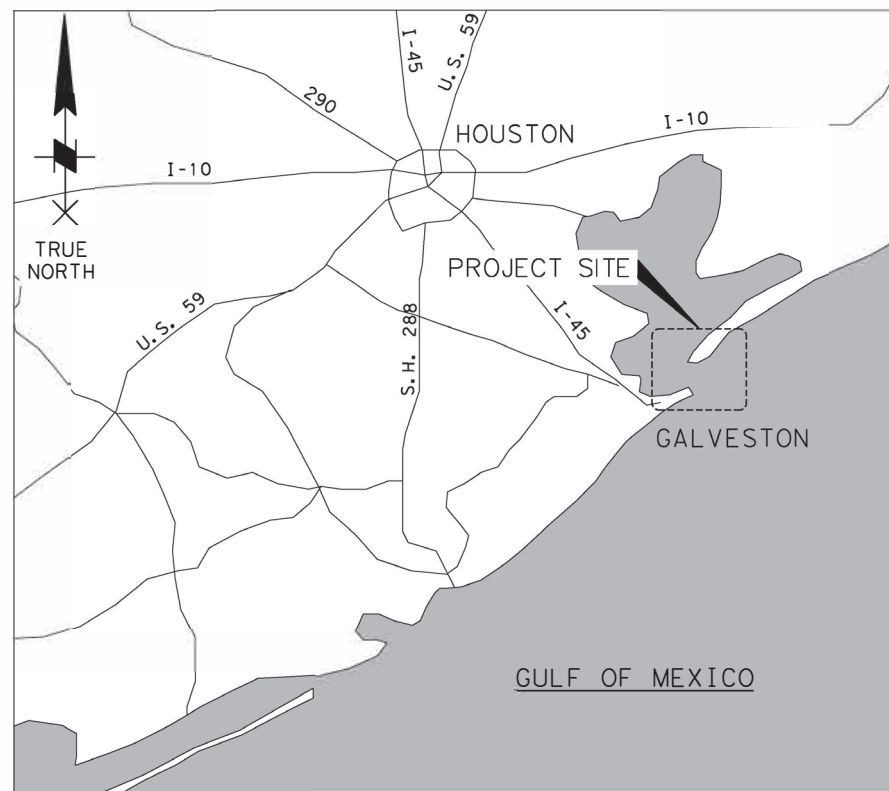


FED. RD. DIV. NO.	MAINTENANCE PROJECT NO.		SHEET NO.
	RMC 6428-78-001		1
STATE	STATE DIST.	COUNTY	
TEXAS	HOU	GALVESTON	
CONT.	SECT.	JOB	HIGHWAY NO.
6428	78	001	SH 87

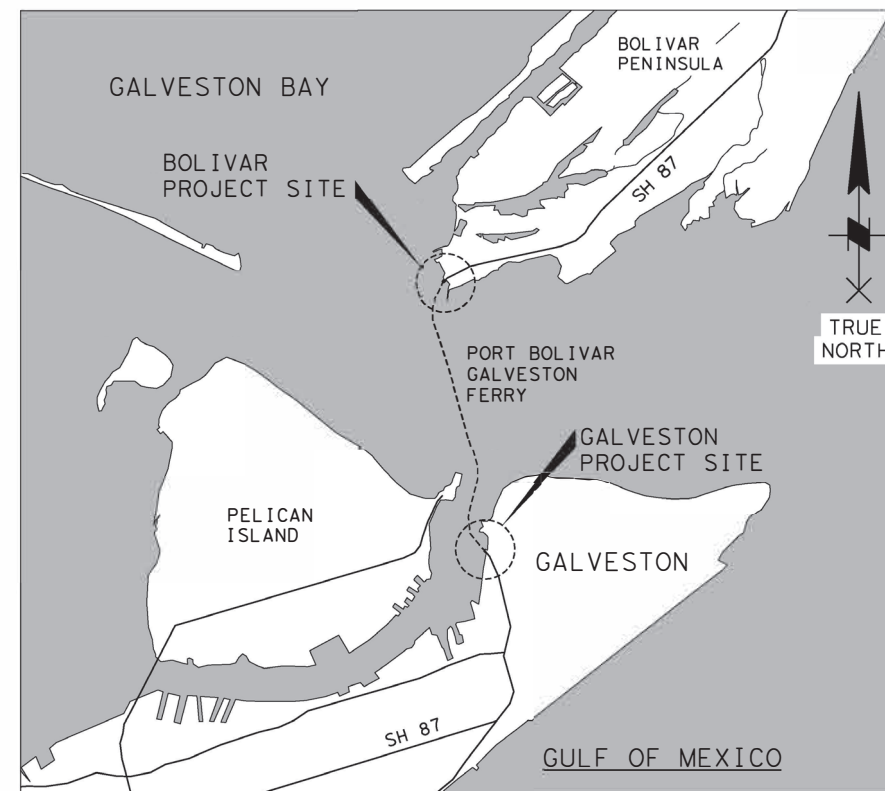
STATE OF TEXAS

DEPARTMENT OF TRANSPORTATION

FERRY LANDING MAINTENANCE III GALVESTON-BOLIVAR GALVESTON COUNTY SH 87



VICINITY MAP



AREA MAP

N.T.S.

COUNTY GALVESTON PROJ. NO. RMC 6428-78-001
 HWY. NO. _____ LETTING DATE _____
 DATE ACCEPTED _____

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

DocuSigned by:
VINCENT HIEU TONG PE 5/25/2023
 755298276ECE494... DATE

EXCEPTIONS: NONE
 EQUATIONS: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOV 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:

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TEXAS DEPARTMENT OF TRANSPORTATION
 5/1/2023

DocuSigned by:
Melody Gallano -20-
 A667165730A3459... ICE


APPROVE DocuSigned by: 5/25/2023
Eliza C. Paul -20-
 DF6493334509439...
 DISTRICT ENGINEER

INDEX OF SHEETS

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4	G-004	BOLIVAR LANDINGS SITE PLAN
5	G-005	GALVESTON WORK DOCK & BOAT LIFT SITE PLAN
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DRAWING NAME: 949402-C-002.dgn
PLOT DATE: 4/6/2023 3:23:49 PM PLOTTED BY: SHIH



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FERRY LANDING MAINTENANCE

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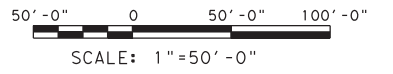
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REVISONS		COUNTY	CONTROL SECTION	JOB HIGHWAY
		GALVESTON	6428 78	001 SH87

3:23:49 PM 4/6/2023


PILE SCHEDULE						
PILE	SIZE	NORTHING	EASTING	TIP EL.	T.O. PILE EL.	NOTES
1-4L	60"Ø	13693035.1550	3315197.2000	-125.0'	20.0'	FIELD VERIFY LOCATION
1-STAIR1	N/A	N/A	N/A	N/A	N/A	SUPPORTED ON BULKHEAD CAP
1-STAIR2	24"SQ	13692845.3946	3315388.1791	-70.0'	2.75'	FIELD VERIFY LOCATION
2-STAIR1	24"SQ	13692706.2061	3315355.5170	-70.0'	2.75'	FIELD VERIFY LOCATION
2-STAIR2	24"SQ	13692718.3461	3315340.2525	-70.0'	2.75'	FIELD VERIFY LOCATION
3-STAIR1	24"SQ	13692584.8524	3315282.2569	-70.0'	2.75'	FIELD VERIFY LOCATION
3-STAIR2	24"SQ	13692596.9902	3315266.9951	-70.0'	2.75'	FIELD VERIFY LOCATION

MONOPILE DIAMETERS OUTSIDE (O.D.)	
60"	1-4L
	1-3R
	2-1L
	2-2L
	2-3L
	2-1R
	2-2R
	2-3R
	3-1L
	3-2L
	3-3L
	3-1R
	3-2R
	3-3R
	72"
1-2L	
1-3L	
1-1R	
1-2R	
1-3R	

OD: OUTER DOLPHIN
WW: WINGWALL



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FERRY LANDING MAINTENANCE
GALVESTON LANDINGS
SITE PLAN

SHEET 3 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	G-003
DN: JMM	REVISIONS			COUNTY:
CK: JMM				GALVESTON
DR: RW	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: WB				6428 78 001 SH87

DRAWING NAME: 949402-C-003.dgn
PLOT DATE: 4/6/2023 3:24:30 PM PLOTTED BY: SHIL

LIGHT TOWER

NORTH BREAKWATER

MONOPILE DIAMETERS OUTSIDE (O. D.)	
60"	4-4L
	4-4R
	5-1L
	5-2L
	5-3L
	5-4L
72"	5-1R
	5-2R
	5-3R
	6-4L
	6-4R
	4-1L
4-2L	
4-3L	
4-1R	
4-2R	
4-3R	
6-1L	
6-2L	
6-3L	
6-1R	
6-2R	
6-3R	

INTERMEDIATE DOLPHIN, TYP (2 PER SLIP)



INNER DOLPHIN, TYP (5 AT SLIP #5) (6 AT SLIPS #4 & #6)

PILE SCHEDULE						
PILE	SIZE	NORTHING	EASTING	TIP EL.	T.O. PILE EL.	NOTES
WW-4LA	30"Ø	13705426.2776	3312876.6528	-115.0'	12.0'	
WW-4LB	30"Ø	13705416.5789	3312879.0893	-115.0'	12.0'	
WW-4LC	30"Ø	13705413.6552	3312867.4509	-115.0'	12.0'	
WW-4LD	30"Ø	13705423.3539	3312865.0145	-115.0'	12.0'	
WW-4LE	24"Ø	13705410.5510	3312883.6968	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4LF	24"Ø	13705409.0892	3312877.8776	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4LG	24"Ø	13705407.6273	3312872.0584	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4LH	24"Ø	13705406.1655	3312866.2392	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4RA	30"Ø	13705384.4232	3312929.4625	-115.0'	12.0'	
WW-4RB	30"Ø	13705372.4247	3312929.2742	-115.0'	12.0'	
WW-4RC	30"Ø	13705372.5816	3312919.2754	-115.0'	12.0'	
WW-4RD	30"Ø	13705384.5801	3312919.4637	-115.0'	12.0'	
WW-4RE	24"Ø	13705387.6891	3312912.5428	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4RF	24"Ø	13705381.6898	3312912.4487	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4RG	24"Ø	13705375.6905	3312912.3546	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
WW-4RH	24"Ø	13705369.6913	3312912.2604	-25.0'	11.5'	B.O. PIN PILE EL = -55'-0"
4-1L	60"Ø	13705378.4199	3312830.3555	-120.0'	20.0'	
4-2L	60"Ø	13705338.1110	3312792.6667	-120.0'	20.0'	
4-3L	60"Ø	13705297.8539	3312754.9126	-120.0'	20.0'	
4-4L	60"Ø	13705259.2014	3312715.1340	-120.0'	20.0'	
4-5L	60"Ø	13705201.8795	3312642.5622	-120.0'	20.0'	
4-6L	60"Ø	13705144.5577	3312569.9905	-120.0'	20.0'	
4-1R	60"Ø	13705328.4191	3312893.4440	-120.0'	20.0'	
4-2R	60"Ø	13705282.5200	3312862.8086	-120.0'	20.0'	
4-3R	60"Ø	13705235.2752	3312833.8713	-120.0'	20.0'	
6-4R	60"Ø	13704979.3781	3313095.7708	-120.0'	20.0'	FIELD VERIFY ALIGNMENT
6-5R	60"Ø	13704890.2860	3313083.0194	-120.0'	20.0'	FIELD VERIFY ALIGNMENT
4-STAIR1	24"SQ	13705433.4753	3312964.8504	-70.0'	2.75'	
4-STAIR2	24"SQ	13705418.1940	3312952.7383	-70.0'	2.75'	
5-STAIR1	24"SQ	13705318.5185	3313044.4080	-70.0'	2.75'	FIELD VERIFY LOCATION
5-STAIR2	24"SQ	13705303.2372	3313032.2947	-70.0'	2.75'	FIELD VERIFY LOCATION
6-STAIR1	24"SQ	13705299.9541	3313155.0277	-70.0'	2.75'	
6-STAIR2	24"SQ	13705281.3436	3313149.2055	-70.0'	2.75'	

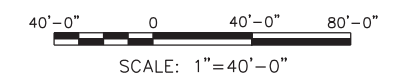
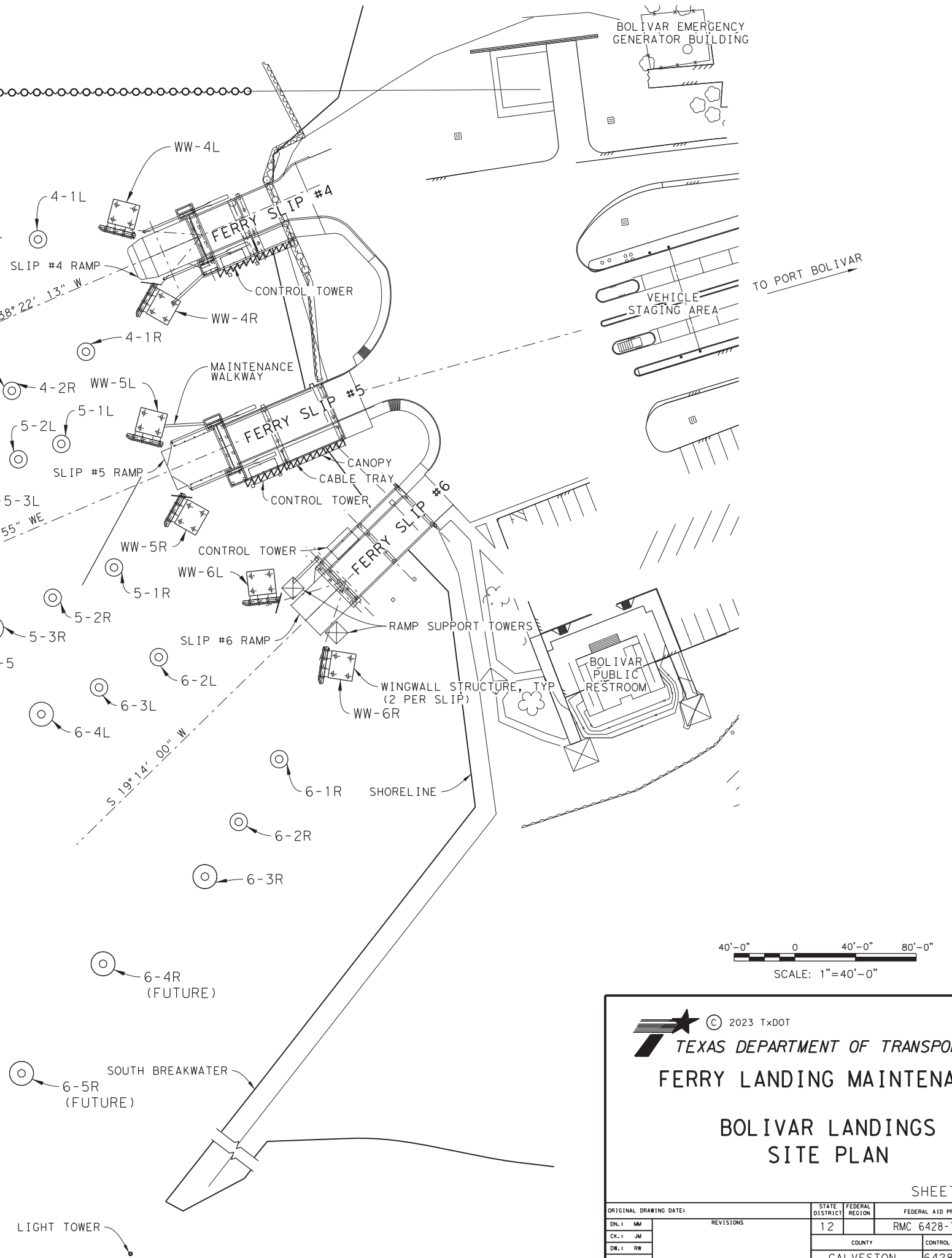
OD: OUTER DOLPHIN TYPE I

GALVESTON BAY

OD: OUTER DOLPHIN
WW: WINGWALL

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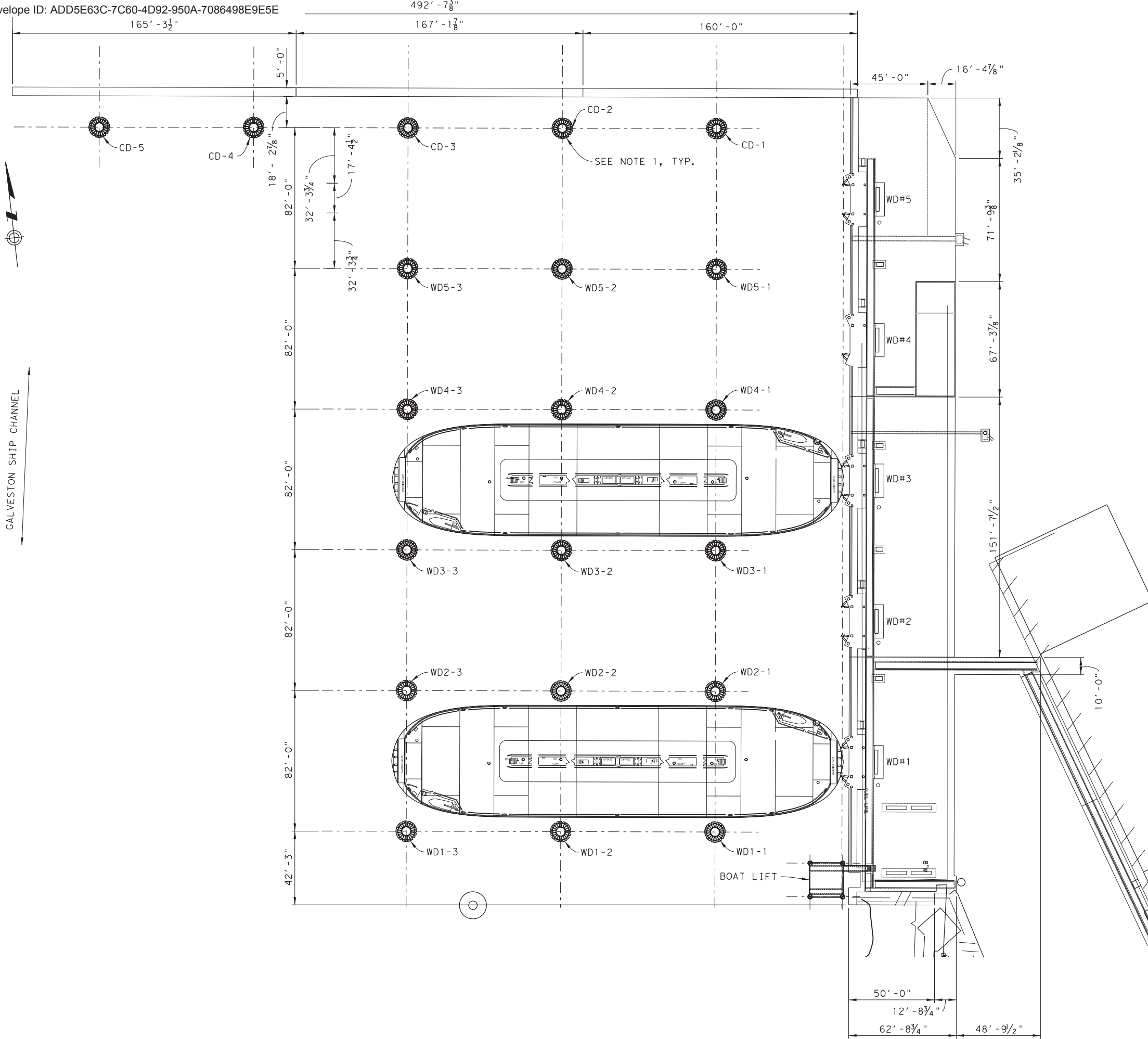


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FERRY LANDING MAINTENANCE
BOLIVAR LANDINGS
SITE PLAN

SHEET 4 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	G-004
DN: J M	REVISIONS		COUNTY:	JOB:
CK: J M			GALVESTON	6428 78 001
DR: R W	REV	DESCRIPTION	DATE	HIGHWAY:
CK: W B				SH87

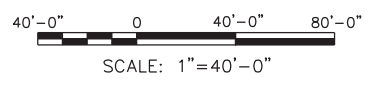
3:24:49 PM 4/6/2023



NOTE:
 1. DOLPHIN IS COMPRISED OF A 60" O.D. MONOPILE AND 9'-10" O.D. DONUT FENDERS.

CD: COMBIWALL DOLPHIN
 WD: WORK DOCK

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FERRY LANDING MAINTENANCE
GALVESTON WORK DOCK & BOAT LIFT
SITE PLAN

SHEET 5 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	G-005
DN: 1 WM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 SH		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-C-005.dgn
 PLOT DATE: 4/6/2023 3:24:58 PM PLOTTED BY: SHIH

Project Number: RMC 6428-78-001

County: Galveston

Highway: SH 87

Control: 6428-78-001

General Notes:

General:

Contractor questions on this project are to be addressed to the following individual(s):

William P. Mallini Email: bill.mallini@txdot.gov

Donald A. Marquise Email: donald.marquise@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

General:

This is a Routine Maintenance Non-Site-Specific Call-Out contract.

The Contractor will begin call out work within the required time for each work order. Work orders are expected to be completed per the contract plans within the number of days allowed for each work order. All call out work orders will have a begin date and number of working days. The Contractor will begin work within 72 hours of notification for call outs, unless otherwise approved by the Engineer; however, call outs requiring a barge

will begin work within 7 calendar days of notification, unless otherwise approved by the Engineer. Work will be completed within the required number of working days. Failure to begin work within the required time and proceed to completion within the required time will result in the assessment of liquidated damages.

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When notify of an emergency repair, Contractor shall respond within 2 hours of notification. Failure to respond within 2 hours of notification will result in the assessment of liquidated damages at the rate of \$2,590 per day.

No work is guaranteed, and no minimum quantity is guaranteed. Line items will only be used on an as needed basis as determined by the department. All items may not be utilized. Buyout is not included with this contract.

Site visits should be performed to properly assess the project. A site visit is essential and strongly encouraged to obtain a complete understanding of the project and project area. A site visit can assist with clarifying details and assessing potential project constraints such as physical and environmental constraints.

When mutually agreed in writing, the Engineer may extend the period of this contract for 1 year if the Contractor has satisfactorily fulfilled the terms and conditions of the contract.

The channel will remain open to marine traffic during repair operations. Coordinate work that will impact boat traffic in the channel with the United States Coast Guard (USCG).

The cost of providing diver(s) required for repair or removal of any bid item will be considered subsidiary to the various bid items.

The execution of all work will be conducted after discussion and agreement by the TxDOT Project Manager or his Representative. Minor details will be discussed. Work will proceed when acceptable to the Project Manager or his Representative

A Work Plan and schedule of values, including Mobilizations and Relocations, and Items of Work will be submitted to TxDOT for approval prior to Mobilization. Any alteration or deviation from the original approved submittal must be resubmitted and approved in writing by TxDOT. This shall include all Contractor Mobilizations and Relocations. Execution of all work will begin with TxDOT approval.

Upon written notice of a work order being issued, order the required materials, and as soon as each line-item materials are available, with approved work plan and TxDOT approval, Mobilize within 10 calendar days and begin work in an expeditious manner. Prosecute work continuously to completion within the working days specified in the approved working plan. Liquidated damages will be assessed when the Contractor fails to complete the work within the specified time for the work plan.

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References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved. Any substitution of materials will require submittal with TxDOT approval.

Line items requiring ordering lead time shall be ordered within 72 hours of the initiation of the line item and written verification shall be submitted to TxDOT Project Manager or his Representative.

TxDOT reserves the right to initiate any item with long lead time to have parts available for repairs as needed. Contractor shall submit actual material costs for payment. Balance of line item shall be paid upon completion of line item.

Line items shall be paid in full upon completion of line item. No partial payments will be allowed unless approved in advance by the Department.

All submittals and/or RFIs must be submitted to TxDOT within 10 contract days upon initiation of the line item. Material shall be ordered within 72 hours of receiving TxDOT approval. Storage of Material will be the responsibility of the Contractor and at Contractor's cost. TxDOT must be satisfied with the security, control, maintenance, and preservation measures. Contractor will be responsible for any damage to any material damaged during the work progress. Contractor will be responsible for any damage to material during storage or transit. Periodic inspections will be conducted during storage and installation. Storage will include long lead time items.

All Contract workers must possess a valid TWIC prior to being approved to work on site. This applies to all work locations and work scopes. There will be no exceptions. All workers must check in at Guard Shack prior to starting work.

Procure permits and licenses, which are to be issued by the City, County, or Municipal Utility District.

If existing Contract expires and existing Contractor does not get new Contract awarded, all leftover materials on hand (MOH) will be delivered to TxDOT and picked up by new Contractor. If existing Contractor is awarded new Contract or Contract is extended, Contractor will keep possession of MOH.

Buy America Act applies. See 2014 Standard Specifications Book (Page 36 Item 6.1.1).

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Two landings in Bolivar and two landings in Galveston must remain operational at all times. While performing work on one landing, the adjacent landing(s) must remain operational at all times. This is applicable to both the Galveston and Bolivar facility.

Do not leave equipment in the ferry landing or work dock when gainful work is not being performed except for overnight where work will be performed the next working day unless directed by the TxDOT Project Manager or his Representative. Equipment is to be relocated from ferry landing over all weekends unless approval is given.

When warranted, the Contractor may conduct the required work on floating intermediate and inner dolphins without removal from the steel monopile upon consultation and approval of the TxDOT Project Manager or his Representative.

Hazardous and non-hazardous waste materials will be disposed of in accordance with all applicable state and federal regulations. Copies of disposal records and manifests will be provided to TxDOT. Contractor shall conduct activities in compliance with applicable Environmental Laws and regulations and other requirements of the Contract relating to the environment, and its protection at all times.

Salvageable parts removed by the Contractor will become the property of the department upon the request of TxDOT Project Manager or his Representative. Should the department waive salvage of any parts removed, said items will become the property of the Contractor. All salvaged material shall include any demo required to remove salvaged material from demo item. Contractor shall store salvaged material at location designed by department.

Do not conduct lifting operations while the ferry vessels are maneuvering or conducting operations in the landing or adjacent landing in which work is being performed. The ferry vessels will not use the landing in which work is being performed unless an unforeseen emergency should arise.

At the TxDOT Project Manager's discretion and approval, repair and maintenance beyond the scope of onsite capabilities can be conducted on the Contractor's property. A twenty four hour notice must be given for any off-site work allowing for the inspector to be present.

The removal of excess marine growth from an Intermediate or Inner Dolphin, if applicable, will be considered subsidiary to the various bid items. All marine growth should be removed in its entirety.

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Pipe piles shall be seamless or straight seam welded and conform to the requirements of ASTM A252. Spiral welded pipe piles are allowed for work dock fenders only. Pipe pile wall thicknesses indicated on the drawings are minimum thickness. No two horizontal splices shall be located closer together than 10 feet. Longitudinal seams in adjacent sections of pipe shall be rotated a minimum of 15 degrees. The use of permanent backing rings is not permitted without specific approval by the TxDOT Project Manager or his Representative. Field splicing of pipe piles is not permitted without prior review and acceptance from the TxDOT Project Manager or his Representative.

New reaction piles shall be ASTM A252 Grade 3 Modified (yield strength = 60 ksi). New fender piles shall also have a minimum yield strength of 60 ksi.

General: Traffic Control and Construction

When design details are not shown on the plans, provide signs and arrows conforming to the latest "Standard Highway Sign Designs for Texas" manual.

Item 7: Legal Relations and Responsibilities

Do not initiate activities in a Project Specific Location (PSL), associated with a U.S. Army Corps of Engineers (USACE) permit area, that have not been previously evaluated by the USACE as part of the permit review of this project. Such activities include those pertaining to, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The permit area includes the waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Assume responsibility for consultations with the USACE regarding activities, including PSLs that have not been previously evaluated by the USACE. Provide the Department with a copy of consultations or approvals from the USACE before initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or if proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The Contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of their determinations for review by the Department or any regulatory agency.

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Document and coordinate with the USACE, if required, before hauling any excavation from or hauling any embankment to a USACE permit area by either 1 or 2 below:

- 1. Restricted Use of Materials for the Previously Evaluated Permit Areas.** Document both the Project Specific Locations (PSL) and their authorization. Maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:
 - a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in the Item, "Excavation" is used for permanent or temporary fill (under the Item, "Embankment") within a USACE permit area.
 - b. Suitable embankment (under the Item, "Embankment") from within the USACE permit area is used as fill within a USACE evaluated area.
 - c. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of at a location approved within a USACE evaluated area.
- 2. Contractor Materials from Areas Other than Previously Evaluated Areas.** Provide the Department with a copy of USACE coordination or approvals before initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:
 - a. The Item, "Embankment" used for temporary or permanent fill within a USACE permit area.
 - b. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of outside a USACE evaluated area.

Do not store any material in waters of the United States inside the right of way without written approval.

The nesting / breeding season for migratory birds is February 15 through September 30.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The

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Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Coordinate with adjacent construction project(s) for all lane closures and landing closures to minimize impacts to the traveling public.

Item 8: Prosecution and Progress

Working days will be computed and charged in accordance with TxDOT 2014 Standard Specifications Section 8.3.1.6. Workdays will be charged Sunday through Saturday. Work being allowed between the hours of 7:00 a.m. and 6:00 p.m. Work on Fridays, Saturdays, Sundays, and National Holidays will only be allowed with prior approval from TxDOT. Work will not be allowed during Spring Break or the week of July 4th without prior approval from TxDOT.

Weather days are not included in this contract. All days are charge workdays including workdays that require prior approval.

The Contractor shall provide 10 calendar days advance written notice to TxDOT Project Manager to obtain approval for scheduling work on Friday, Saturday, Sunday, Spring Break, and Week of July 4th.

Item 7009: Mobilization of Marine Operations and System Repair

6001: Mobilization into site encompasses the Bolivar Ferry landings, Galveston Ferry landings and Galveston Work Docks, subsequently moving to and from Galveston and Bolivar once mobilized into job site, will not constitute mobilization, but will be a relocate as defined in Special Specification 7102. Sequence of work with detailed work scope shall be submitted to TxDOT Project Manager and must be pre-approved in writing before any mobilization. Mobilization shall be based on TxDOT approved schedule of values.

50% of the Mobilization will be paid after Mobilizing into the site with Sequence of work and TxDOT Project Manager's approval. The remaining 50% will be paid after demobilization and the contractor has cleared the Department's Right of Way. Any additional required mobilizations after contract commencement with written approval from TxDOT Project Manager will be paid on the same formula bases.

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If the contractor mobilizes into the work site and then departs the work site without completing the work, such as to pick up material or equipment, this will not be

considered as a demobilization and there will be no compensation for this move. This will be considered subsidiary to the work item.

Item 7102: Relocation of Marine Repair Equipment

6001: The job site as defined will encompass both Bolivar Ferry Landing and Galveston Ferry Landings and Galveston Work Docks, subsequently moving to and from Galveston or Bolivar once mobilized into the job site, will not constitute mobilization, but will be a relocate as defined in Special Specification 7102.

Any required temporary shift out of a landing or work dock to accommodate the needs of the department will constitute a relocate as defined in Special Specification, "Relocation of Marine Equipment." A relocate other than defined in Special Specification, "Relocation of Marine Equipment," will be at the TxDOT Project Manager discretion and approved prior to operations.

If operational needs require a relocate, the TxDOT Project Manager will direct a (1) relocate out of the landing for a specified period of time and one (1) relocate into the landing.

Shifting positions within one landing or work dock will not constitute a relocate as defined in Special Specification, "Relocation of Marine Equipment."

All relocations shall be submitted in writing with Sequence of work at time of mobilization and approved by TxDOT Project Manager in writing. Any unapproved relocations shall be at Contractor cost.

Item 7146: Ferry Landing Maintenance

6002: Sheave Assembly Replacement – Contractor shall secure landing ramp and counterweight in place and remove sheave assembly per project specifications and drawings for Landings #1, #4, or #6. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445.

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TxDOT will supply new sheave and shaft assembly for Contractor to install. Existing counterweight shall be reused. Note: Quantities are per landing (2 towers).

6003: 24" Monopile Replacement for Concrete Tower Pad – At locations where the monopiles will be removed, ensure there is adequate support for the structures above the monopiles, such as installation of temporary support structures or reinforcing of adjacent structures. Once adequate support is placed/installed, remove the existing 24" monopile and install a new 24" monopile per project specifications and drawings for #1 or #6 Landings. New steel piles are 80 feet in length and the top 40 feet shall be coated with Thermal Sprayed Aluminum (TSA) coating. Remove all temporary supports. If tower is to be removed, it will be subsidiary of line item. Activation of 6015 may be used to make repair with TxDOT Project Manager or his Representative approval.

6004: Spring Box Concrete Foundation Replacement at Landings #1, #4, and #6 – Remove the landing ramp assembly, spring box assembly, and the outermost spring box steel base plates and store them in a TxDOT-approved location. Cut and remove a one foot section/strip of concrete at 3 sides of the platform (ones that are exposed to the water). Be careful not to damage any of the steel reinforcements. Roughen the exposed cut concrete surfaces to an amplitude of ¼". Chip into the concrete an additional 6 inches to expose more sections of the steel reinforcements.

Splice new steel bars, that are the same size as the existing ones, with the exposed platform steel reinforcements using mechanical couplers.

Clean all surfaces prior to placing concrete. Place/install new concrete in accordance with the dimensions indicated in the project drawings. Maintain a 3" clear cover between reinforcement and the concrete surface. Install new base plate anchor bolts in accordance with Line Item 7146-6016.

Install new style hinge shaft base plates Line item 7146-6063.

Reinstall the rest of the steel base plates, spring box assembly, and landing ramp assembly. Approximately 5½ cubic yards of concrete is required, per landing, to replace/refurbish the existing spring box concrete foundation. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 421 and 446. Removal and reinstallation of the spring box assembly, spring box steel base plates, and landing ramp are subsidiary to this Line Item.

6005: Chain Fall Replacement Per Landing (Landings #1, #4, or #6) – Unhook the existing 10-ton chain falls from their support bracket plates. Replace the support bracket plates.

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TxDOT to determine if existing brackets can remain. New support bracket plates, which shall be provided by the Contractor, shall be hot-dipped galvanized for corrosion control.

Install new chain falls onto the support bracket plates at each landing. Existing chain falls are Chester Zephyr 10-ton manual chain falls with stainless steel lifting chain and aluminum pull chain.

Housing and lifting chains shall all be Grade 316 stainless steel and match existing lengths of chain and travel. Work shall be in accordance with 2014 Standard Specifications, Item 445. Welds and bare surfaces on in-situ steel members shall be cold galvanized in accordance with TxDOT 2014 Standard Specifications Item 445. Contractor shall verify all measurements. (2 each per landing)

6006: Landing Grating and Passenger Walkway Diamond Plate Replacement Per Landing – Remove existing landing grating and passenger walkway diamond plates and replace with new ones per project specifications and drawings for #1, #4, or #6 Landings. New landing gratings shall be 1½" and 2½" riveted steel gratings. New diamond plates shall be hot-dipped galvanized coated yellow non-skid on top. Secured to grating to lock into place for vehicle traffic. Welds and bare surfaces on in-situ steel members shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Contractor to confirm all sizes and orientation (left hand or right hand) prior to ordering.

6007: Head Log Replacement Per Landing – Remove existing head log and replace with new head log including (14) brackets and (6) angles per project specifications and drawings for #1, #4, or #6 Landings. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445.

6008: Main Lifting Beam (W21x62) Repair (Landings #1, #4, or #6) – Prior to any repair/replacement work, ensure the ramp has adequate support, such as installation of temporary support structures, in case the lifting beam needs to be isolated or separated from the ramp assembly. Once adequate support is installed/placed, replace the lifting beam as needed. Adjacent members damaged during the repair/replacement work shall also be repaired or replaced, as necessary. Remove the temporary supports. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445.

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Lifting beam shall be fitted with additional pad eye, for chain fall operation, and properly aligned with the lifting rams. All bolts shall be in kind and subsidiary to this Line Item.

6009: Channel Iron (C4x7.25) for Small Grating Repair Per Landing (Landings #1, #4, or #6) – Prior to any repair/replacement work, ensure the ramp has adequate support, such as installation of temporary support structures. Once adequate support is installed/placed, repair/replace (24) channel iron members per the project drawings for #1, #4, and #6 Landings. Adjacent members damaged during the repair/replacement work shall also be repaired or replaced, as necessary. Remove the temporary supports. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445.

6010: Landing Ramp Refurbishment Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), remove the landing ramp hinge shaft. Remove the landing ramp assembly and place it in a TxDOT-approved location. At the TxDOT-approved location, inspect the landing ramp assembly and make any necessary repairs or replacement on up to 50% of ramp. All replacement members and/or parts shall be subsidiary of line item and be hot-dipped galvanized. Fully recoat the structure. Welds and bare surfaces on in-situ steel members shall be cold-galvanized.

Reposition the landing ramp assembly and reinstall a new hinge shaft, which shall be made of non-corroding material. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new hinge shaft. Members damaged during the refurbishment work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446. All necessary repairs, including electrical and hydraulic removal and reinstallation, shall be subsidiary to this Line Item.

6011: Concrete Counterweight Block-Lifting Eyebolt Repair Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block and landing ramp. Chip concrete around stub shafts to allow adequate room to weld the new eyelets/eyebolts in place. Remove the existing eyebolts and replace with new eyebolts.

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The new eyebolts are 1½ inch diameter, 19 inch in length with a 3-inch ID eyelet and will have to be welded to existing stub shafts in the concrete block. Fill/replace the chipped concrete areas with epoxy grout. Remove the temporary supports. Work shall be in accordance with TxDOT Standard Specifications 2014, Item 445. (2 each per landing)

6012: Counterweight Block-Lifting Cable Replacement Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block and landing ramp. Remove the existing lifting steel cables and replace with new steel cables. Cables are 32 feet 8 inches in length, ¾ inch diameter, and 6 x 19 wire rope galvanized, with Closed Wire Rope Sockets on each end. The new steel cables are also pre-lubricated with EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent). Remove the temporary supports. Cables will be replaced on both the right and left towers, for a total of (4) cables (two at each tower).

6013: Counterweight Block Angle Tracking Per Landing (Landings #1, #4, or #6) – Line Item includes (2) counterweight towers. Provide and install temporary supports for the concrete counterweight block and landing ramp. Remove the existing concrete block angle guides (L5x5x5/16) and replace with new ones per project specifications and drawings. The new angle guides shall be hot-dipped galvanized. Adjacent members damaged during the replacement work shall also be repaired or replaced as necessary. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the surfaces of the angle guides where the concrete block will travel along. Remove the temporary supports.

6014: Hydraulic Lifting Rams and Swivels Per Landing (Remove and Install) – Replace existing hydraulic lifting rams and swivels with new ones for Landings #1, #4 or #6. Installation of any bolts shall be subsidiary to this Line Item. TxDOT will supply new rams and swivels for Contractor to install. Contractor will supply hydraulic hoses and stainless-steel fittings for marine environments for the new rams. Hoses shall meet J1942 specifications or better. (2 rams per landing, 2 hoses per ram)

6015: One Concrete Pad for Tower Repair (Landings #1, #4, or #6) – Remove damaged, cracked, spalled, and delaminated concrete sections, as well as damaged steel reinforcement. Expose and remove all corroded reinforcements with 10% or more section loss.

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Removed reinforcements shall be replaced in-kind and shall be subsidiary of this line item. Exposed reinforcements with less than 10% section loss shall be left in place, cleaned, and coated with anti-corrosion coating. Depth of concrete removal shall allow for a minimum clearance of 1" between the farthest exposed reinforcement (from original concrete face) and the exposed concrete repair/replacement surface roughen exposed concrete surfaces to be repaired to ¼" amplitude.

Clean all surfaces prior to placing concrete.

Place new concrete and complete repairs per project specifications and drawings. Total concrete to be repaired/replaced is four cubic yards. Work shall be in accordance with TxDOT 2014 Standard Specifications, Item 421.

6016: Install Spring Box Anchor Bolts Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), remove the landing ramp hinge shaft. Remove the landing ramp assembly and place it in a TxDOT approved location. Remove the spring box assembly and place it in a TxDOT-approved location. Remove existing base plate anchor bolts and replace them with new ones per project specifications and drawings. Each spring box assembly has a total of 84 anchor bolts. New anchor bolts will be post-installed. Reinstall the base plates. Reinstall the spring box assembly. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the steel springs. Reposition the landing ramp assembly and reinstall a new hinge shaft. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new hinge shaft. Members damaged during the replacement work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of bolts, aside from the anchor bolts, shall be subsidiary to this Line Item. With the exception of the hinge shaft and steel springs, which will be greased, clean and cold-galvanize welds and bare surfaces.

Work shall be in accordance with Standard Specifications TxDOT 2014, Items 445 and 446.

6017: Repair Spring Box Concrete Foundation (Landings #1, #4, or #6) – Perform this Line Item in conjunction with Line Item 7146-6016. Remove damaged, cracked, spalled, and delaminated concrete sections, as well as damaged steel reinforcement. Expose and remove all corroded reinforcements with 10% or more section loss. Removed reinforcements shall be replaced in-kind. Exposed reinforcements with less than 10% section loss shall be left in place, cleaned, and coated with anti-corrosion coating.

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Depth of concrete removal shall allow for a minimum clearance of 1" between the farthest exposed reinforcement (from original concrete face) and the exposed concrete repair/replacement surface. Roughen exposed concrete surfaces to be repaired to ¼" amplitude. Clean all surfaces prior to placing concrete. Extend the area of concrete placement as necessary per the project drawings. Install additional reinforcements as necessary and splice them to existing ones accordingly. Maintain a 3" clear cover between reinforcement and the concrete surface. Place new concrete and complete repairs per project specifications and drawings. Approximately one cubic yard of damaged concrete shall be replaced. Work shall be in accordance with TxDOT 2014 Standard Specifications, Item 421.

6018: Repair Spring Box Armor Plate at Back Wall Per Landing (Landings #1, #4, or #6) – Remove the L9x4x1/2 member sections attached to the spring box armor plate. Also, remove the steel grating adjacent to the L9x4x1/2 member. Remove and replace damaged and/or severely corroded sections of the armor plate. New armor plate sections shall be hot-dipped galvanized and secured to the concrete backwall via post-installed anchor bolts.

Install new hot-dipped galvanized L9x4x1/2 to the new armor plate sections. Reinstall the removed steel grating. Members damaged during the replacement work shall also be repaired or replaced as necessary. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.

6019: Replace Spring Box Angle L9x4x1/2 Per Landing (Landings #1, #4, or #6) – Perform this Line Item in conjunction with Line Item 7146-6018. Remove damaged and/or severely corroded sections of the L9x4x1/2 member attached to the spring box armor plate. Also, remove the steel grating adjacent to the L9x4x1/2 member. Install new hot-dipped galvanized L9x4x1/2 sections to the armor plate. Reinstall the removed steel grating.

Members damaged during the replacement work shall also be repaired or replaced as necessary. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.

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- 6020: Finger Replacement (Full Set Per Landing) – Replace the landing ramp finger plates in any Landing as per project drawings. General layout of the finger plates is shown in the project drawings. Contractor to verify dimensions and all related appurtenances, such as support brackets, prior to commencing any work. Contractor to ensure proper fit-up for each finger plate. New finger plates shall be coated with Thermal Sprayed Aluminum (TSA) coating. Adjacent members damaged during the replacement work shall also be repaired or replaced as necessary. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.
- 6021: Hydraulic Lifting Rams Per Landing (Remove and Install; Any Landing) – Remove existing hydraulic lifting rams (actuator) and hoses and replace with new rams and hoses per project specifications and drawings. Installation of any bolts shall be subsidiary to this Line Item. TxDOT will supply new rams for Contractor to install. Contractor will supply hydraulic hoses and fittings for the new rams. Hoses will meet J1942 specifications or better. Stainless steel crossover tubing shall be removed from the old ram and reinstalled onto the new ram. All bolts are subsidiary to this Line Item. (2 rams per landing, 2 hoses per ram)
- 6022: Chain Fall Replacement Per Landing (Any Landing) – Unhook the existing chain falls. Replace the shackle-and-pin assemblies supporting the chain falls with new ones that are hot-dipped galvanized. Install new chain falls onto the shackle-and-pin assemblies. Existing chain falls are Chester Zephyr 10-ton manual chain falls with stainless steel lifting chain and aluminum pull chain. Housing and lifting chains shall all be Grade 316 stainless steel (matching existing lengths of chain travel and length). A quantity of (1) for this Line Item equals (2) chain falls.
- 6023: Guard Rail Replacement Per Landing (Any Landing) – Remove damaged guard rail sections (first ten-foot section, all rails, at the end of the ramp) and replace them with new ones per project drawings. There is a total of (10) rails for each ramp – (5) on the right edge and (5) on the left edge. TxDOT will take possession of all usable rails. Adjacent members damaged during the replacement work shall also be repaired or replaced as necessary. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT Standard Specification Item 445.

Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be in kind and subsidiary to this Line Item.

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- 6024: Lifting Cable Replacement Per Landing (Any Landing) – Line Item includes (2) lifting cables. Provide and install temporary supports for the landing ramp. Replace the lifting cables with new ones. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new cables. Replace lifting cable bracket plates. Welds and bare surfaces on in-situ steel members shall be coated with Thermal Sprayed Aluminum (TSA) coating. Installation of any bolts shall be subsidiary to this Line Item. Remove the temporary supports. These lifting cables are the cables on the waterside of the ramp connecting to the overhead beams.
- 6025: Torque Tube Bushing Replacement Per Landing (Any Landing) – Provide and install temporary supports for the landing ramp. Disconnect the lifting cables. Disconnect/remove the torque tube assembly. Remove the existing torque tube bushing members. Install the new torque tube bushing members. Bushing members shall be coated with Thermal Sprayed Aluminum (TSA) coating. Reinstall the torque tube assembly. Reconnect the lifting cables. Remove the temporary supports. Welds and bare surfaces on in-situ steel members shall be coated with Thermal Sprayed Aluminum (TSA) coating. Installation of any bolts shall be subsidiary to this Line Item.
- 6026: Mooring Ring for 60" Monopile Replacement (Any Landing) – Remove the existing mooring ring assembly and replace with a new mooring ring assembly per project specifications and drawings for any landing. In addition, install UHMW pads at the bottom of the mooring ring assembly. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445.
- 6027: Replace Boat Lift Fender – Replace existing 20" MSO Square O Bore 10' long rubber fender with new rubber fender per project specifications and drawings. Installation of bolts shall be subsidiary to this Line Item.
- 6028: Repair Metal Roofing (50 sq. feet) – Replace 50 sq. feet sections of 2 3/8" Grade 316 stainless steel standing seam roof panels for the boat lift or any Landing per project specifications and drawings. Installation of bolts shall be subsidiary to this Line Item.
- 6029: 60" Diameter x 140' Length Monopile Replacement (Any Landing) – Remove donut fender assemblies and mooring ring (if applicable), and place in a TxDOT-approved location. Remove the monopile.

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If monopile cannot be removed, it can be cut beneath the mud line and slightly relocated with TxDOT Project Manager approval or his Representative. Drive a new 60" diameter monopile at its designated location per the project specifications and drawings. Alternatively, if the new monopile is sufficiently smaller in size than the existing one, the new monopile can be installed in the same location as, and within the inside area of, the cut monopile. Install a new steel cap plate on the monopile. Steel pipe caps shall be 1-inch-thick steel plate. New steel pile and cap plate shall be coated with Thermal Sprayed Aluminum (TSA) coating. TSA coating with a sealer (Carboline 893 or approved equal) shall be applied to the top 50'11" section of the steel pile. Reinstall the donut fender assemblies and mooring ring (if applicable). Installation of any bolts shall be subsidiary to this Line Item. Place new retro-reflective adhesive signs on the new monopile.

6030: 60" Diameter x 20' Length Monopile Extension (Any Landing) – Install a new monopile extension and 1-inch-thick steel cap plate. New steel pile extension and cap plate shall be coated with Thermal Sprayed Aluminum (TSA) coating. Place new retro-reflective adhesive signs on the new monopile extension.

6031: 9'10" Donut Fender Full Replacement (Any Landing/Work Dock) – Replace existing donut fenders (full Donut Fender units) at the inner dolphin position or any work dock position with new Trelleborg Model 60-UHC donut fenders or equivalent. The upper unit donut fender shall have a 70% maximum foam compression with 180 ft-kip minimum energy absorbed and 350 kips maximum reaction. Ferries/vessels shall make contact within the bottom 1/3 section of the new upper unit donut fender assembly. Replace the existing lower unit donut fender (full Donut Fender foam filled flotation unit), at the inner dolphin, with a new foam filled flotation unit. The new upper unit donut fender shall have (2) rows of (18) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (36) pads. The new lower donut fender flotation unit shall have (2) rows of (16) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (32) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT. Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. All work shall be completed per the project specifications and drawings.

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Full replacement shall also include the mooring ring assembly with (8) tie off locations, UHMW wearing pads underneath the mooring ring assembly, composite plastic timber fender elements, UHMW pads attached to the outboard side of the timber fenders, and chain support assemblies with hose protection for the timber fender elements. All items shall be provided and installed by the Contractor. Installation of lag bolts for the UHMW pads at the outboard side of the timber fenders shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 5" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. Ballast is included as per the drawings and specifications.

6032: 13'8" Donut Fender Full Replacement (Any Landing) – Replace existing donut fenders at the intermediate dolphin with new Trelleborg Model 60-UHC donut fenders or equivalent. The upper unit donut fender shall have a 70% maximum foam compression with 700 ft-kip minimum energy absorbed and 1000 kips maximum reaction. Ferries/vessels shall make contact within the bottom 1/3 section of the new upper unit donut fender assembly. Replace the existing lower unit donut fender (full Donut Fender foam filled flotation unit), at the intermediate dolphin, with a new foam filled flotation unit. The new upper unit donut fender shall have (2) rows of (18) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (36) pads. The new lower donut fender flotation unit shall have (2) rows of (16) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (32) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT. Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. All work shall be completed per the project specifications and drawings. Full replacement shall also include the mooring ring assembly, UHMW wearing pads underneath the mooring ring assembly, composite plastic timber fender elements, UHMW pads attached to the outboard side of the timber fenders, and chain support assemblies with hose protection for the timber fender elements. All items shall be provided and installed by the Contractor. Installation of lag bolts for the UHMW pads at the outboard side of the timber fenders shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 5" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. Ballast is included as per the drawings and specifications.

6033: 9'10" Donut Fender Upper Unit Replacement (Any Landing) – Replace existing upper unit donut fender at the inner dolphin with new Trelleborg Model 60-UHC donut fender or equivalent.

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The new unit shall have a 70% maximum foam compression with 180 ft-kip minimum energy absorbed and 350 kips maximum reaction. Ferries/vessels shall make contact within the bottom 1/3 section of the new upper unit donut fender assembly. The new upper unit donut fender shall have (2) rows of (18) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (36) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT.

Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. All work shall be completed per the project specifications and drawings. Installation of lag bolts shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 5" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. Line Item includes the removal of the mooring ring and its installation onto the replacement unit.

6034: 9'10" Donut Fender Lower Unit Replacement (Any Landing) – Replace existing lower foam filled flotation unit at the inner dolphin with a new foam filled flotation unit. The new unit shall have (2) rows of (16) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (32) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT. Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. Add ballast plates under the mooring ring per the project specifications and drawings. Installation of bolts shall be subsidiary to this Line Item. All work shall be completed per the project specifications and drawings.

6035: Donut Fender Removal, Clean, Inspect and Repair (Any Landing) – Remove mooring ring assembly, if applicable, and place in a TxDOT-approved location. Remove donut fender assembly and place in a TxDOT-approved location. At the TxDOT-approved location, disconnect the chain assembly (which includes shackles and pad eyes) and plastic timbers (with the UHMW pads) from the donut fender flotation unit. Clean and inspect the flotation unit and bearings. Replace broken or lost pad eyes and UHMW bearings. Repair cracks on and/or penetrations through the metal portion of the donut fender. Reconnect/reinstall the chain assembly and plastic timbers. Waterblast the monopile to remove marine growth, then apply anti-fouling compound. Reinstall the donut fender assembly to the monopile. Reinstall the mooring ring assembly. Installation of any bolts shall be subsidiary to this Line Item.

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Replacement of chains and shackles shall be subsidiary to this Line Item and shall be Grade 316 stainless steel. Ballast plates shall be removed, as needed, to correct float height to levels as per the drawings and specifications.

- 6036: Donut Fender Timber Replacement (12"x12"x5.25' Timbers, UHMW Pads, and Chain Assembly; Any Landing) – Disconnect/remove and replace damaged chain assembly members, plastic timbers, and UHMW pads in accordance with Trelleborg instructions and/or recommendations. Installation of bolts shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 7" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. If safety is a concern, replacement work may take place in a location approved by the TxDOT Project Manager or his representative.
- 6037: Donut Fender Timber Replacement (12"x8"x4.75' Timbers, UHMW Pads, and Chain Assembly; Any Landing) – Disconnect/remove and replace damaged chain assembly members, plastic timbers, and UHMW pads in accordance with Trelleborg instructions and/or recommendations. Installation of bolts shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 7" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. If safety is a concern, replacement work may take place in a location approved by the TxDOT Project Manager or his representative.
- 6038: Donut Fender UHMW Replacement (Any Landing) – Damaged and/or missing lag bolts (with washer) and UHMW pads shall be replaced in-kind per project specifications and drawings. Bolts are 5/8" in diameter, 7" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer.
- 6039: 13'8" Donut Fender Lower Unit Replacement (Any Landing) – Replace existing lower foam filled flotation unit at the intermediate dolphin with a new foam filled flotation unit. The new unit shall have (2) rows of (16) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (32) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT. Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. Add ballast plates under the mooring ring per the project specifications and drawings. Installation of bolts shall be subsidiary to this Line Item. All work shall be completed per the project specifications and drawings.
- 6040: Replace Wing Wall Timbers and UHMW Pads (Any Landing) – Replace existing 12"x12"x16' composite plastic timber fender elements and 2"x12"x16' UHMW plastic facing with new elements.

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Installation of bolts shall be subsidiary to this Line Item. Bolts for the timber fender elements are A307, galvanized, 3/4" in diameter, and each bolt shall have a 3/4" galvanized washer. For the UHMW pads, bolts are 13" in length x 1/2" in diameter, Grade 316 stainless steel, and each bolt shall have a 1/2" Grade 316 stainless steel washer. All work shall be completed per project specifications and drawings. Line item is per each timber with UHMW pad.

6041: Replace Wing Wall UHMW Pads (Any Landing) – Replace existing 2"x12"x16' UHMW plastic facing with new elements. Installation of bolts shall be subsidiary to this Line Item. Bolts are 13" in length x 1/2" in diameter, Grade 316 stainless steel. Each bolt shall have a 1/2" Grade 316 stainless steel washer. All work shall be completed per project specifications and drawings. Line item is per each UHMW pad.

6042: Outer Dolphin Replacement (Type II; Any Landing) – This Line Item pertains to an updated design of an Outer Dolphin, not the existing Type II Outer Dolphin mentioned in Line Item 7146-6044. Drive three new 42" diameter plumb piles behind the Type I outer dolphin. Weld steel 3/4" thick cap plates on the three piles. Remove the existing 36" diameter fender piles and fender panel assemblies. 16" pin piles will remain in place. They are out of the footprint of new pile. Remove the existing leg fenders. Remove the leg fender mounting brackets and grind smooth the surface of the MC18 perimeter framing of the concrete diaphragm at these locations. Remove the hold down bar assemblies and pile caps at the four existing reaction piles. Weld pile extensions, with steel 3/4" pile caps, on the four existing reaction piles. Extend the navigation aide steel pipe support and relocate the control box as necessary. Remove the existing guard rails and ladder rails that extend above the concrete diaphragm. Grind smooth the surface of the MC18 perimeter framing of the concrete diaphragm at these locations. Install the Type II outer dolphin steel framing, which is prefabricated offsite, on top of the Type I outer dolphin concrete diaphragm and weld it to the MC18 perimeter framing of the concrete diaphragm. Weld new fender mounting plates. Weld new hold down bar assemblies on the pile extensions and the three new 42" diameter piles. Install steel grating on the steel framing. Cut/trim steel grating to fit. Install the new ladder assembly, ladder walkway, and new guard rails. Remove the rest of the original ladder assembly. Install new 18" diameter fender piles. Install the new fender panel assemblies, which are prefabricated offsite. Secure the fender panel assemblies to the fender piles via steel pipe shear lugs.

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Install new rubber cone fenders between the new fender panel assemblies and new fender mounting plates. Install fender chain assemblies—link chains, chain tensioners, shackles with pins, and steel brackets for the chain assemblies. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts, with the exception of steel piles, shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Steel pipe piles, on the other hand, shall be coated with Thermal Sprayed Aluminum (TSA) coating. Contractor to verify dimensions and clearances prior to commencing work. Contractor's sequence of work shall be submitted to the TxDOT Project Manager for approval prior to beginning work. Field adjustments shall only be done with the written approval of the TxDOT Project Manager. All work shall be completed per project specifications and drawings.

6043: Fabricate and Install Handrail on (1) Outer Dolphin or Wing Wall (Any Landing) – Remove damaged and/or severely corroded handrails and replace with new ones per project drawings. Adjacent members damaged during the replacement work shall also be repaired or replaced as necessary. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts shall be hot-dipped galvanized.

Bolts shall be Grade 316 stainless steel. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445.

6044: Outer Dolphin Repair (Type II) – Outer Dolphin Type II has three separate fender systems: one at the front of the outer dolphin (directly outboard) and one at each side. The side fender systems are mirror images of each other. This Line Item covers the fender panel assembly and its support structures at either side of the outer dolphin. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts, with the exception of the steel fender piles, shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Steel fender piles, on the other hand, shall be coated with Thermal Sprayed Aluminum (TSA) coating with sealer (Carboline 893 or approved equal). If safety is a concern, some of the repair work may take place in a location approved by the TxDOT Project Manager or his representative.

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- 6045: Outer Dolphin Repair (Type I) – This Line Item covers repairs for the typical Outer Dolphin Type I fender system, which includes the steel pin pile, steel fender pile, fender panel assembly and attachments, rubber fender, and support chains. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts, with the exception of steel piles, shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Steel pipe piles, on the other hand, shall be coated with Thermal Sprayed Aluminum (TSA) coating with sealer (Carboline 893 or approved equal). If safety is a concern, some of the repair work may take place in a location approved by the TxDOT Project Manager or his representative. If the 16” pin piles cannot be removed a 130’x36” pile may be driven over the existing pin pile.
- 6046: Replace Navigation Lights Per Landing (Any Landing, Bolivar Navigation Towers, or Work Dock) – Replace existing navigation lights with new Sealite navigation lights manufactured by Sealight USA, Light #: SL-70-W (flash rate-fixed/steady burn), which uses an SL-70-W battery (B-NiMH-3.6V 8 Ah with bird spike SL-70-W). Each timeline item is initiated contractor will replace 2 existing lights per project specifications and drawings for any landing, Bolivar navigation towers, or Work Docks. Installation of any bolts and light fixtures/assemblies shall be subsidiary to this Line Item. New steel members/parts shall be hot-dipped galvanized.
- Bolts shall be Grade 316 stainless steel. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT Standard Specification Item 445. (Unit quantity of 1 each corresponds to 2 lights)
- 6047: Fabricate and Install Ladders on Outer Dolphin or Navigation Tower (Any Landing, or Bolivar Navigation Towers) – Remove ladder sections/members and replace with new ones per project drawings. Adjacent members damaged during the replacement work shall also be repaired or replaced as necessary. Installation of any bolts shall be subsidiary to this Line Item. New steel members/parts shall be hot-dipped galvanized. Welds and bare surfaces on in-situ steel members shall be cold-galvanized in accordance with TxDOT 2014 Standard Specification Item 445.
- 6048: Replace Adhesive Sign Per Landing (Any Landing) – Line Item includes (1) sign. Replace damaged and/or missing retro-reflective adhesive sign with new sign per project specifications and drawings for Any Landing/Work Dock. TxDOT will provide the signs. Signs are located on both the starboard side and port side of each slip entry.

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- Signs shall be installed by bolting to UHMW pads or by Stainless Steel Straps around Monopile. Both Bolts and Straps are considered subsidiary to this line item.
- 6049: Replace Slow Bell Sign Per Landing (Any Landing) – Line Item includes (1) sign. Replace damaged and/or missing “Slow Bell” sign with new sign per project specifications and drawings for Any Landing/Work Dock. TxDOT will provide the signs. Signs are located on both the starboard side and port side of each slip entry. Signs shall be installed by bolting to UHMW pads or by Stainless Steel Straps around Monopile. Both the Bolts and Straps are considered subsidiary to this line item.
- 6050: Replace Landing Utility Raceway Supports Brackets on #1, #4, and #6 Landings (Per Bracket) – Replace existing utility raceway support brackets with newly fabricated stainless steel support brackets for Landings #1, #4, and #6. Landing #1 will require two (2) brackets, landing #4 will require two (2) brackets, and landing #6 will require two (2) brackets. The new brackets will be bolted in place where the original brackets were located. TxDOT will supply the new support brackets. Installation or replacement of any bolts, replacement of anchor support bracket bolts and nuts, any modifications to brackets shall be subsidiary to this Line Item. Use hot-dipped galvanized anchor studs, bolts, washers, and lock washers.
- 6051: Replace Landing Utility Raceways (Total of 120 Linear Feet) – Replace existing utility raceways with newly fabricated stainless-steel raceways for Landings #1, #4, and #6. Landing #1 will require forty (40) linear feet of raceway, landing #4 will require forty (40) linear feet of raceway and landing #6 will require forty (40) linear feet of raceway. Raceways will rest on existing support brackets located on the north and south side of the landings. TxDOT will supply the raceways. Installation or replacement of any bolts or nuts shall be subsidiary to this Line Item. Apply anti-corrosion coating (cold galvanize spray or brush on) on welds (if applicable).
- 6052: Repair Raceway Support Brackets on Any Landing (Per Bracket) – Raceway support brackets will be removed, recoated with Thermal Sprayed Aluminum (TSA) coating, and reinstalled. All nuts and anchor bolts shall be galvanized, and installation will be subsidiary to this Line Item. Provide temporary supports as needed.
- 6053: Install Shore Power on Anyone Landing/Work Dock – Contractor will supply stainless steel Electrical Control Box to support 480-volt shore power to Landing as outlined in the contract.

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In addition, Contractor will supply Meltric Connector DR200 inlet (male), plug parts #37-28043-972-4x, 200A, 480V, 3P+G+2AUX, Type 4X with metal tightening straps on each side (set at the 15-set point), including oversized metal handle with 2" NPT, part #795PON20, and aluminum cord grip with aluminum mesh, part #CG2002AM. All cabling from power source (power source to be determined by TxDOT) to Control Box at each landing, all cabling from Control Box to South Landing Tower or South A-Frame Tower cable hanging brackets shall be in approved conduit. At this point (determined by TxDOT), enough cable to reach shore power connection on vessel will be looped onto hanging bracket mounted by TxDOT and Metric Male Plug installed at end run of cabling. Cables shall be 2/0 with 2/aux.

6054: Move Contact Surface of Wing Wall (Landings #1, #4, or #6) – Remove the 12"x12"x16' composite plastic timber fenders and 6"x8"x1'-0" composite plastic timber spacer blocks and place them in a TxDOT-approved location. If still functional, the 2"x12"x16' UHMW plastic facing elements do not need to be detached from the timber fenders. All non-functional and/or severely damaged timber fenders and UHMW plastic facing elements shall be discarded and replaced. Attach a new wide flange steel beam member (W6x25 for the wingwalls at Landing #6 and W18x97 for the wingwalls at Landings #1 and #4), with steel plate stiffeners and protective coating, onto each W30x99 wale beam via a bolted connection. The new wide flange steel beam members shall also have predrilled holes matching the attachment points for the timber fenders. All remaining bare steel surfaces shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Remove all marine growth, clean, then install the plastic timber fenders (with the UHMW plastic facing elements attached) and plastic timber spacer blocks to the new steel beam members. Installation of bolts shall be subsidiary to this Line Item.

Bolts for the timber fender elements are A307, galvanized, 3/4" in diameter, and each bolt shall have a 3/4" galvanized washer. For the UHMW facing elements, bolts are 13" in length x 1/2" in diameter, Grade 316 stainless steel, and each bolt shall have a 1/2" Grade 316 stainless steel washer. This Line Item is per landing.

6055: Remove Unutilized Monopile and Donut Fenders – Monopiles and donut fenders that are not being used shall be removed from the slips per the direction of TxDOT. Monopiles shall be pulled out and become the property of the Contractor, unless otherwise notified by TxDOT. If the pile cannot be pulled out by any means, cut the pile five feet below the mudline, and deliver the cut pile to an approved disposal area.

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Donut fenders that are still useable, as determined by TxDOT, shall either be relocated to a different monopile dolphin location or stored in a TxDOT-approved location. TxDOT shall determine where the useable donut fenders shall be placed. Donut fenders that are damaged, unusable, and/or beyond repair, on the other hand, shall be disposed of at an approved location. Installation of any bolts shall be subsidiary to this Line Item.

6056: 13'8" Donut Fender Upper Unit Replacement (Any Landing) – Replace existing upper unit donut fender at the intermediate dolphin with new Trelleborg Model 60-UHC donut fender or equivalent. The new unit shall have a 70% maximum foam compression with 700 ft-kip minimum energy absorbed and 1000 kips maximum reaction. Ferries/vessels shall make contact within the bottom 1/3 section of the new upper unit donut fender assembly. The new upper unit donut fender shall have (2) rows of (18) 24"x3"x2.25" UHMW plastic bearing pads equally distributed along the inner diameter of the core, for a total of (36) pads. The steel core shall be coated with Thermal Sprayed Aluminum (TSA) coating. The minimum thickness of the TSA coating shall be 14 mils DFT. Apply anti-fouling (sealant) coating on top of the exposed portion of the TSA coating. All work shall be completed per the project specifications and drawings. Installation of lag bolts shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 5" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. Line Item includes the removal of the mooring ring and its installation onto the replacement unit.

6057: Replace Old Style Landing Rockers Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), detach the lifting steel cables and remove the landing ramp hinge shaft. Remove the landing ramp assembly and place it in a TxDOT-approved location. Remove the old-style landing rockers (14 total) and replace them with new ones that are fully cylindrical. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new rockers.

The landing ramp assembly shall be modified as necessary to accommodate the new rockers. Reposition the landing ramp assembly and reinstall a new hinge shaft, which shall be made of non-corroding material. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new hinge shaft as well. Members damaged during the rocker replacement work shall also be repaired or replaced as necessary. Reattach the lifting steel cables, then remove the temporary supports. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446.

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- 6058: Install New Bolts for Any Landing Cover Plates Per Landing – Remove and replace the existing bolts for the steel plates covering the joint/transition area between the landing ramp steel grating and the adjacent concrete deck. Bolts are 7.5"x3/4" UNC Grade 316 stainless steel bolts. The threaded section at each bolt is 1.5" long. Each bolt shall have a Grade 316 stainless steel washer. There are (3) 9'1/2"x24" steel cover plates per landing and each cover plate have (18) bolts. All bolts shall be replaced at each landing. Tighten/torque the bolts to 131 ft-lbs. This Line Item also includes the installation/application of removable lock tight on the bolt threads.
- 6059: Repair Top Seal of Donut Fender (Maintenance Item) – Remove the donut fenders (upper and lower unit) and all fender attachments from the monopile and place them in a TxDOT-approved location. Detach all elements connected to the donut fenders as necessary. Clean the donut fenders. Reapply/repair sealant on the donut fenders per the manufacturer's recommendations. Reinstall the donut fenders, including all fender attachments, to the monopile. Installation of any bolts shall be subsidiary to this Line Item.
- 6060: Counterweight Tower Leg Repair Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the counterweight tower, concrete counterweight block, and landing ramp. Detach the lifting steel cables from the concrete counterweight block. Remove/cut the structurally deficient sections of the counterweight tower legs. Remove all attachments within the repair area prior to cutting. Splice new steel members/sections in the cut area via welding (at Landing #4, as an alternative, splicing can be performed via bolted connection; see drawings for connection details). Reattach all previously removed attachments. Reattach the lifting steel cables, then remove the temporary supports. Counterweight tower members damaged during the repair work shall be repaired or replaced as necessary. Welds and bare steel surfaces shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.
- 6061: Remove/Refurbish Unutilized Counterweight Tower Members and/or Attachments Per Landing (Landings #1, #4, or #6) – Provide and install temporary supports for the counterweight tower, concrete counterweight block, and landing ramp as needed. Remove tower members and/or attachments, such as hangers, pad eyes, brackets, that are no longer needed as determined by TxDOT. Members not included for removal that are damaged during the refurbishment work shall be repaired or replaced as necessary. Remove all temporary supports.

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- Steel surfaces and welds made bare by the removal/refurbishment work, as well as from any related repair work, shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.
- 6062: Install TxDOT-provided Timber Fenders Per Dolphin – Remove and replace damaged timber fenders with TxDOT-provided timber fenders. The replacement fenders can either be new or salvaged. Replacement of UHMW wearing pads, which shall be provided and installed on the timber fenders by the Contractor, and the installation of lag bolts for the UHMW pads at the outboard side of the timber fenders shall be subsidiary to this Line Item. Bolts are 5/8" in diameter, 7" long, Grade 316 stainless steel lag bolts. Each lag bolt shall have a 5/8" Grade 316 stainless steel washer. If safety is a concern, the donut fenders can be removed from the monopile and placed in a TxDOT-approved location where the installation of new timber fenders can be performed.
- 6063: Replace/Retrofit Spring Box (Landings #1, #4, or #6) – Provide and install temporary supports for the concrete counterweight block (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), remove the landing ramp hinge shaft. Remove the landing ramp assembly and place it in a TxDOT-approved location. Remove the old hinge shaft base plates (7 total per landing). Replace base plate anchor bolts as needed. Install new style hinge shaft base plates per project specifications and drawings. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the steel springs. Reposition the landing ramp assembly and reinstall a new hinge shaft. Apply EAL-type grease (i.e., Panolin Biogrease EP 2 or equivalent) on the new hinge shaft. Members damaged during the replacement work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of bolts shall be subsidiary to this Line Item. In case new base plate anchor bolts are needed to be installed, perform this Line Item in conjunction with Line Item 7146-6016. With the exception of the hinge shaft and steel springs, which will be greased, clean and cold-galvanize welds and bare surfaces. Work shall be in accordance with Standard Specifications TxDOT 2014, Items 445 and 446.
- 6064: Relocate Pair of Donut Fenders (Upper Unit and Lower Unit) – This Line Item covers the relocation/swapping of donut fenders between monopile dolphin locations. Donut fenders shall be relocated in pairs (upper and lower unit) and the monopile dolphins involved in the relocation shall be determined by TxDOT.

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Elements to be relocated include all attachments to the donut fenders, such as mooring ring assemblies, timber fender assemblies, and chain assemblies. Items damaged during the relocation shall be repaired or replaced as necessary. Do not reinstall damaged donut fenders and fender attachments. Installation of any bolts shall be subsidiary to this Line Item.

6065: Repair Donut Fender Lower Unit (9'10" and 13'8") – Remove the donut fenders (upper and lower unit) and all fender attachments from the monopile and place them in a TxDOT-approved location. Detach all elements connected to the donut fender lower unit. Clean the donut fender lower unit and inspect for bearing damage, damage/cracks on the floatation component, loss of coating, weld damage, and missing elements. Replace or repair bearings, seal cracks, reapply coating, repair welds, and replace missing parts as necessary. Minor repairs shall be performed at the TxDOT-approved location. For major repairs, as determined by TxDOT or TxDOT Representative, the donut fender shall be sent to the manufacturer for refurbishment. If the manufacturer determines that the donut fender is not repairable, it shall be discarded. Donut fender lower units that are repaired, as well as all attachments and the corresponding donut fender upper units, shall be reinstalled on the monopiles. Installation of any bolts shall be subsidiary to this Line Item.

6066: Shore Power Maintenance/Repair – Perform maintenance on, repair, and/or replace shore power components per the manufacturers' recommendations. Ensure components are de-energized prior to performing any work. Only use equipment, materials, and procedures approved and/or recommended by the components' manufacturer(s). Structures, support members, and other components not included in this Line Item that are damaged during the maintenance/repair/replacement work shall be repaired or replaced as necessary. Steel surfaces and welds made bare by the work covered in this Line Item, as well as from any related repair work, shall be cold galvanized in accordance with TxDOT 2014 Standard Specification Item 445. Installation of any bolts shall be subsidiary to this Line Item.

6067: Complete Replacement of Outer Dolphin – Remove handrails, ladder, and navigation aids. Remove fender panels, including all mounting hardware. Remove rubber fenders. Remove/demolish the dolphin deck/platform.

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Whenever possible, completely remove all existing piles. Otherwise, cut the piles at least fivefeet below the mudline. Ensure all cut piles are permanently and completely plugged or covered. Install the new outer dolphin.

- 6068: Apply protective coating on one third (1/3) of the total area (or length) of the wall, on both sides and/or as designated by TxDOT, including the steel cap plates for the steel pipe piles and all exposed welds. Apply coating down -2 FT of Tide Line. The type of coating to use should have adequate anticorrosive properties, can be applied on wet surfaces, and not harmful to the marine environment, such as BIO-DUR 560 epoxy coating (manufactured by Thin Film Technology, Inc.) or an equivalent protective coating product. Surface preparation for the combi wall shall be in accordance with the protective coating manufacturer's instructions/recommendations.
- 6069: Refurbish A-frame Counterbalance Structure (Any Landing) – Provide and install temporary supports for the landing ramp and the A-frame counterweight beams (at both sides of the landing ramp). Disconnect all mechanical and electrical connections. Remove the chain falls and drag link assemblies/lifting cables in accordance with Line Items 6022 and 6024, respectively, and store in a TxDOT-approved location. Remove the lower pintle bearing assemblies and landing ramp assembly in accordance with Line Items 6071 and 6072, respectively. Detach the hydraulic lifting rams, including all connected hoses, in accordance with Line Item 6021. Remove the torque tube assembly between the counterweight beams in accordance with Line Item 6025. Remove the counterweight beams and store in a TxDOT-approved location. Remove the upper pintle bearing assemblies in accordance with Line Item 6070. Remove the A-frame structure and place in a TxDOT-approved location. All components that were removed shall be completely disassembled, inspected, replaced (as required/needed), and recoated (as needed) in accordance with their respective Line-Item procedures, specifications, and/or drawings. Install a fully coated refurbished A-frame structure. Install new upper pintle bearing assemblies in accordance with Line Item 6070. Install/re-install the counterweight beams. Install/reinstall the torque tube assembly between the counterweight beams in accordance with Line Item 6025. Install/re-install the hydraulic lifting rams and all associated hoses in accordance with Line Item 6021. Install new lower pintle bearing assemblies in accordance with Line Item 6071. Install/re-install the land ramp assembly in accordance with Line Item 6072. Install new bolts for the landing ramp cover plates in accordance with Line Item 6058. All damaged guard rails shall be replaced in accordance with Line Item 6023. Install/re-install the drag link assemblies/lifting cables in accordance with Line Item 6024.

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Attach/re-attach the chain falls in accordance with Line Item 6022. Reconnect all mechanical and electrical connections. Remove the temporary supports.

Members/components damaged during the refurbishment work shall be repaired or replaced as necessary. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446. All electrical and hydraulic removal and reinstallation shall be subsidiary to this Line Item.

6070: Upper Pintle Bearing Replacement at A-frame Counterbalance Structure (Any Landing) – Provide and install temporary supports for the landing ramp. While fully supporting the A-frame counterweight beams (i.e., by crane), remove both drag link assemblies from the counterweight beams. Detach both actuator rods from their respective clevis assembly and securely strap the actuator cylinders to the A-frame. Detach the torque tube assembly from the counterweight beams. Detach the counterweight beams from their respective pintle bearing carriers and place them in a TxDOT-approved location. Remove the pintle bearing carriers, pintle bearing sockets, pintle retainers, and pintles. Inspect all pintle bearing components. All inspection findings shall be presented in a report and submitted to TxDOT. The entire upper pintle bearing assembly shall be replaced, including the pintle bearing carriers, pintle bearing sockets, pintle retainers, and pintles. All replacement members and/or parts shall be subsidiary to this line item and shall be hot-dipped galvanized as required. Reinstall the pintles and pintle retainers. Reinstall the pintle bearing sockets and pintle bearing carriers. Reinstall the counterweight beams. Reinstall the torque tube assembly between the counterweight beams. Reattach the actuator rods to their corresponding clevis assembly. Reinstall the drag link assemblies to the counterweight beams. Members damaged during the refurbishment work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446. All electrical and hydraulic removal and reinstallation shall be subsidiary to this Line Item.

6071: Lower Pintle Bearing Replacement at A-frame Counterbalance Structure (Any Landing) – Provide and install temporary supports for the A-frame counterweight beams (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), detach both drag link assemblies from the landing ramp, then remove the transition plates located at the back of the landing ramp. Remove the pintle bearing mounting brackets. Detach the landing ramp assembly from the pintle bearing carriers and place it in a TxDOT-approved location.

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Remove the pintle bearing carriers, pintle bearing sockets, pintle retainers, and pintles. Inspect all pintle bearing components. All inspection findings shall be presented in a report and submitted to TxDOT.

The entire lower pintle bearing assembly shall be replaced, including the mounting brackets, pintle bearing carriers, pintle bearing sockets, pintle retainers, and pintles.

All replacement members and/or parts shall be subsidiary to this line item and shall be hot-dipped galvanized as required. Reinstall the pintles and pintle retainers. Reinstall the pintle bearing sockets and pintle bearing carriers. Reposition the landing ramp assembly and reinstall the pintle bearing mounting brackets, drag link assemblies, and the transition plates at the back of the landing ramp. Members damaged during the refurbishment work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446. All electrical and hydraulic removal and reinstallation shall be subsidiary to this Line Item.

6072: Landing Ramp Refurbishment Per Landing (Any Landing) – Provide and install temporary supports for the A-frame counterweight beams (at both sides of the landing ramp). While fully supporting the landing ramp (i.e., by crane), detach both drag link assemblies from the landing ramp, then remove the transition plates located at the back of the landing ramp. Remove the pintle bearing mounting brackets. Detach the landing ramp assembly from the pintle bearing carriers and place it in a TxDOT-approved location. At the TxDOT-approved location, inspect the landing ramp assembly and make any necessary repairs or replacement on up to 50% of ramp. All replacement members and/or parts shall be subsidiary to this line item and shall be hot-dipped galvanized. Recoat entire ramp as required. Welds and bare surfaces on in-situ steel members shall be cold-galvanized. Reposition the landing ramp assembly and reinstall the pintle bearing mounting brackets, drag link assemblies, and the transition plates at the back of the landing ramp. Members damaged during the refurbishment work shall also be repaired or replaced as necessary. Remove the temporary supports. Installation of any bolts shall be subsidiary to this Line Item. Work shall be in accordance with TxDOT Standard Specifications 2014, Items 445 and 446. All electrical and hydraulic removal and reinstallation shall be subsidiary to this Line Item.

6073: Wing Wall Replacement – TBD

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6074: Replace Deteriorated or Damaged Security Booth – Disconnect all electrical and mechanical connections at the security booth/guard shack. Remove all items inside the shack that are not permanently attached/secured to the building and store them in a TxDOT-approved location.

Remove all electrical and mechanical equipment, including light fixtures, electrical panel enclosures, and heating/cooling units, and store or dispose of them in a TxDOT-approved location. Remove other miscellaneous items attached to the building, such as fire extinguishers and first aid cabinet, and store them in a TxDOT-approved location. Remove the countertop table. Remove the door

Disassemble and remove the prefabricated fiberglass building, including the glass windows and flooring, in accordance with the manufacturer's instructions /recommendations. Inspect all the support and ancillary structures/items for the security booth, including the handrails, stairway assembly, metal mesh at various locations, building support columns and framing, fiberglass panel skirt surrounding the building support framing and columns, and steel plate flooring at the top of the stairway, and replace all that are damaged. Apply protective coating on all steel elements. Apply the appropriate sealants where the new building floor will be located. Assemble and install the new prefabricated fiberglass building, including the glass windows and flooring, in accordance with the drawings and manufacturer's instructions. The new building shall be weatherproof and rated for a wind speed of 150 mph. Exterior color of the building shall be white, and the interior color shall be light beige/brown. Install the door. The door shall be heavy-duty, weatherproof, and rated for a wind speed of 150 mph. Note that the door for all security booths/guard shacks shall be keyed the same. Install a new countertop table per the drawings. Install new electrical and mechanical equipment per the drawings. Install/re-install other miscellaneous items, such as fire extinguishers and first aid cabinet, per the drawings. Air conditioning unit for the security booth/guard shack shall be a Friedrich air conditioning window unit, Model no. KEL36A35A-C, Serial no. 2003M90902, with a cooling capacity of 35,000 BTU. Any changes to the specified air conditioning unit shall be per TxDOT approval. Hole through the wall of the booth, where the air conditioning unit will be installed, shall be 20 ¼" high by 28" wide. Installation of any bolts and replacement of all damaged electrical conduits, electrical cables, waterlines if applicable, and mounting hardware are subsidiary to this Line Item. Note that mounting hardware also includes all necessary support brackets for the air conditioning unit as well as reinforcing elements/materials for the hole on the booth's wall where the air conditioning unit will be installed. Reconnect all electrical and mechanical connections.

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6075: Bus Shelter Replacement – The existing bus shelter shall be removed in one piece. Unfasten the anchor baseplates from their ground supports and lift the entire shelter via the permanently attached lifting rings.

Replace the bus shelter in kind. Securely fasten the anchor baseplates of the new shelter to their respective ground supports, replacing deteriorated ground fasteners as needed. Replacement of ground fasteners is subsidiary to this Line Item.

6076: Bottom Survey at Galveston and Bolivar – Perform bathymetric surveys of the mudline at each Slip, at both Galveston and Bolivar, and the Maintenance Dock at Galveston. Survey data and drawings shall be presented in a report and submitted to TxDOT. This line item, when completed, will include all areas shown on Sheets G-003 and G-004.

6077: Bucket Dredging (Up To 50 Cubic Yards) – TxDOT shall direct the dredging contractor where to dredge. All dredged materials shall be delivered to a private disposal site. Dredging operations shall follow all regulatory requirements. This line item will be used as needed and will specify the volume needed to maintain operations.

6078: Replace Monopile Top, Including Light Bracket – If present, remove the light fixture and all associated components and store them in a TxDOT-approved location. If necessary, remove the mooring ring assembly and upper donut fender unit and store them in a TxDOT-approved location. Cut and remove the top 3" portion of the monopile that needs replacement. Weld a new steel cap plate. If applicable, install new support brackets on the cap plate for the light fixture and its components. Apply protective coating on all exposed bare steel elements and welds. Replace the retro-reflective adhesive sign at the top portion of the monopile in kind. If previously removed, re-install the upper donut fender unit and mooring ring assembly. If applicable, reinstall the light fixture and all associated components. Installation of any bolts and replacement of damaged light fixture, electrical conduits, electrical cables, and mounting hardware are subsidiary to this Line Item.

