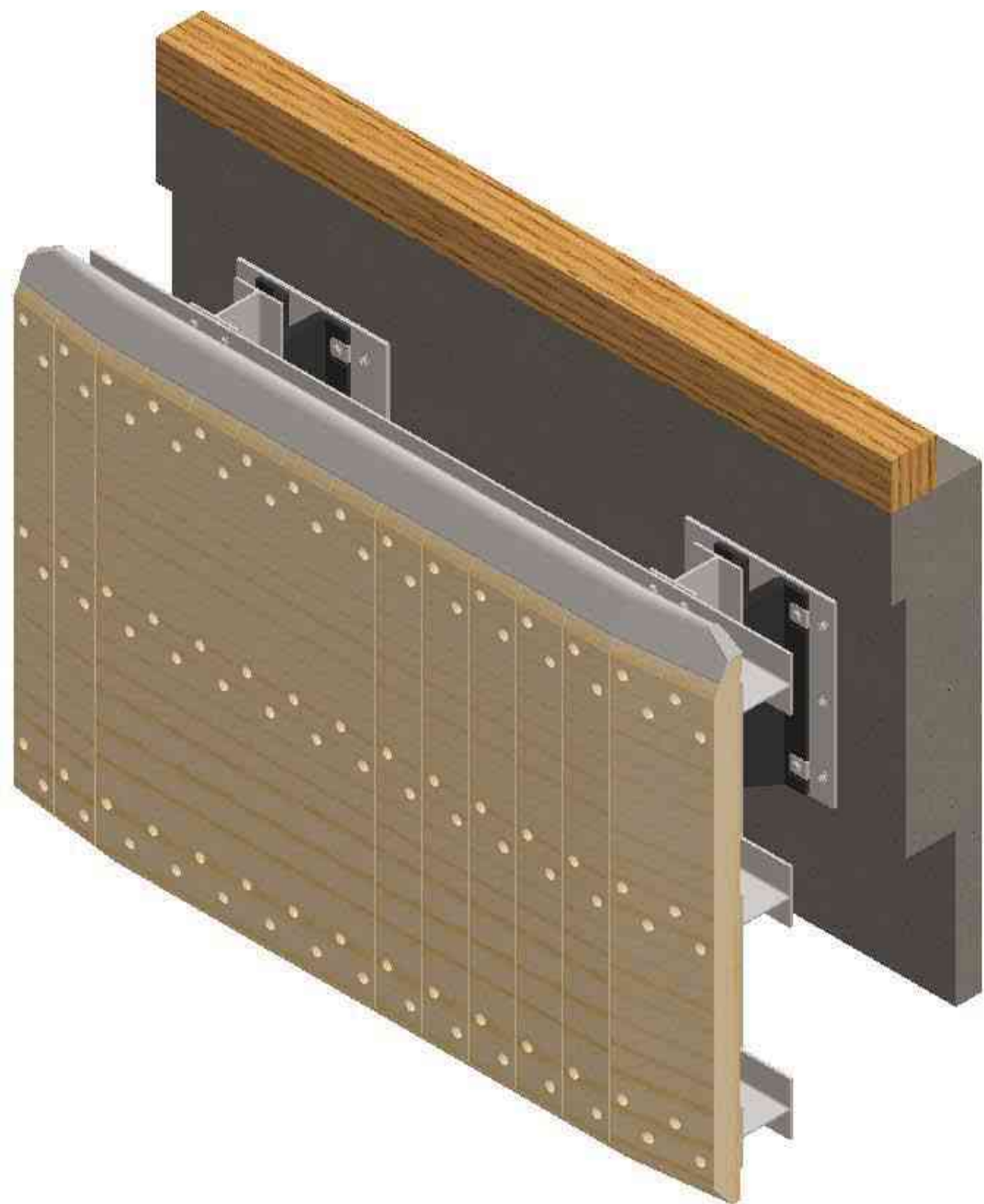
NO.	DATE	APPD	REVISION
10	JAN 2013	JK	CONFORMED DRAWING
1	SEPT 2012	JK	ADDENDUM NO 2

SCALE	AS SHOWN
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FOR NEW YORK CITY
DEPARTMENT OF SANITATION
MARINE EXPORT OF SOLID WASTE
SOUTHWEST BROOKLYN
MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL
FENDER SYSTEM DETAILS - SHEET 1



GENERAL NOTES:

1. ALL HOT DIP GALVANIZED (HDG) ITEMS TO BE AS PER A153 OR A123 AS REQUIRED (IF APPLICABLE).
2. ALL STAINLESS STEEL ITEMS TO BE 316 STAINLESS STEEL, U.N.O. (IF APPLICABLE).
3. MODIFICATION OF DOCK SIDE ATTACHMENT LOCATIONS NOT ALLOWED UNLESS AUTHORIZED BY MARITIME INTERNATIONAL.
4. ALL DIMENSIONS ARE IN FEET AND INCHES [MM].
5. PRIOR TO PAINTING OR GALVANIZING, ALL EXTERIOR EDGES TO BE GROUND TO 1/8" [3] MINIMUM RADIUS TO AVOID SHARP EDGES.

FENDER SYSTEM PERFORMANCE:

REACTION = 40.9 kips [182 kN]
 ENERGY = 16.6 ft-kips [22.5 kN-m]
 DEFLECTION = 54%
 TOLERANCE = 10%

CHAIN NOTES:

1. ALL CHAIN ASSEMBLIES TO BE HOT DIP GALVANIZED (HDG) AS PER ASTM A123 AS REQUIRED.
2. ALL WEIGHT CHAINS MUST BE TAUT AFTER PANEL INSTALLATION.
3. ALL CHAINS TO PRE-ASSEMBLED AT FACTORY PRIOR TO SHIPMENT.

STEEL NOTES:

1. ALL EXTERIOR STEEL TO BE MINIMUM Q345B (50 KSI).
2. ALL INTERIOR STEEL TO BE MINIMUM Q345B (50 KSI).
3. ALL CHAIN PADEYES AND LIFTING EYES TO BE MINIMUM 50 KSI.
4. ALL HOLES IN CHAIN PADEYES AND LIFTING EYES MUST BE DRILLED. THESE HOLES MUST NOT BE FLAME CUT.

PANEL ITEM WEIGHTS (lbs.)

STEEL FRAME = 5600
 RUBBER = 560
 TIMBER = 2600
 TOTAL = 8760

ADDITIONAL ITEM WEIGHTS (lbs.)

FENDER BASE PLATE = 520 (EACH)

WELDING NOTES:

1. ALL WELDING TO BE AS PER AWS D1.1. ALL EXTERIOR WELDS TO BE WATER TIGHT. USE 70 KSI WELD METAL.
2. ALL WELDS TO BE 1/4" [6] FILLET ALL AROUND UNLESS NOTED OTHERWISE.

TOLERANCES:


1. TOLERANCE ON CHAIN LINKS TO BE +5%/-2.5%.
2. TOLERANCE ON DRILLED HOLE LOCATIONS TO BE ±1/8" [3].
3. TOLERANCE ON UHMW DIMENSIONS TO BE ±1/8" [3].
4. TOLERANCE FOR LOCATION OF DOCK SIDE HARDWARE TO BE ±1/16" [2].
5. TOLERANCE ON GENERAL STEEL FABRICATION TO BE ±1/4" [6].
6. PANEL SHOULD NOT BE OUT OF FLATNESS BY MORE THAN 1/4" [6] ON VERTICAL, 1/2" [12] ON HORIZONTAL AND 3/4" [19] ON DIAGONAL.

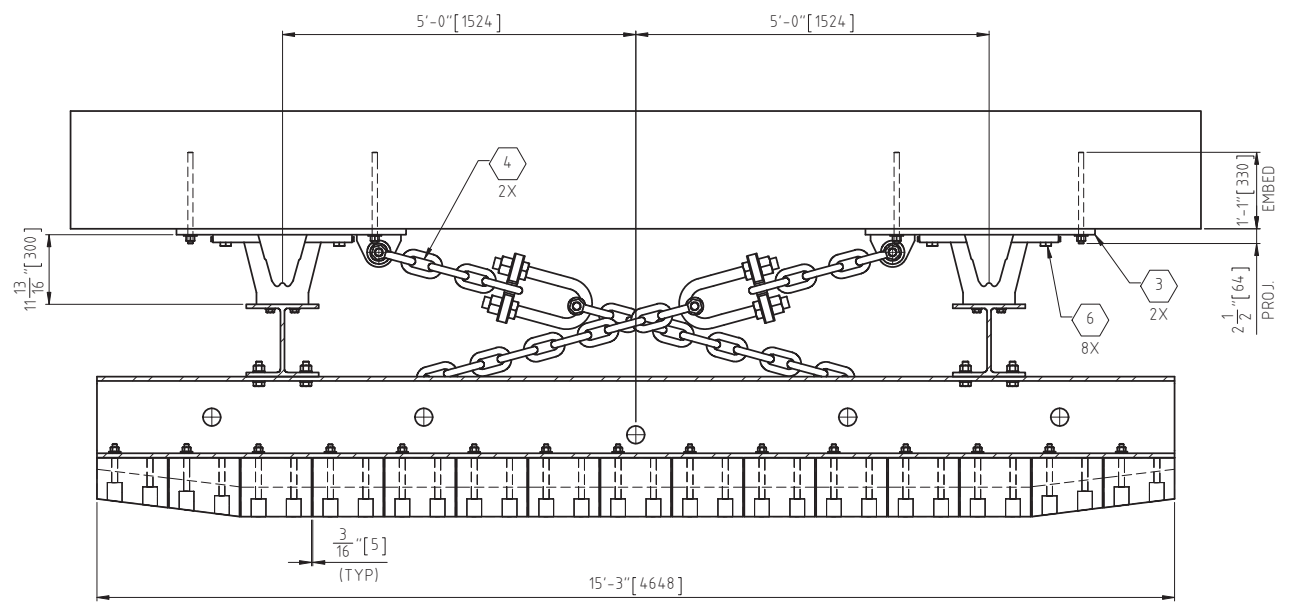
PAINT NOTES:

1. PANEL TO BE PAINTED AS PER THE FOLLOWING SPECIFICATIONS:
 - a. BLAST SURFACES TO SSPC-SP10 NEAR WHITE BLAST.
 - b. STRIPE COAT ALL EDGES AND WELDS.
 - c. PRIMER COAT: 50-70 MICRONS OF CARBOGUARD 890.
 - d. INTERMEDIATE COAT: 50-70 MICRONS OF CARBOGUARD 890.
 - e. TOP COAT: 25-30 MICRONS OF CARBOTHANE 134.
 - f. TOTAL D.F.T. TO BE 100-300 MICRONS.
 - g. COLOR TO BE BLACK.
2. NO SINGLE SPOT MEASUREMENT CAN BE LESS THAN 80% OF THE SPECIFIED MINIMUM THICKNESS AND NO MORE THAN 120% OF THE SPECIFIED MAXIMUM THICKNESS.

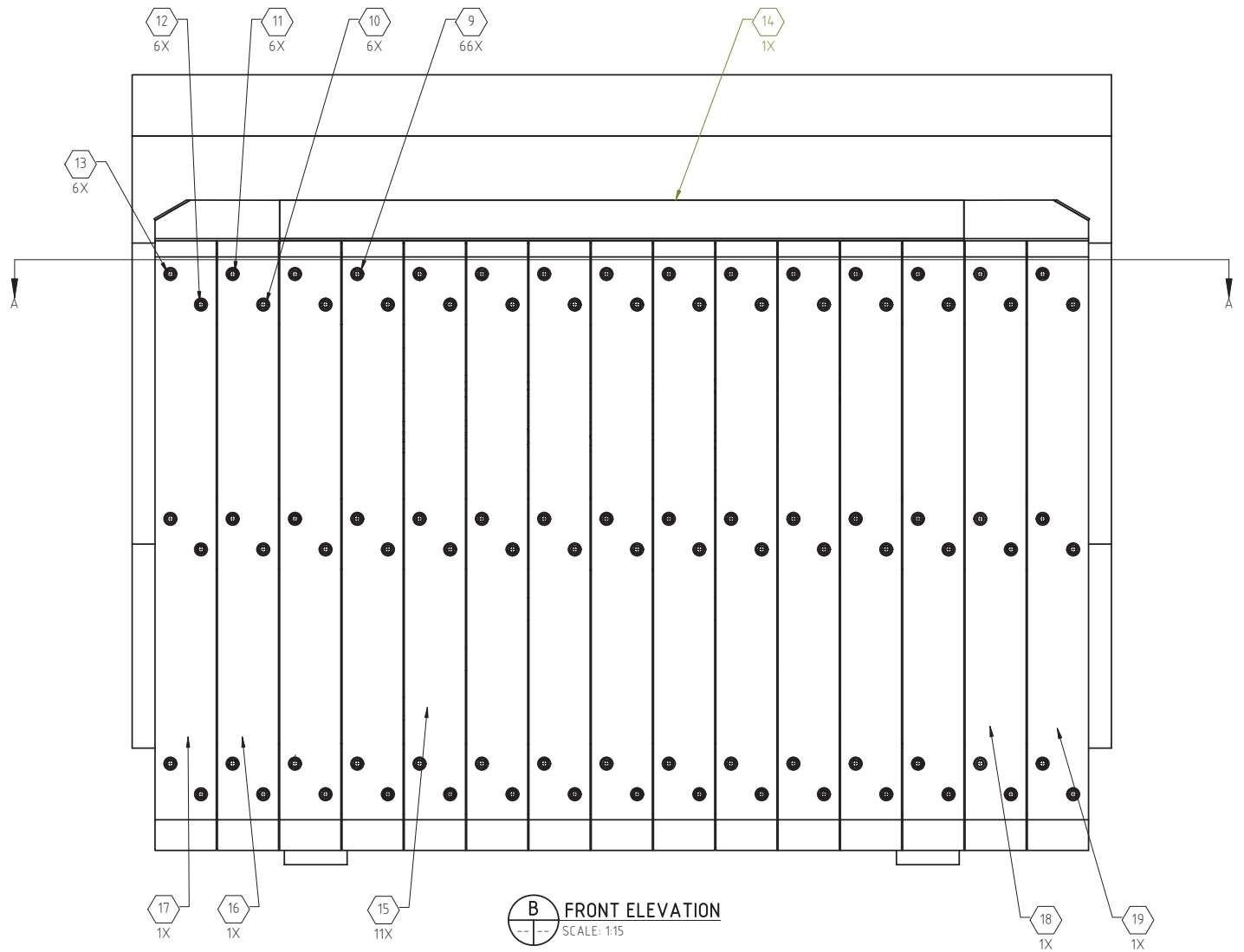
FIT-UP NOTE:

1. TO ENSURE PROPER FIT-UP AND TO PREVENT DAMAGE TO THE FENDER SYSTEM COMPONENTS, REVIEW MARITIME INTERNATIONAL'S INSTALLATION PROCEDURES PRIOR TO INSTALLING THE SYSTEM IN THE FIELD.

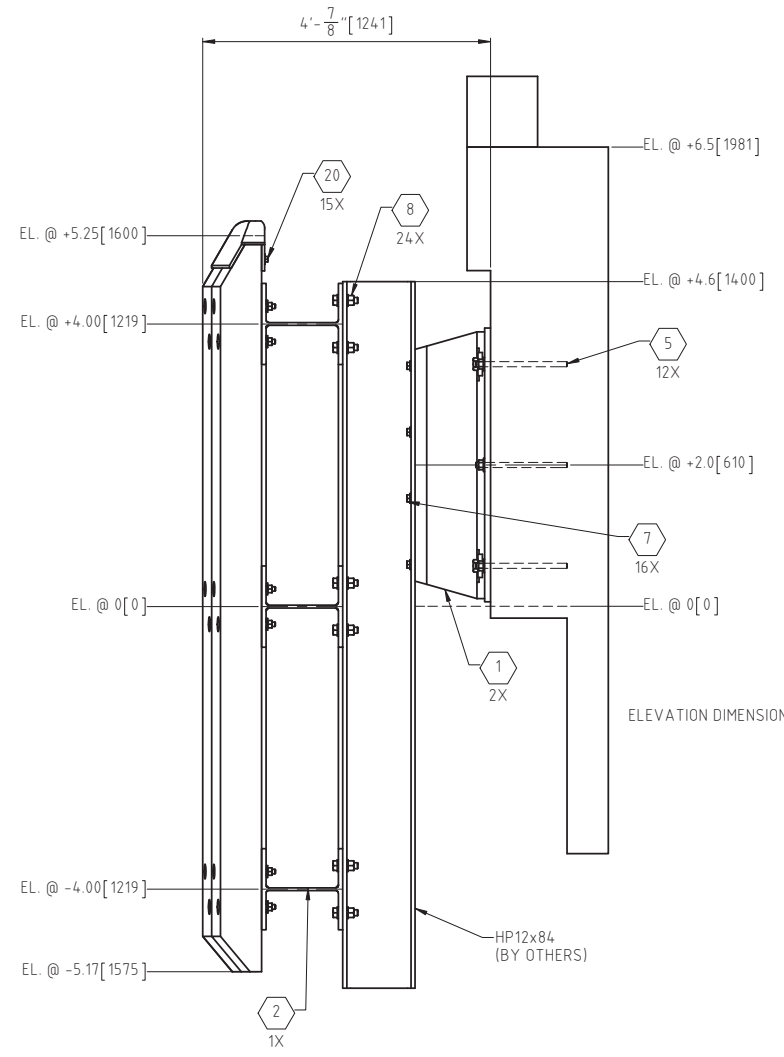
0	KLK	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
 MARITIME <i>International</i>			
PROJECT TITLE SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE COVER SHEET			
<small>REVISIONS AND THE DESIGN RESPONSIBILITY OF MARITIME INTERNATIONAL. ALL DIMENSIONS SHALL BE TO UNLESS OTHERWISE SPECIFIED. APPROVED BY MARITIME INTERNATIONAL, A DIVISION OF MARITIME INTERNATIONAL.</small>			
1	KLK	CHANGED FENDER SYSTEM PERFORMANCE	6/11/2015
REV BY		DESCRIPTION	DATE
SCALE		DRAWN BY	CHECKED BY
AS NOTED		KLK	JLD
APPROVED BY		JLD	
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV/SET
D	61254	61254-01	1/A