6079: Outer Dolphin Replacement (Type III) – Perform the demolition activities described in Line Item 6067 prior to starting any of the work in this Line Item. Install the 60" diameter steel pipe monopiles for the donut fender assemblies. Install the steel pipe reaction pile. Pile installation locations shall be in accordance with the drawings.

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In instances where the existing/original outer dolphin piles are cut instead of fully extracted, adjust the locations of the new piles, while maintaining their spacing from one another per the drawings and as approved by TxDOT, to miss the existing/original piles. Install steel cap plates on top of all the piles. At each cap plate, install the lower portion of the bolted connection assembly for the structural steel brace framing.

Apply protective coating on all bare steel surfaces and welds. Install all lower donut fender units/assemblies and all associated elements, connections, and/or hardware, including UHMW-PE pads that will be attached to the monopiles. Install all upper donut fender units/assemblies and all associated elements, connections, and/or hardware, including UHMW-PE pads that will be attached to the monopiles. Secure the connections between the upper and lower donut fender units/assemblies. Install the mooring ring assembly on top of each upper donut fender unit/assembly. Install the upper portion of the structural steel brace framing. Fasten the two portions of the structural steel brace framing together via bolted connection. Attach a "Slow Bell" sign at the top portion on the outermost face/surface of the outermost monopile (relative to shore/land).

Install light fixtures/navigation lights, including all associated components and support hardware, on top of the structural steel brace framing as required. Installation of any bolts, electrical components, and mounting hardware are subsidiary to this Line Item.

6080: Remove, Clean, Inspect, Repair Type III Outer Dolphin – TBD

6081: Steel Bracket Replacement at Landing Ramp Framing – TBD

GENERAL							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7009	6001	MOBILIZATION	EA	8			N/A
7102	6001	RELOCATION	EA	80			N/A

#1, #4, OR #6 LANDING REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6002	SHEAVE ASSEMBLY REPLACEMENT - REMOVE AND INSTALL	EA	1		TXDOT WILL SUPPLY SHEAVE AND SHAFT	S-185 THRU S-187
7146	6003	24" MONOPILE REPLACEMENT FOR CONCRETE TOWER PAD	EA	1		THERE ARE EIGHT 24" MONOPILES THAT SUPPORT THE CONCRETE TOWER PAD	S-145
7146	6004	SPRING BOX CONCRETE FOUNDATION REPLACEMENT AT LANDINGS #1, #4, AND #6	EA	1		THIS IS TO UPGRADE/REPLACE THE EXISTING FOUNDATION	N/A
7146	6005	CHAIN FALL REPLACEMENT PER LANDING BOTH CHAIN FALLS	EA	1		INCLUDES SUPPORT BRACKETS	S-940
7146	6006	LANDING GRATING AND PASSENGER WALK WAY DIAMOND PLATE REPLACEMENT PER LANDING	EA	1			S-140 THRU S-141, S-976 THRU S-978
7146	6007	HEAD LOG REPLACEMENT PER LANDING - INCLUDE ALL BRACKETS AND ANGLES	EA	1		CONTRACTOR TO SUPPLY AND INSTALL	S-141, S-142
7146	6058	INSTALL NEW BOLTS FOR ANY LANDING COVER PLATES PER LANDING	EA	3			N/A

#1, #4, OR #6 LANDING RAMP REPAIR							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6008	MAIN LIFTING BEAM REPAIR PER LANDING - W21X62	EA	1			S-140, S-141, S-955
7146	6009	CHANNEL IRON FOR SMALL GRATING REPAIR PER LANDING - C4X7.25	EA	1			S-140 THRU S-142
7146	6010	LANDING RAMP REFURBISHMENT PER LANDING	EA	1		REMOVE, FULLY RECOAT STRUCTURE, AND REINSTALL	S-140 THRU S-144, S-976 THRU S-978

#1, #4, OR #6 LANDING TOWER REPAIR							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6011	CONCRETE COUNTER WEIGHT BLOCK-LIFTING EYEBOLT REPAIR	EA	1		TWO BOLTS PER BLOCK, AND TWO BLOCKS PER LANDING	S-187, S-956
7146	6012	COUNTER WEIGHT BLOCK-LIFTING CABLE REPLACEMENT PER LANDING BOTH TOWERS	EA	2			S-187
7146	6013	COUNTER WEIGHT BLOCK ANGLE TRACKING PER LANDING	EA	1			S-185 THRU S-187
7146	6014	HYDRAULIC LIFTING RAMS AND SWIVELS PER LANDING - REMOVE AND INSTALL BOTH RAMS PER LANDING	EA	1		TXDOT WILL SUPPLY RAMS AND CONTRACTOR WILL SUPPLY HOSES	S-187
7146	6015	CONCRETE PAD FOR TOWER REPAIR	EA	1			S-145, S-900
7146	6060	COUNTER WEIGHT TOWER LEG REPAIR PER TOWER LANDING 1, 4, 6	EA	1			S-979, S-980
7146	6061	REMOVE/REFURBISH UNUTILIZED COUNTER WEIGHT TOWER MEMBERS AND/OR ATTACHMENTS	EA	1			S-185 THRU S-187, S-955, S-956

#1, #4, OR #6 LANDING SPRINGBOX REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6016	INSTALL SPRING BOX ANCHOR BOLTS PER LANDING	EA	1			S-153
7146	6017	REPAIR SPRING BOX CONCRETE FOUNDATION PER LANDING	EA	1			S-153
7146	6057	REPLACE OLD STYLE LANDING ROCKER PER LANDING 1, 4, 6	EA	1			N/A
7146	6063	REPLACE/RETROFIT SPRING BOX PER LANDING 1, 4, 6	EA	1			S-150 THRU S-153

#1, #4, OR #6 LANDING SPRINGBOX REPAIR							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6018	REPAIR SPRING BOX ARMOR PLATE AT BACK WALL PER LANDING	EA	1			S-153
7146	6019	REPLACE SPRING BOX ANGLE L9x4x1/2 PER LANDING	EA	1			S-153
7146	6070	UPPER PINTLE BEARING REPLACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	1			S-995, S-1002 THRU S-1006
7146	6071	LOWER PINTLE BEARING REPEACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	1			S-994, S-996 THRU S-1002
7146	6072	LANDING RAMP REFURBISHMENT PER LANDING (ANY LANDING)	EA	1			N/A
7146	6081	STEEL BRACKET REPLACEMENT AT LANDING RAMP FRAMING	EA	0			S-1030

ANY LANDING REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6020	FINGER REPLACEMENT - FULL SET PER LANDING	EA	1			S-160 THRU S-169
7146	6021	HYDRAULIC LIFTING RAMS PER LANDING - REMOVE AND INSTALL BOTH RAMS	EA	1		TXDOT WILL SUPPLY RAMS AND CONTRACTOR WILL SUPPLY HOSES	S-180
7146	6022	CHAIN FALL REPLACEMENT PER LANDING (ANY LANDING) BOTH CHAIN FALLS	EA	2		INCLUDES SUPPORT BRACKETS; 2 CHAIN FALLS PER UNIT OF "EA"	S-940
7146	6023	GUARD RAIL REPLACEMENT PER LANDING INCLUDE 10 PER LANDING	EA	2		GUARD RAILS MIRROR EACH SIDE; SEE NOTE 2	S-170, S-171
7146	6024	LIFTING CABLE REPLACEMENT PER LANDING BOTH CABLES	EA	3		PER LANDING INCLUDES BOTH CABLES	S-180, S-958 THRU S-964
7146	6069	REFURBISH A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	3			S-121

ANY LANDING REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6025	TORQUE TUBE BUSHING REPLACEMENT PER LANDING	EA	3			S-180, S-965 THRU S-971
7146	6026	MOORING RING FOR 60" MONOPILE REPLACEMENT	EA	1			S-121, S-981, S-990, S-991


BOAT LIFT REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6027	REPLACE BOAT LIFT FENDER	EA	1			S-200, S-201, S-204

BOAT LIFT REPAIR							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6028	REPAIR METAL ROOFING (50 SQ FT)	EA	4			S-200 THRU S-202

NOTES:

1. CONTRACTOR TO VERIFY DIMENSIONS, LOCATIONS, AND MEMBER TYPES PRIOR TO PERFORMING ANY WORK.
2. GUARD RAILS, INCLUDING ALL CONNECTION ELEMENTS, SHALL BE REPLACED IN-KIND.

DRAWING NAME: 949402-C-100.dgn PLOT DATE: 5/23/2023 2:16:36 PM PLOTTED BY: SHIH



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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

LINE ITEM SUMMARY
SHEET 1 OF 2

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
		12		RMC 6428-78-001	G-100
DR.:	MC	COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
DR.:	REV	GALVESTON		6428 78	001 SH87

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MONOPILE							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6029	60" DIAMETER X 140' LENGTH MONOPILE REPLACEMENT	EA	8			S-120, S-1022
7146	6030	60" DIAMETER X 20' LENGTH MONOPILE EXTENSION	EA	1			S-120, S-1020
7146	6055	REMOVE UNUTILIZED MONOPILE AND DONUT FENDERS	EA	1			S-120, S-121, S-1020 THRU S-1022

DONUT FENDER REPLACEMENT							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6031	9'10" DONUT FENDER FULL REPLACEMENT	EA	16			S-120 THRU S-122
7146	6032	13'8" DONUT FENDER FULL REPLACEMENT	EA	4			S-120 THRU S-122

DONUT FENDER REPAIR							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6033	9'10" DONUT FENDER UPPER UNIT REPLACEMENT	EA	6			S-120, S-121, S-990, S-991
7146	6034	9'10" DONUT FENDER LOWER UNIT REPLACEMENT	EA	6			S-120, S-121, S-990, S-991
7146	6035	DONUT FENDER REMOVAL, CLEAN, INSPECT, & REPAIR	EA	40		INCLUDES SHACKLE, PAD EYES & BEARINGS	S-120 THRU S-122
7146	6036	DONUT FENDER TIMBER REPLACEMENT - 12"x12"x5.25' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	EA	120			S-120 THRU S-122
7146	6037	DONUT FENDER TIMBER REPLACEMENT - 12"x8"x4.75' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	EA	1			S-120 THRU S-122
7146	6038	DONUT FENDER UHMW REPLACEMENT	EA	150		7"x 5/8" SS316 w/ SS316 WASHER	S-122, S-981
7146	6039	13'8" DONUT FENDER LOWER UNIT REPLACEMENT	EA	1			S-120, S-121
7146	6040	REPLACE WING WALL TIMBERS AND UHMW PADS	EA	6			S-130, S-133
7146	6041	REPLACE WING WALL UHMW PADS	EA	4			S-130, S-133
7146	6054	MOVE CONTACT SURFACE OF WING WALL PER LANDING	EA	1		2 WING WALLS PER UNIT OF "EA"	S-982 THRU S-984
7146	6056	13'8" DONUT FENDER UPPER UNIT REPLACEMENT	EA	2			S-120, S-121
7146	6059	REPAIR TOP SEAL OF DONUT FENDER	EA	4			S-120, S-121
7146	6062	INSTALL TXDOT-PROVIDED TIMBER FENDER	EA	20			S-120 THRU S-122
7146	6064	RELOCATE PAIR OF DONUT FENDERS (UPPER UNIT AND LOWER UNIT)	EA	8		2 DONUT FENDERS PER UNIT OF "EA"	S-120, S-121
7146	6065	REPAIR DONUT FENDER LOWER UNIT	EA	12		APPLIES TO BOTH 9'-10" & 13'-8" DONUT FENDERS	S-120, S-121
7146	6067	COMPLETE REPLACEMENT OF OUTER DOLPHIN	EA	2			S-103, S-910 THRU S-916
7146	6073	WING WALL REPLACEMENT	EA	0			S-130 THRU S-133
7146	6078	REPLACE MONOPILE TOP, INCLUDING LIGHT BRACKET	EA	20		APPLY PROTECTIVE COATING	S-1020 THRU S-1022
7146	6079	OUTER DOLPHIN REPLACEMENT - TYPE III	EA	2			S-1010
7146	6080	REMOVE, CLEAN, INSPECT, REPAIR TYPE III OUTER DOLPHIN	EA	0			S-1010

OUTER DOLPHIN REPLACEMENT - TYPE II							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6042	OUTER DOLPHIN REPLACEMENT - TYPE II	EA	1			S-103, S-910 THRU S-916
7146	6043	FABRICATE AND INSTALL HAND RAIL ON OUTER DOLPHIN OR WING WALL	EA	3			S-130, S-911, S-914, S-993
7146	6044	OUTER DOLPHIN REPAIR - TYPE II	EA	1			S-103, S-911 THRU S-913, S-916

OUTER DOLPHIN REPAIR - TYPES I							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6045	OUTER DOLPHIN REPAIR - TYPE I	EA	4			S-100, S-101, S-104 THRU S-111


NAVIGATION LIGHTS							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6046	REPLACE NAVIGATION LIGHTS PER LANDING	EA	12			S-100, S-102, S-110
7146	6047	FABRICATE & INSTALL LADDERS ON OUTER DOLPHIN OR NAVIGATION TOWERS	EA	2			S-109

RETRO-REFLECTIVE SIGNS, UTILITY RACEWAYS, SHOREPOWER, AND MISCELLANEOUS ITEMS							
ITEM NO	DESC CODE	DESCRIPTION	UNIT	EST QTY	EST UNIT PRICE	REMARKS	REFERENCE SHEETS
7146	6048	REPLACE ADHESIVE SIGN PER LANDING	EA	12			S-941
7146	6049	REPLACE SLOW BELL SIGN PER LANDING	EA	12			S-941
7146	6050	REPLACE LANDING UTILITY RACEWAY SUPPORTS BRACKETS ON #1, #4, AND #6 LANDINGS	EA	1		STAINLESS STEEL MATERIAL ONLY	N/A
7146	6051	REPLACE LANDING UTILITY RACEWAY	EA	1		STAINLESS STEEL MATERIAL ONLY	N/A
7146	6052	REPAIR RACEWAY SUPPORT BRACKETS ON #2, #3, OR #5 LANDINGS	EA	15			N/A
7146	6053	INSTALL SHOREPOWER ON ANY ONE LANDING	EA	1			S-950 THRU S-954
7146	6066	SHOREPOWER MAINTENANCE/REPAIR	EA	3			S-950 THRU S-954
7146	6068	COMBIWALL MAINTENANCE	EA	3			S-210, S-211
7146	6074	REPLACE DETERIORATED OR DAMAGED SECURITY BOOTH	EA	4			S-1007 THRU S-1009
7146	6075	BUS SHELTER REPLACEMENT	EA	2			S-992
7146	6076	BOTTOM SURVEY AT GALVESTON AND BOLIVAR	EA	2			N/A
7146	6077	BUCKET DREDGING (UP TO 50 CUBIC YARDS)	EA	10			N/A

NOTES:

- CONTRACTOR TO VERIFY DIMENSIONS, LOCATIONS, AND MEMBER TYPES PRIOR TO PERFORMING ANY WORK.

DRAWING NAME: 949402-C-101.dgn
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LINE ITEM SUMMARY

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ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
		12		RMC 6428-78-001	G-101
DN: MM	REVISIONS			COUNTY:	CONTROL SECTION JOB HIGHWAY
CK: SS				GALVESTON	6428 78 001 SH87
DR: MC					
CK: RW	REV	DESCRIPTION	DATE		

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QUANTITY SUMMARY SHEET

ITEM NO.	7009	7102	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6001	6001	6002	6003	6004	6005	6006	6007	6008
DESCRIPTION	MOBILIZATION	RELOCATION	SHEAVE ASSEMBLY REPLACEMENT - REMOVE AND INSTALL	24" MONOPILE REPLACEMENT FOR CONCRETE TOWER PAD	SPRING BOX CONCRETE FOUNDATION REPLACEMENT AT LANDINGS #1, #4, AND #6	CHAIN FALL REPLACEMENT PER LANDING	LANDING GRATING AND PASSENGER WALK WAY DIAMOND PLATE REPLACEMENT PER LANDING	HEAD LOG REPLACEMENT PER LANDING - INCLUDE ALL BRACKETS AND ANGLES	MAIN LIFTING BEAM REPAIR PER LANDING - W21X62
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	8	80	1	1	1	1	1	1	1

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6009	6010	6011	6012	6013	6014	6015	6016	6017
DESCRIPTION	CHANNEL IRON FOR SMALL GRATING REPAIR PER LANDING - C4X7.25	LANDING RAMP REFURBISHMENT PER LANDING	CONCRETE COUNTER WEIGHT BLOCK-LIFTING EYEBOLT REPAIR	COUNTER WEIGHT BLOCK-LIFTING CABLE REPLACEMENT PER LANDING	COUNTER WEIGHT BLOCK ANGLE TRACKING PER LANDING	HYDRAULIC LIFTING RAMS AND SWIVELS PER LANDING - REMOVE AND INSTALL	CONCRETE PAD FOR TOWER REPAIR	INSTALL SPRING BOX ANCHOR BOLTS PER LANDING	REPAIR SPRING BOX CONCRETE FOUNDATION PER LANDING
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	1	1	2	1	1	1	1	1

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6018	6019	6020	6021	6022	6023	6024	6025	6026
DESCRIPTION	REPAIR SPRING BOX ARMOR PLATE AT BACK WALL PER LANDING	REPLACE SPRING BOX ANGLE L9x4x1/4 PER LANDING	FINGER REPLACEMENT - FULL SET PER LANDING	HYDRAULIC LIFTING RAMS PER LANDING - REMOVE AND INSTALL	CHAIN FALL REPLACEMENT PER LANDING (ANY LANDING)	GUARD RAIL REPLACEMENT PER LANDING	LIFTING CABLE REPLACEMENT PER LANDING	TORQUE TUBE BUSHING REPLACEMENT PER LANDING	MOORING RING FOR 60" MONOPILE REPLACEMENT
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	1	1	1	2	2	3	3	1

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QUANTITY SUMMARY
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ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: MM	REVISIONS	12		RMC 6428-78-001	G-200
CK: SS		COUNTY		CONTROL SECTION JOB	HIGHWAY
DN: MC		GALVESTON		6428 78 001	SH87
CK: RW	REV DESCRIPTION DATE				

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QUANTITY SUMMARY SHEET

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6027	6028	6029	6030	6031	6032	6033	6034	6035
DESCRIPTION	REPLACE BOAT LIFT FENDER	REPAIR METAL ROOFING (50 SQ FT)	60" DIAMETER X 120' LENGTH MONOPILE REPLACEMENT	60" DIAMETER X 20' LENGTH MONOPILE EXTENSION	9'10" DONUT FENDER FULL REPLACEMENT	13'8" DONUT FENDER FULL REPLACEMENT	9'10" DONUT FENDER UPPER UNIT REPLACEMENT	9'10" DONUT FENDER LOWER UNIT REPLACEMENT	DONUT FENDER REMOVAL, CLEAN, INSPECT, & REPAIR
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	4	8	1	16	4	6	6	40

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6036	6037	6038	6039	6040	6041	6042	6043	6044
DESCRIPTION	DONUT FENDER TIMBER REPLACEMENT - 12"x 12"x5.25' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	DONUT FENDER TIMBER REPLACEMENT - 12"x 8"x4.75' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	DONUT FENDER UHMW REPLACEMENT	13'8" DONUT FENDER LOWER UNIT REPLACEMENT	REPLACE WING WALL TIMBERS AND UHMW PADS	REPLACE WING WALL UHMW PADS	OUTER DOLPHIN REPLACEMENT - TYPE II	FABRICATE AND INSTALL HAND RAIL ON OUTER DOLPHIN OR WING WALL	OUTER DOLPHIN REPAIR - TYPE II
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	120	1	150	1	6	4	1	3	1

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6045	6046	6047	6048	6049	6050	6051	6052	6053
DESCRIPTION	OUTER DOLPHIN REPAIR - TYPE I	REPLACE NAVIGATION LIGHTS PER LANDING	FABRICATE & INSTALL LADDERS ON OUTER DOLPHIN OR NAVIGATION TOWERS	REPLACE ADHESIVE SIGN PER LANDING	REPLACE SLOW BELL SIGN PER LANDING	REPLACE LANDING UTILITY RACEWAY SUPPORT BRACKETS ON #1, #4, AND #6 LANDINGS	REPLACE LANDING UTILITY RACEWAY	REPAIR RACEWAY SUPPORT BRACKETS ON #2, #3, OR #5 LANDINGS	INSTALL SHOREPOWER ON ANY ONE LANDINGS
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	4	12	2	12	12	1	1	15	1

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QUANTITY SUMMARY
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ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DL: MM	REV	12		RMC 6428-78-001	G-201
CK: SS		COUNTY		CONTROL SECTION	JOB HIGHWAY
DL: MC		GALVESTON		6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE		

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QUANTITY SUMMARY SHEET

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6054	6055	6056	6057	6058	6059	6060	6061	6062
DESCRIPTION	MOVE CONTACT SURFACE OF WING WALL PER LANDING	REMOVE UNUTILIZED MONOPILE AND DONUT FENDER	13'8" DONUT FENDEER UPPER UNIT REPLACEMENT	REPLACE OLD STYLE LANDING ROCKER	INSTALL NEW BOLTS FOR THE NEW STYLE LANDING COVER PLATES	REPAIR TOP SEAL OF DONUT FENDER	COUNTER WEIGHT TOWER LEG REPAIR	REMOVE/REFURBISH UNUTILIZED COUNTER WEIGHT TOWER MEMBERS AND/OR ATTACHMENTS	INSTALL TXDOT-PROVIDED TIMBER FENDER
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	1	2	1	3	4	1	1	20

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6063	6064	6065	6066	6067	6068	6069	6070	6071
DESCRIPTION	REPLACE/RETROFIT SPRING BOX	RELOCATE PAIR OF DONUT FENDERS (UPPER UNIT AND LOWER UNIT)	REPAIR DONUT FENDER LOWER UNIT	SHOREPOWER MAINTENANCE/REPAIR	COMPLETE REPLACEMENT OF OUTER DOLPHIN	COMBIWALL MAINTENANCE	REFURBISH A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	UPPER PINTLE BEARING REPLACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	LOWER PINTLE BEARING REPLACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	8	12	3	2	3	3	1	1

ITEM NO.	7146	7146	7146	7146	7146	7146	7146	7146	7146
DESC. CODE	6072	6073	6074	6075	6076	6077	6078	6079	6080
DESCRIPTION	LANDING RAMP REFURBISHMENT PER LANDING (ANY LANDING)	WING WALL REPLACEMENT OF OUTER DOLPHIN	REPLACEMENT DETERIORATED OR DAMAGED SECURITY BOOTH	BUS SHELTER REPLACEMENT	BOTTOM SURVEY AT GALVESTON AND BOLIVAR	BUCKET DREDGING (UP TO 50 CUBIC YARDS)	REPLACE MONOPILE TOP, INCLUDING LIGHT BRACKET	OUTER DOLPHIN REPLACEMENT - TYPE III	REMOVE, CLEAN, INSPECT, REPAIR TYPE III OUTER DOLPHIN
UNIT	EA	EA	EA	EA	EA	EA	EA	EA	EA
RMC #6428-78-001									
TOTALS	1	0	4	2	2	10	20	2	0

ITEM NO.	7146
DESC. CODE	6081
DESCRIPTION	STEEL BRACKET REPLACEMENT AT LANDING RAMP FRAMING
UNIT	EA
RMC #6428-78-001	
TOTALS	0



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ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DL: MM	REVISONS	12		RMC 6428-78-001	G-202
CK: SS		COUNTY		CONTROL SECTION	JOB HIGHWAY
DL: MC		GALVESTON		6428 78	001 SH87
CK: RW	REV DESCRIPTION DATE				

DRAWING NAME: 949402-G-202.dgn
 PLOT DATE: 5/23/2023 2:19:39 PM PLOTTED BY: SHH

ESTIMATE AND QUANTITY SHEET

						PROJECT RMC 6428-78-001		ALT	ITEM-CODE			DESCRIPTION	UNIT	TOTAL	
						CONTROL # 6428-78-001			ITEM NO	DESC CODE	SP NO			EST. QTY	FINAL
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL								
									7009	6001		MOBILIZATION	EA	8	
									7102	6001		RELOCATION	EA	80	
									7146	6002		SHEAVE ASSEMBLY REPLACEMENT - REMOVE AND INSTALL	EA	1	
									7146	6003		24" MONOPILE REPLACEMENT FOR CONCRETE TOWER PAD	EA	1	
									7146	6004		SPRING BOX CONCRETE FOUNDATION REPLACEMENT	EA	1	
									7146	6005		CHAIN FALL REPLACEMENT PER LANDING	EA	1	
									7146	6006		LANDING GRATING AND PASSENGER WALK WAY DIAMOND PLATE REPLACEMENT PER LANDING	EA	1	
									7146	6007		HEAD LOG REPLACEMENT PER LANDING - INCLUDE ALL BRACKETS AND ANGLES	EA	1	
									7146	6008		MAIN LIFTING BEAM REPAIR PER LANDING - W21X62	EA	1	
									7146	6009		CHANNEL IRON FOR SMALL GRATING REPAIR PER LANDING - C4X7.25	EA	1	
									7146	6010		LANDING RAMP REFURBISHMENT PER LANDING	EA	1	
									7146	6011		CONCRETE COUNTER WEIGHT BLOCK-LIFTING EYEBOLT REPAIR	EA	1	
									7146	6012		COUNTER WEIGHT BLOCK-LIFTING CABLE REPLACEMENT PER LANDING	EA	2	
									7146	6013		COUNTER WEIGHT BLOCK ANGLE TRACKING PER LANDING	EA	1	
									7146	6014		HYDRAULIC LIFTING RAMS AND SWIVELS PER LANDING - REMOVE AND INSTALL	EA	1	
									7146	6015		CONCRETE PAD FOR TOWER REPAIR	EA	1	
									7146	6016		INSTALL SPRING BOX ANCHOR BOLTS PER LANDING	EA	1	
									7146	6017		REPAIR SPRING BOX CONCRETE FOUNDATION PER LANDING	EA	1	
									7146	6018		REPAIR SPRING BOX ARMOR PLATE AT BACK WALL PER LANDING	EA	1	
									7146	6019		REPLACE SPRING BOX ANGLE L9x4x1/4 PER LANDING	EA	1	
									7146	6020		FINGER REPLACEMENT - FULL SET PER LANDING	EA	1	
									7146	6021		HYDRAULIC LIFTING RAMS PER LANDING - REMOVE AND INSTALL	EA	1	
									7146	6022		CHAIN FALL REPLACEMENT PER LANDING ANY LANDING	EA	2	
									7146	6023		GUARD RAIL REPLACEMENT PER LANDING	EA	2	
									7146	6024		LIFTING CABLE REPLACEMENT PER LANDING	EA	3	
									7146	6025		TORQUE TUBE BUSHING REPLACEMENT PER LANDING	EA	3	
									7146	6026		MOORING RING FOR 60" MONOPILE REPLACEMENT	EA	1	
									7146	6027		REPLACE BOAT LIFT FENDER	EA	1	

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ESTIMATE AND QUANTITY
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ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
		12		RMC 6428-78-001	G-300
DN: MM	REVISIONS		COUNTY	CONTROL SECTION	JOB HIGHWAY
CK: SS			GALVESTON	6428 78	001 SH87
DR: MC					
CK: RW	REV	DESCRIPTION	DATE		

ESTIMATE AND QUANTITY SHEET

						PROJECT RMC 6428-78-001		ALT	ITEM-CODE			DESCRIPTION	UNIT	TOTAL	
						CONTROL # 6428-78-001			ITEM NO	DESC CODE	SP NO			EST. QTY	FINAL
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL								
								7146	6028		REPAIR METAL ROOFING (50 SQ FT)	EA	4		
								7146	6029		60" DIAMETER X 120' LENGTH MONOPILE REPLACEMENT	EA	8		
								7146	6030		60" DIAMETER X 20' LENGTH MONOPILE EXTENSION	EA	1		
								7146	6031		9'10" DONUT FENDER FULL REPLACEMENT	EA	16		
								7146	6032		13'8" DONUT FENDER FULL REPLACEMENT	EA	4		
								7146	6033		9'10" DONUT FENDER UPPER UNIT REPLACEMENT	EA	6		
								7146	6034		9'10" DONUT FENDER LOWER UNIT REPLACEMENT	EA	6		
								7146	6035		DONUT FENDER REMOVAL, CLEAN, INSPECT, & REPAIR	EA	40		
								7146	6036		DONUT FENDER TIMBER REPLACEMENT - 12"x12"x5.25' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	EA	120		
								7146	6037		DONUT FENDER TIMBER REPLACEMENT - 12"x8"x4.75' TIMBERS, UHMW PADS, & CHAIN ASSEMBLY	EA	1		
								7146	6038		DONUT FENDER UHMW REPLACEMENT	EA	150		
								7146	6039		13'8" DONUT FENDER LOWER UNIT REPLACEMENT	EA	1		
								7146	6040		REPLACE WING WALL TIMBERS AND UHMW PADS	EA	6		
								7146	6041		REPLACE WING WALL UHMW PADS	EA	4		
								7146	6042		OUTER DOLPHIN REPLACEMENT - TYPE II	EA	1		
								7146	6043		FABRICATE AND INSTALL HAND RAIL ON OUTER DOLPHIN OR WING WALL	EA	3		
								7146	6044		OUTER DOLPHIN REPAIR - TYPE II	EA	1		
								7146	6045		OUTER DOLPHIN REPAIR - TYPE I	EA	4		
								7146	6046		REPLACE NAVIGATION LIGHTS PER LANDING	EA	12		
								7146	6047		FABRICATE & INSTALL LADDERS ON OUTER DOLPHIN OR NAVIGATION TOWERS	EA	2		
								7146	6048		REPLACE ADHESIVE SIGN PER LANDING	EA	12		
								7146	6049		REPLACE SLOW BELL SIGN PER LANDING	EA	12		
								7146	6050		REPLACE LANDING UTILITY RACEWAY SUPPORT BRACKETS ON #1, #4, AND #6 LANDINGS	EA	1		
								7146	6051		REPLACE LANDING UTILITY RACEWAY	EA	1		
								7146	6052		REPAIR RACEWAY SUPPORT BASKETS ON #2, #3, OR #5 LANDINGS	EA	15		

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ESTIMATE AND QUANTITY
SHEET 2 OF 3


ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: MM	REVISONS	12		RMC 6428-78-001	G-301
CK: SS		COUNTY		CONTROL SECTION	JOB HIGHWAY
DR: MC		GALVESTON		6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE		

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ESTIMATE AND QUANTITY SHEET

						PROJECT RMC 6428-78-001		ALT	ITEM-CODE			DESCRIPTION	UNIT	TOTAL	
						CONTROL # 6428-78-001			ITEM NO	DESC CODE	SP NO			EST. QTY	FINAL
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL								
									7146	6053		INSTALL SHOREPOWER ON ANY ONE LANDING	EA	1	
									7146	6054		MOVE CONTACT SURFACE OF WING WALL PER LANDING	EA	1	
									7146	6055		REMOVE UNUTILIZED MONOPILE AND DONUT FENDER	EA	1	
									7146	6056		13'8" DONUT FENDER UPPER UNIT REPLACEMENT	EA	2	
									7146	6057		REPLACE OLD STYLE LANDING ROCKER	EA	1	
									7146	6058		INSTALL NEW BOLTS FOR ANY LANDING COVER PLATES	EA	3	
									7146	6059		REPAIR TOP SEAL OF DONUT FENDER	EA	4	
									7146	6060		COUNTER WEIGHT TOWER LEG REPAIR	EA	1	
									7146	6061		REMOVE/REFURBISH UNUTILIZED COUNTER WEIGHT TOWER MEMBERS AND/OR ATTACHMENTS	EA	1	
									7146	6062		INSTALL TXDOT-PROVIDED TIMBER FENDER	EA	20	
									7146	6063		REPLACE/RETROFIT SPRING BOX	EA	1	
									7146	6064		RELOCATE PAIR OF DONT FENDERS (UPPER UNIT & LOWER UNIT)	EA	8	
									7146	6065		REPAIR DONUT FENDER LOWER UNIT	EA	12	
									7146	6066		SHOREPOWER MAINTENANCE/REPAIR	EA	3	
									7146	6067		COMPLETE REPLACEMENT OF OUTER DOLPHIN	EA	2	
									7146	6068		COMBIWALL MAINTENANCE	EA	3	
									7146	6069		REFURBISH A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	3	
									7146	6070		UPPER PINTLE BEARING REPLACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	1	
									7146	6071		LOWER PINTLE BEARING REPLACEMENT AT A-FRAME COUNTER BALANCE STRUCTURE (ANY LANDING)	EA	1	
									7146	6072		LANDING RAMP REFURBISHMENT PER LANDING (ANY LANDING)	EA	1	
									7146	6073		WING WALL REPLACEMENT	EA	0	
									7146	6074		REPLACE DETERIORATED OR DAMAGED SECURITY BOOTH	EA	4	
									7146	6075		BUS SHELTER REPLACEMENT	EA	2	
									7146	6076		BOTTOM SURVEY AT GALVESTON AND BOLIVAR	EA	2	
									7146	6077		BUCKET DREDGING (UP TO 50 CUBIC YARDS)	EA	10	
									7146	6078		REPLACE MONOPILE TOP, INCLUDING LICHT BRACKET	EA	20	
									7146	6079		OUTER DOLPHIN REPLACEMENT - TYPE III	EA	2	
									7146	6080		REMOVE, CLEAN, INSPECT, REPAIR TYPE III OUTER DOLPHIN	EA	0	
									7146	6081		STEEL BRACKET REPLACEMENT AT LANDING RAMP FRAMING	EA	0	
												CONTRACTOR FORCE ACCOUNT WORK (PART) SAFETY CONTINGENCY	LS	1	

DRAWING NAME: 949402-C-302.dgn
PLOT DATE: 5/23/2023 - 2:22:10 PM PLOTTED BY: SHIH

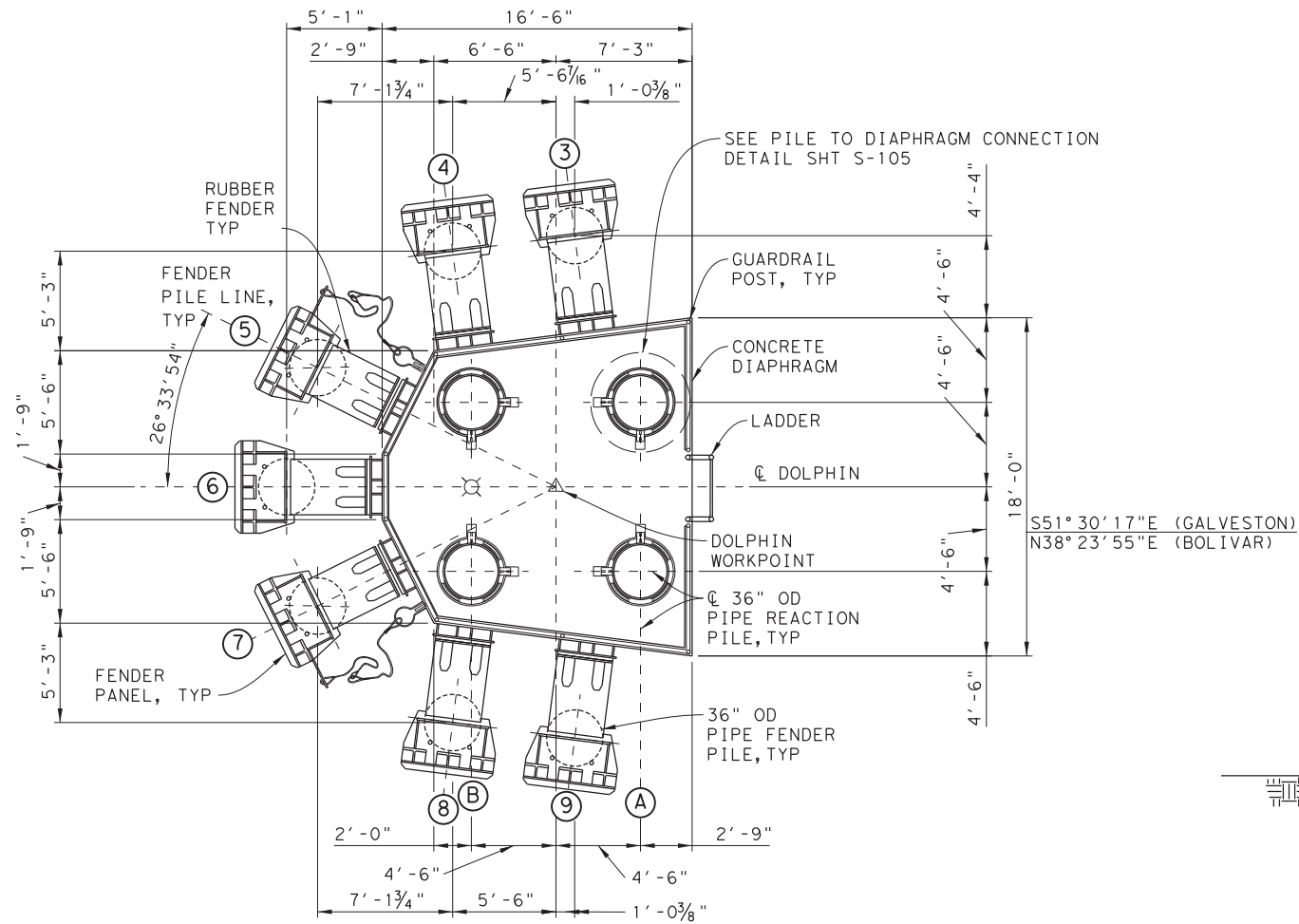


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FERRY LANDING MAINTENANCE
ESTIMATE AND QUANTITY
SHEET 3 OF 3

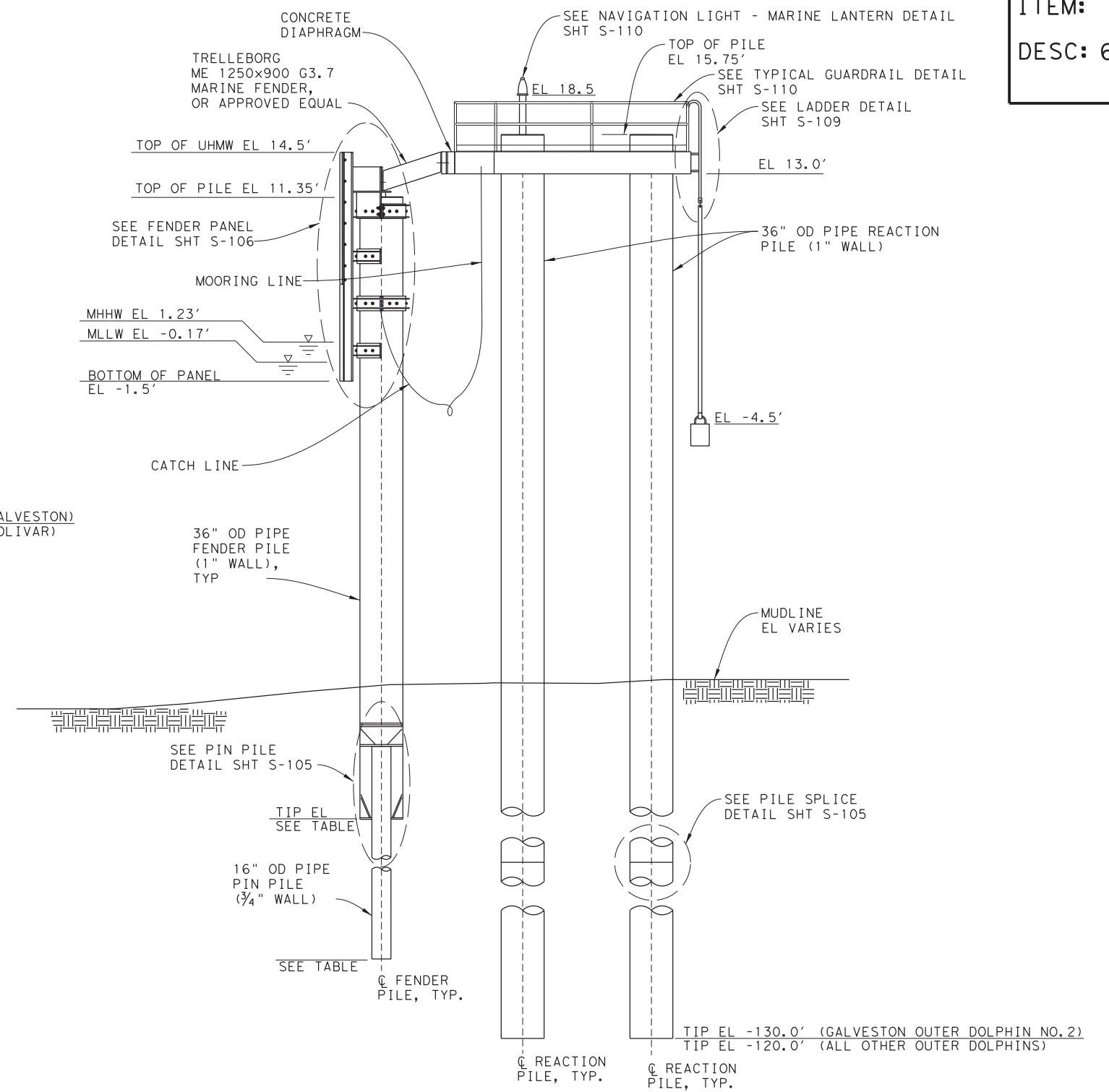
SHEET 26 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
		12		RMC 6428-78-001	G-302
DN: MM	REV	COUNTY		CONTROL SECTION	JOB HIGHWAY
CK: SS	REV	GALVESTON		6428 78	001 SH87

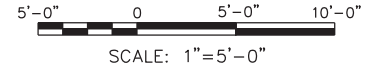
2:22:10 PM 5/23/2023



OUTER DOLPHIN PLAN - TYPE I



ELEVATION



PILE TIP ELEVATION TABLE			
LOCATION	OUTER DOLPHIN NO.	30" OD PIPE FENDER PILE TIP ELEVATION	16" OD PIPE PIN PILE TIP ELEVATION
GALVESTON	1	-30.0	-90.0
	2	-40.0	-100.0
	3	-40.0	-100.0
BOLIVAR	1	-25.0	-75.0
	2	-25.0	-75.0

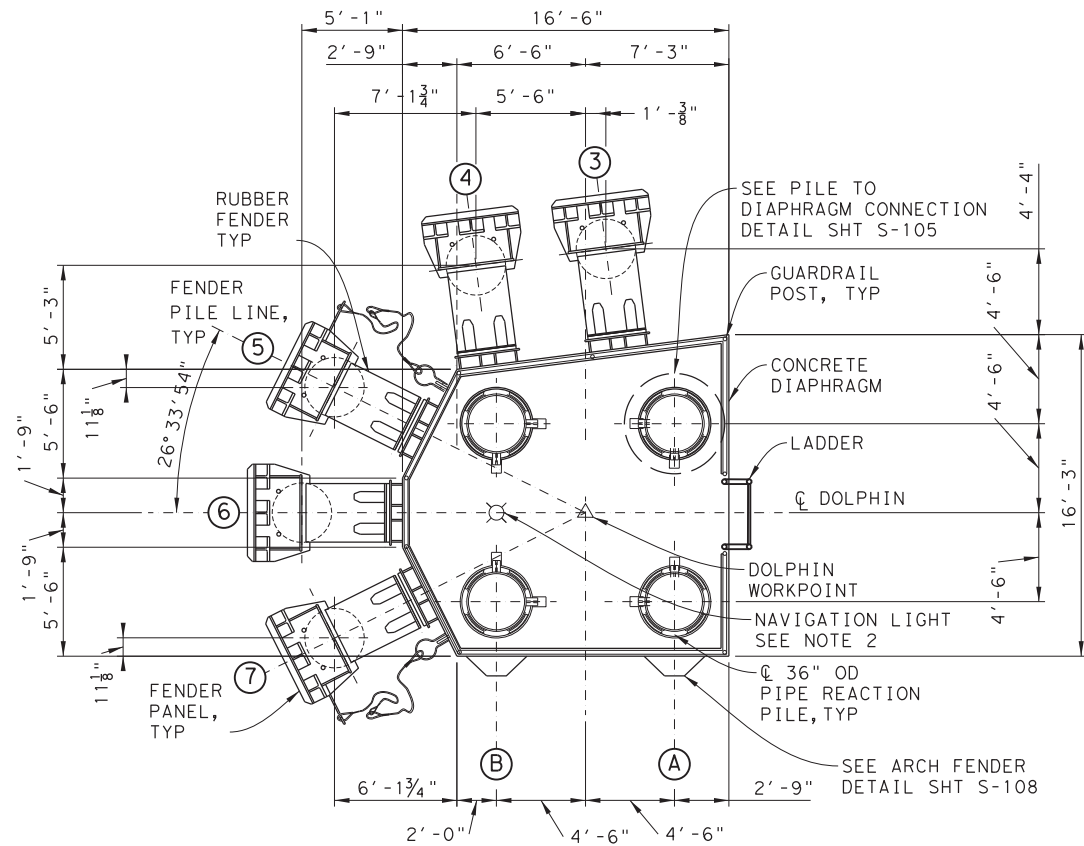
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OUTER DOLPHIN
DETAIL - TYPE I
SHEET 27 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-100
DN: MM	REVISIONS			COUNTY:
CK: WB				GALVESTON
DR: SH	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: RW				6428 78 001 SH87

3:26:46 PM 4/6/2023

DRAWING NAME: 949402-S-100.dgn PLOT DATE: 4/6/2023 3:26:46 PM PLOTTED BY: SHILL



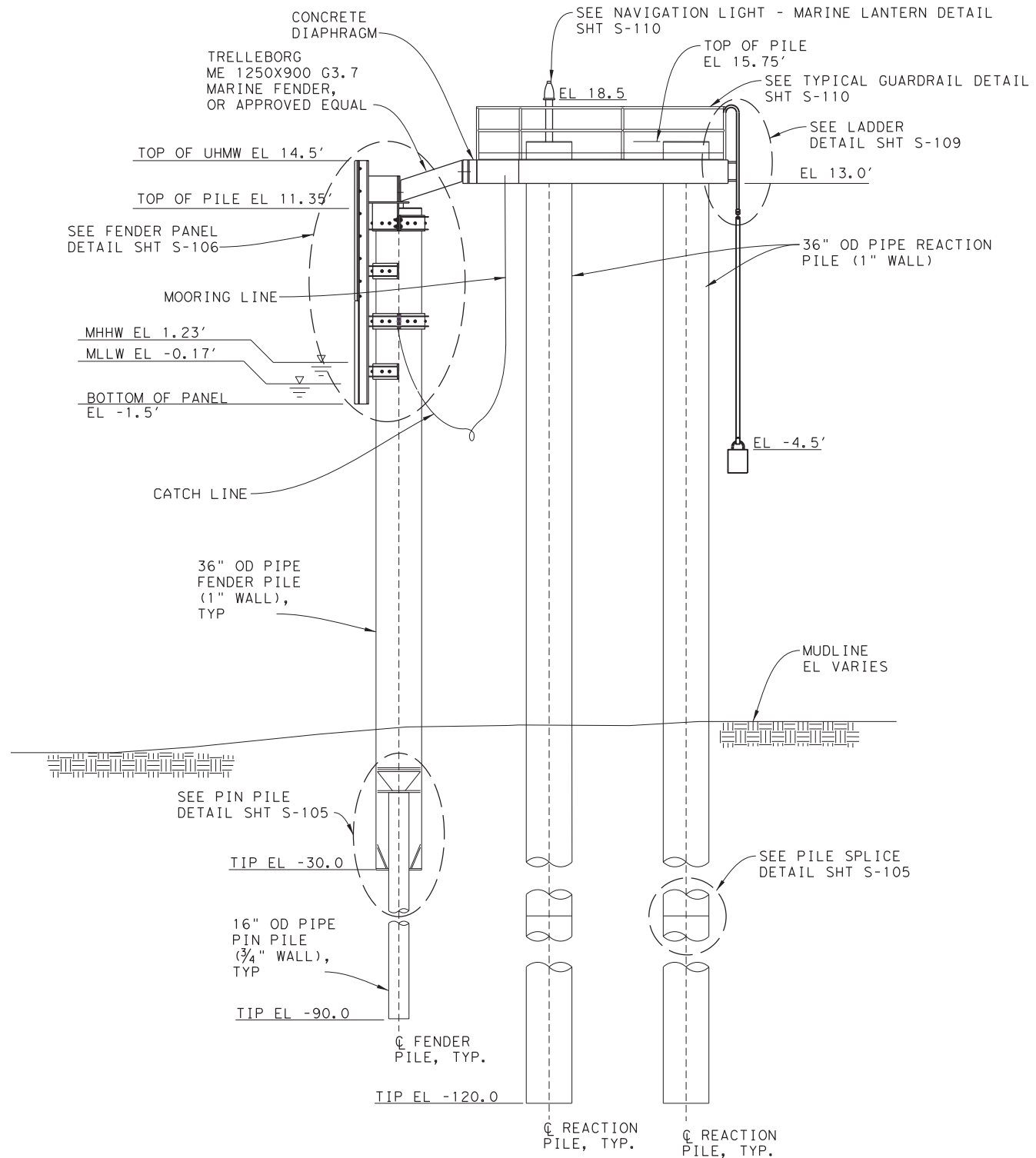
OUTER DOLPHIN PLAN - TYPE II

NOTES:

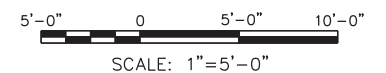
1. TYPE II IS OUTER DOLPHIN NO. 3 AT GALVESTON SLIP 3.
2. NAVIGATION LIGHT INCLUDES MARINE LANTERN, BATTERY AND PHOTOVOLTAIC MODULE (SEE SPECIAL SPECIFICATIONS).

THERMAL SPRAYED ALUMINUM (TSA) COATING APPLICATION:

1. ENTIRE PIN PILE
2. ENTIRE FENDER PILE AND CAP PLATE
3. ENTIRE REACTION PILE AND CAP PLATE
4. HOLD DOWN BARS AND DIAPHRAGM SUPPORT BARS AT TOP OF REACTION PILES
5. STEEL FENDER PANEL FRAMES AND SADDLES
6. ARCH FENDER MOUNTING BRACKETS AND PANEL FRAMES



ELEVATION

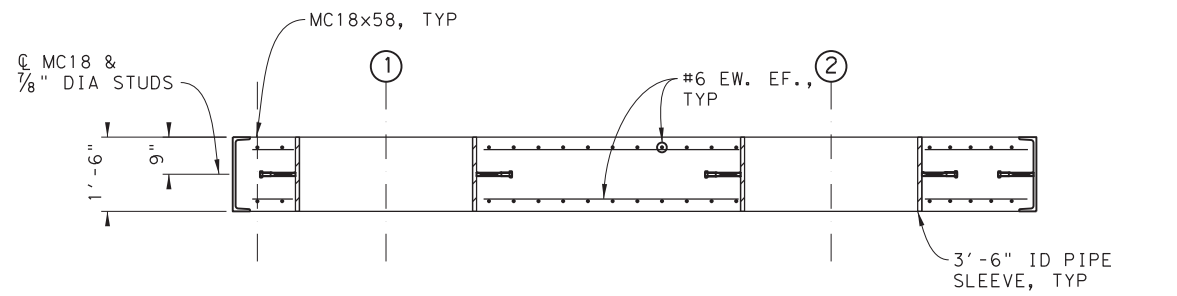
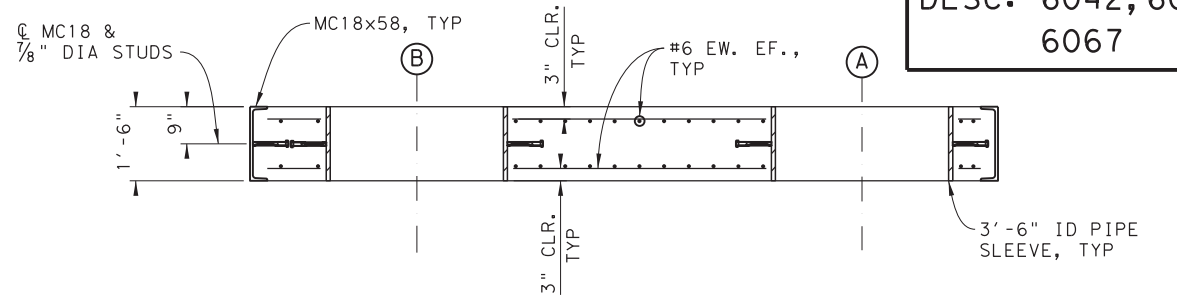
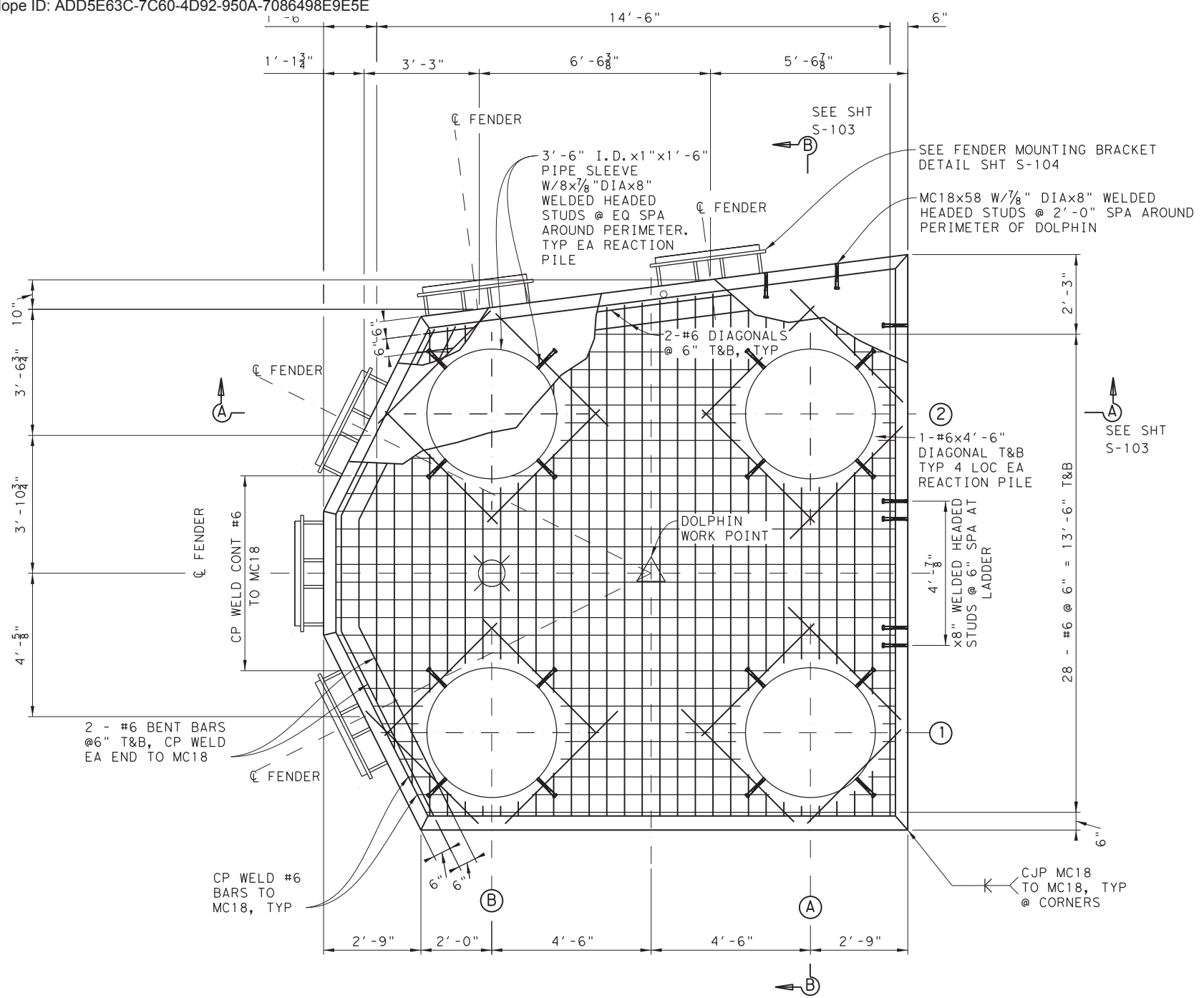


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OUTER DOLPHIN
DETAIL - REFERENCE ONLY
 SHEET 29 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-102
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

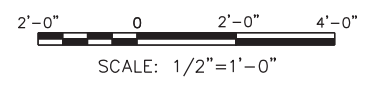
DRAWING NAME: 949402-S-102.dgn PLOT DATE: 4/6/2023 3:26:58 PM PLOTTED BY: SHH



NOTES:

- HOT DIP GALVANIZED DIAPHRAGM FRAME (INCLUDING FENDER MOUNTING BRACKETS) AND PIPE SLEEVES IN ACCORDANCE WITH ASTM A123.
- CP DENOTES COMPLETE PENETRATION.
- CJP DENOTES COMPLETE JOINT PENETRATION.

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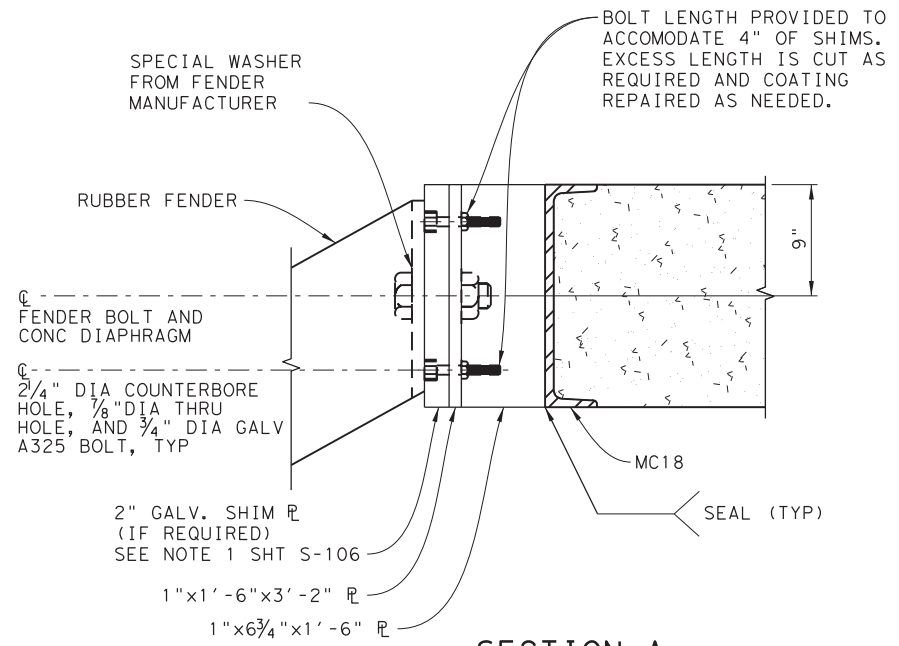
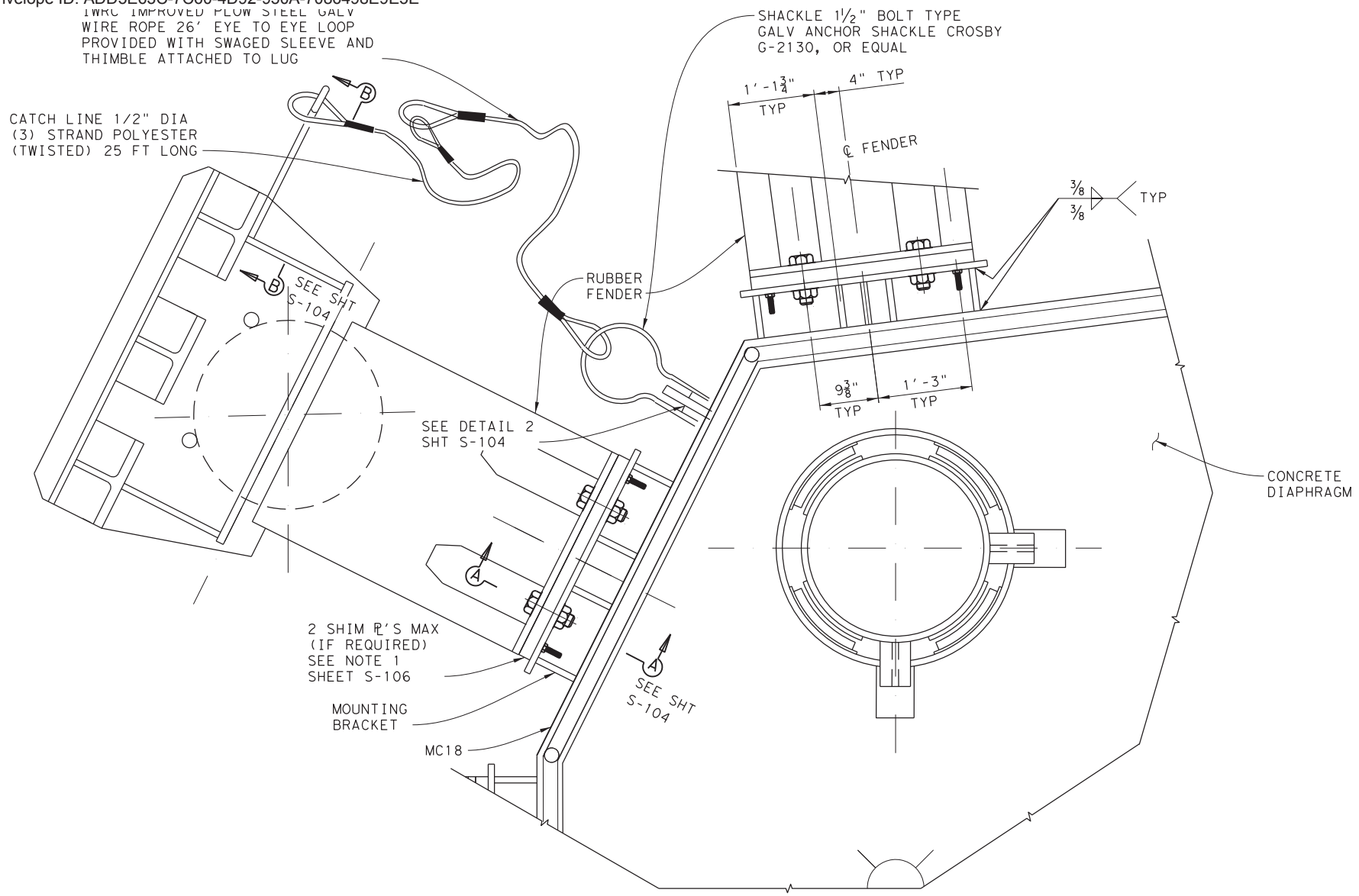


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OUTER DOLPHIN DIAPHRAGM
DETAIL - REFERENCE ONLY

SHEET 30 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-103
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

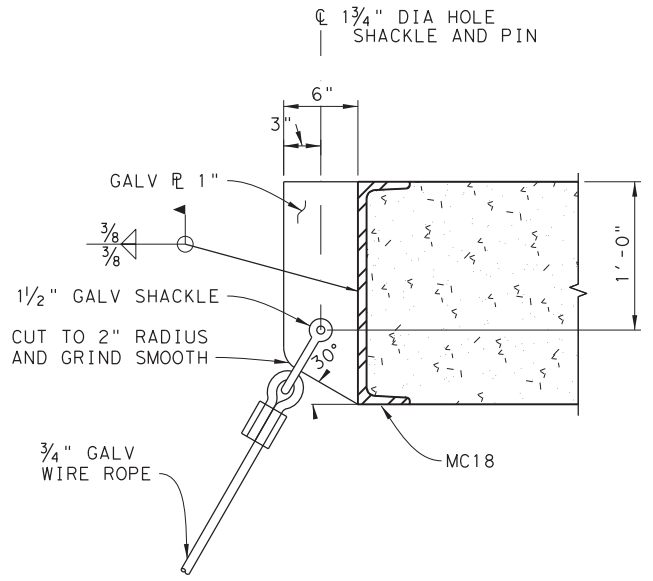
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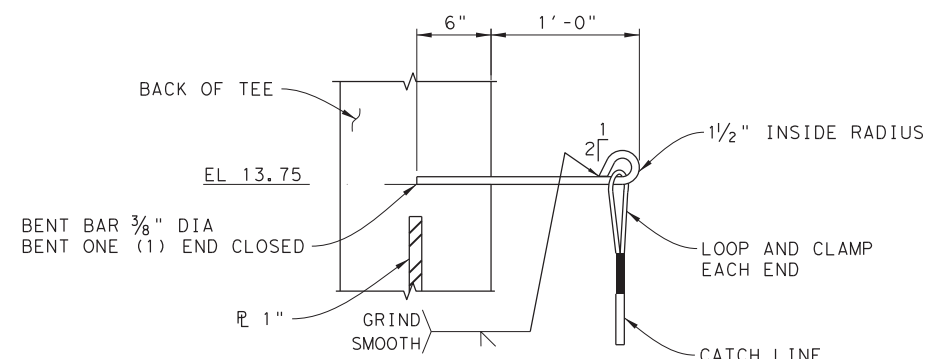
SECTION A
SCALE: 1/2" = 1'-0"
S-104

FENDER MOUNTING BRACKET AND MOORING LINE DETAIL
SCALE: 1" = 1'-0"
S-101 & S-103

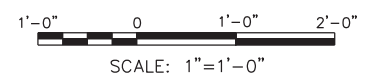
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MOORING LUG DETAIL 2
SCALE: 1/2" = 1'-0"
S-104



SECTION B
SCALE: 1/2" = 1'-0"
S-104

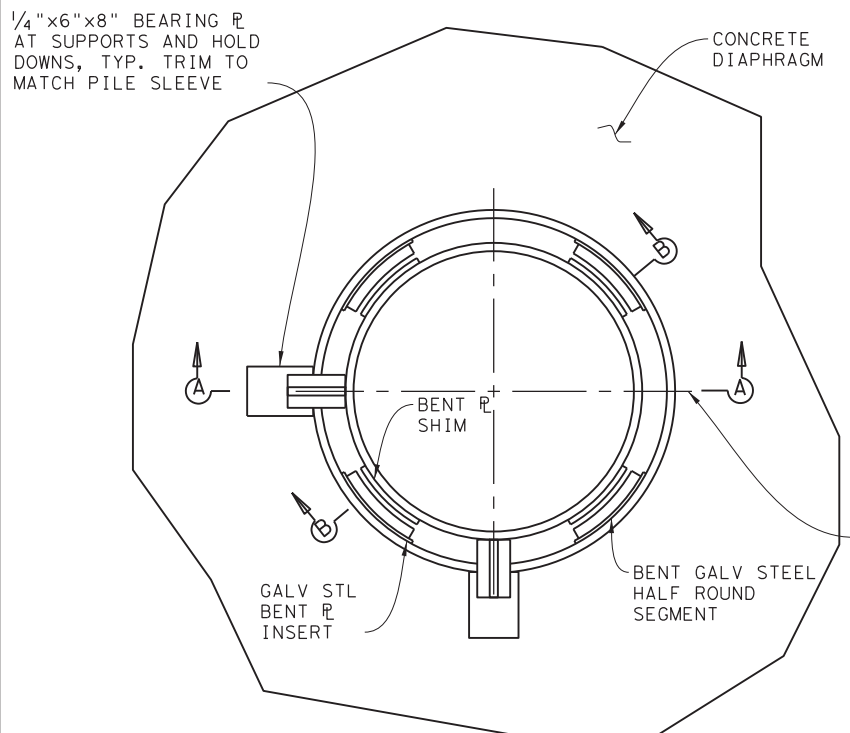


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FERRY LANDING MAINTENANCE
 OUTER DOLPHIN MISC
 DIAPHRAGM & MOORING DETAILS

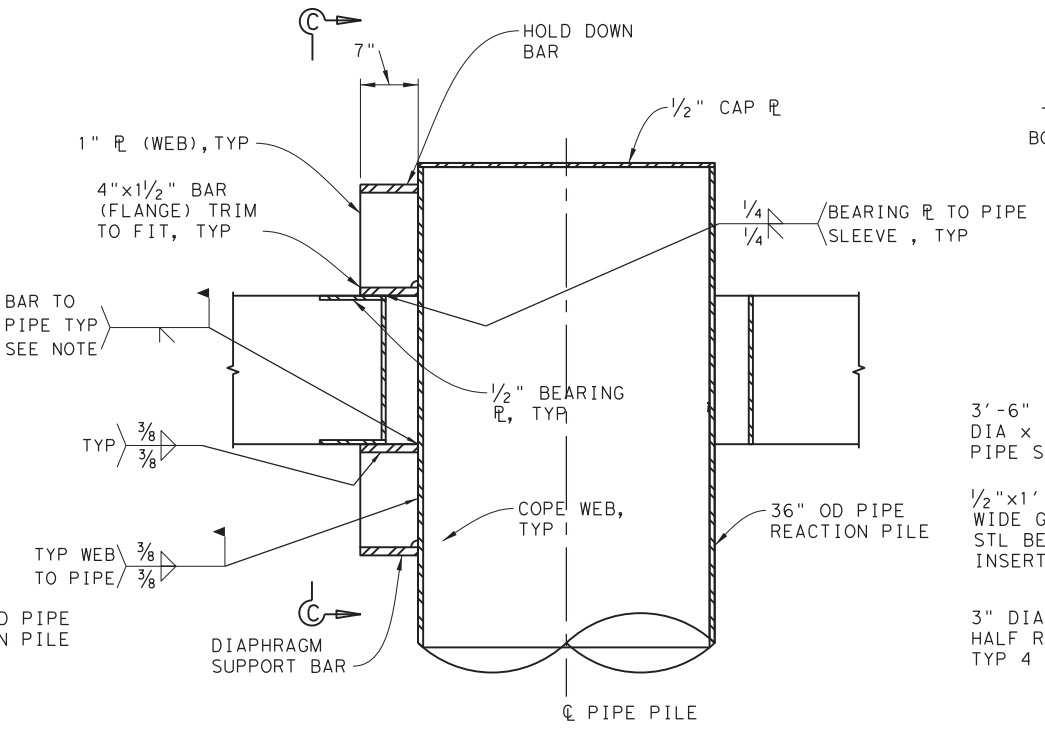
SHEET 31 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-104
DN:1 MM	REVISIONS			COUNTY:
CK:1 WB				GALVESTON
DR:1 SH	CONTROL SECTION:	JOB:	HIGHWAY:	
CK:1 RW	6428 78	001	SH87	

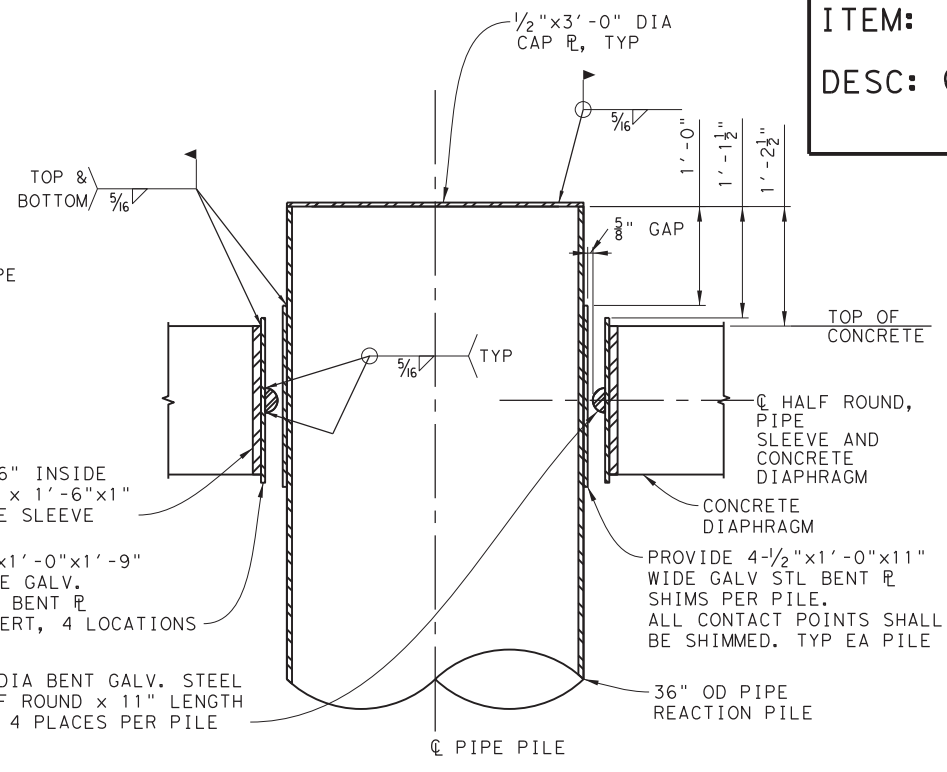
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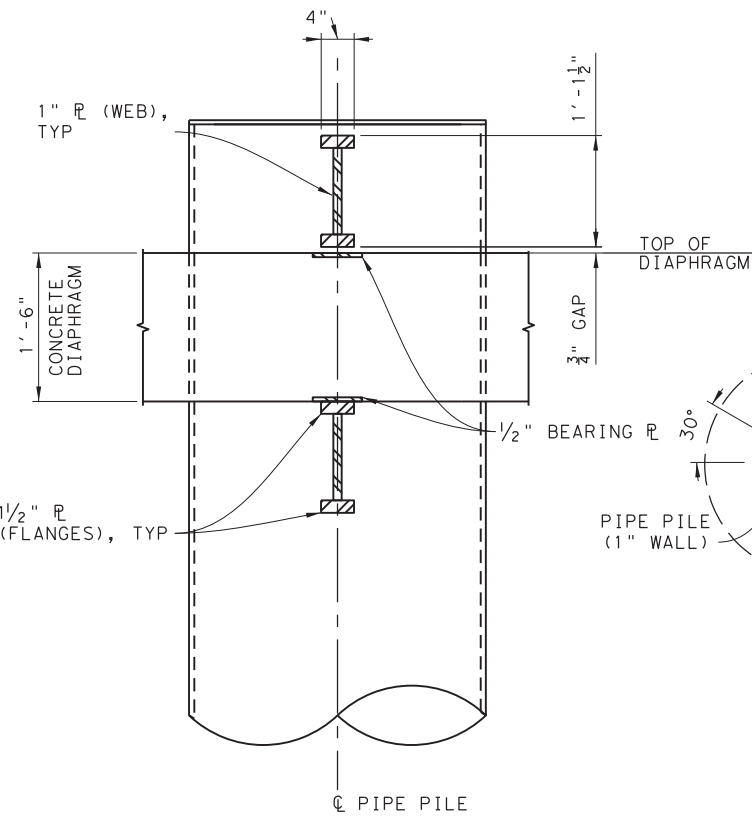
PILE TO DIAPHRAM CONNECTION DETAIL
S-100, S-102



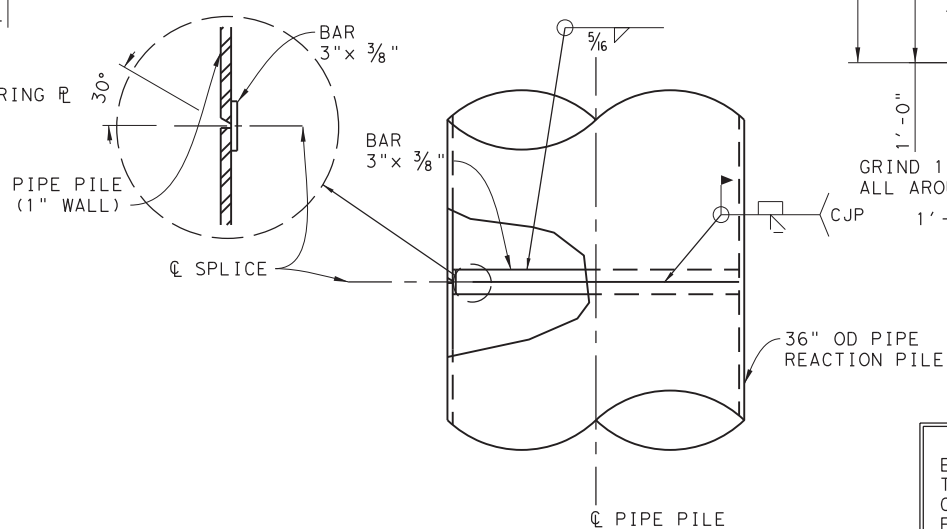
SECTION A
S-105



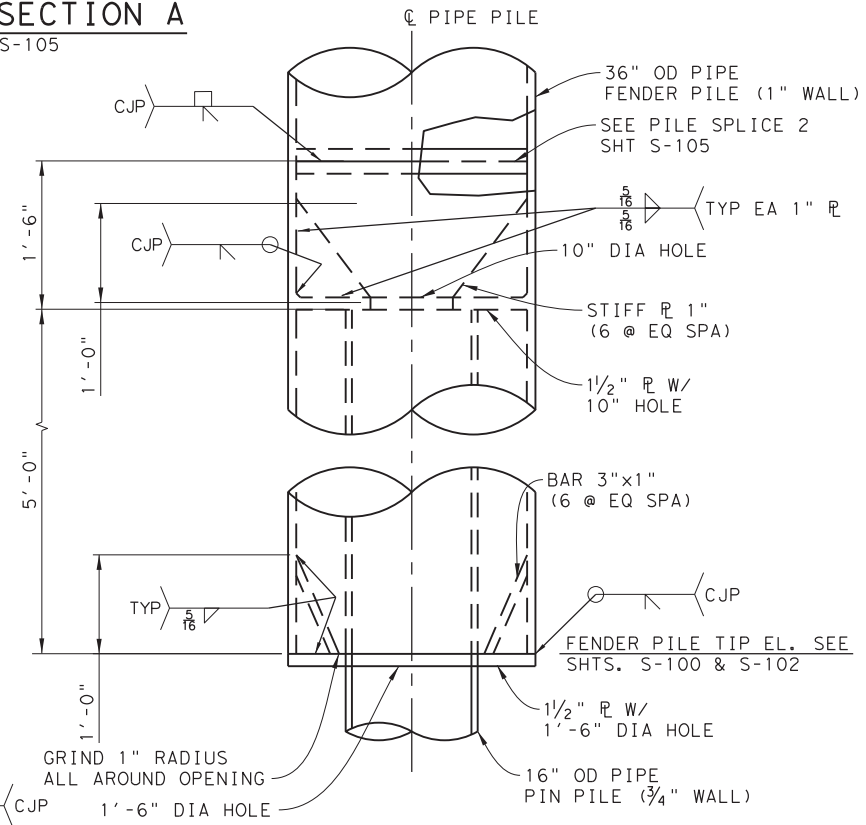
SECTION B
S-105



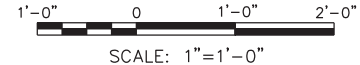
VIEW C
S-105



PILE SPLICE DETAIL
S-100, S-102



PIN PILE DETAIL
S-100, S-102



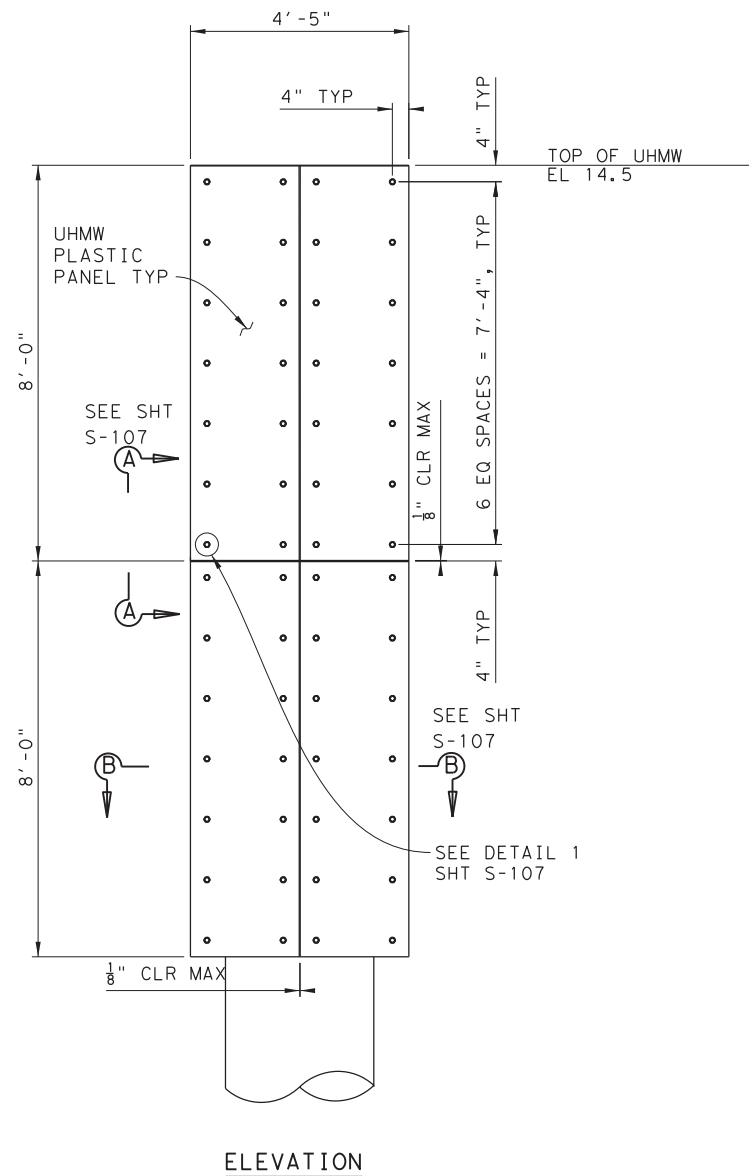
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FERRY LANDING MAINTENANCE
TYPE I OUTER DOLPHIN PILE DETAILS

SHEET 32 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-105
DN: 1 WM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

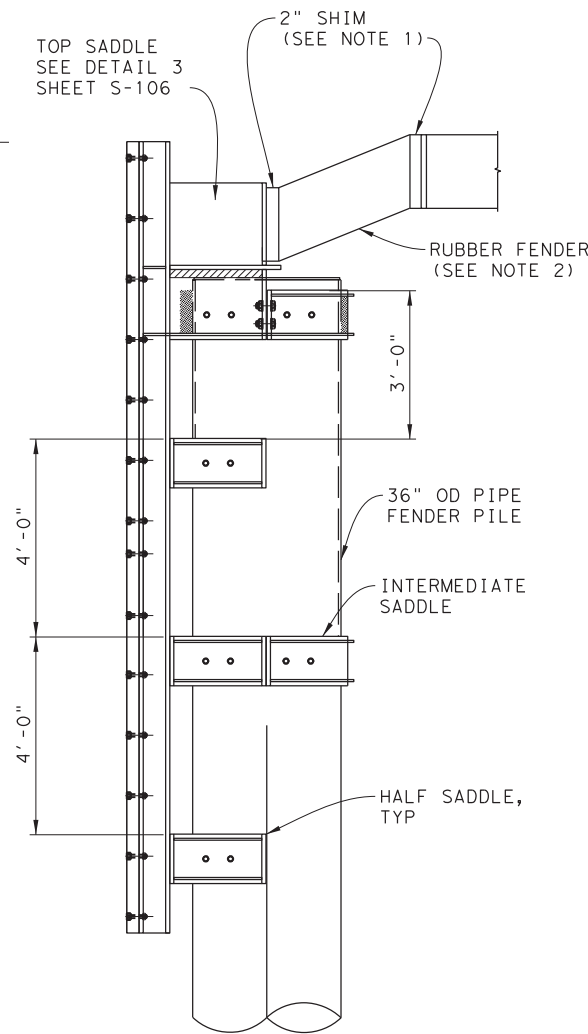
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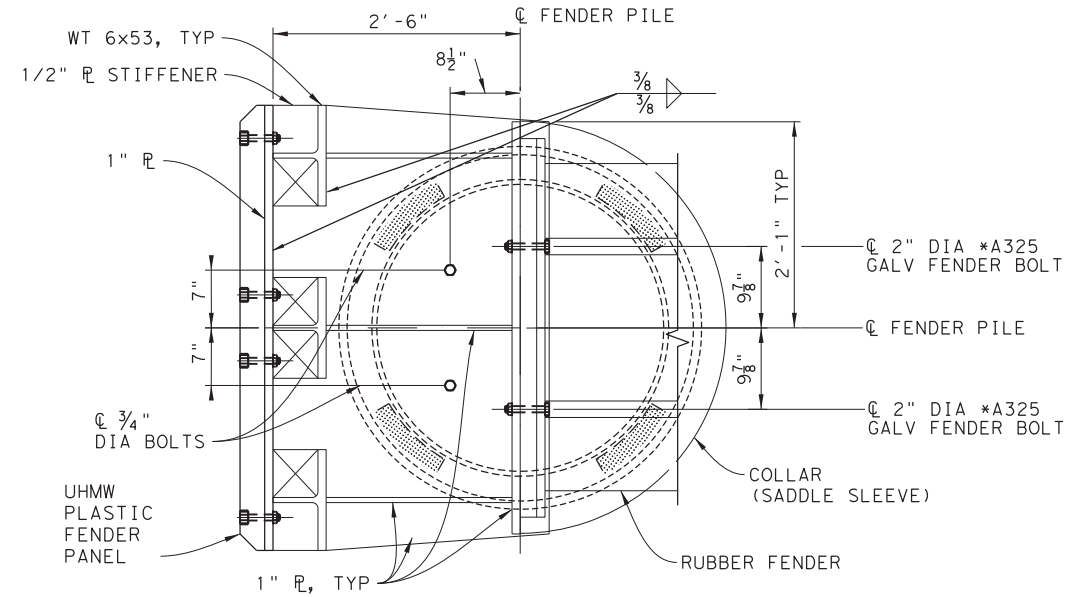
ELEVATION

NOTE:
TYPICAL FOR EACH FENDER PANEL

FENDER PANEL DETAIL
S-101, S-102

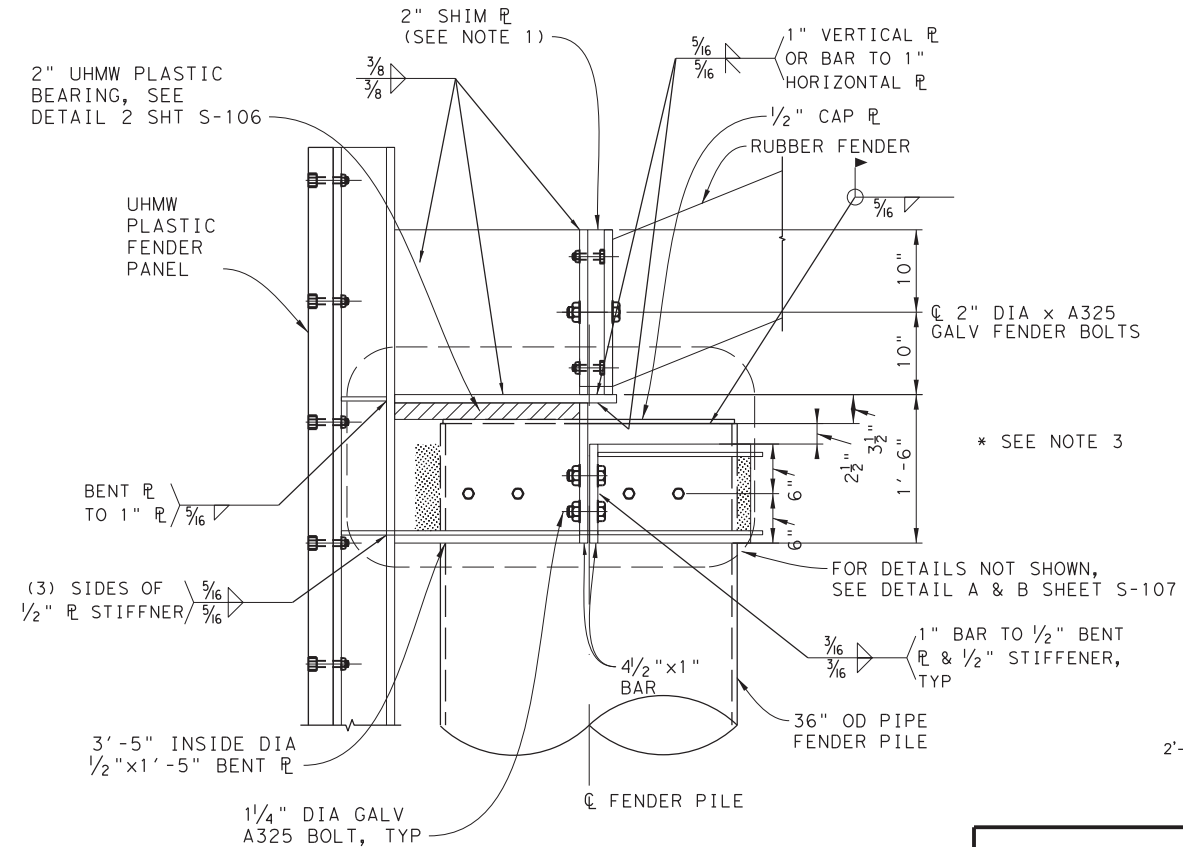


SIDE VIEW



PLAN

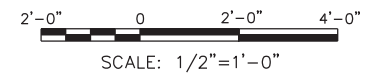
* SEE NOTE 3



ELEVATION

TOP SADDLE DETAIL
S-106

* SEE NOTE 3



NOTES:

- CONTRACTOR TO INSTALL FENDER PILES PLUMB WITHIN TOLERANCE SPECIFIED IN THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS. CONTRACTOR MAY PROVIDE UP TO 2 SHIMS AT EACH END OF EACH FENDER TO MAKE PILES PLUMB. ONE SHIM AT EACH END OF FENDER IS SHOWN IN THESE DRAWINGS.
- RUBBER FENDERS SHALL BE TRELLEBORG ME1250X900 G3.7 FENDER OR APPROVED EQUAL WITH THE FOLLOWING PERFORMANCE FOR EACH RUBBER FENDER ELEMENT (SEE SPECIAL PROVISIONS).