A/A SECTION
SCALE: 1:15



B FRONT ELEVATION
SCALE: 1:15



C SIDE ELEVATION
SCALE: 1:15

ITEM NO.	SHEET	DESCRIPTION	QTY.	JOB QTY.
1	5	AD 300 x 1000 RUBBER ARCH FENDER (G13)	2	40
2	8	OPEN STEEL PANEL	1	20
3	10	FENDER MOUNTING PLATE	2	40
4	4	SHEAR CHAIN ASSEMBLY, H.D.G.	2	40
5	5	AD 300 FENDER MOUNTING PLATE ANCHOR HARDWARE, H.D.G.	12	240
6	5	AD 300 FENDER TO PLATE MOUNTING HARDWARE, H.D.G.	8	160
7	5	M20 FENDER TO HP12x84 HARDWARE ASSEMBLY, H.D.G.	16	320
8	5	STEEL FRAME TO HP12x84 HARDWARE ASSEMBLY, H.D.G.	24	480
9	6	TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.	66	1320
10	6	TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.	6	120
11	6	TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.	6	120
12	6	TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.	6	120
13	6	TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.	6	120
14	11	CAP PLATE, H.D.G.	1	20
15	7	10" x 12" GREENHEART TIMBER (TYPE 1)	11	220
16	7	10" x 12" GREENHEART TIMBER (TYPE 2)	1	20
17	7	10" x 12" GREENHEART TIMBER (TYPE 3)	1	20
18	7	10" x 12" GREENHEART TIMBER (TYPE 4)	1	20
19	7	10" x 12" GREENHEART TIMBER (TYPE 5)	1	20
20	6	CAP PLATE TO TIMBER HARDWARE ASSEMBLY, H.D.G.	15	300

ELEVATION DIMENSIONS ARE IN FEET [MM]

0	KLK	INITIAL RELEASE	04/30/15
REV. BY		DESCRIPTION	DATE

MARITIME
International

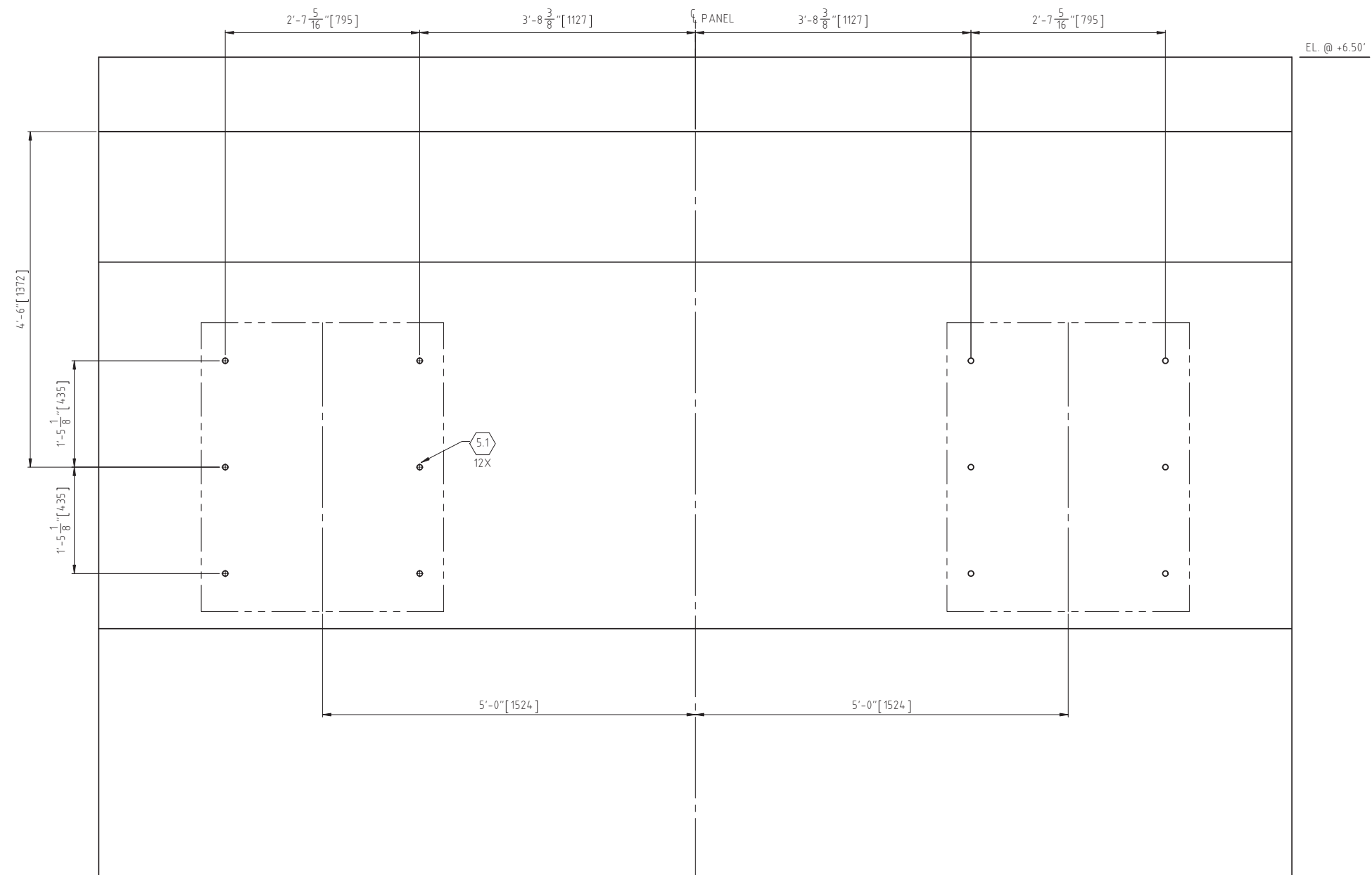
PROJECT TITLE
SOUTHWEST BROOKLYN MARINE TRANSFER STATION

DRAWING TITLE
FENDER PLANS


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REV.	BY	DESCRIPTION	DATE
1	KLK	ADDED PERFORMANCE	6/11/2015
REVISIONS			

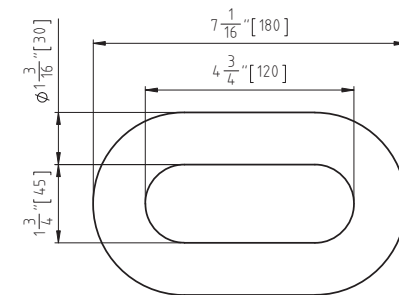
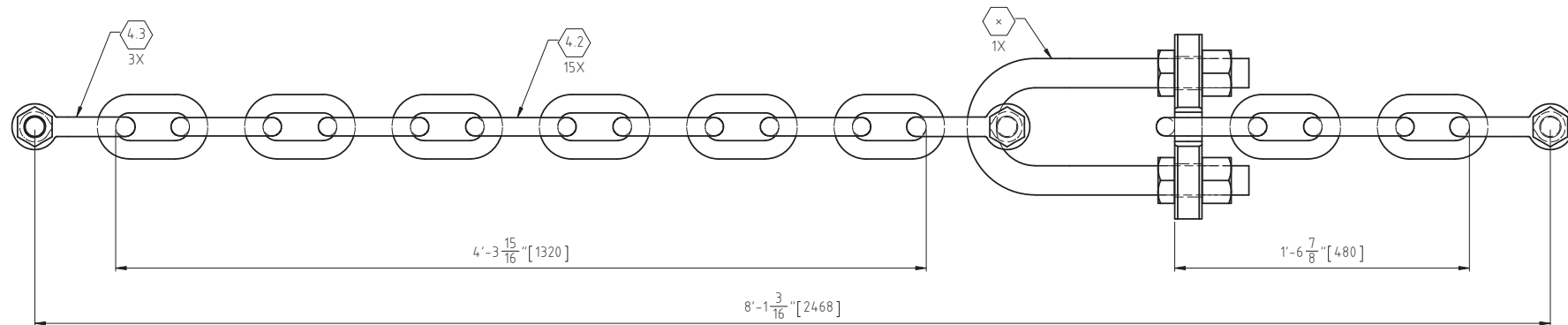
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLK	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV./SET
D	61254	61254-02	1/A



A ANCHOR BOLT LAYOUT/CONCRETE ELEVATION
SCALE: 1:10

0	KLG	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
 MARITIME <i>International</i>			
PROJECT TITLE			
SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE			
ANCHOR BOLT LAYOUT			
<small>THE DRAWING AND THE DESIGN INFORMATION IS THE PROPERTY OF MARITIME INTERNATIONAL. ANY USE OTHER THAN THAT WHICH IS SPECIFICALLY AUTHORIZED BY MARITIME INTERNATIONAL, IS PROHIBITED & OFFENSE.</small>			
SCALE	DRAWN BY:	CHECKED BY:	APPROVED BY:
AS NOTED	KLG	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV./SET
D	61254	61254-03	0/0

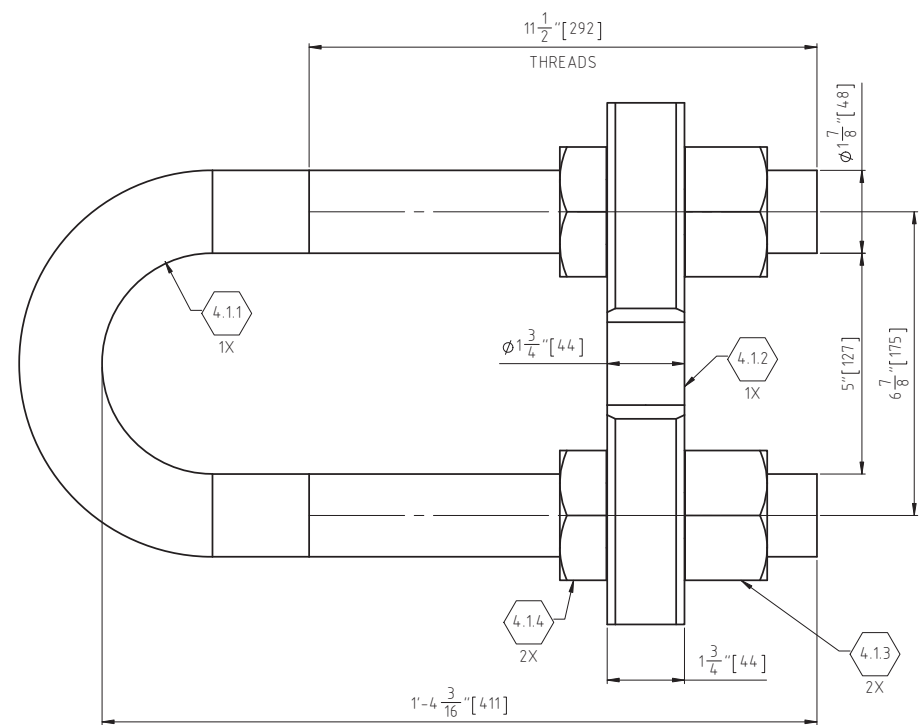
ITEM NO.	DESCRIPTION	QTY.	MBL (kips)
4.1	1 7/8" DOGBONE ASSEMBLY, H.D.G.	1	148 kips
4.2	30mm GR. 3 OPEN LINK CHAIN, H.D.G. (SEE DETAIL A)	15	147 kips
4.3	1 1/4" SAFETY BOLT ANCHOR SHACKLE, G2130, H.D.G.	3	159 kips



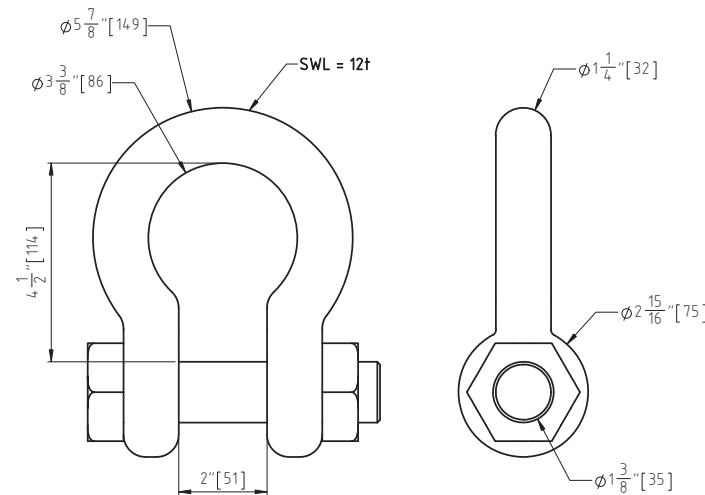
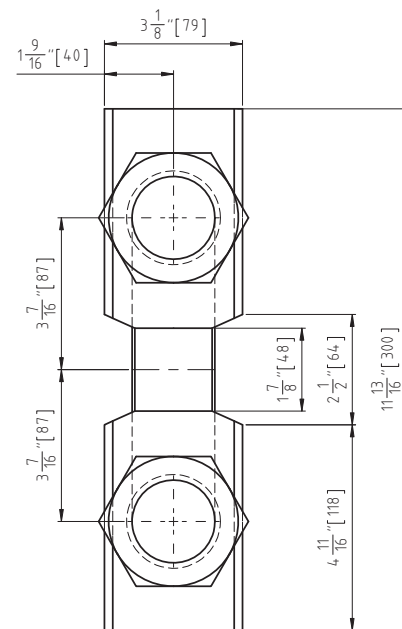
A 30mm GR. 3 CHAIN, H.D.G.
SCALE: 1:2

4 SHEAR CHAIN ASSEMBLY, H.D.G.
SCALE: 1:5
(40 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
4.1.1	1 7/8"-5 UNC-2A U-BOLT, AISI 4140 HR, H.D.G.	1
4.1.2	1 7/8" DOGBONE ASSEMBLY, H.D.G.	1
4.1.3	1 7/8"-5 UNC-2B HEAVY HEX NUT	2
4.1.4	1 7/8"-5 UNC-2B JAM NUT	2



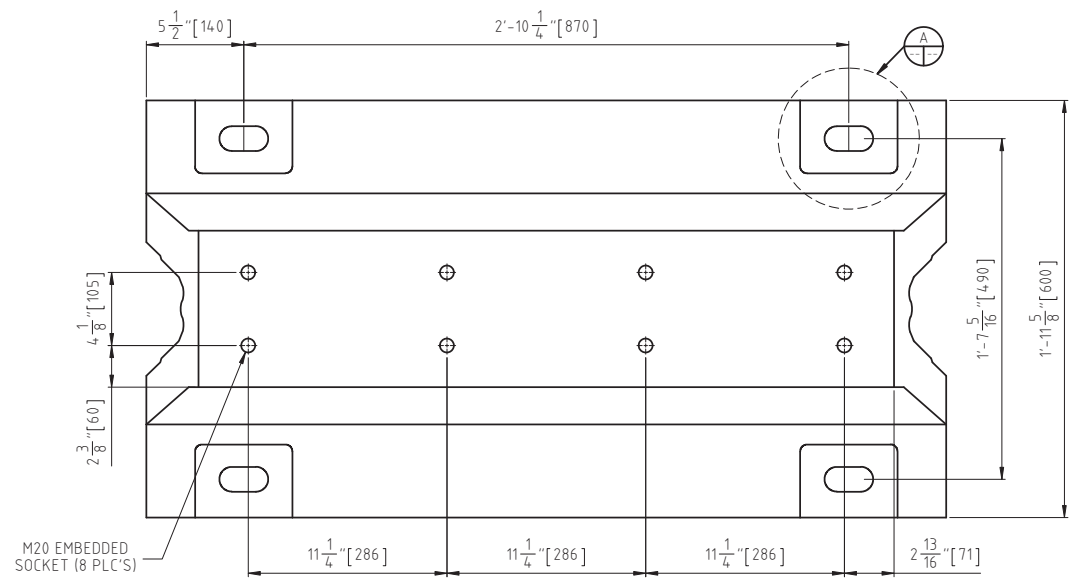
4.1 1 7/8" DOGBONE SHACKLE ASSEMBLY, H.D.G.
SCALE: 1:2
(40 REQ'D)



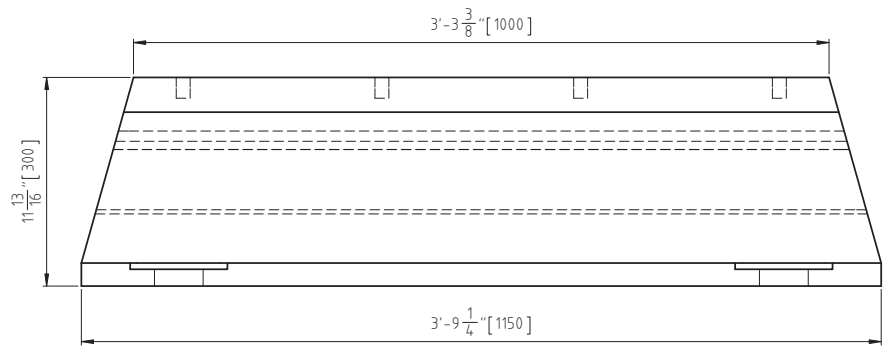
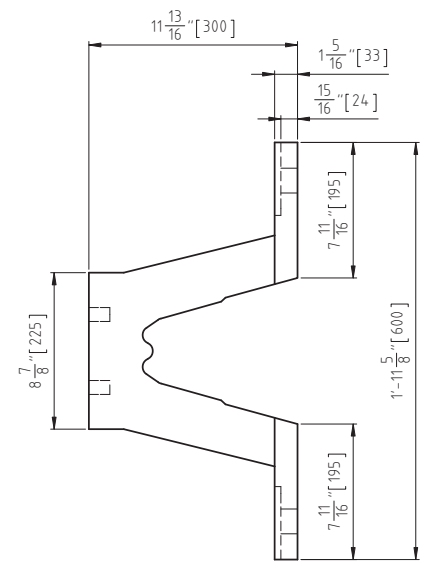
4.3 1 1/4" SAFETY BOLT ANCHOR SHACKLE, G2130, H.D.G.
SCALE: 1:2
(120 REQ'D)
(316 S.S. COTTER PIN REQUIRED AT EACH SHACKLE)

0	KLK	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
PROJECT TITLE			
SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE			
CHAIN ASSEMBLIES & DETAILS			
<small>THE DRAWING AND THE DESIGN INFORMATION IS THE PROPERTY OF MARITIME INTERNATIONAL. ANY USE OTHER THAN THAT WHICH IS EXPRESSLY AUTHORIZED BY MARITIME INTERNATIONAL IS PROHIBITED & OFFENSE.</small>			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLK	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV/SET
D	61254	61254-04	0/0