MINIMUM ENERGY ABSORBED: 253 FT-KIPS
MAXIMUM REACTION: 135 KIPS

- CONTRACTOR SHALL VERIFY ALL RUBBER FENDER DIMENSIONS AND ANCHOR BOLT REQUIREMENTS WITH FENDER MANUFACTURER CERTIFIED DRAWINGS AND ADJUST AS REQUIRED AND APPROVED BY THE PROJECT MANAGER OR HIS REPRESENTATIVE.

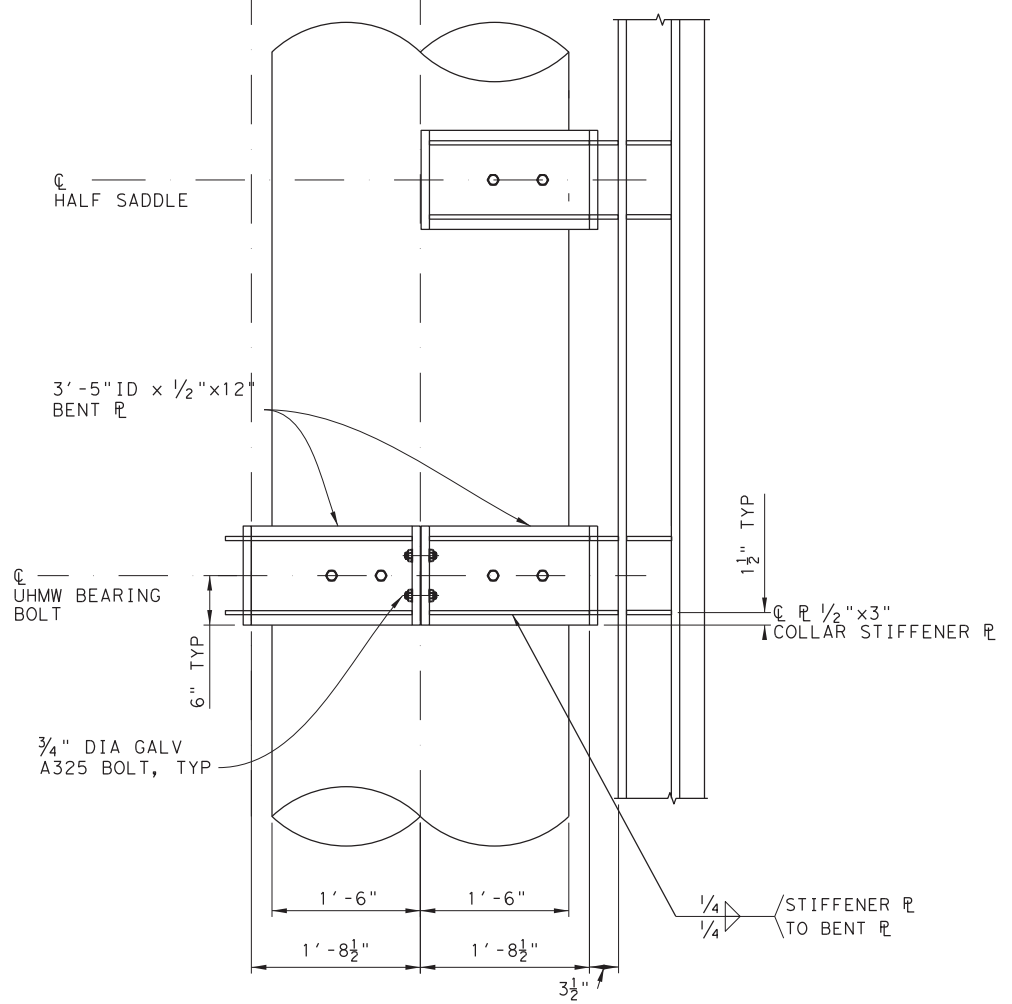
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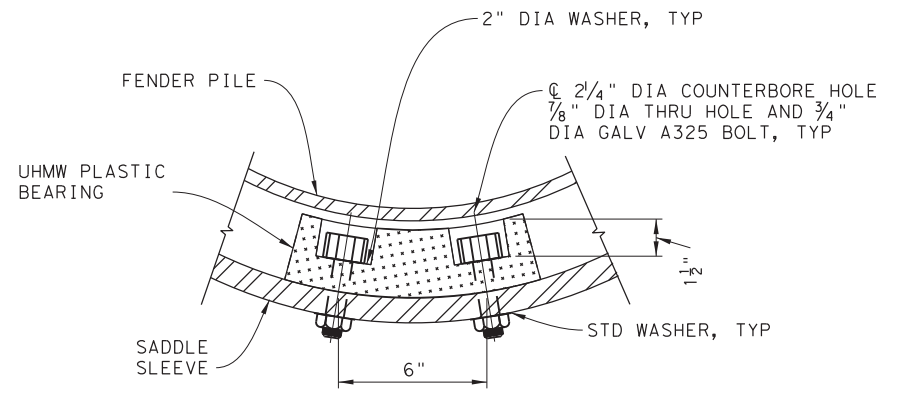
TYPE I OUTER DOLPHIN
FENDER PANEL DETAIL 1 OF 2

SHEET 33 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-106
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

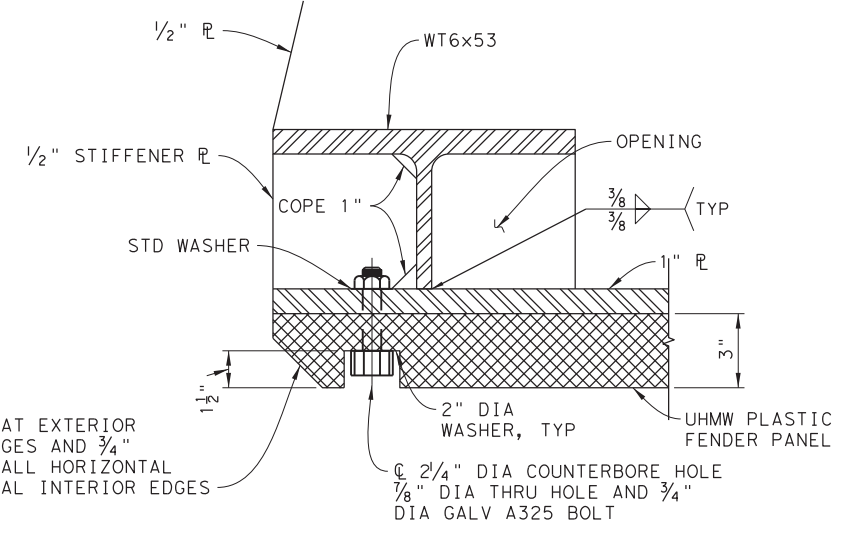


VIEW A
SCALE: 1"=1'-0"
S-106



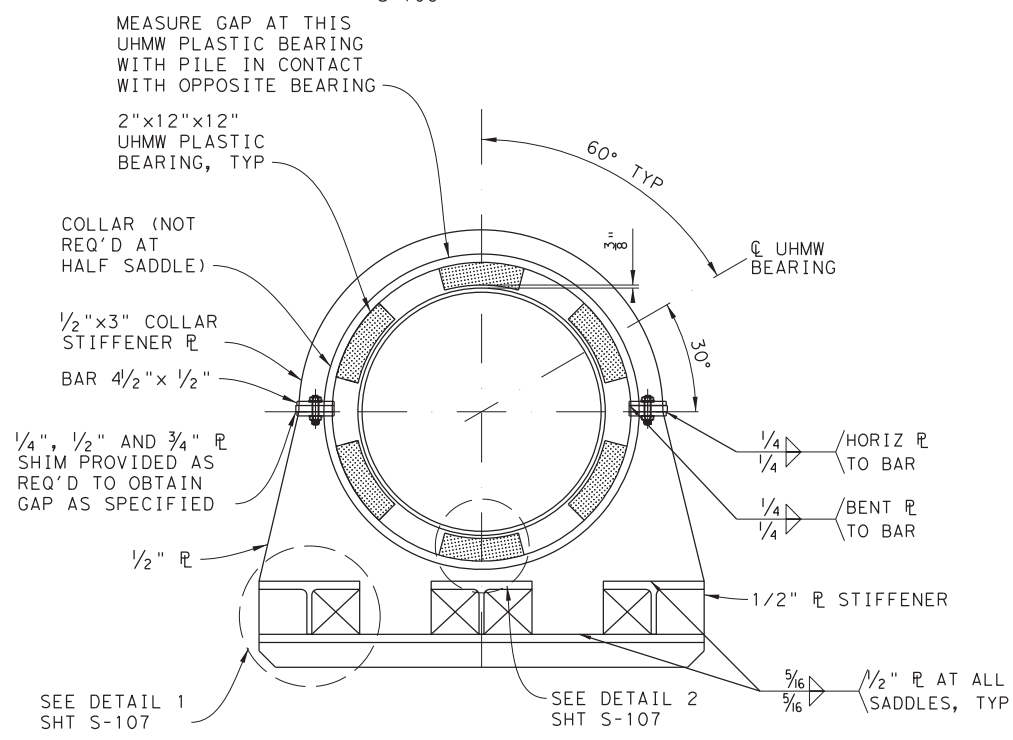
NOTES:
TYPICAL FOR EACH BEARING AT EACH SADDLE.

UHMW BEARING DETAIL
SCALE: 3"=1'-0"
S-107

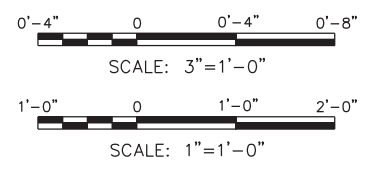


2" CHAMFER AT EXTERIOR VERTICAL EDGES AND 3/4" CHAMFER AT ALL HORIZONTAL & AT VERTICAL INTERIOR EDGES

UHMW PANEL DETAIL
SCALE: 3"=1'-0"
S-107



SECTION B
SCALE: 1"=1'-0"
S-106



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FERRY LANDING MAINTENANCE
TYPE I OUTER DOLPHIN
FENDER PANEL DETAIL 2 OF 2
SHEET 34 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-107
DN: 1 MM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

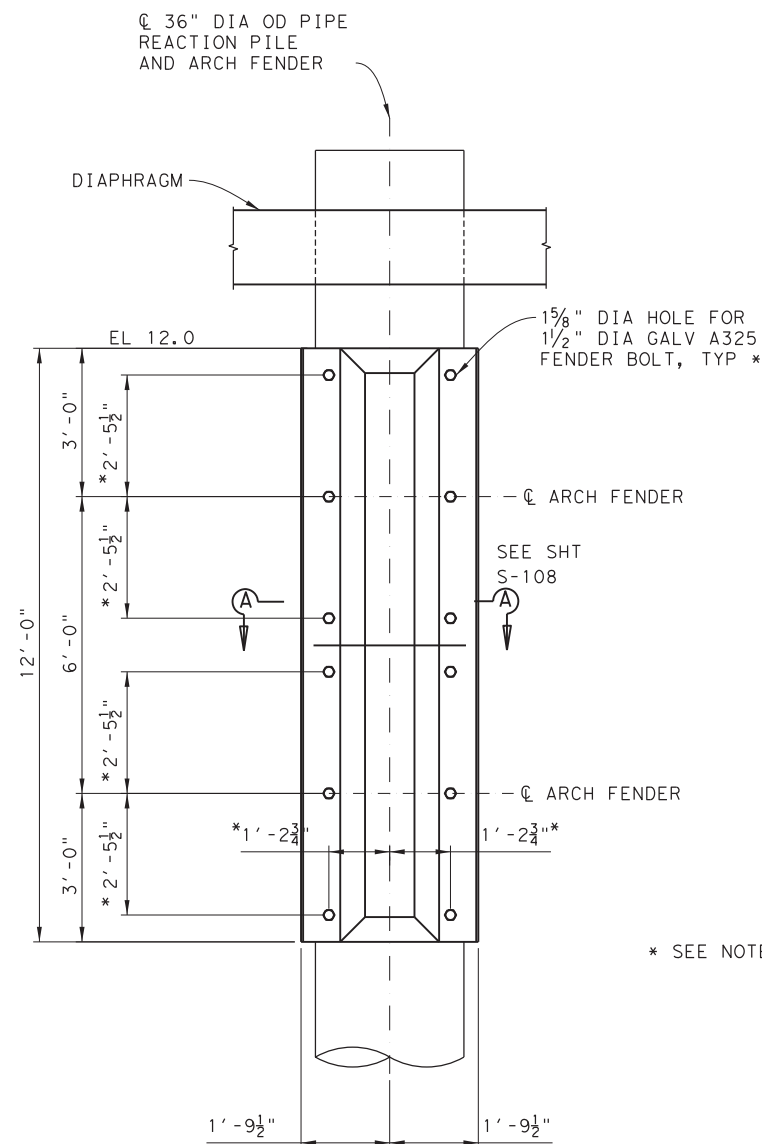
DRAWING NAME: 949402-S-107.dgn PLOT DATE: 4/6/2023 3:27:26 PM PLOTTED BY: SHIL

NOTES:

1. ARCH FENDERS ARE METSO TRELLEX MA 500X1700B FENDERS, OR APPROVED EQUAL, WITH THE FOLLOWING PERFORMANCE FOR EACH FENDER ELEMENT (SEE SPECIAL PROVISIONS):

MINIMUM ENERGY ABSORBED: 66 FT-KIPS
 MAXIMUM REACTION AT ABOVE ENERGY: 98 KIPS

2. TO REPLACE OR REPAIR, CONTRACTOR SHALL VERIFY ALL ARCH FENDER DIMENSIONS AND ANCHOR BOLT REQUIREMENTS WITH FENDER MANUFACTURER CERTIFIED DRAWINGS AND ADJUST AS REQUIRED AND APPROVED BY THE TXDOT PROJECT MANAGER OR HIS REPRESENTATIVE.

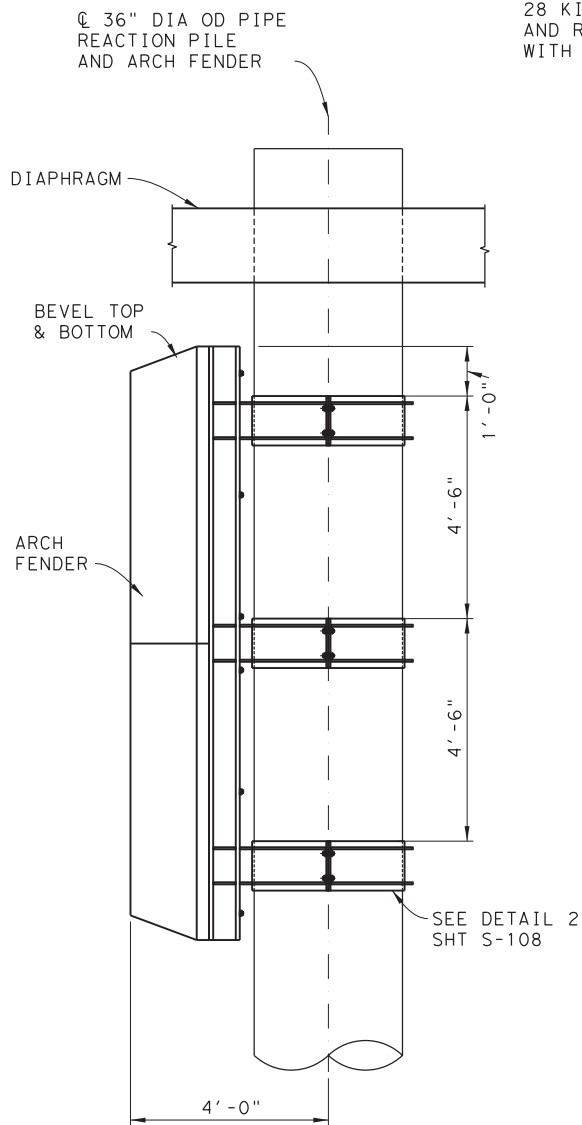


ELEVATION

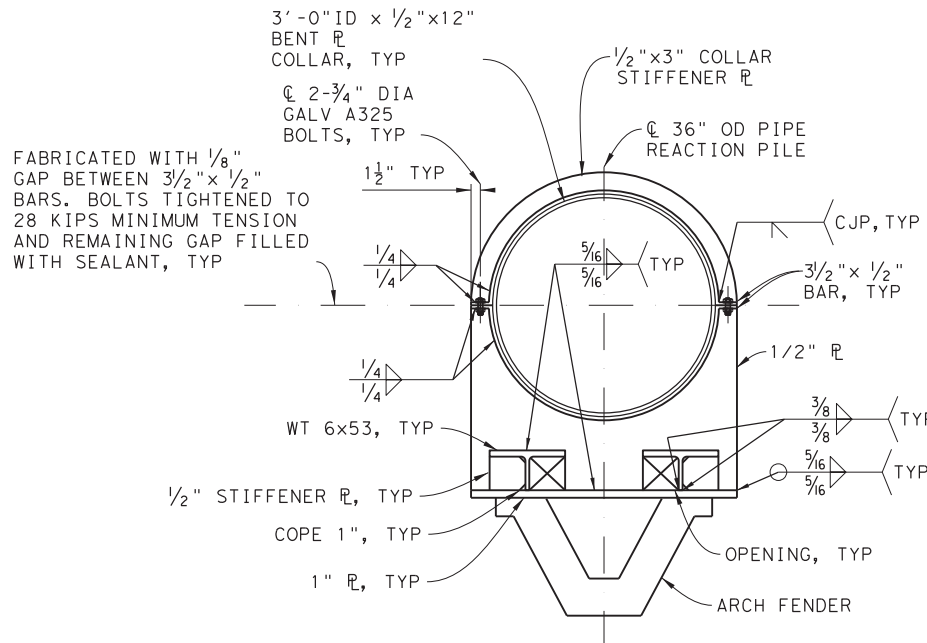
ARCH FENDER DETAIL

SCALE: 1/2" = 1' - 0"
 S-102

* SEE NOTE 2

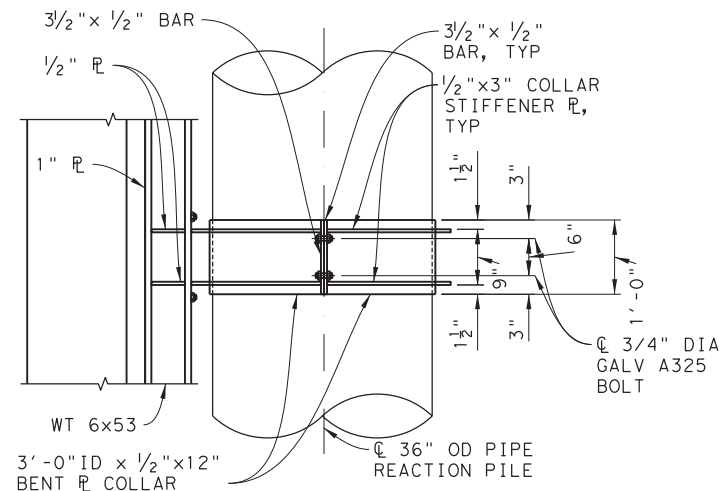


SIDE VIEW



SECTION A

SCALE: 3/4" = 1' - 0"
 S-108



FRICION COLLAR MOUNTING BRACKET DETAIL

SCALE: 3/4" = 1' - 0"
 S-108



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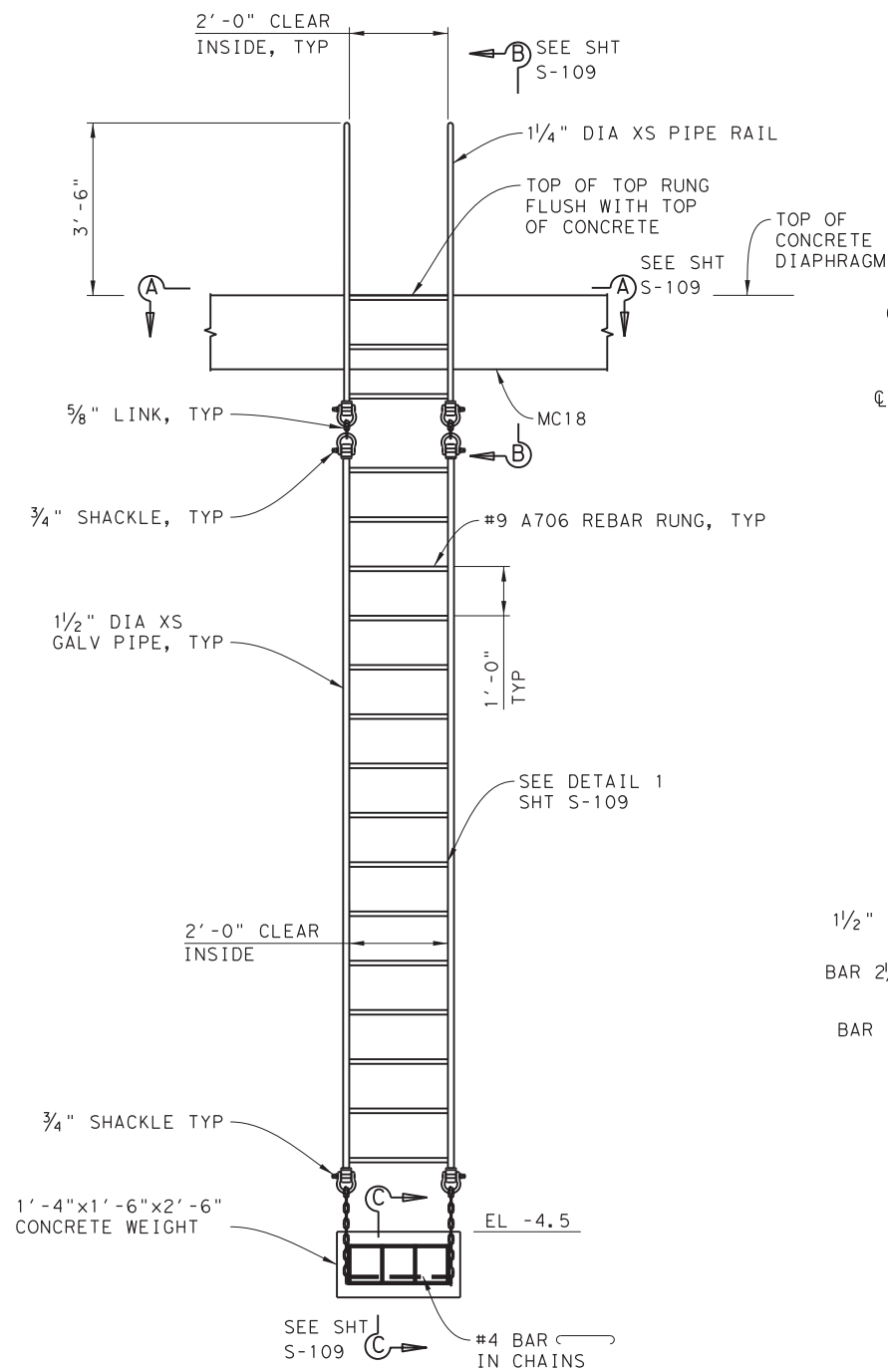
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FERRY LANDING MAINTENANCE

TYPE I OUTER DOLPHIN ARCH FENDER DETAILS

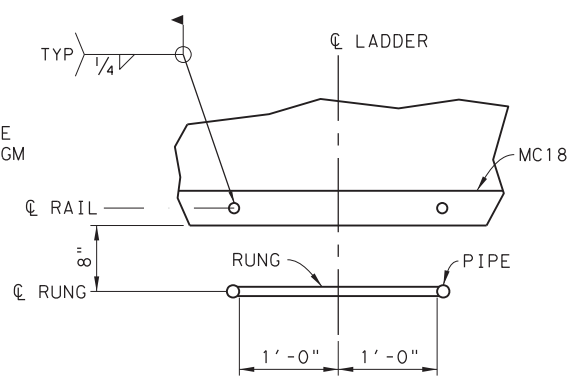
SHEET 35 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
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DN: I MB	REVISIONS			
CK: I WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: I SH		GALVESTON	6428 78 001	SH87
CK: I RW	REV	DESCRIPTION	DATE	

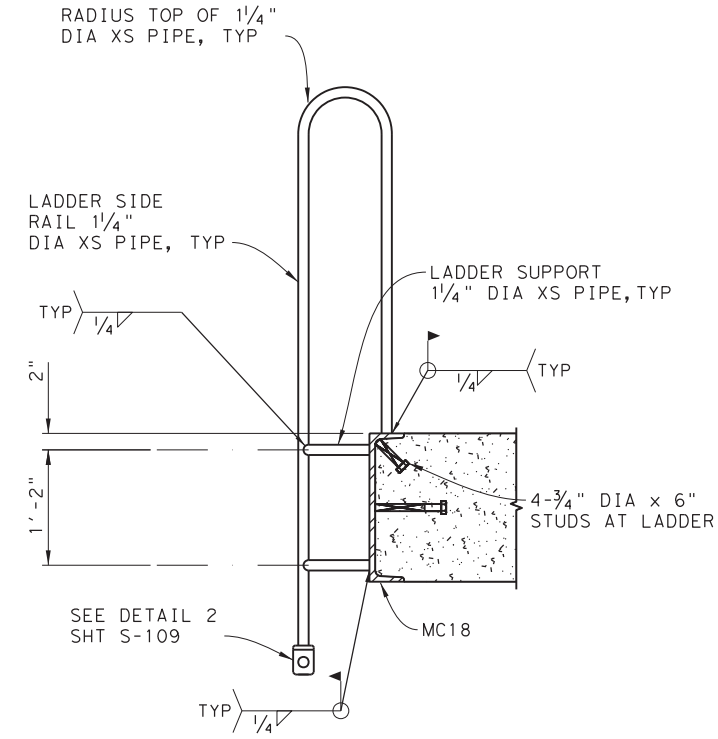
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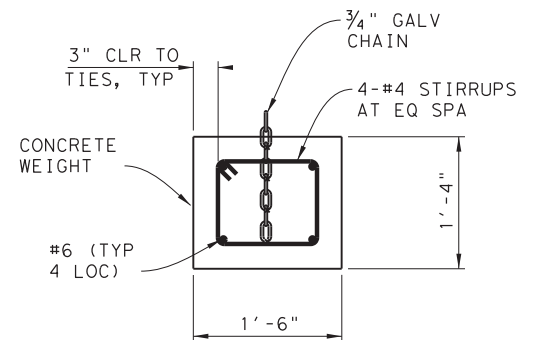
LADDER DETAIL
SCALE: 1/2"=1'-0"
S-100 & S-102



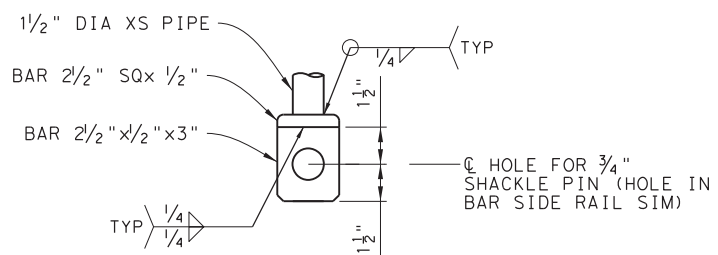
SECTION A
SCALE: 1"=1'-0"
S-109



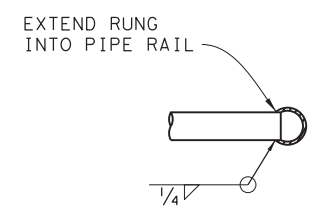
SECTION B
SCALE: 1"=1'-0"
S-109



SECTION C
SCALE: 1"=1'-0"
S-109

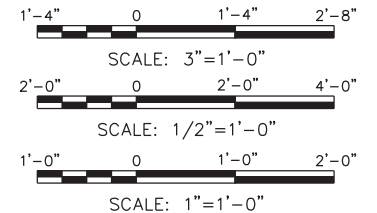


PIPE TO SHACKLE DETAIL
SCALE: 3"=1'-0"
S-109



RUNG WELD DETAIL
SCALE: 3"=1'-0"
S-109

NOTE:
TYPICAL EACH END, EACH RUNG



NOTES:
HOT DIP GALVANIZED LADDER AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

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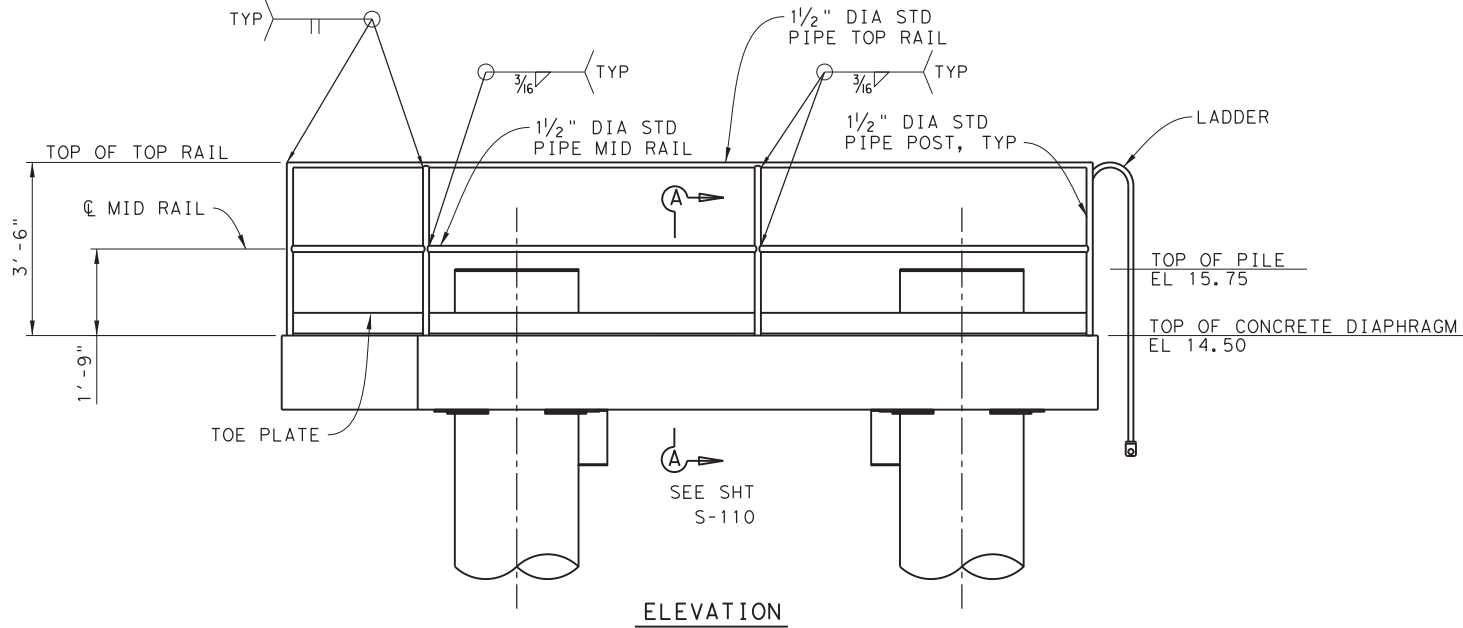
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FERRY LANDING MAINTENANCE
TYPE I OUTER DOLPHIN LADDER DETAILS

SHEET 36 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-109
DN: 1	WB	REV	DESCRIPTION	DATE
DR: 1	SH			
CK: 1	FW			
COUNTY:		CONTROL SECTION:	JOB:	HIGHWAY:
GALVESTON		6428 78	001	SH87

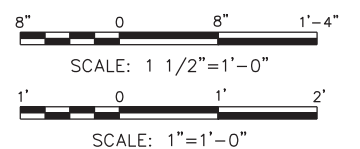
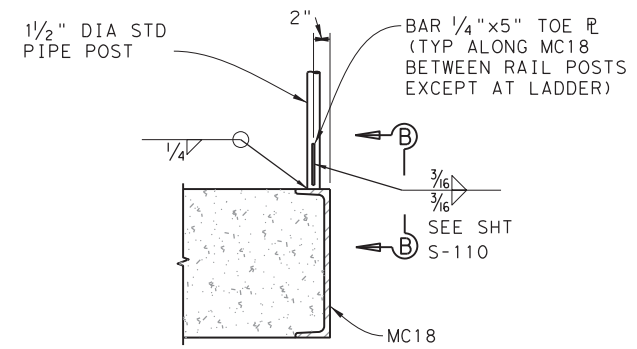
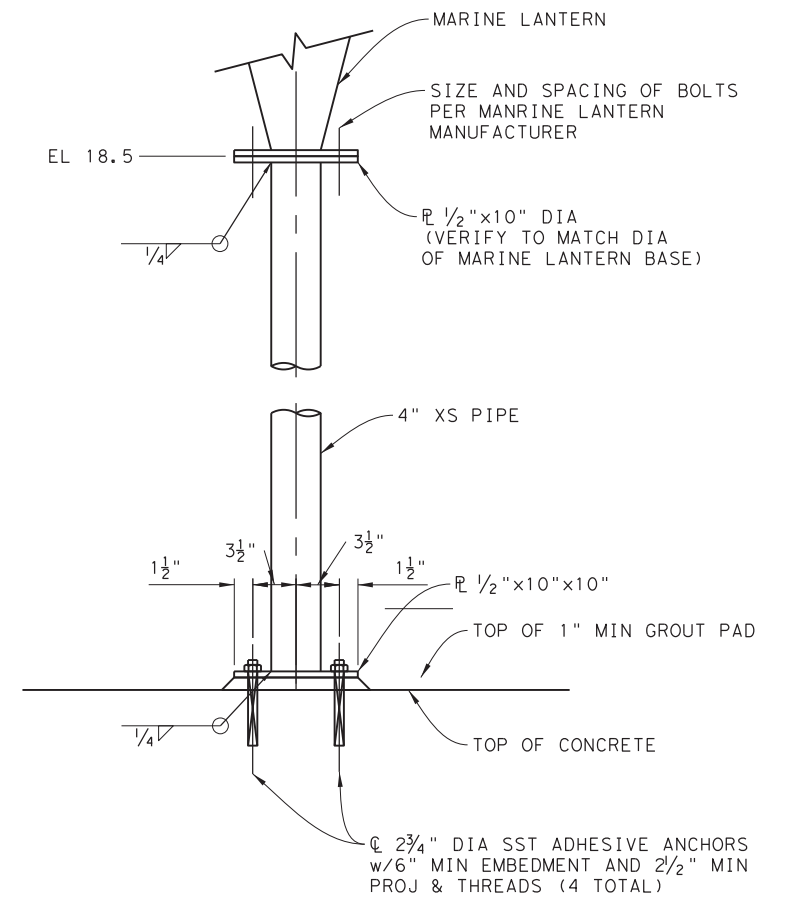
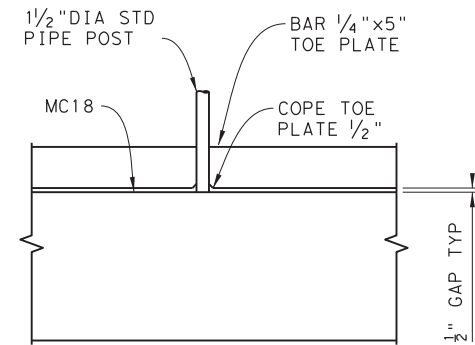
3:27:51 PM 4/6/2023

DRAWING NAME: 949402-S-109.dgn PLOT DATE: 4/6/2023 3:27:51 PM PLOTTED BY: SHIH



- NOTES:**
1. MAXIMUM SPACING FOR GUARDRAIL POSTS SHALL BE 8'-0"
 2. HOT DIP GALVANIZE GUARDRAIL AFTER FABRICATION IN ACCORDANCE WITH ASTM 123.

TYPICAL GUARDRAIL DETAIL
SCALE: 1/2"=1'-0"
S-100 & S-102



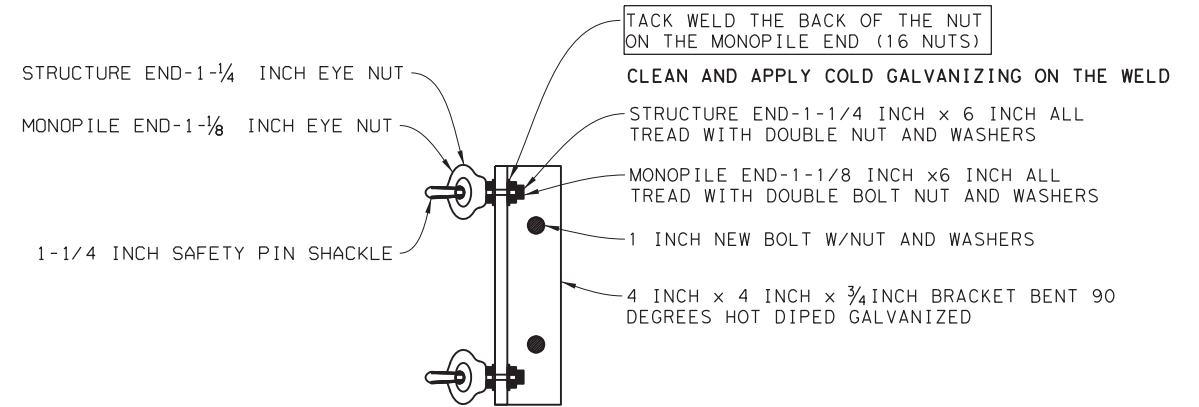
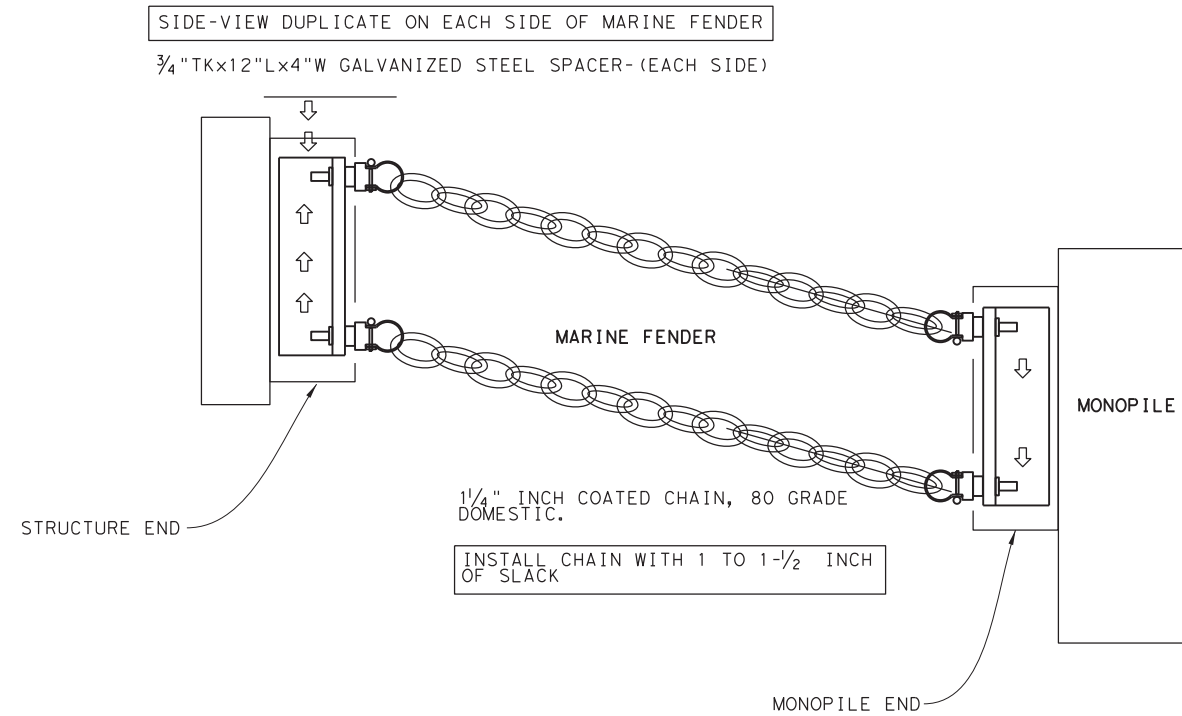
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FERRY LANDING MAINTENANCE
TYPE I OUTER DOLPHIN
MISC DETAILS

SHEET 37 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-110
DN: 1 WM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-110.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:27:59 PM



REQUIRED MATERIAL FOR EACH MARINE CHAIN INSTALLATION
4" X 4" GALVANIZED STEEL ANGLE-4 EACH
1-1/4" X 6" ALL THREAD W/ DOUBLE NUT AND WASHER-4 EACH
1-1/8" X 6" ALL THREAD W/ DOUBLE NUT AND WASHER-4 EACH
1-1/4" EYE NUT-4 EACH
1-1/8" EYE NUT-4 EACH
1-1/4" X 6" SAFETY PIN SHACKLE-8 EACH
1" HEX BOLT WITH NUT AND WASHERS-16 EACH
1-1/4" X 6" COATED CHAIN, GAGE 80 DOMESTIC-30 FEET
3/4"TK X 12"L X 4"W GALVANIZED STEEL SPACER-2 EACH

MARINE FENDER OUTER DOLPHIN CHAIN REINFORCEMENT SYSTEM

NOT TO SCALE

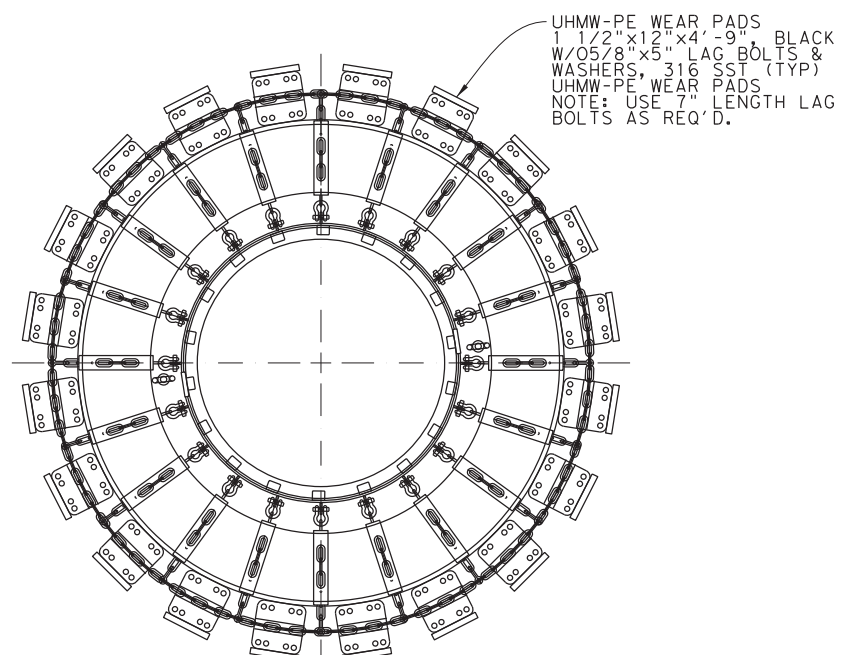
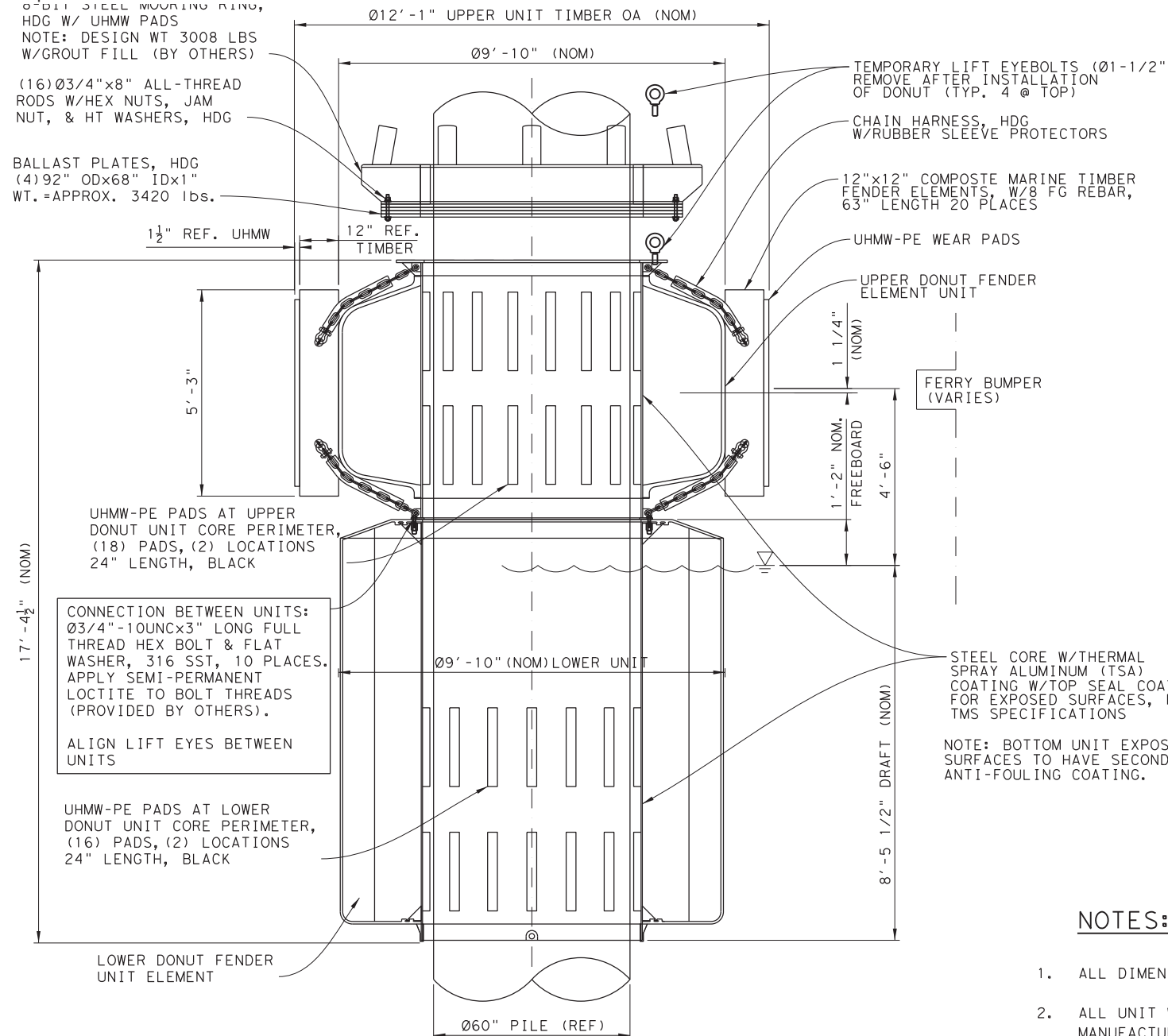
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FERRY LANDING MAINTENANCE
MARINE FENDER OUTER DOLPHIN CHAIN REINFORCEMENT SYSTEM

SHEET 38 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
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DN: I	MM	REVISIONS		
CK: I	WB			
DN: I	SH	COUNTY	CONTROL SECTION	JOB HIGHWAY
CK: I	RW	GALVESTON	6428 78	001 SH87

DRAWING NAME: 949402-S-111.dgn
 PLOT DATE: 4/6/2023 3:28:10 PM PLOTTED BY: SHIH



PLAN VIEW AT UPPER UNIT

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED BY OTHERS.
2. ALL UNIT WEIGHTS AND DIMENSIONS ARE NOMINAL AND SUBJECT TO NORMAL MANUFACTURING TOLERANCES.
3. ALL STEEL IS TO BE PER ASTM A36 OR EQUAL.
4. ALL DONUT UNIT CONNECTION HARDWARE IS TO BE AISI 316 STAINLESS STEEL, UNO.
5. TIMBER NET CONNECTION CHAINS AND SHACKLES ARE TO BE GALVANIZED PER ASTM A123/A153 OR EQUAL.
6. STEEL MOORING RING AND BALLAST PLATES ARE TO BE HOT-DIP GALVANIZED PER ASTM A123.
7. BALLAST PLATE CONNECTION HARDWARE IS TO BE GALVANIZED PER ASTM A153.
8. ALL WELDING IS TO BE PER AWS D1.1 OR EQUAL.
9. ALL EXPOSED STEEL SURFACES TO HAVE A THERMAL SPRAY ALUMINUM (TSA) COATING SYSTEM PER TMS SPECIFICATIONS. COLOR: GRAY OR GOLD
10. ALL NON-EXPOSED STEEL SURFACES TO HAVE EPOXY PAINT COATING PER TMS SPECIFICATIONS.
11. BOTTOM UNIT EXPOSED STEEL TO HAVE SECONDARY COATING OF ANTI-FOULING PAINT, COLOR: TBD.
12. COMPOSITE MARINE TIMBER WITH FIBERGLASS REBAR AND UHMW-PE WEAR PADS ARE TO BE PER TMS SPECIFICATIONS. UHMW-PE WEAR PAD CONNECTIONS TO BE AISI 316 STAINLESS STEEL.



REFERENCE WEIGHTS:

MOORING RING:	3008 LBS
BALLAST PLATES:	3420 LBS
UPPER UNIT:	13969 LBS
LOWER UNIT:	6963 LBS
TOTAL WEIGHT:	27360 LBS

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FERRY LANDING MAINTENANCE
 9' 10" OD UPPER & LOWER
 DONUT FENDER ASSEMBLY w/
 MOORING RING

SCALE: 1/2" = 1'-0" SHEET 39 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-120
DN: MM	REVISIONS			COUNTY:
CK: WB				GALVESTON
DR: SH			CONTROL SECTION:	JOB HIGHWAY:
CK: RW	REV	DESCRIPTION	DATE	6428 78 001 SH87

DRAWING NAME: 949402-S-120.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:28:15 PM

8-BIT STEEL MOORING RING,
HDG W/UHMW PADS
NOTE: DESIGN WT 3008 LBS
W/GROUT FILL (BY OTHERS).

BALLAST PLATES, HDG
(6) 92'ODx68"IDx1"
WT. = APPROX. 5130 lbs.

(16) 03/4"x10" ALL-THREAD
RODS W/HEX NUTS, JAM
NUT, & HT WASHERS, HDG

TEMPORARY LIFT EYEBOLTS (Ø1-1/2")
REMOVE AFTER INSTALLATION
OF DONUT (TYP. 4 @ TOP)

CHAIN HARNESS, HDG
W/RUBBER SLEEVE
PROTECTORS

12x12 COMPOSITE MARINE
TIMBER FENDER ELEMENTS,
W/(8) FG REBAR, 63" LENGTH
30 PLACES

UHMW-PE WEAR PADS

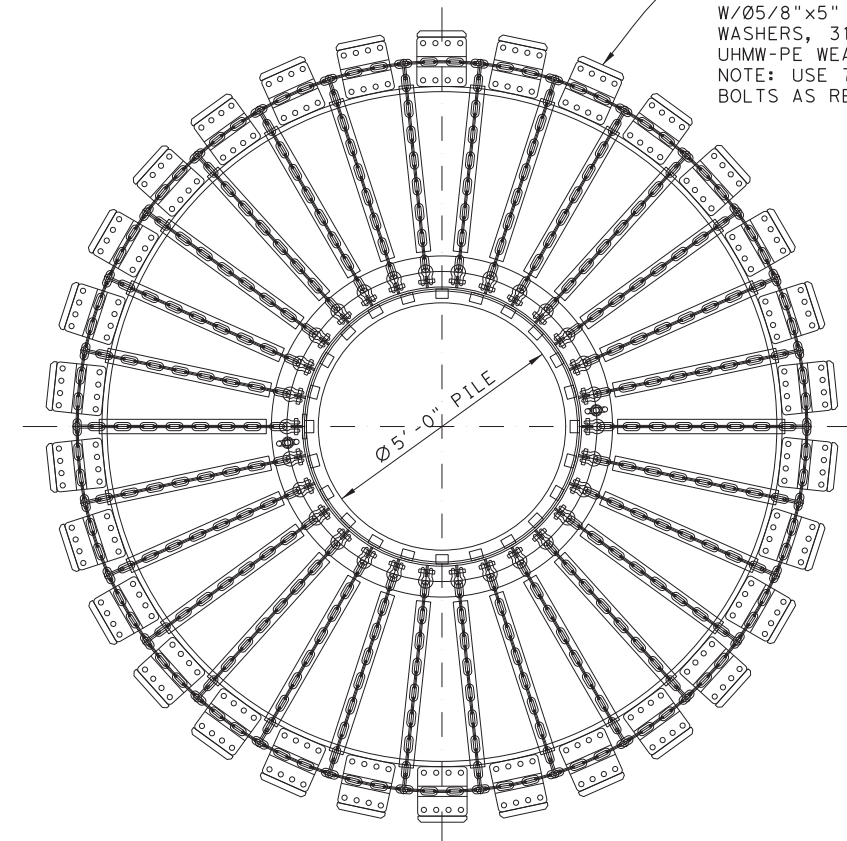
UPPER DONUT FENDER
ELEMENT UNIT

FERRY BUMPER
(VARIES)

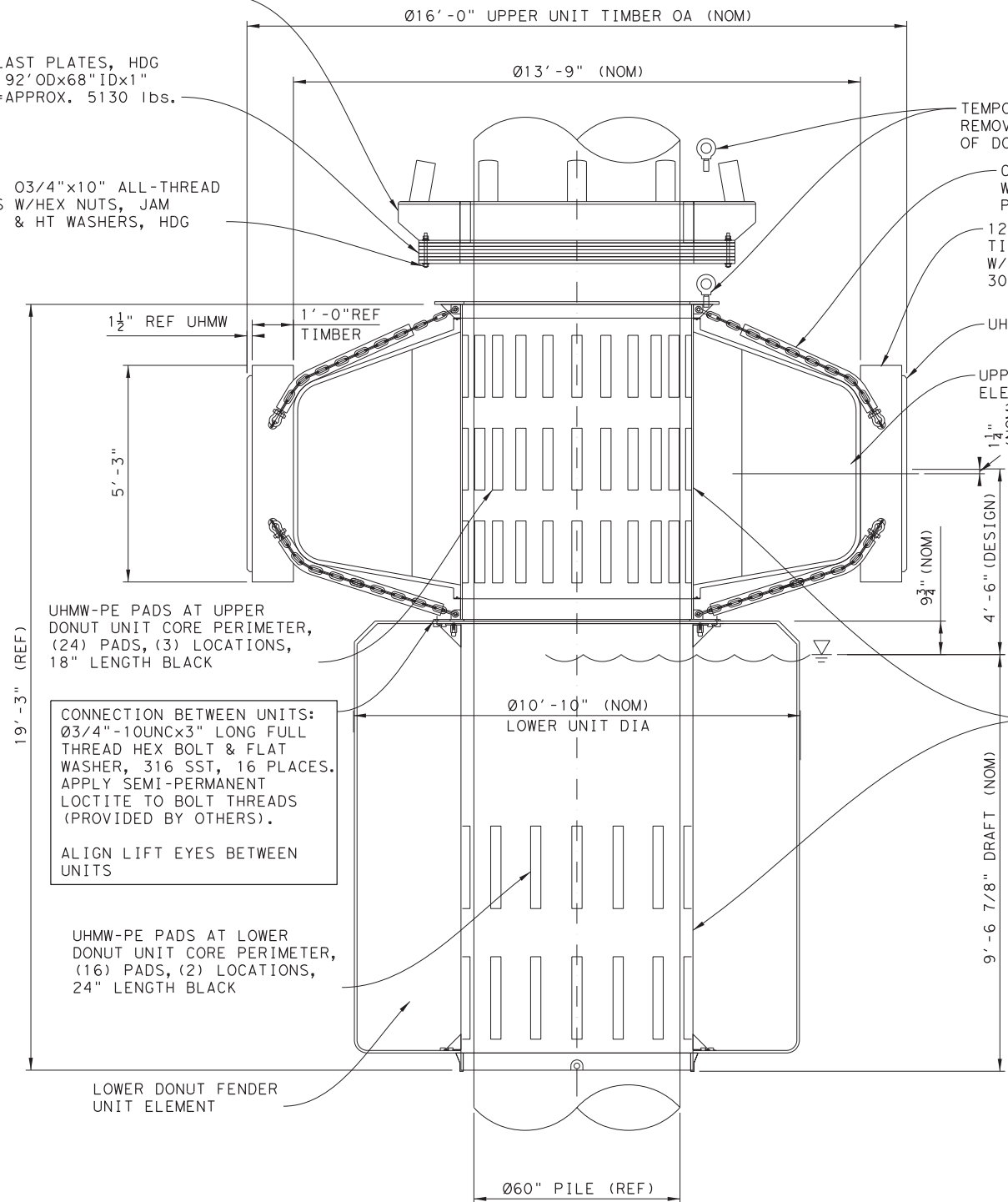
STEEL CORE W/ THERMAL
SPRAY ALUMINUM (TSA)
COATING W/TOP SEAL COATING
FOR EXPOSED SURFACES, PER
TMS SPECIFICATIONS

NOTE: BOTTOM UNIT EXPOSED
STEEL SURFACES TO HAVE
SECONDARY ANTI-FOULING
COATING.

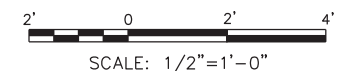
UHMW-PE WEAR PADS
1 1/2"x12"x4'9", BLACK
W/Ø5/8"x5" LAG BOLTS &
WASHERS, 316 SST (TYP)
UHMW-PE WEAR PADS
NOTE: USE 7" LENGTH LAG
BOLTS AS REQ'D.



PLAN VIEW AT UPPER UNIT



SIDE VIEW



CONNECTION BETWEEN UNITS:
Ø3/4"-10UNCx3" LONG FULL
THREAD HEX BOLT & FLAT
WASHER, 316 SST, 16 PLACES.
APPLY SEMI-PERMANENT
LOCTITE TO BOLT THREADS
(PROVIDED BY OTHERS).

ALIGN LIFT EYES BETWEEN
UNITS

UHMW-PE PADS AT LOWER
DONUT UNIT CORE PERIMETER,
(16) PADS, (2) LOCATIONS,
24" LENGTH BLACK

LOWER DONUT FENDER
UNIT ELEMENT

REFERENCE WEIGHTS:

MOORING RING:	3008 LBS
BALLAST PLATES:	5130 LBS
UPPER UNIT:	24490 LBS
LOWER UNIT:	8525 LBS
TOTAL WEIGHT:	41153 LBS

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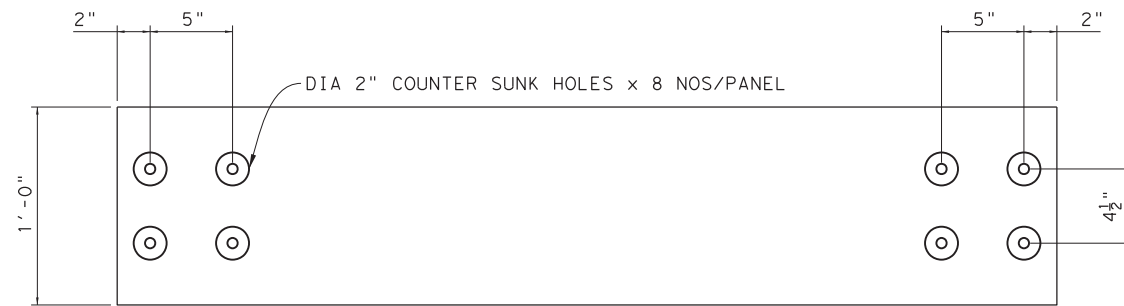
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FERRY LANDING MAINTENANCE
13'9" UPPER & LOWER
DONUT FENDER ASSEMBLY w/
MOORING RING

SCALE: 1/2" = 1'-0" SHEET 40 OF 148

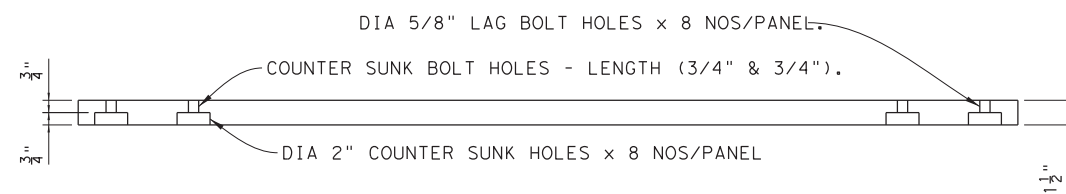
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DN: MM	CK: WB	DR: SH	CK: RW	REV
COUNTY:	CONTROL SECTION:	JOB:	HIGHWAY:	
GALVESTON	6428 78	001	SH87	

ITEM: 7146

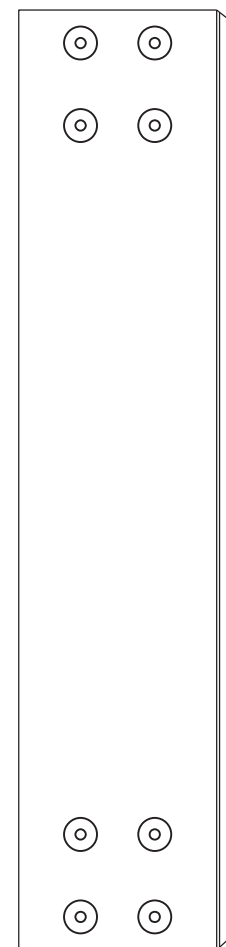
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FRONT VIEW / ELEVATION



SIDE VIEW



FRONT VIEW ELEVATION

NOTES:

1. UHMW-PE TIMBER PAD WILL BE CONSTRUCTED IN ONE SIZE AS FOLLOWS: 12"W x 4.75'L.
2. LAG BOLTS WILL BE 7"x5/8" SS 316 WITH SS 316 WASHER.
3. COUNTERSUNK HOLE MEASUREMENTS FOR BOTH INTERMEDIATE AND INNER TIMBERS WILL BE THE SAME.
4. FIELD FIT MAYBE REQUIRED INCLUDING NEW MOUNTING LOCATION.



DRAWING NAME: 949402-S-122.dgn
PLOT DATE: 4/6/2023 3:28:24 PM PLOTTED BY: SHIH

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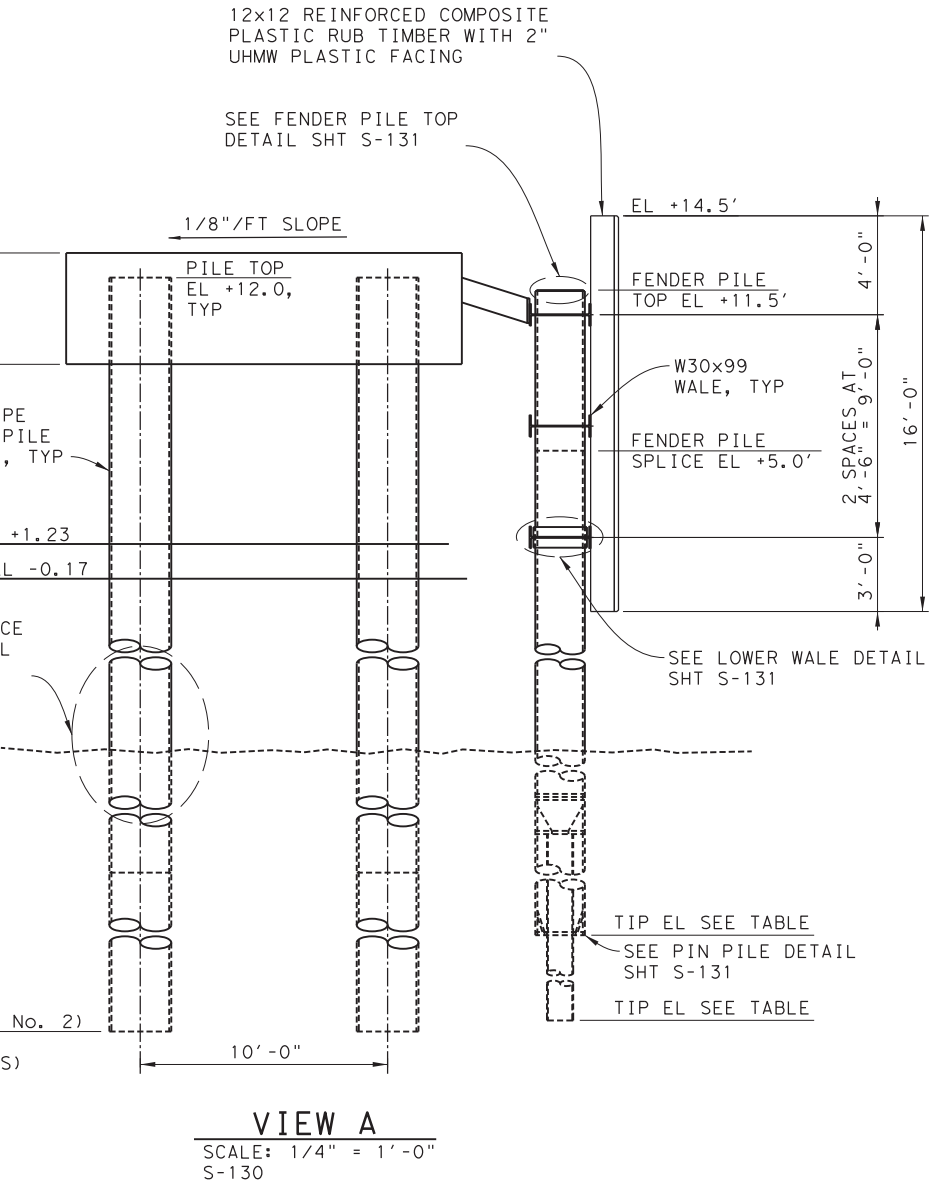
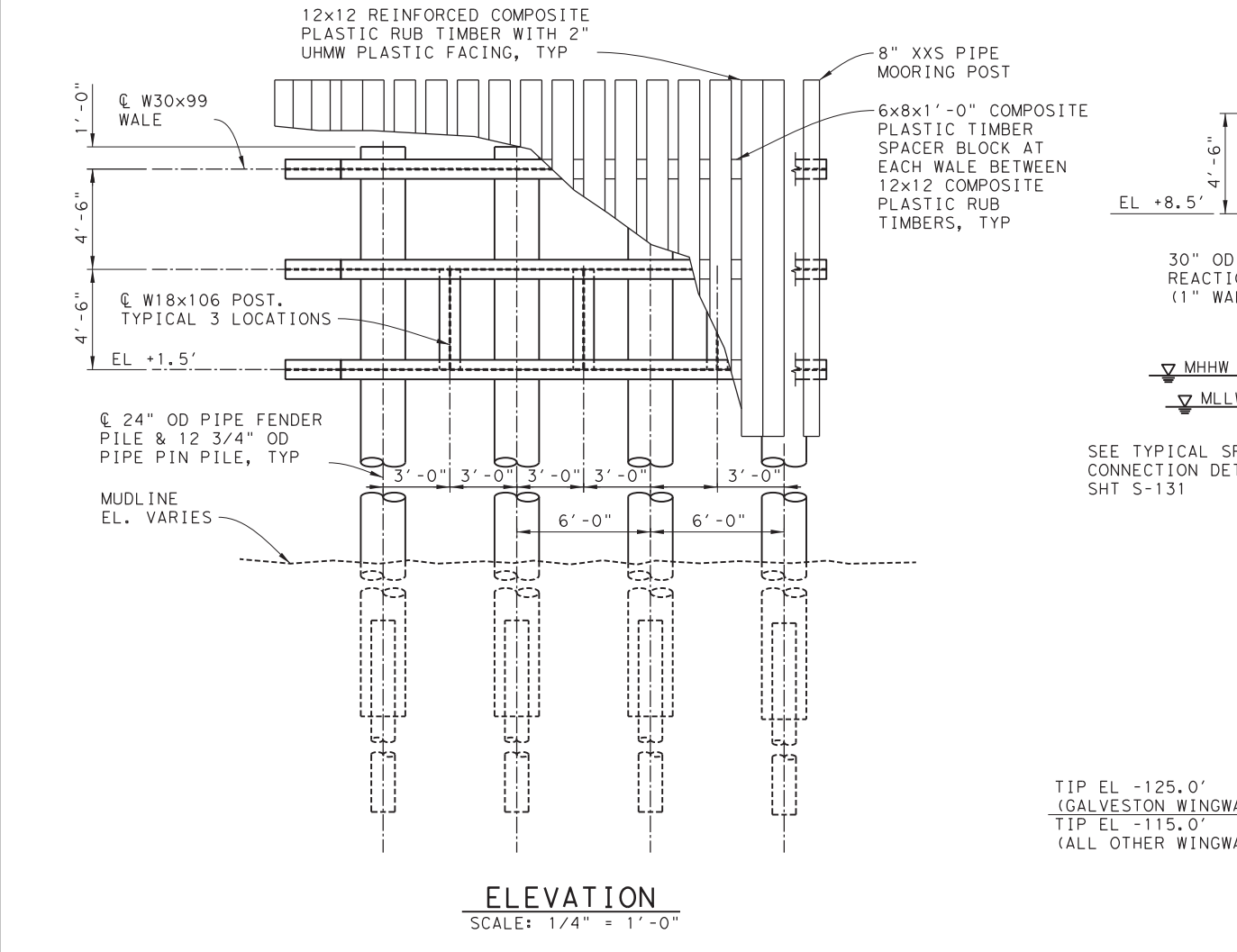
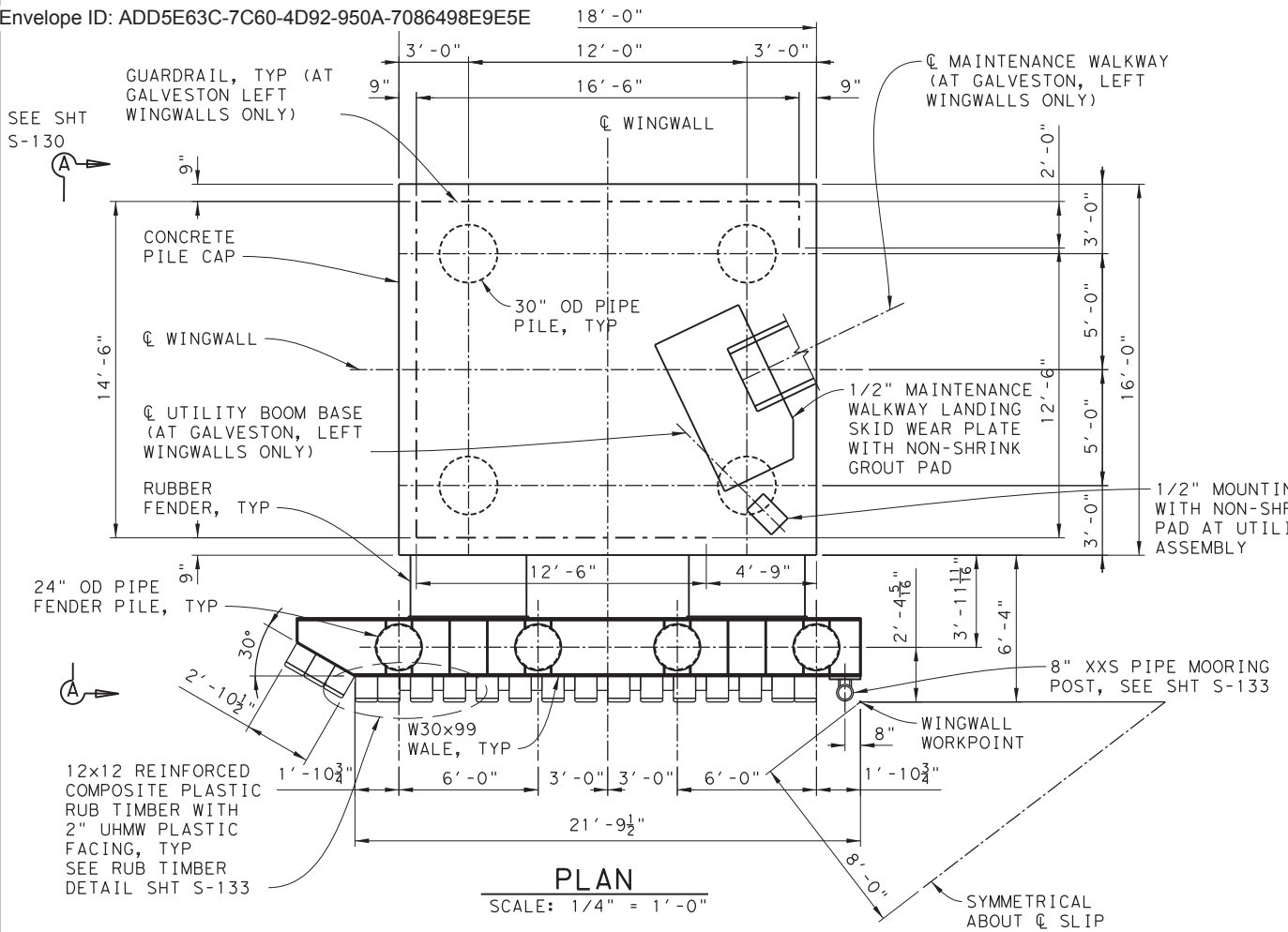
FERRY LANDING MAINTENANCE

**REINFORCED COMPOSITE
UHMW-PE TIMBER PAD**

SHEET 41 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-122
CK:1	WB	COUNTY			HIGHWAY
DN:1	MC	GALVESTON	6428	78	001
CK:1	RW	REV	DESCRIPTION	DATE	SH87

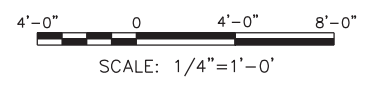
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PILE TIP ELEVATION TABLE

LOCATION	WINGWALL NO.	24" OD PIPE FENDER PILE TIP ELEVATION	12 3/4" OD PIPE PIN PILE TIP ELEVATION
GALVESTON	1	-25.0	-75.0
	2	-35.0	-85.0
	3	-25.0	-65.0
	4	-25.0	-65.0
BOLIVAR	1	-25.0	-55.0
	2	-25.0	-55.0

- COATING NOTES:**
- THERMAL SPRAYED ALUMINUM (TSA) COATING SCHEDULE:
 - ENTIRE PIN PILE
 - FENDER PILE BELOW FENDER PILE SPLICE ELEV +5.0
 - ENTIRE REACTION PILE. TOP 5 FEET OF PILE CAST INTO CONCRETE PILECAP COATED WITH EPOXY COATING OVER TSA COATING.
 - ENTIRE FENDER PILE FRAME INCLUDING PIPES, WALES, SLEEVES, AND MOORING POST. IN ADDITION, TOP SURFACES OF ALL HORIZONTAL WALES COATED WITH EPOXY COATING OVER TSA COATING.