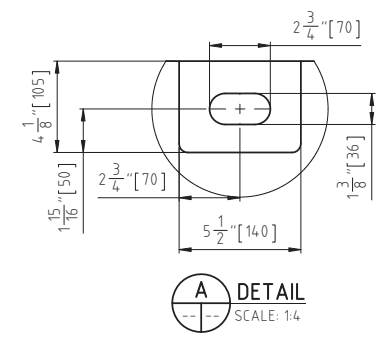
FENDER PERFORMANCE				
FENDER	REACTION	ENERGY	DEFLECTION	TOLERANCE
EACH	40.9 kips [182 kN]	16.6 ft-kips [22.5 kN-m]	54%	+/-10%



M20 EMBEDDED SOCKET (8 PLCS)

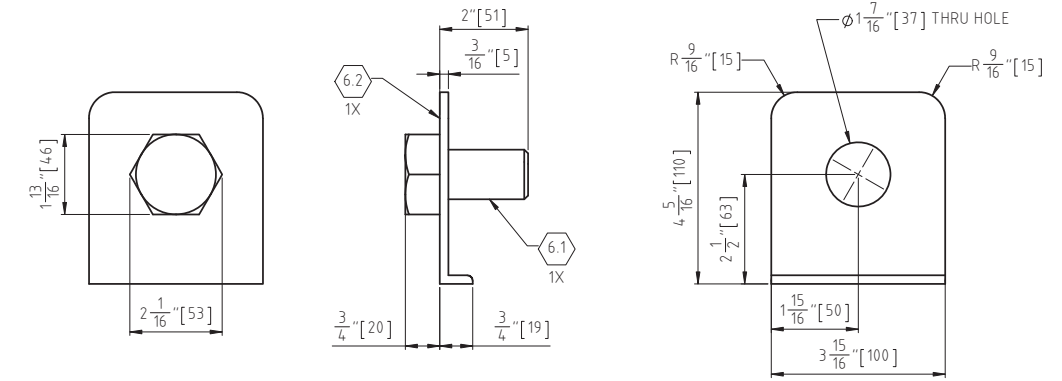


1 AD 300 x 1000 RUBBER ARCH FENDER (G1.3)
SCALE: 1:5
(40 REQ'D)



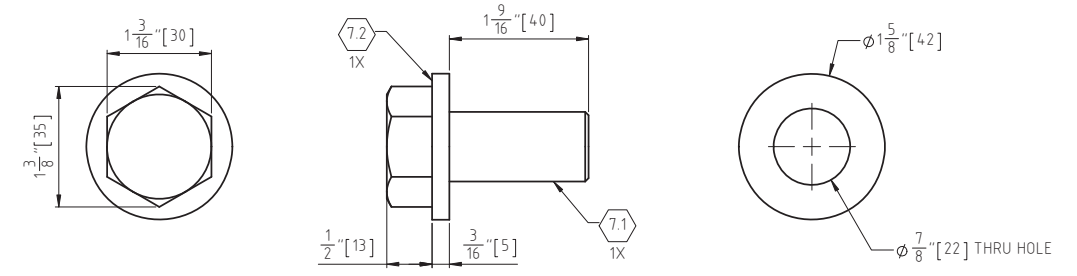
A DETAIL
SCALE: 1:4

ITEM NO.	DESCRIPTION	QTY.
6.1	1 1/8"-7 UNC-2A x 2" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1
6.2	AD 300 FENDER WASHER, H.D.G.	1



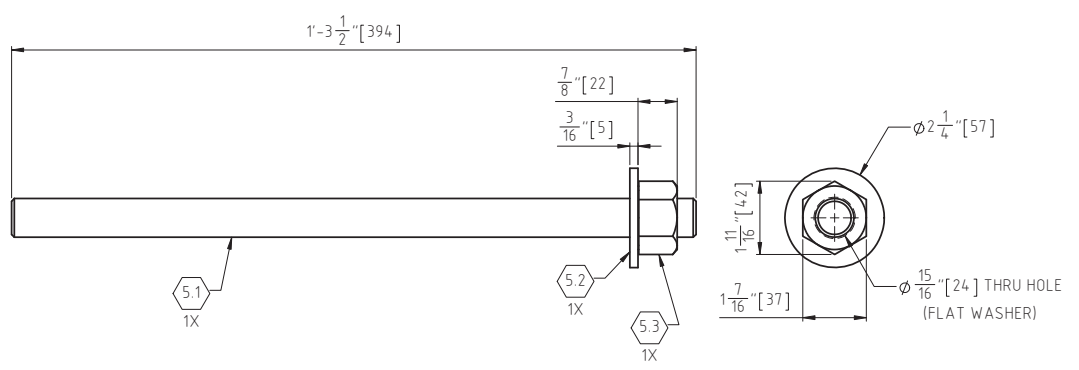
6 AD 300 FENDER TO PLATE MOUNTING HARDWARE, H.D.G.
SCALE: 1:2
(240 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
7.1	M20x2.5 X 40 LONG HEX BOLT, GR. 4.6, H.D.G.	1
7.2	M20 FLAT WASHER, GR. 8, H.D.G.	1



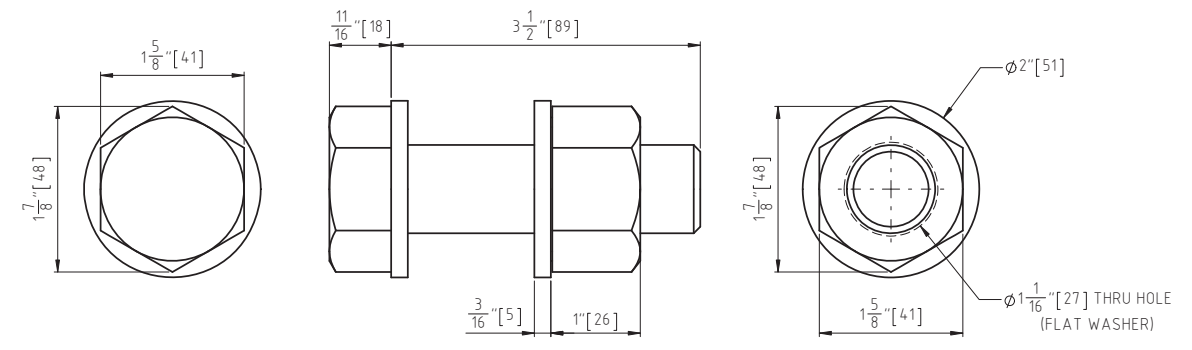
7 M20 FENDER TO HP12x84 HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(320 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
5.1	7/8"-9 UNC-2A x 15 1/2" THREADED ANCHOR ROD, A307, H.D.G.	1
5.2	7/8" FLAT WASHER, F436, H.D.G.	1
5.3	7/8"-9 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



5 AD 300 FENDER MOUNTING PLATE ANCHOR HARDWARE, H.D.G.
SCALE: 1:2
(240 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
8.1	1"-8 UNC-2A x 3 1/2" HEAVY HEX BOLT, A307 GR. B, H.D.G. (FULLY THREADED)	1
8.2	1" FLAT WASEHR, F436, H.D.G.	2
8.3	1"-8 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



8 STEEL FRAME TO HP12x84 HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(480 REQ'D)

REV.	BY	DESCRIPTION	DATE
0	KLG	INITIAL RELEASE	04/30/15

MARITIME
International

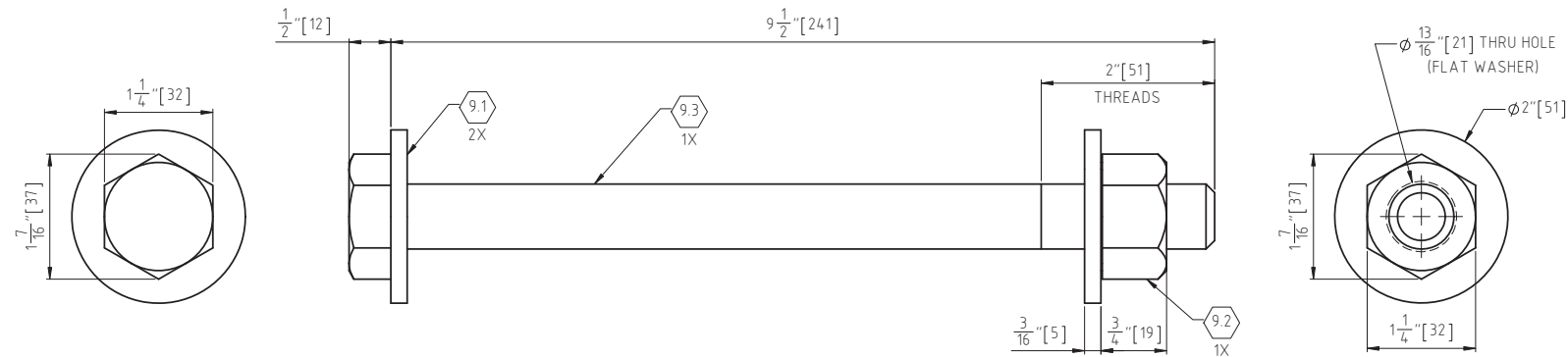
PROJECT TITLE
SOUTHWEST BROOKLYN MARINE TRANSFER STATION

DRAWING TITLE
FENDER & HARDWARE DETAILS

REV.	BY	DESCRIPTION	DATE	SCALE	DRAWN BY	CHECKED BY	APPROVED BY
1	KLG	CHANGED FENDER PERFORMANCE	6/11/2015	AS NOTED	KLG	JLD	JLD

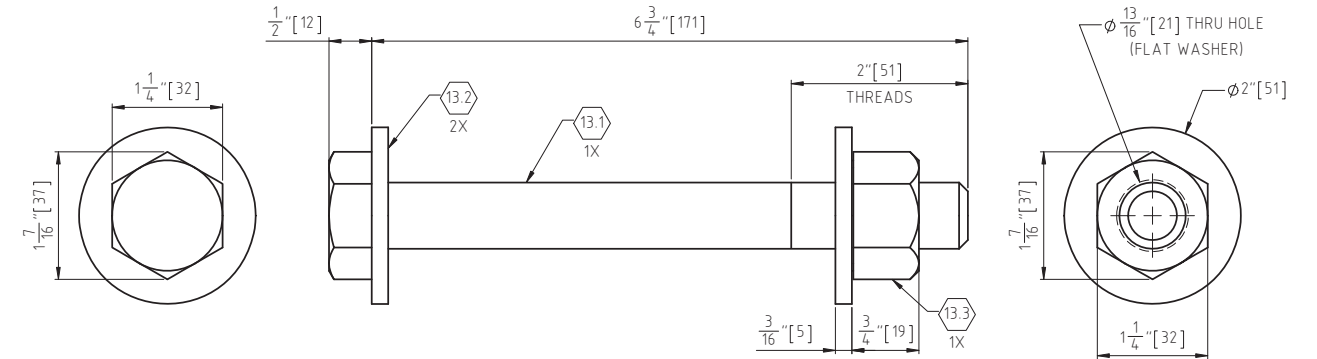
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV./SET
D	61254	61254-05	1/A

ITEM NO.	DESCRIPTION	QTY.
9.1	3/4" FLAT WASHER, F436, H.D.G.	2
9.2	3/4"-10 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1
9.3	3/4"-10 UNC-2A x 9 1/2" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1



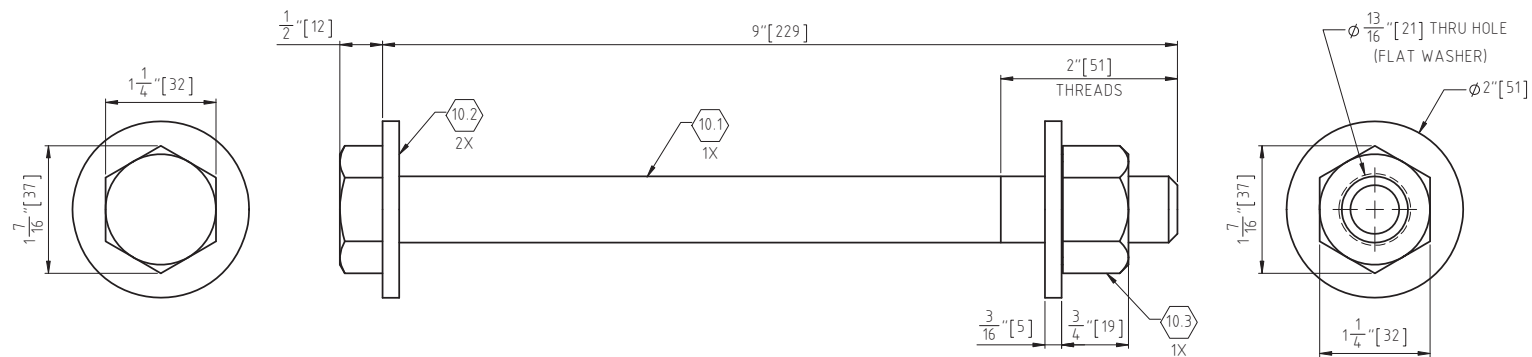
9 TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(1320 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
13.1	3/4"-10 UNC-2A x 6 3/4" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1
13.2	3/4" FLAT WASHER, F436, H.D.G.	2
13.3	3/4"-10 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



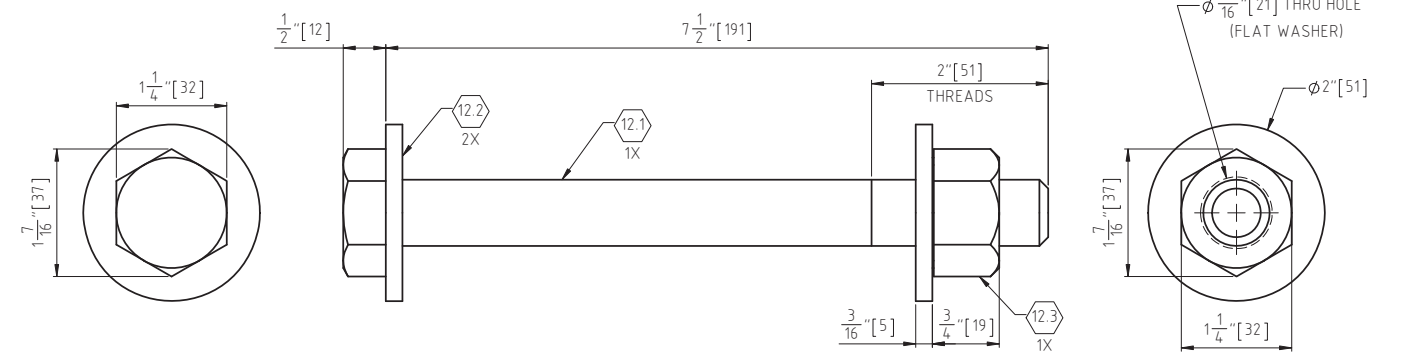
13 TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(120 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
10.1	3/4"-10 UNC-2A x 9" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1
10.2	3/4" FLAT WASHER, F436, H.D.G.	2
10.3	3/4"-10 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



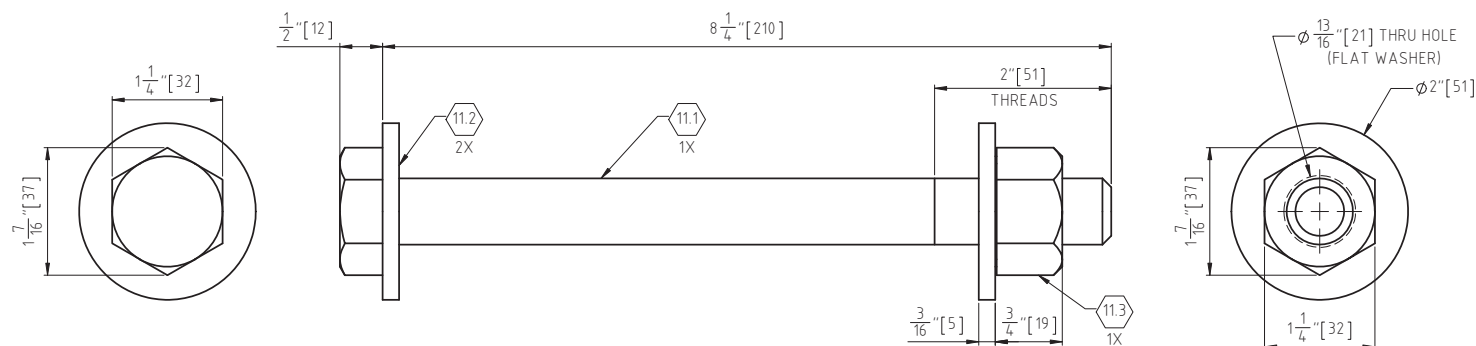
10 TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(120 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
12.1	3/4"-10 UNC-2A x 7 1/2" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1
12.2	3/4" FLAT WASHER, F436, H.D.G.	2
12.3	3/4"-10 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



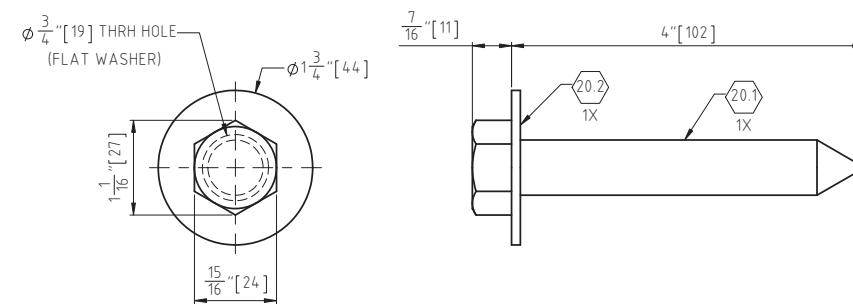
12 TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(120 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
11.1	3/4"-10 UNC-2A x 8 1/4" HEAVY HEX BOLT, A307 GR. B, H.D.G.	1
11.2	3/4" FLAT WASHER, F436, H.D.G.	2
11.3	3/4"-10 UNC-2B HEAVY HEX NUT, A563 DH, H.D.G.	1



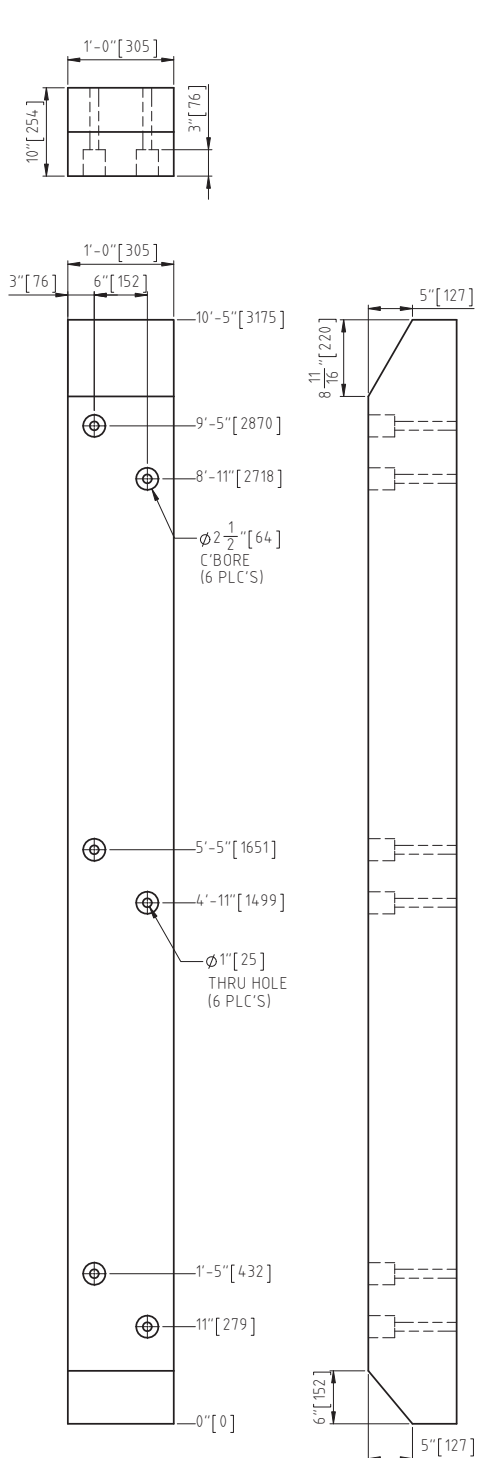
11 TIMBER TO STEEL HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(120 REQ'D)

ITEM NO.	DESCRIPTION	QTY.
20.1	5/8" x 4" LAG SCREW, H.D.G.	1
20.2	5/8" FLAT WASHER, F436, H.D.G.	1

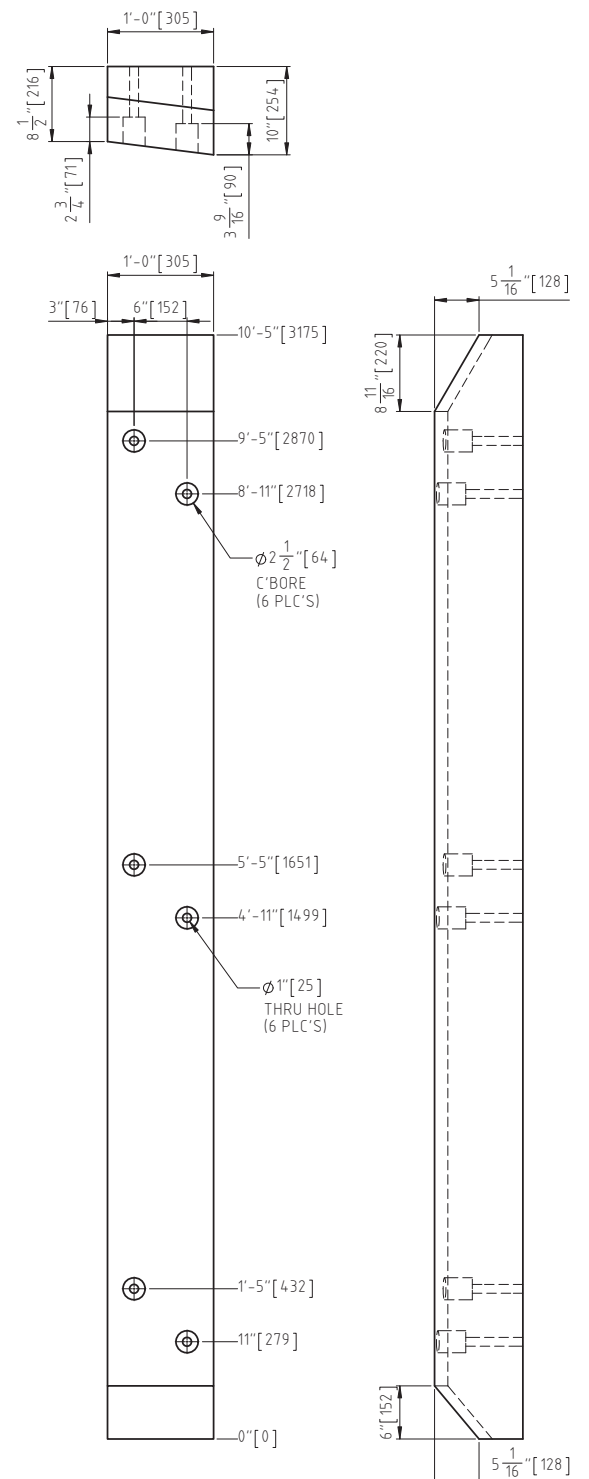


20 CAP PLATE TO TIMBER HARDWARE ASSEMBLY, H.D.G.
SCALE: 1:1
(300 REQ'D)

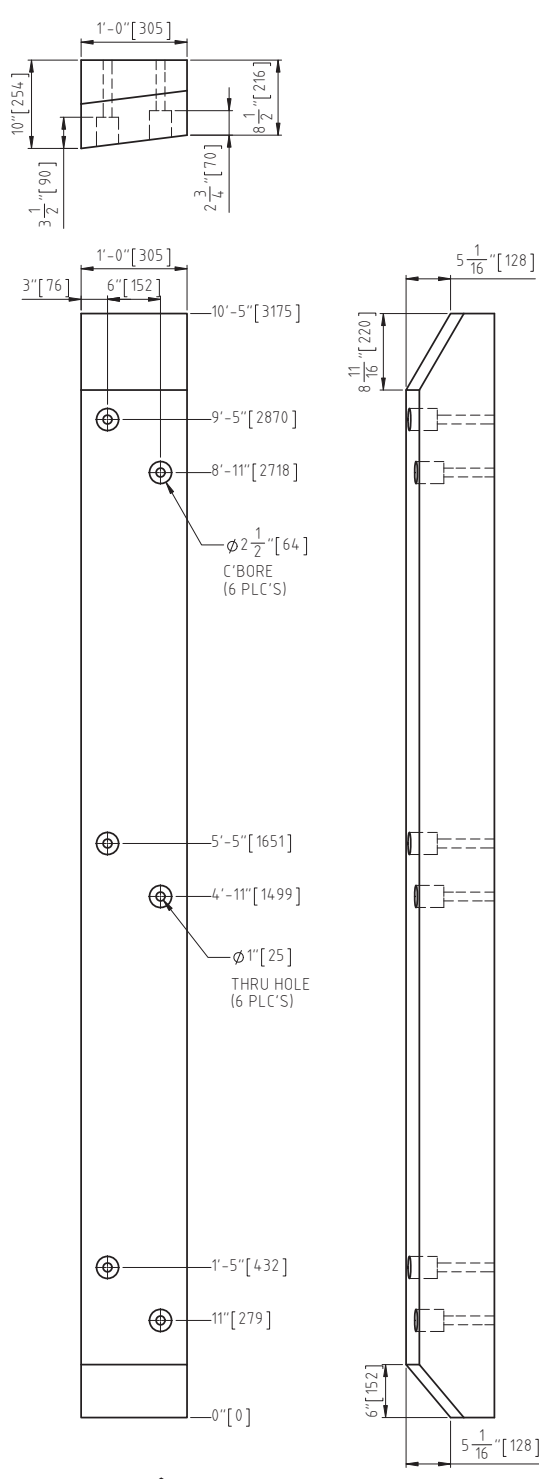
0	KLK	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
PROJECT TITLE SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE HARDWARE DETAILS			
<small>WE warrant and the design professional is the designer of marine structures. We do not warrant that which is specially fabricated by marine professionals, a partnership or corporation.</small>			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLK	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV/SET
D	61254	61254-06	0/0



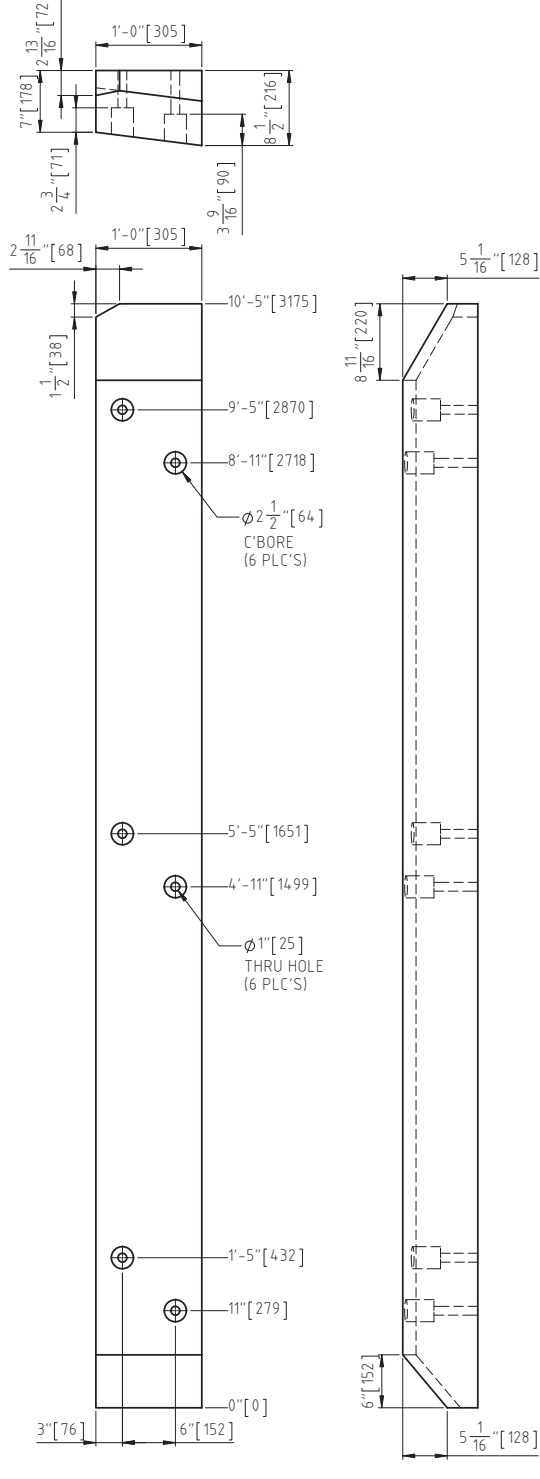
15 10" x 12" GREENHEART TIMBER (TYPE 1)
SCALE: 1:10
(20 REQ'D)



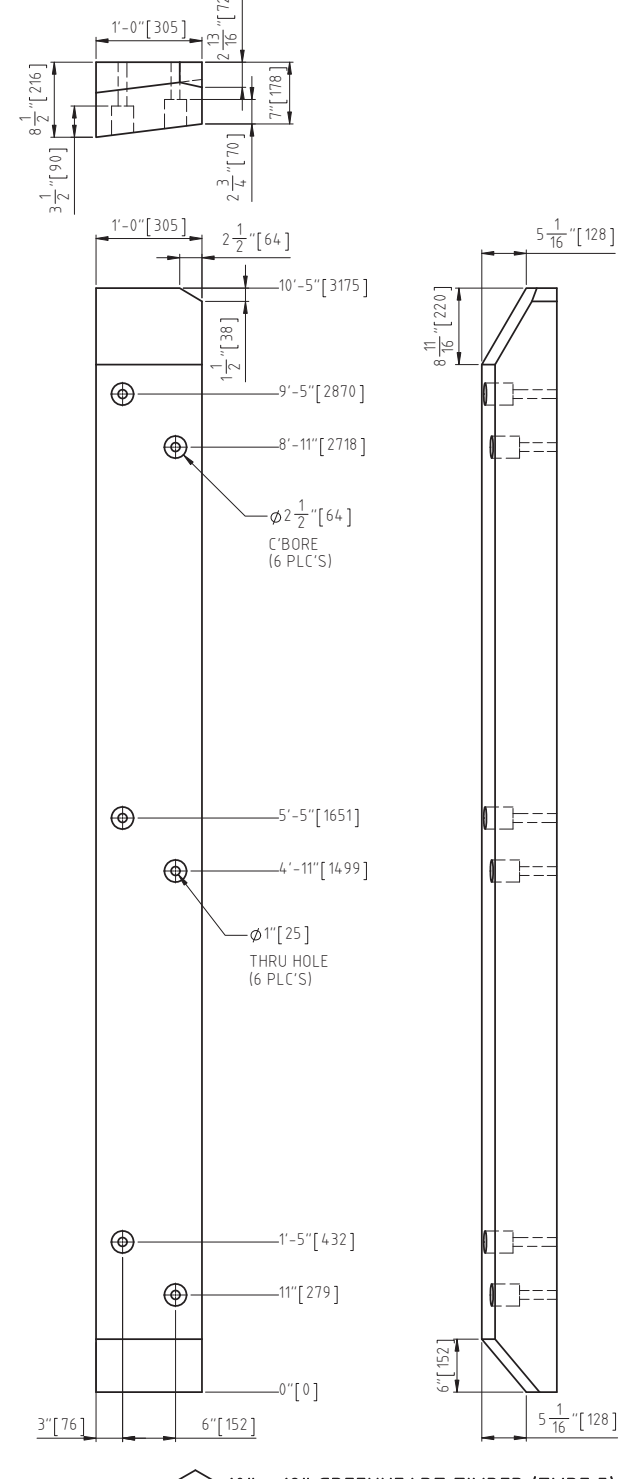
16 10" x 12" GREENHEART TIMBER (TYPE 2)
SCALE: 1:10
(20 REQ'D)



18 10" x 12" GREENHEART TIMBER (TYPE 4)
SCALE: 1:10
(20 REQ'D)

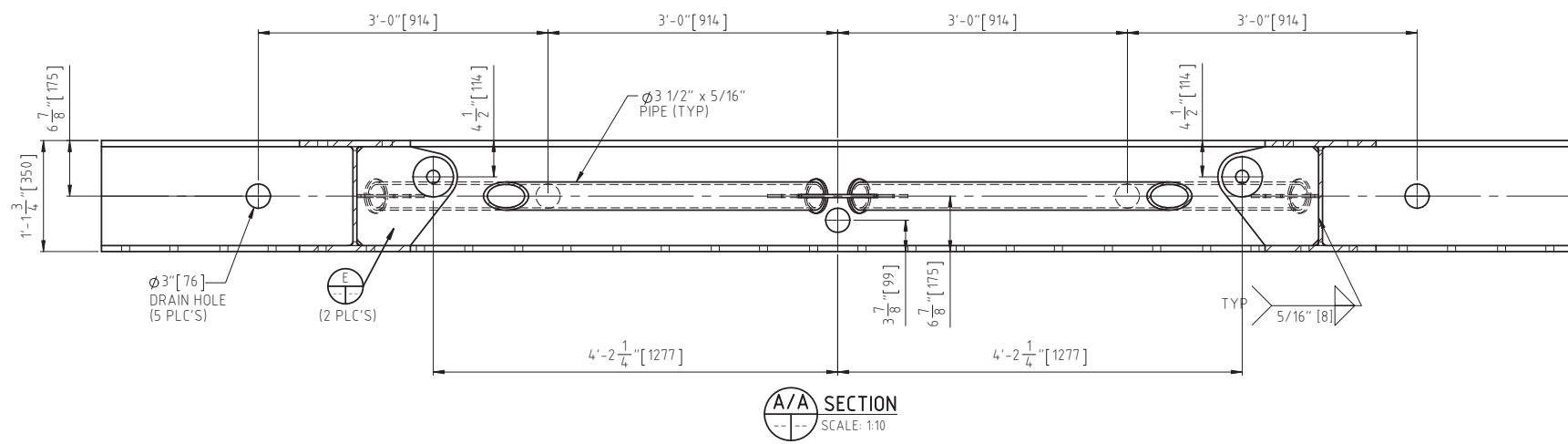


17 10" x 12" GREENHEART TIMBER (TYPE 3)
SCALE: 1:10
(20 REQ'D)