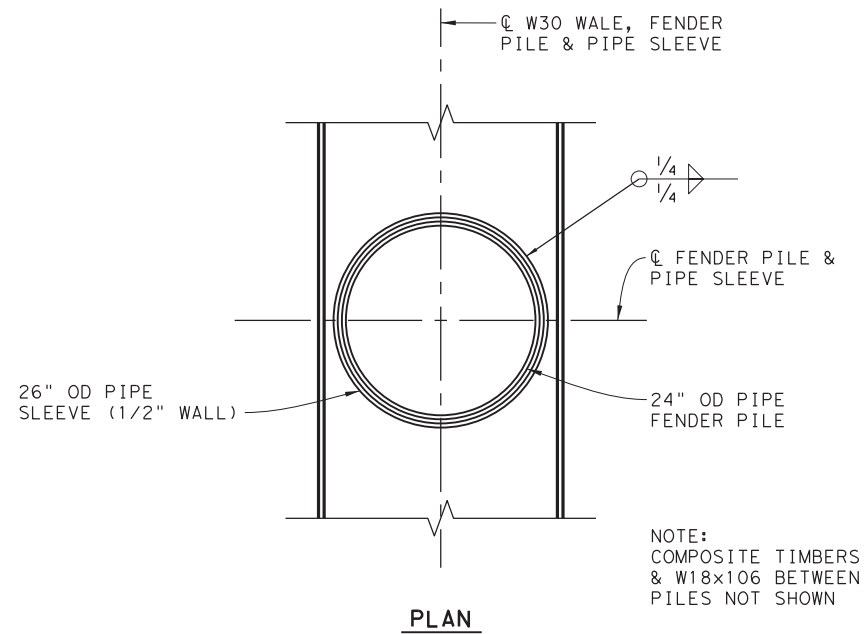


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FERRY LANDING MAINTENANCE
WING WALL
PLAN AND ELEVATION
SHEET 42 OF 148

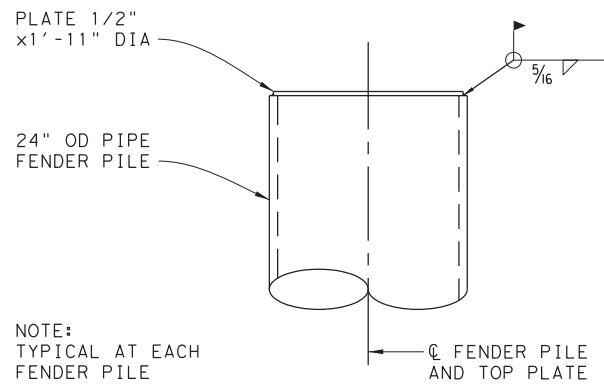
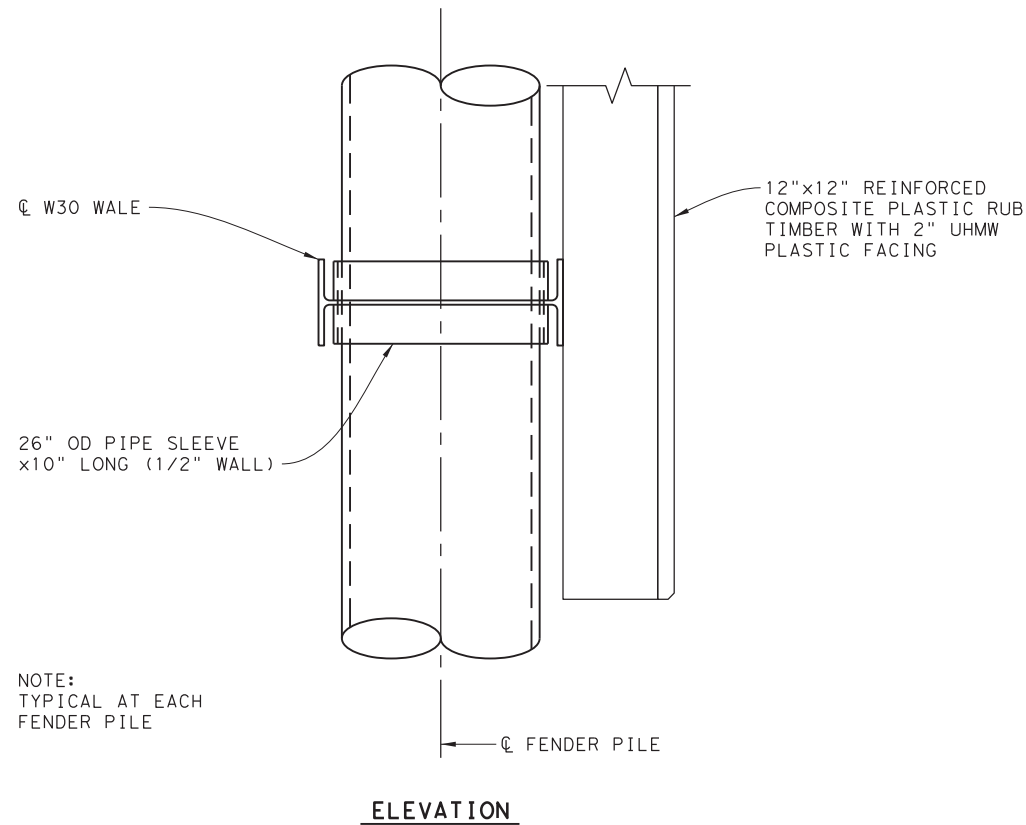
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	12		RMC 6428-78-001	S-130
DN: MM	REVISIONS			COUNTY:
CK: WB				CONTROL SECTION JOB HIGHWAY:
DR: MC				GALVESTON 6428 78 001 SH87
CK: RW	DATE:			

3:28:28 PM 4/6/2023

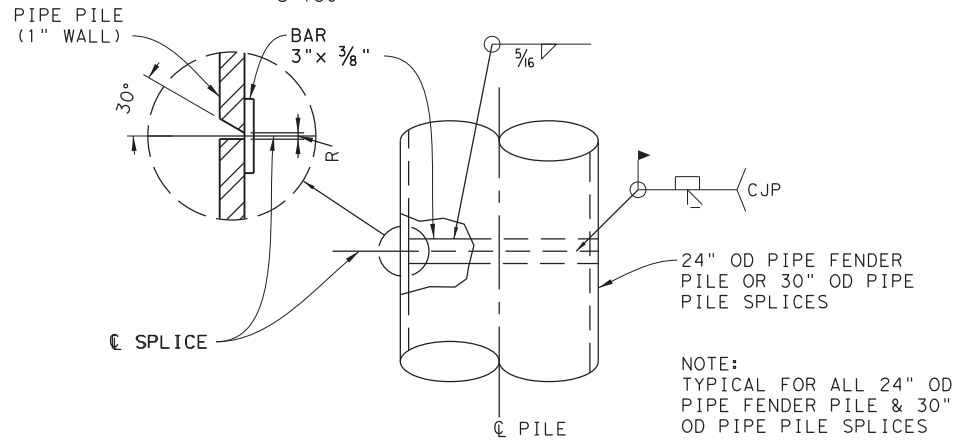
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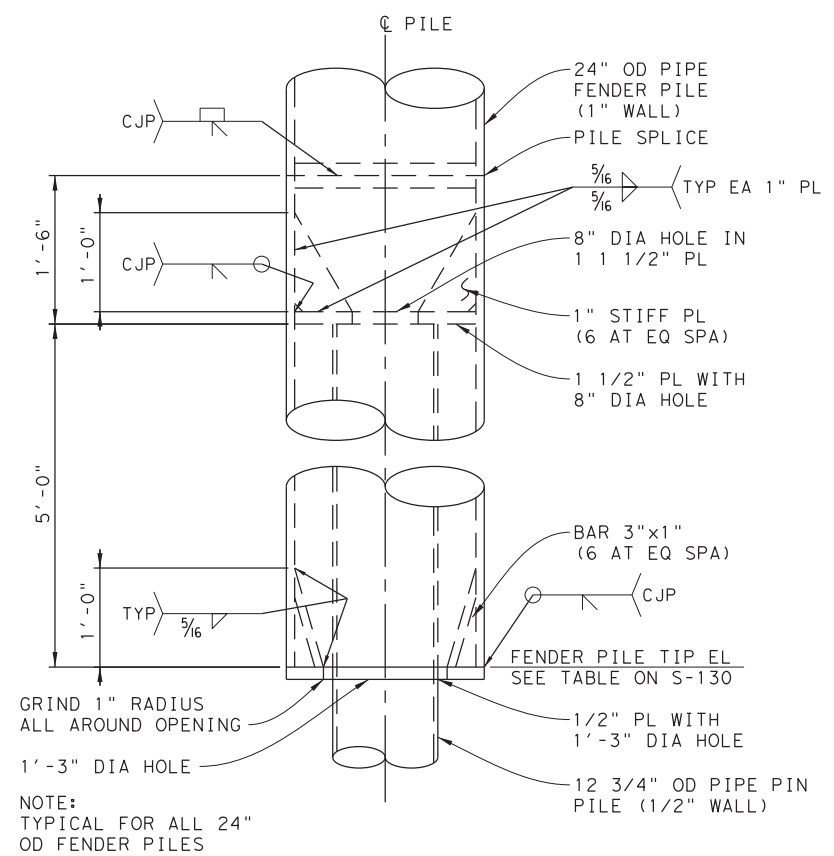
LOWER WALE SUPPORT DETAIL
SCALE: 1" = 1'-0"
S-130



FENDER PILE TOP DETAIL
SCALE: 1" = 1'-0"
S-130

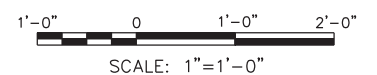


TYPICAL SPLICE CONNECTION
SCALE: 1" = 1'-0"
S-130



PIN PILE DETAIL
SCALE: 1" = 1'-0"
S-130

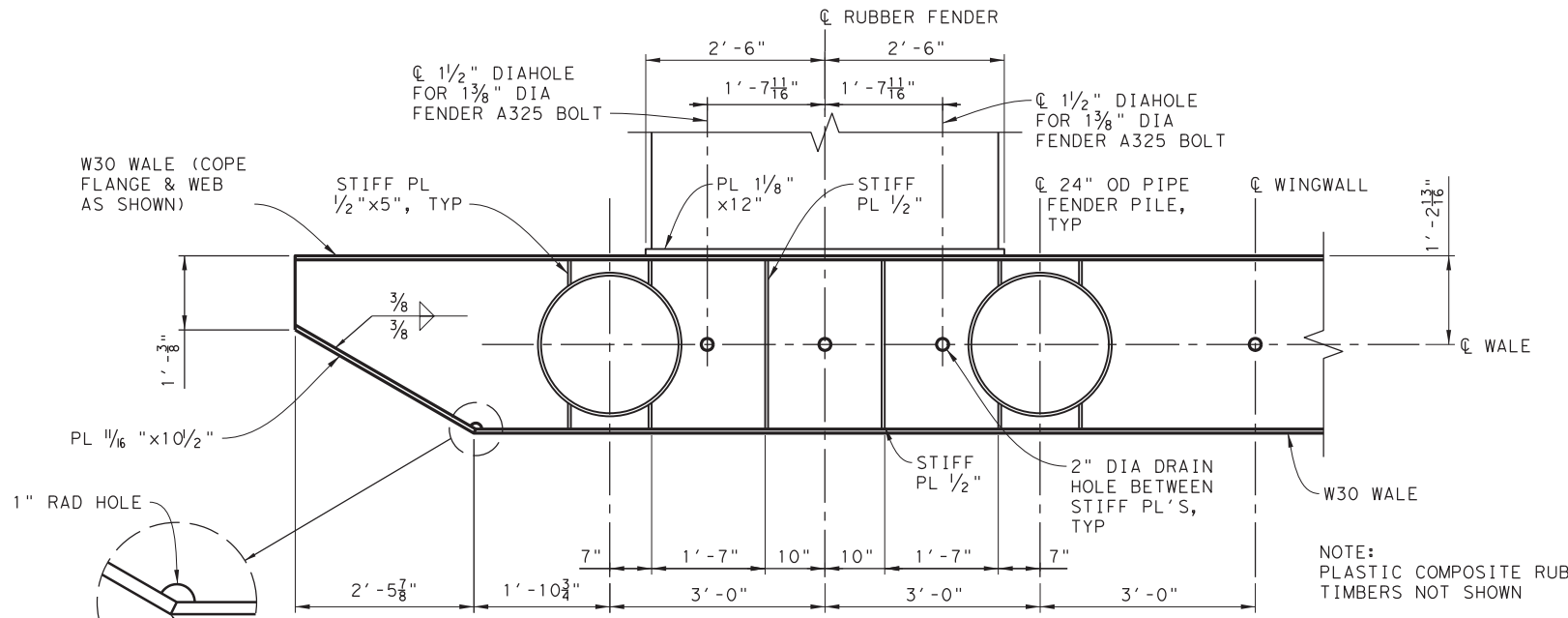
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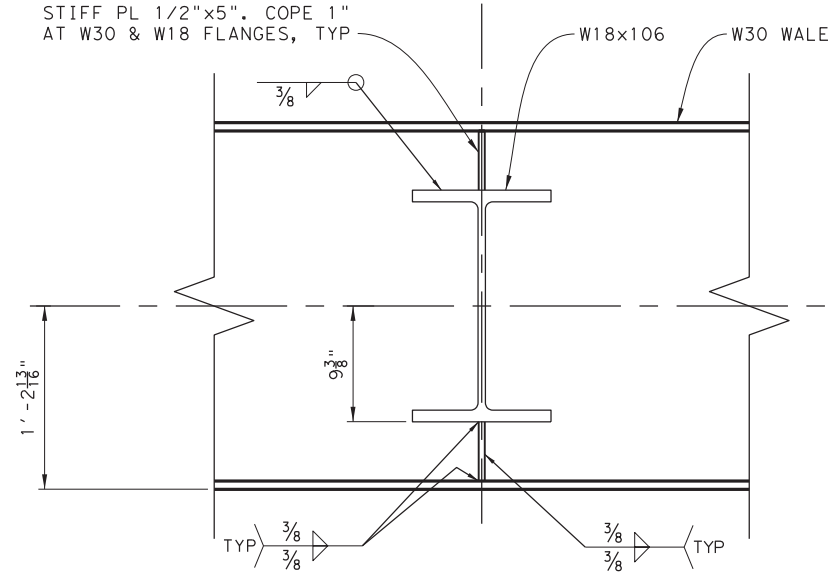
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
 WING WALL
 PILE DETAILS

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-131
DN: 1 WB	REVISIONS			COUNTY:
DN: 1 MC				GALVESTON
DN: 1 RW	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
				6428 78 001 SH87

DRAWING NAME: 949402-S-131.dgn PLOT DATE: 4/6/2023 3:28:39 PM PLOTTED BY: SHIL



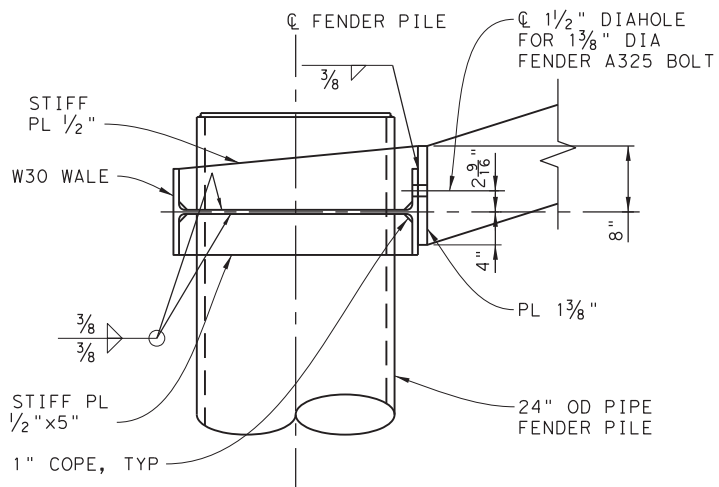
FENDER PLAN DETAIL
SCALE: 3/4" = 1'-0"



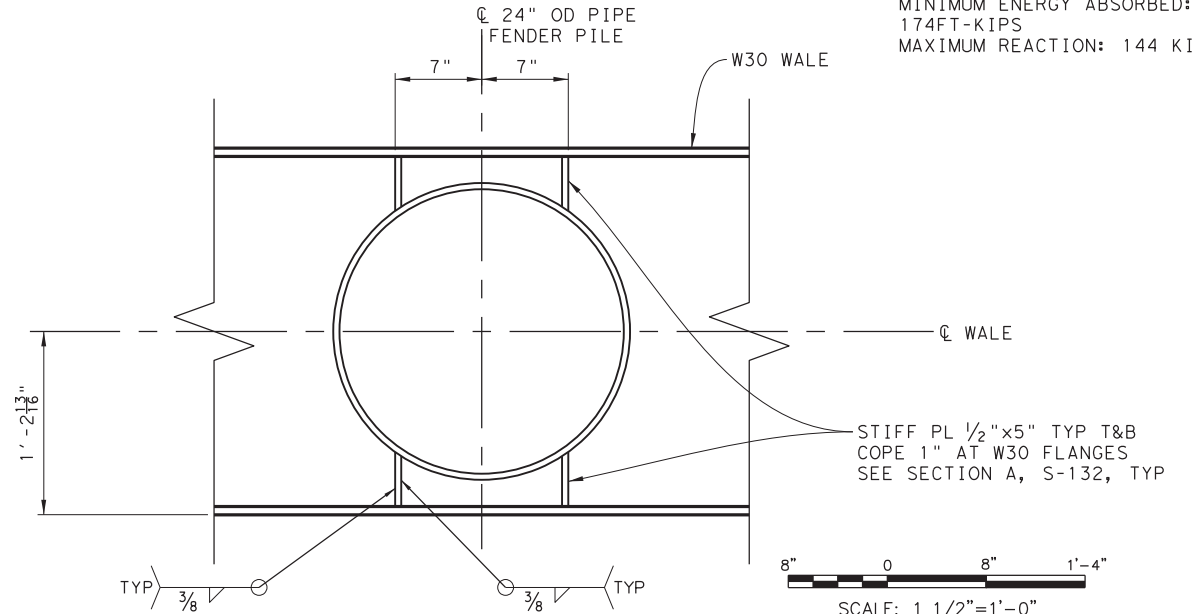
SECTION
SCALE: 1/2" = 1'-0"
S-132

- NOTES:**
1. TYPICAL AT ALL W18 TO W30 WALE CONNECTIONS AT CENTER AND LOWER WALE
 2. PLASTIC COMPOSITE RUB TIMBERS NOT SHOWN

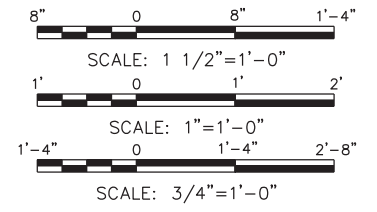
- NOTES:**
1. TYPICAL AT ALL 24" OD PIPE FENDER PILES FOR UPPER AND CENTER W30 WALES EXCEPT AS SHOWN IN SECTION A/S-132.
 2. PLASTIC COMPOSITE RUB TIMBERS NOT SHOWN
 3. RUBBER FENDERS ARE METSO TRELLEX MV800x1500A FENDERS, OR APPROVED EQUAL, WITH THE FOLLOWING PERFORMANCE FOR EACH RUBBER FENDER ELEMENT:
MINIMUM ENERGY ABSORBED: 174FT-KIPS
MAXIMUM REACTION: 144 KIPS



SECTION A
SCALE: 1" = 1'-0"
S-132



SECTION
SCALE: 1/2" = 1'-0"
S-132

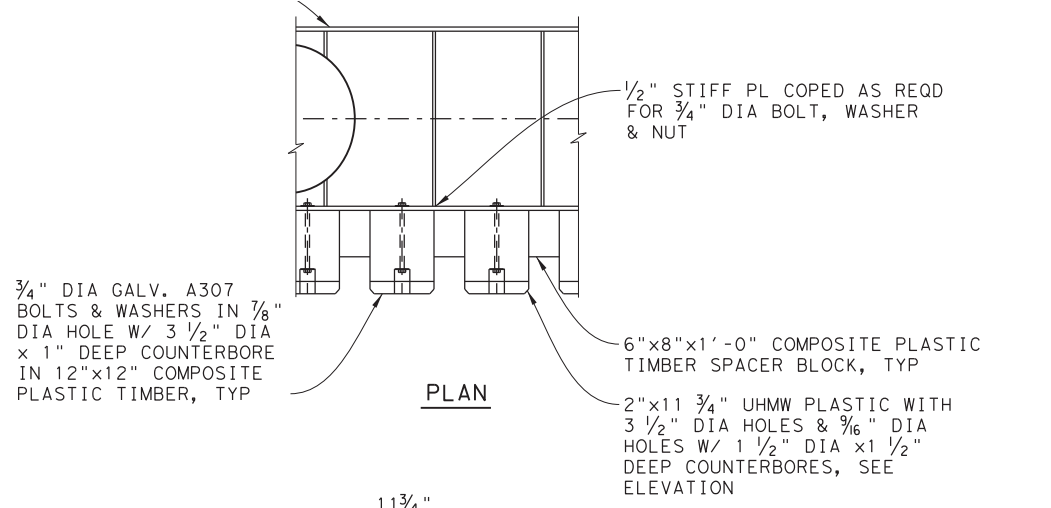


DRAWING NAME: 949402-S-132.dgn PLOT DATE: 4/6/2023 3:28:48 PM PLOTTED BY: SHIH

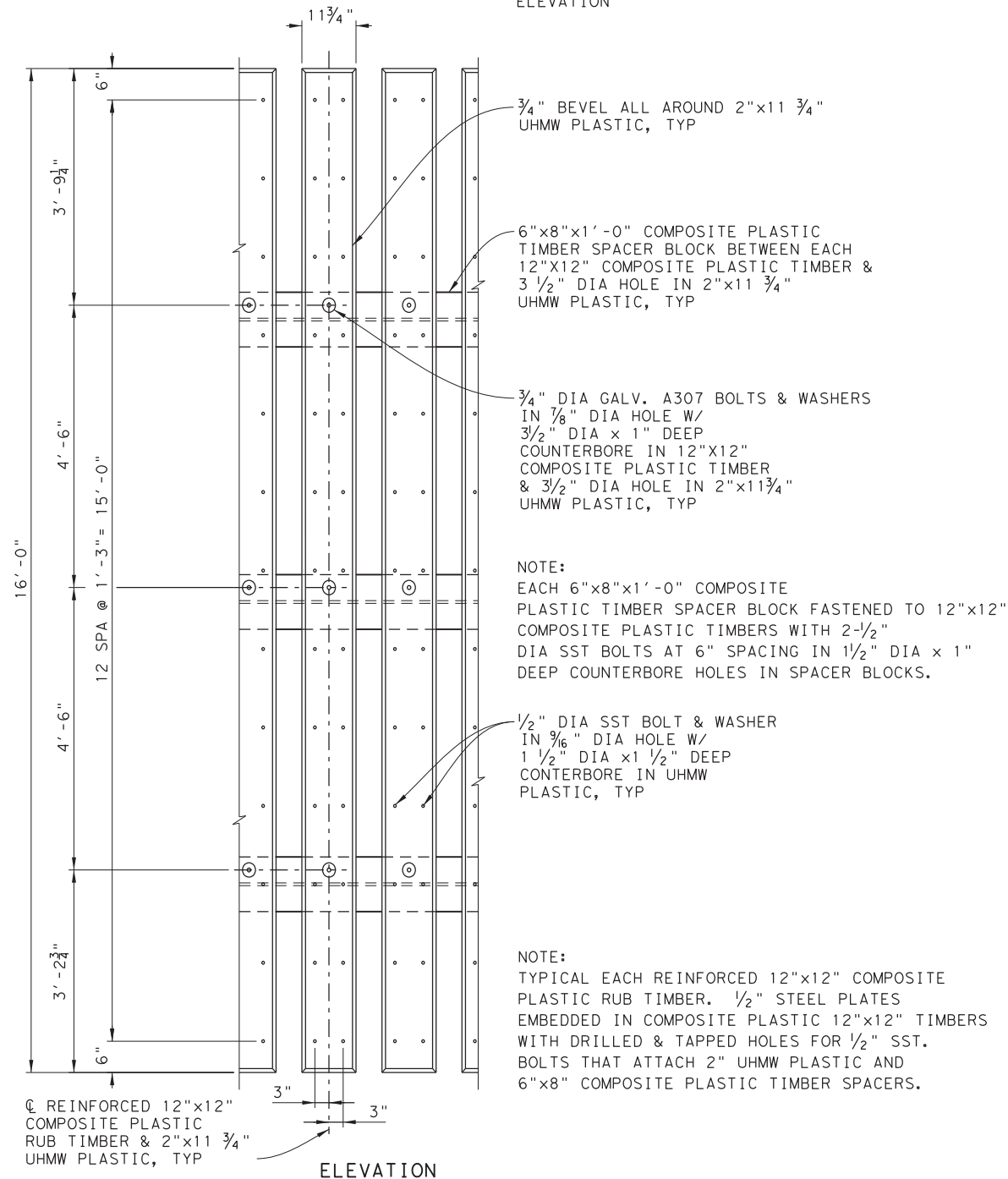
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FERRY LANDING MAINTENANCE
 WING WALL
 FENDER DETAILS 1 OF 2
 SHEET 44 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-132
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

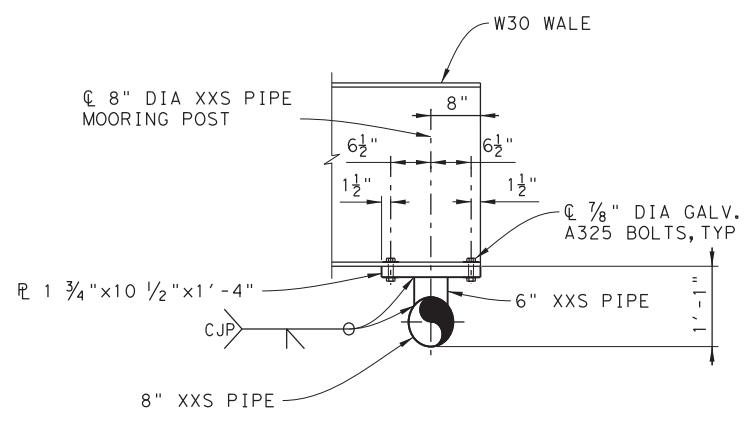


PLAN

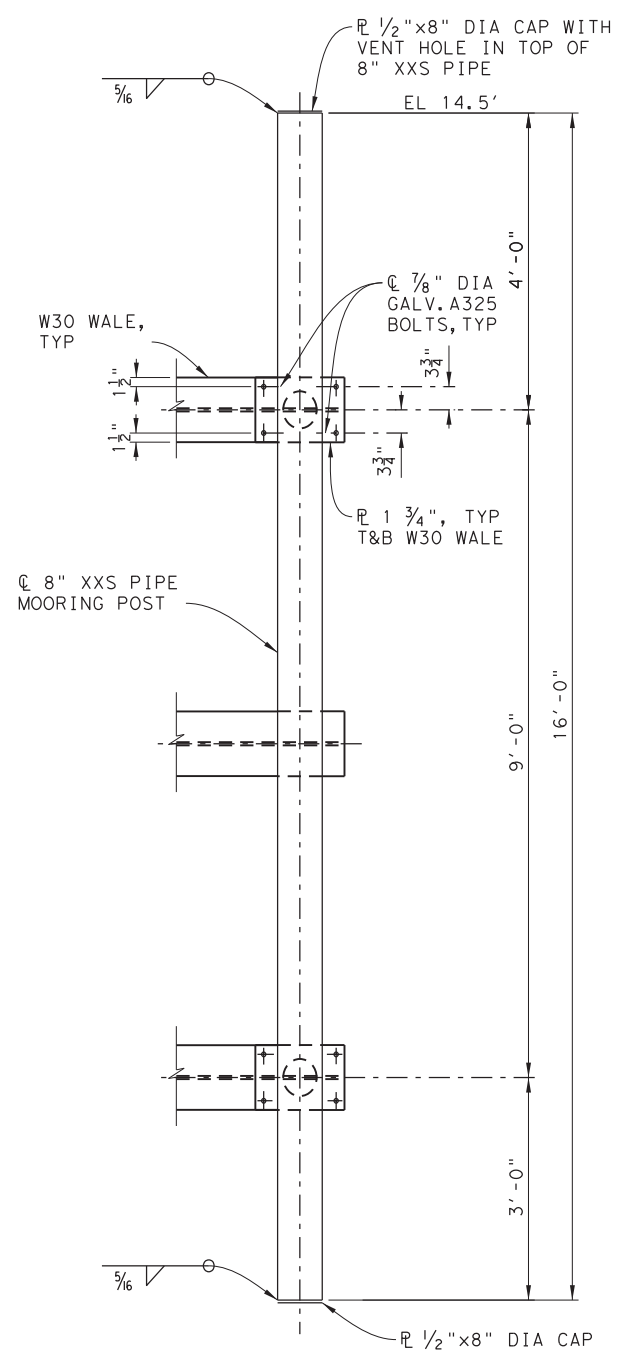


ELEVATION

RUB TIMBER DETAIL
S-130



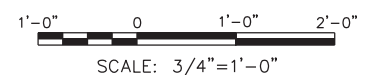
PLAN



ELEVATION

MOORING POST DETAIL
S-130

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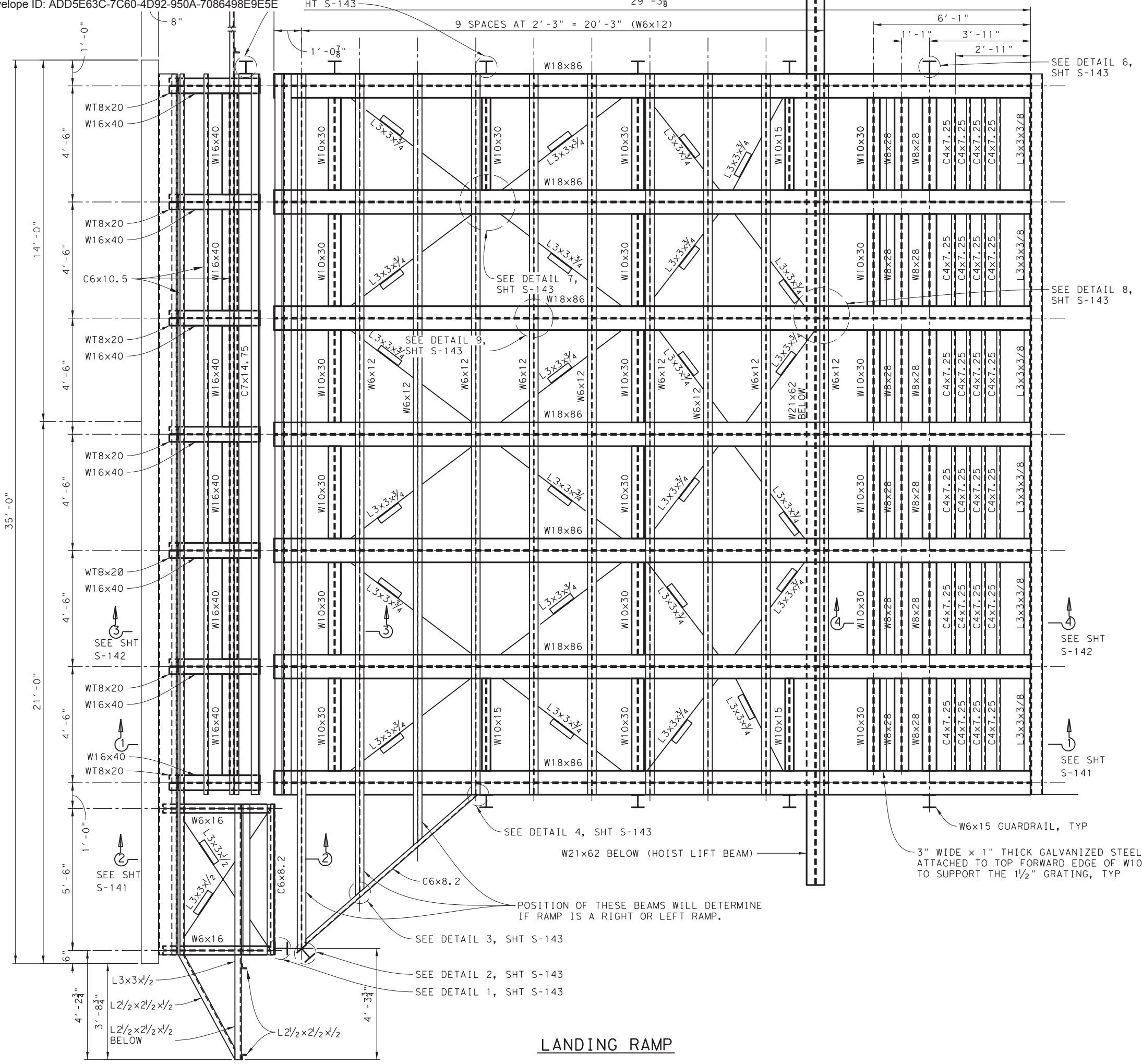
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
WING WALL
FENDER DETAILS 2 OF 2

SHEET 45 OF 148

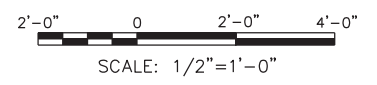
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	12		RMC 6428-78-001	S-133
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-133.dgn
PLOT DATE: 4/6/2023 3:29:00 PM PLOTTED BY: SHIH

ITEM: 7146
DESC: 6006, 6008,
6009, 6010



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FERRY LANDING MAINTENANCE

LANDING RAMP
No. 1, 4 AND 6 PLAN

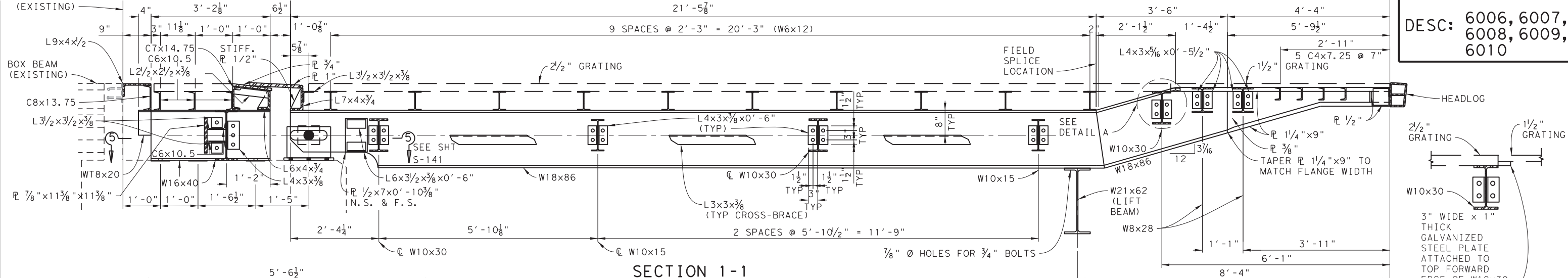
SHEET 46 OF 148

LANDING RAMP

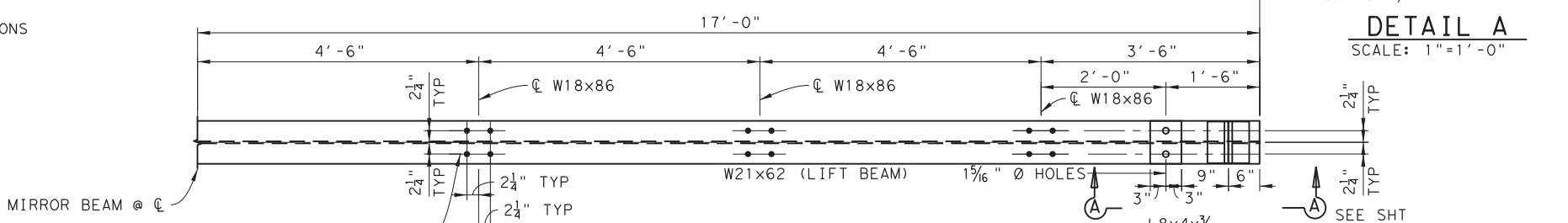
ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
		12		RMC 6428-78-001	S-140
DN: 1	WB	COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
CK: 1	WB	GALVESTON		6428 78	001 SH87
DR: 1	MC	DATE:			
CK: 1	RW				

DRAWING NAME: 949402-S-140.dgn
PLOT DATE: 4/6/2023 3:29:05 PM PLOTTED BY: SHIH

ITEM: 7146
DESC: 6006, 6007,
6008, 6009,
6010

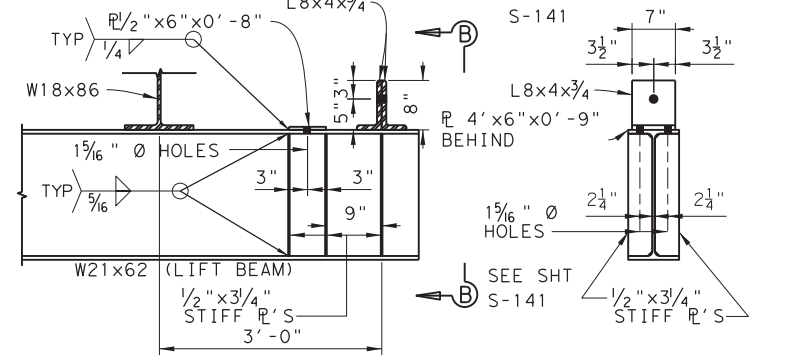


SECTION 1-1
SCALE: 3/4"=1'-0"
S-140



HALF-PLAN (LIFT BEAM)
SCALE: 3/4"=1'-0"

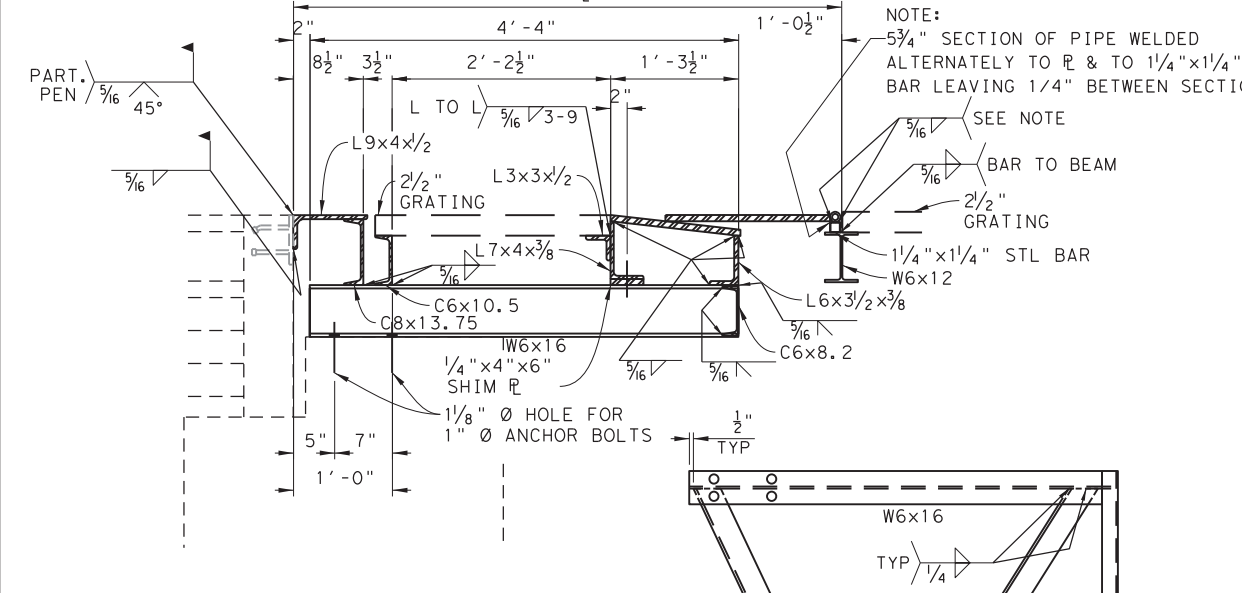
DETAIL A
SCALE: 1"=1'-0"



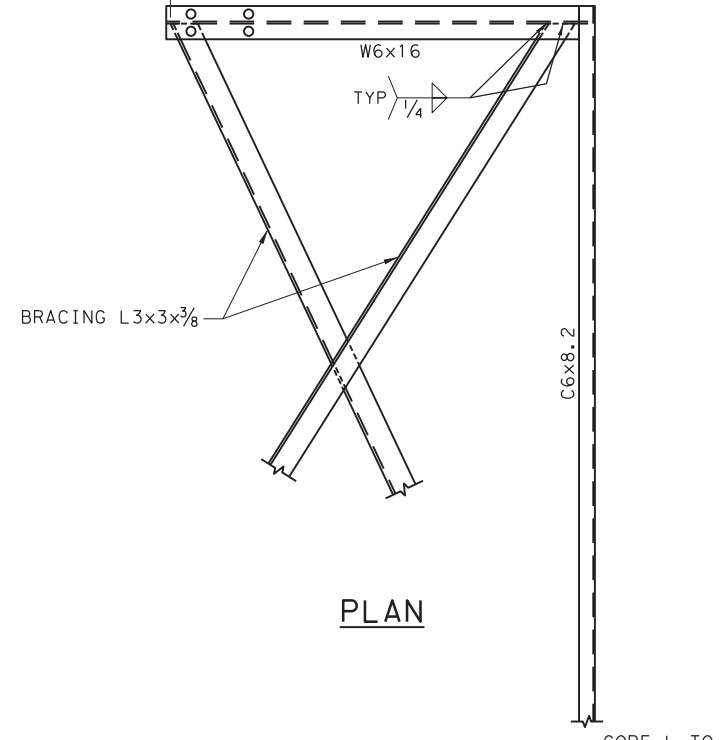
SECTION A-A
SCALE: 3/4"=1'-0"
S-141

SECTION B-B
SCALE: 3/4"=1'-0"
S-141

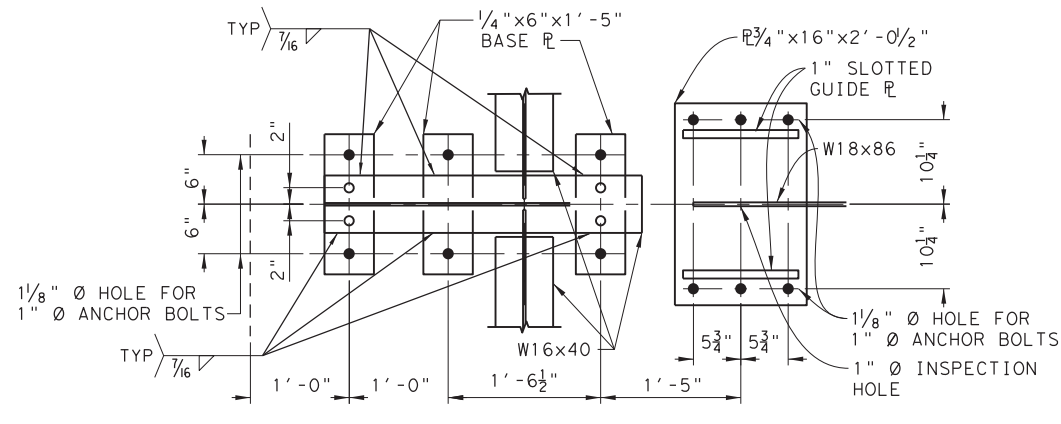
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SECTION 2-2
SCALE: 1"=1'-0"
S-140

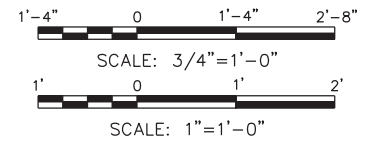


PLAN



SECTION 5-5
SCALE: 1"=1'-0"
S-141

NOTE:
ALL BOLTED CONNECTIONS SHALL HAVE 3/4" Ø BOLTS w/7/8" Ø HOLES UNLESS NOTED OTHERWISE.



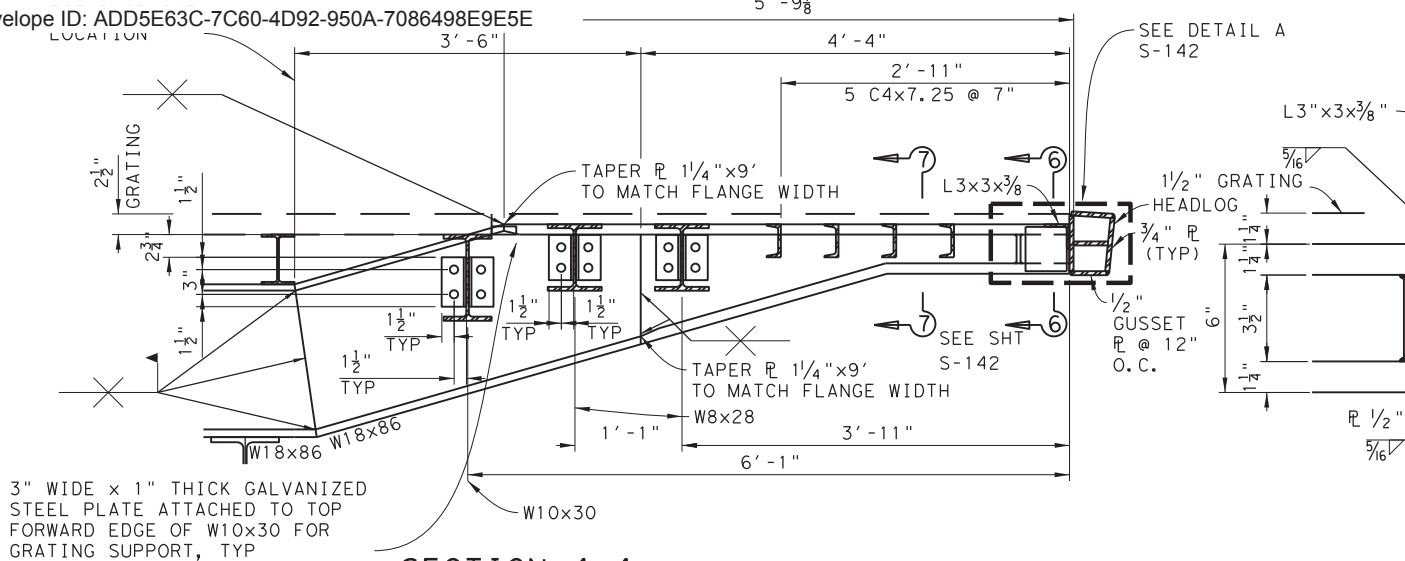
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FERRY LANDING MAINTENANCE

LANDING RAMP NO. 1,
4, & 6 DETAILS SHEET 1 OF 3

SHEET 47 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:			
	12		RMC 6428-78-001	S-141			
DN:	WB:	MC:	REV:	DESCRIPTION:	DATE:	JOB:	HIGHWAY:
CK.1	WB	MC				GALVESTON	6428 78 001 SH87

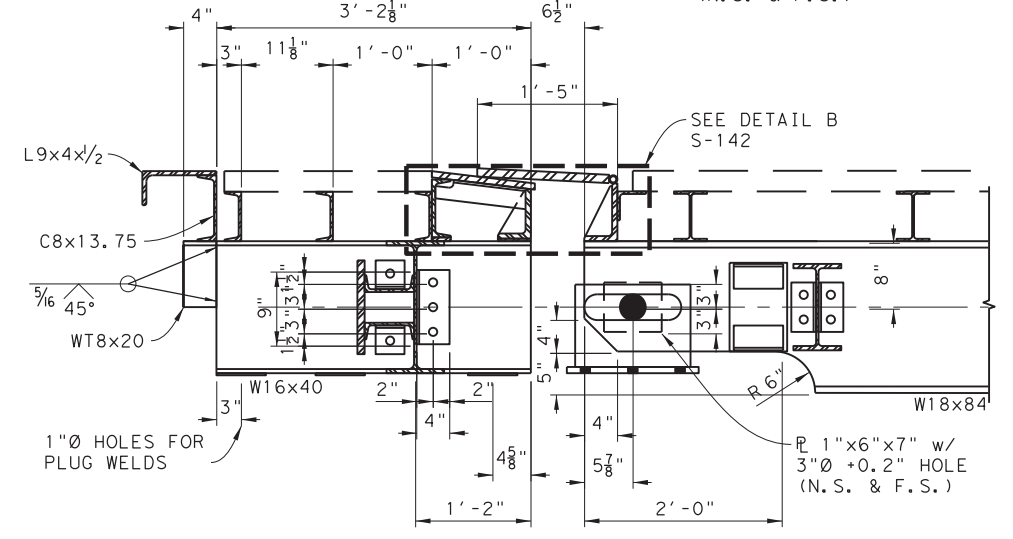
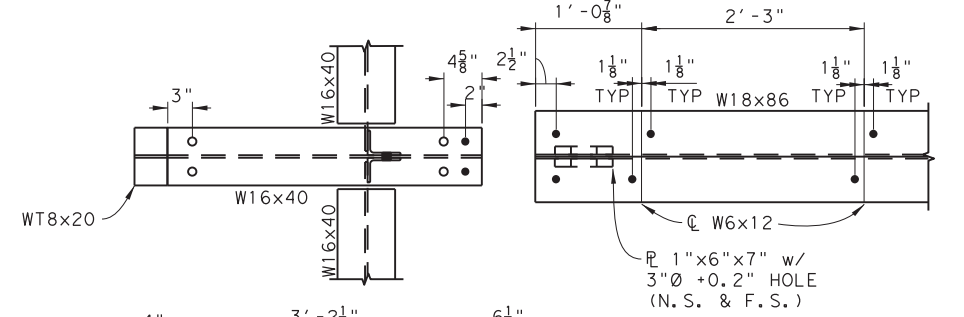
DRAWING NAME: 949402-S-141.dgn
PLOT DATE: 4/6/2023 3:29:11 PM PLOTTED BY: SHIL



SECTION 4-4
SCALE: 1"=1'-0"
S-140

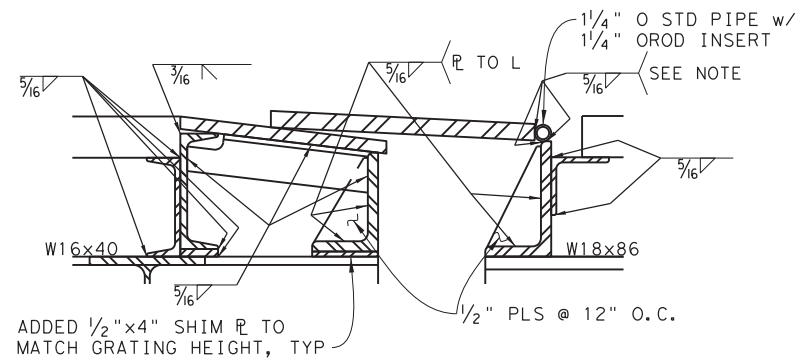
DETAIL A
SCALE: 3"=1'-0"
S-142

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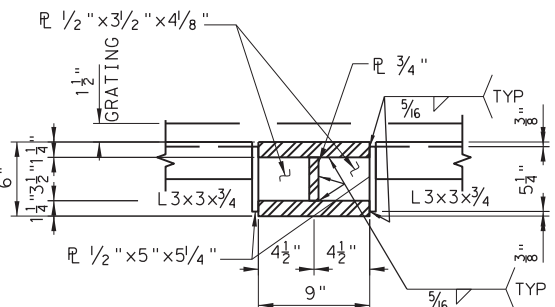


SECTION 3-3
SCALE: 1"=1'-0"
S-140

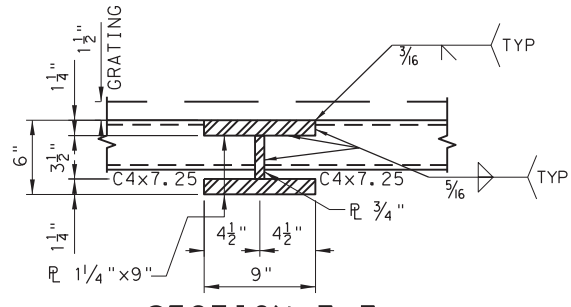
NOTE:
5 3/4" SECTION OF PIPE WELDED ALTERNATELY TO R & TO L LEAVING 1/4" BETWEEN SECTIONS



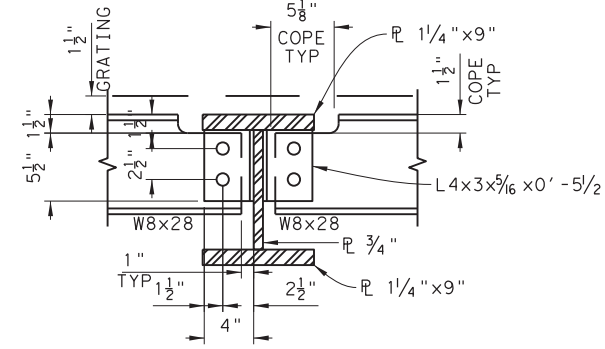
DETAIL B
SCALE: 1/2"=1'-0"
S-142



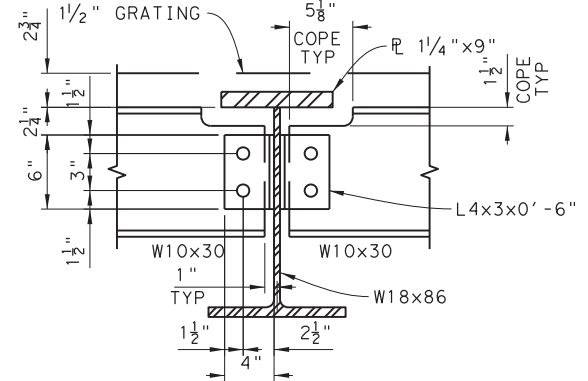
SECTION 6-6
SCALE: 1/2"=1'-0"
S-142



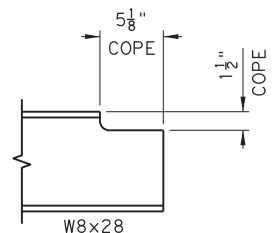
SECTION 7-7
SCALE: 1/2"=1'-0"
S-142



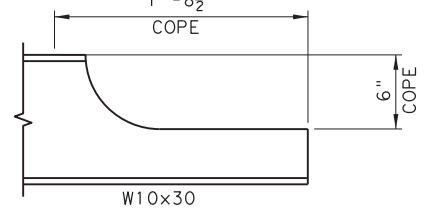
W8x28 CONNECTION DETAILS
SCALE: 1/2"=1'-0"



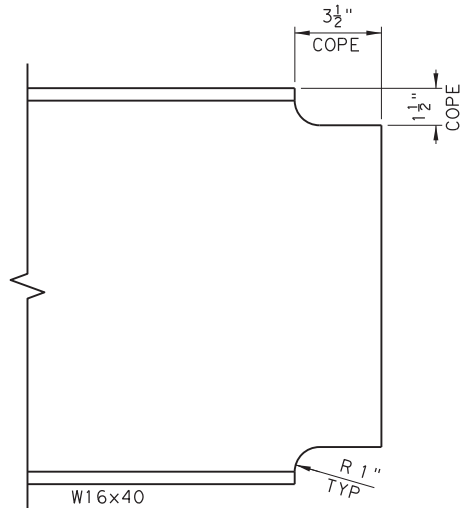
W10x30 CONNECTION DETAILS
SCALE: 1/2"=1'-0"



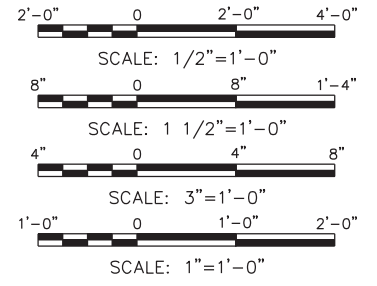
W8x28 BLOCKING DETAIL
SCALE: 1/2"=1'-0"



W10x30 BLOCKING DETAIL
SCALE: 1/2"=1'-0"



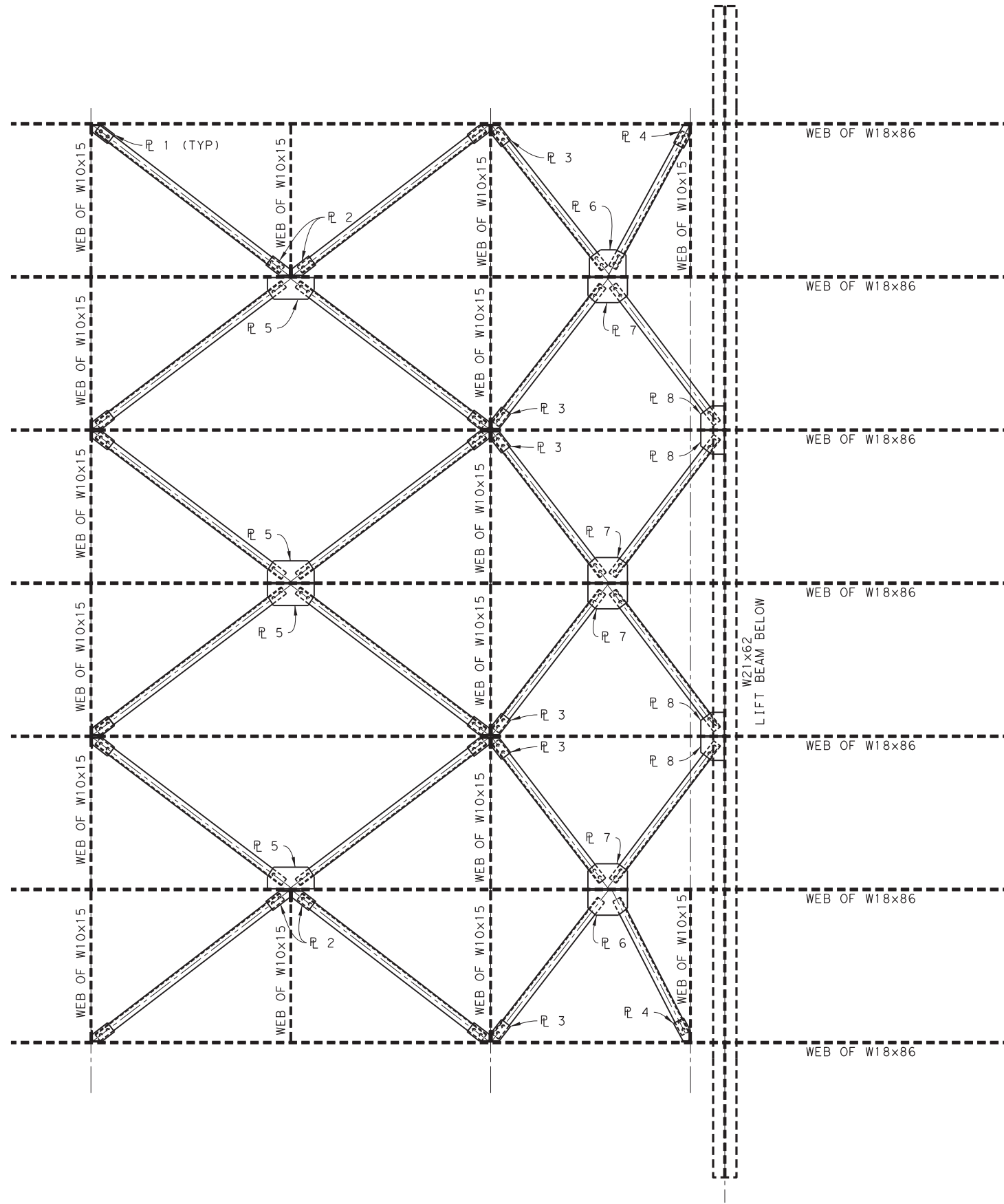
W16x40 BLOCKING DETAIL
SCALE: 3"=1'-0"



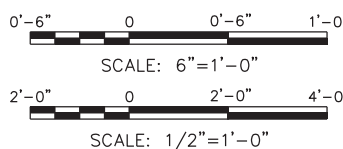
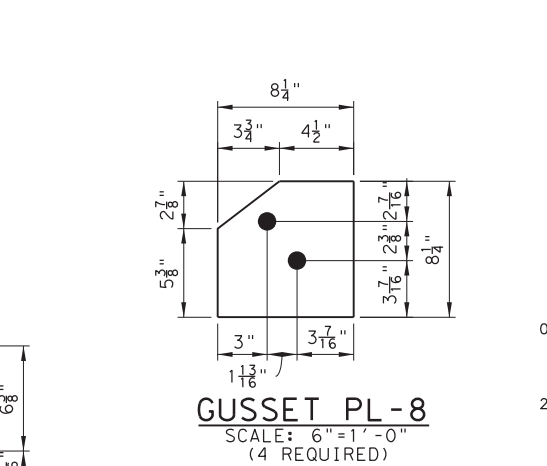
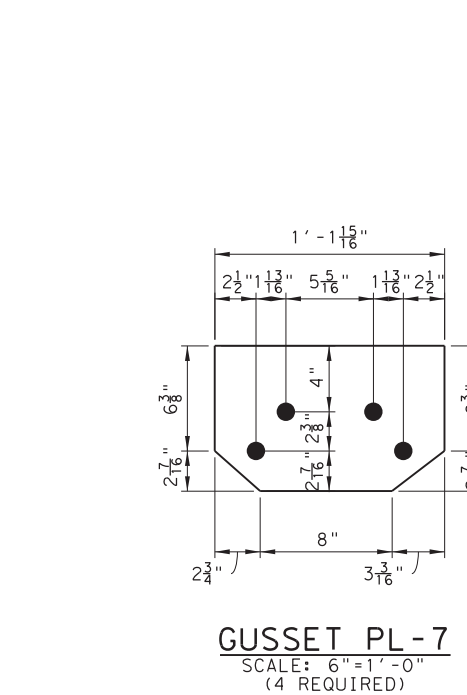
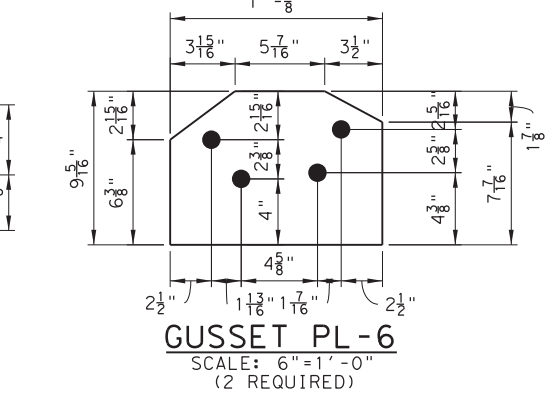
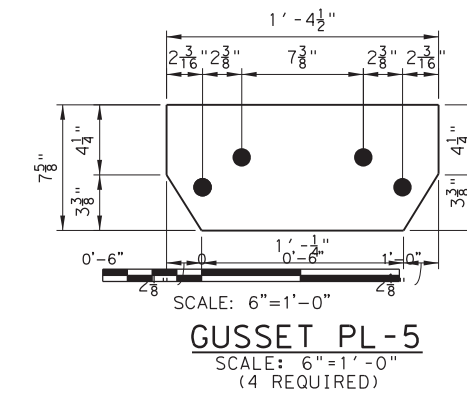
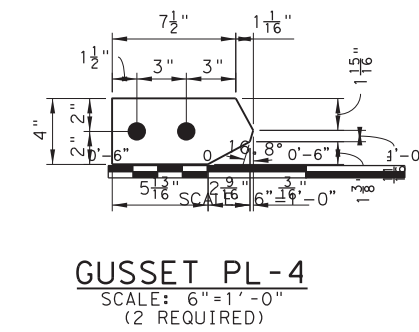
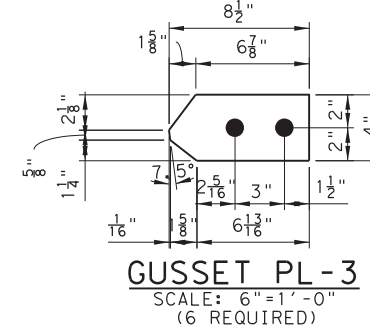
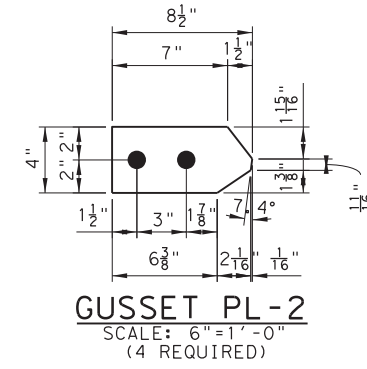
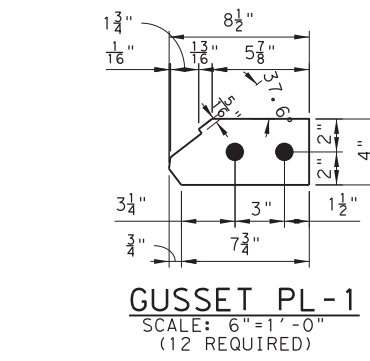
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FERRY LANDING MAINTENANCE
LANDING RAMP NO. 1,
4, & 6 DETAILS SHEET 2 OF 3

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-142
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-142.dgn
PLOT DATE: 4/6/2023 3:29:35 PM PLOTTED BY: SHIL



BASE PLATE LAYOUT PLAN
SCALE: 1/2"=1'-0"



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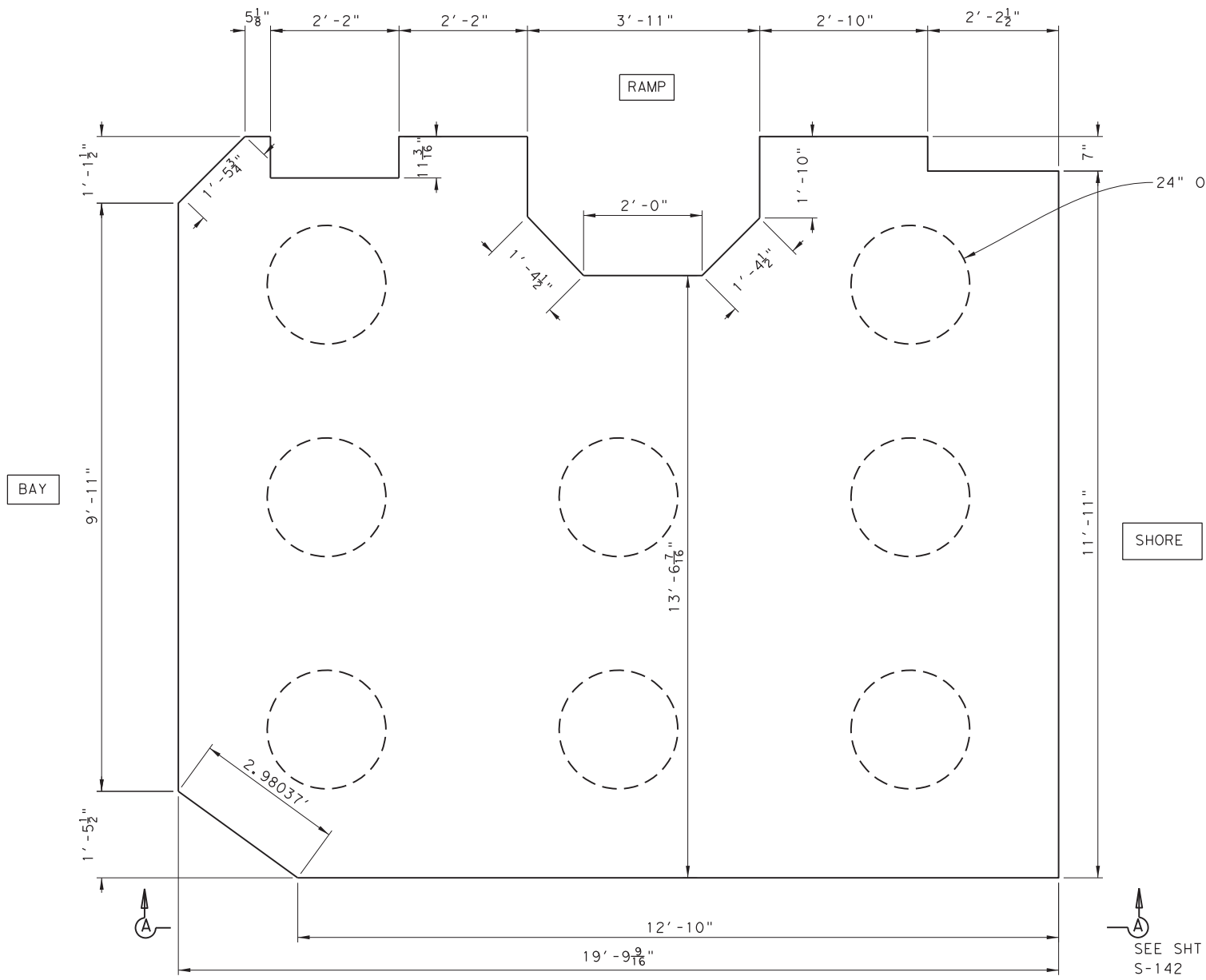
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FERRY LANDING MAINTENANCE
LANDING RAMP NO. 1,
4, & 6 ANGLE BRACING LAYOUT
AND DETAILS

SHEET 50 OF 148

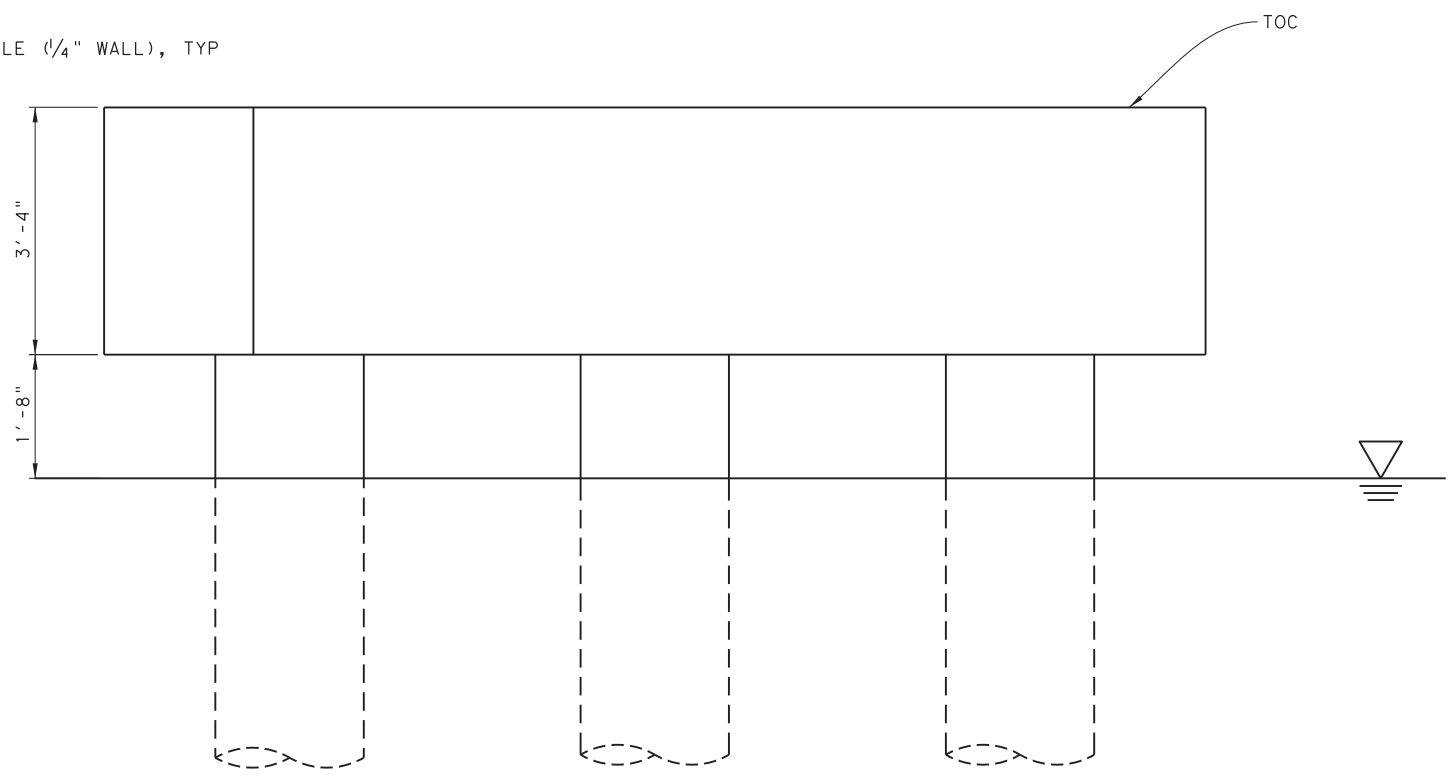
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-144
DN: I MM	REVISIONS			
CK: I WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: I MC		GALVESTON	6428 78	001 SH87
CK: I RW	REV	DESCRIPTION	DATE	

3:30:02 PM 4/6/2023

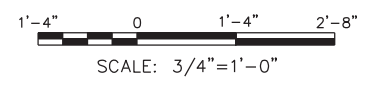
DRAWING NAME: 949402-S-144.dgn
PLOT DATE: 4/6/2023 3:30:02 PM PLOTTED BY: SHIL



PLATFORM @ SLIP 1 (SLIP 6 SIMILAR)
SCALE: 3/4"=1'-0"




ELEVATION PLATFORM
SCALE: 3/4"=1'-0"



NOTES:

- CONTRACTOR TO VERIFY DIMENSIONS AND PILE LAYOUT PRIOR TO BEGINNING ANY WORK.

DRAWING NAME: 949402-S-145.dgn
PLOT DATE: 4/6/2023 3:30:07 PM PLOTTED BY: SHILL

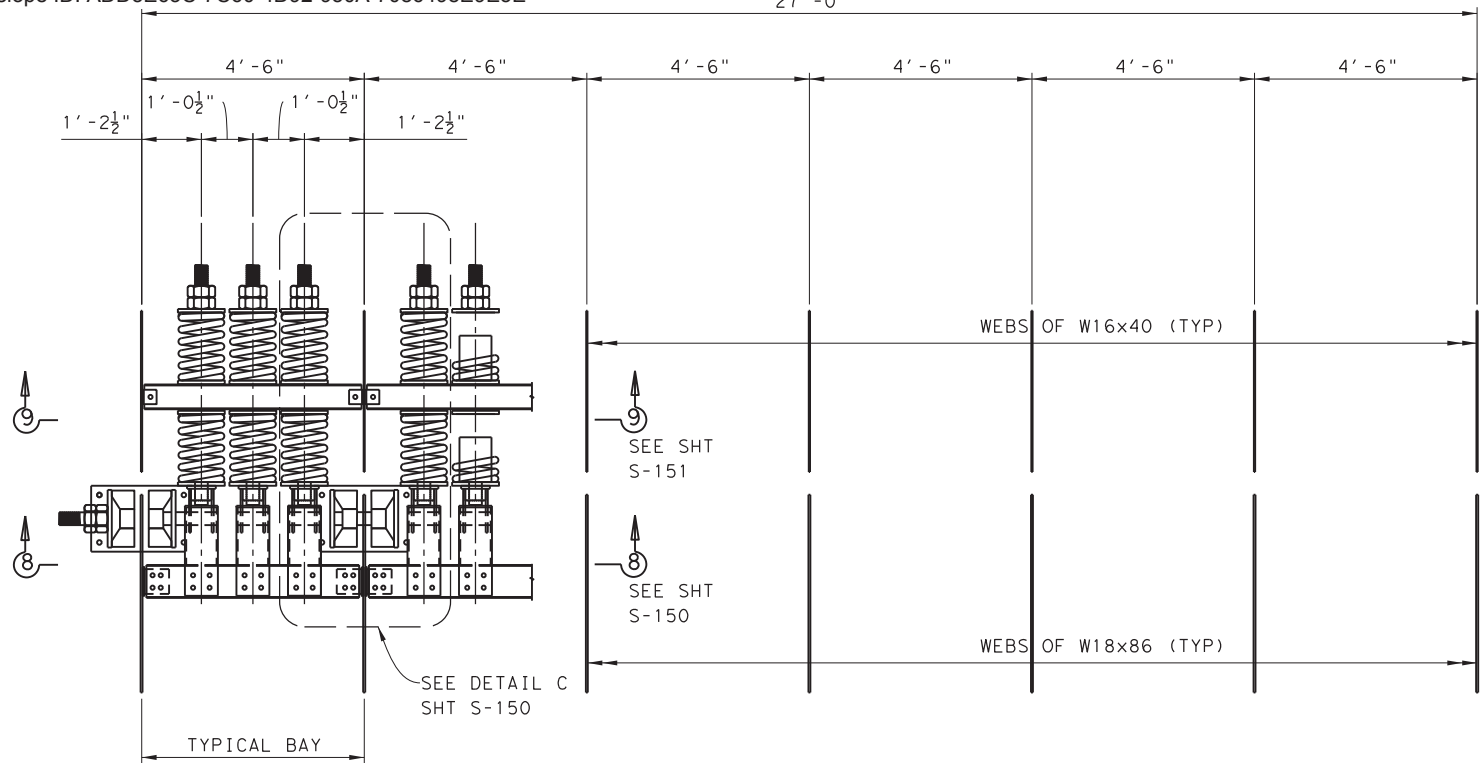


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COUNTERWEIGHT TOWER
PLATFORM @ SLIPS 1 & 6

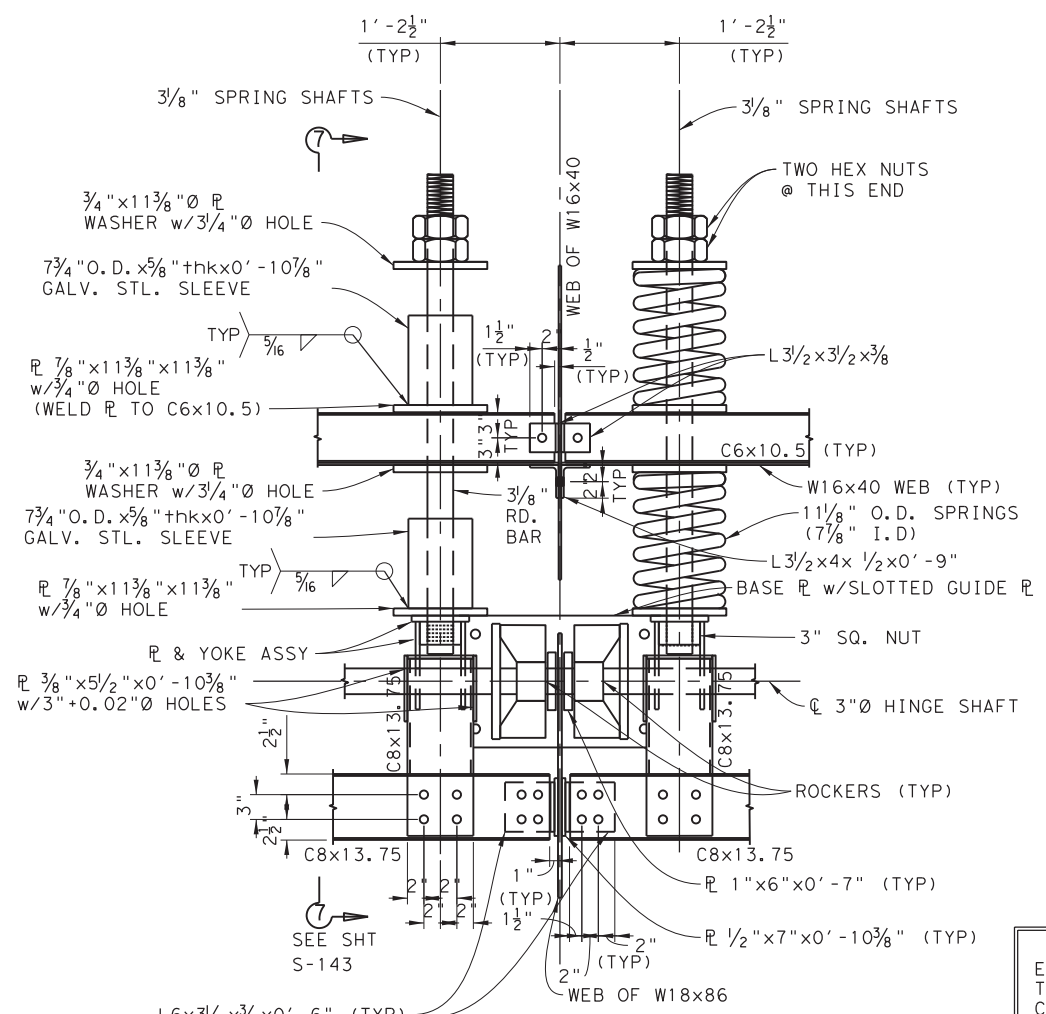
SHEET 51 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN:1	MM	12		RMC 6428-78-001	S-145
CK:1	SS	COUNTY:			HIGHWAY:
CK:1	MC	GALVESTON			
CK:1	RW	REV	DESCRIPTION	DATE	JOB
					SH87



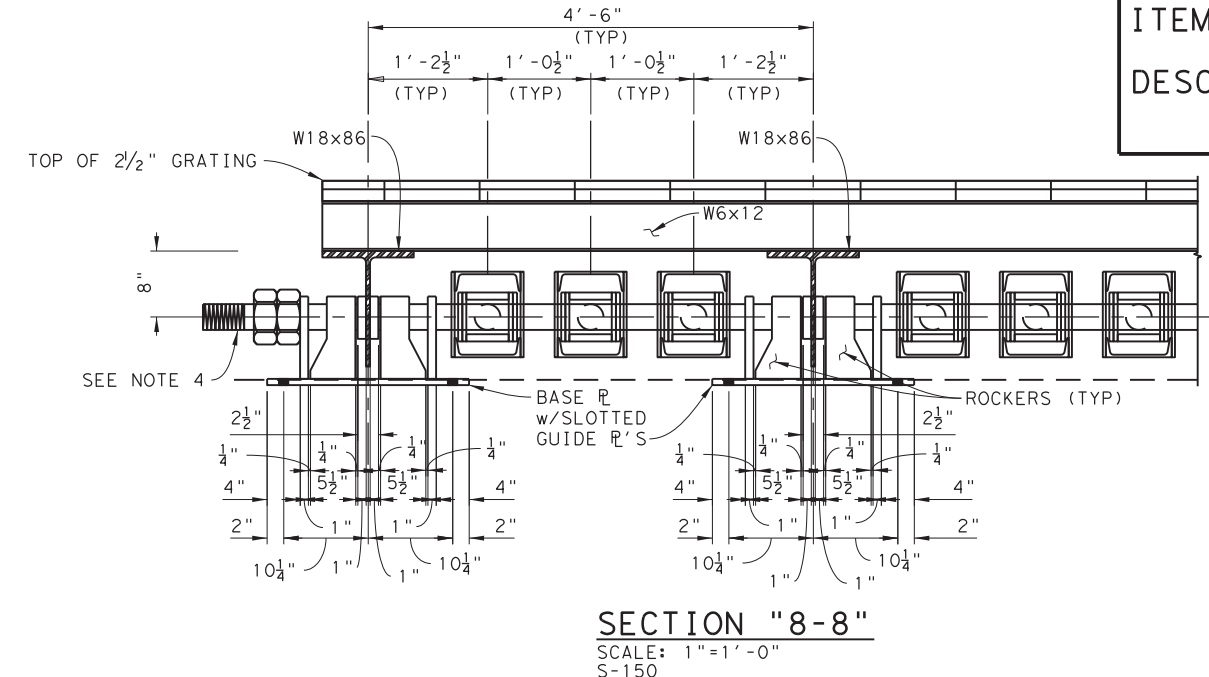
PLAN BELOW TOP FLANGE BEAMS

SCALE: 1/2"=1'-0"



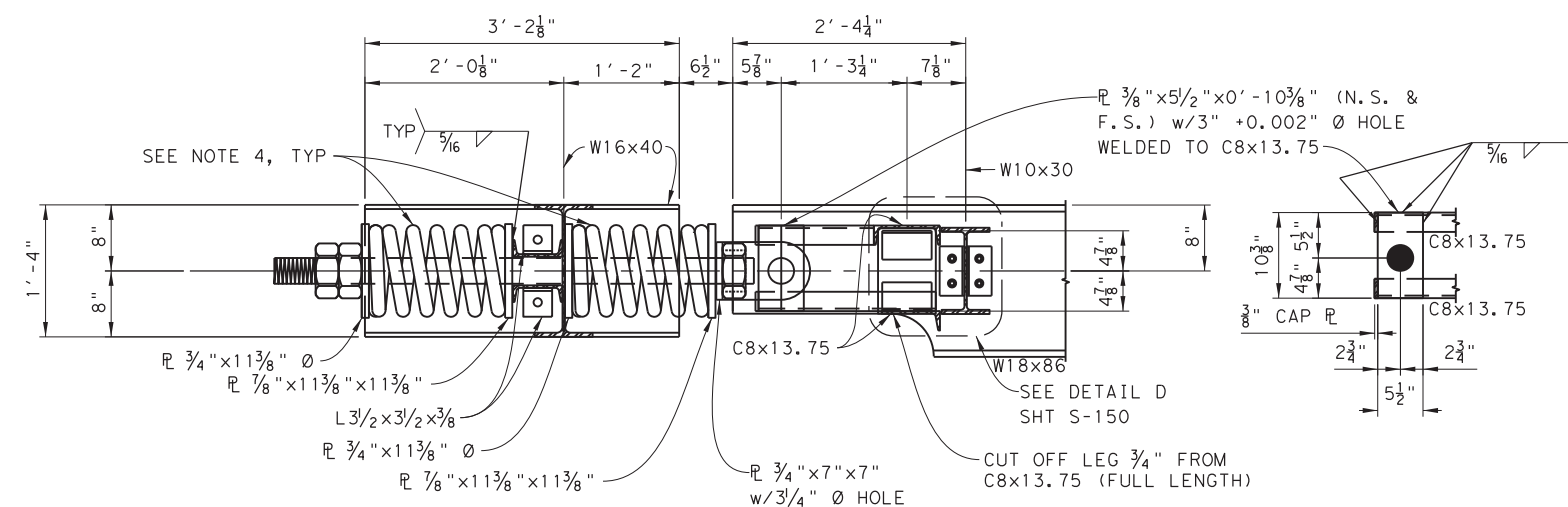
DETAIL C

SCALE: 1"=1'-0" S-150



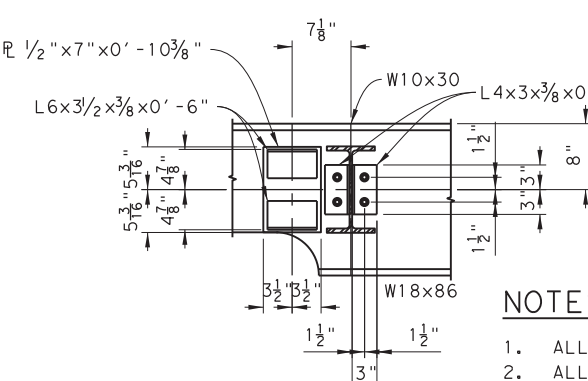
SECTION "8-8"

SCALE: 1"=1'-0" S-150



SECTION "7-7"

SCALE: 1"=1'-0" S-150



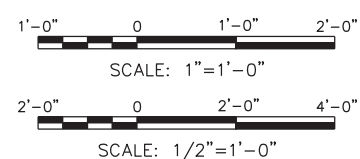
DETAIL D

SCALE: 1"=1'-0" S-150

NOTES:

1. ALL BOLTS ARE 3/4" w/ 7/8" Ø HOLES. (U.O.N.)
2. ALL MATERIALS ARE HOT DIP GALVANIZED.
3. WELDS ARE 1/4" FILLET (U.O.N.).
4. PERIODICALLY APPLY EAL-TYPE GREASE, PANOLIN BIOGREASE EP2 OR EQUIVALENT, FOR CORROSION CONTROL. APPLY TO ALL EXPOSED SURFACES.