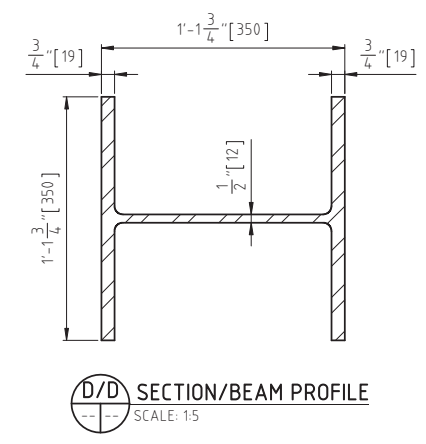
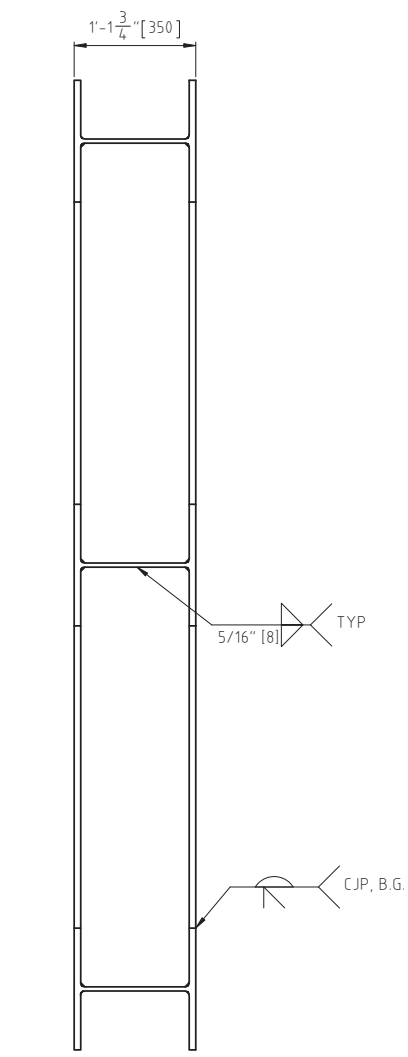
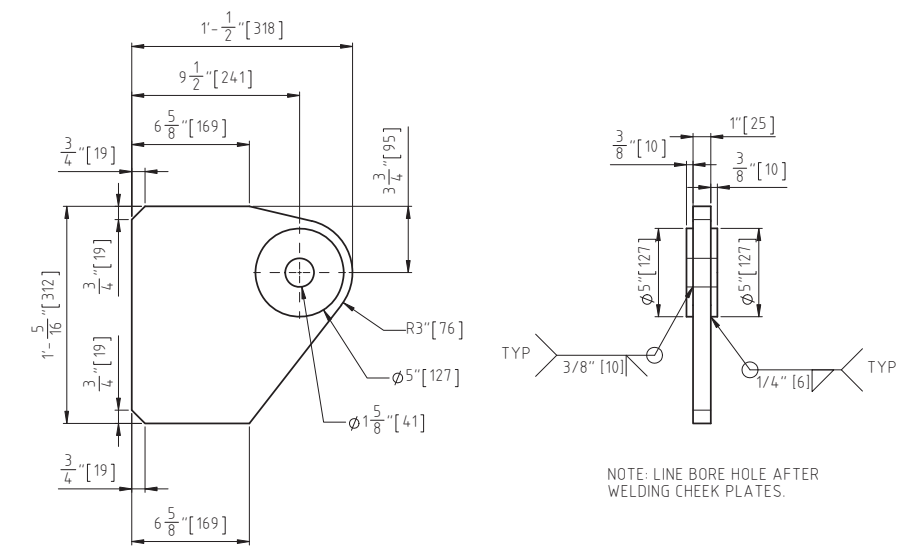
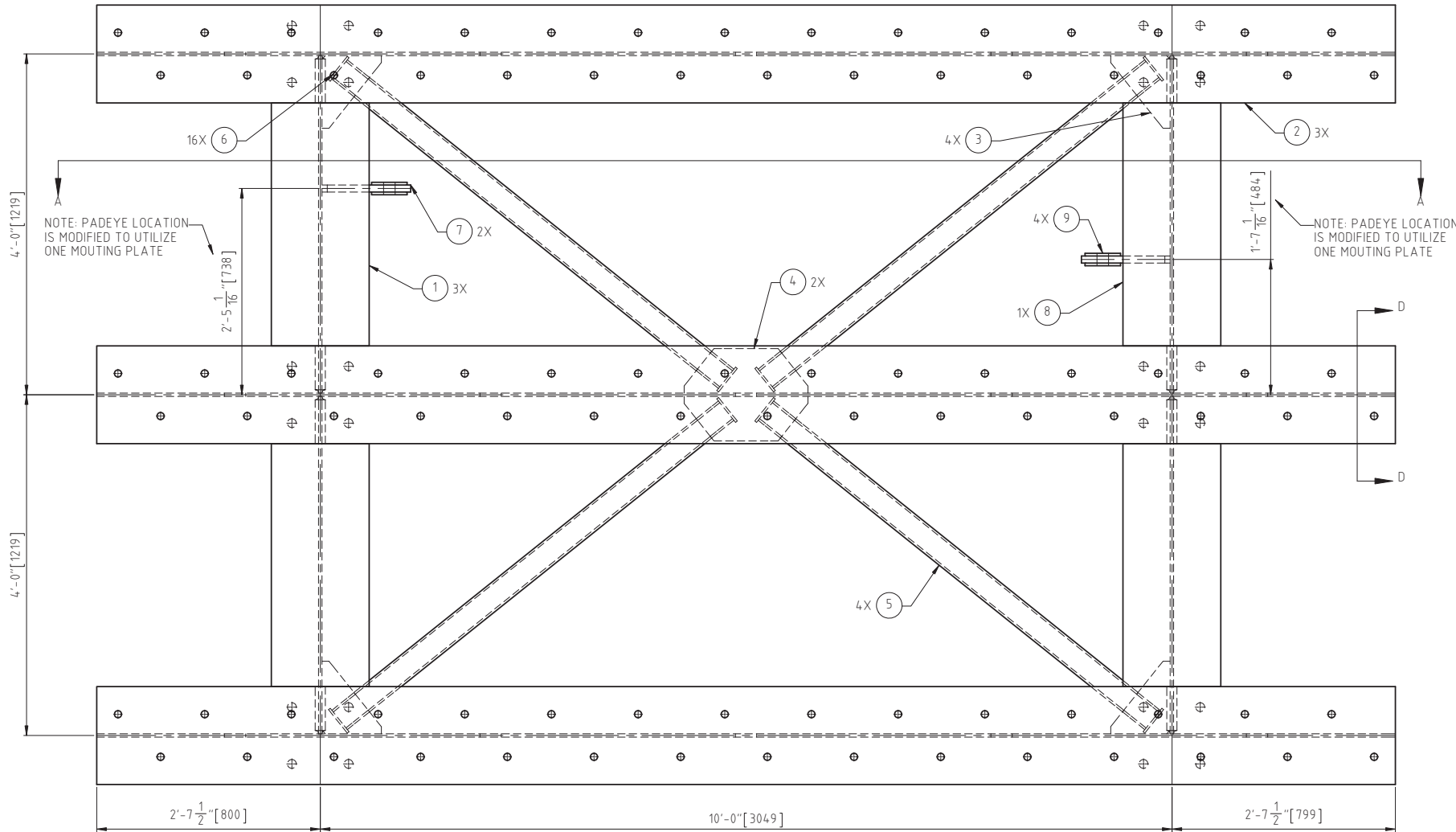


19 10" x 12" GREENHEART TIMBER (TYPE 5)
SCALE: 1:10
(20 REQ'D)

0	KLK	INITIAL RELEASE	04/30/15
REV	BY	DESCRIPTION	DATE
SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
GREENHEART TIMBER DETAILS			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLK	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV/SET
D	61254	61254-07	0/0



PART NUMBER	DESCRIPTION	MATERIAL	LENGTH	WEIGHT (LBS)	QTY.
1	W12x106	Plain Carbon Steel	3'-11 1/2"	279	3
2	W12x106	Plain Carbon Steel	15'-3"	1360	3
3	3/8" THICK PLATE	Plain Carbon Steel		5	4
4	3/8" THICK PLATE	Plain Carbon Steel		9	2
5	3" XS PIPE	Plain Carbon Steel	5'-9 3/4"	59	4
6	5/16" PLATE	Plain Carbon Steel		1	16
7	1" THICK PLATE	Plain Carbon Steel		35	2
8	W12x106	Plain Carbon Steel	3'-11 1/2"	279	1
9	3/8" THICK PLATE	Plain Carbon Steel		2	4



0	KLK	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE

MARITIME
International

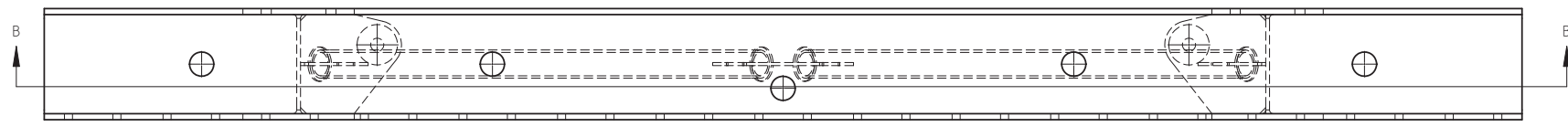
PROJECT TITLE
SOUTHWEST BROOKLYN MARINE TRANSFER STATION

DRAWING TITLE
PANEL ASSEMBLY

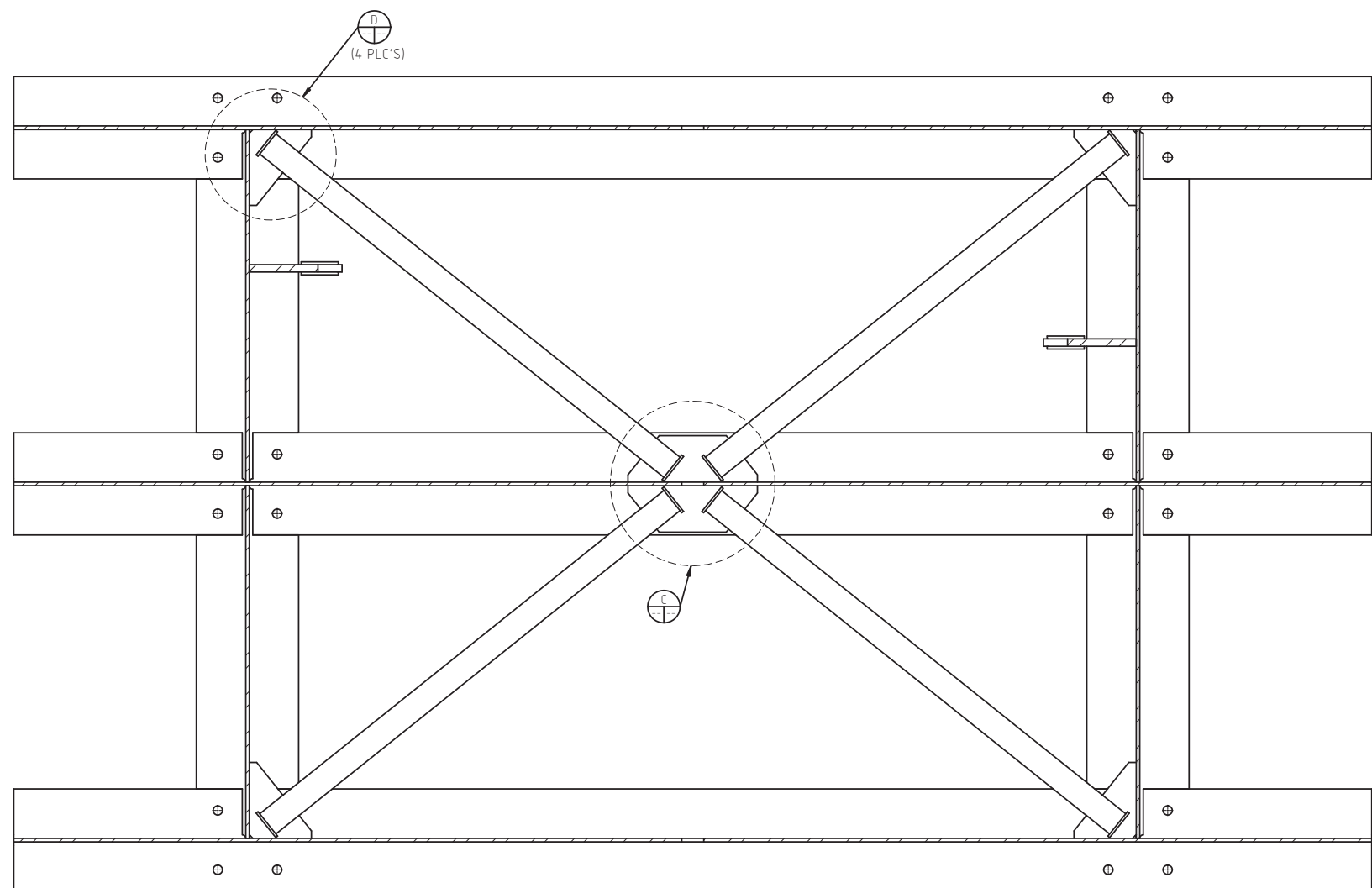
SCALE: AS NOTED
DRAWN BY: KLK
CHECKED BY: JLD
APPROVED BY: JLD

SHEET D PROJECT NUMBER 61254 DRAWING NUMBER 61254-08 REV/SET 1/A

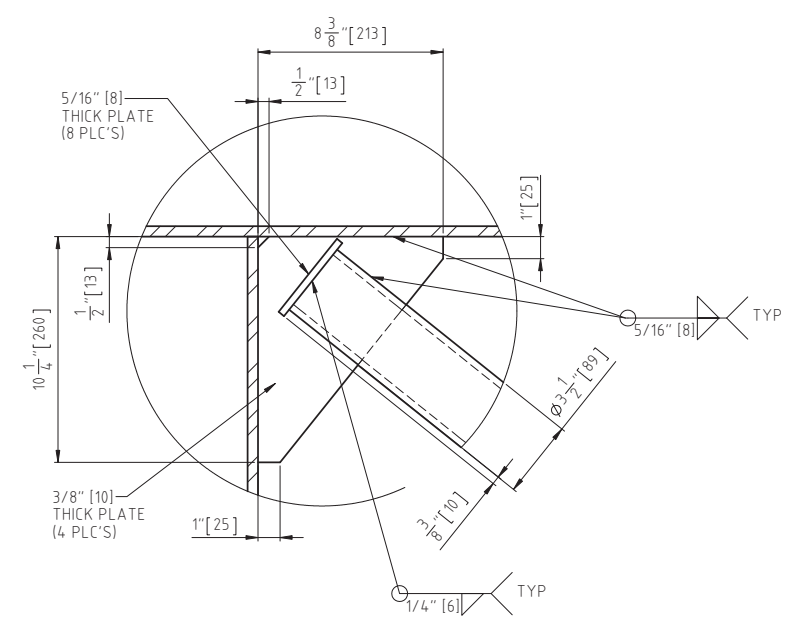
REV.	BY	DESCRIPTION	DATE
1	KLK	ADDED CUT LIST BOM	6/11/2015
REVISIONS			



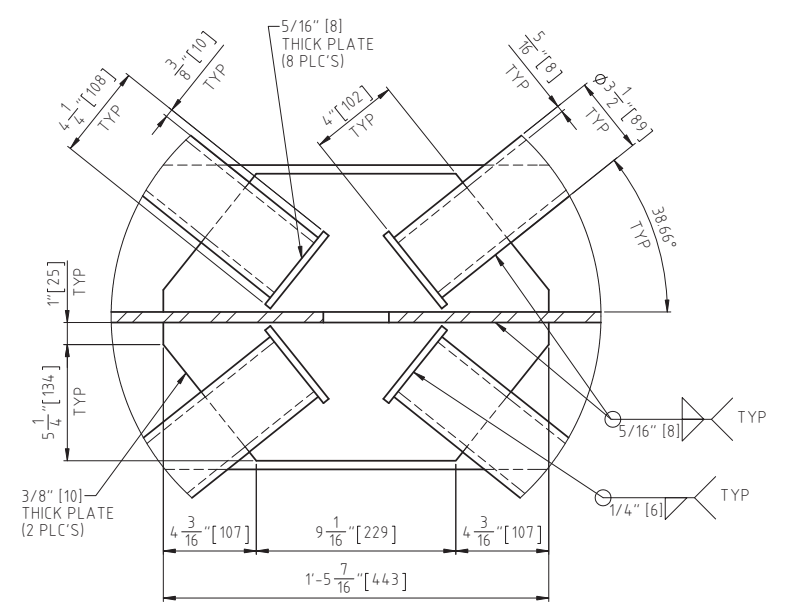
A PLAN VIEW
SCALE: 1:10




B/B SECTION
SCALE: 1:10

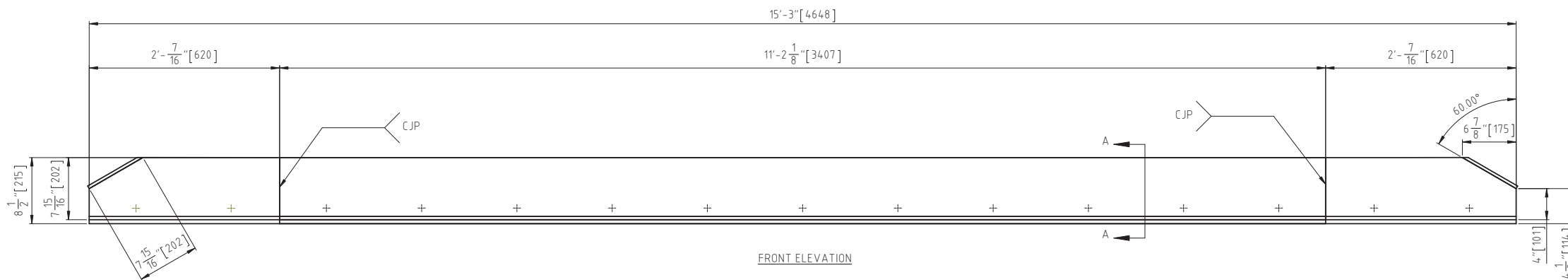


D DETAIL
SCALE: 1:4

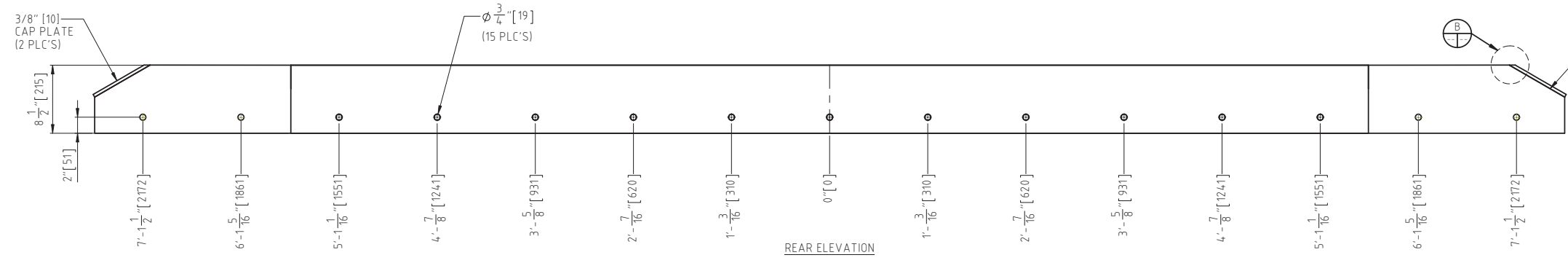
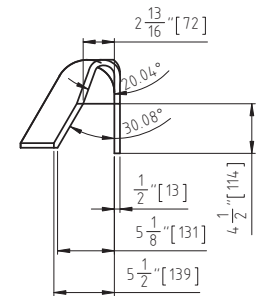


C DETAIL
SCALE: 1:4

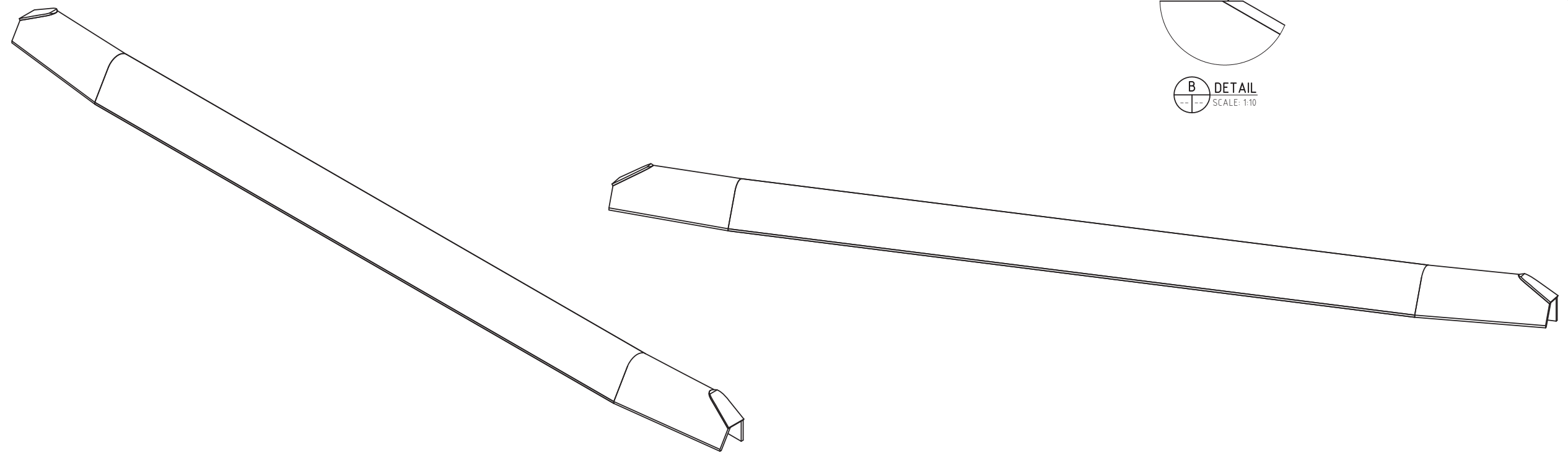
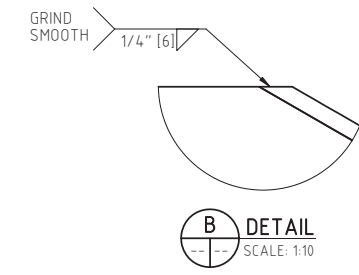
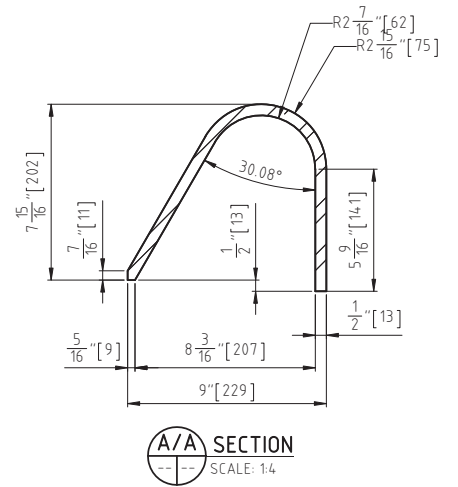
0	KLG	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
 MARITIME <i>International</i>			
PROJECT TITLE			
SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE			
PANEL ASSEMBLY			
<small>THESE DRAWINGS AND THE DESIGN INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF MARITIME INTERNATIONAL. ANY USE OTHER THAN THAT WHICH IS EXPRESSLY AUTHORIZED BY MARITIME INTERNATIONAL IS PROHIBITED & OFFENSE.</small>			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLG	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV/SET
D	61254	61254-09	0/0



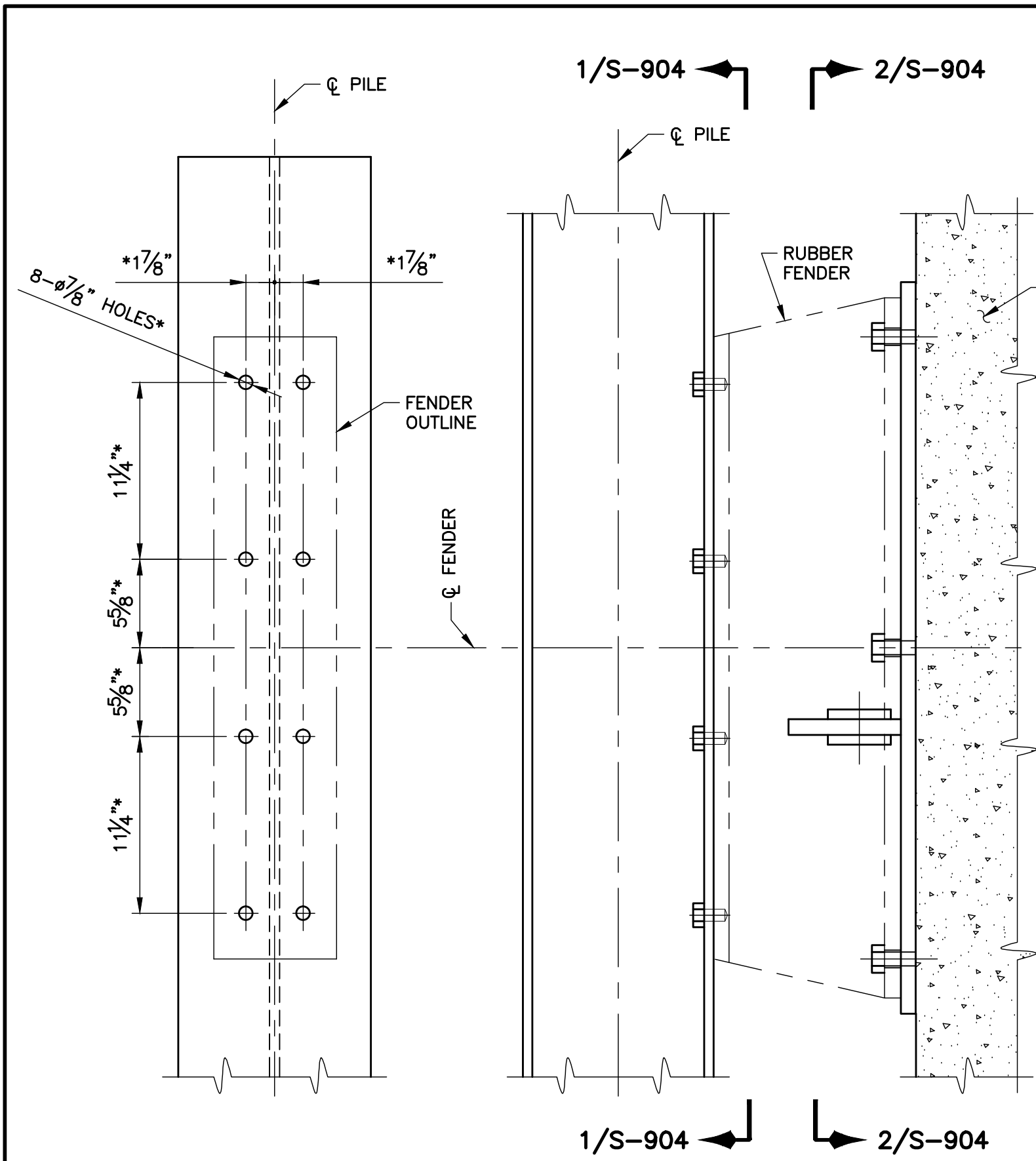
DIMENSIONS ARE TYPICAL
ARE OPPOSITE END



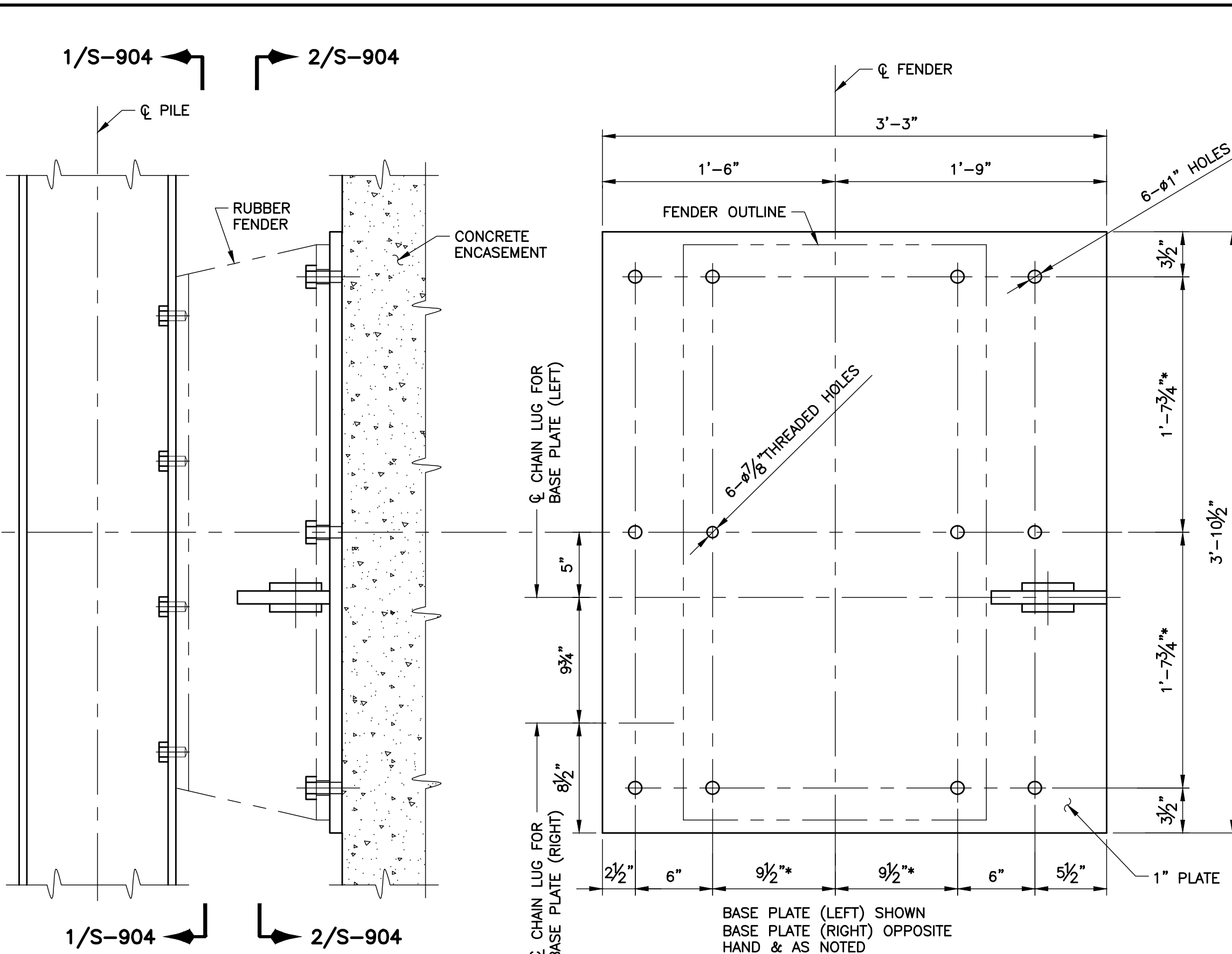
14 CAP PLATE, H.D.G.
SCALE: 1:8
(20 REQ'D)



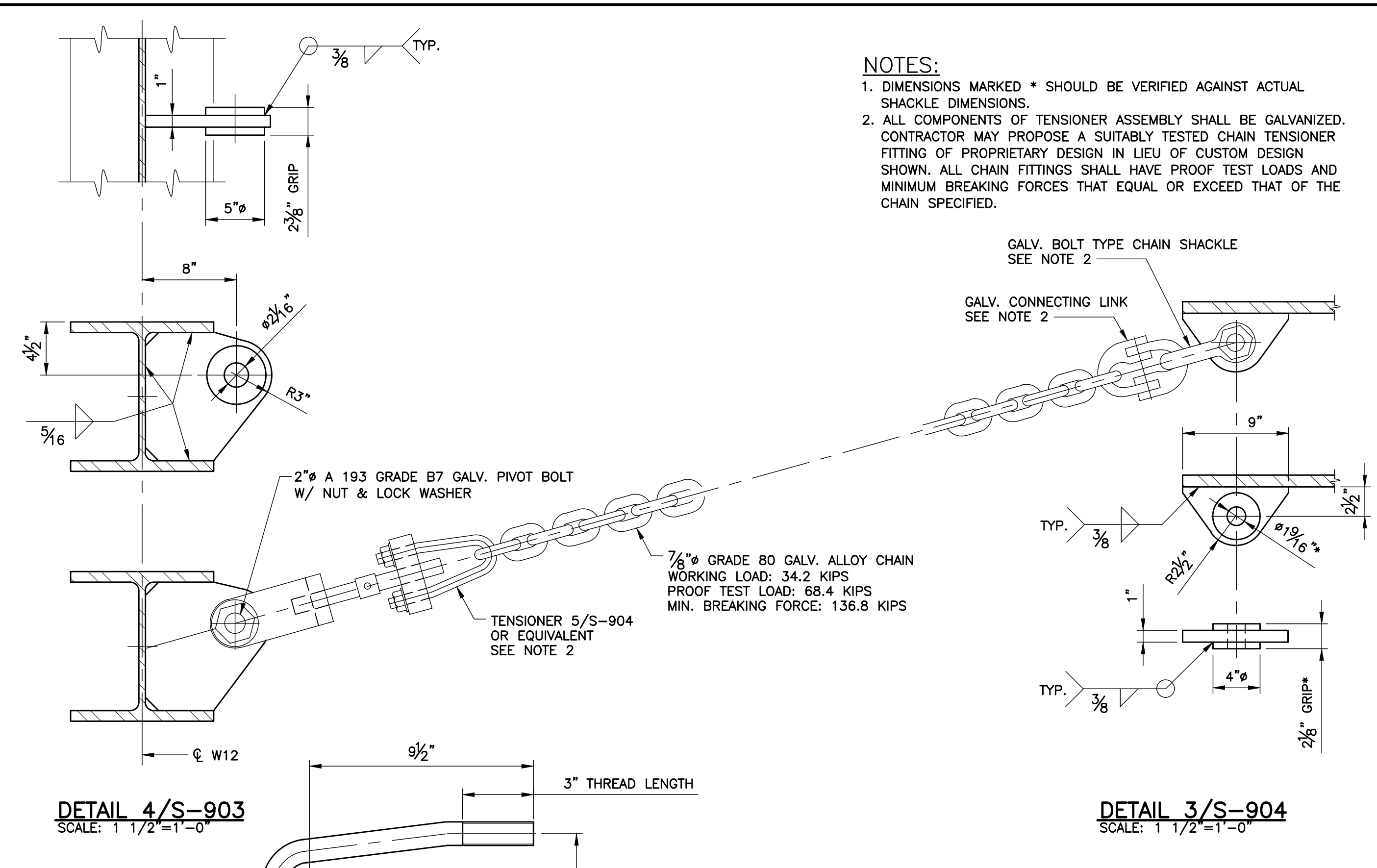
0	KLK	INITIAL RELEASE	04/30/15
REV BY		DESCRIPTION	DATE
PROJECT TITLE SOUTHWEST BROOKLYN MARINE TRANSFER STATION			
DRAWING TITLE TIMBER CAP PLATE DETAILS			
<small>THESE DRAWINGS AND THE DESIGN INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF MARITIME INTERNATIONAL. ANY USE OTHER THAN THAT WHICH IS EXPRESSLY AUTHORIZED BY MARITIME INTERNATIONAL IS PROHIBITED & OFFENSE.</small>			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS NOTED	KLK	JLD	JLD
SHEET	PROJECT NUMBER	DRAWING NUMBER	REV / SET
D	61254	61254 -11	0/0



SECTION 1/S-904
SCALE: 1 1/2"=1'-0"



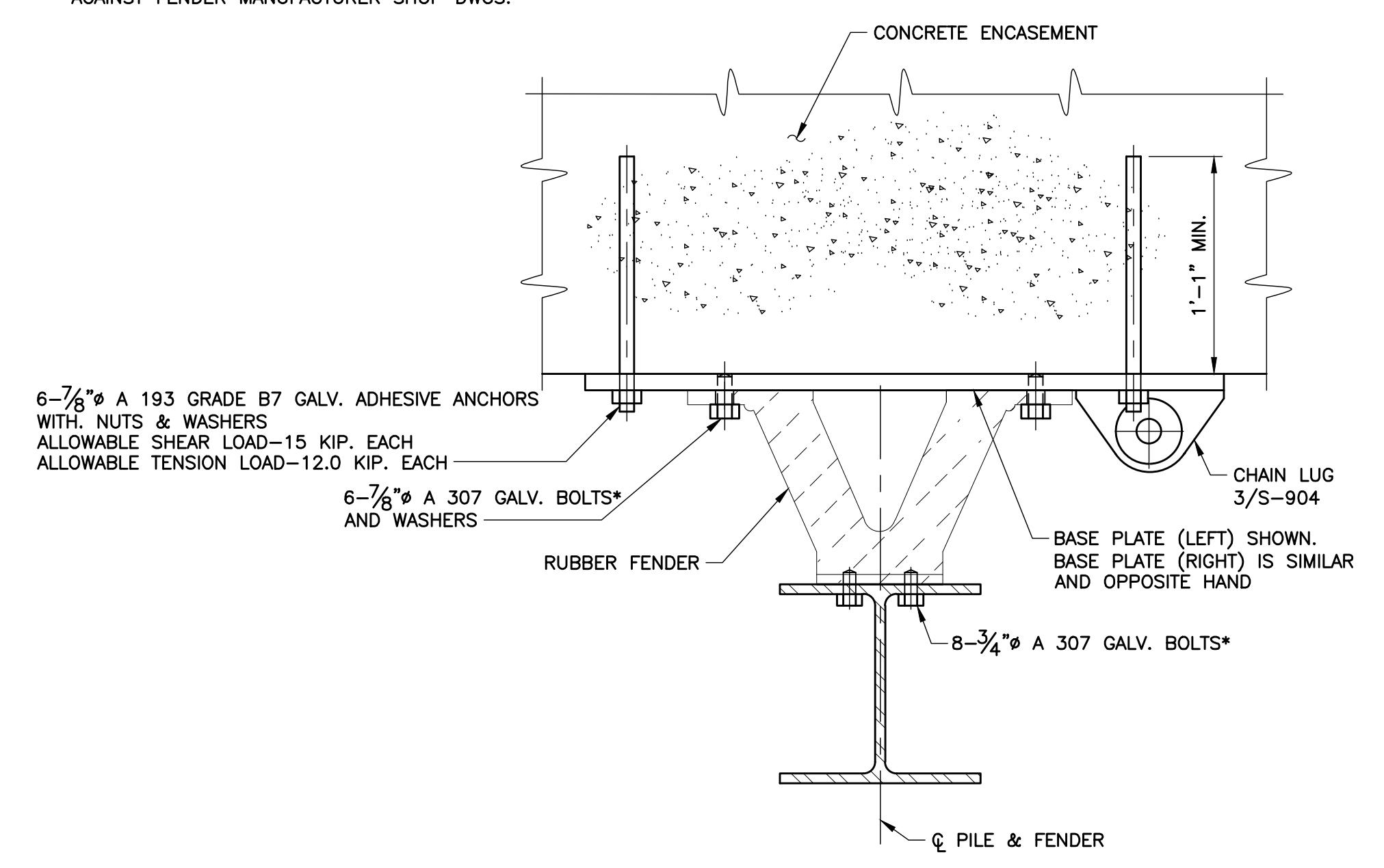
SECTION 2/S-904
SCALE: 1 1/2"=1'-0"