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

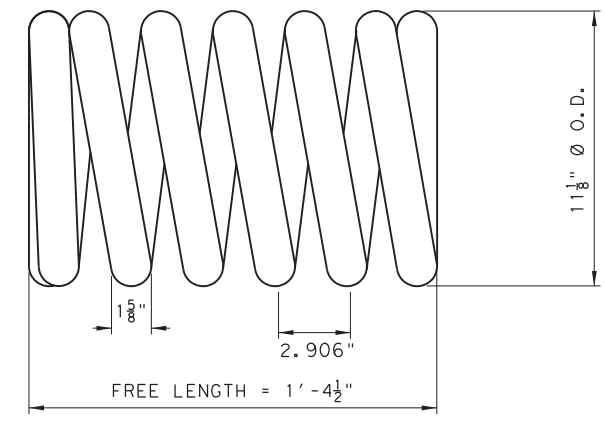
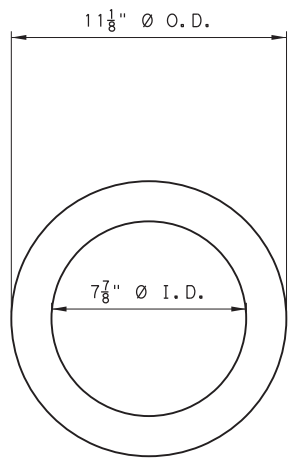


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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
 SPRING BOX
 ASSEMBLY DETAILS SHEET 1 OF 4
 SHEET 52 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-150
DN: I MM	REVISIONS		COUNTY:	JOB:
CK: I WB			GALVESTON	6428 78 001
DR: I MC	REV	DESCRIPTION	DATE	HIGHWAY:
CK: I RW				SH87

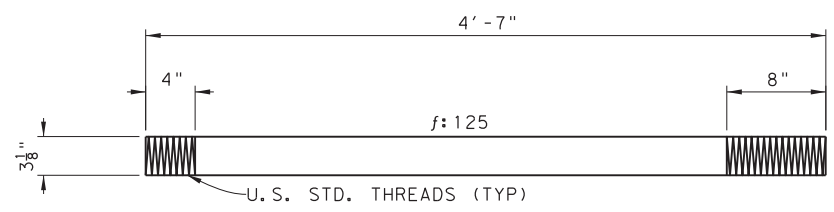
DRAWING NAME: 949402-S-150.dgn
PLOT DATE: 4/6/2023
PLOTTED BY: SHIL

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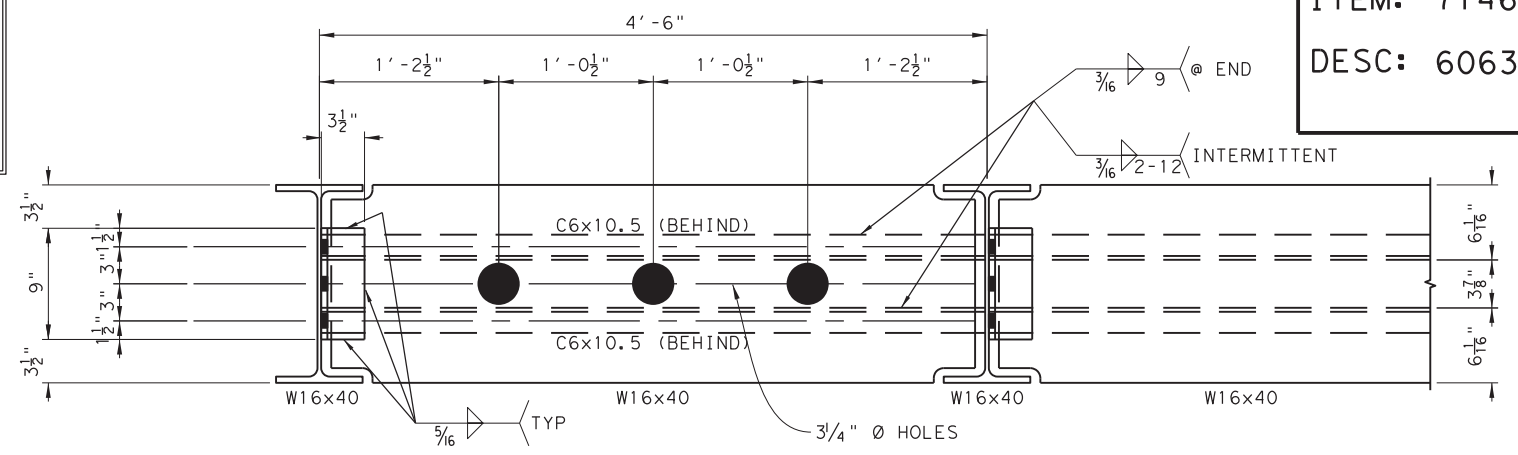
HELICAL COMPRESSION SPRING

MATERIAL: 5160M (ASTM A304; A689)
ALLOWABLE TORSIONAL STRENGTH = 120 K.S.I. (36 REQ'D)



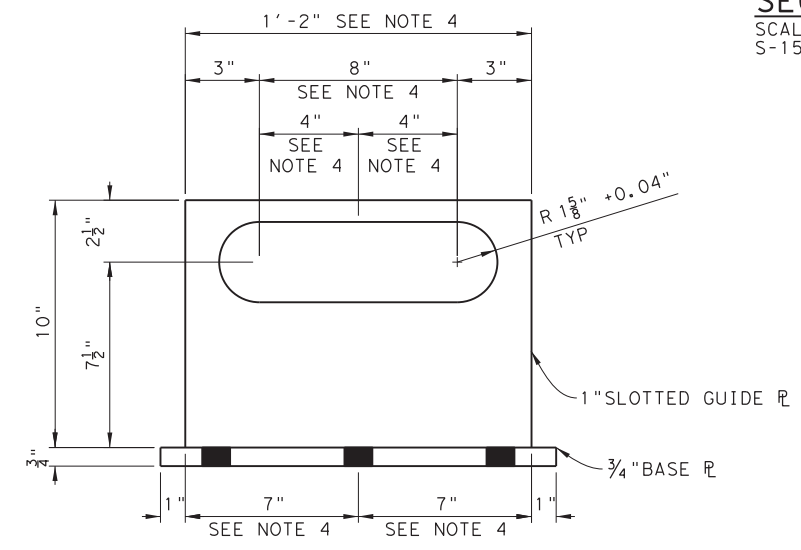
SPRING SHAFT

SCALE: 1 1/2" = 1'-0"
(18 REQUIRED)



SECTION "9-9"

SCALE: 1 1/2" = 1'-0"
S-150



BASE PLATE & GUIDE DETAILS

SCALE: 3" = 1'-0"
(7 REQ'D)

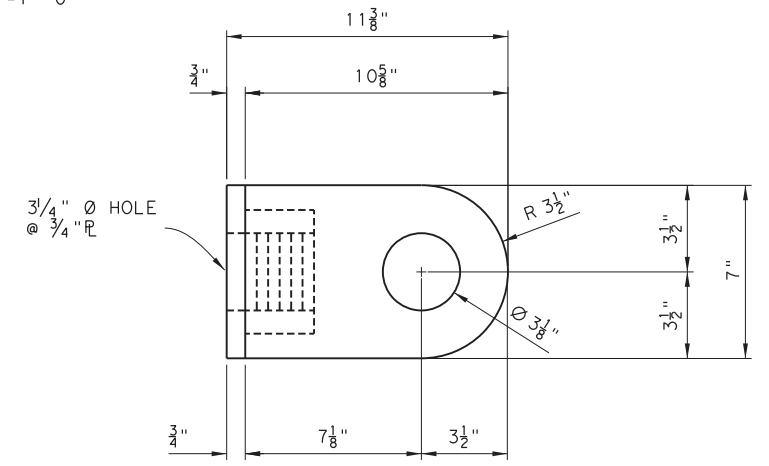
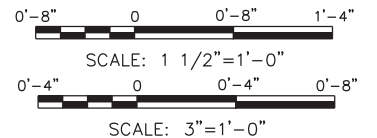
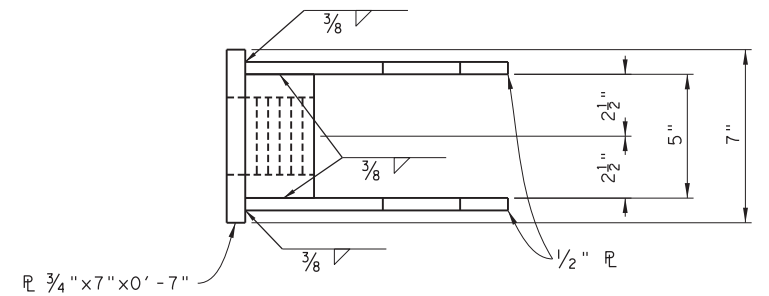


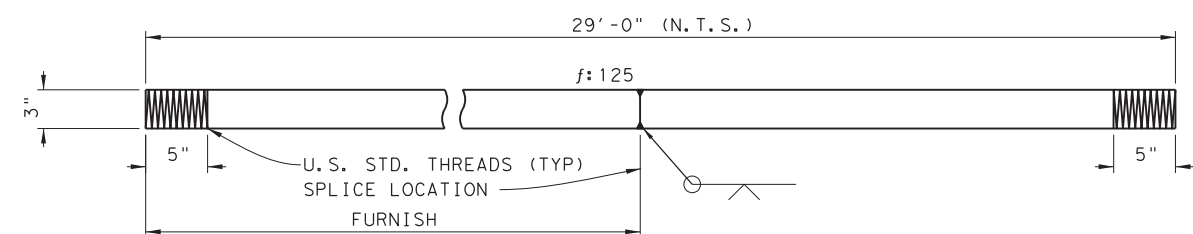
PLATE & YOKE DETAILS

SCALE: 3" = 1'-0"



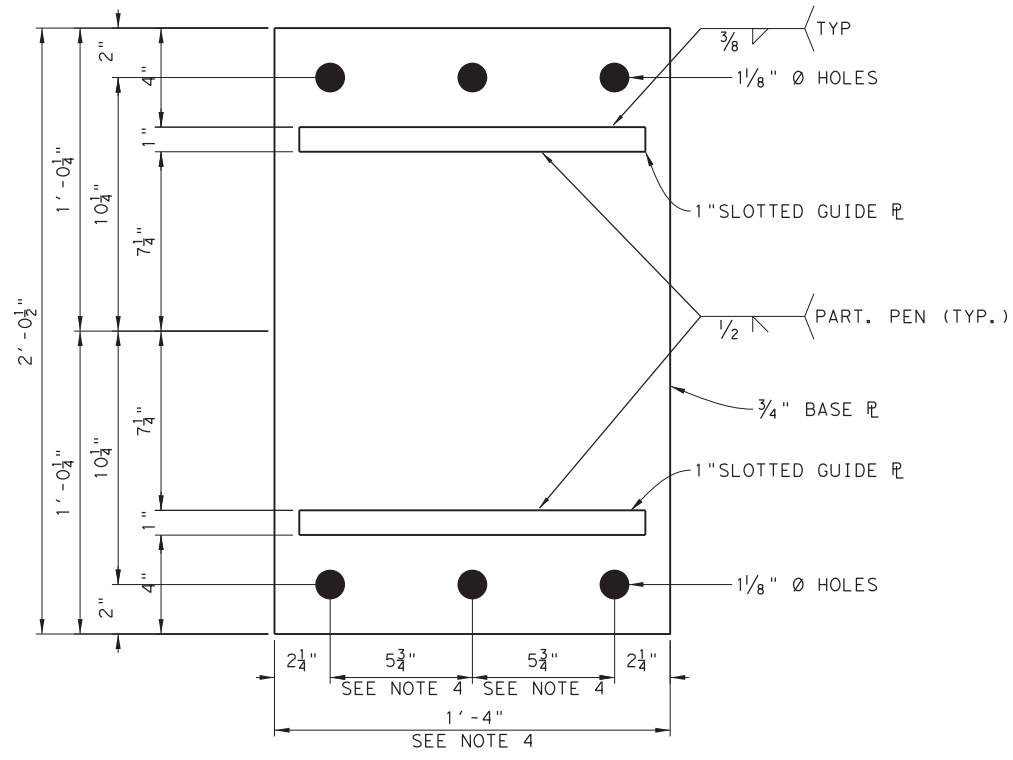
NOTES:

1. ALL BOLTS ARE 3/4" w/7/8" Ø HOLES. (U.N.O.)
2. ALL MATERIALS ARE HOT DIP GALVANIZED.
3. WELDS ARE 1/4" FILLET (U.O.N.).
4. DIMENSIONS SHOWN ARE FOR THE EXISTING CONDITION. FOR REPLACEMENT, INCREASE THE DIMENSIONS SUCH THAT THE HINGE SHAFT HAS AN ALLOWABLE MAXIMUM LATERAL TRAVEL OF 5" INSTEAD OF 4", IN BOTH DIRECTIONS, ALONG THE ELONGATED HOLE OF THE GUIDE PLATE. ADJUST THE LOCATION AND/OR LAYOUT OF AFFECTED SPRING BOX ASSEMBLY MEMBERS.



HINGE SHAFT

SCALE: 1 1/2" = 1'-0"
(ONE REQUIRED)

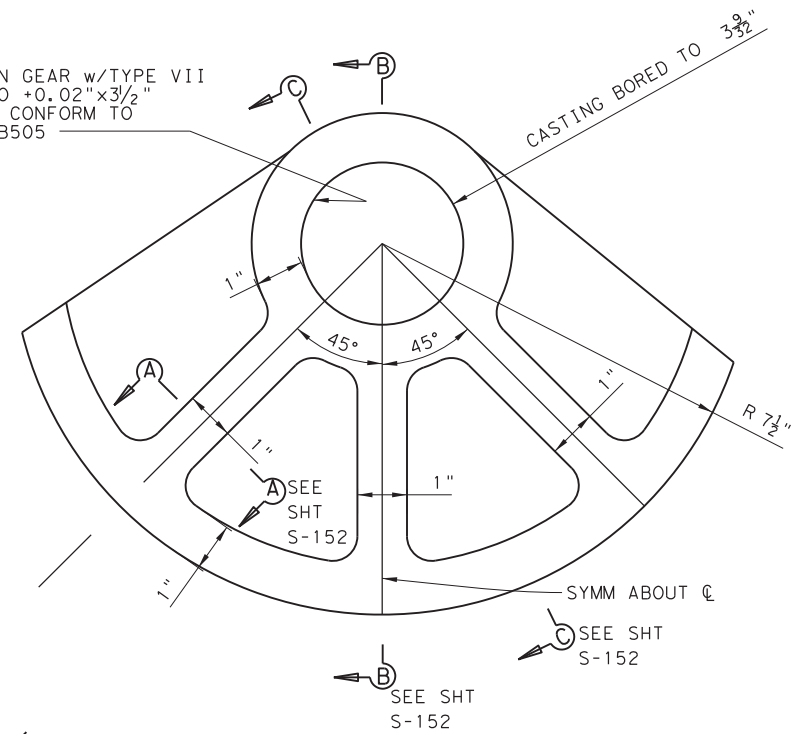


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FERRY LANDING MAINTENANCE
 SPRING BOX
 ASSEMBLY DETAILS SHEET 2 OF 4
 SHEET 53 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-151
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: MC		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

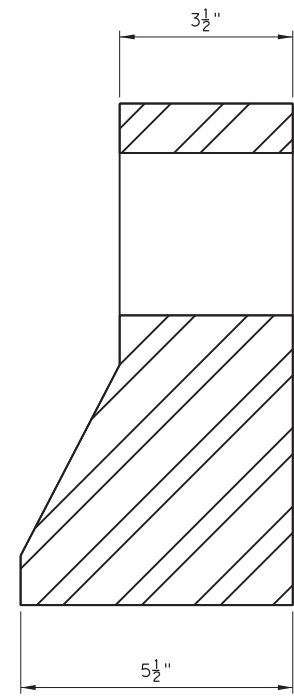
DRAWING NAME: 949402-S-151.dgn
PLOT DATE: 4/6/2023 3:30:16 PM PLOTTED BY: SHII

BRONZE BUSHING, BOSTON GEAR w/TYPE VII OIL GROVES, BORE = 3"0 +0.02"x3 1/2" LONG. BRONZE BUSHINGS CONFORM TO REQUIREMENTS OF ASTM B505



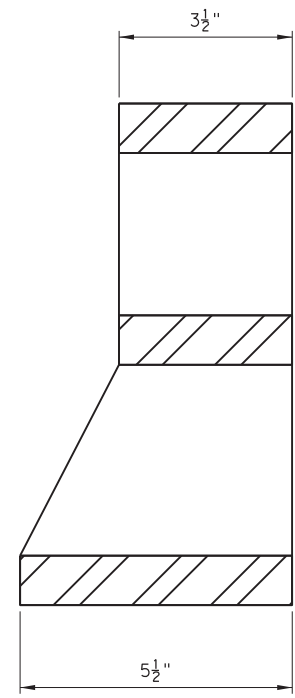
CAST STEEL ROCKERS

SCALE: 6"=1'-0"
(14 REQ'D)



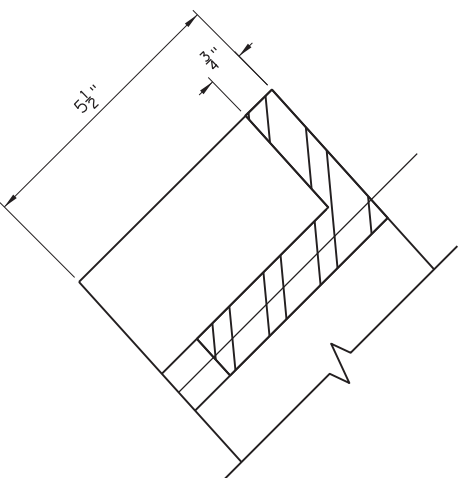
SECTION B-B

SCALE: 6"=1'-0"
S-152



SECTION C-C

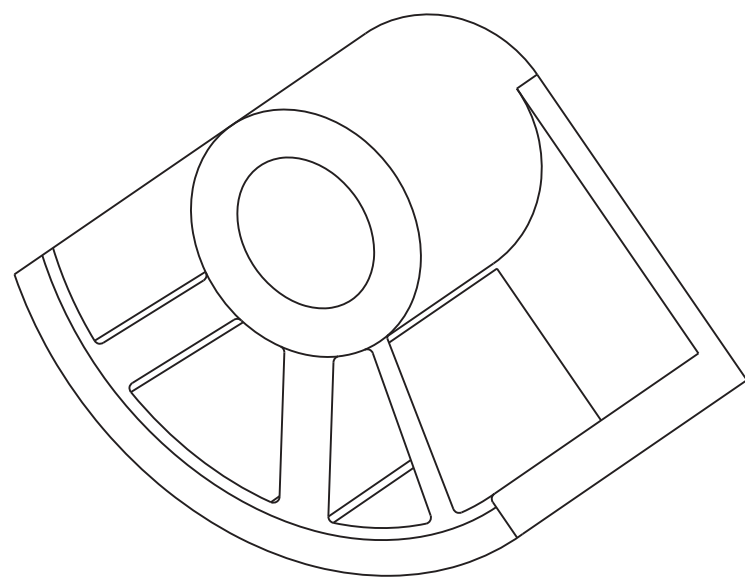
SCALE: 6"=1'-0"
S-152



SECTION A-A

SCALE: 6"=1'-0"
S-152

SHOWN ARE DETAILS FOR THE ORIGINAL ROCKERS AT THE SPRING BOX ASSEMBLY, SEE SHEET S-988 FOR REPLACEMENT ROCKER DETAILS.

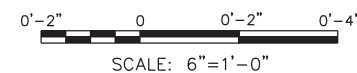


ISO VIEW

SCALE: 6"=1'-0"

NOTE:

1. ALL MATERIALS ARE HOT DIP GALVANIZED.

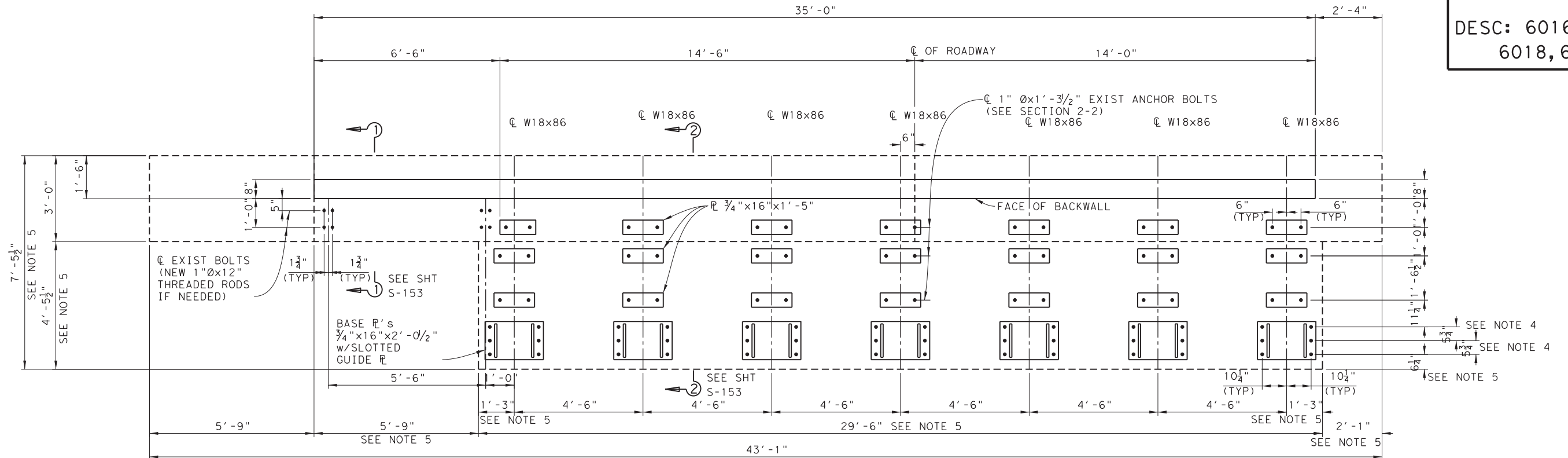


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FERRY LANDING MAINTENANCE
 SPRING BOX
 ASSEMBLY DETAILS SHEET 3 OF 4
 SHEET 54 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-152
DN: MM	REVISIONS			
CK: WB				
DR: MC	COUNTY:	CONTROL:	SECTION:	JOB:
CK: RW	GALVESTON	6428	78	001
REV:	DESCRIPTION:	DATE:		HIGHWAY:
				SH87

DRAWING NAME: 949402-S-152.dgn
PLOT DATE: 4/6/2023 3:30:21 PM PLOTTED BY: SHILL



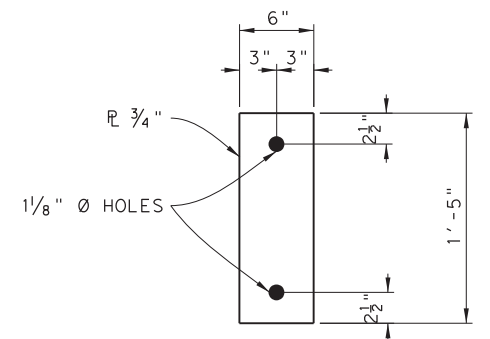
NOTES:

1. ALL BOLTS ARE 3/4" w/1/8" Ø HOLES. (U.N.O.)
2. ALL MATERIALS ARE HOT DIP GALVANIZED.
3. WELDS ARE 1/4" FILLET (U.O.N.).
4. DIMENSIONS SHOWN ARE FOR THE EXISTING CONDITION. FOR REPLACEMENT, INCREASE THE DIMENSIONS SUCH THAT THE HINGE SHAFT HAS AN ALLOWABLE MAXIMUM LATERAL TRAVEL OF 5" INSTEAD OF 4", IN BOTH DIRECTIONS, ALONG THE ELONGATED HOLE OF THE GUIDE PLATE. ADJUST THE LOCATION AND/OR LAYOUT OF AFFECTED SPRING BOX ASSEMBLY MEMBERS.
5. DIMENSIONS SHOWN ARE FOR THE EXISTING CONDITION. TO REPAIR/UPGRADE, INCREASE THE CONCRETE PLATFORM DIMENSIONS TO ACCOMODATE THE REPLACEMENT DETAILS STATED ON SHEET S-151 FOR THE SPRING BOX ASSEMBLY. THE INCREASED PLATFORM DIMENSIONS SHALL ALLOW FOR THE PLACEMENT OF EDGE REINFORCEMENT BETWEEN THE ANCHOR BOLTS AND THE VERTICAL FACES OF THE PLATFORM. MINIMUM CLEAR COVER BETWEEN THE FACE OF THE PLATFORM AND THE EDGE REINFORCEMENT SHALL BE THREE INCHES. IN ADDITION TO THE INSTALLATION OF EDGE REINFORCEMENT, INSTALL ANCHOR BOLT REINFORCEMENTS FOR BOTH SHEAR AND TENSION IN CASE THERE ARE NO EXISTING ONES. INSTALLATION OF EDGE AND ANCHOR BOLT REINFORCEMENTS SHALL BE IN ACCORDANCE WITH ACI 314.

BASE PLATE LAYOUT PLAN

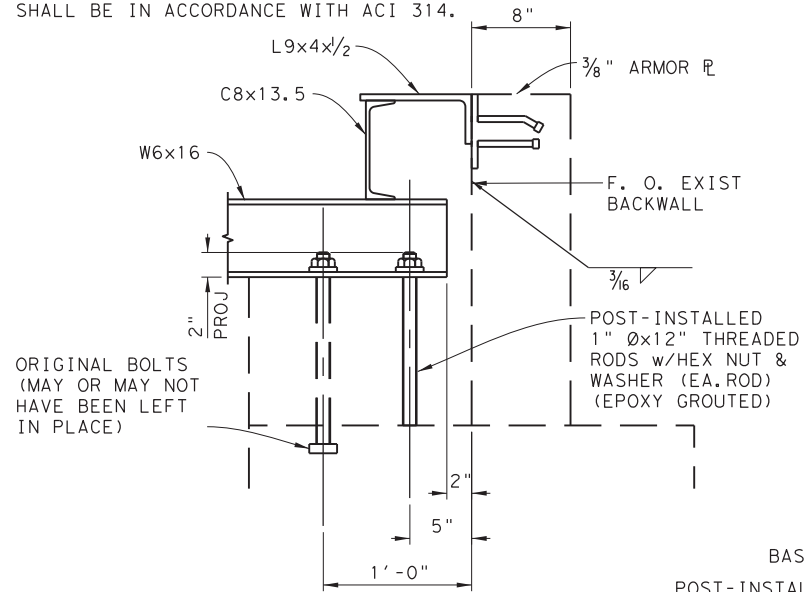
SCALE: 1/2" = 1'-0"

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.



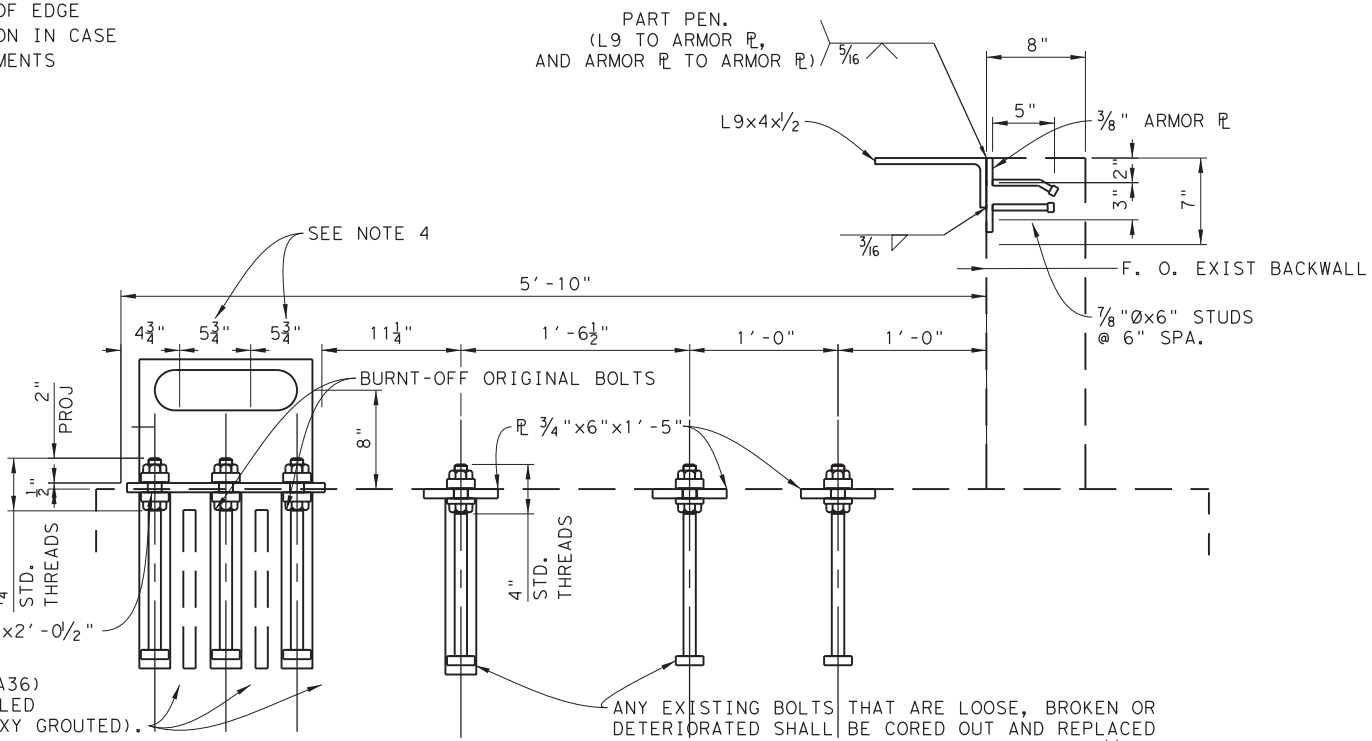
BASE PLATE DETAIL

SCALE: 1/2" = 1'-0"
(21 REQUIRED)



SECTION 1-1

SCALE: 1/2" = 1'-0"
S-153

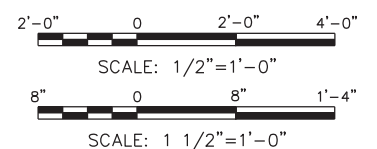


SECTION 2-2

SCALE: 1/2" = 1'-0"
S-153

BOLTS ARE ASTM A193 B7 STL
NUTS ARE ASTM A194-2H STL

ANY EXISTING BOLTS THAT ARE LOOSE, BROKEN OR DETERIORATED SHALL BE CORED OUT AND REPLACED WITH NEW BOLTS & EPOXY GROUTED. 1"Øx1'-3/2" BOLTS (A36) w/2 HEX NUTS & 1 WASHER (EA. BOLT).



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FERRY LANDING MAINTENANCE
SPRING BOX
ASSEMBLY DETAILS SHEET 4 OF 4

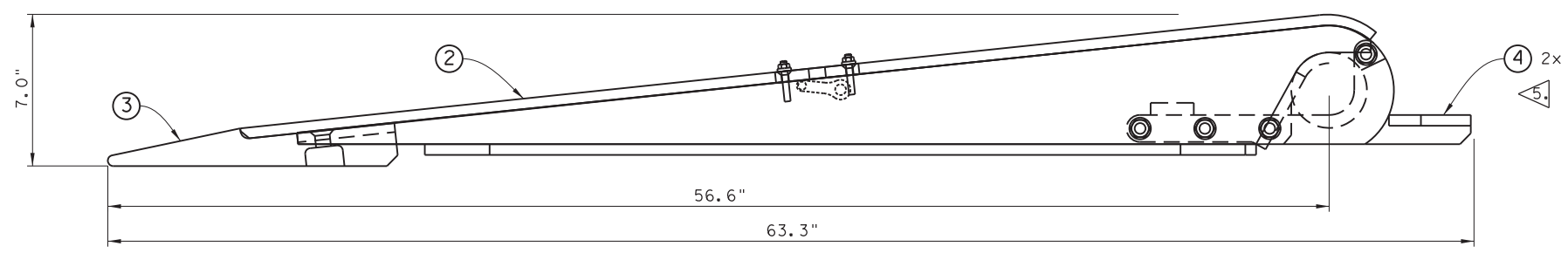
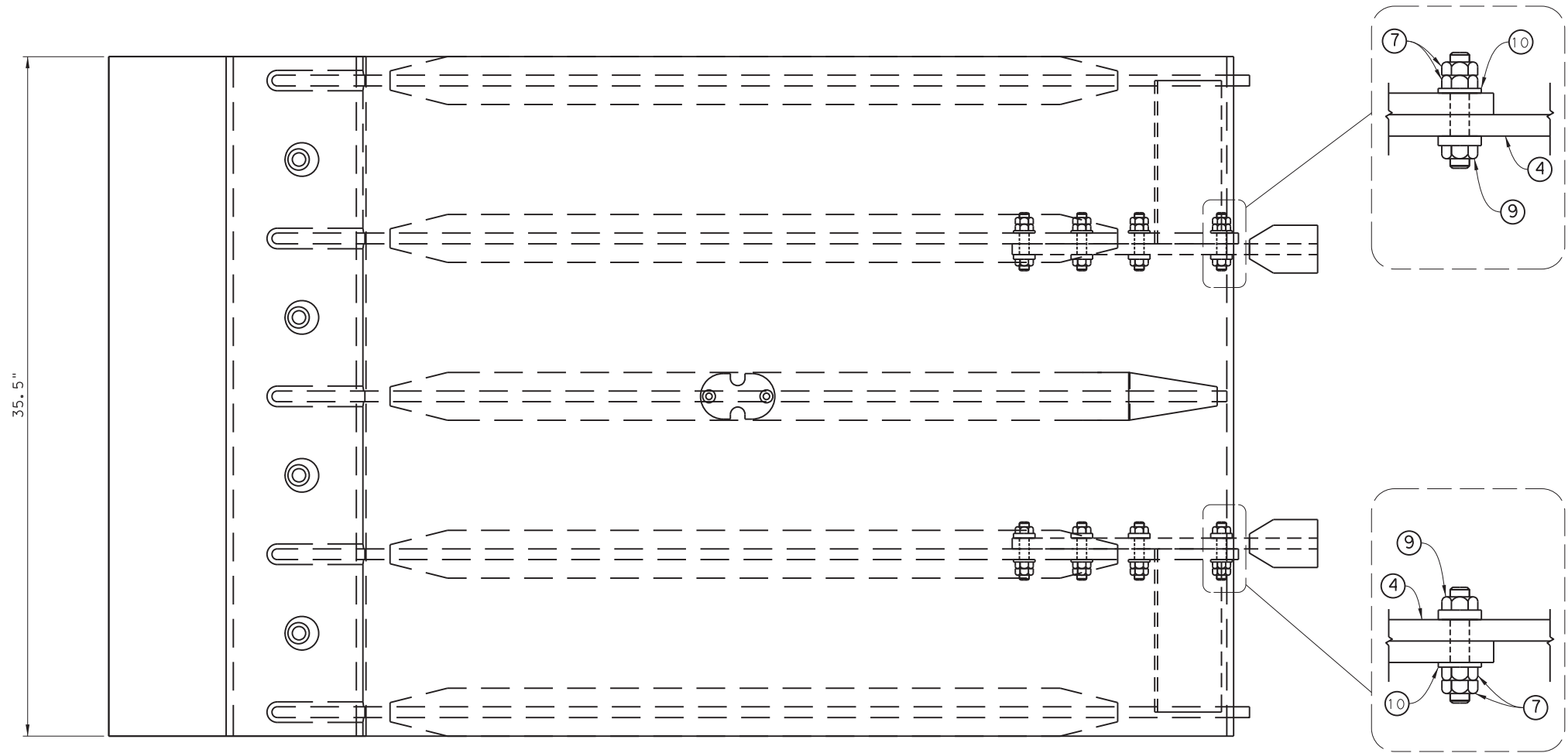
SHEET 55 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-153
DN: MM	REVISIONS:	COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
CK: WB		GALVESTON	6428 78	001 SH87
DR: MC				
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-153.dgn
PLOT DATE: 4/6/2023 3:30:25 PM PLOTTED BY: SHIL

NOTE:

1. FABRICATION SHALL BE IN ACCORDANCE WITH ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS.
2. UHMW COMPONENTS OF POLY FEND BLACK UHMW PE OR APPROVED EQUIVALENT VIRGIN UHMW MATERIAL.
SUPPLIER:
ULTRA POLY INC.
2926 S. STEELE ST.
TACOMA, WA 98409
(253)272-1217 / 1-800-872-8469
3. SHACKLE COVER SHALL BE COATED WITH THERMAL SPRAYED ALUMINUM (TSA) COATING.
4. TSA COATING SHALL BE APPLIED TO ALL SURFACES OF THE SHACKLE COVER. INSURE INTERIOR OF ALL THROUGH HOLES ARE COATED.
5. HINGE RETAINERS (ITEM 4) WILL BE DETACHED AND RE-INSTALLED AT NEXT ASSEMBLY LEVEL. HEX NUTS (ITEM 7) SHALL BE SNUG FIT ONLY AT THIS ASSEMBLY LEVEL.



1124A150-1 INBD FINGER ASSEMBLY

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

12	10		FLAT WASHER	1/2", ASTM F436, GALV		
8	9		HEX BOLT	1/2-13 UNC x 2.5", ASTM A325, GALV		
2	8		SCHC SCREW	5/16-18 UNC x 1.00", SS		
20	7		HEX NUT	1/2-13 UNC, ASTM A563, GALV		
1	6		ANCHOR SHACKLE	3/8" - 1TON, CROSBY GROUP		
1	5	1124A150-4	SHACKLE COVER	FB .50"x2.38"x3.88", ASTM A709, GR 50	1	3
2	4	1124A156-1	HINGE RETAINER	HINGE RETAINER	4	
1	3	1124A150-2	INBOARD TIP SKID	UHMW 2.0"x13.5"x35.5", ASTM 4020-81	22	3
1	2	1124A151-1	FINGER WELDMENT	INBD FINGER WELDMENT	446	
/	1	1124A150-1	INBD FINGER ASSEMBLY		478	
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SH

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X, X	±.100"
72" - 50'-0"	±1/8"	X, XX	±.060"
50'-0" & OVER	±3/16"	X, XXX	±.030"
		X, XXXX	±.0100"
SURFACE FINISHES		DRILLED HOLES	±1/32"
TURN, MILL, BORING TO REAM			-0
		DEGREE	±1/2°

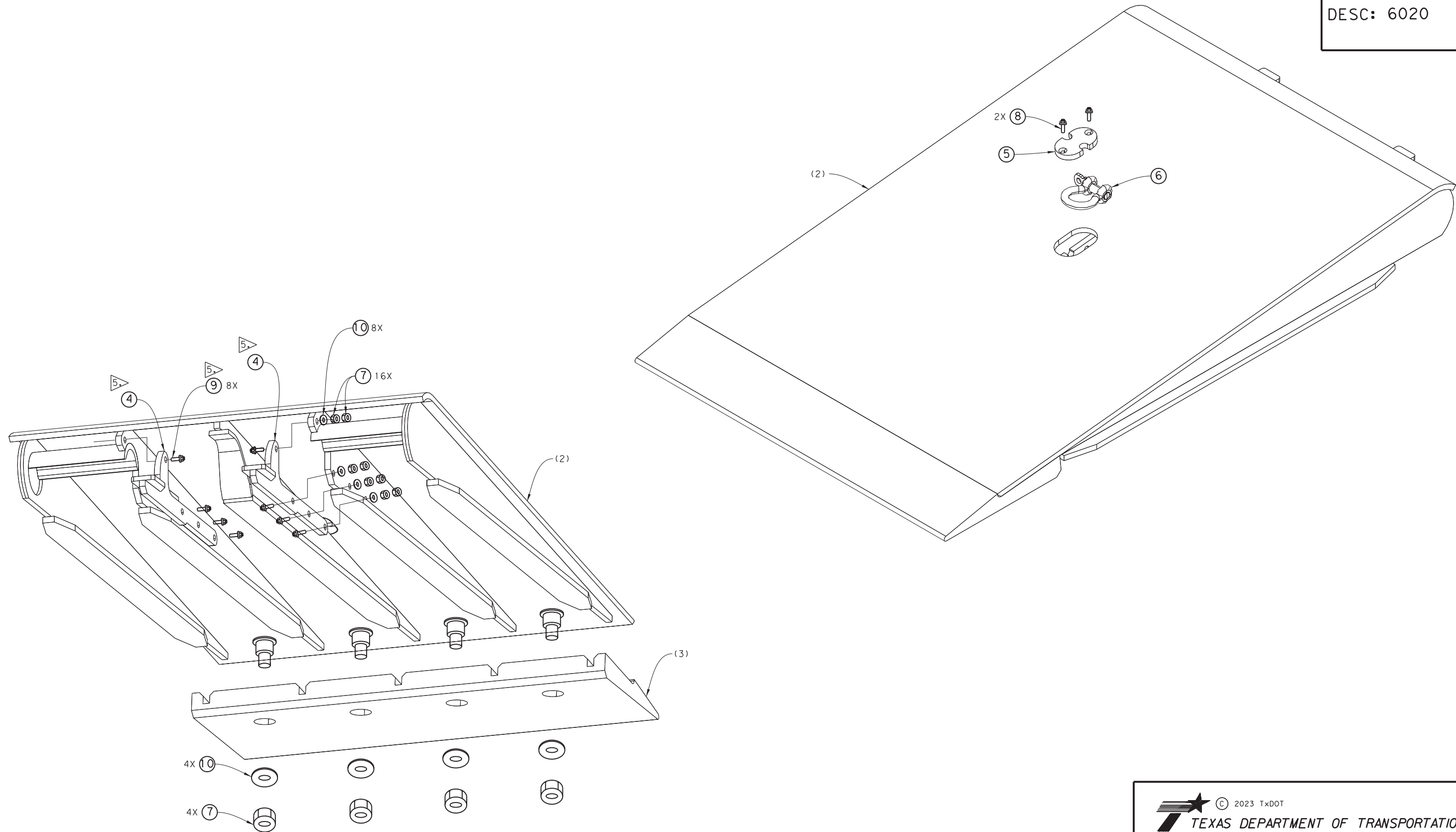
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

INBOARD FINGER ASSEMBLY
1 OF 3

SHEET 57 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-161
REV. NO.	REV.	DESCRIPTION	DATE	COUNTY
1	RW			GALVESTON
				CONTROL SECTION JOB HIGHWAY
				6428 78 001 SH87

DRAWING NAME: 949402-S-161.dgn PLOT DATE: 4/6/2023 3:30:34 PM PLOTTED BY: SHILL



1124A150-1 INBD FINGER ASSEMBLY

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X.X	±.100"
72" - 50'-0"	±1/8"	X.XX	±.060"
50'-0" & OVER	±3/16"	X.XXX	±.030"
		X.XXXX	±.0100"

SURFACE FINISHES
 TURN, MILL, BORING \sqrt{R} TO \sqrt{R}
 REAM \sqrt{R}

DRILLED HOLES	±1/32"
	-0
DEGREE	±1/2°

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

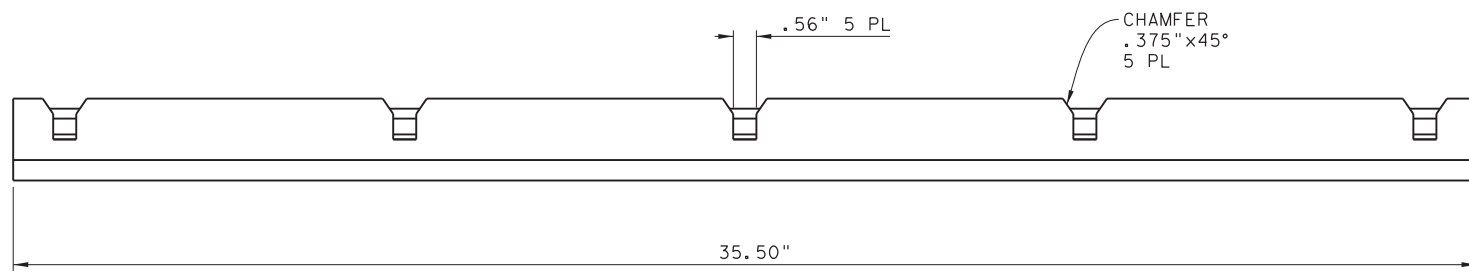
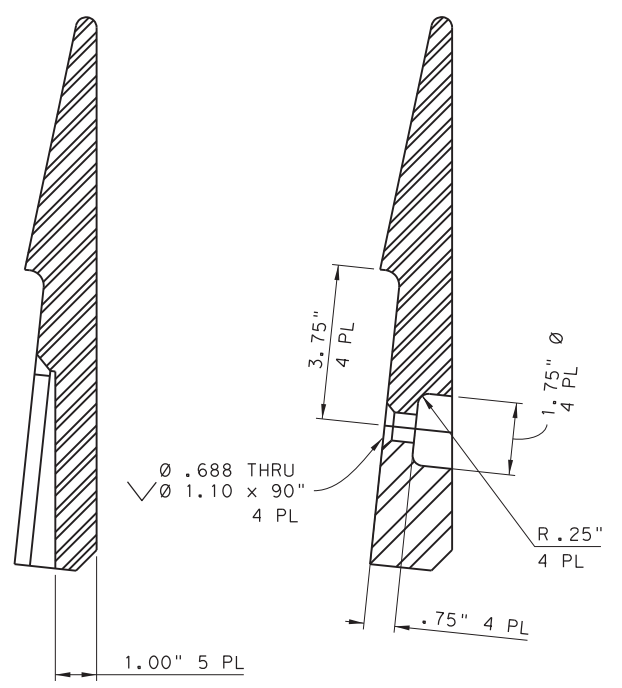
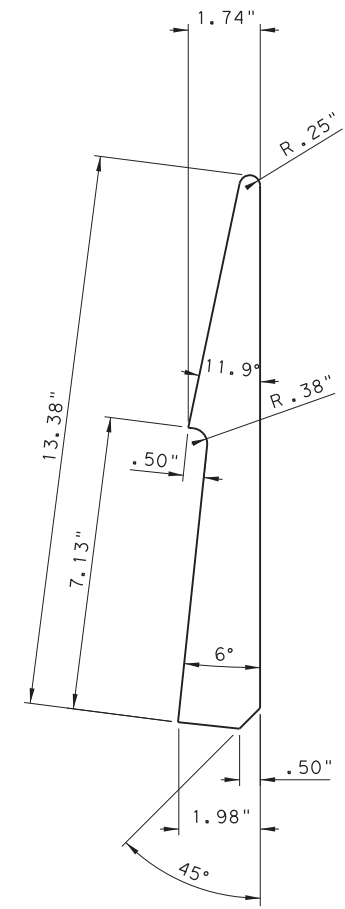
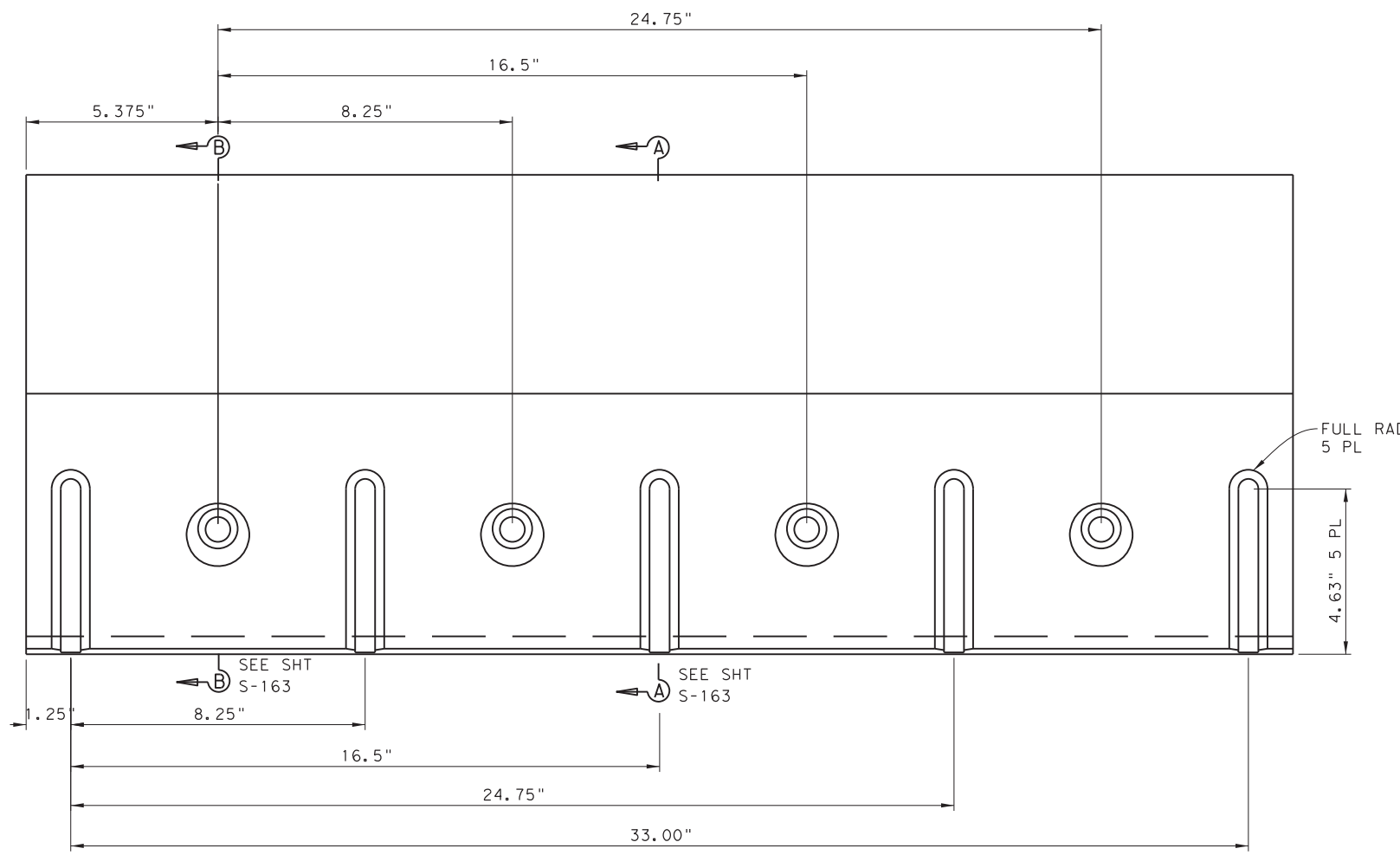
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

INBOARD FINGER ASSEMBLY
 2 OF 3

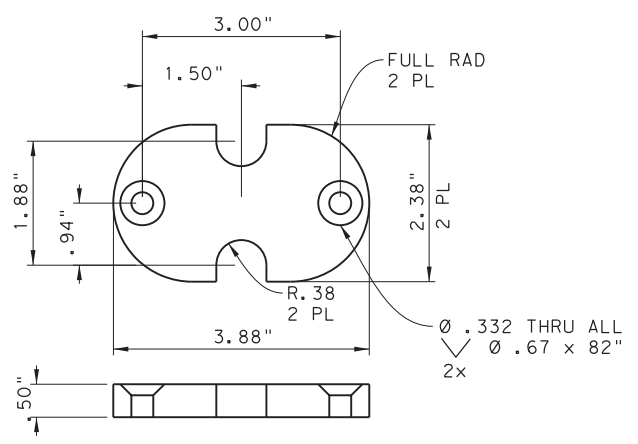
SHEET 58 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-162
CK:1	SS	COUNTY			HIGHWAY
DR:1	MC	GALVESTON	6428	78	001
CK:1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-162.dgn PLOTTED BY: SHIL PLOT DATE: 4/6/2023 3:30:38 PM



DETAIL ITEM 3 - INBOARD TIP SKID



DETAIL ITEM 5 - SHACKLE COVER

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X.X	±.100"
72" - 50'-0"	±1/8"	X.XX	±.060"
50'-0" & OVER	±3/16"	X.XXX	±.030"
		X.XXXX	±.0100"
SURFACE FINISHES		DRILLED HOLES	±1/32"
TURN, MILL, BORING TO REAM			-0
		DEGREE	±1/2°

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

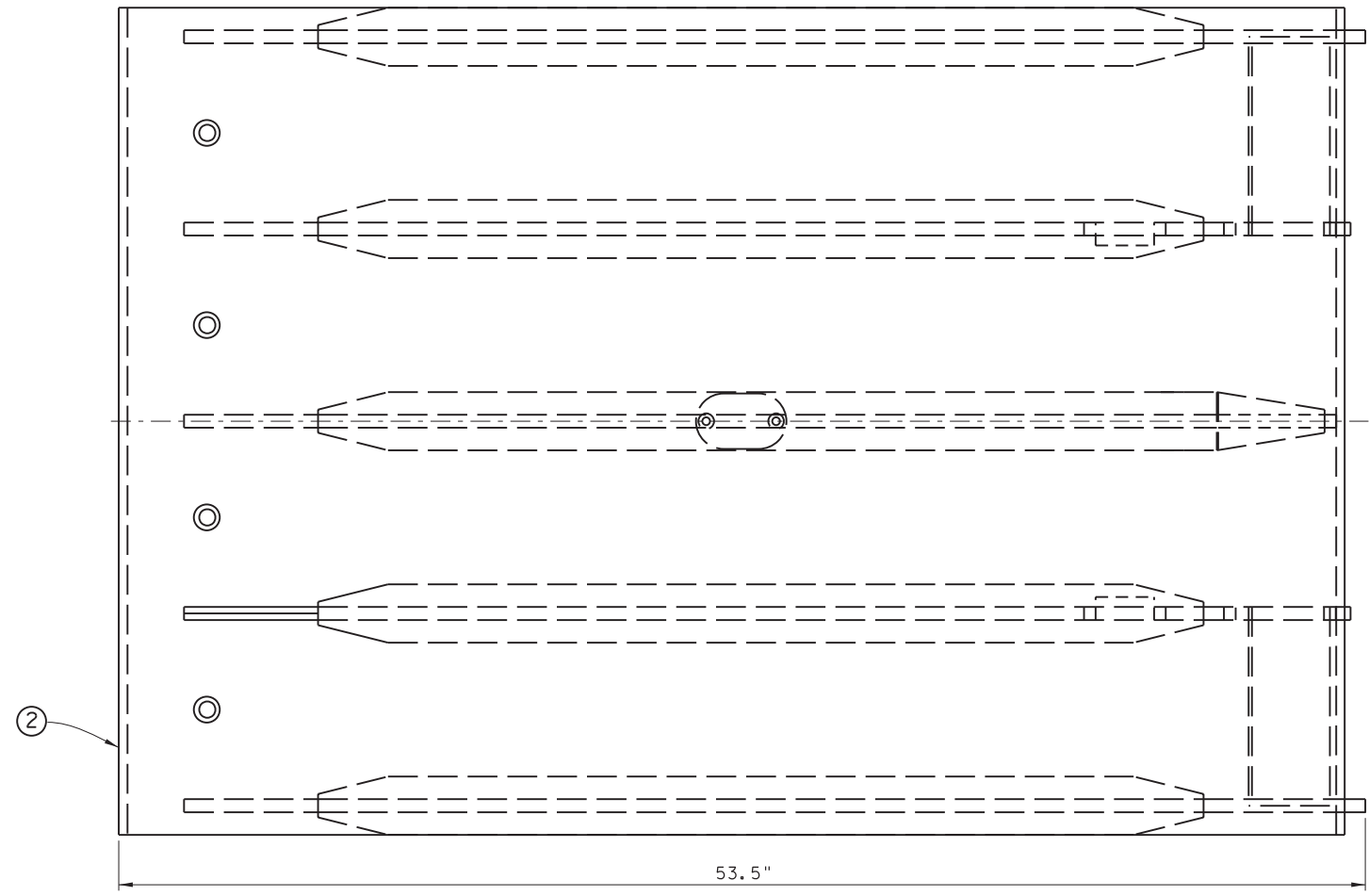
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FERRY LANDING MAINTENANCE
INBOARD FINGER ASSEMBLY
PART DETAILS

SHEET 59 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-163
DN: MM	REVISONS			
CK: SS		COUNTY:	CONTROL SECTION JOB:	HIGHWAY:
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

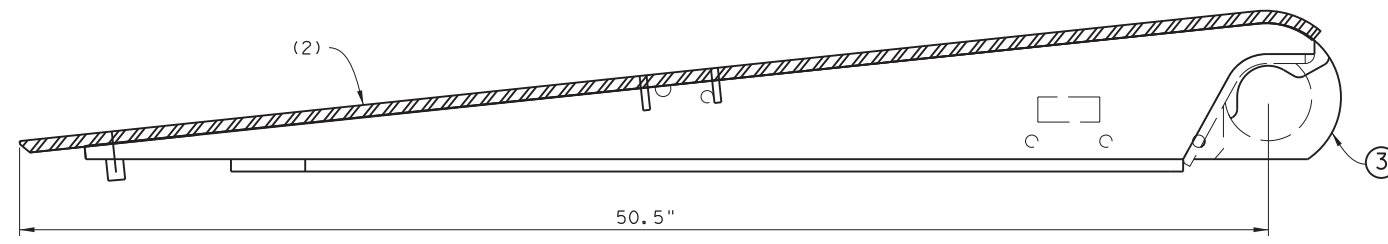
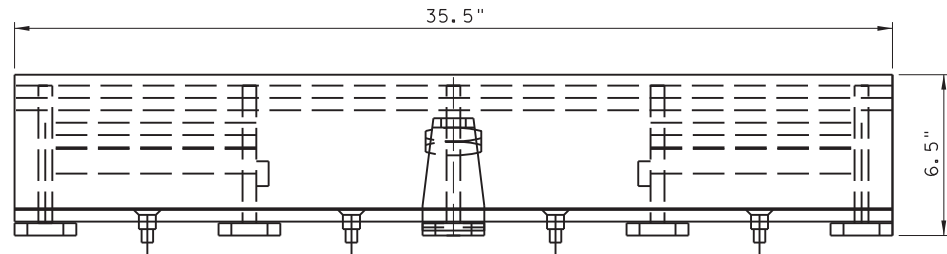
3:30:42 PM 4/6/2023

DRAWING NAME: 949402-S-163.dgn
PLOT DATE: 4/6/2023 3:30:42 PM PLOTTED BY: SHILL



NOTE:

1. FABRICATION SHALL BE IN ACCORDANCE WITH ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS.
2. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5 BRIDGE WELDING CODE AS AMENDED BY ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS.
3. BEARING SURFACES MUST BE MASKED PRIOR TO TSA COATING.
4. ENTIRE FINGER WELDMENT SHALL BE COATED WITH THERMAL SPRAYED ALUMINUM COATING.
5. TSA COATING SHALL BE APPLIED TO ALL SURFACES OF THE ASSEMBLY, WITH THE EXCEPTION OF BEARING SURFACES, AFTER FABRICATION. INSURE INTERIOR OF ALL THROUGH HOLES ARE COATED.
6. APPLY NON-SKID COATING TO TOP TRAVEL SURFACE OF FINGER ASSEMBLIES.



1124A151-1 INBOARD FINGER WELDMENT

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QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SH
4	12		NELSON SBL SHOULDER STUD	SBL 5/8"x3/4", 1/2-13x5/8", MILD STEEL	0	
2	11	1124A151-11	ROUND TUBE	RT 3.5"ODx2.5"IDx8.5", ASTM A240 UNS 31803	5	3
2	10	1124A151-10	FLAT BAR	FB .50"x1.0"x3.5", ASTM A709, GR 50	0	
1	9	1124A151-9	FLAT BAR	FB .375"x2.5"x7.0", ASTM A709, GR 50	1	3
1	8	1124A151-8	FLAT BAR	FB .50"x2.5"x38.7", ASTM A709, GR 50	13	3
4	7	1124A151-7	FLAT BAR	FB .50"x2.5"x38.0", ASTM A709, GR 50	13	3
1	6	1124A151-6	PLATE	PL .50"x5.5"x49.8", ASTM A709, GR 50	19	3
2	5	1124A151-5	PLATE	PL .50"x5.5"x50.5", ASTM A709, GR 50	20	3
1	4	1124A151-4	PLATE	PL .50"x5.5"x50.9", ASTM A709, GR 50	22	3
1	3	1124A151-3	PLATE	PL .50"x5.5"x50.9", ASTM A709, GR 50	22	3
1	2	1124A151-2	PLATE	PL .50"x35.5"x53.0", ASTM A709, GR 50	265	3
/	1	1124A151-1	INBD FINGER WELDMENT		446	
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SH

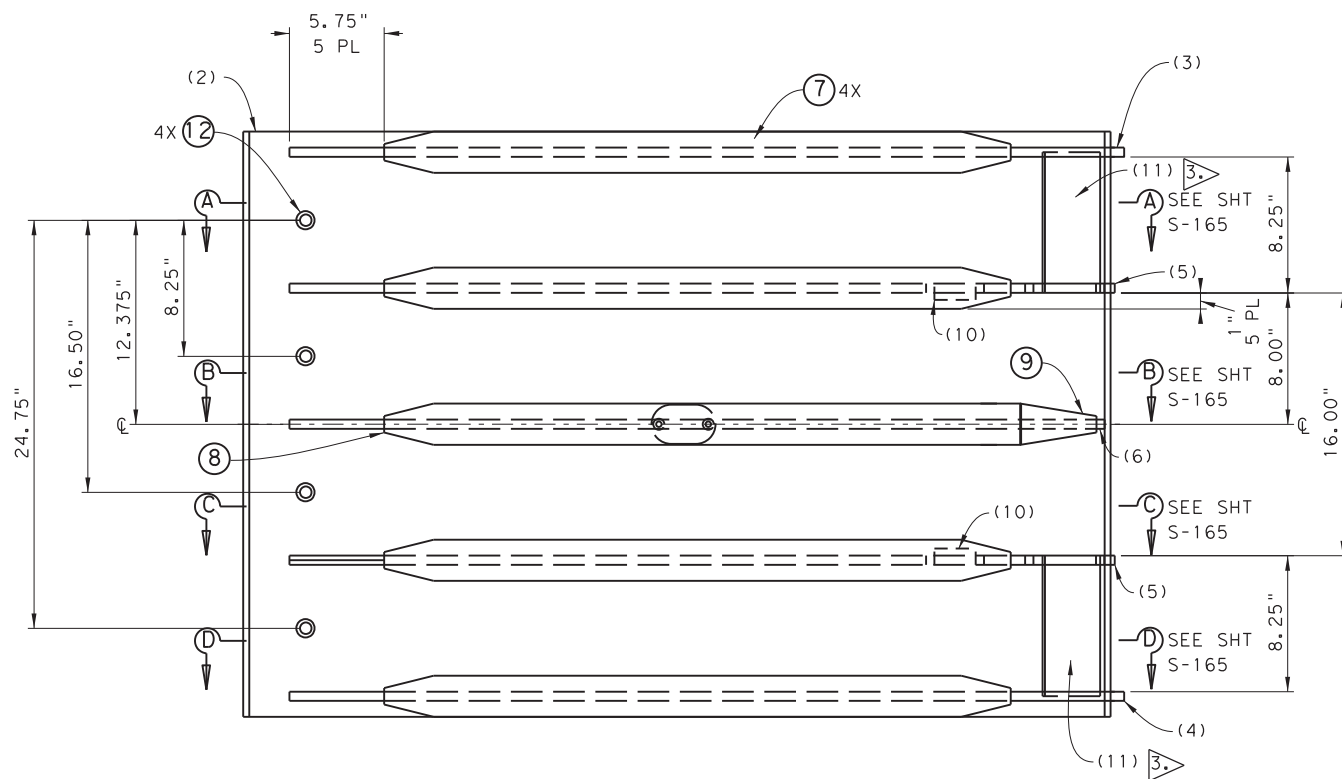
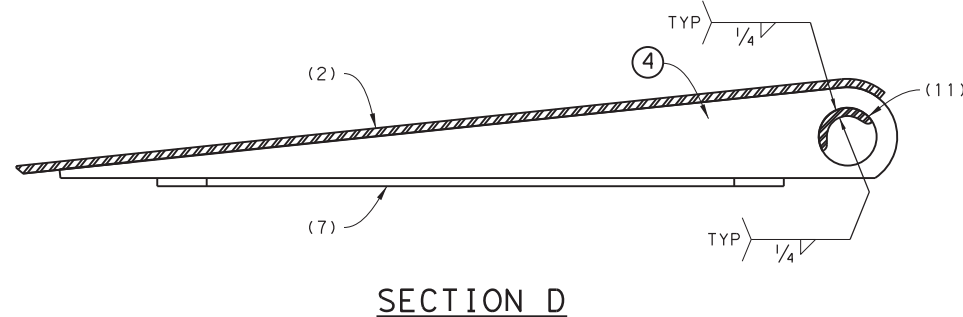
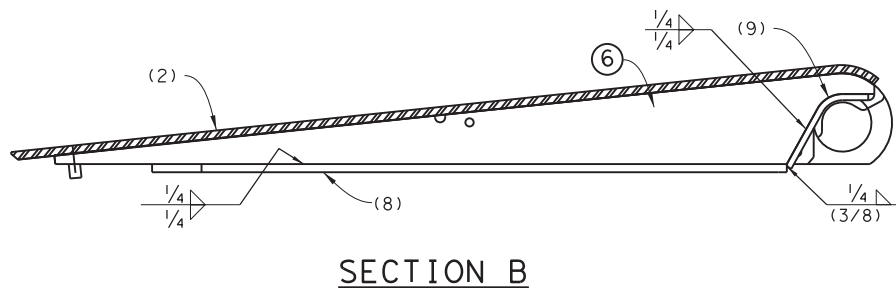
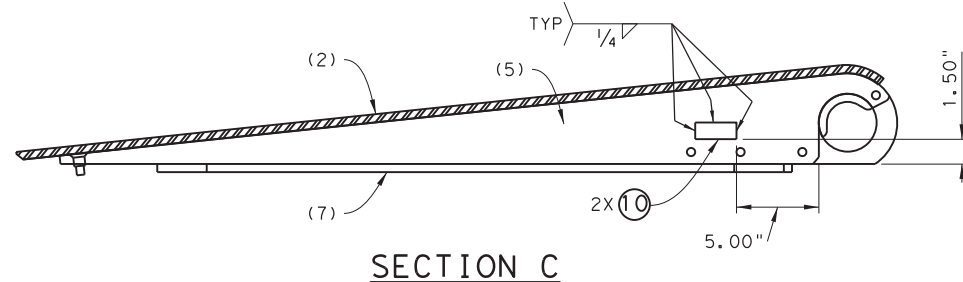
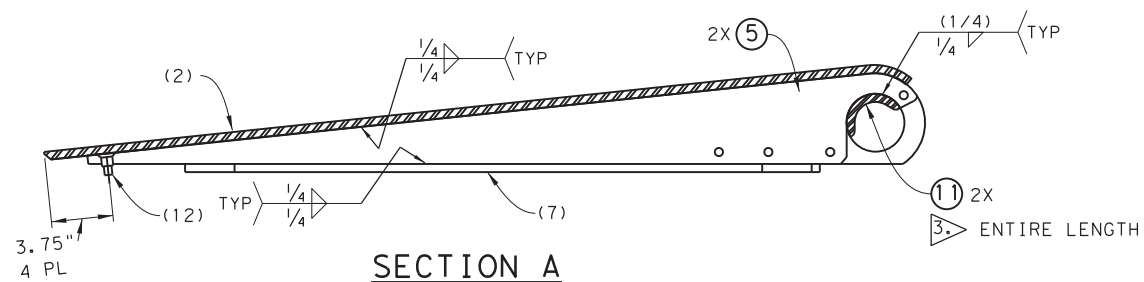
UNLESS OTHERWISE SPECIFIED:	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0 - 72" ±1/16"	X.X ±.100"
72" - 50'-0" ±1/8"	X.XX ±.060"
50'-0" & OVER ±3/16"	X.XXX ±.030"
	X.XXXX ±.0100"
SURFACE FINISHES	DRILLED HOLES ±1/32"
TURN, MILL, BORING ✓ TO REAM ✓	-0
	DEGREE ±1/2°

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

INBOARD FINGER WELDMENT

ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	12		RMC 6428-78-001	S-164
REVISONS		COUNTY	CONTROL SECTION	JOB HIGHWAY
DN:1 MM		GALVESTON	6428 78	001 SH87
CK:1 SS				
DR:1 MC				
CK:1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-164.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:30:47 PM



1124A151-1 INBOARD FINGER WELDMENT
BOTTOM VIEW

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X, X	±.100"
72" - 50' - 0"	±1/8"	X, XX	±.060"
50' - 0" & OVER	±3/16"	X, XXX	±.030"
		X, XXXX	±.0100"
SURFACE FINISHES		DRILLED HOLES	±1/32"
TURN, MILL, BORING ✓ TO ✓			-0
REAM ✓		DEGREE	±1/2°

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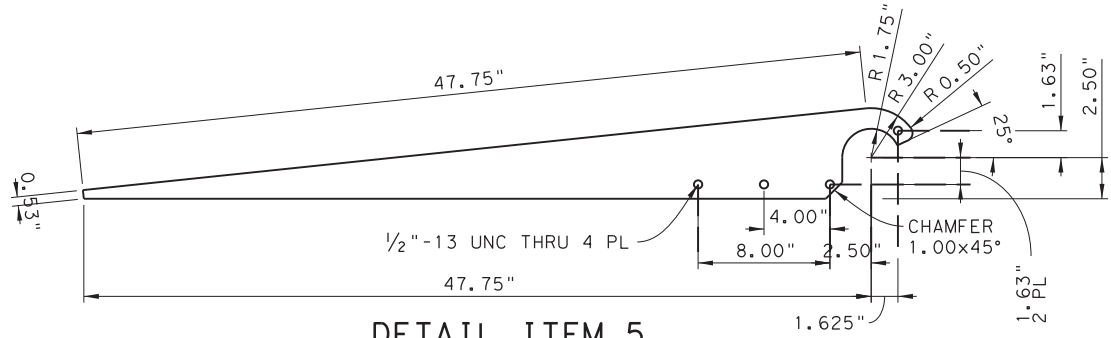
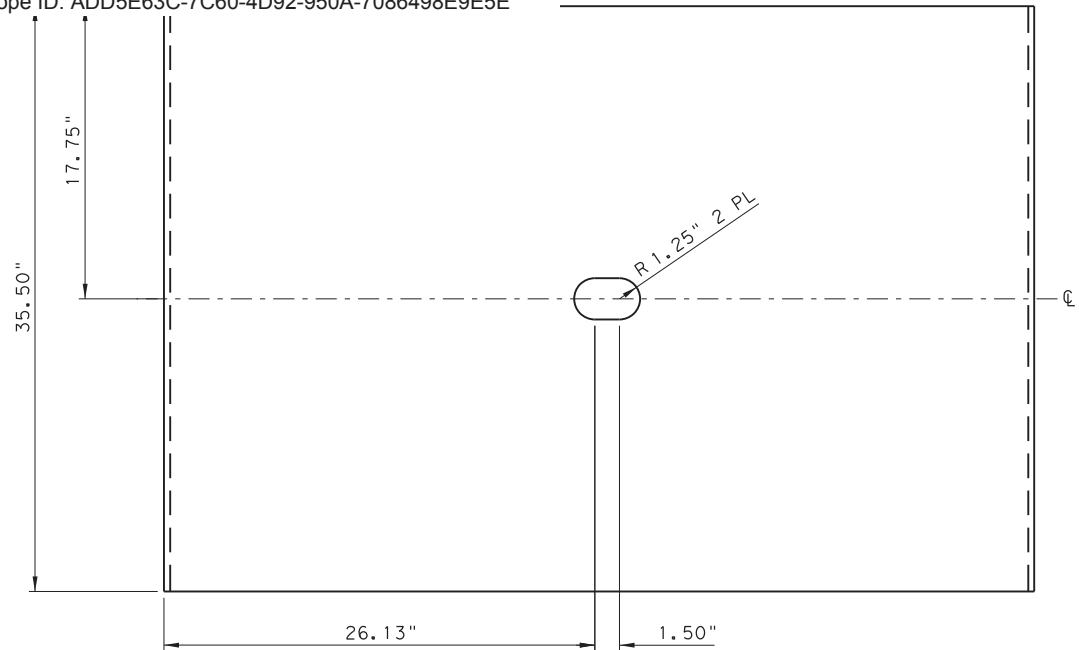
TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

INBOARD FINGER WELDMENT
SECTIONS & DETAILS

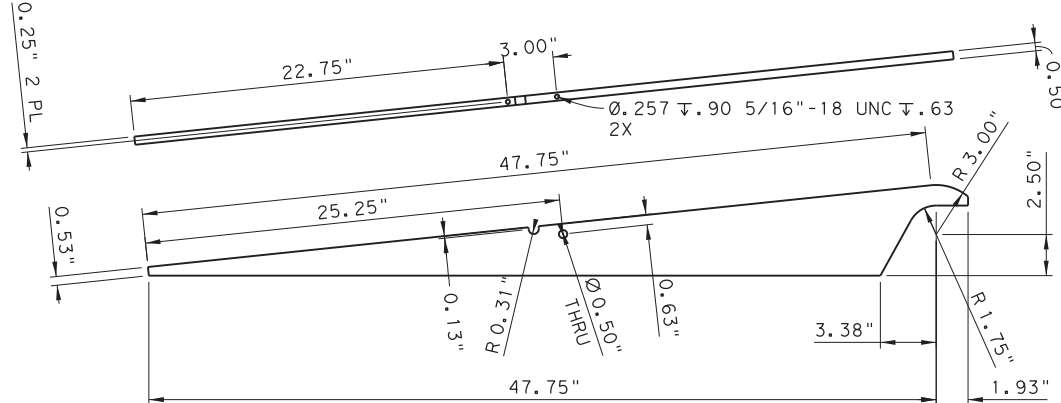
SHEET 61 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-165
REVISIONS:	COUNTY:	CONTROL:	SECTION:	JOB:
	GALVESTON	6428	78	001
DATE:	DESCRIPTION:	DATE:	DESCRIPTION:	DATE:

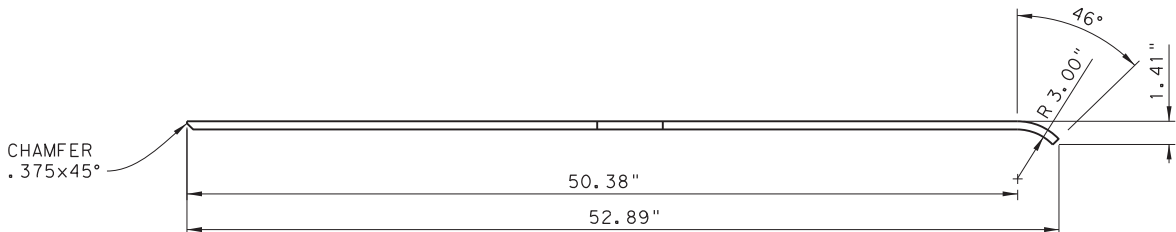
DRAWING NAME: 949402-S-165.dgn PLOTTED BY: SHILL PLOT DATE: 4/6/2023 3:30:51 PM



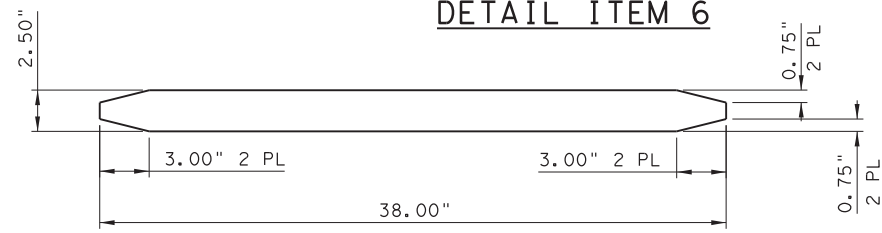
DETAIL ITEM 5



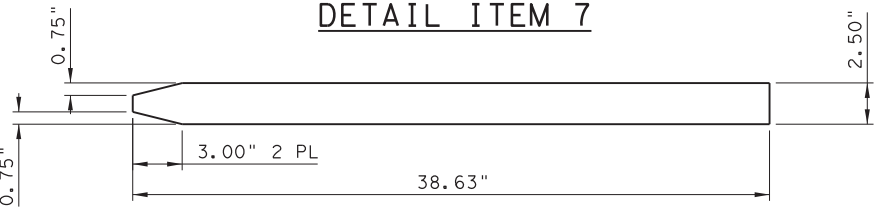
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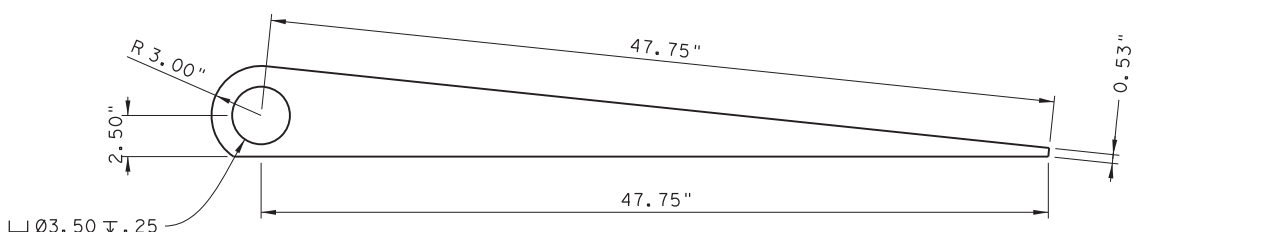
DETAIL ITEM 2



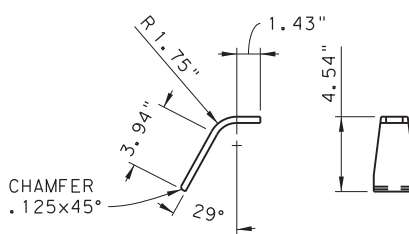
DETAIL ITEM 7



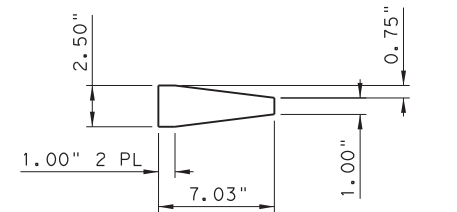
DETAIL ITEM 8



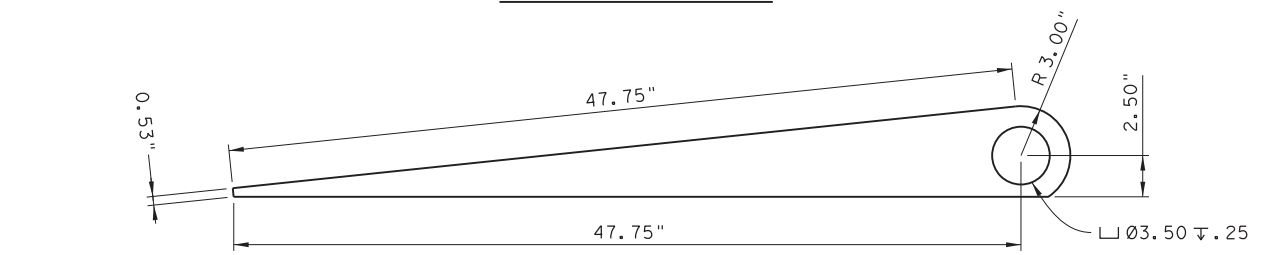
DETAIL ITEM 3



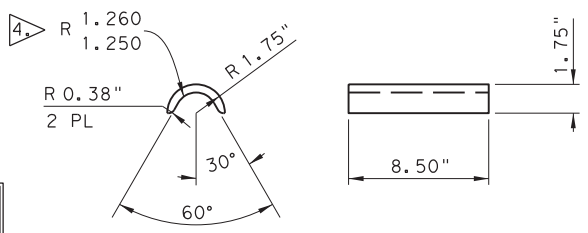
DETAIL ITEM 9



(ITEM 9 FLAT PATTERN)



DETAIL ITEM 4



DETAIL ITEM 11

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X.X	±.100"
72" - 50'-0"	±1/8"	X.XX	±.060"
50'-0" & OVER	±3/16"	X.XXX	±.030"
		X.XXXX	±.0100"
SURFACE FINISHES		DRILLED HOLES	±1/32"
TURN, MILL, BORING	✓ TO REAM	DEGREE	±1/2°

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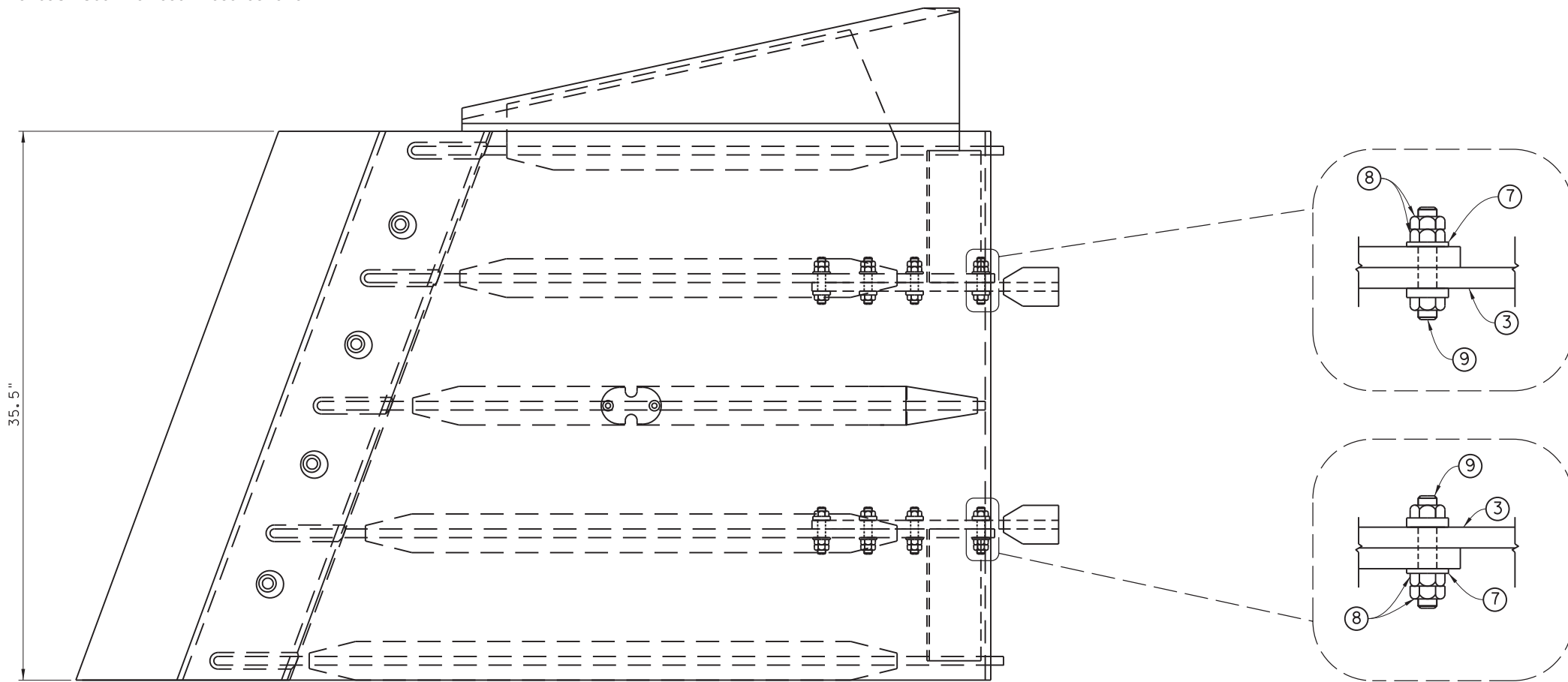
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
INBOARD FINGER WELDMENT PARTS DETAILS

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-166
REV	DESCRIPTION	DATE	COUNTY:	CONTROL SECTION JOB HIGHWAY
CK.1	SS		GALVESTON	6428 78 001 SH87

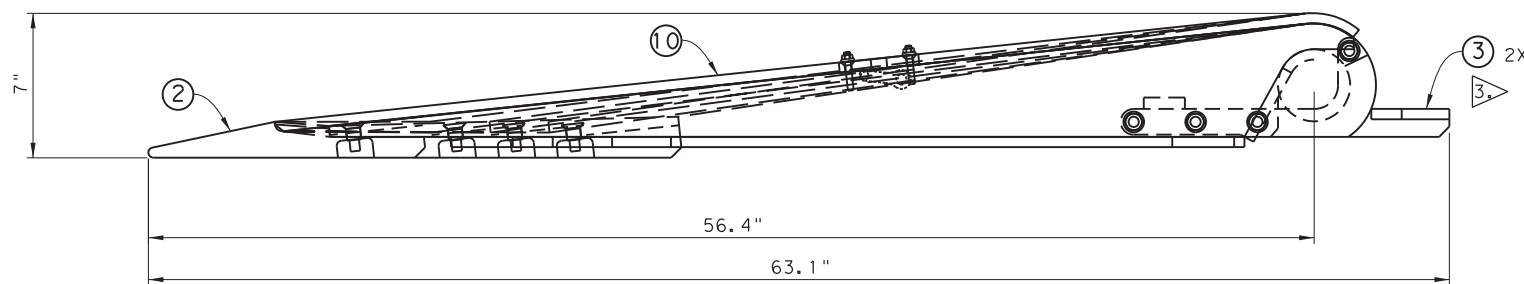
DRAWING NAME: 949402-S-166.dgn PLOTTED BY: SHIL PLOT DATE: 4/6/2023 3:30:55 PM

NOTE:

1. FABRICATION SHALL BE IN ACCORDANCE WITH ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS.
2. UHMW COMPONENTS OF POLY FEND BLACK UHMW PE OR APPROVED EQUIVALENT VIRGIN UHMW MATERIAL.
 SUPPLIER:
 ULTRA POLY, INC.
 2926 S. STEELE ST.
 TACOMA, WA 98409
 (253)272-1217 / 1-800-872-8469
3. HINGE RETAINERS (ITEM 3) WILL BE DETACHED AND RE-INSTALLED AT NEXT ASSEMBLY LEVEL. HEX NUTS (ITEM 8) SHALL BE SNUG FIT ONLY AT THIS ASSEMBLY LEVEL.



PLAN VIEW



1124A152-1 STARBOARD FINGER ASSEMBLY

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1	10	1124A153-1	FINGER WELDMENT	STBD FINGER WELDMENT	414	
8	9		HEX BOLT	1/2-13 UNCx2.5", ASTM A325, GALV		
20	8		HEX NUT	1/2-13 UNC, ASTM A563, GALV		
12	7		FLAT WASHER	1/2", ASTM F436, GALV		
2	6		SCHC SCREW	5/16-18 UNCx1.00", SS		1
1	5		ANCHOR SHACKLE	3/8"-1 TON, CROSBY GROUP		
1	4	1124A150-4	SHACKLE COVER	FB .50"x2.38"x3.88", ASTM A709, GR 50	1	
2	3	1124A156-1	HINGE RETAINER	HINGE RETAINER	4	
1	2	1124A152-2	STARBOARD TIP SKID	UHMW 2.0"x13.5"x42.4", ASTM 4020-81	22	
/	1	1124A152-1	STARBOARD FINGER ASSEMBLY		446	
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SH

UNLESS OTHERWISE SPECIFIED:	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0 - 72" ±1/16"	X.X ±.100"
72" - 50'-0" ±1/8"	X.XX ±.060"
50'-0" & OVER ±3/16"	X.XXX ±.030"
	X.XXXX ±.0100"
SURFACE FINISHES	DRILLED HOLES ±1/32"
TURN, MILL, BORING ✓ TO REAM ✓	DEGREE ±1/2°

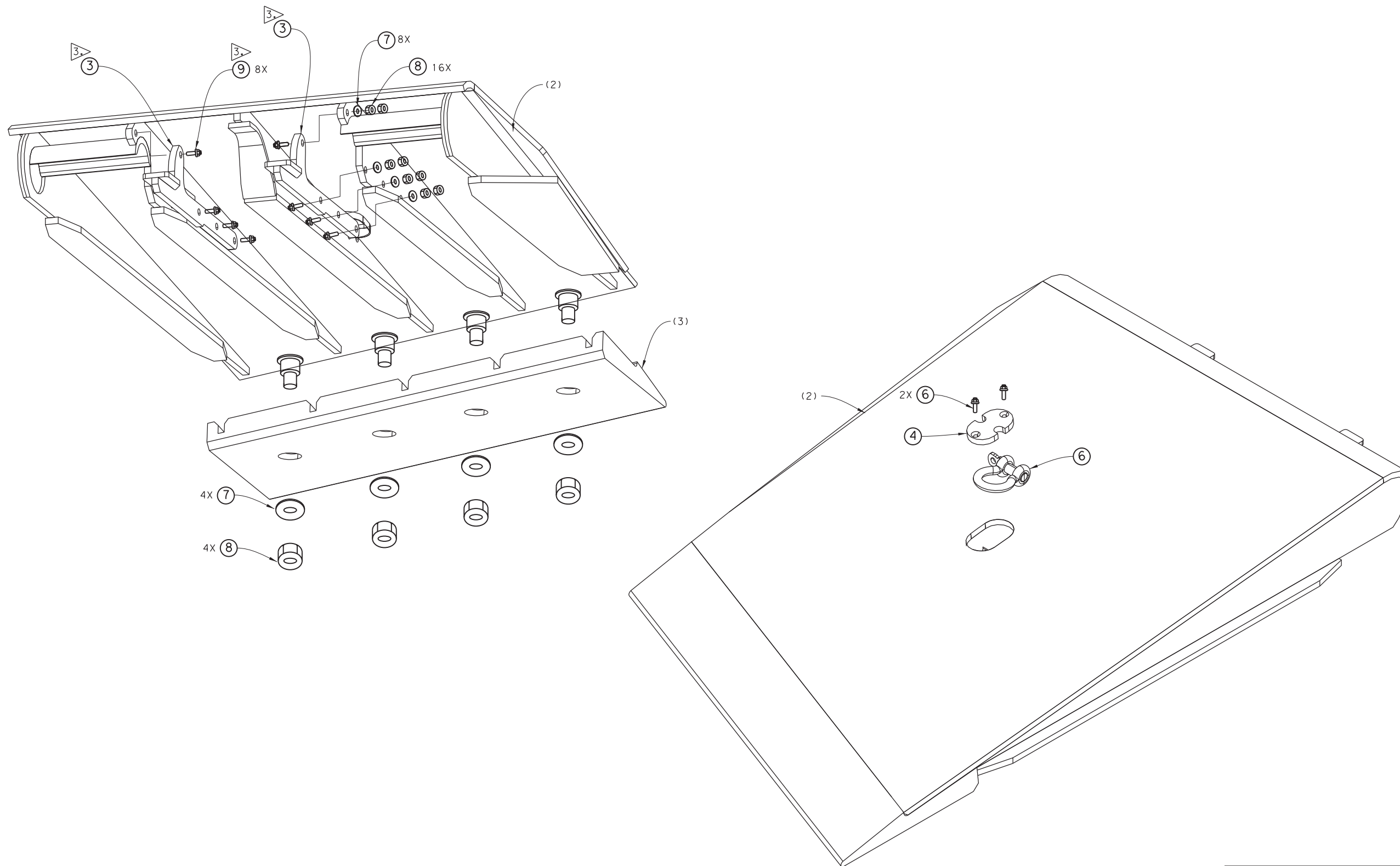
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
STARBOARD FINGER ASSEMBLY
1 OF 2

SHEET 63 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	12		RMC 6428-78-001	S-167
REVISIONS	COUNTY	CONTROL	SECTION	JOB
	GALVESTON	6428	78	001
DATE	DATE	DATE	DATE	DATE

3:30:59 PM 4/6/2023

DRAWING NAME: 949402-S-167.dgn
 PLOT DATE: 4/6/2023 3:30:59 PM
 PLOTTED BY: SHIL



1124A152-1 STARBOARD FINGER ASSEMBLY

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X.X	±.100"
72" - 50' - 0"	±1/8"	X.XX	±.060"
50' - 0" & OVER	±3/16"	X.XXX	±.030"
		X.XXXX	±.0100"

SURFACE FINISHES
 TURN, MILL, BORING \sqrt{R} TO \sqrt{R}
 REAM \sqrt{R}

DRILLED HOLES ±1/32"
 -0
 DEGREE ±1/2°

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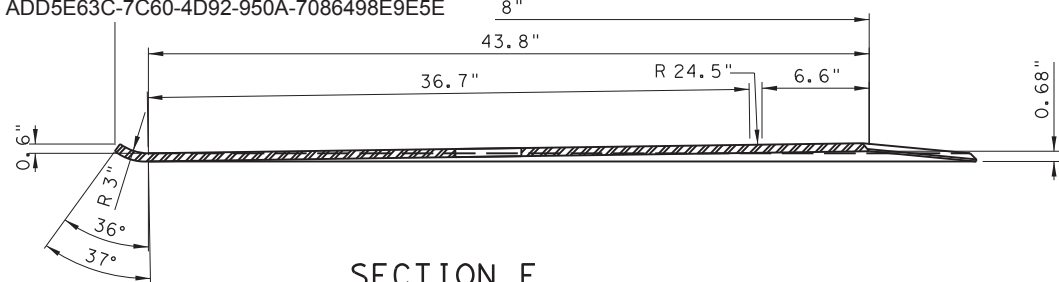


FERRY LANDING MAINTENANCE

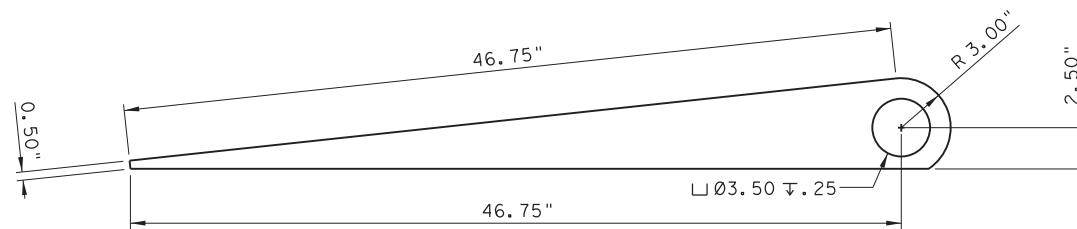
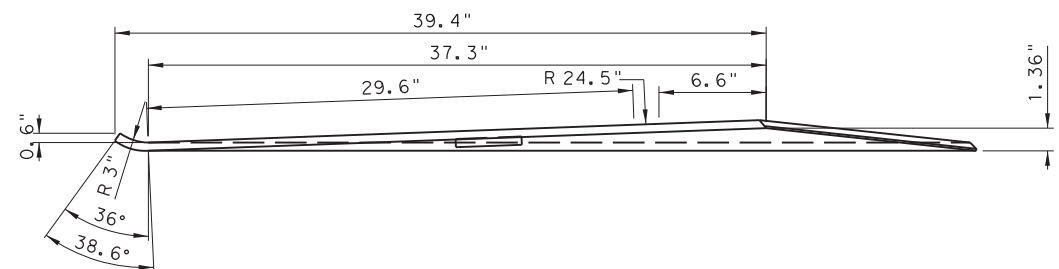
STARBOARD FINGER ASSEMBLY
 2 OF 2

SHEET 64 OF 148

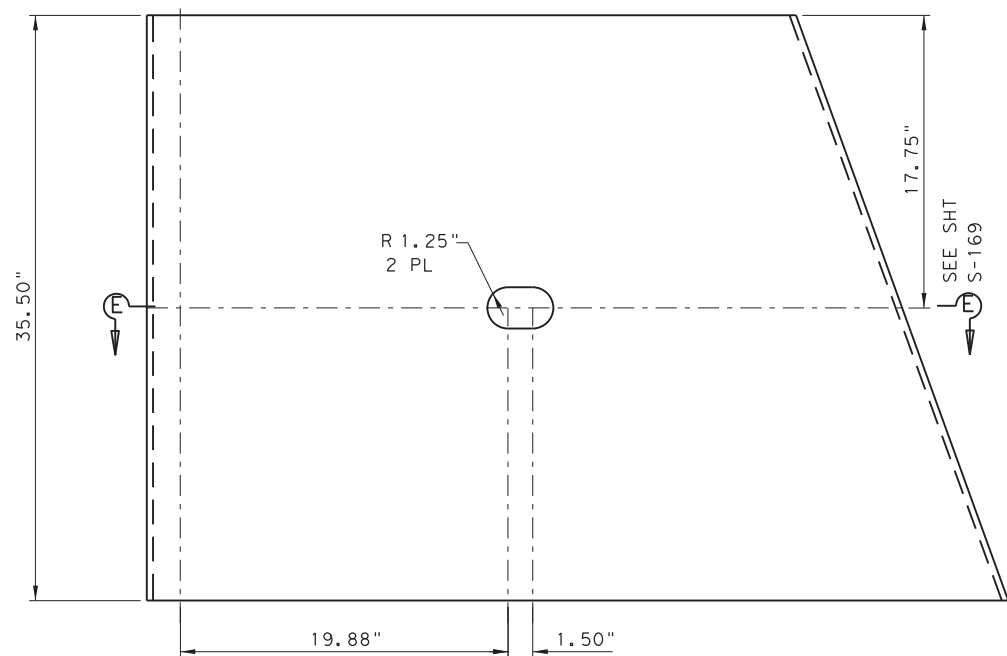
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: I	MM	12		RMC 6428-78-001	S-168
CK: I	SS	COUNTY			HIGHWAY
DN: I	MC	GALVESTON	6428	78	001 SH87
CK: I	RW	REV	DESCRIPTION	DATE	



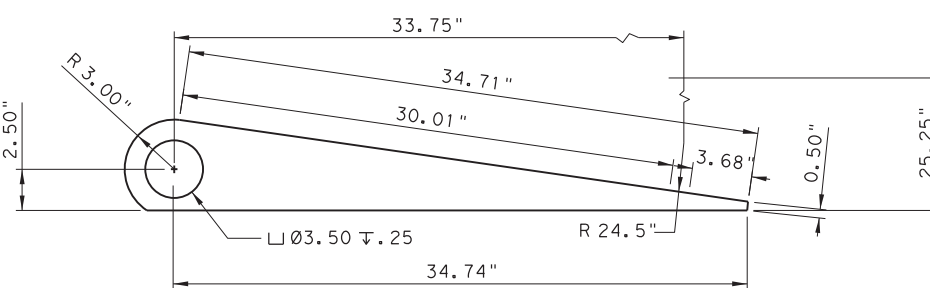
SECTION E



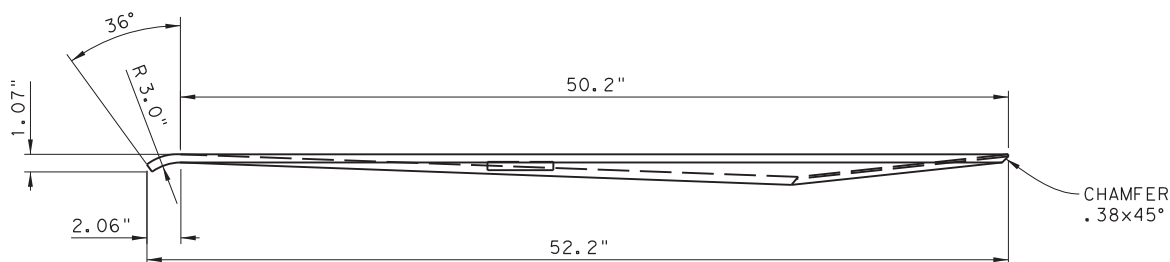
DETAIL ITEM 3



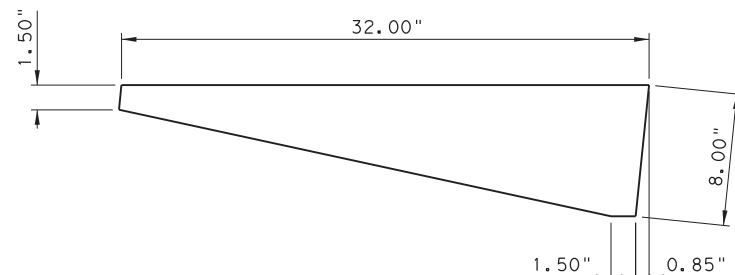
DETAIL ITEM 2



DETAIL ITEM 7



DETAIL ITEM 17



UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - 72"	±1/16"	X.X	±.100"
72" - 50'-0"	±1/8"	X.XX	±.060"
50'-0" & OVER	±3/16"	X.XXX	±.030"
		X.XXXX	±.0100"
SURFACE FINISHES		DRILLED HOLES	±1/32"
TURN, MILL, BORING ✓ TO REAM ✓		DEGREE	-0
			±1/2°

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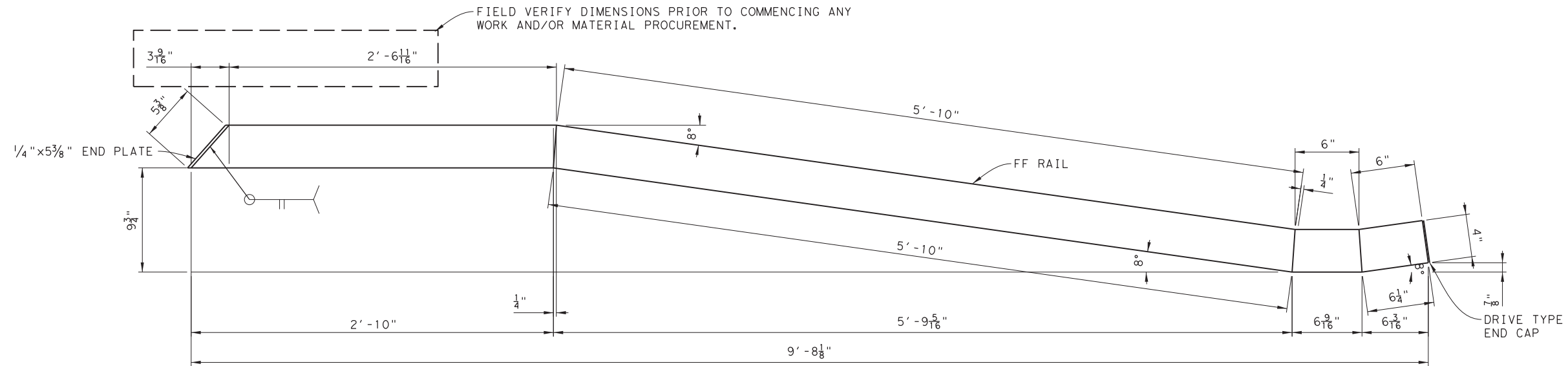
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
PORT FINGER WELDMENT
PARTS DETAILS

SHEET 65 OF 148

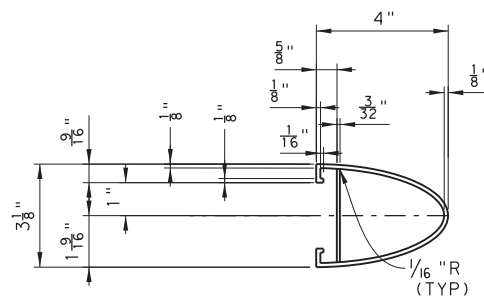
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-169
REVISIONS	COUNTY:	CONTROL SECTION:	JOB:	HIGHWAY:
	GALVESTON	6428 78	001	SH87

3:31:09 PM 4/6/2023

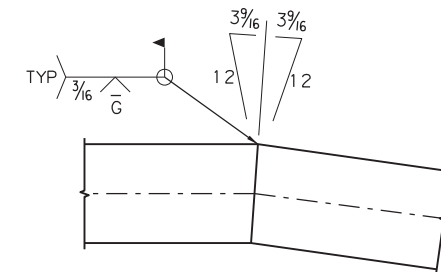
DRAWING NAME: 949402-S-169.dgn PLOTTED BY: SHIL PLOT DATE: 4/6/2023 3:31:09 PM



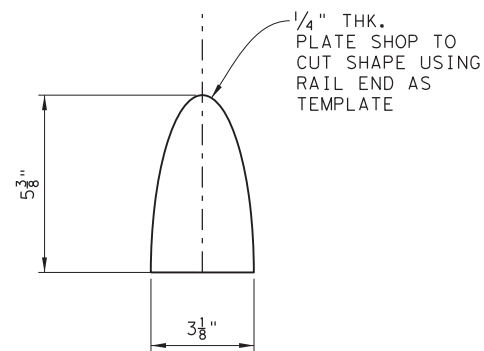
2 REQ'D. ~ MITERED RAIL



TYP. SECTION THRU RAIL

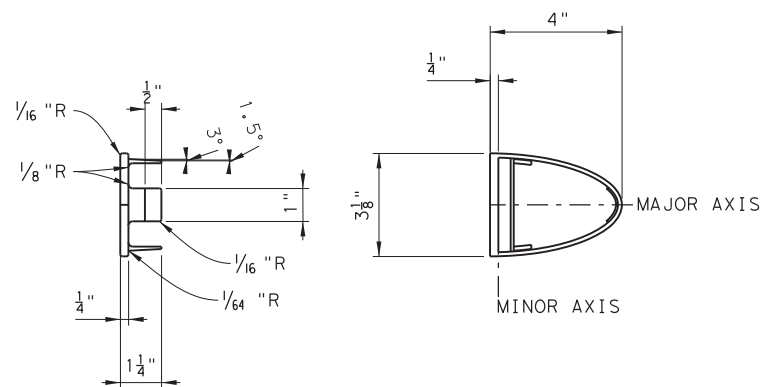


TYPICAL WELD DETAIL @ MITERED RAILS



END PLATE

2 ~ REQ'D



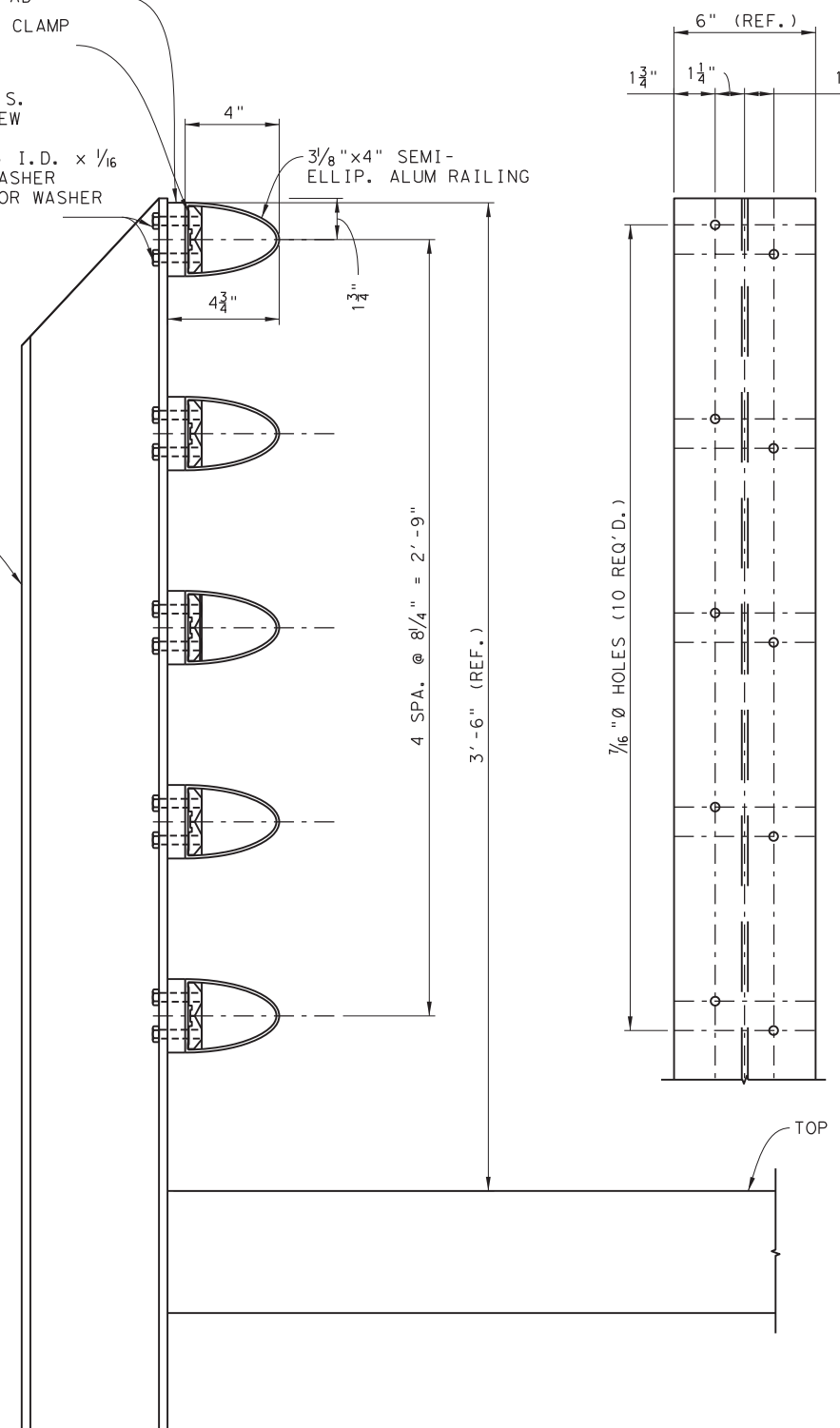
2 ~ DRIVE TYPE END CAPS (4" x 3/8")

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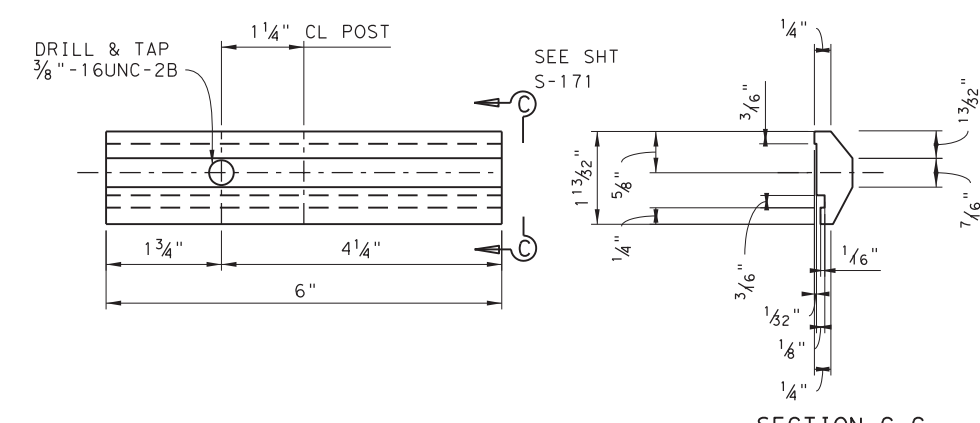
© 2023 TxDOT
TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
 5-LINE ALUM BRIDGE RAIL
 LANDING RAMP NO. 2, 3, & 5
 TYPICAL DETAILS 1 OF 2
 SHEET 66 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-170
DN:1 MM	REVISIONS			COUNTY:
CK:1 SS				GALVESTON
DR:1 MC	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK:1 RW				6428 78 001 SH87

(10) ALUMINUM CLAMP BARS PER POST
 3/8" UHMW SEPARATION PAD
 3/8" - 16UNC-2A S.S. HEX HD CAP SCREW x 1 3/4" LG.
 W/ 7/8" O.D. x 1 1/2" I.D. x 1/16" THK ALUM FLATWASHER & UHMW SEPARATOR WASHER (10 PER POST)



TYP. SECTION THRU RAIL

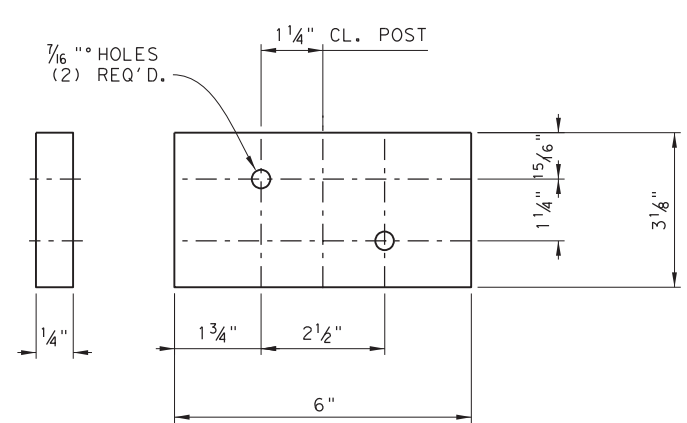


8 ~ REQ'D ALUMINUM CLAMP BARS
 (CLAMP BAR EXTRUSION)

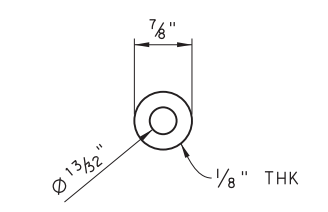
NOTES:
 ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2002 AND ALL CURRENT SUPPLEMENTAL SPECIFICATIONS.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS AND CLAMP BARS	B221	6061-T6	
SCREWS FOR CLAMP BARS	F593	TYPE 304	
ALUM WASHERS	B209	6061-T6	
UHMW WASHERS	D-4020-96	UHMW	POLYETHYLENE
END PLATES	B209	6061-T6	
END CAPS	B26	356F	
SEPARATER SHIM	D-4020-96	UHMW	POLYETHYLENE
ELECTRODES FOR WELDING	AWS A5.10 ALLOY ER4043		

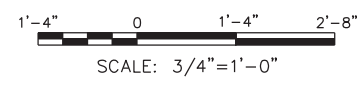
ALL ALUMINUM COMPONENTS ARE MILL FINISH, UNLESS OTHERWISE NOTED.
 POSTS TO BE PERPENDICULAR TO TOP OF PARAPET AND RAILS SHALL BE PARALLEL TO THE TOP OF THE PARAPET.
 ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES.



4 ~ REQ'D UHMW SEPARATOR PAD



UMHW SEPARTOR WASHER
 8 ~ REQ'D



DRAWING NAME: 949402-S-171.dgn PLOT DATE: 4/6/2023 3:31:17 PM PLOTTED BY: SHIH

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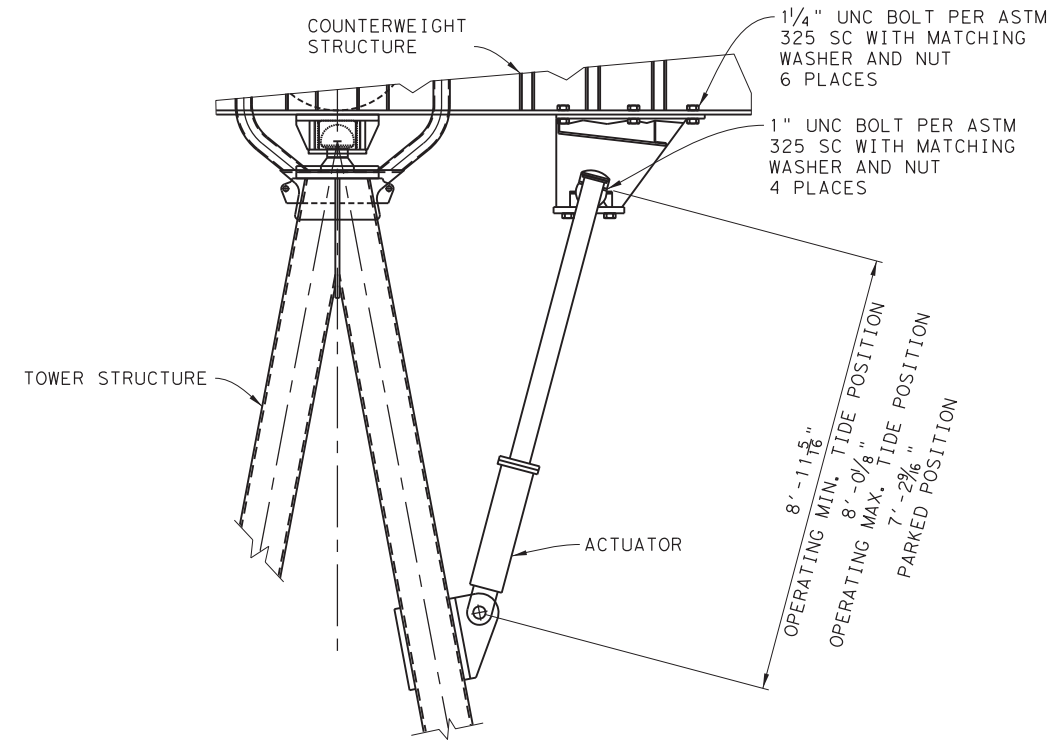
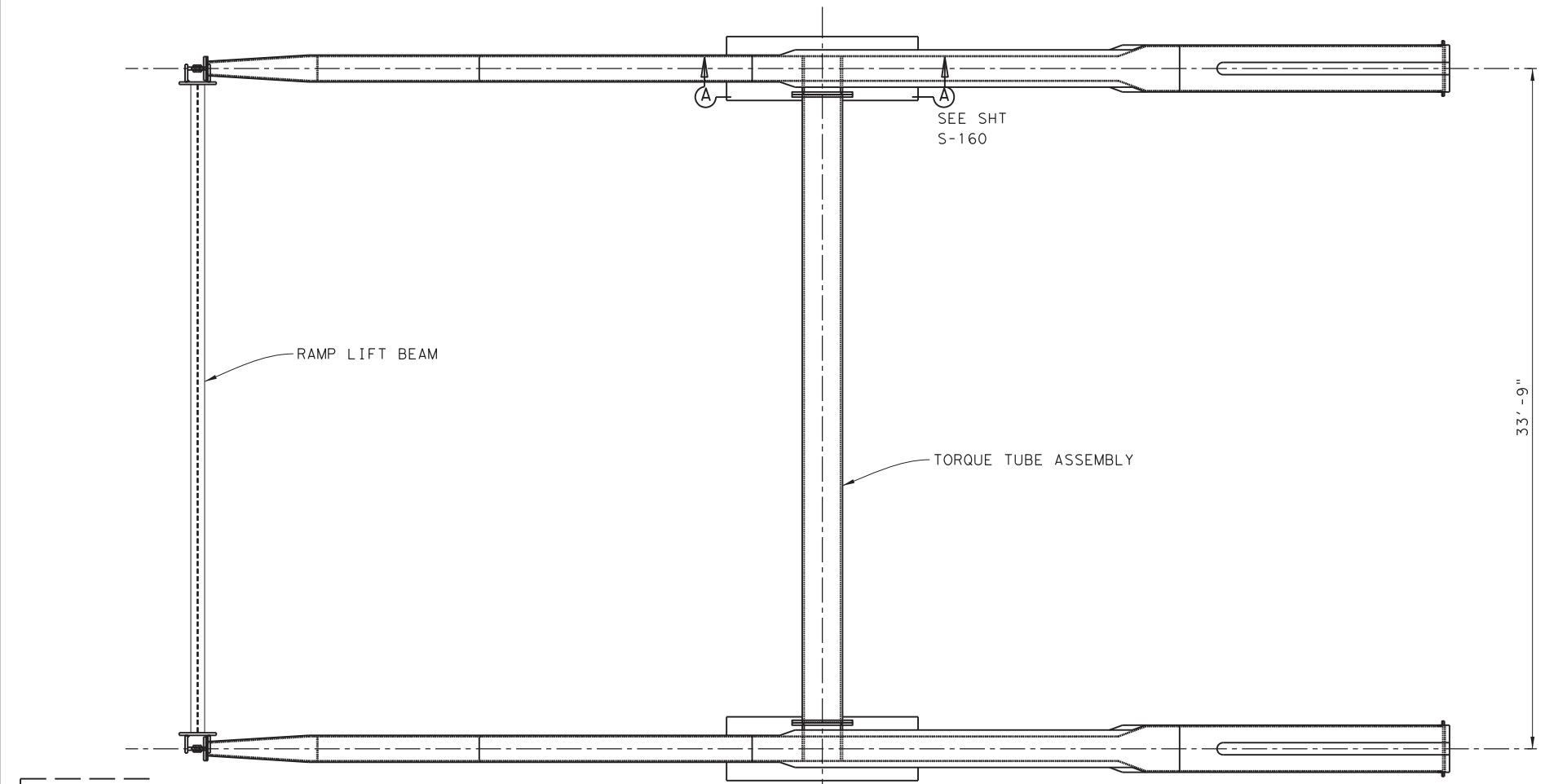
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
 5-LINE ALUM BRIDGE RAIL
 LANDING NO. 2, 3, & 5
 TYPICAL DETAILS 2 OF 2
 SHEET 67 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-171
DN: MM	REVISIONS:	COUNTY:	CONTROL SECTION JOB:	HIGHWAY:
CK: SS		GALVESTON	6428 78 001	SH87
DR: MC				
CK: RW	REV	DATE:		

ITEM: 7146
DESC: 6021, 6024, 6025

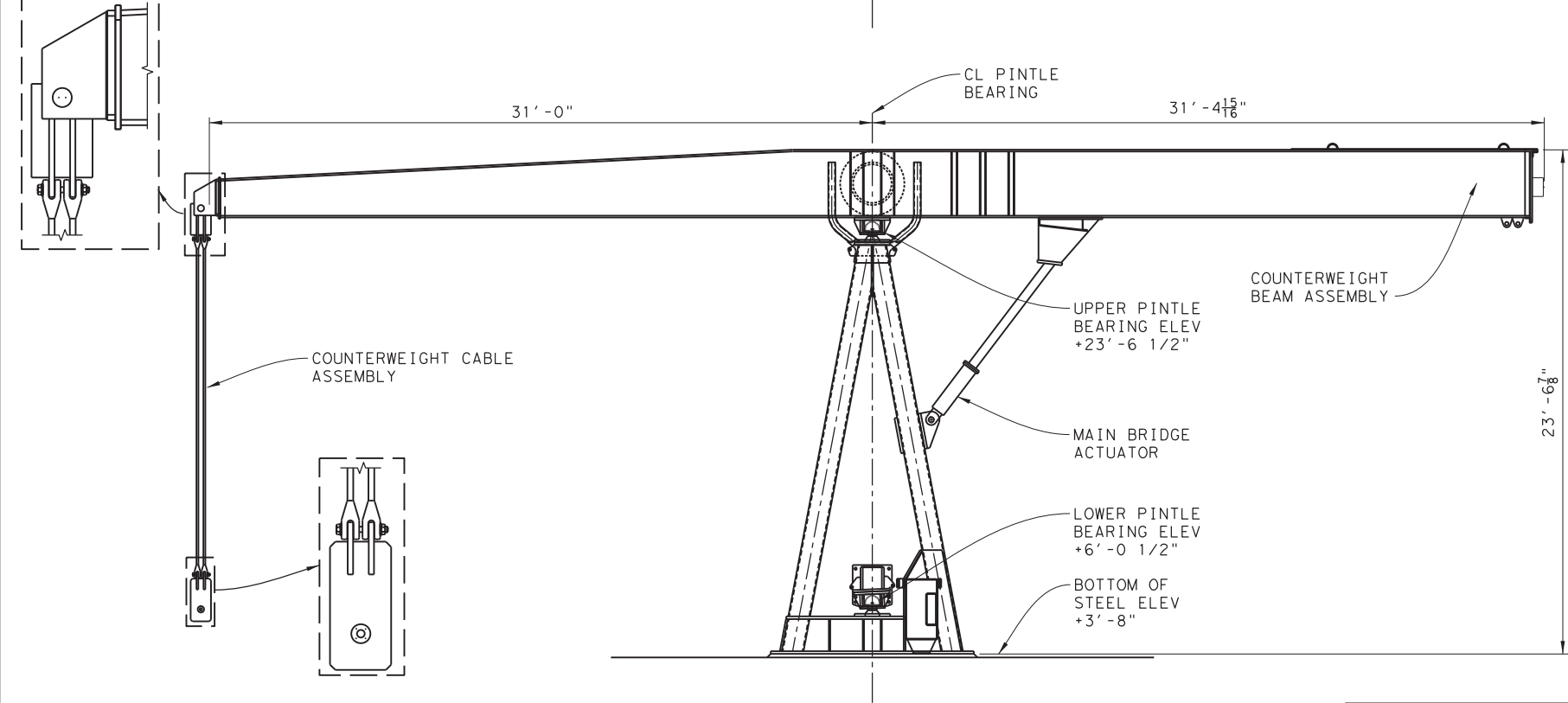
NOTE:

1. THERMAL SPRAYED ALUMINUM (TSA) COATING WAS APPLIED TO ALL ENVIRONMENT-EXPOSED SURFACES OF THE ENTIRE TOWER STRUCTURE AND PRIOR TO MECHANICAL ASSEMBLY. STAINLESS STEEL COMPONENTS NOT WELDED TO THE MAIN STRUCTURES WERE NOT COATED.

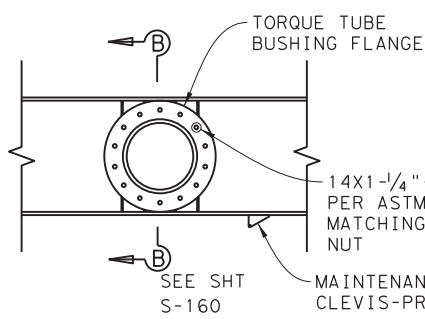


A-FRAME COUNTERBALANCE TOWER ACTUATOR INSTALLATION

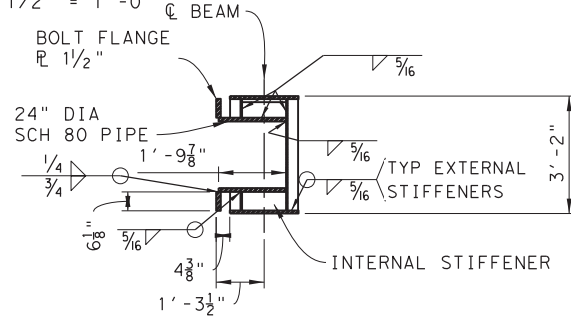
SCALE: 1/2" = 1'-0"



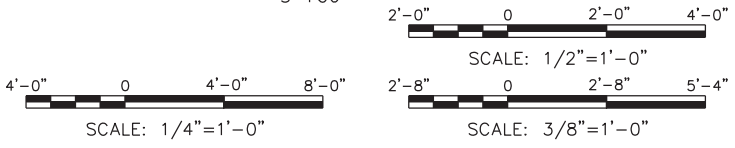
EXISTING A-FRAME COUNTERBALANCE TOWER
SCALE: 1/4" = 1'-0"



SECTION A-A
SCALE: 3/8" = 1'-0"
S-160



SECTION B-B
SCALE: 3/8" = 1'-0"
S-160



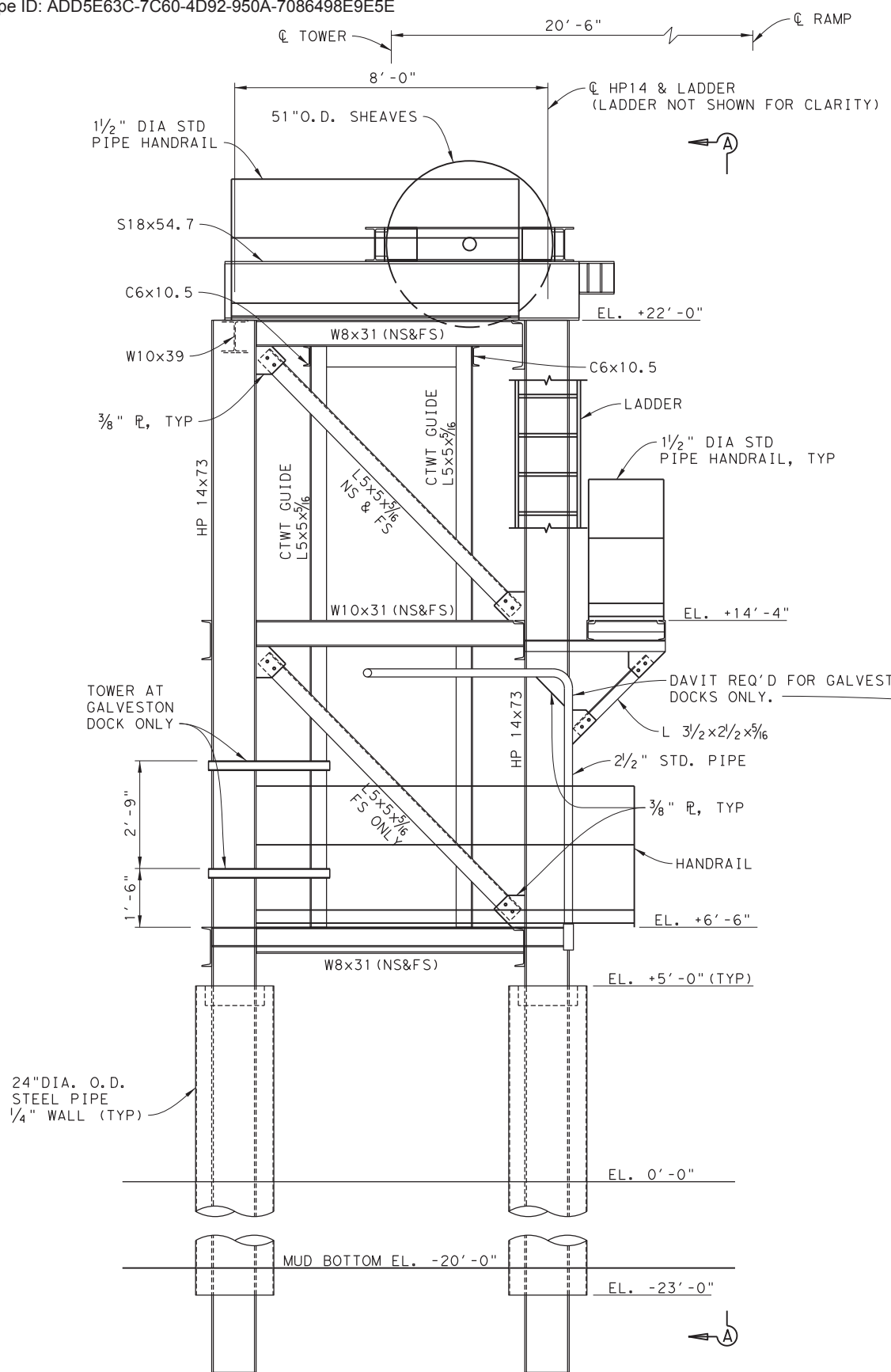
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FERRY LANDING MAINTENANCE
A-FRAME COUNTERBALANCE TOWER
FOR LANDING No. 2, 3, & 5

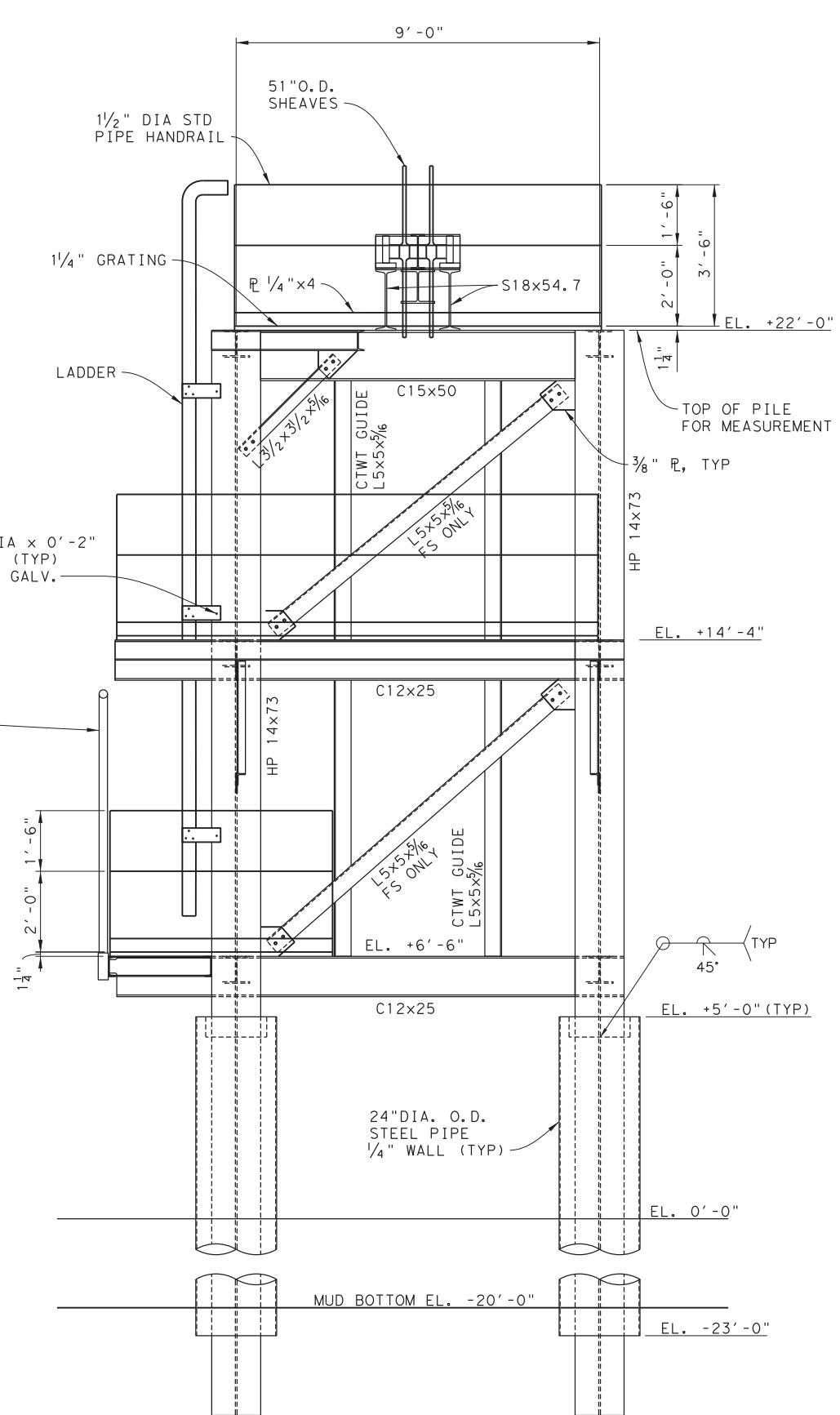
SHEET 68 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-180
DN: 1 MM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 MC		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-180.dgn
PLOT DATE: 4/6/2023 3:31:43 PM PLOTTED BY: SHIL



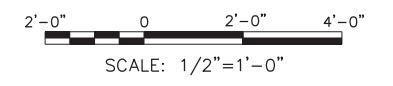
FRONT ELEVATION
SCALE: 1/2" = 1'-0"



ELEVATION A-A
SCALE: 1/2" = 1'-0"

NOTES:

1. ALL ERECTION BOLTS TO BE A325 HOT DIP GALV. UNLESS NOTED.
2. HANDRAIL BOLTS TO BE 5/8" DIA. X 1 1/2" A307 HOT DIP GALV. W/HEX NUT & L.W.
3. TOWER ASSEMBLY SHOWN IS FOR LANDING #4, WHERE THERE ARE TWO TOWERS THAT MIRROR EACH OTHER. TOWER ASSEMBLIES AT LANDINGS #1 AND #6 ARE SIMILAR. AT LANDINGS #1 AND #6, HOWEVER, EACH TOWER ASSEMBLY IS INSTALLED ON A STEEL PIPE PILE-SUPPORTED CONCRETE PLATFORM.



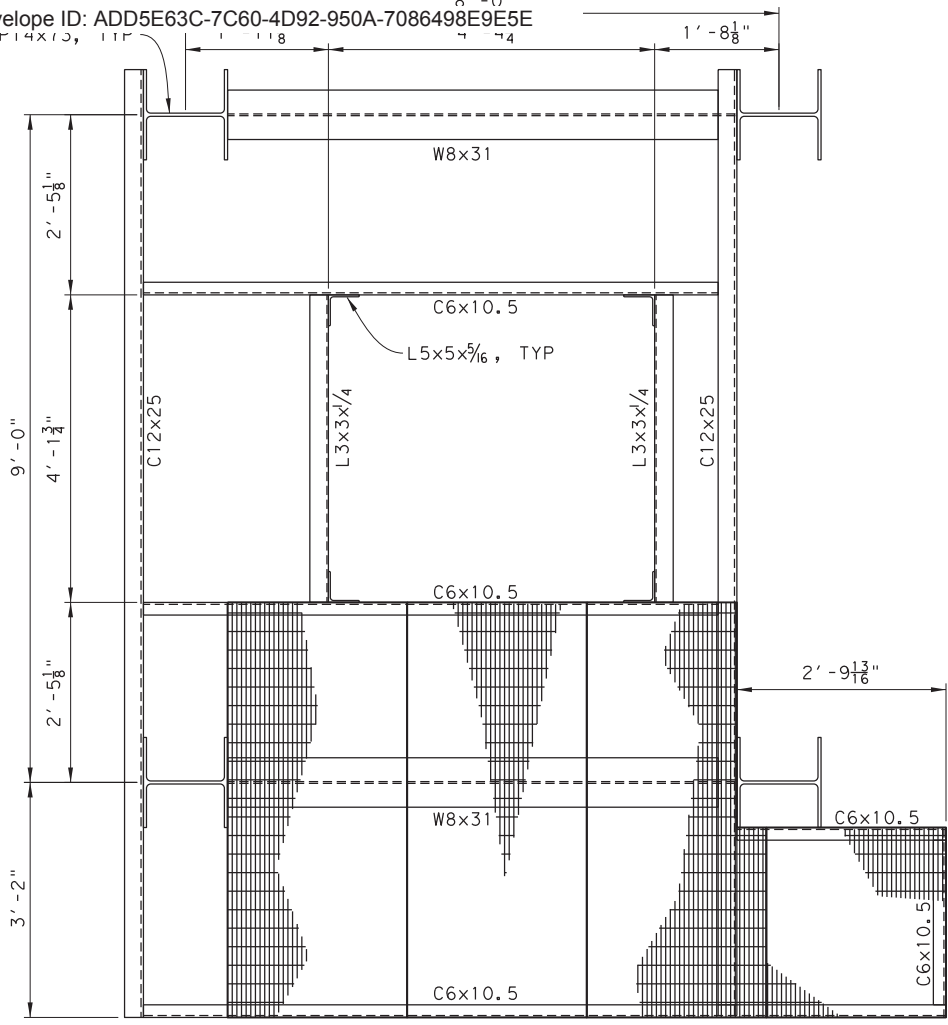
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FERRY LANDING MAINTENANCE
HOIST TOWER DETAILS
SHEET 1 OF 3

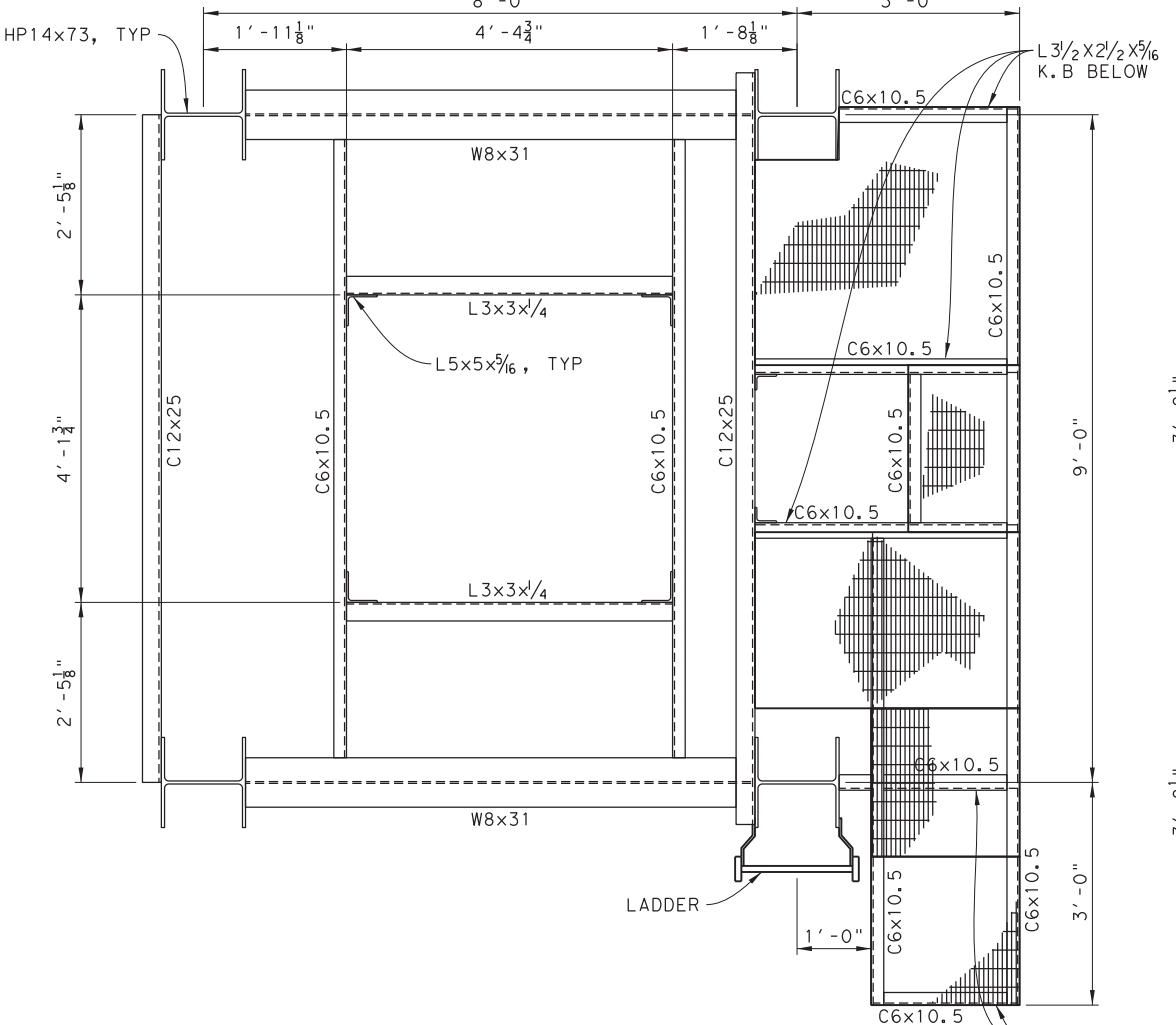
SHEET 69 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-185
DN: I MM	REVISIONS			COUNTY:
CK: I TK				GALVESTON
DR: I RW	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: I MM				6428 78 001 SH87

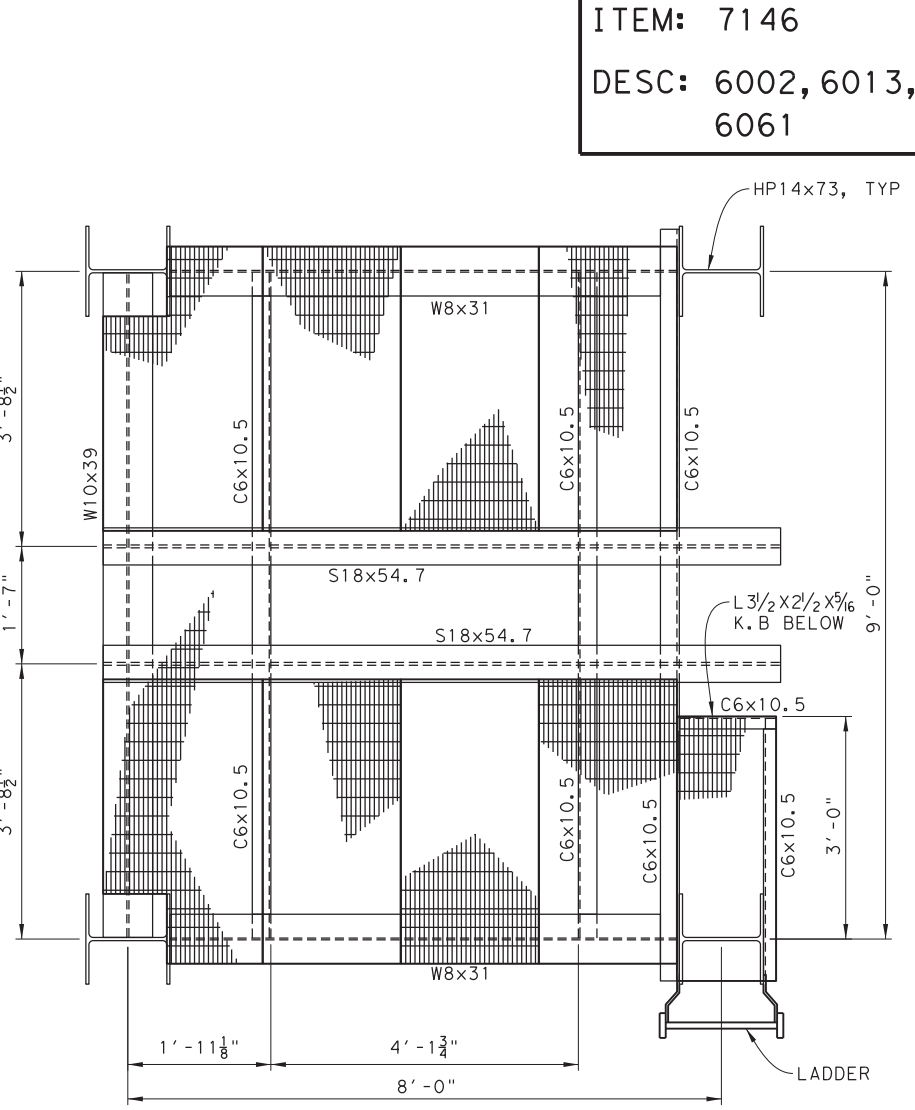
DRAWING NAME: 949402-S-185.dgn
PLOT DATE: 4/6/2023 3:32:15 PM PLOTTED BY: SHIL



PLAN OF HOIST TOWER @ ELEV. 6'-6"
SCALE: 3/4" = 1'-0"

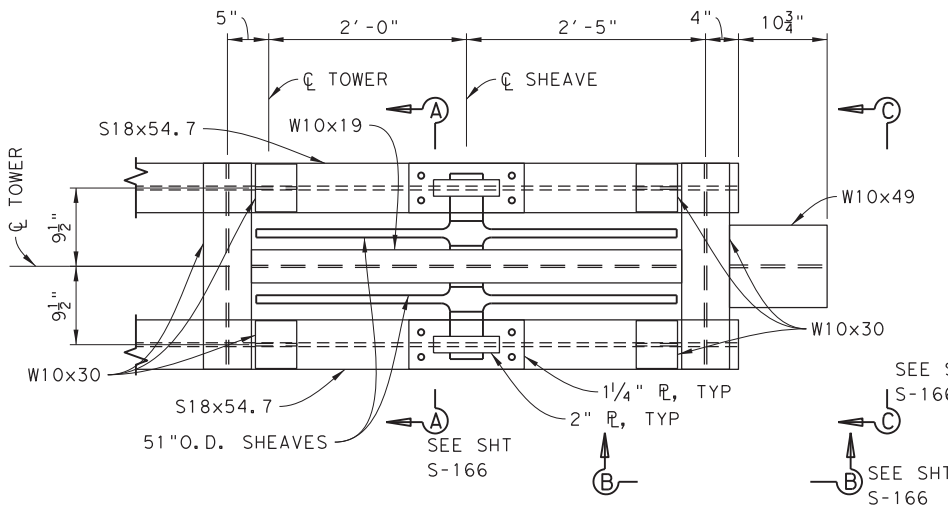


PLAN OF HOIST TOWER @ ELEV. 14'-4"
SCALE: 3/4" = 1'-0"

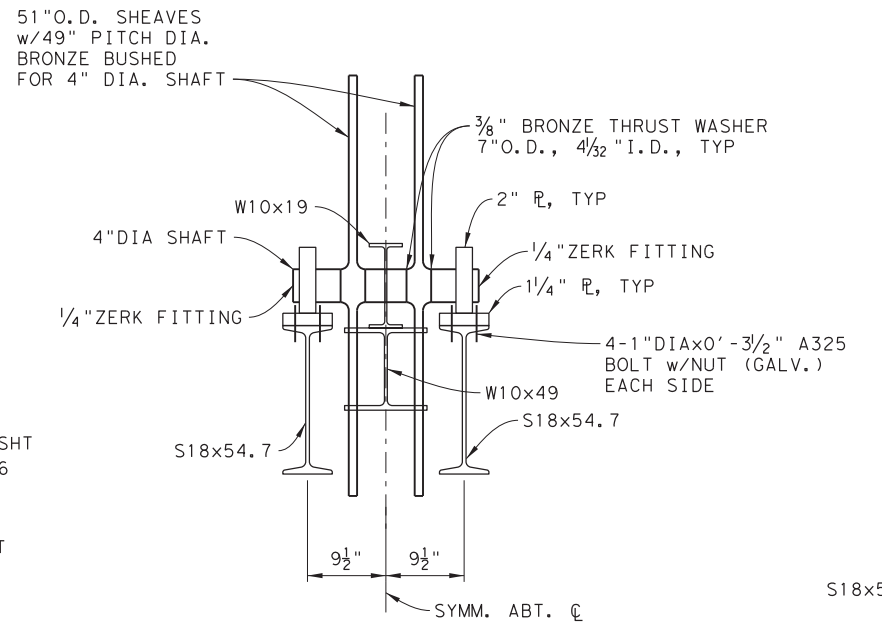


PLAN OF HOIST TOWER @ ELEV. 22'-6"
SCALE: 3/4" = 1'-0"

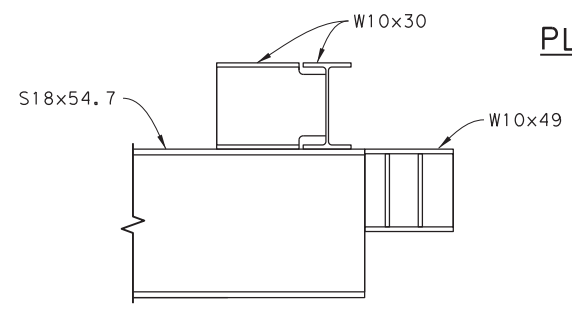
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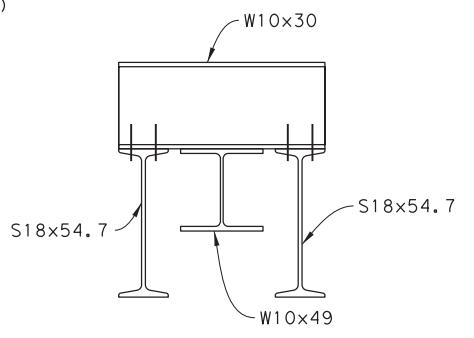
PLAN @ SHEAVE SUPPORT
SCALE: 1" = 1'-0"



SECTION A-A
SCALE: 1" = 1'-0"
S-166



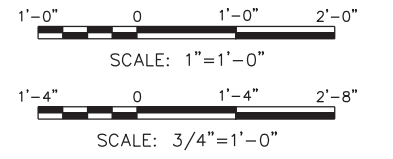
SECTION B-B
SCALE: 1" = 1'-0"
S-166



SECTION C-C
SCALE: 1" = 1'-0"
S-166

NOTES:

1. USE OPP. HAND PIECES ON OPP. TOWERS.
2. USE KLEMP TYPE BK-1 ANCHOR CUPS, OR APPROVED EQUAL, FOR ANCHORING GRATING.

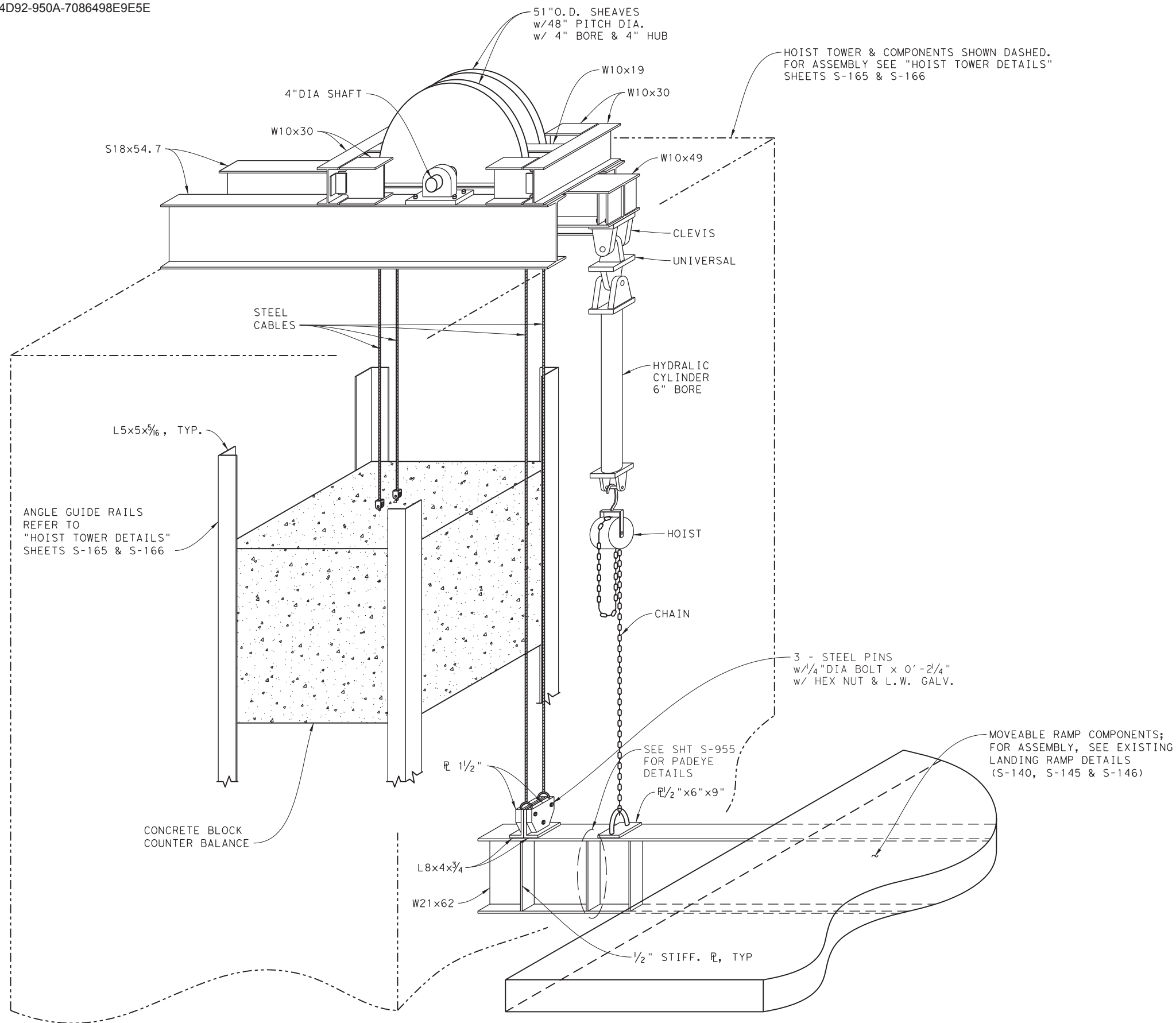


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FERRY LANDING MAINTENANCE
HOIST TOWER DETAILS
SHEET 2 OF 3

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-186
DN: MM	REVISIONS			
CK: TK		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: RW		GALVESTON	6428 78	001 SH87
CK: MM	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-186.dgn
PLOT DATE: 4/6/2023 3:32:29 PM
PLOTTED BY: SHIH

ITEM: 7146
 DESC: 6002, 6011,
 6012, 6013,
 6014, 6061



**HOIST TOWER - MOVEABLE RAMP
 LIFT ASSEMBLY**
 NO SCALE

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FERRY LANDING MAINTENANCE
HOIST TOWER DETAILS
SHEET 3 OF 3

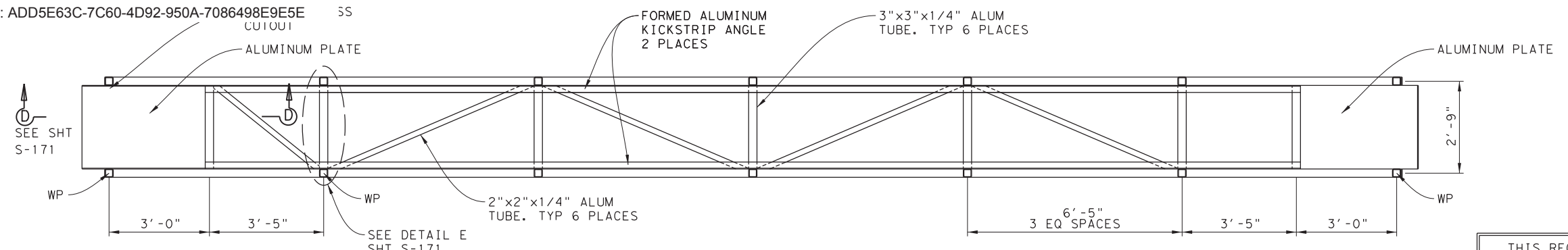
SHEET 71 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-187
DN: I	MM	REV	DESCRIPTION	DATE
CK: I	TK			
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CK: I	MM	REV	DESCRIPTION	DATE

COUNTY: GALVESTON CONTROL: 6428 SECTION: 78 JOB: 001 HIGHWAY: SH87

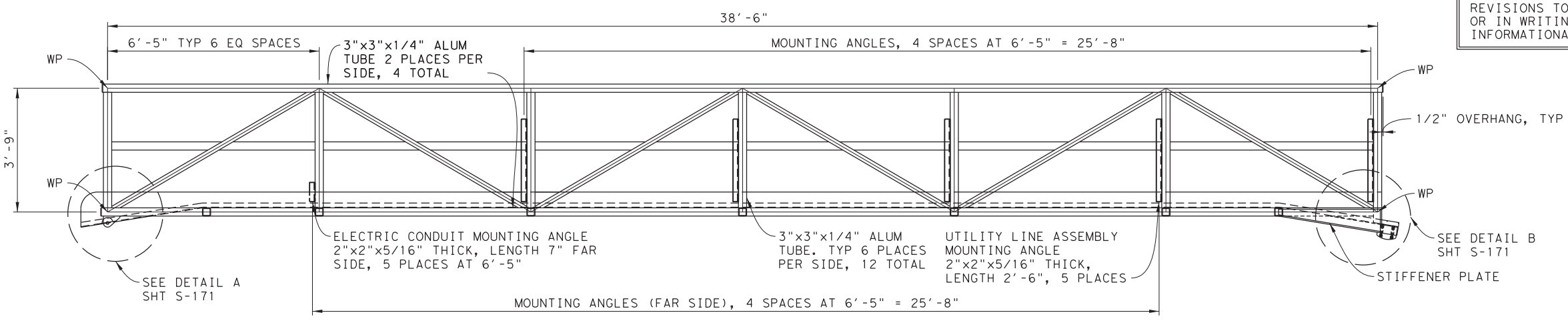
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 PLOT DATE: 4/6/2023 3:32:38 PM PLOTTED BY: SHIH

FOR REFERENCE

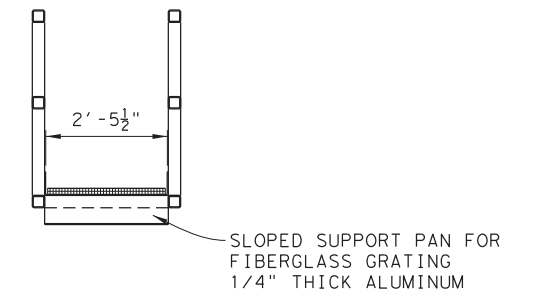


MAINTENANCE WALKWAY PLAN
SCALE: 1/2" = 1'-0"

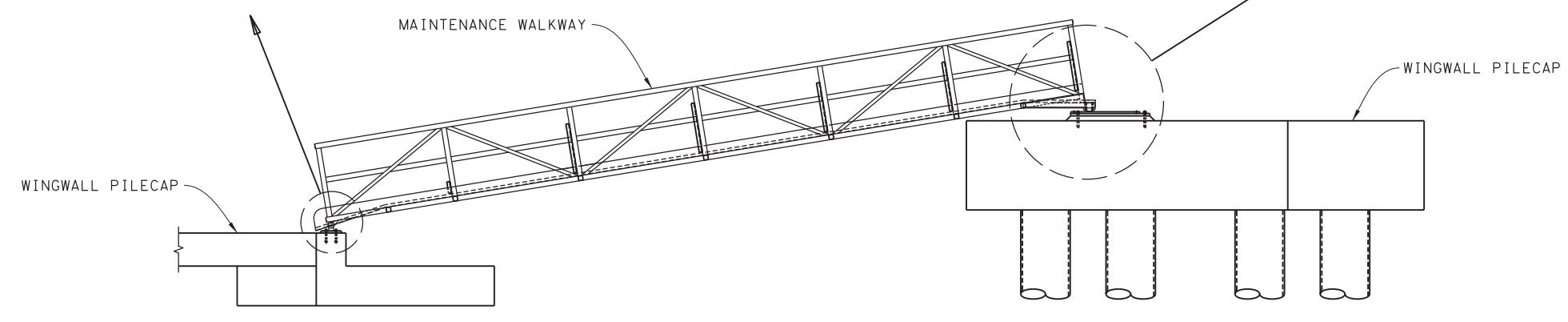
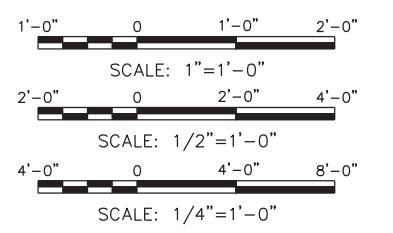
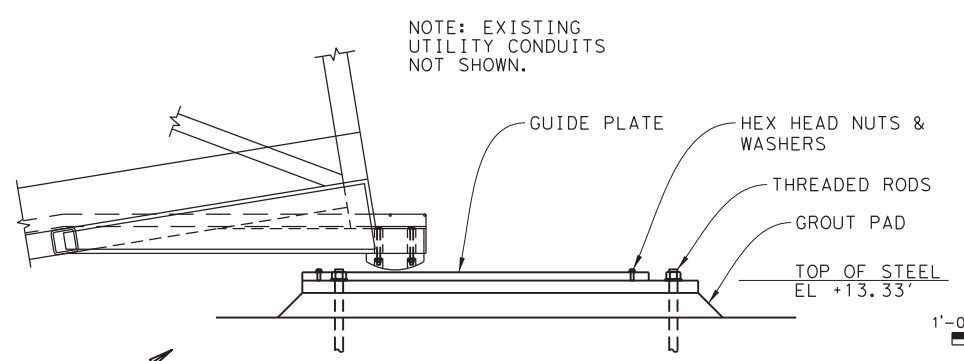
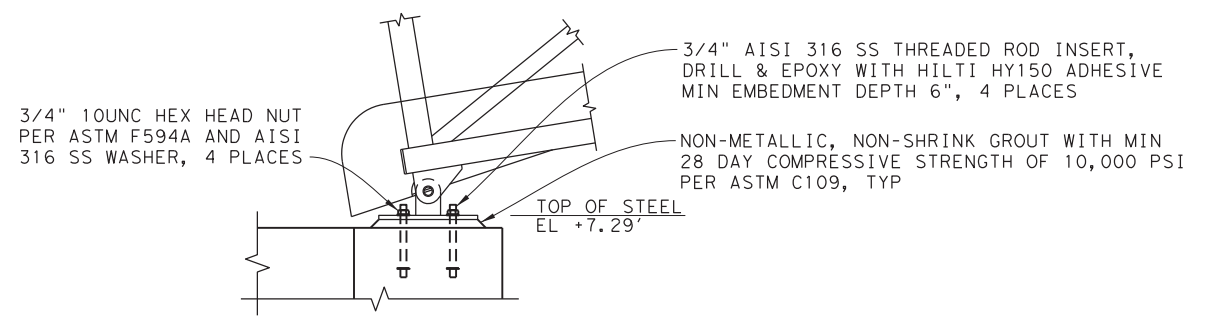
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MAINTENANCE WALKWAY ELEVATION
SCALE: 1/2" = 1'-0"