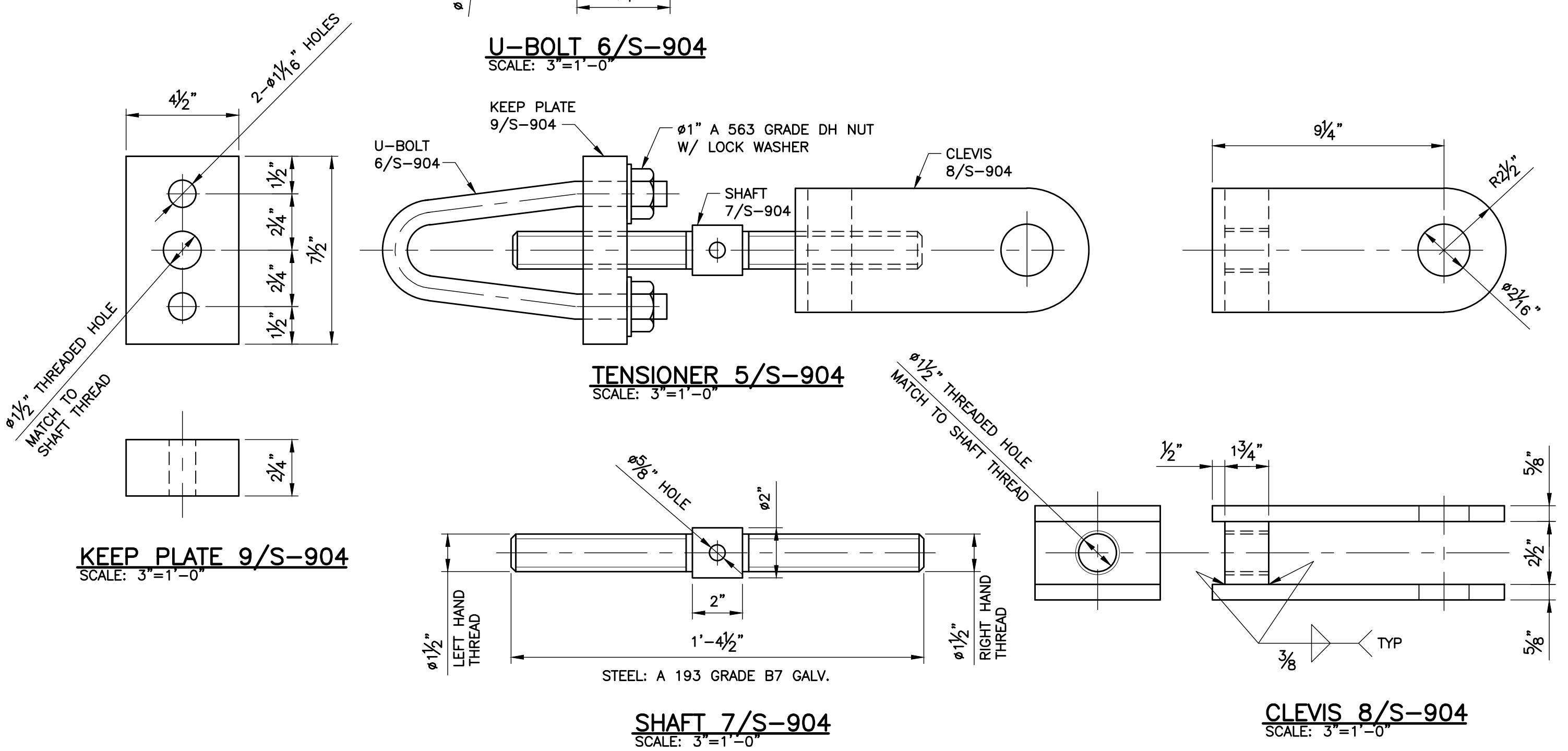
DETAIL 4/S-903
SCALE: 1 1/2"=1'-0"

DETAIL 3/S-904
SCALE: 1 1/2"=1'-0"

NOTE:
DIMENSIONS MARKED * SHALL BE VERIFIED AGAINST FENDER MANUFACTURER SHOP DWGS.



CROSS-SECTION AT FENDER
SCALE: 1 1/2"=1'-0"



U-BOLT 6/S-904
SCALE: 3"=1'-0"

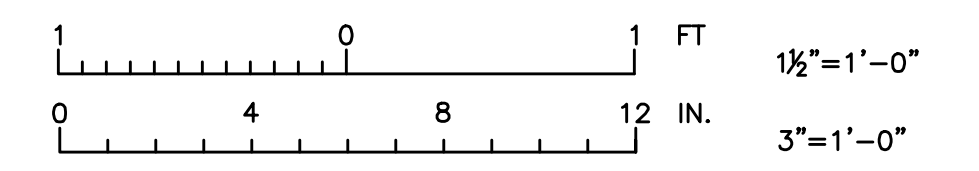
TENSIONER 5/S-904
SCALE: 3"=1'-0"

KEEP PLATE 9/S-904
SCALE: 3"=1'-0"

SHAFT 7/S-904
SCALE: 3"=1'-0"

CLEVIS 8/S-904
SCALE: 3"=1'-0"

NOTES:
1. DIMENSIONS MARKED * SHOULD BE VERIFIED AGAINST ACTUAL SHACKLE DIMENSIONS.
2. ALL COMPONENTS OF TENSIONER ASSEMBLY SHALL BE GALVANIZED. CONTRACTOR MAY PROPOSE A SUITABLY TESTED CHAIN TENSIONER FITTING OF PROPRIETARY DESIGN IN LIEU OF CUSTOM DESIGN SHOWN. ALL CHAIN FITTINGS SHALL HAVE PROOF TEST LOADS AND MINIMUM BREAKING FORCES THAT EQUAL OR EXCEED THAT OF THE CHAIN SPECIFIED.



WARNING
IT IS A VIOLATION OF SECTION 2209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED, IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED. THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

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DESIGNED: JK
DRAWN: BL
CHECKED: JK

APPROVED:

NO.	DATE	APPD	REVISION
10	JAN 2013	JK	CONFORMED DRAWING

SCALE
AS SHOWN

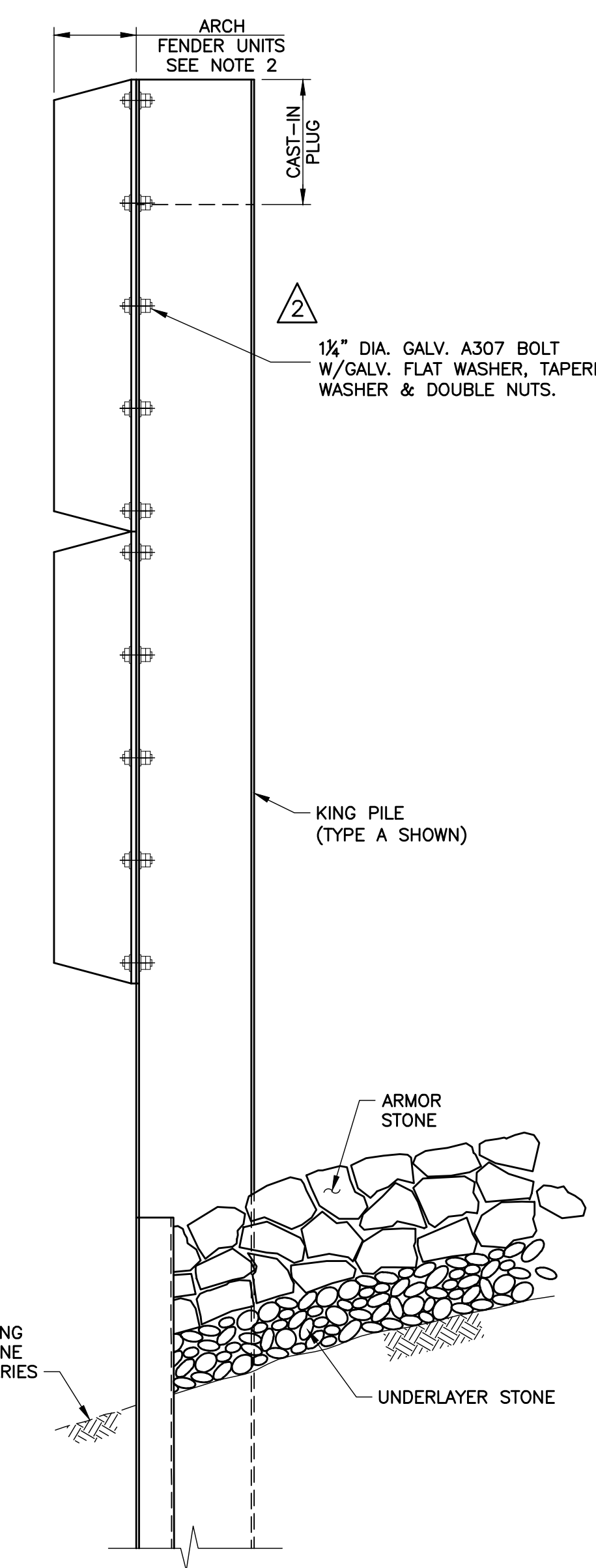
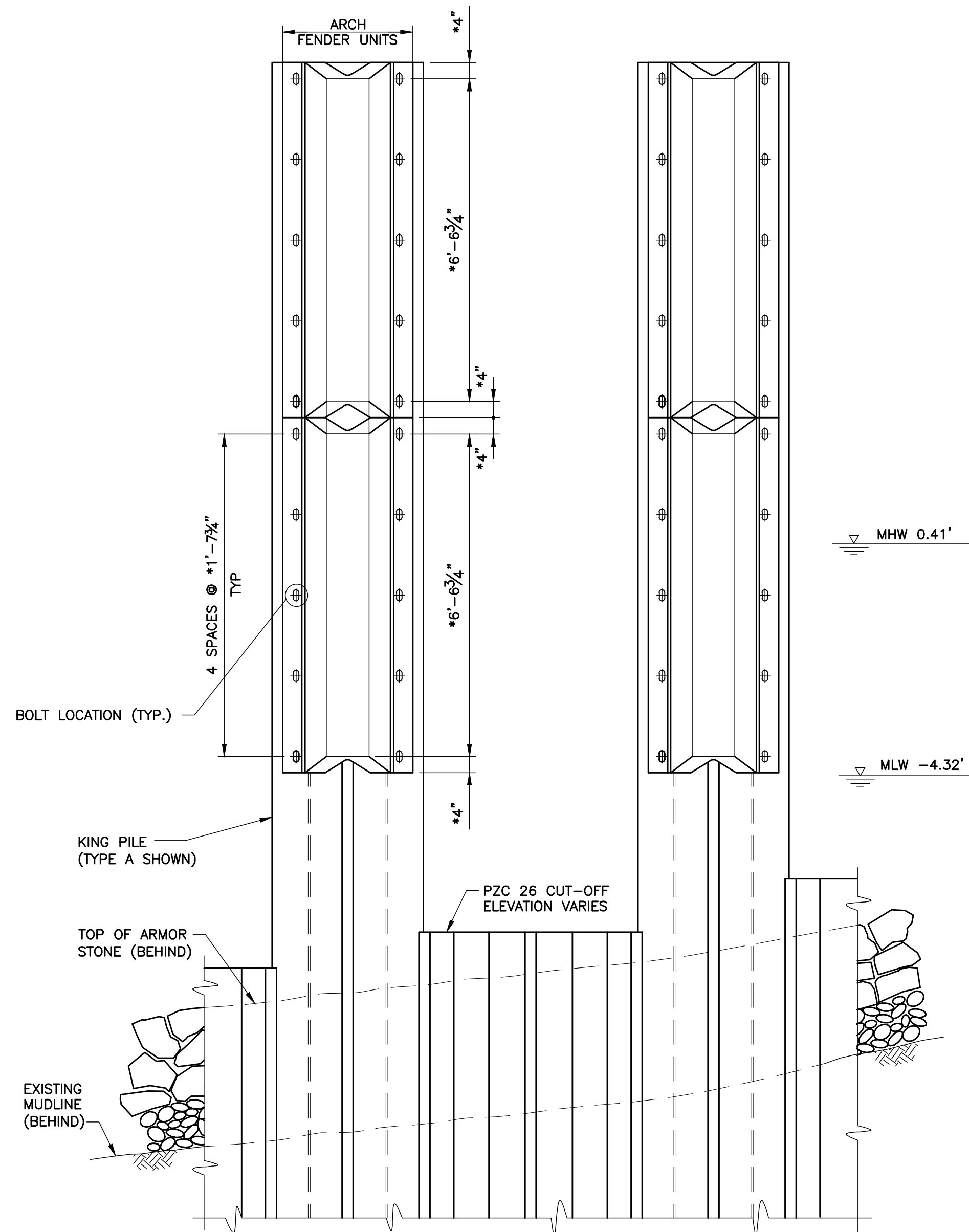
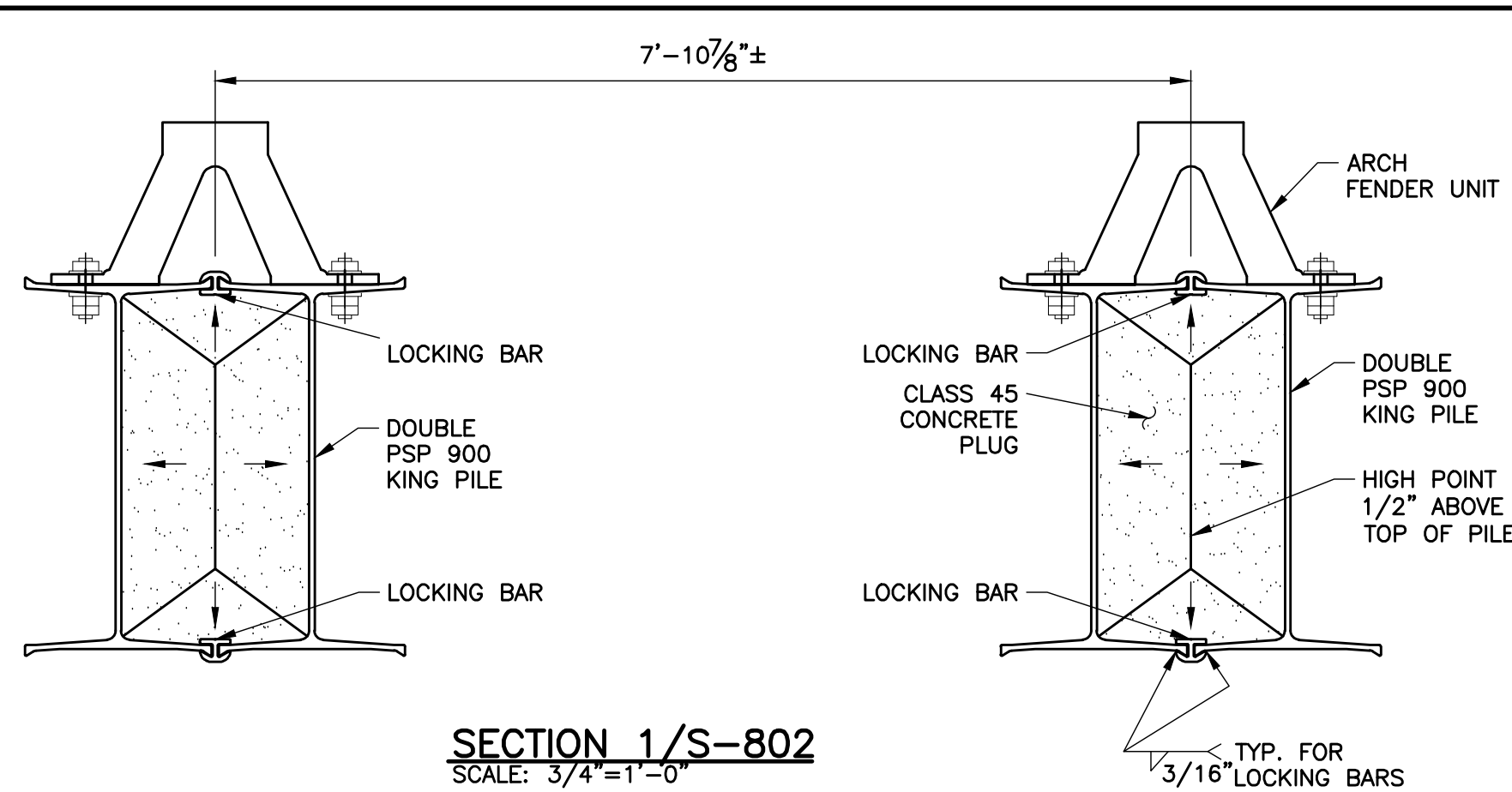
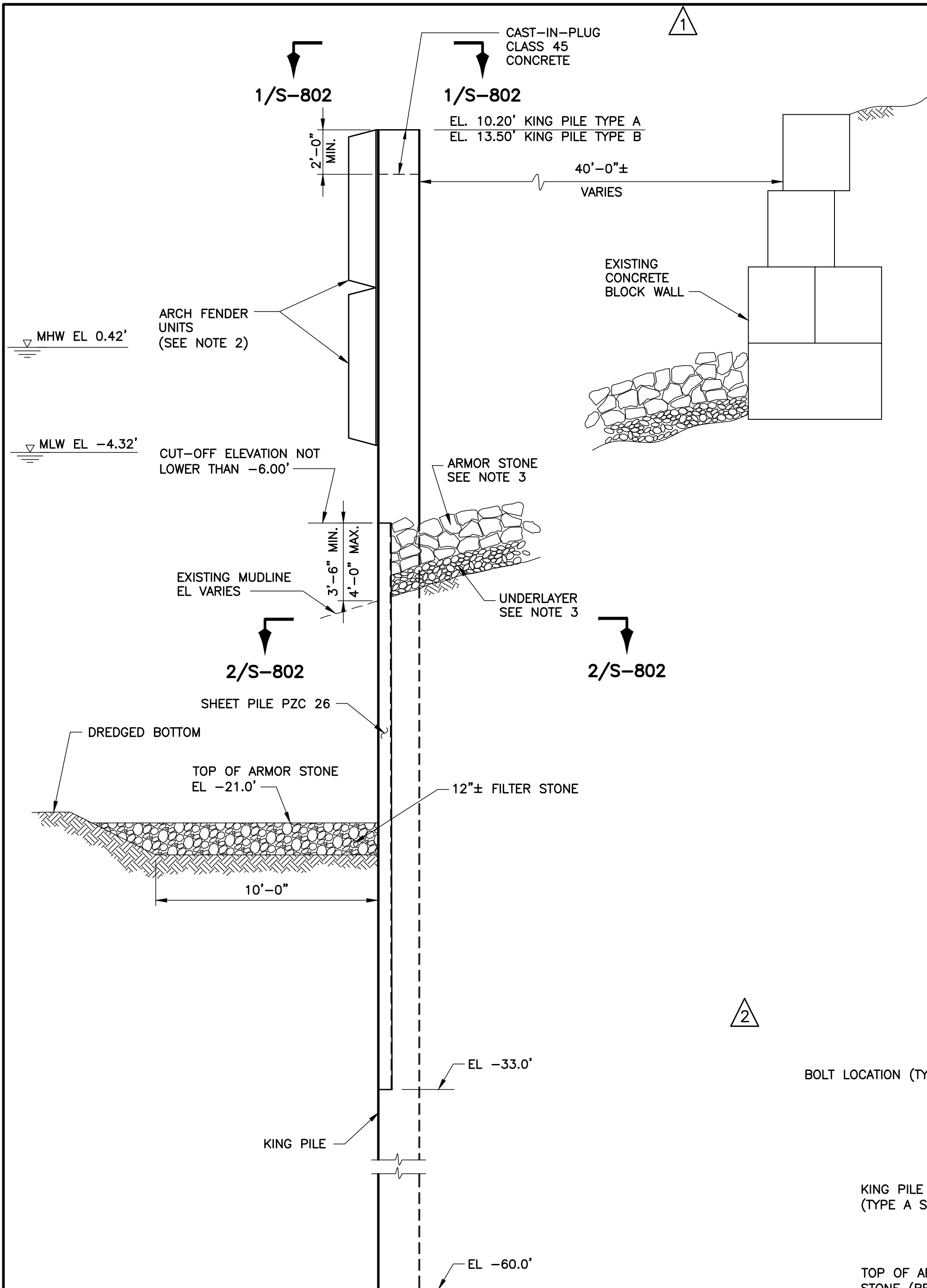
DDC
NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