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



ELEVATION
SCALE: 1/4" = 1'-0"

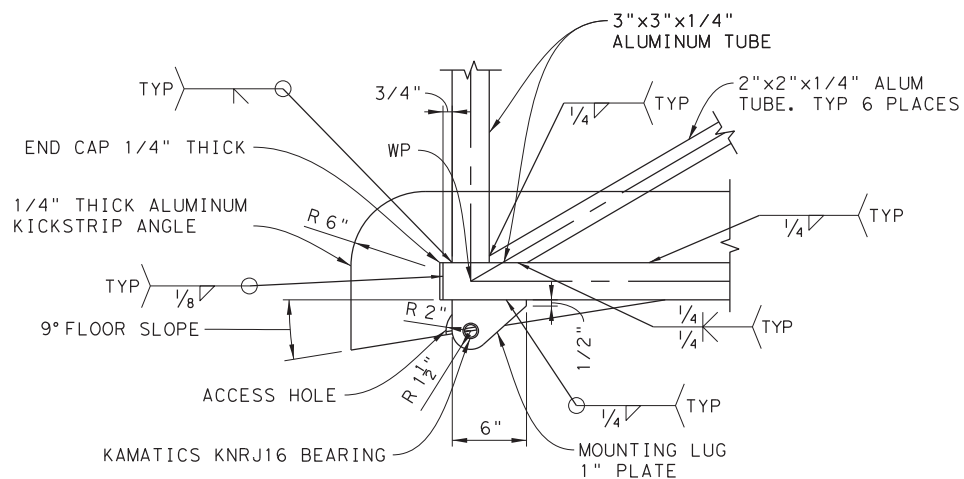
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FERRY LANDING MAINTENANCE
MAINTENANCE WALKWAY PLAN AND ELEVATION
 SHEET 72 OF 148

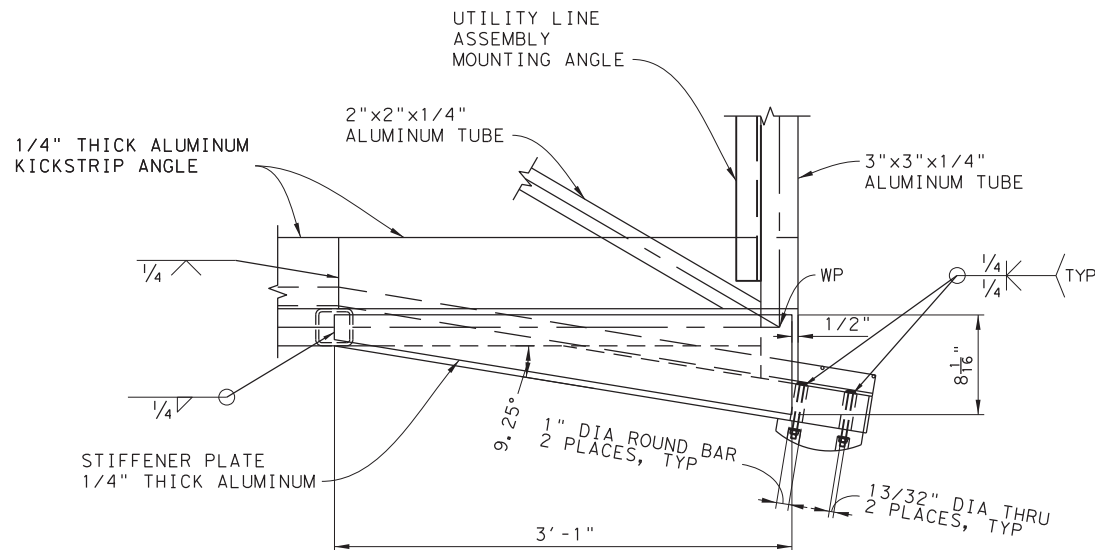
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DN: 1 MM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 MC		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

3:32:44 PM 4/6/2023

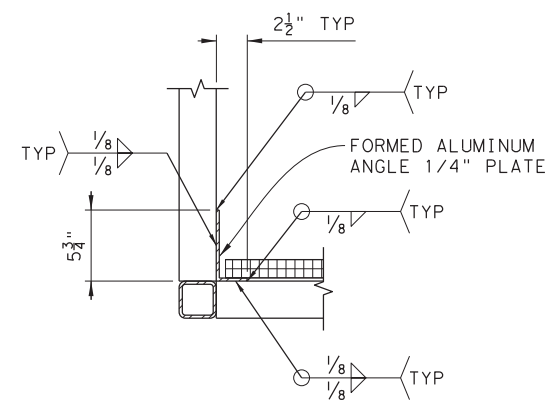
FOR REFERENCE



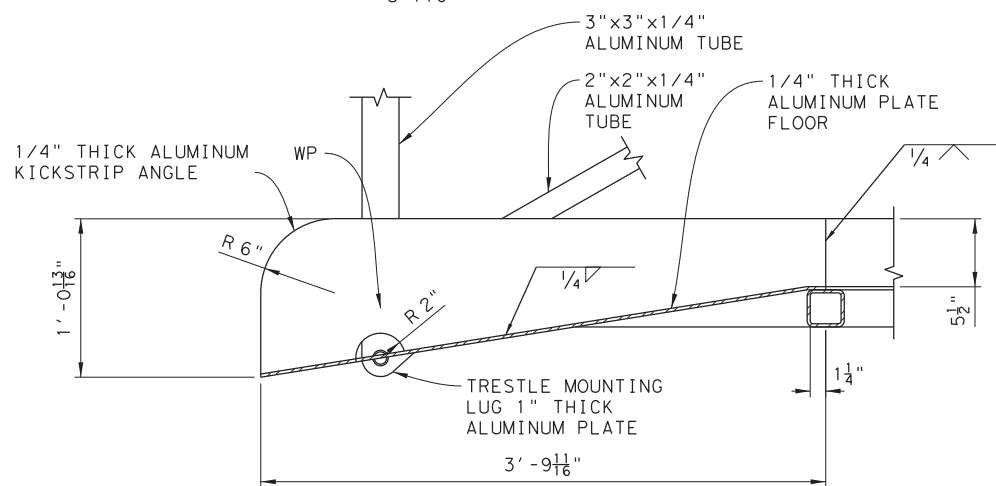
DETAIL A
SCALE: 1 1/2" = 1'-0"
S-170



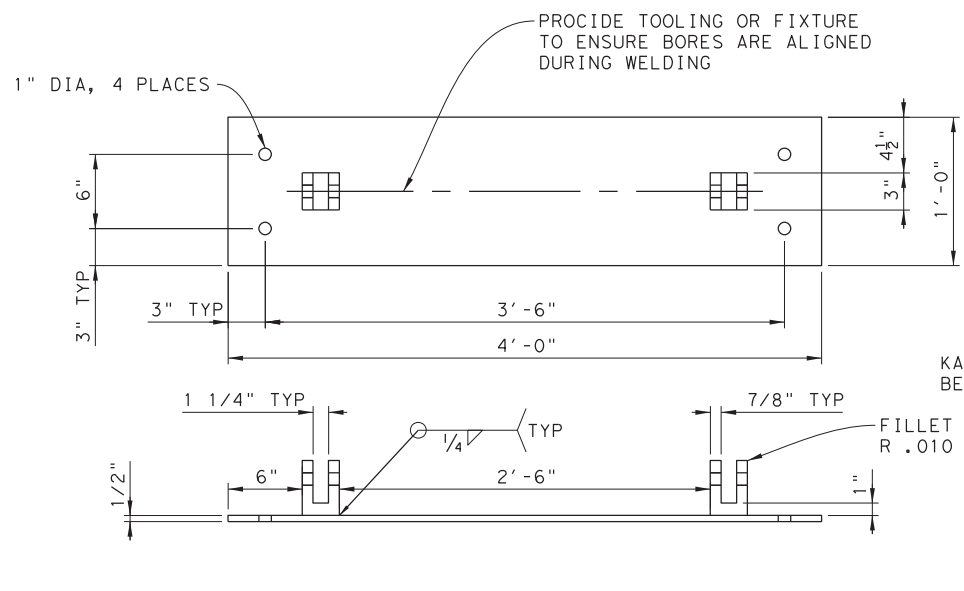
DETAIL B
SCALE: 1 1/2" = 1'-0"
S-170



SECTION C
SCALE: 1 1/2" = 1'-0"
S-171

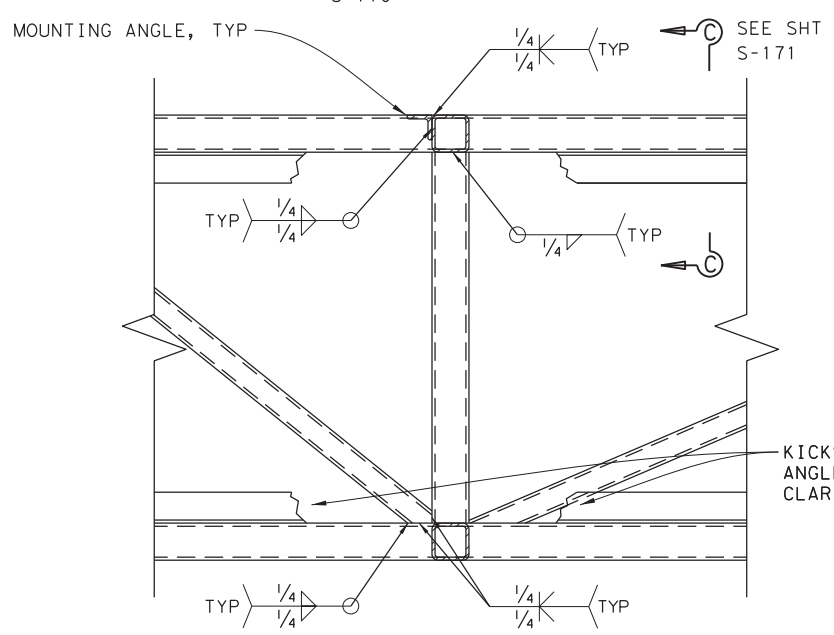
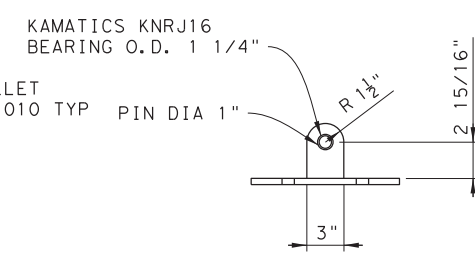


SECTION D
SCALE: 1 1/2" = 1'-0"
S-170

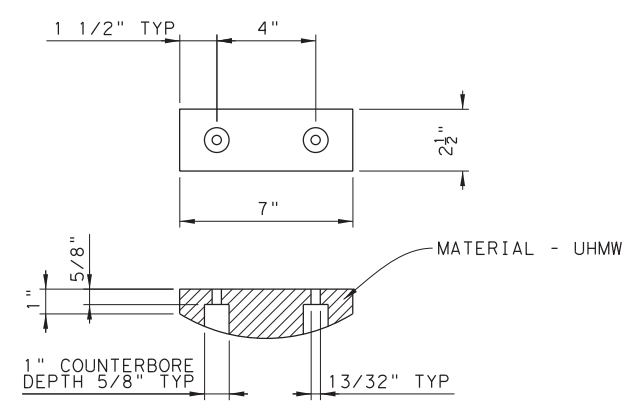


TRESTLE MOUNTING PLATE DETAIL
SCALE: 1 1/2" = 1'-0"

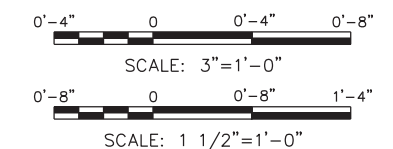
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DETAIL E
SCALE: 1 1/2" = 1'-0"
S-170



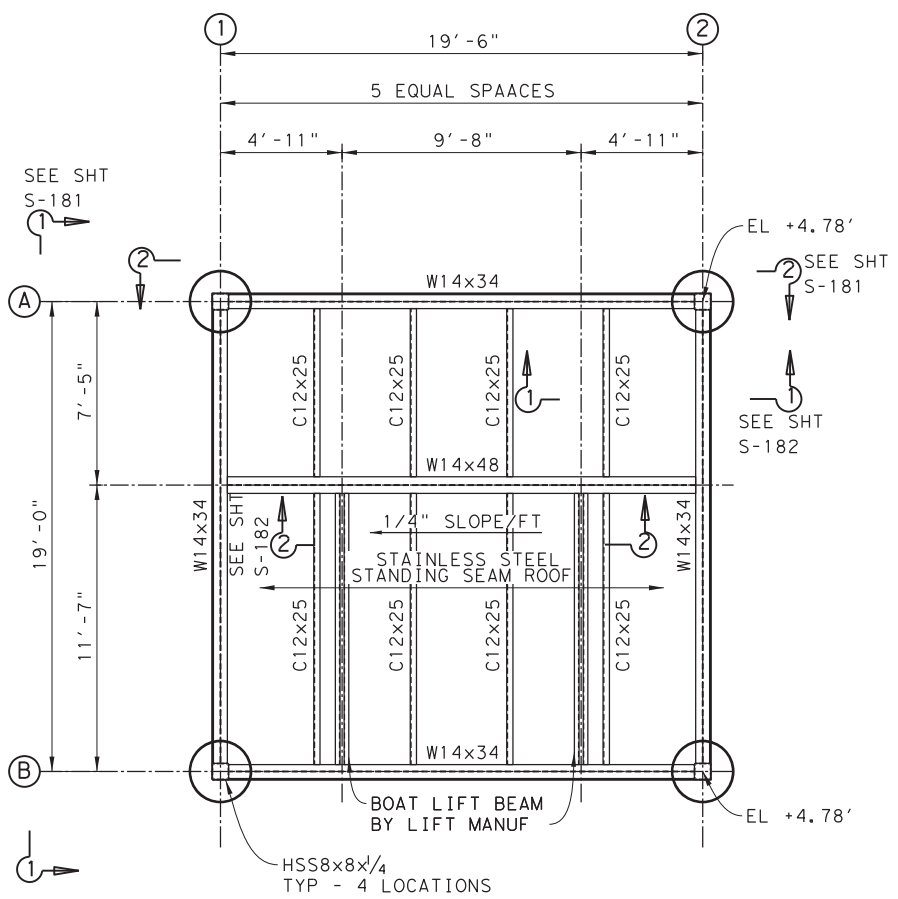
SKID PAD DETAIL
SCALE: 3" = 1'-0"



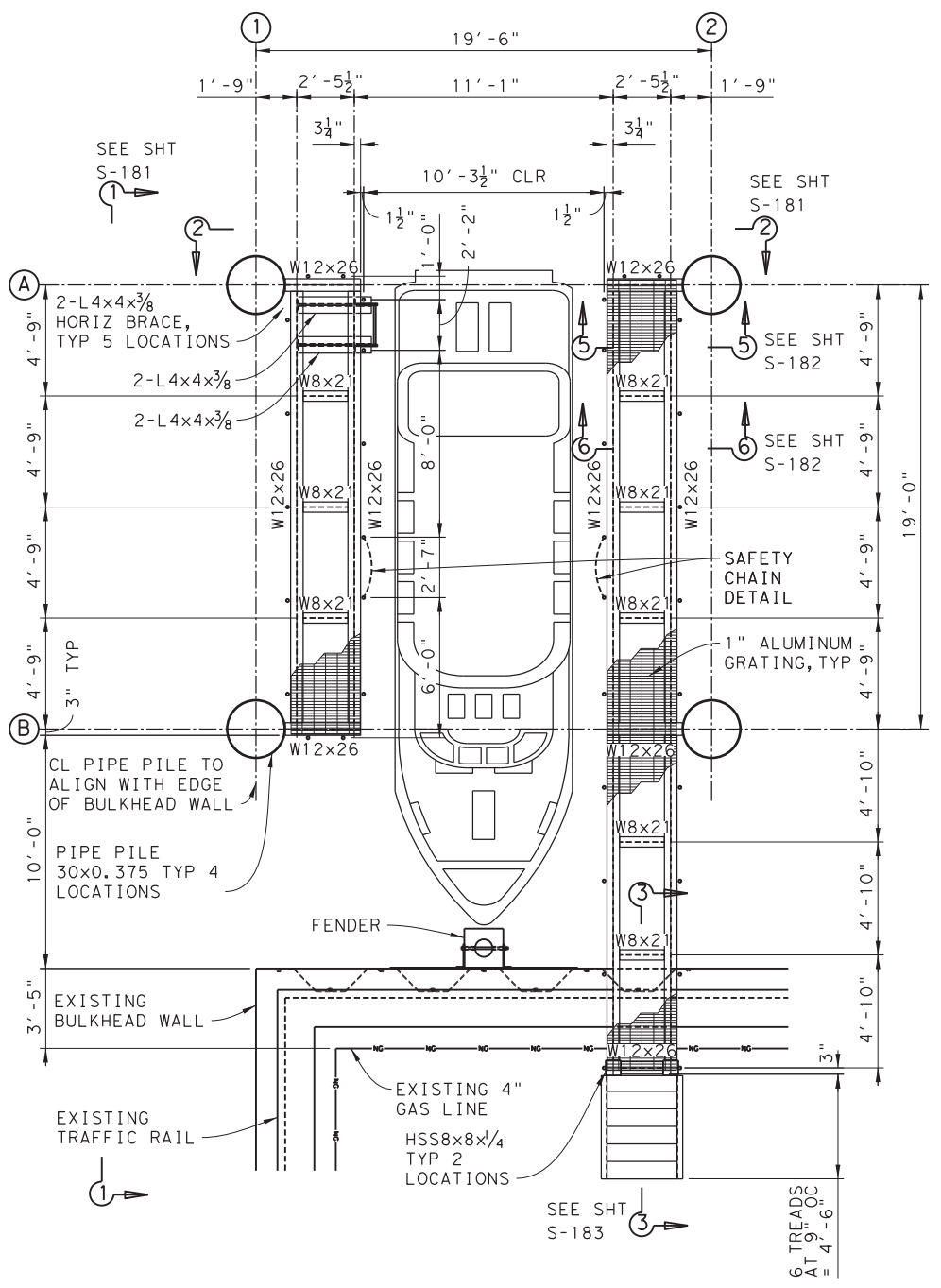
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FERRY LANDING MAINTENANCE
 MAINTENANCE WALKWAY
 SECTIONS AND DETAILS

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-191
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: MC		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

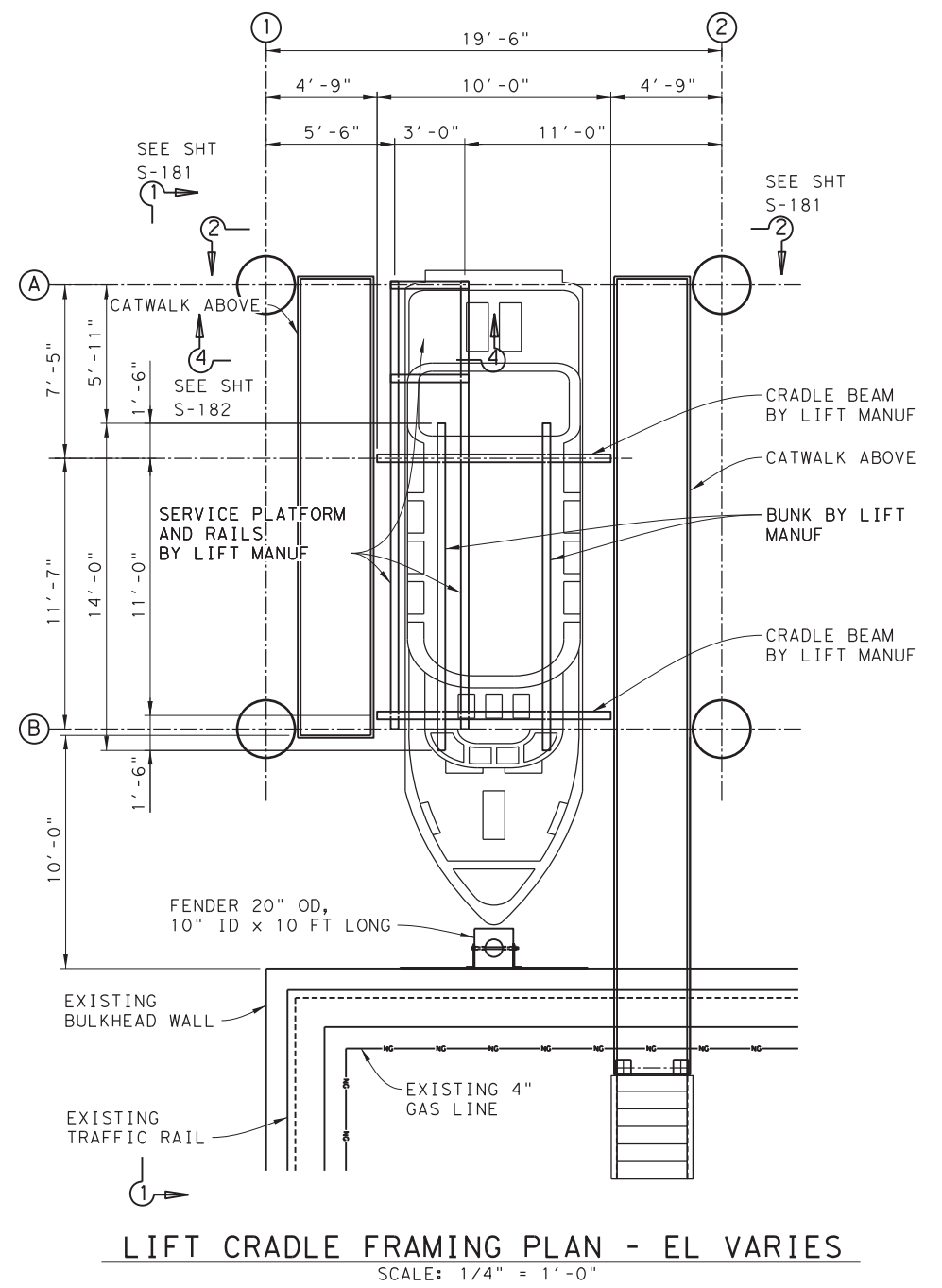
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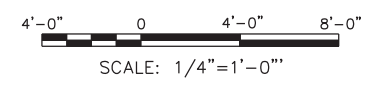
ROOF FRAMING PLAN - EL +18'-0"
SCALE: 1/4" = 1'-0"



CATWALK FRAMING PLAN - EL +9'-1"
SCALE: 1/4" = 1'-0"



LIFT CRADLE FRAMING PLAN - EL VARIES
SCALE: 1/4" = 1'-0"



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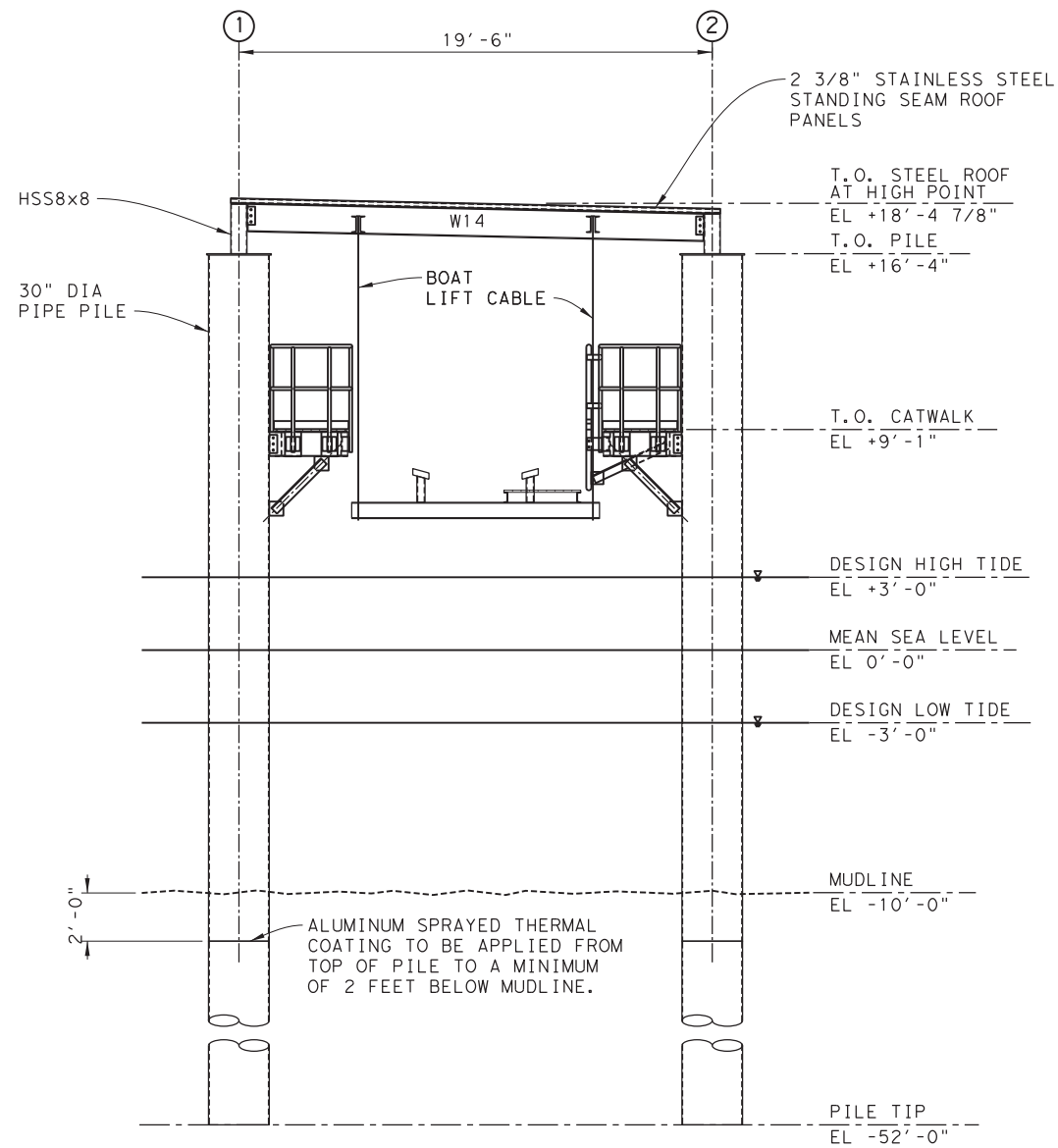
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FERRY LANDING MAINTENANCE
BOAT LIFT PLANS

SHEET 74 OF 148

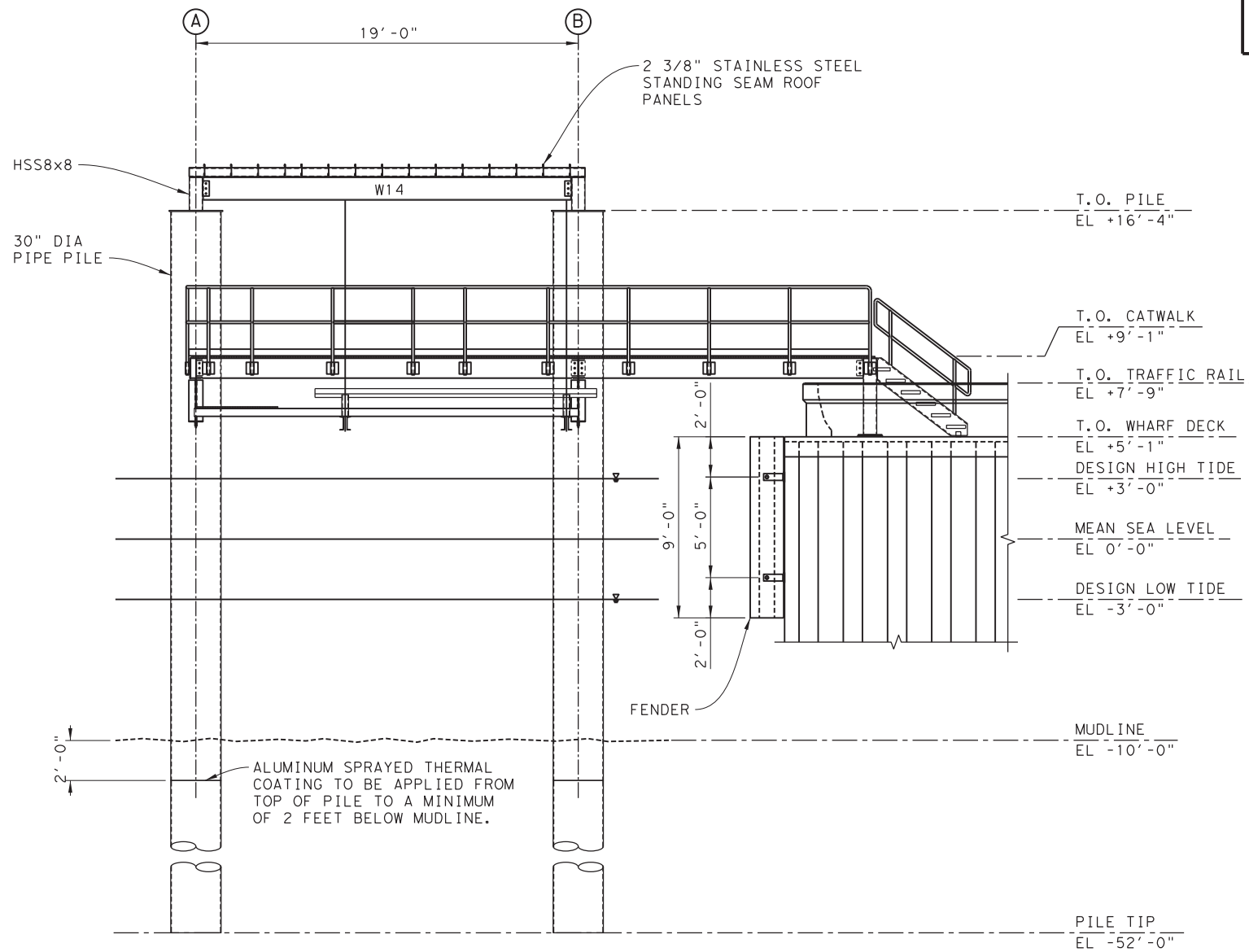
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-200
DN: 1 WM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 MC		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

3:32:55 PM 4/6/2023

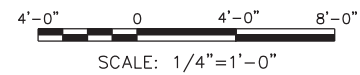
DRAWING NAME: 949402-S-200.dgn
PLOT DATE: 4/6/2023 3:32:55 PM PLOTTED BY: SHILL



SECTION 2
SOUTH ELEVATION - BOAT AT LIFTED POSITION
SCALE: 1/4" = 1'-0"
S-180



SECTION 1
WEST ELEVATION - BOAT AT LIFTED POSITION
SCALE: 1/4" = 1'-0"
S-180



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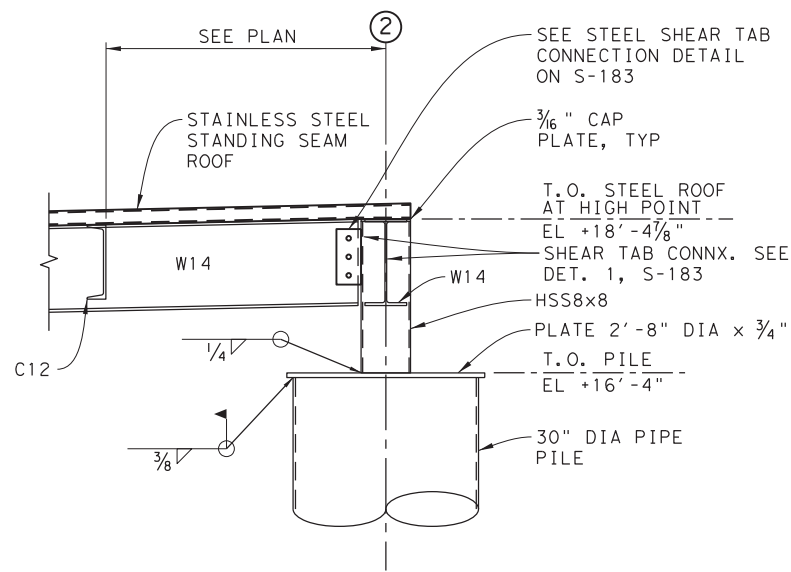
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FERRY LANDING MAINTENANCE

BOAT LIFT
ELEVATION DETAILS

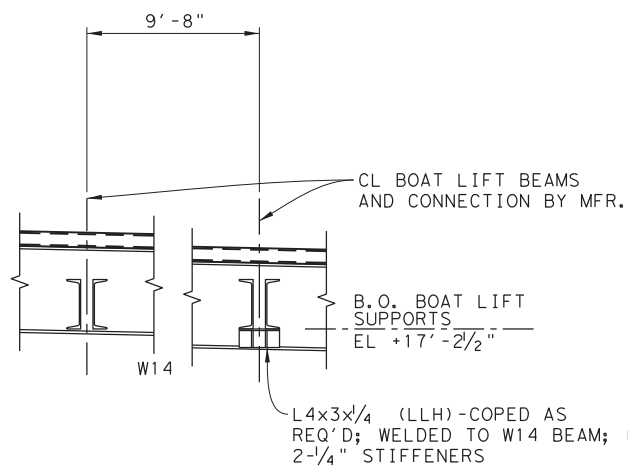
SHEET 75 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-201
DN: 1 WM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 MC		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

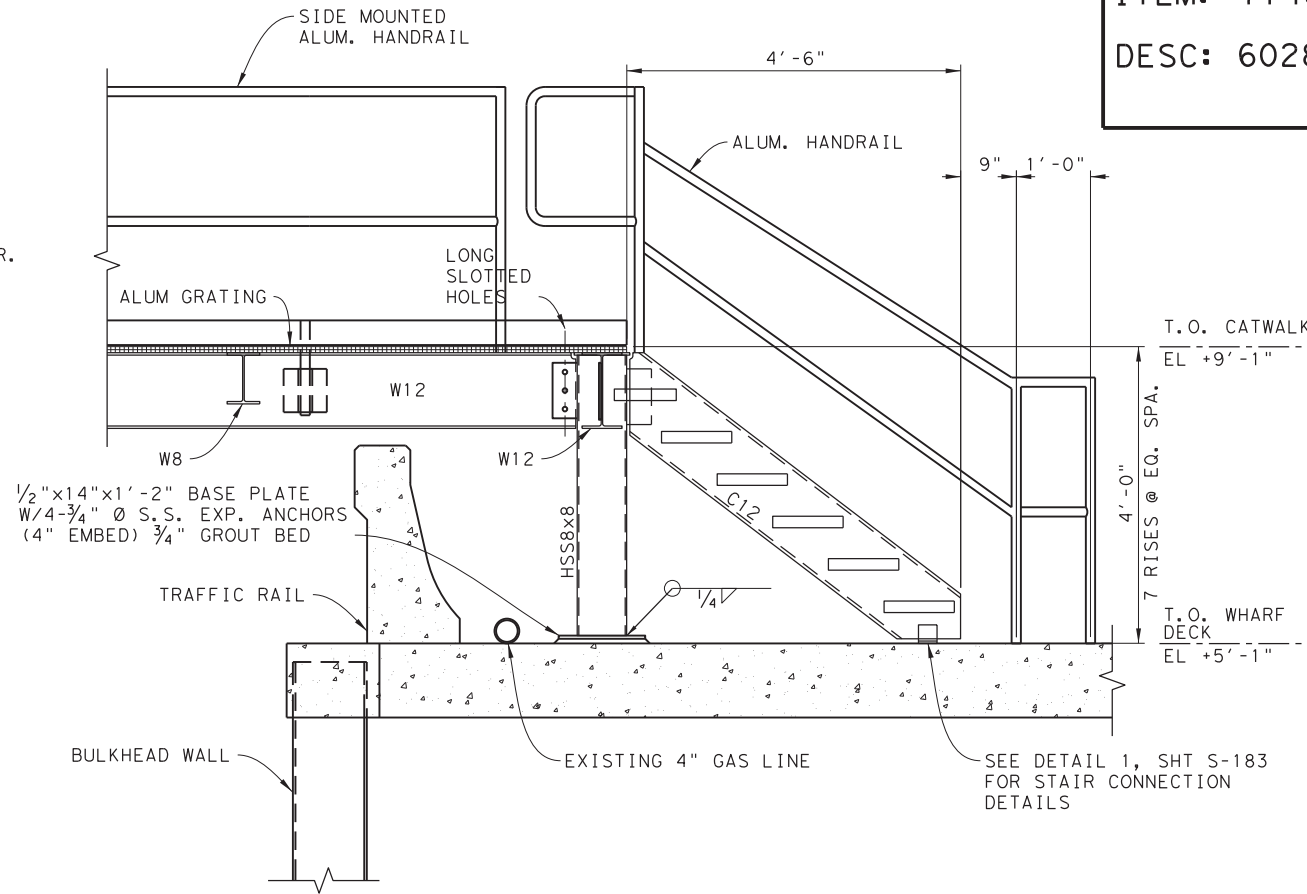
DRAWING NAME: 949402-S-201.dgn
PLOT DATE: 4/6/2023 3:33:02 PM PLOTTED BY: SHII



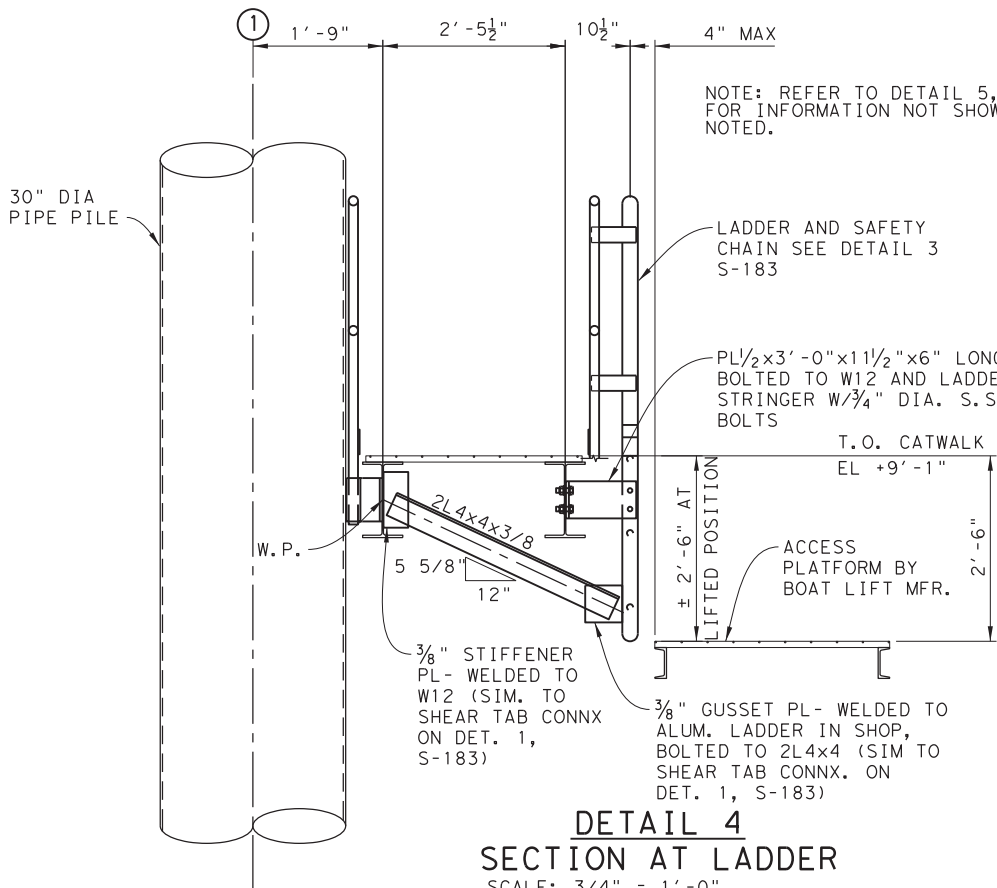
DETAIL 1
COLUMN TO PILE CONNECTION
 SCALE: 3/4" = 1'-0"
 S-180



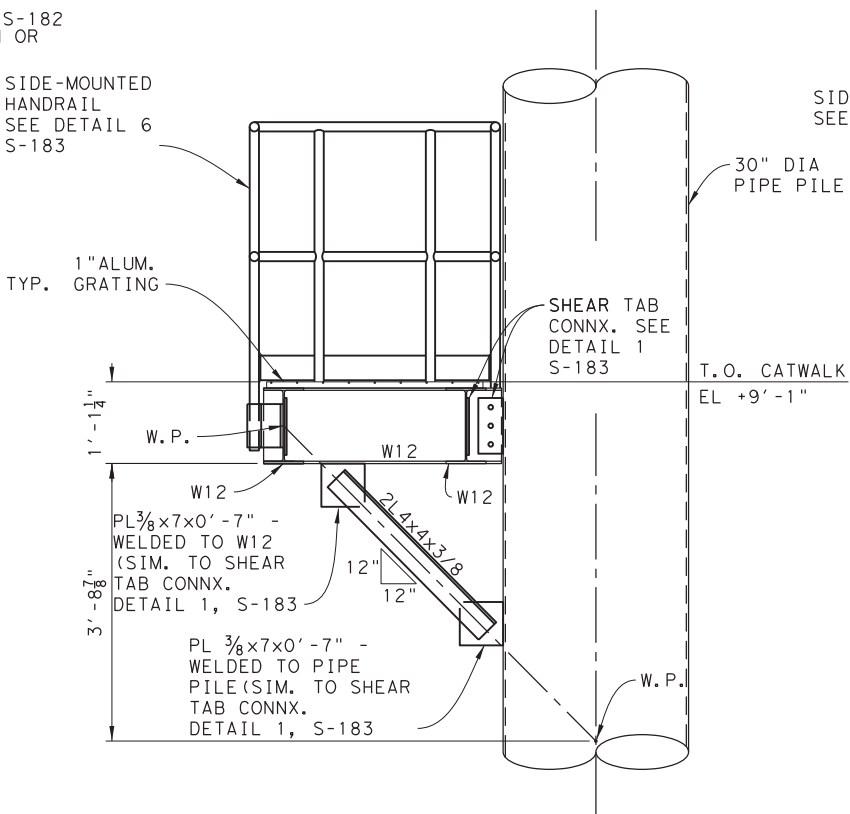
DETAIL 2
BOAT LIFT SUPPORTS
 SCALE: 3/4" = 1'-0"
 S-180



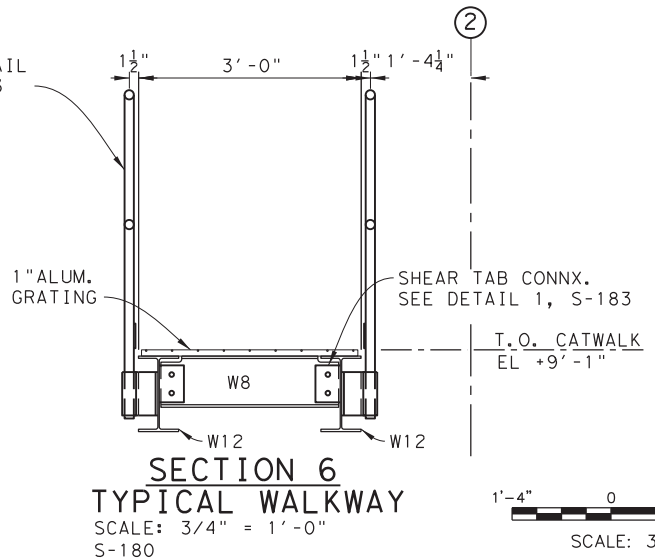
DETAIL 3
STAIRS
 SCALE: 3/4" = 1'-0"
 S-180



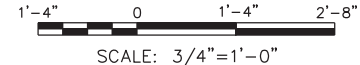
DETAIL 4
SECTION AT LADDER
 SCALE: 3/4" = 1'-0"
 S-180



DETAIL 5
BRACE CONNECTION
 SCALE: 3/4" = 1'-0"
 S-180



SECTION 6
TYPICAL WALKWAY
 SCALE: 3/4" = 1'-0"
 S-180



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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
BOAT LIFT
SECTIONS & DETAILS 1 OF 3
 SHEET 76 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-202
DN: MM	REVISIONS			COUNTY:
CK: WB				GALVESTON
DR: MC	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: RW				6428 78 001 SH87

3:33:07 PM 4/6/2023

DRAWING NAME: 949402-S-202.dgn PLOT DATE: 4/6/2023 3:33:07 PM PLOTTED BY: SHH

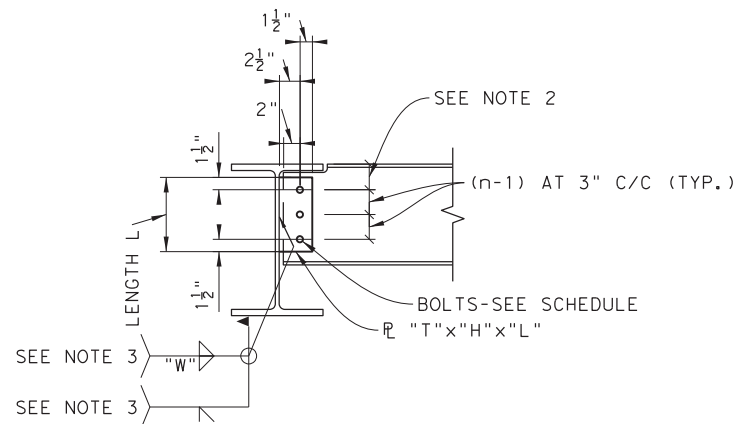
BEAM SIZE	PLATE THICK "T"	PLATE LENGTH "H"	PLATE THICK "L"	NUMBER OF BOLTS "n"	BOLT SIZE AND TYPE	WELD SCHEDULE	
						ANGLE OF FRAMING "Z"	WELD SIZE "W"
C8, C9	5/16"	4"	6"	2	3/4" DIA. F593	90° TO 60°	* 1/4' FILLET
W6, MC6	5/16"	7"	3"	2	3/4" DIA. F593	59.9° TO 30°	FULL PEN
W8, W10, MC10	5/16"	4"	6"	2	3/4" DIA. F593	LESS THAN 30°	
W12, W14, C12, MC12	5/16"	4"	9"	3	3/4" DIA. F593		
W16, W18	5/16"	4"	12"	4	3/4" DIA. F593		
W21	5/16"	4"	15"	5	3/4" DIA. F593		

WELD SCHEDULE	
ANGLE OF FRAMING "Z"	WELD SIZE "W"
90° TO 60°	* 1/4' FILLET
59.9° TO 30°	FULL PEN
LESS THAN 30°	

FOR REFERENCE

NOTES:

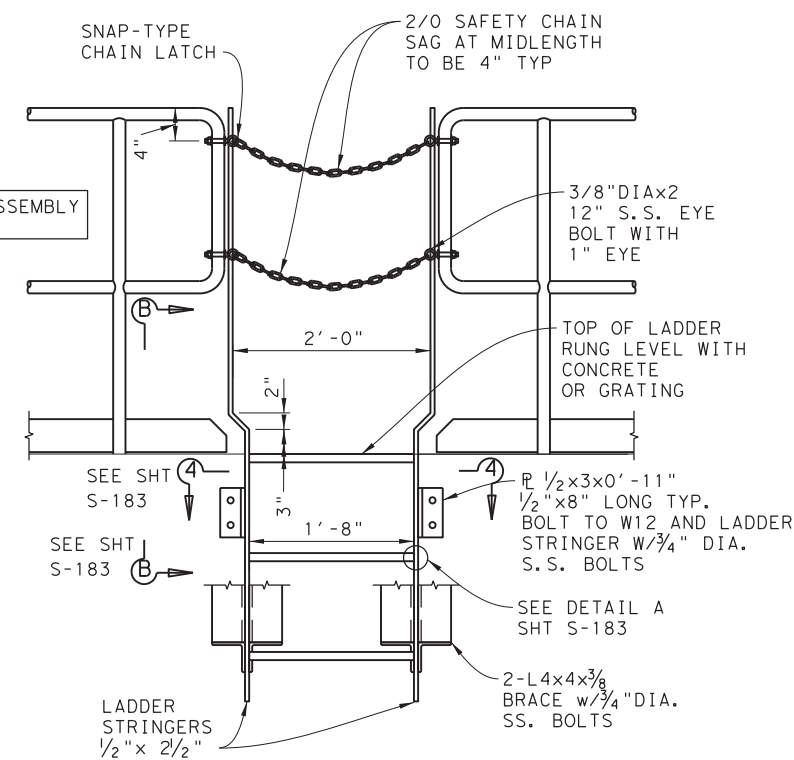
1. DETAIL APPLIES TO ALL SIMPLY SUPPORTED BEAMS UNLESS SPECIFIC DETAILS FOR AN ALTERNATE CONNECTION ARE PROVIDED.
2. "K" = 1 1/2" OR 3" MIN.
"K" = DISTANCE FROM OUTER FACE OF FLANGE TO WEB TOE OF FILLET OF ROLLED SHAPE OR EQUIVALENT DISTANCE ON WELDED SECTION, IN.
3. WELD SIZE AND TYPE VARIES WITH ANGLE OF FRAMING-SEE SCHEDULE.
4. SCHEDULES ARE BASED ON ASD DESIGN METHODS.



**STEEL SHEAR TAB CONNECTION
DETAIL AND SCHEDULE**

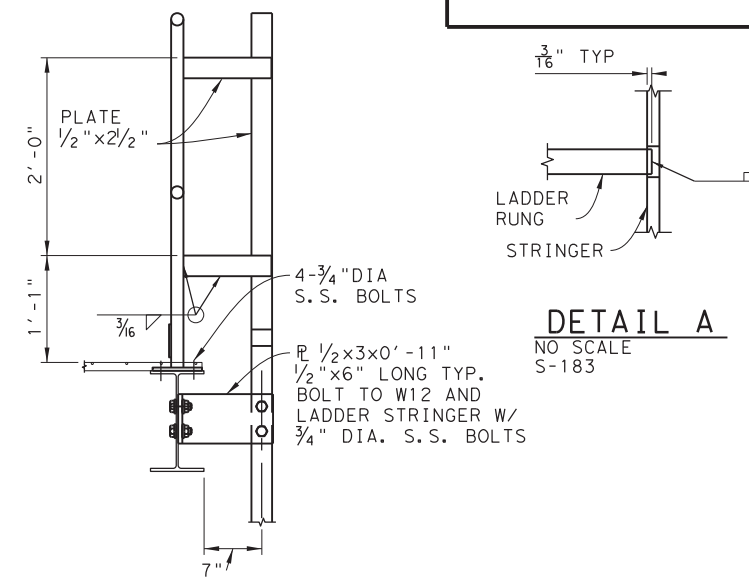
SCALE: 1"=1'-0"
S-180, S-182

NOTE: LADDER ASSEMBLY IS ALUMINUM



LADDER DETAIL

SCALE: 1"=1'-0"
S-180, S-182



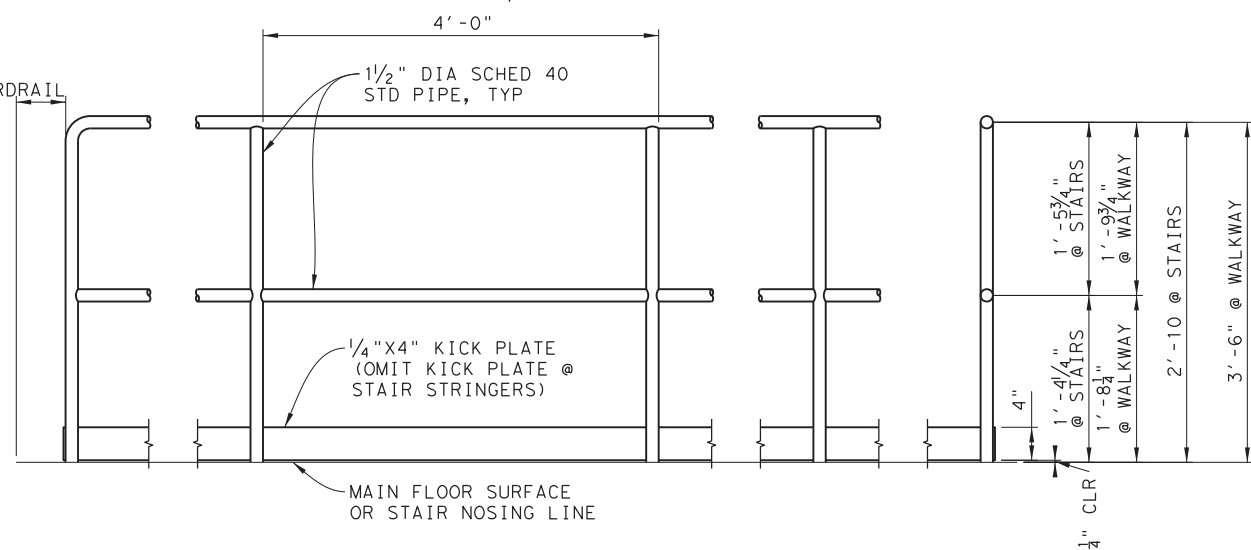
SECTION B

SCALE: 1"=1'-0"
S-183

DETAIL A

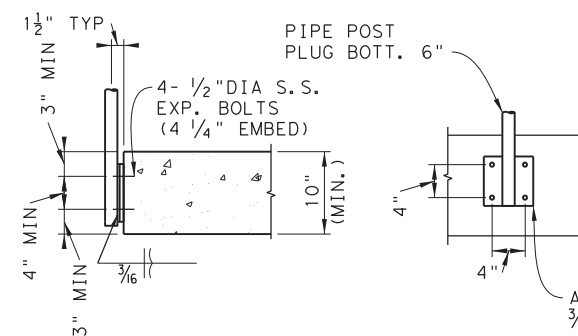
NO SCALE
S-183

4' TO ADJACENT WALL OR EQUIP.
6" TO ADJACENT GUARDRAIL



GUARDRAIL ELEVATION & SECTION

SCALE: 1"=1'-0"
S-183

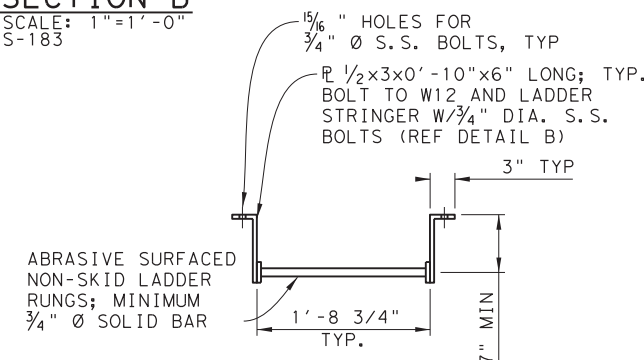


TOP MOUNTED RAILING POST

S-183

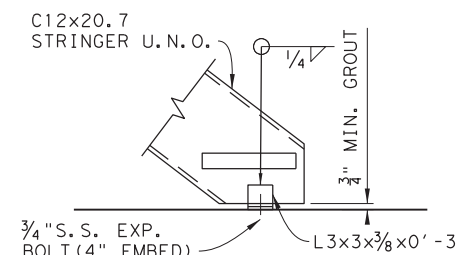
SIDE MOUNTED RAILING POST

S-182



SECTION 4

SCALE: 1"=1'-0"
S-183



DETAIL 1 STAIR CONNECTION

S-182

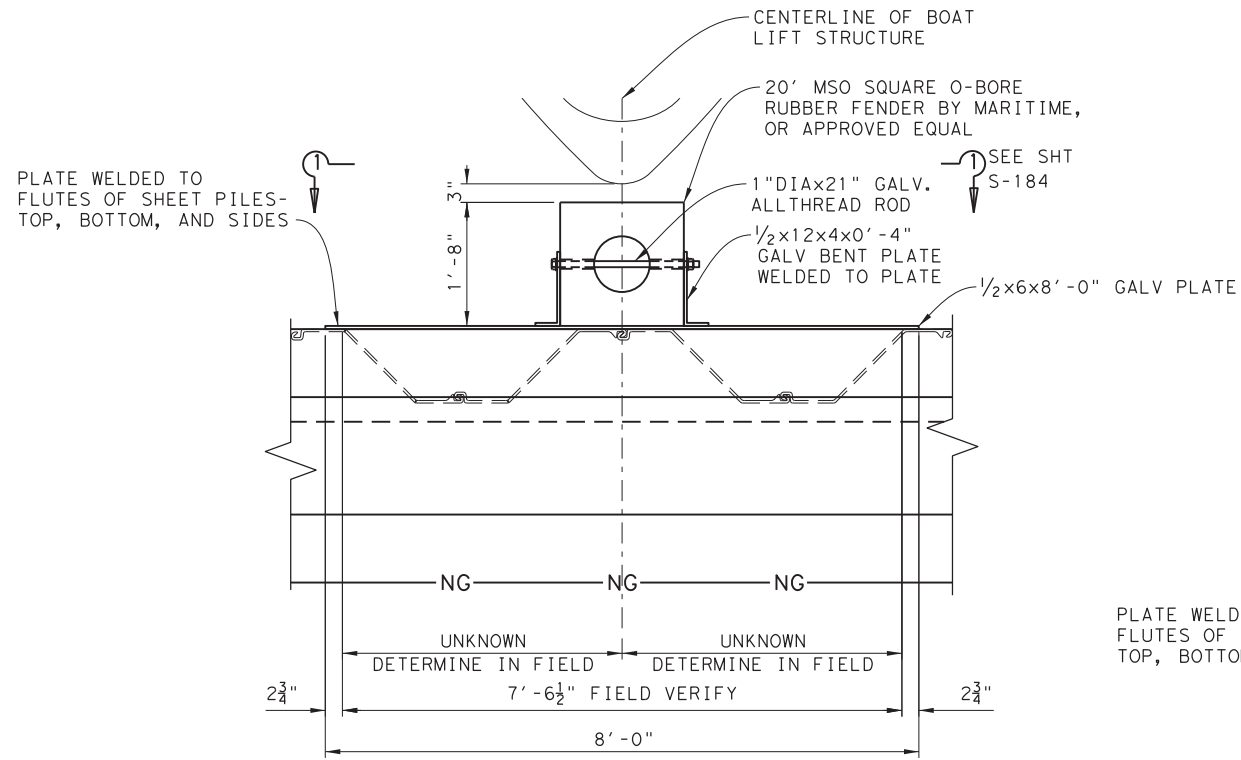
SCALE: 1"=1'-0"

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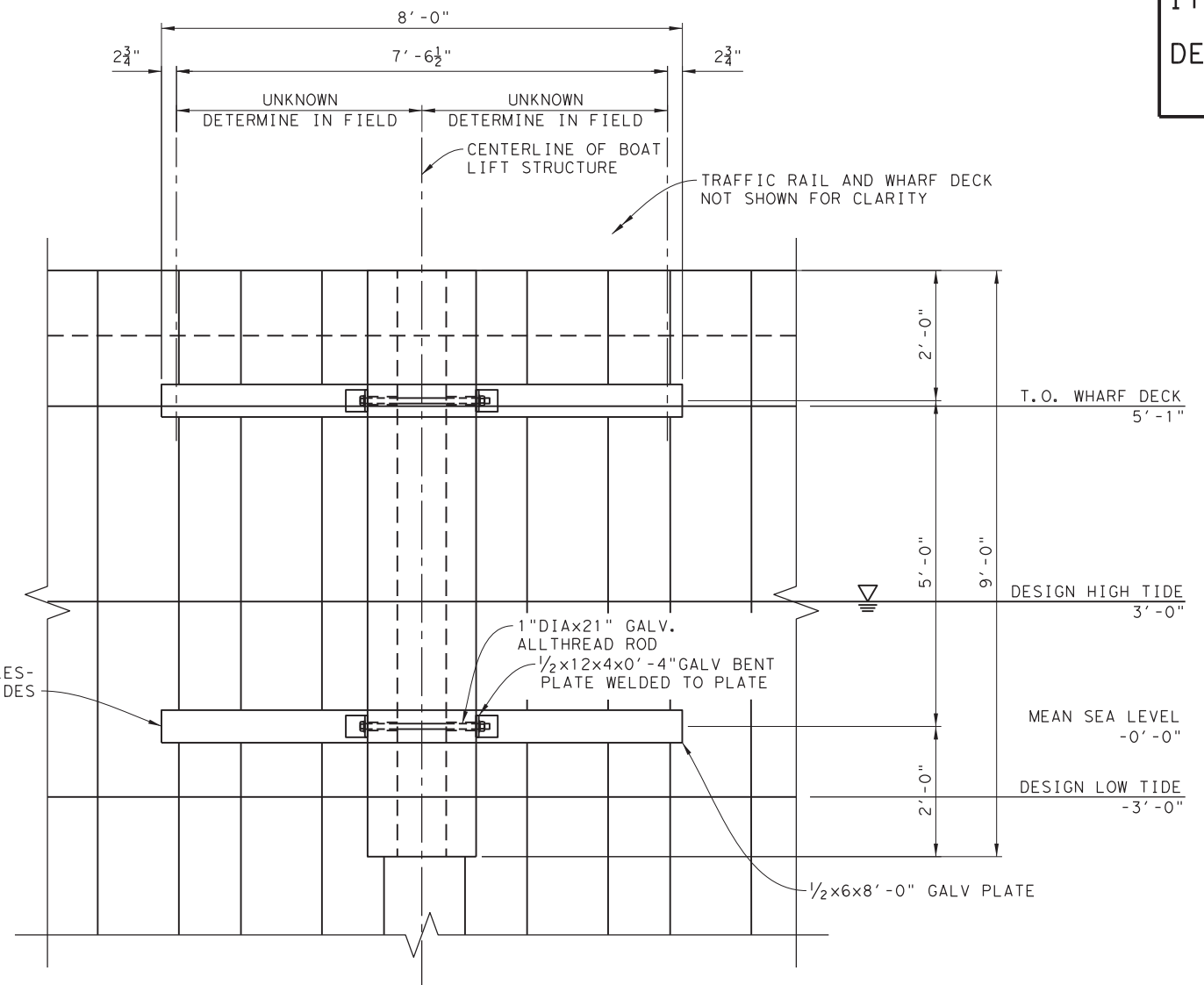
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
BOAT LIFT
SECTIONS & DETAILS 2 OF 3

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-203
DN: 1 WM	REVISIONS			COUNTY:
CK: 1 WB				GALVESTON
DR: 1 MC	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: 1 RW				6428 78 001 SH87

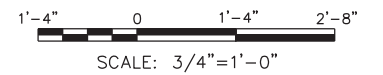
DRAWING NAME: 949402-S-203.dgn PLOT DATE: 4/6/2023 3:33:11 PM PLOTTED BY: SHIL



ENLARGED PLAN FENDER MOUNT
SCALE: 3/4"=1'-0"



VIEW 1
SCALE: 3/4"=1'-0"
S-184

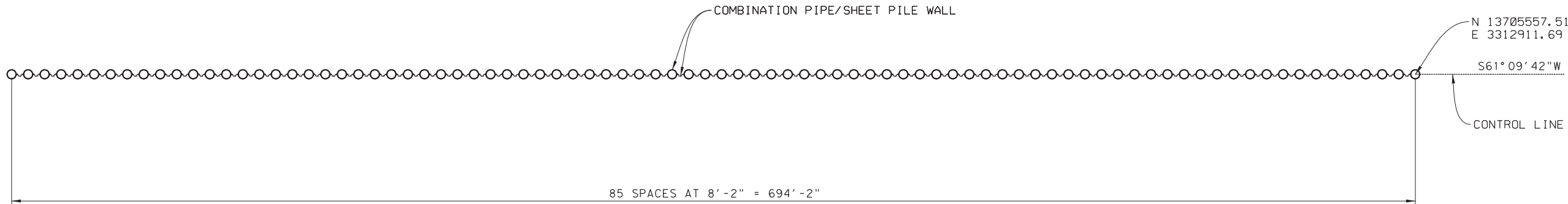
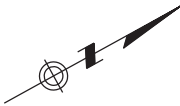


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FERRY LANDING MAINTENANCE
BOAT LIFT
SECTIONS & DETAILS 3 OF 3
 SHEET 78 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-204
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-204.dgn
 PLOT DATE: 4/6/2023 3:33:16 PM PLOTTED BY: SHIH



PLAN -NORTH BREAKWATER

MATERIALS:

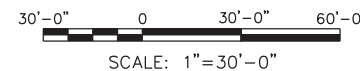
1. SHEET PILING: ASTM A572, GRADE 50 (fy=50 KSI) WITH THE FOLLOWING MINIMUM SECTION PROPERTIES:
 - MOMENT OF INERTIA 184.2 IN⁴/FT OF WALL
 - SECTION MODULUS 30.2 IN³/FT OF WALL
 - CROSS-SECTION AREA 7.94 IN²/FT OF WALL
 - NOMINAL DEPTH 12 IN
2. PIPE PILING: ASTM A252 GRADE 3 MODIFIED IN ACCORDANCE WITH SPECIAL SPECIFICATIONS 7658, WITH A MINIMUM YIELD STRENGTH OF 50 KSI.
3. STEEL PLATES AND BARS: ASTM A572, GRADE 50 (fy=50 KSI).

DESIGN LOADS:

1. WAVE LOADING DETERMINED FROM OCEANOGRAPHIC STUDY FOR 100-YEAR FLOOD RETURN EVENT.
2. WAVE LOADS: BASED ON WAVE HEIGHT OF 9.6' AND SCOUR DEPTH OF 10.0'.
 - TROUGH LOAD: 8.1 KIPS/FT OF WALL
 - CREST LOAD: 8.7 KIPS/FT OF WALL
3. LOAD CASES:
 - TROUGH WAVE - ACTIVE EARTH PRESSURE (AWAY FROM WALL)
 - CREST WAVE (TOWARDS WALL)

COATINGS:

1. COATING SCHEDULE:
 - SHEET PILING AND PIPE PILING COATED (INCLUDING CAP PLATE) FROM TOP OF PILE TO ELEV -25.0' WITH THERMAL SPRAYED ALUMINUM (TSA) COATING).
 - SHEET PILING AND PIPE PILING COATED FROM ELEV -25.0' TO TIP WITH EITHER EPOXY COATING OR TSA COATING (CONTRACTOR'S OPTION).
 - FOR COATING DETAIL AT SHEET PILING, SEE DETAIL 3 ON SHEET S-201.



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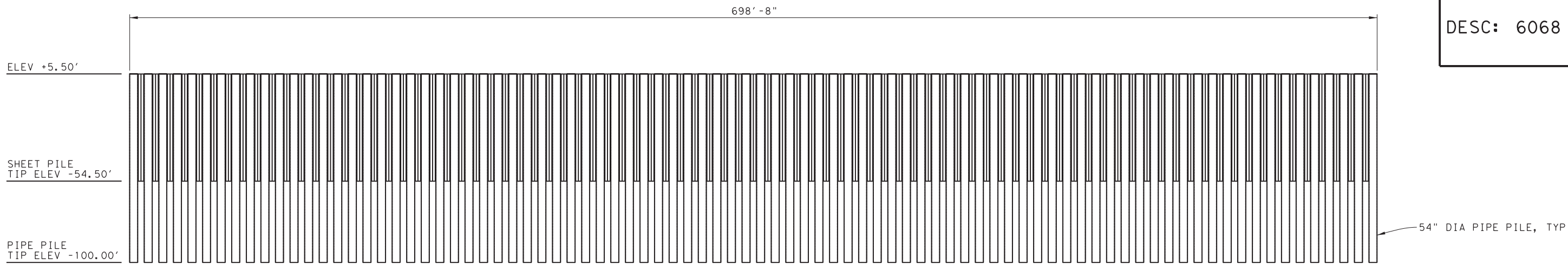
FERRY LANDING MAINTENANCE

BOLIVAR
NORTH BREAKWATER PLAN

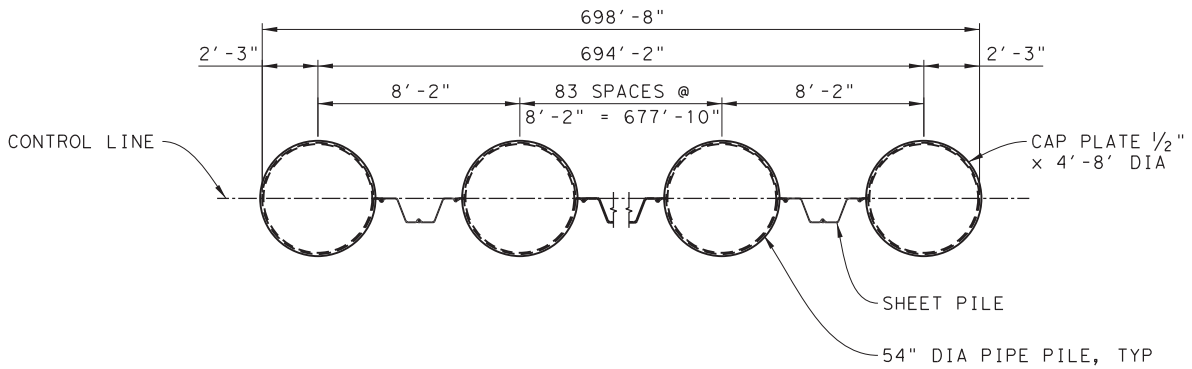
SHEET 79 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-210
CK: 1	WB	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN: 1	MC	GALVESTON		6428 78	001 SH87
CK: 1	FW	REV	DESCRIPTION	DATE	

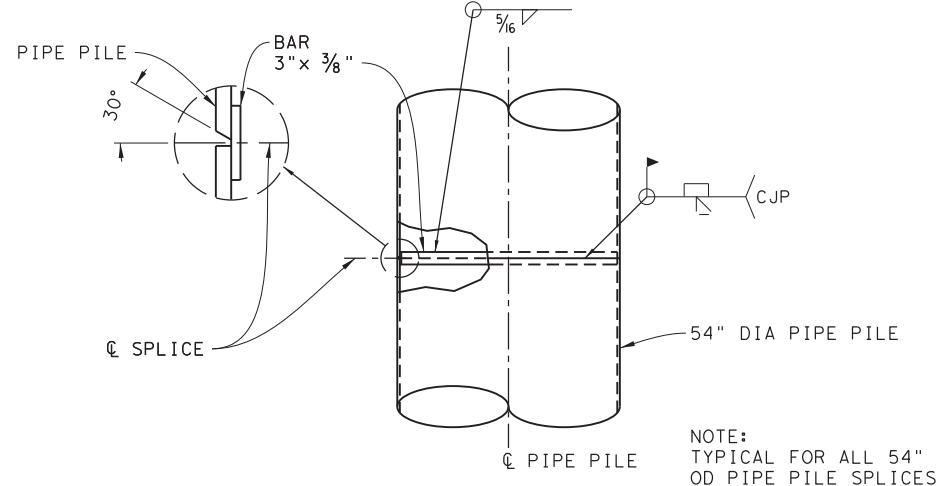
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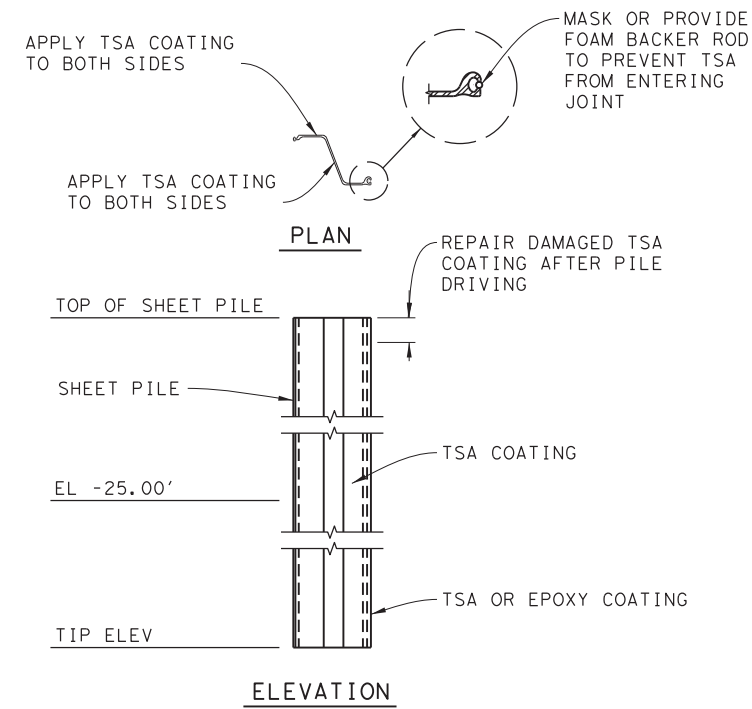
ELEVATION - NORTH BREAKWATER
SCALE: 1"=30'



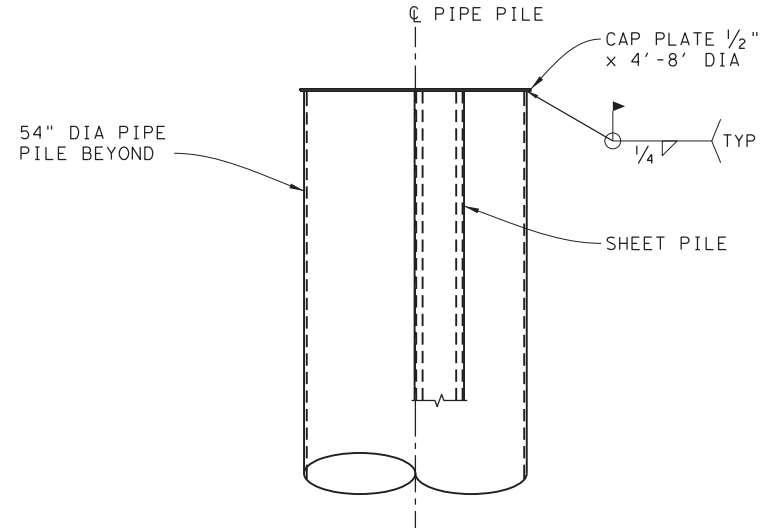
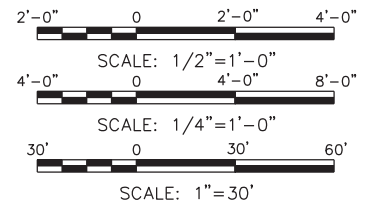
PLAN - NORTH BREAKWATER
SCALE: 1/4"=1'-0"



TYPICAL SPLICE CONNECTION
SCALE: 1/2"=1'-0"



SHEET PILE COATING DETAIL
SCALE: 1/2"=1'-0"



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

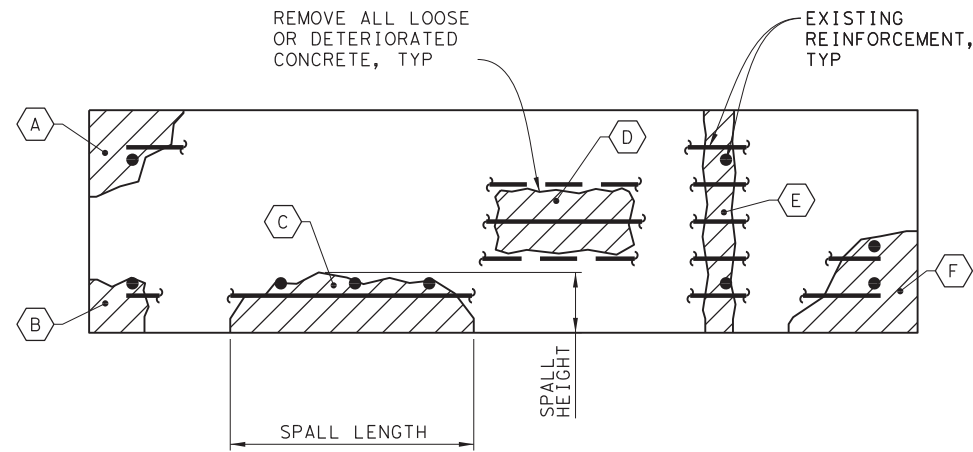
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FERRY LANDING MAINTENANCE
 BOLIVAR NORTH
 BREAKWATER ELEVATION & DETAILS

SHEET 80 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-211
DN: 1 MM	REVISIONS			
CK: 1 WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 MC		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

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 PLOT DATE: 4/6/2023 3:33:29 PM PLOTTED BY: SHH






TYPICAL CONCRETE DEFECTS

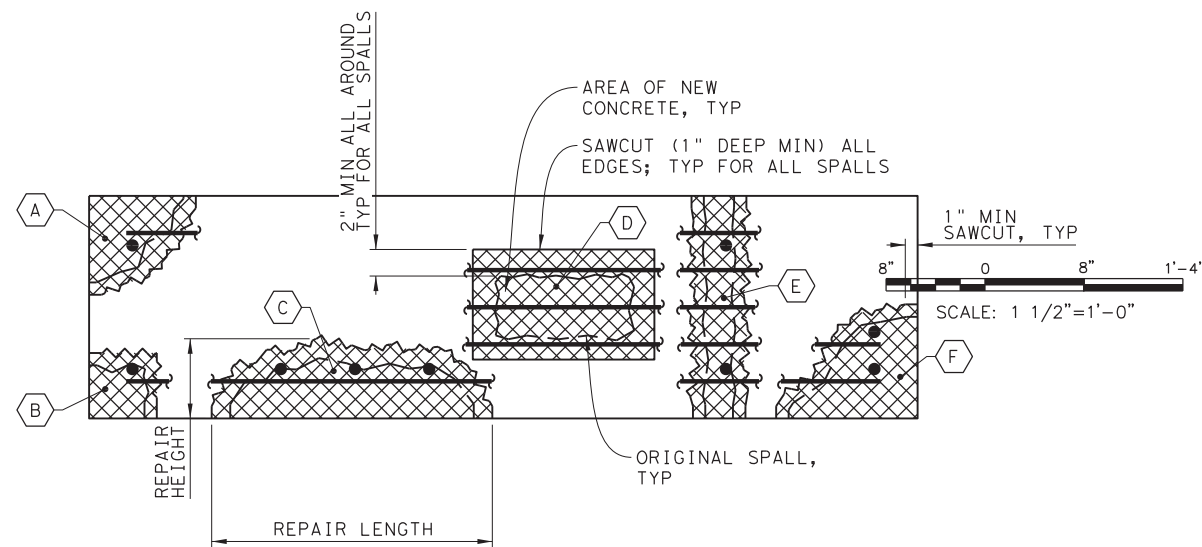
SCALE: 1 1/2" = 1'-0"

NOTES:

1. EXPOSE AND REMOVE ALL CORRODED REINFORCEMENTS WITH 10% OR MORE SECTION LOSS. REMOVED REINFORCEMENTS SHALL BE REPLACED IN KIND. EXPOSED REINFORCEMENTS WITH LESS THAN 10% SECTION LOSS SHALL BE LEFT IN PLACE, CLEANED, AND COATED WITH ANTI-CORROSION COATING.
2. DEPTH OF THE CONCRETE REMOVAL/REPAIR AREA SHALL ALLOW FOR A MINIMUM CLEARANCE OF 1" BETWEEN THE FARTHEST EXPOSED REINFORCEMENT (FROM ORIGINAL CONCRETE FACE) AND THE EXPOSED CONCRETE REPAIR SURFACE.
3. ROUGHEN EXPOSED CONCRETE SURFACES TO BE REPAIRED TO 1/4" AMPLITUDE.
4. CLEAN ALL SURFACES PRIOR TO PLACING CONCRETE.
5. NO DISTINCTION IS MADE BETWEEN SPALLS AND DELAMINATIONS SINCE REPAIRS ARE THE SAME.