FOR NEW YORK CITY
DEPARTMENT OF SANITATION
MARINE EXPORT OF SOLID WASTE
SOUTHWEST BROOKLYN
MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL
FENDER SYSTEM DETAILS - SHEET 2

NYC DOB NO.

FILE NAME: DSNYS904_10
DWG: **S-904.10**
SHEET NO.: 334 OF 708
DATE: JUNE 2012



NOTES:

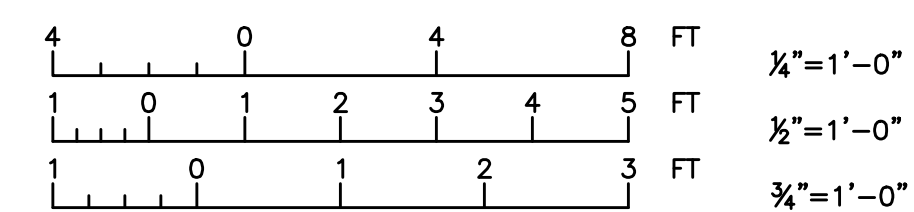
- SHEET PILE DESIGNATIONS SHOWN FOR KING AND Z-SHEETS ARE AS MANUFACTURED BY GERDAU. SHEET PILING BY OTHER MANUFACTURERS MAY BE ACCEPTABLE SUBJECT TO THE APPROVAL OF THE ENGINEER. YIELD STRENGTH OF STEEL SHALL BE FY=50 KSI MIN. FOR KING PILES AND FY=39 KSI MIN. FOR Z-SHEETS.
- ARCH FENDER UNITS SHALL BE THE FOLLOWING UNITS AS MANUFACTURED BY TRELLEBORG OR APPROVED EQUAL IN SIZE AND PERFORMANCE.

ARCH FENDER UNIT SIZE AND RUBBER GRADE	KING PILE TYPE A AN 400X2000 E1.0 (2 UNITS PER KING PILE)	KING PILE TYPE B AN 400X2500 E1.0 (2 UNITS PER KING PILE)
	MAX. RATED REACTION AT 51.5% DEFLECTION	89 KIPS
MIN. RATED ENERGY AT 51.5% DEFLECTION	45 FOOT-KIPS	56 FOOT-KIPS

3. FOR SCOUR PROTECTION DETAILS SEE DWGS. Z-003 & Z-005.

RUBBER FENDER DETAILS

NOTE:
DIMENSIONS MARKED * SHALL BE VERIFIED AGAINST FENDER MANUFACTURER SHOP DWGS.



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DESIGNED: JK	APPROVED:
DRAWN: FC	
CHECKED: JK	

NO.	DATE	APPD	REVISION
10	JAN 2013	JK	CONFORMED DRAWING
2	OCT 2012	JK	ADDENDUM NO 3
1	SEPT 2012	JK	ADDENDUM NO 2

SCALE
AS SHOWN

DDC
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FOR NEW YORK CITY
DEPARTMENT OF SANITATION
MARINE EXPORT OF SOLID WASTE
SOUTHWEST BROOKLYN
MARINE TRANSFER STATION

CONTRACT NO. 2
STRUCTURAL

BULKHEAD DETAILS - SHEET 2

NYC DOB NO.

FILE NAME: DSNYFS802_10
DWG: **S-802.10**
SHEET NO.: 327 OF 708
DATE: JUNE 2012

ATTACHMENT B

PHOTOS

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

EAST BULKHEAD



Photo 1. Overall view of East Bulkhead



Photo 3.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

EAST BULKHEAD



Photo 3. Loose Bolt



Photo 4. Rubber Fender Peeling Off.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

EAST BULKHEAD



Photo 5. Rubber Fender Peeling Off.



Photo 6. Bent at Steel Sheeting.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

EAST BULKHEAD



Photo 7. Rubber Fender Peeling Off.

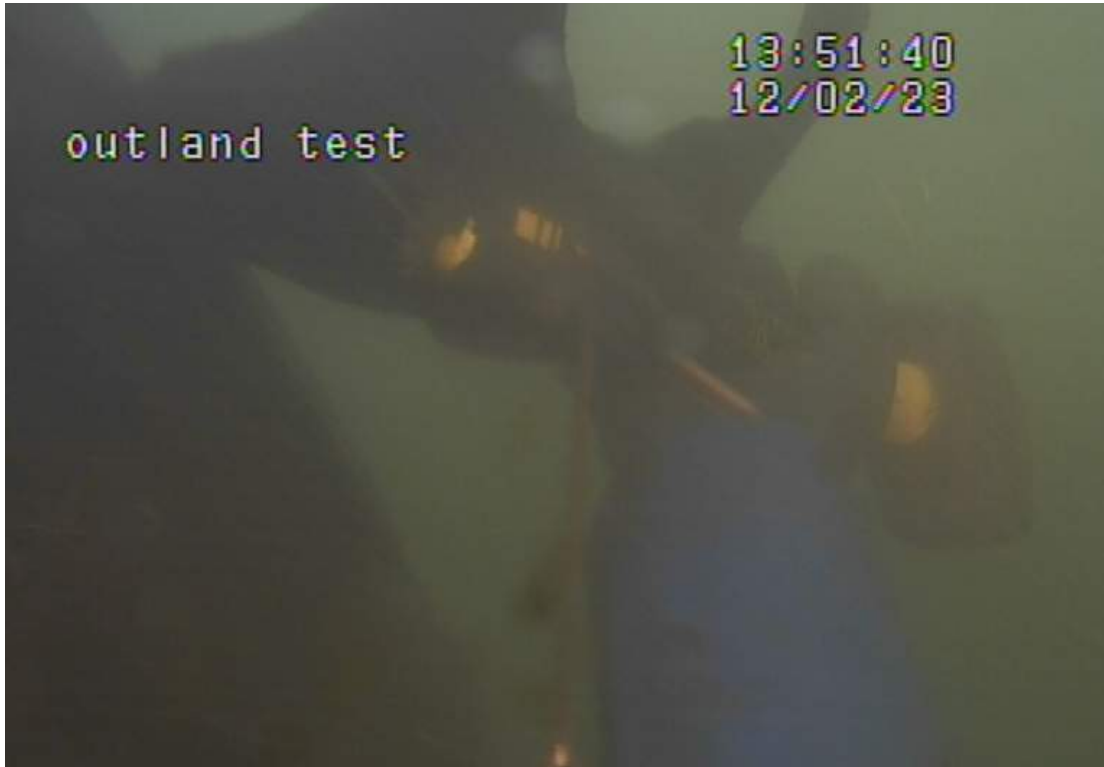


Photo 8. Rubber Fender Peeling Off.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

EAST BULKHEAD



Photo 9. Typical divet at Concrete Bulkhead.



Photo 10. Loose Bolt.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD

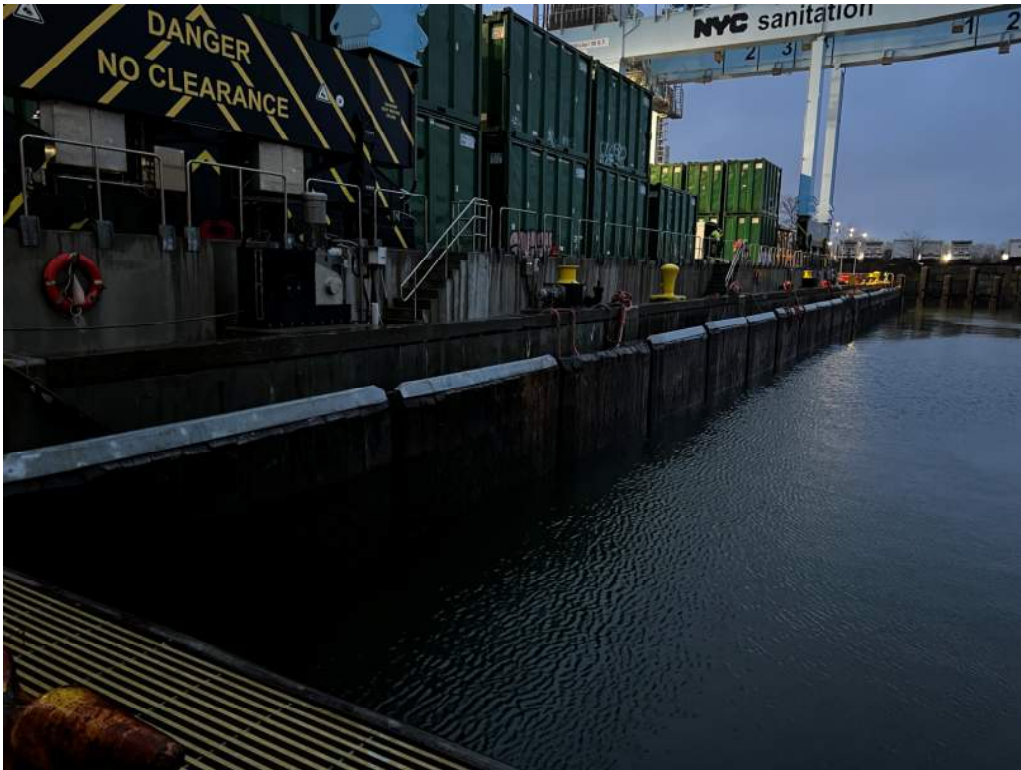


Photo 1. Overall view of North Bulkhead



Photo 2. HDG cap plate missing at fender #3

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 3. Missing cap plate at fender #3.



Photo 4. Typical corrosion at top of HP Piles.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 5. Typical missing bolts for the cap plate.



Photo 6. Bent HP Pile and rubber fender at fender #9.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 7. Close view of bent HP Pile and rubber fender at fender #9.



Photo 8. Corrosion at HP Pile.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 9. Rubber fender detached from concrete bulkhead at fender #17.

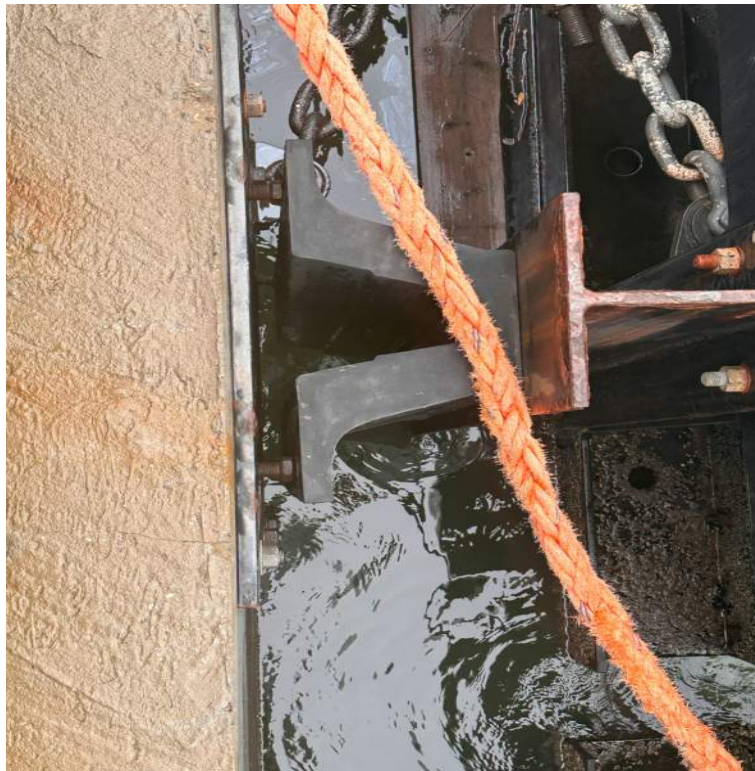


Photo 10. Fender #17.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 11. Exposed rebar at concrete bulkhead at fender #1.



Photo 11. Loose bolt at fender #1.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD

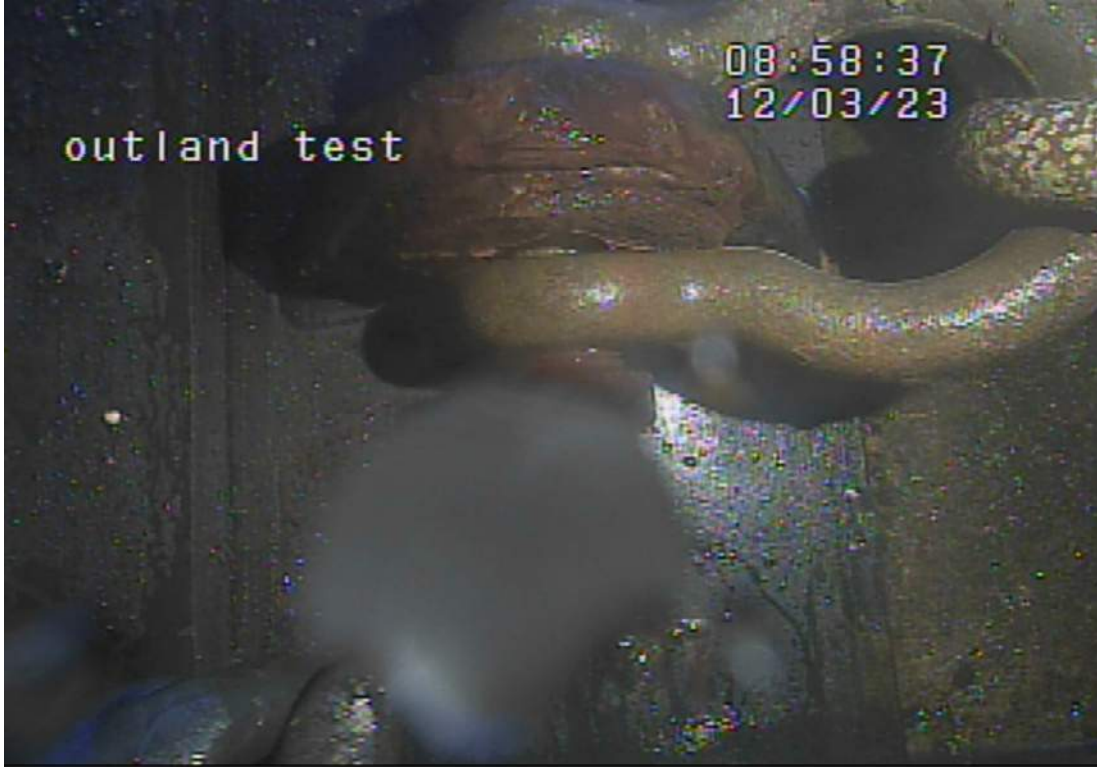


Photo 12. Minor Corrosion at shackle for fender #2.



Photo 13. Loose washer at fender #2. (typical)

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 14. Exposed chair at underside of concrete deck.



Photo 15. Minor rot at top of fender #5.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 16. Vertical Split at face board at fender #7.



Photo 17. Exposed rebar at fender #7.

SOUTHWEST BROOKLYN MARINE TRANSFER STATION
DECEMBER 2023

NORTH BULKHEAD



Photo 18. Bolt and washer missing at the connection rubber fender to HP pile at fender #8