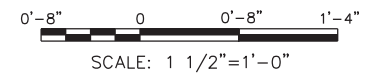
LEGEND:

-  SPALL/DELAMINATION
-  DEMOLITION LIMITS
-  DEFECT/REPAIR TYPE



TYPICAL CONCRETE REPAIRS

SCALE: 1 1/2" = 1'-0"



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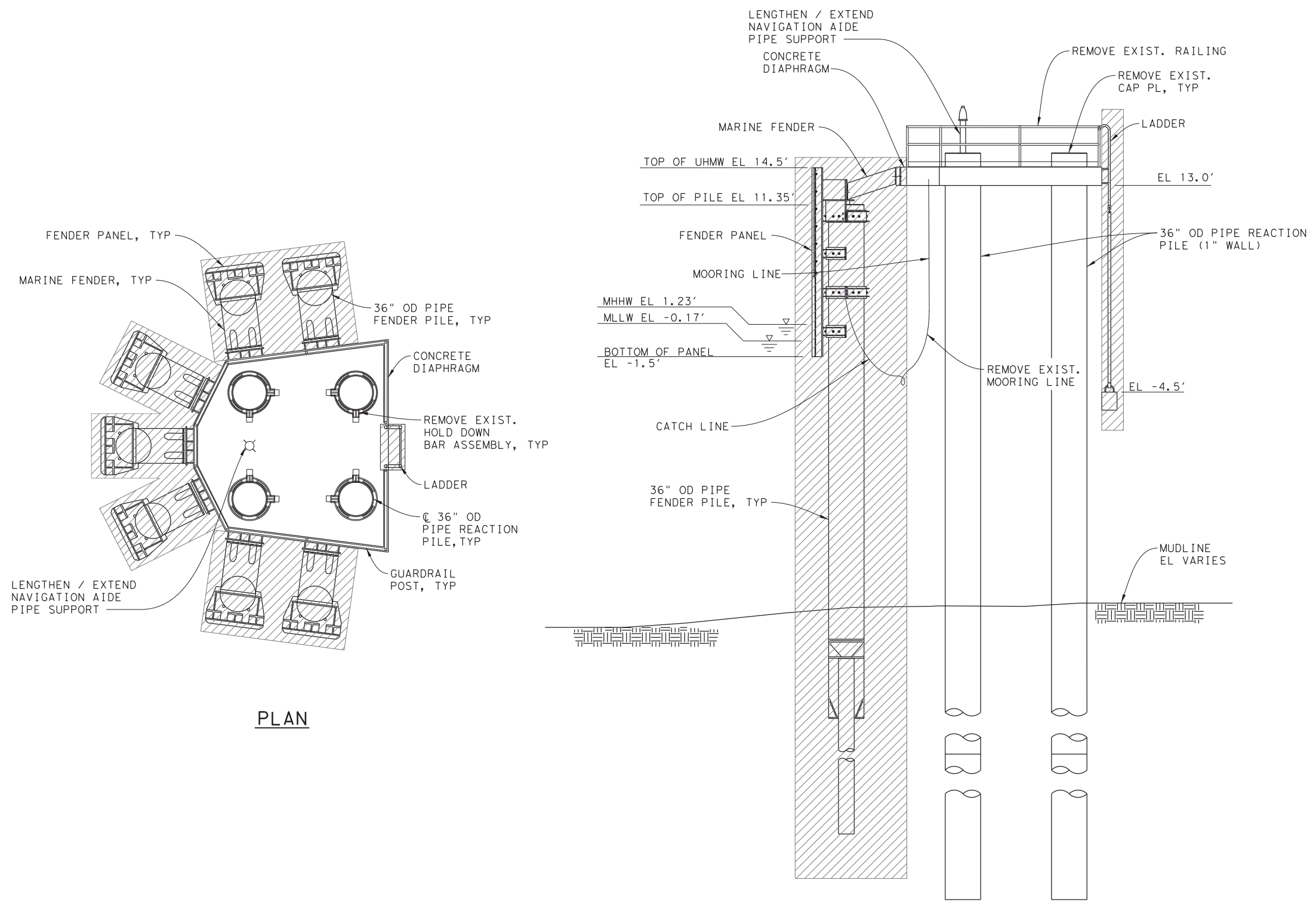
FERRY LANDING MAINTENANCE

**TYPICAL CONCRETE
 REPAIR DETAILS**

SHEET 81 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-900
CK: 1	SS	COUNTY		CONTROL SECTION JOB	HIGHWAY
CK: 1	RW	GALVESTON	6428	78 001	SH87

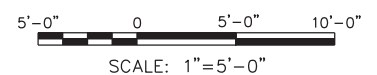
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DEMOLISH AND REMOVE

PLAN

ELEVATION



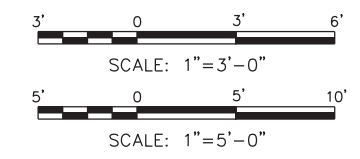
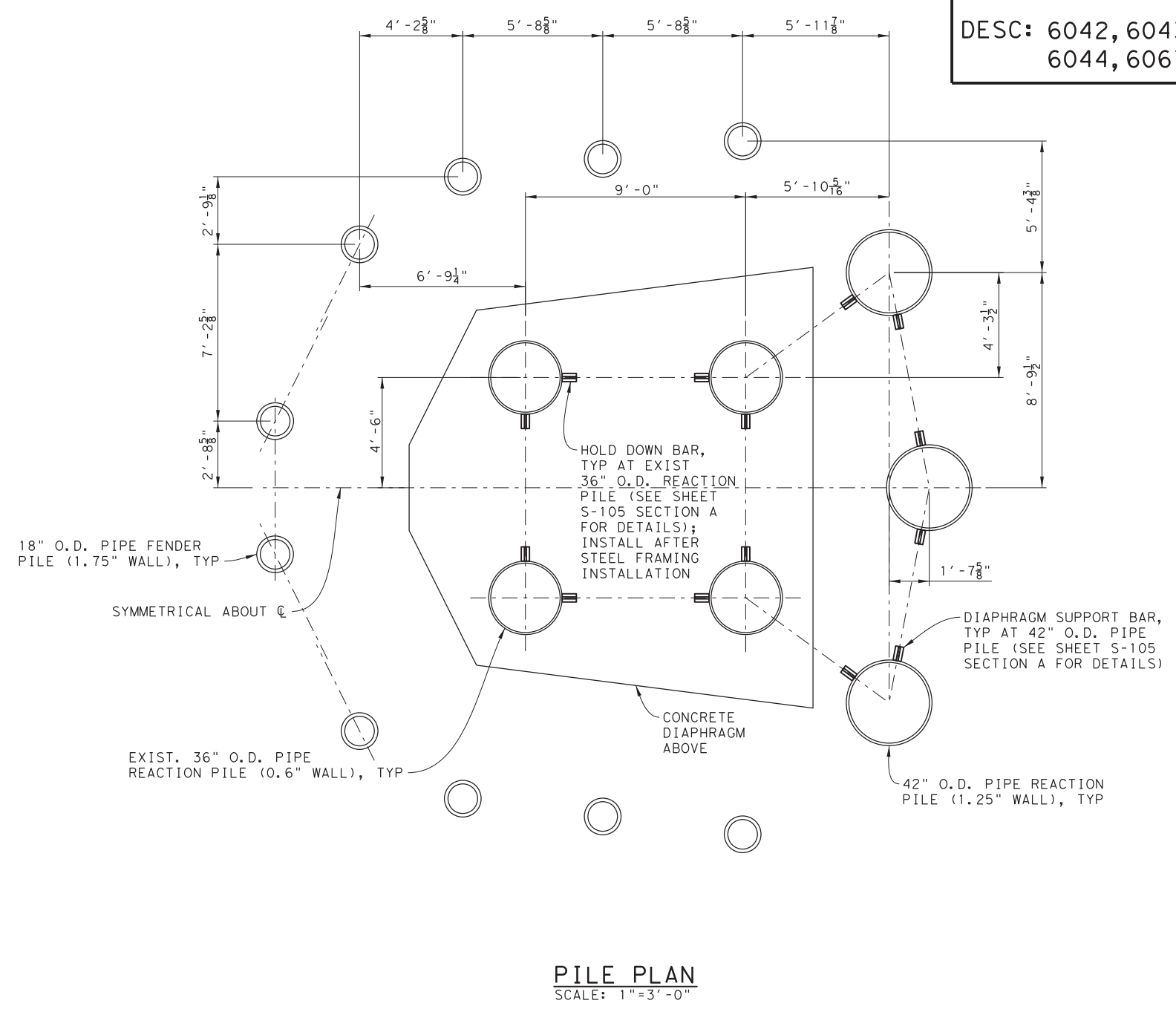
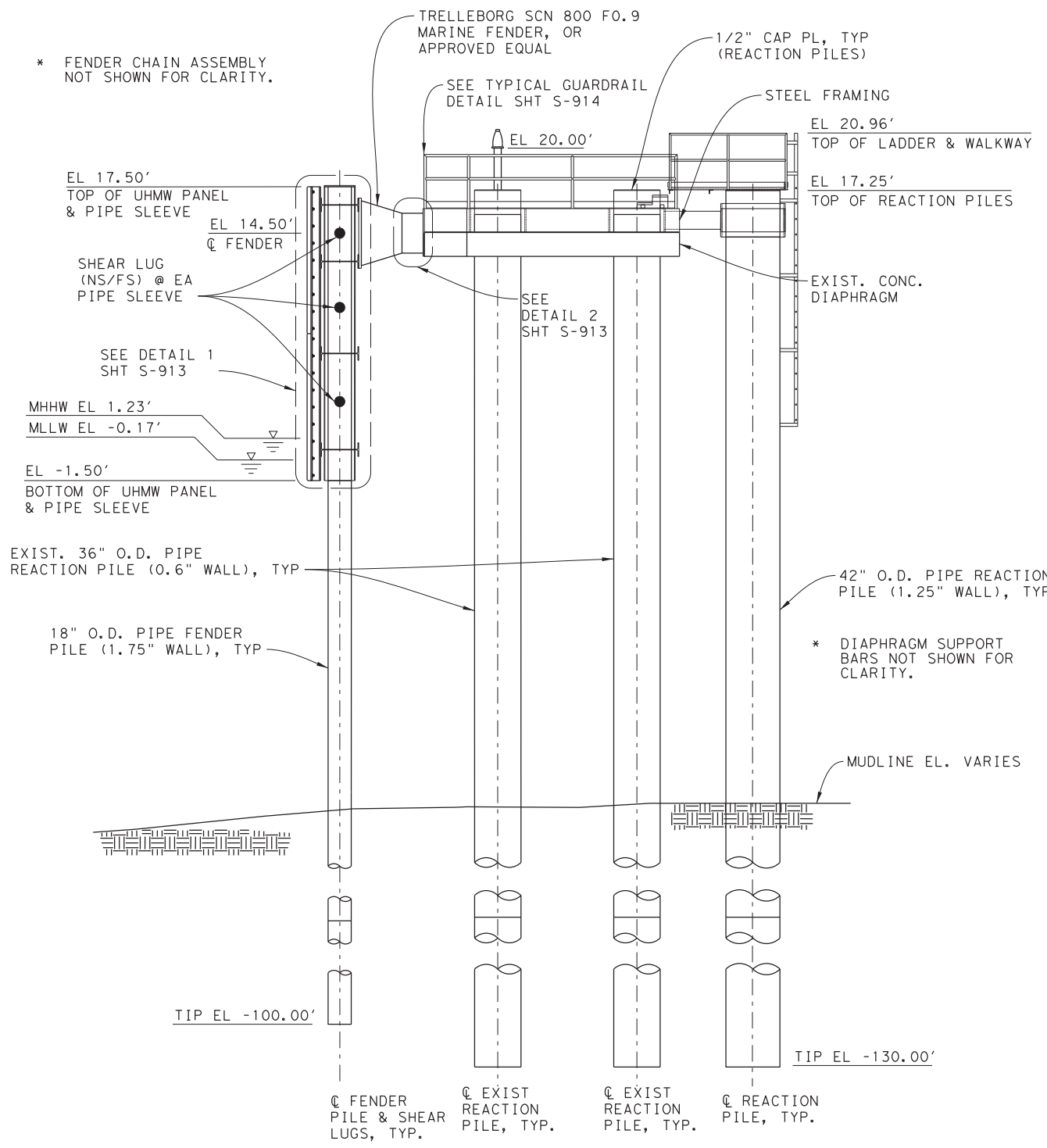
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FERRY LANDING MAINTENANCE
 TYPE II OUTER DOLPHIN
 DEMOLITION OF TYPE I STRUCTURES

SHEET 82 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-910
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-910.dgn
PLOT DATE: 4/6/2023 3:34:00 PM PLOTTED BY: SHIL

ITEM: 7146
DESC: 6042, 6043, 6044, 6067

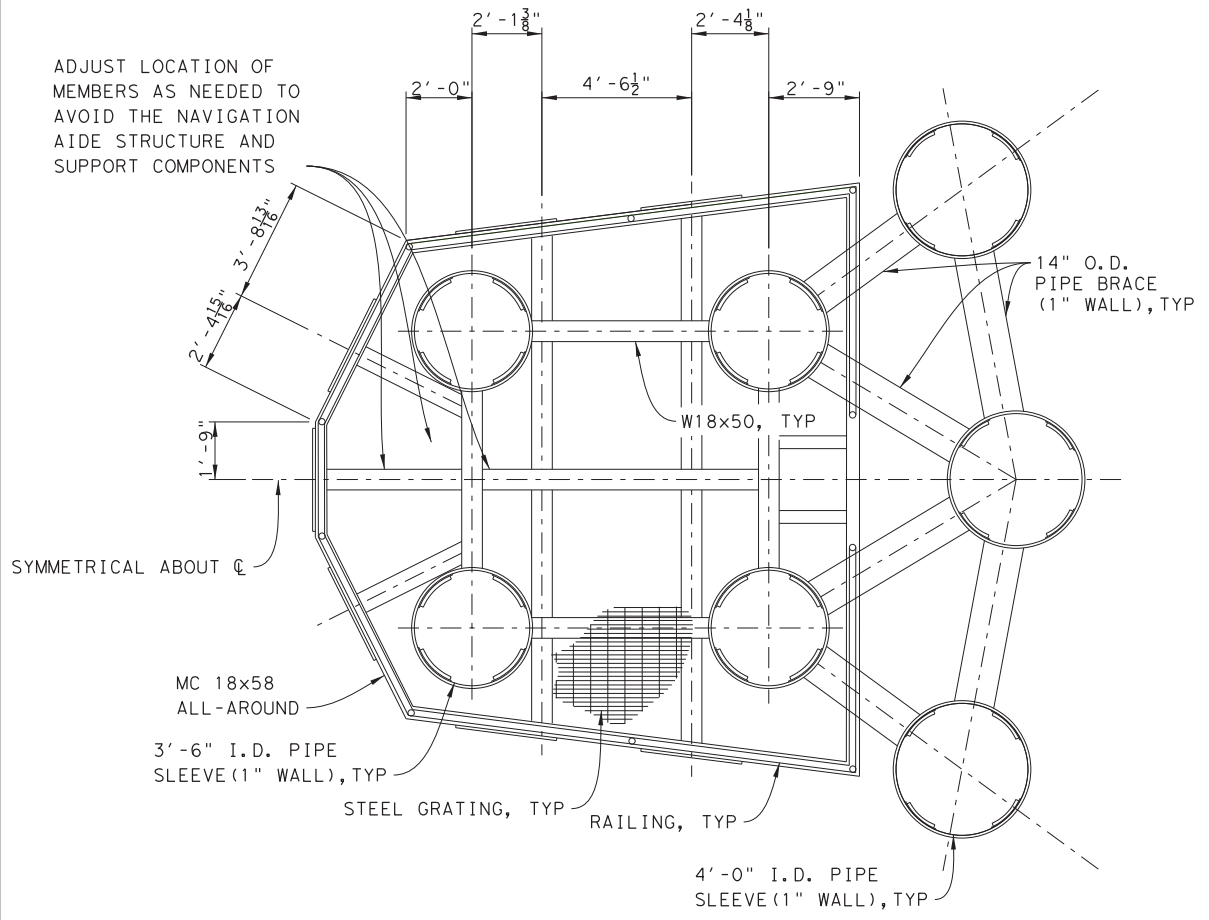


DRAWING NAME: 949402-S-911.dgn
PLOT DATE: 4/6/2023 3:34:22 PM PLOTTED BY: SHIH

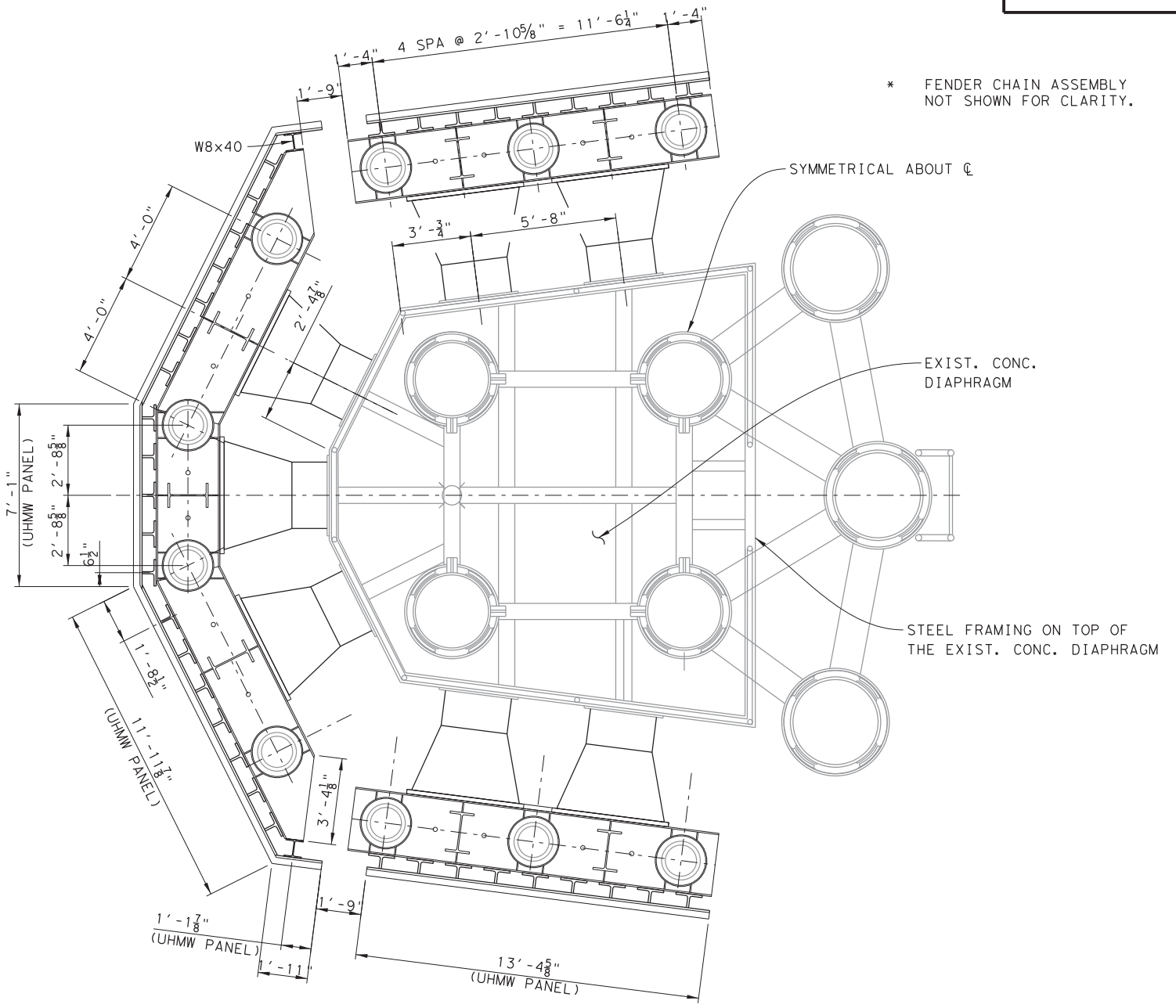
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
TYPE II OUTER DOLPHIN DETAILS
SHEET 1 OF 6

SHEET 83 OF 148

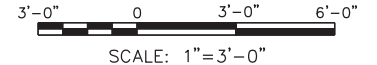
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-911
DN: I MM	REVISIONS			
CK: I SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: I SH		GALVESTON	6428 78 001	SH87
CK: I RW	REV	DESCRIPTION	DATE	



STEEL FRAMING PLAN
SCALE: 1"=3'-0"



FENDER PLAN
SCALE: 1"=3'-0"



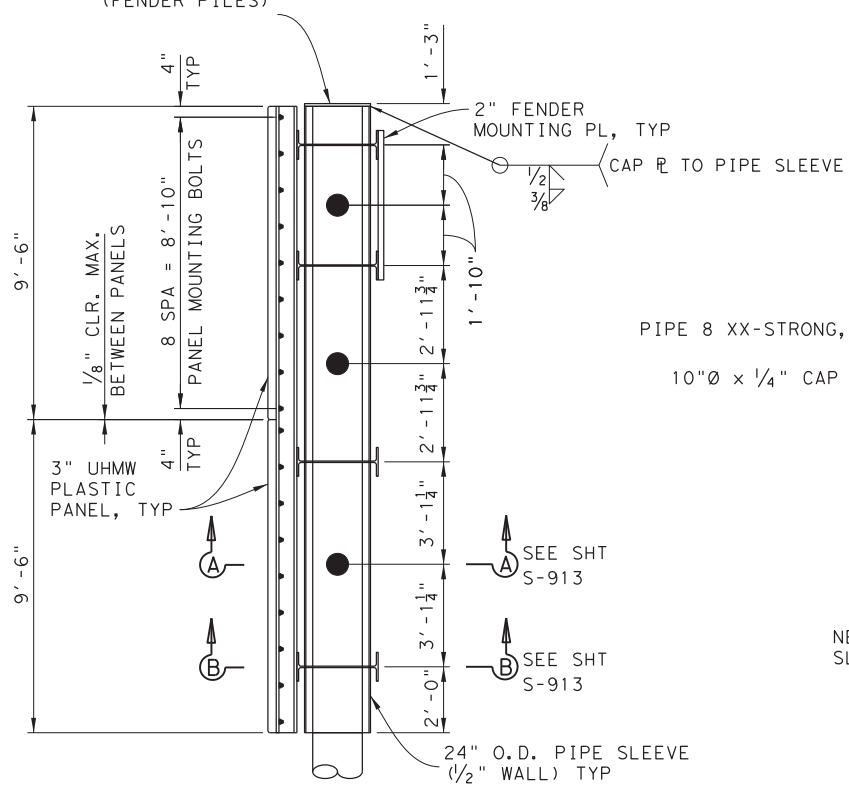
DRAWING NAME: 949402-S-912.dgn
PLOT DATE: 4/6/2023 3:37:47 PM PLOTTED BY: SHILL

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FERRY LANDING MAINTENANCE
TYPE II OUTER DOLPHIN DETAILS
SHEET 2 OF 6

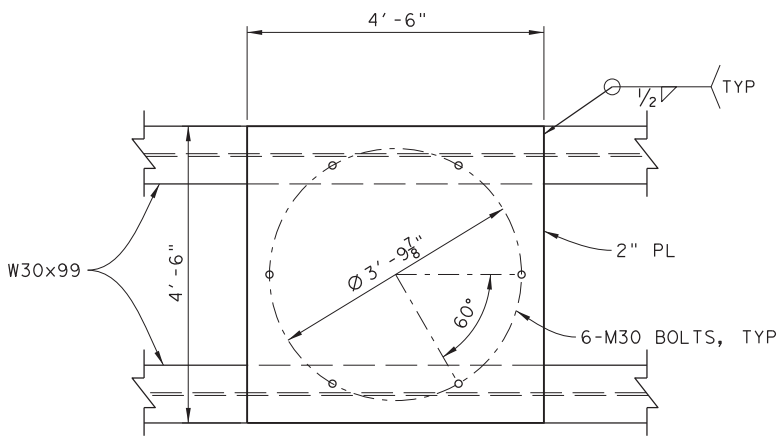
SHEET 84 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-912
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

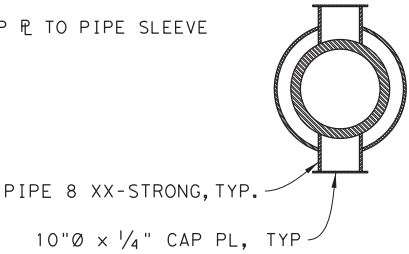
ITEM: 7146
DESC: 6042, 6044, 6067



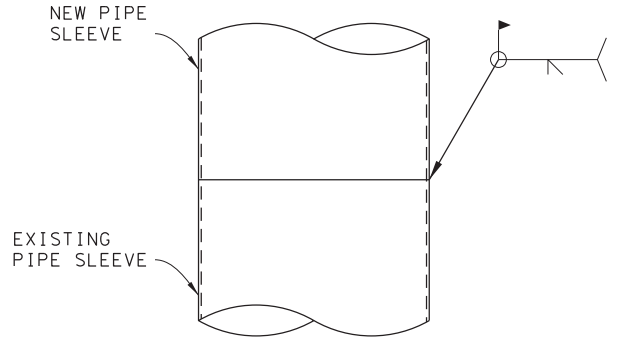
DETAIL 1
SCALE: 1"=3'-0"
S-911



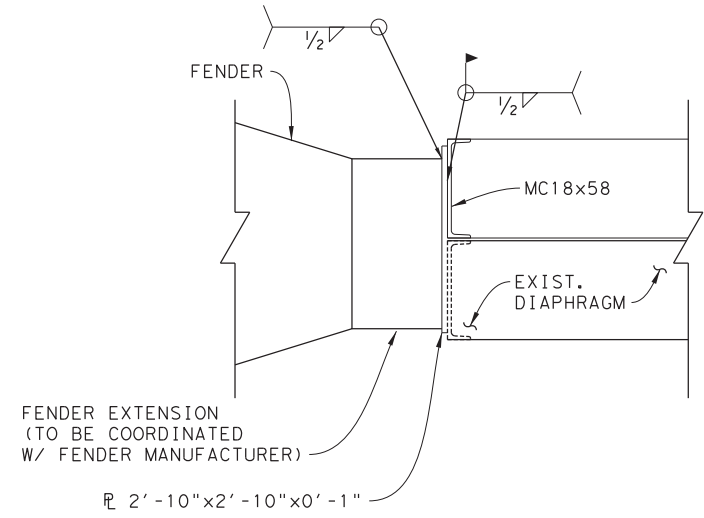
FENDER MOUNTING PLATE DETAIL
SCALE: 1 1/2"=1'-0"



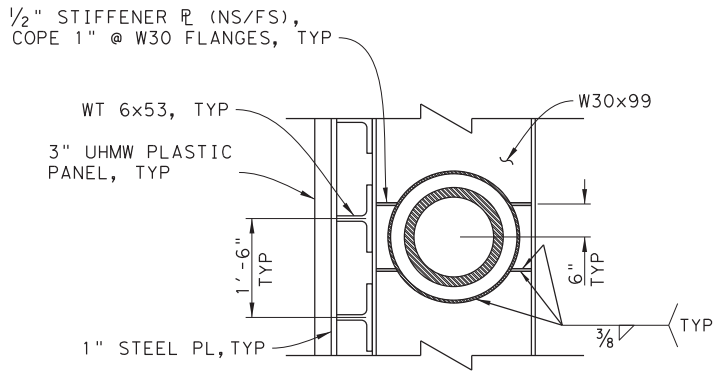
SECTION A-A
SCALE: 1 1/2"=1'-0"
S-913



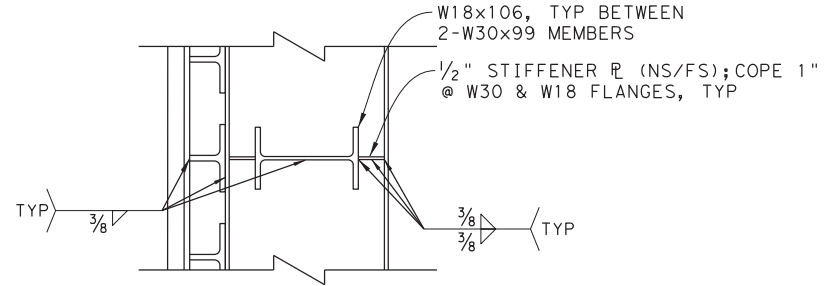
REACTION PILE PIPE SLEEVE SPLICE DETAIL
SCALE: 1 1/2"=1'-0"



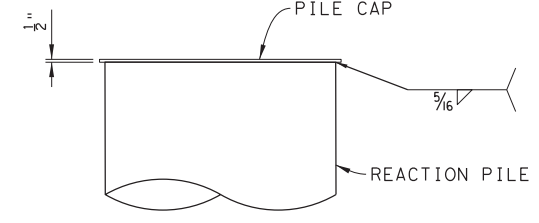
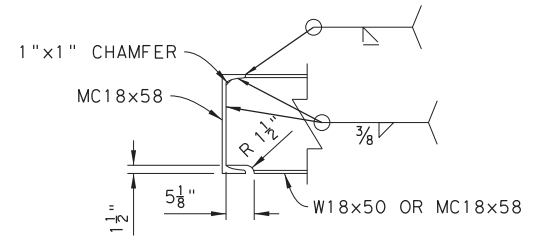
DETAIL 2
SCALE: 1 1/2"=1'-0"
S-911



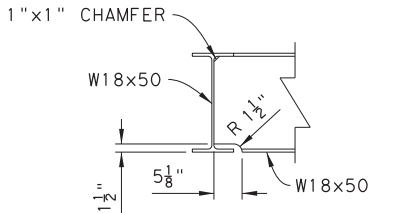
SECTION B-B
SCALE: 1 1/2"=1'-0"
S-913



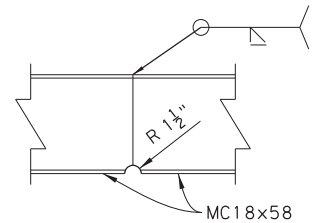
W18, MC18 TO MC18 CONNECTION
SCALE: 1 1/2"=1'-0"



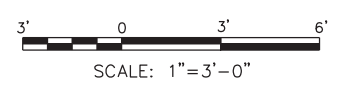
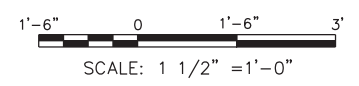
REACTION PILE CAP PLATE
SCALE: 1 1/2"=1'-0"



W18 TO W18 CONNECTION
SCALE: 1 1/2"=1'-0"



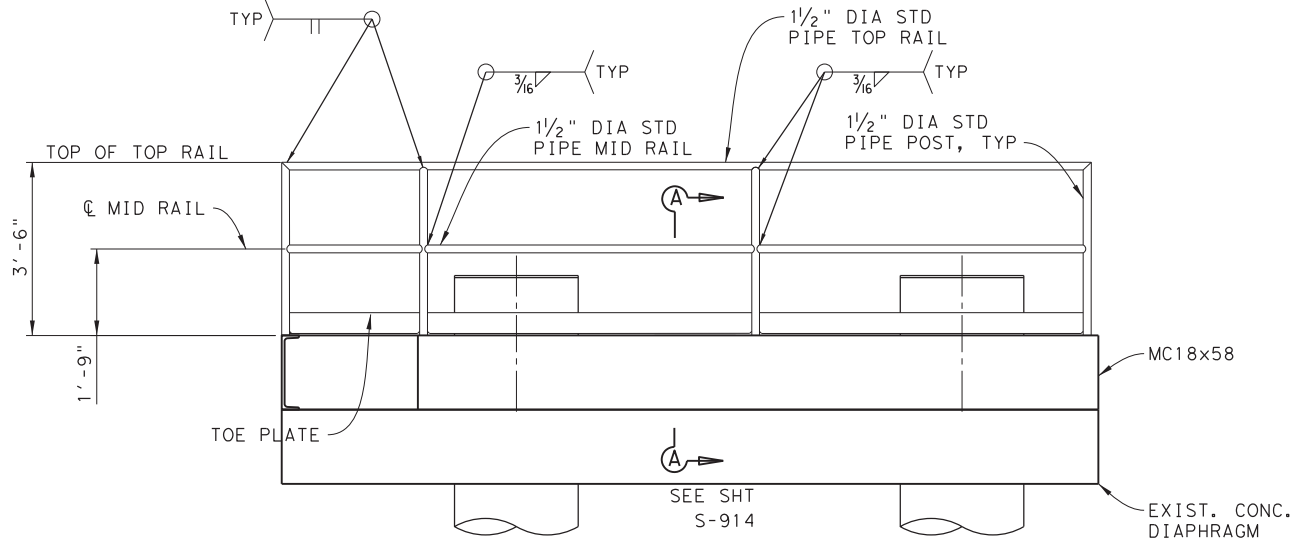
MC18 TO MC18 CONNECTION
SCALE: 1 1/2"=1'-0"



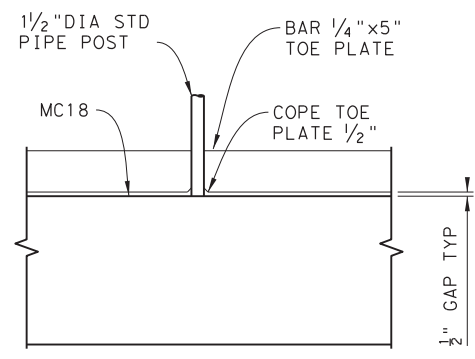
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
TYPE II OUTER DOLPHIN DETAILS
SHEET 3 OF 6

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-913
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-913.dgn PLOT DATE: 4/6/2023 3:37:59 PM PLOTTED BY: SHIH



ELEVATION



VIEW B

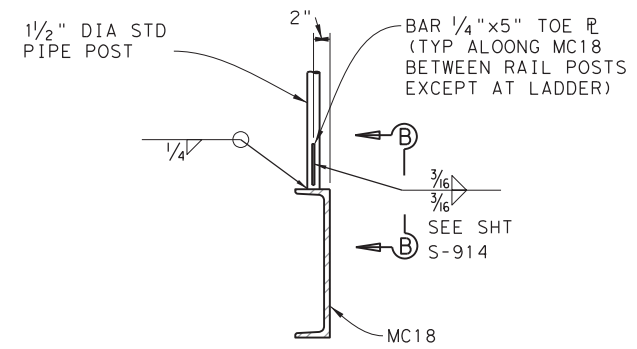
SCALE: 1"=1'-0"
S-914

NOTES:

1. MAXIMUM SPACING FOR GUARDRAIL POSTS SHALL BE 8'-0"
2. HOT DIP GALVANIZE GUARDRAIL AFTER FABRICATION IN ACCORDANCE WITH ASTM 123.

TYPICAL GUARDRAIL DETAIL

SCALE: 1/2"=1'-0"
S-911



SECTION A

SCALE: 1"=1'-0"
S-914



SCALE: 1/2"=1'-0"



SCALE: 1"=1'-0"



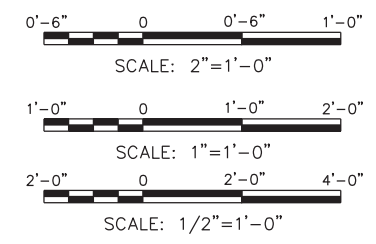
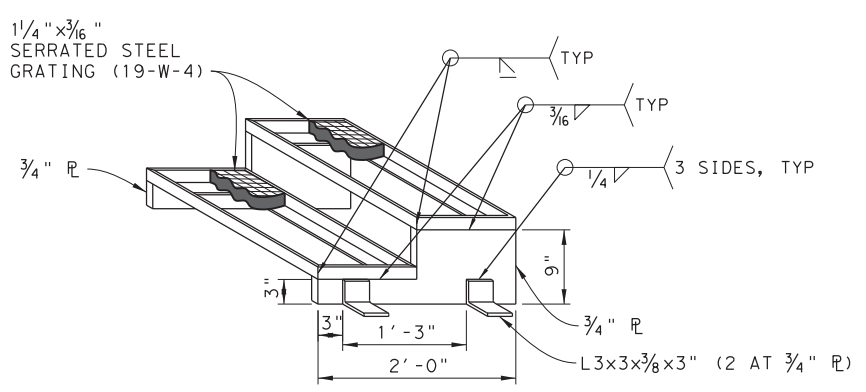
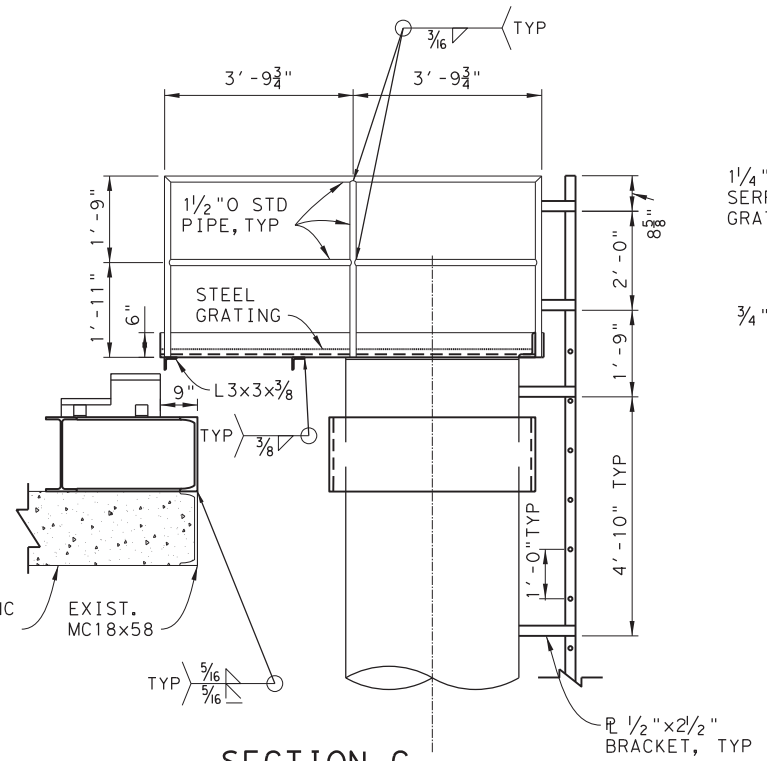
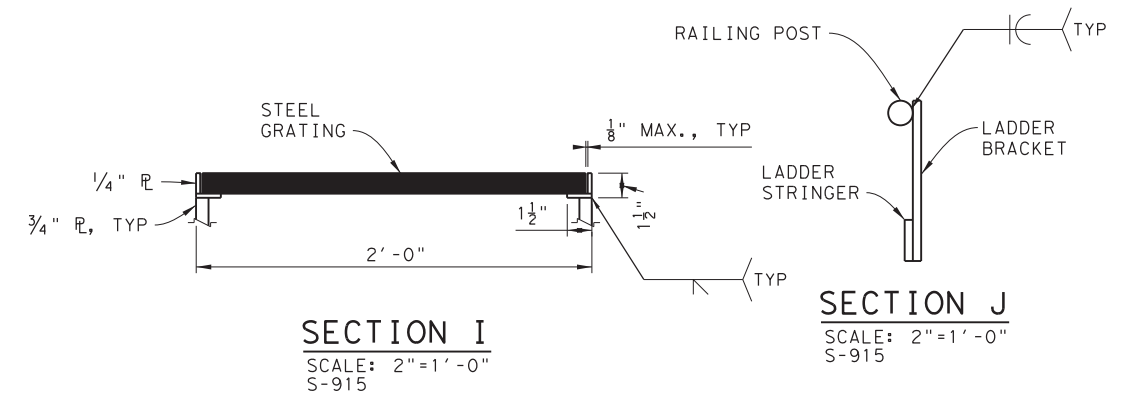
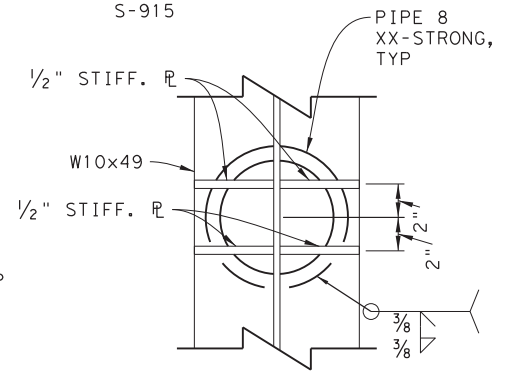
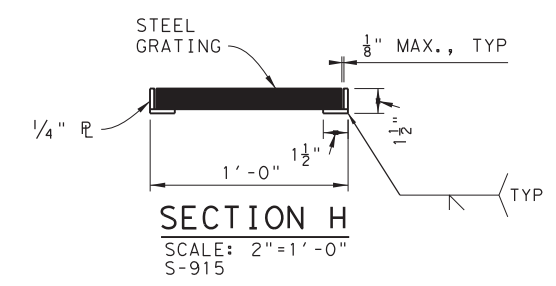
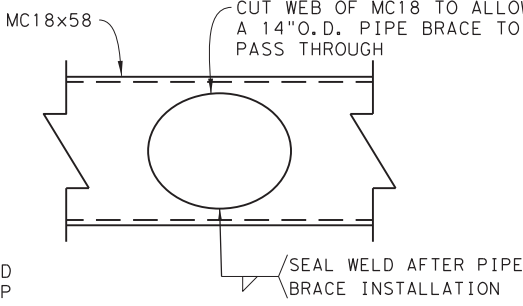
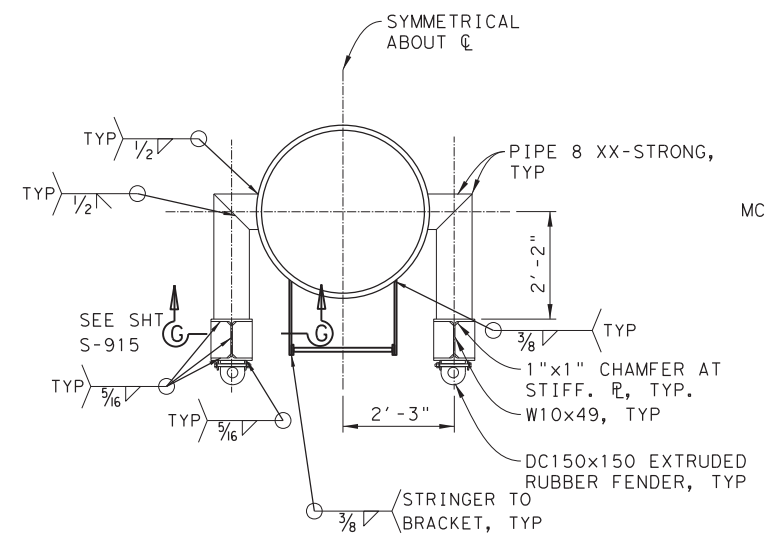
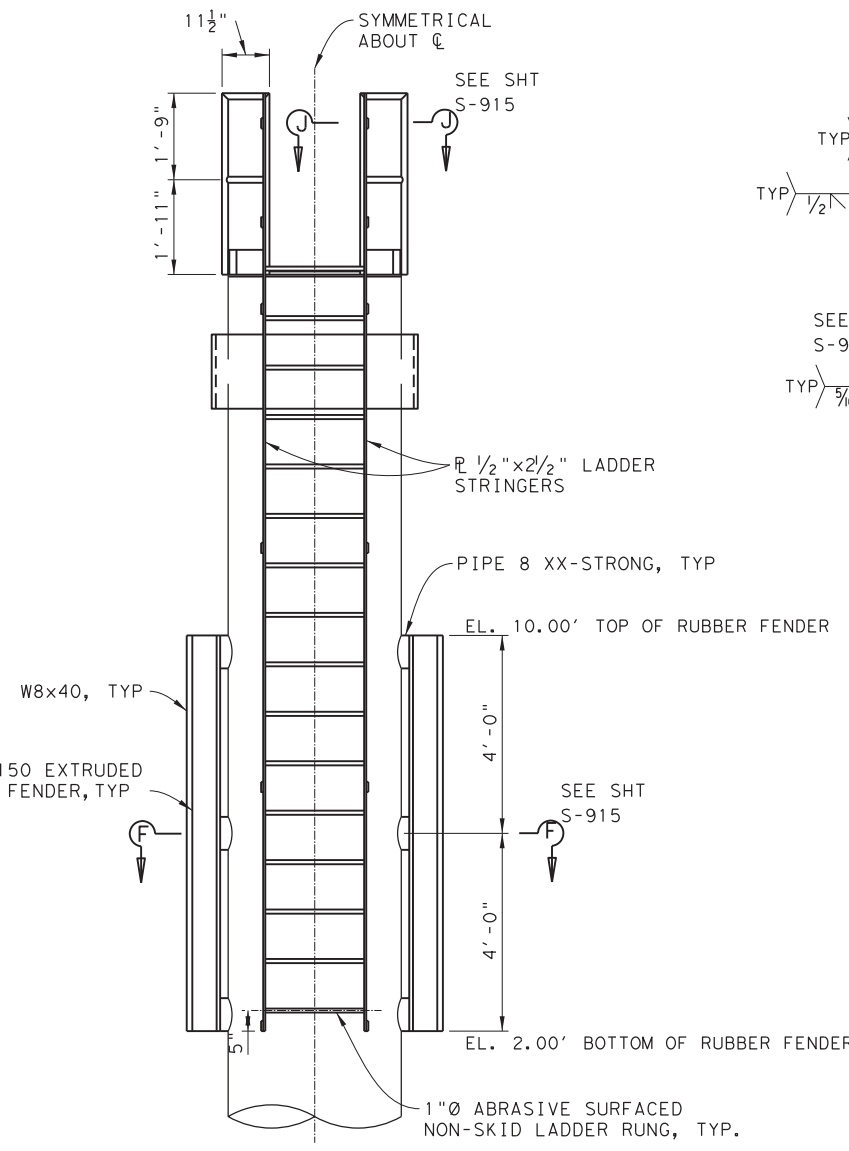
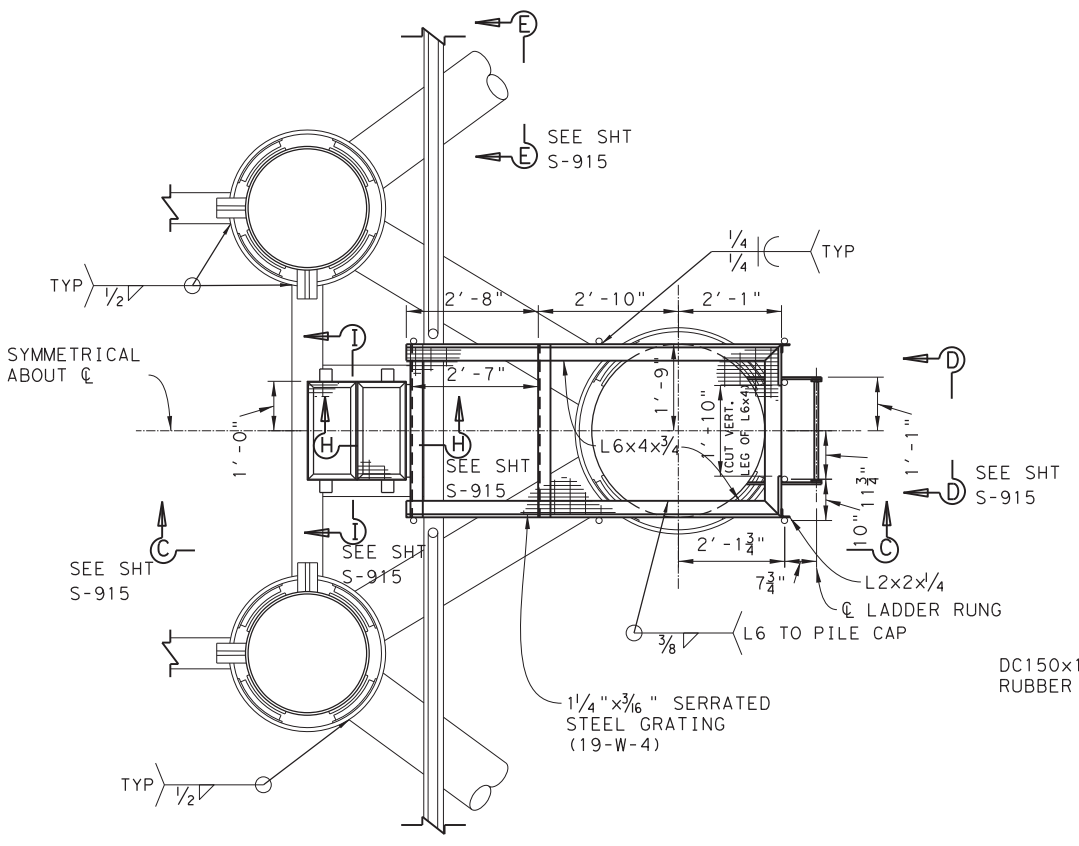
TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

TYPE II OUTER DOLPHIN DETAILS
SHEET 4 OF 6

SHEET 86 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-914
DN:1 MM	REVISIONS			
CK:1 SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DN:1 SH		GALVESTON	6428 78 001	SH87
CK:1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-914.dgn
PLOT DATE: 4/6/2023 3:38:09 PM PLOTTED BY: SHIH

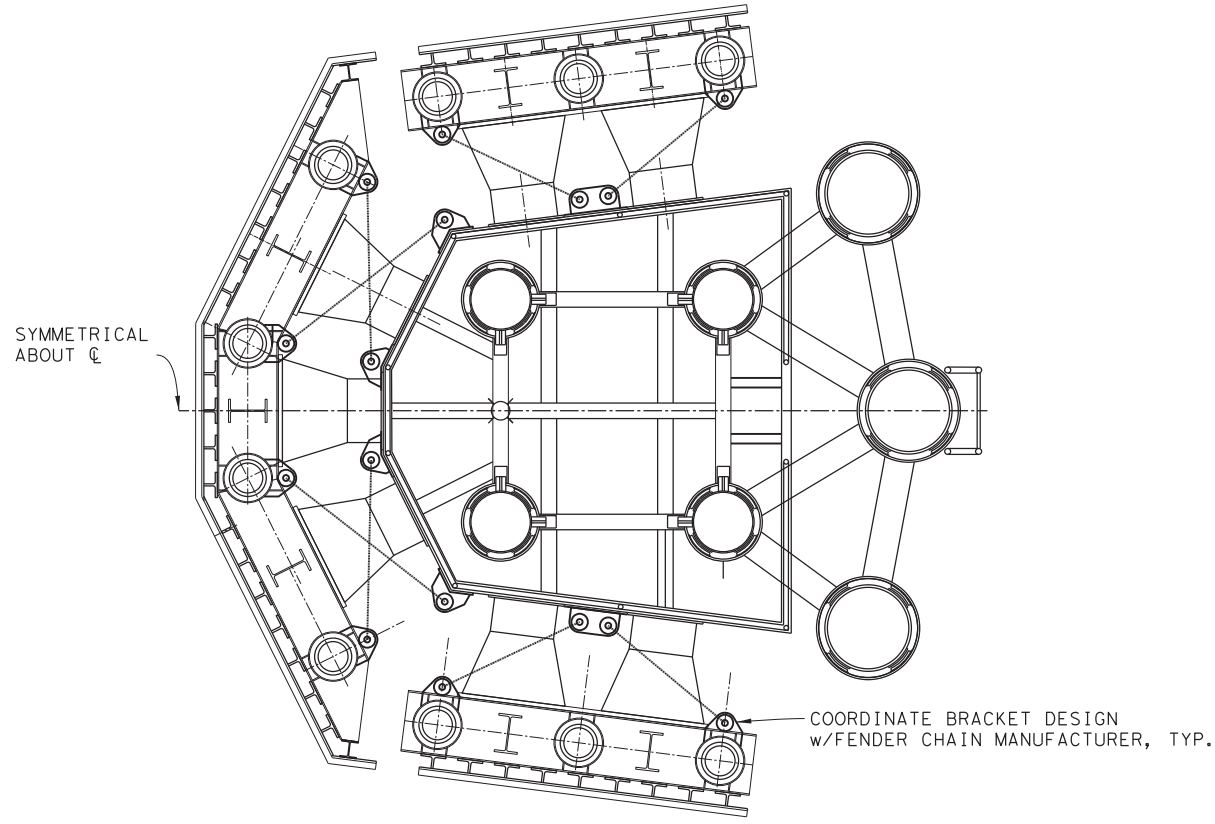


* DIAPHRAGM SUPPORT BAR NOT SHOWN FOR CLARITY.

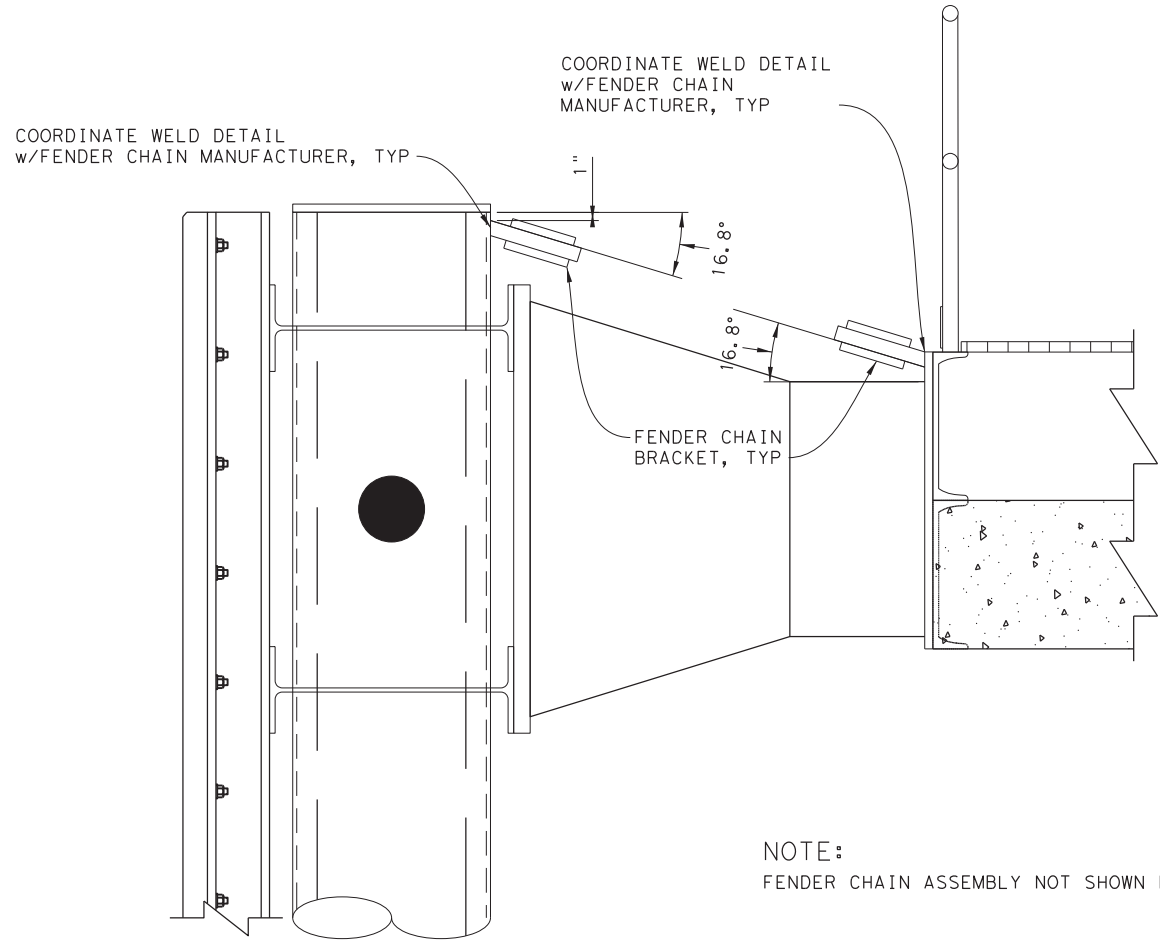
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FERRY LANDING MAINTENANCE
TYPE II OUTER DOLPHIN DETAILS
SHEET 5 OF 6

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-915
DN: SS	REV	DESCRIPTION	DATE	
CK: SS				
DR: SH				
CK: RW				

DRAWING NAME: 949402-S-915.dgn
PLOT DATE: 4/6/2023 3:38:22 PM PLOTTED BY: SHIL



FENDER SHEAR CHAINS PLAN
SCALE: 1/4"=1'-0"

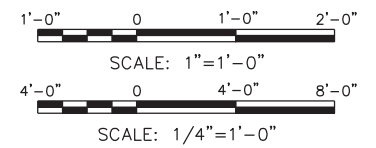


NOTE:
FENDER CHAIN ASSEMBLY NOT SHOWN FOR CLARITY.

SECTION A-A
SCALE: 1"=1'-0"

NOTES:

- LINK CHAINS, CHAIN TENSIONERS, SHACKLES, AND PINS SHALL BE SELECTED PER THE FENDER CHAIN MANUFACTURER'S RECOMMENDATIONS BASED ON A REQUIRED MINIMUM BREAKING LOAD (MBL) OF 480 kN.



DRAWING NAME: 949402-S-916.dgn
PLOT DATE: 4/6/2023 3:38:31 PM PLOTTED BY: SHH

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FERRY LANDING MAINTENANCE
TYPE II OUTER DOLPHIN DETAILS
SHEET 6 OF 6

SHEET 88 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-916
CK:1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN:1	SH	GALVESTON		6428 78	001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	



10-TON CHAIN FALL - LANDINGS #1, #4, & #6



10-TON CHAIN FALL - LANDINGS #2, #3, & #5

SCALE: NTS

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FERRY LANDING MAINTENANCE

10-TON CHAIN FALL

SHEET 89 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DL: MM	REVISONS	12		RMC 6428-78-001	S-940
CK: SS		COUNTY		CONTROL SECTION	JOB HIGHWAY
DL: SH		GALVESTON		6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE		



RETRO-REFLECTIVE ADHESIVE SIGN ON INTERMEDIATE DOLPHIN (SQUARE)



RETRO-REFLECTIVE ADHESIVE SIGN ON INTERMEDIATE DOLPHIN (TRIANGLE)



NOTICE TO MOTORISTS ADHESIVE SIGN ON MONOPILE DOLPHIN




"SLOW BELL" SIGN ON OUTER DOLPHIN



"SLOW BELL" SIGN ON OUTER DOLPHIN

SCALE: NTS

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FERRY LANDING MAINTENANCE
SIGNS

SHEET 90 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-941
CK:1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DK:1	SH	GALVESTON		6428 78	001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-941.dgn
PLOT DATE: 4/6/2023 3:39:06 PM PLOTTED BY: SHII



SHORE POWER CABINET
FRONT EXTERIOR VIEW




SHORE POWER CABINET CONTROLS
FRONT INTERIOR VIEW



SHORE POWER CABINET CONTROLS
FRONT EXTERIOR VIEW

SCALE: NTS

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FERRY LANDING MAINTENANCE
SHORE POWER CABINET DETAILS
SHEET 1 OF 5

SHEET 91 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-950
CK: 1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN: 1	SH	GALVESTON		6428 78	001 SH87
CK: 1	RW	REV	DESCRIPTION	DATE	

SEE DETAIL A
SHT S-952

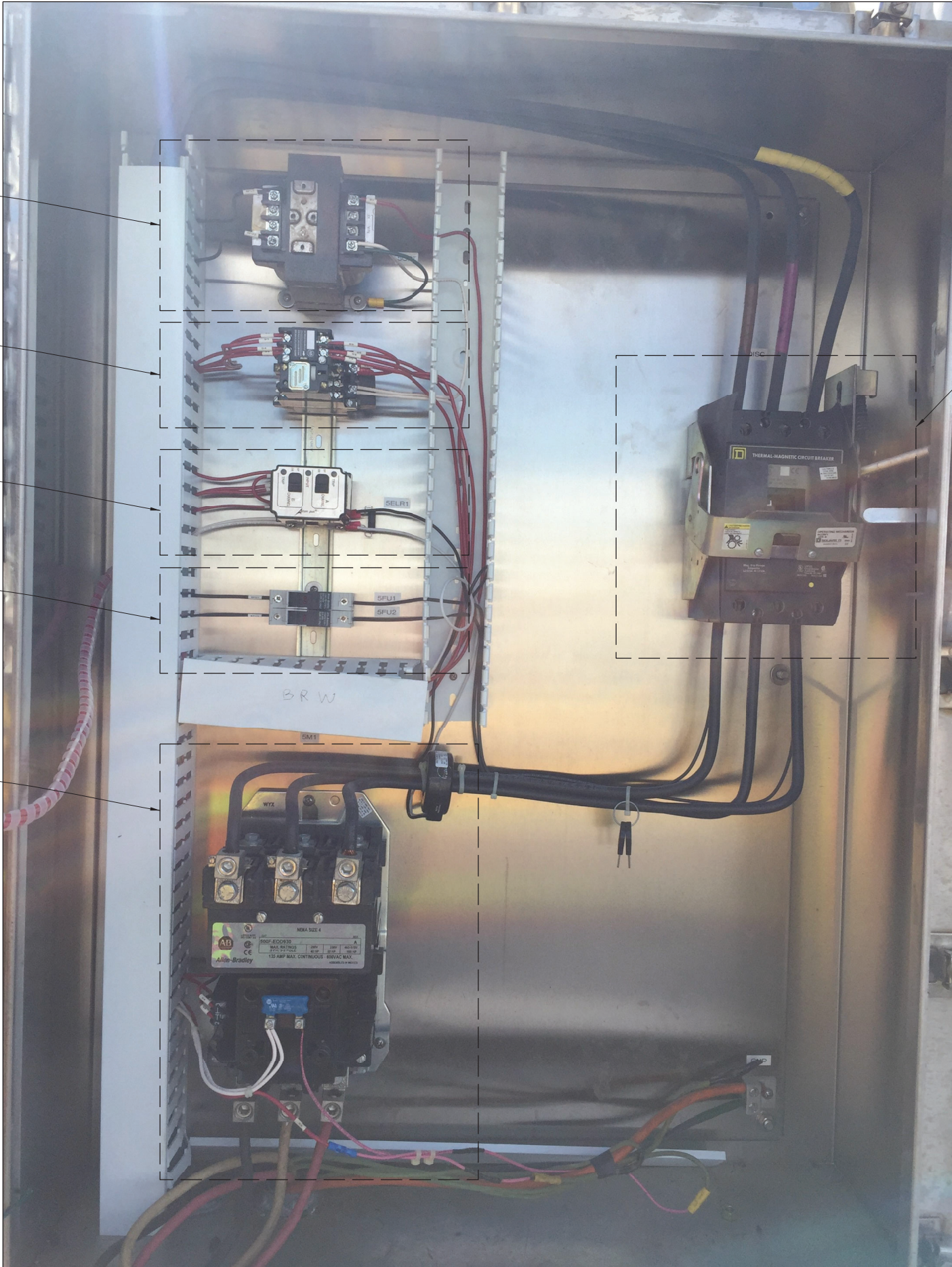
SEE DETAIL B
SHT S-952

SEE DETAIL C
SHT S-953

SEE DETAIL D
SHT S-953


SEE DETAIL E
SHT S-954

SEE DETAIL F
SHT S-954



SCALE: NTS

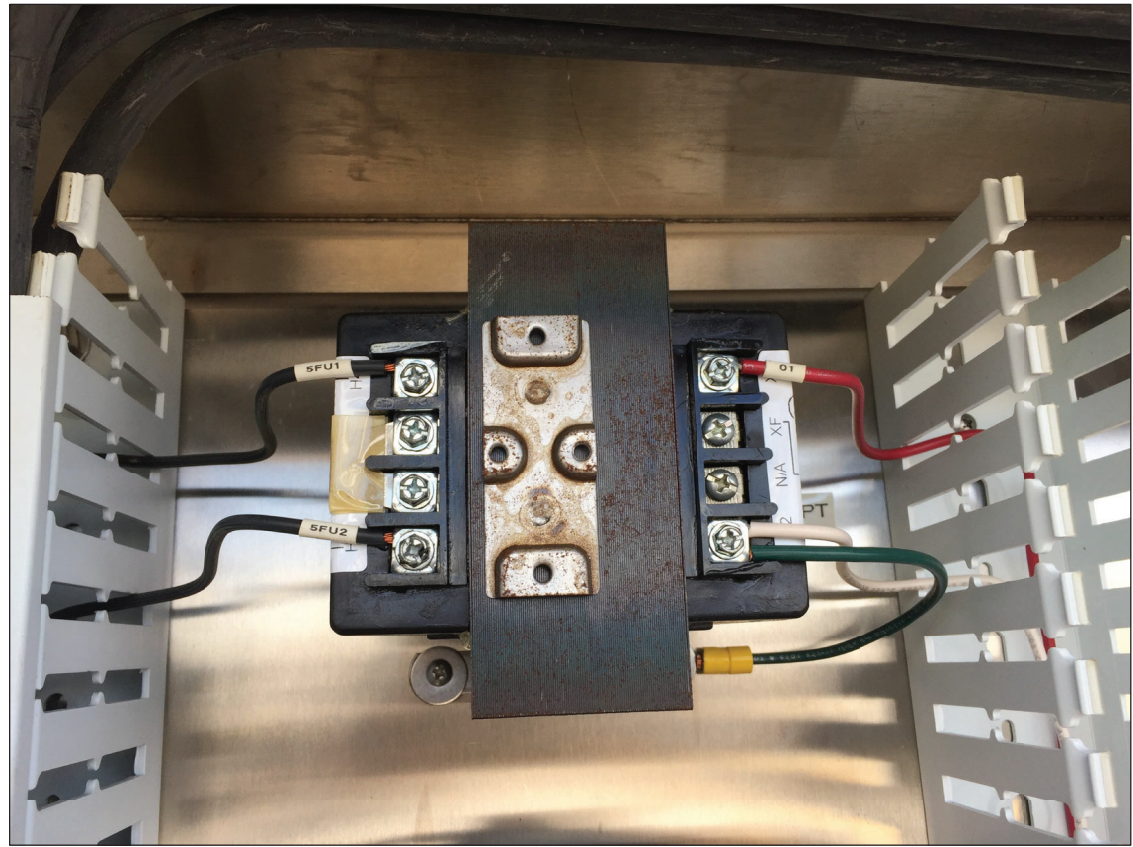
**SHORE POWER CABINET
INTERIOR ARRANGEMENT**

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FERRY LANDING MAINTENANCE
SHORE POWER CABINET DETAILS
SHEET 2 OF 5

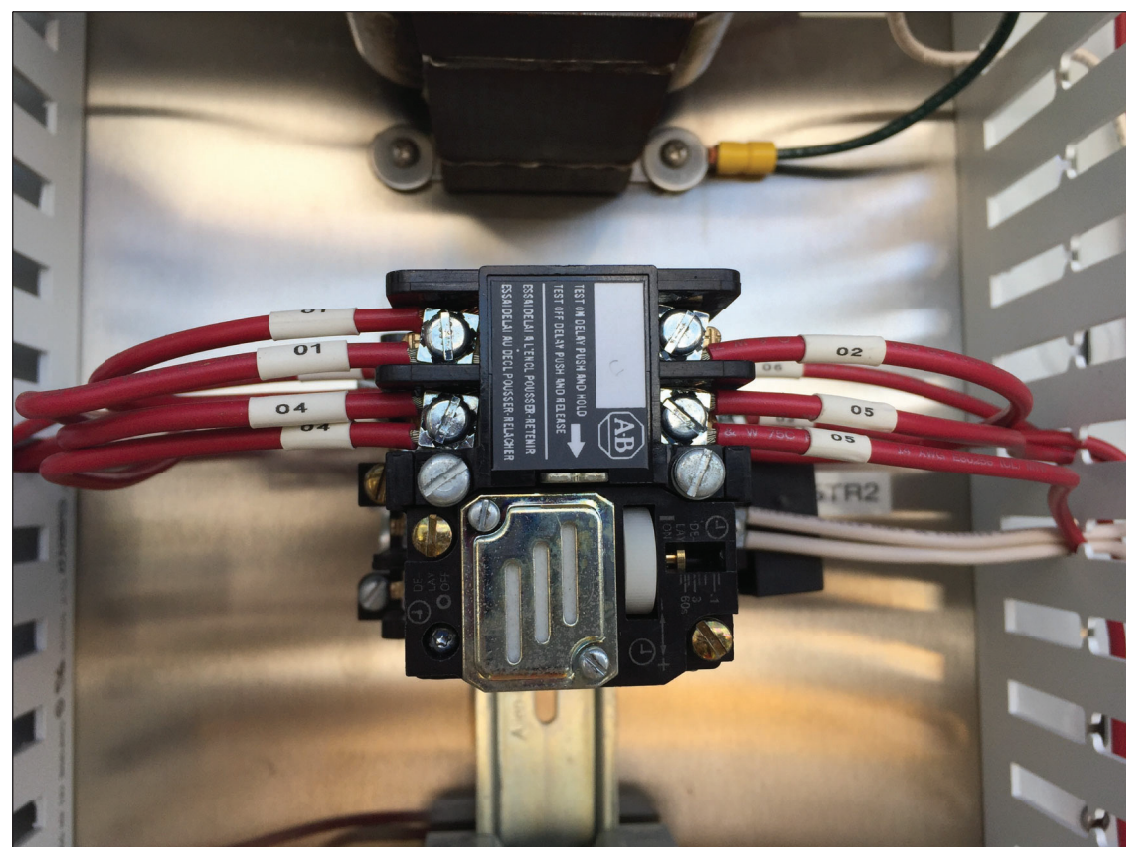
SHEET 92 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-951
CK: 1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
CK: 1	RW	GALVESTON	6428	78	001 SH87

DRAWING NAME: 949402-S-951.dgn
PLOT DATE: 4/6/2023 3:42:11 PM PLOTTED BY: SHILL




DETAIL A



DETAIL B

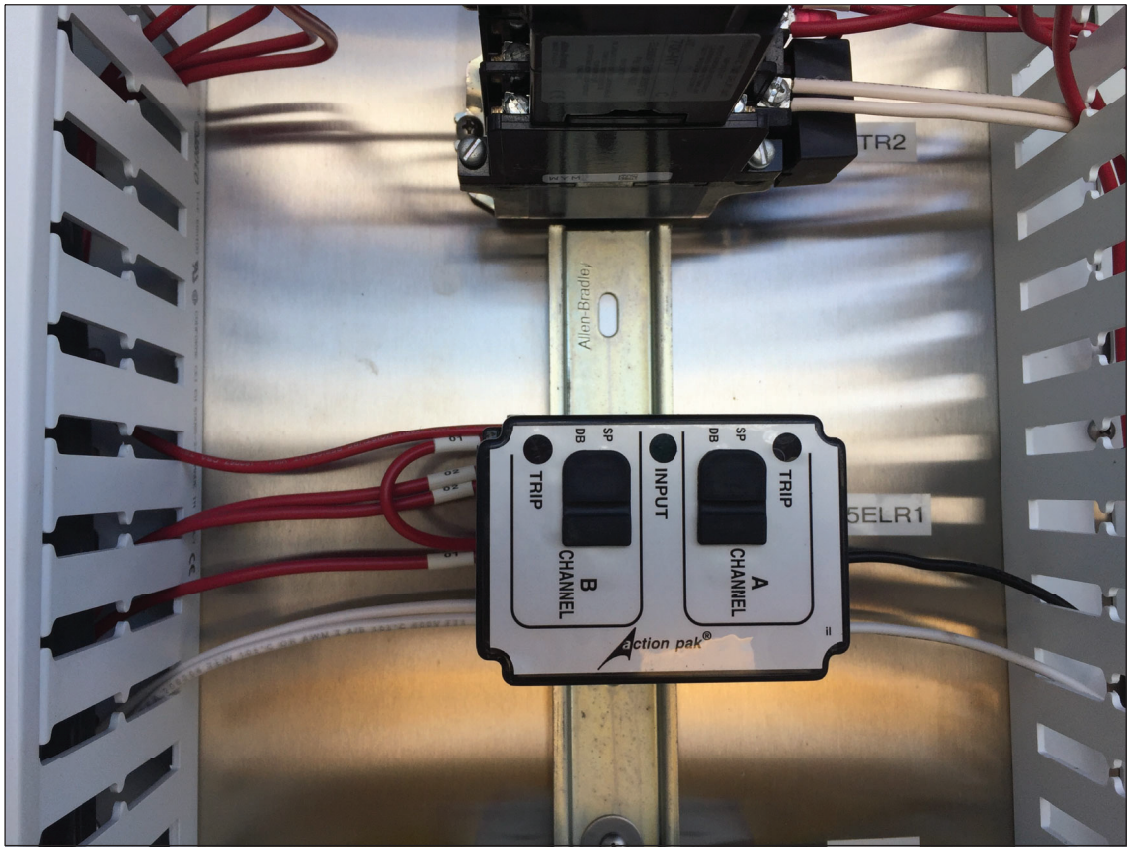
SCALE: NTS

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FERRY LANDING MAINTENANCE
SHORE POWER CABINET DETAILS
SHEET 3 OF 5

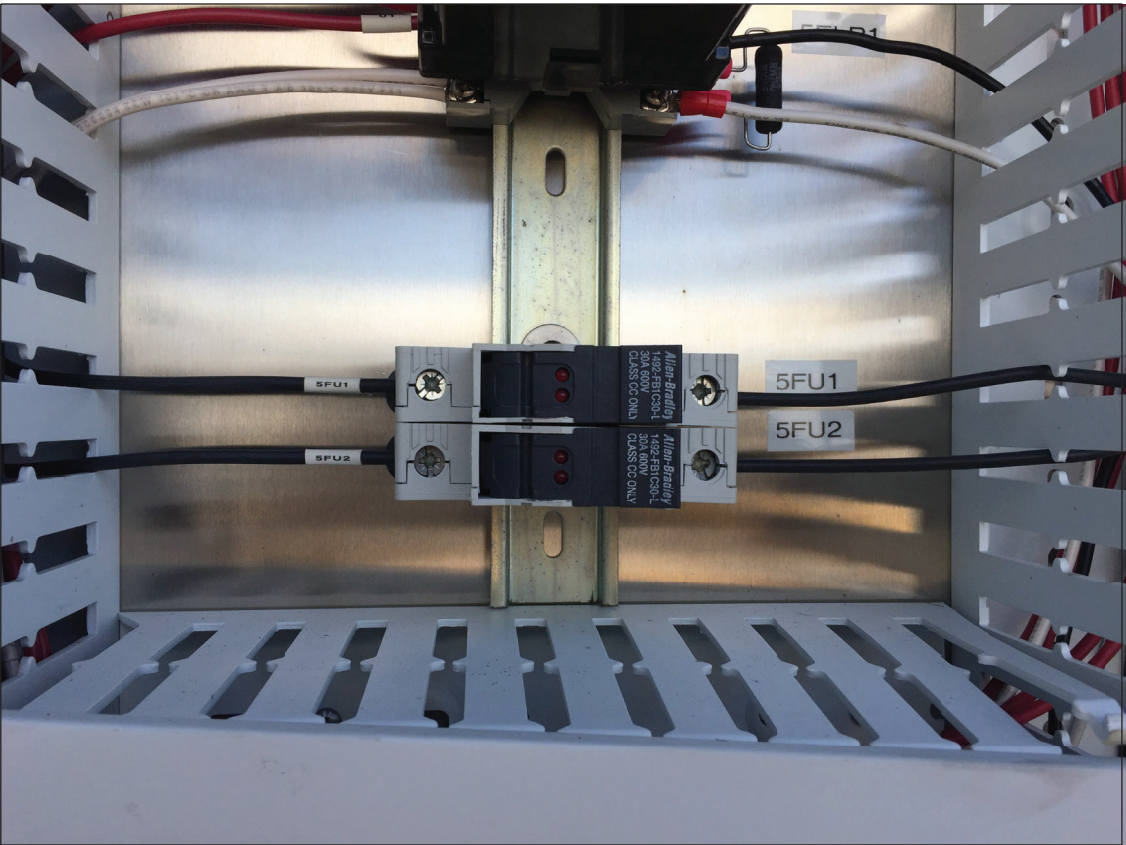
SHEET 93 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-952
CK:1	SS	COUNTY			HIGHWAY
CK:1	SH	GALVESTON			SH87
CK:1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-952.dgn
PLOT DATE: 4/6/2023 3:43:02 PM PLOTTED BY: SHIH




DETAIL C



DETAIL D

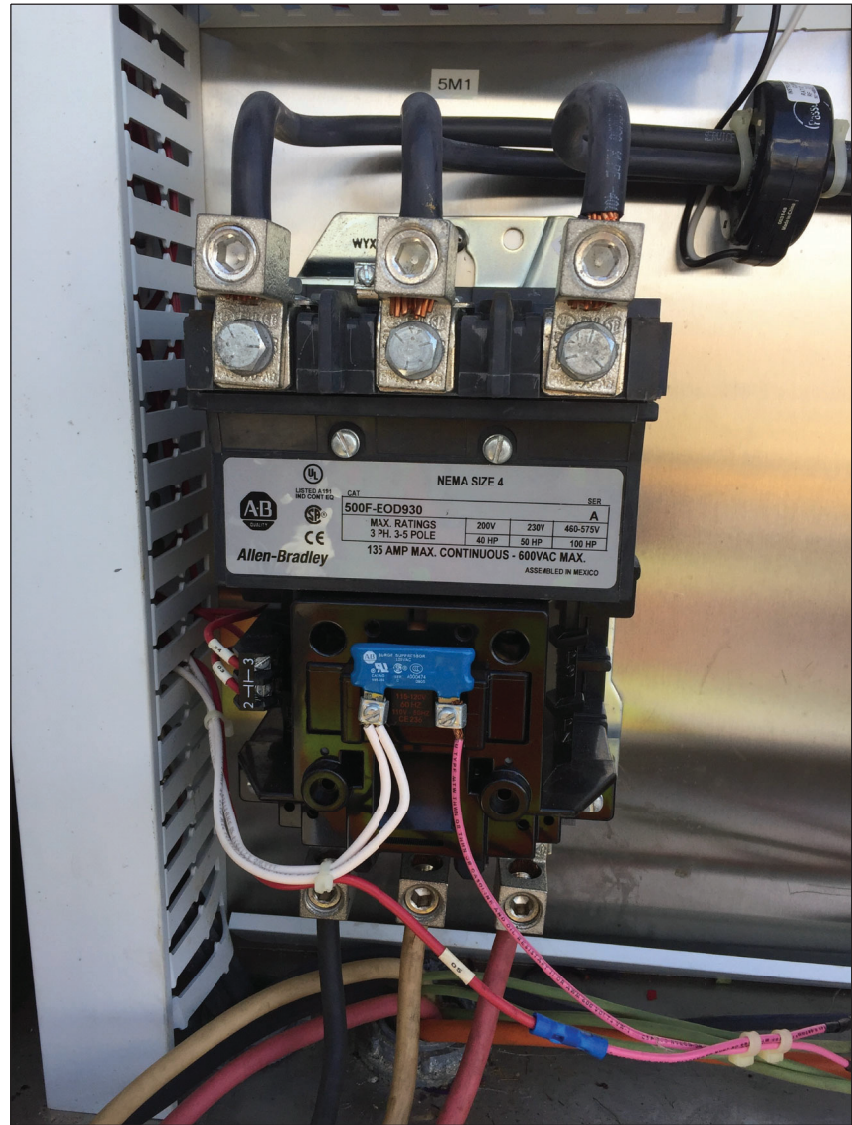
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DRAWING NAME: 949402-S-953.dgn
PLOT DATE: 4/6/2023 3:43:22 PM PLOTTED BY: SHIH

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FERRY LANDING MAINTENANCE
SHORE POWERS CABINET DETAILS
SHEET 4 OF 5

SHEET 94 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-953
CK:1	SS	REVISONS			
DR:1	SH	COUNTY	CONTROL SECTION	JOB	HIGHWAY
CK:1	RW	GALVESTON	6428 78	001	SH87



DETAIL E



DETAIL F

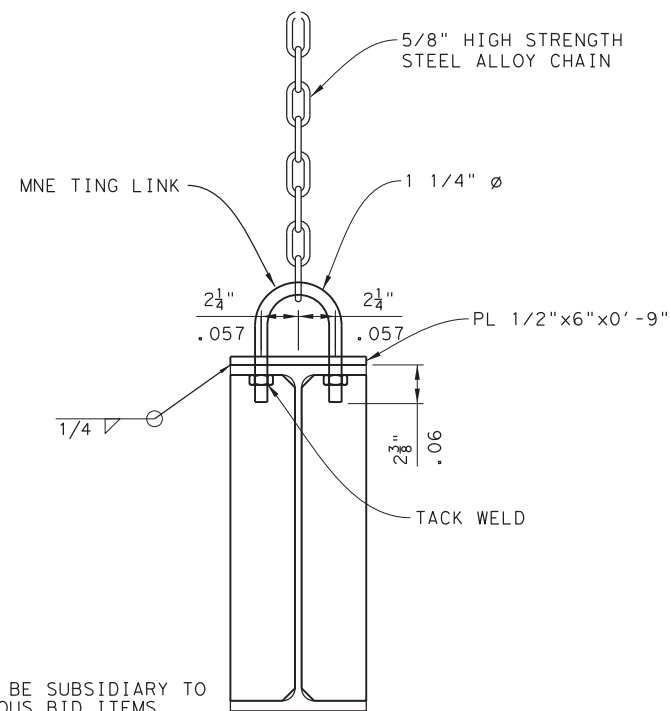
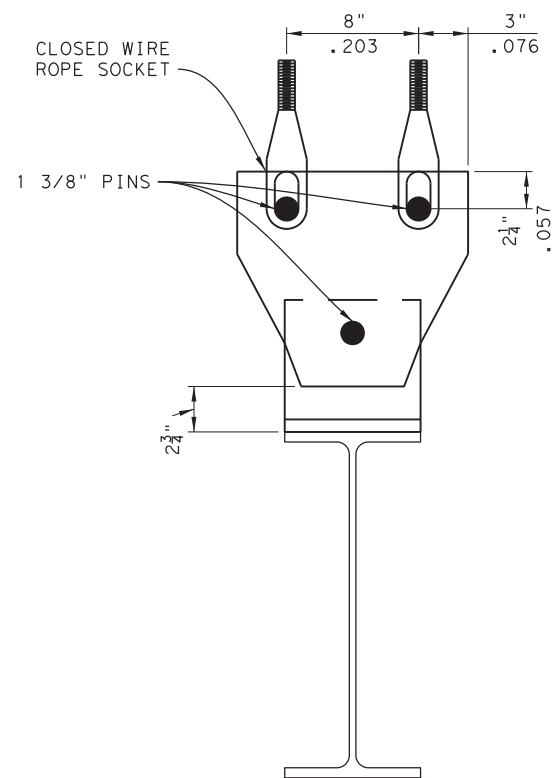
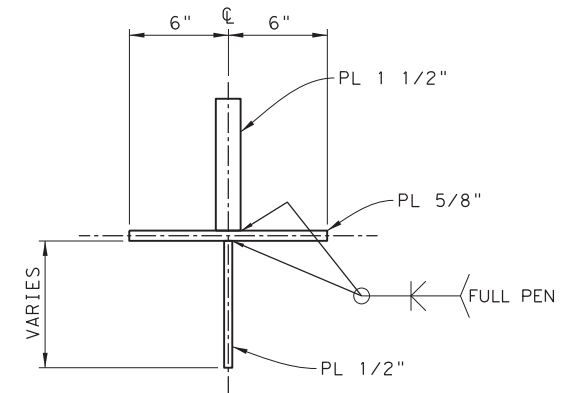
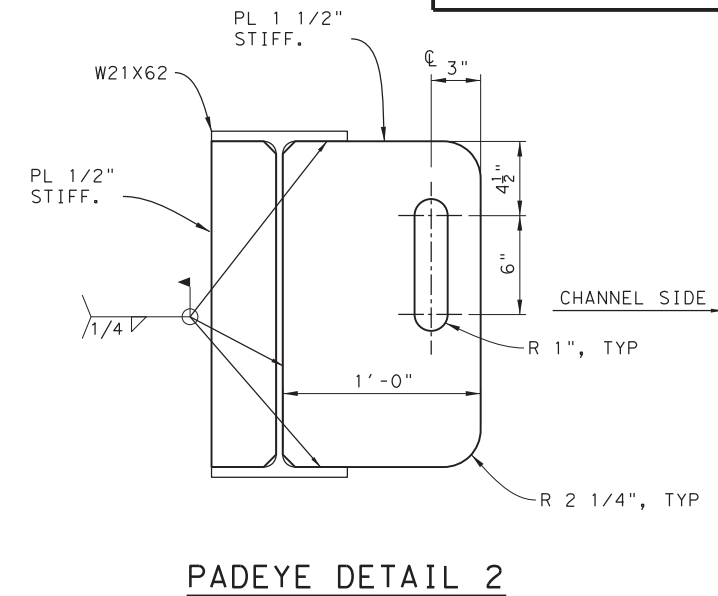
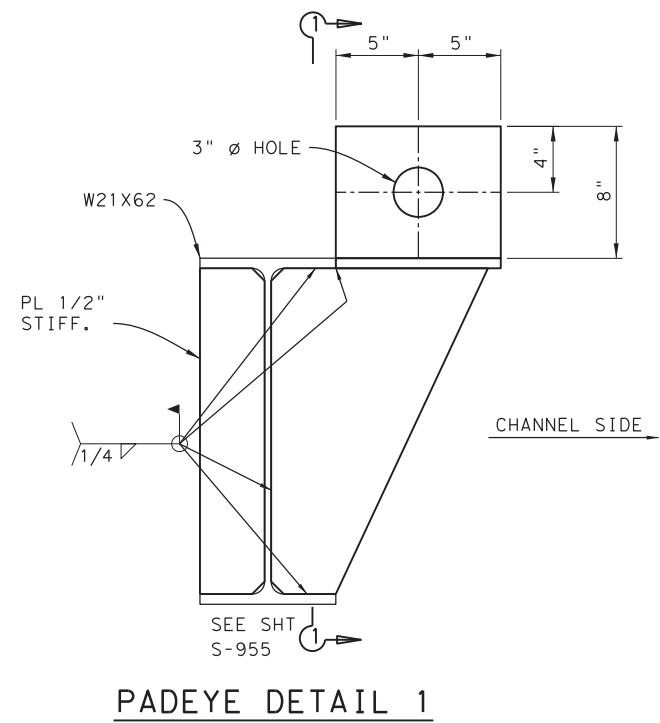
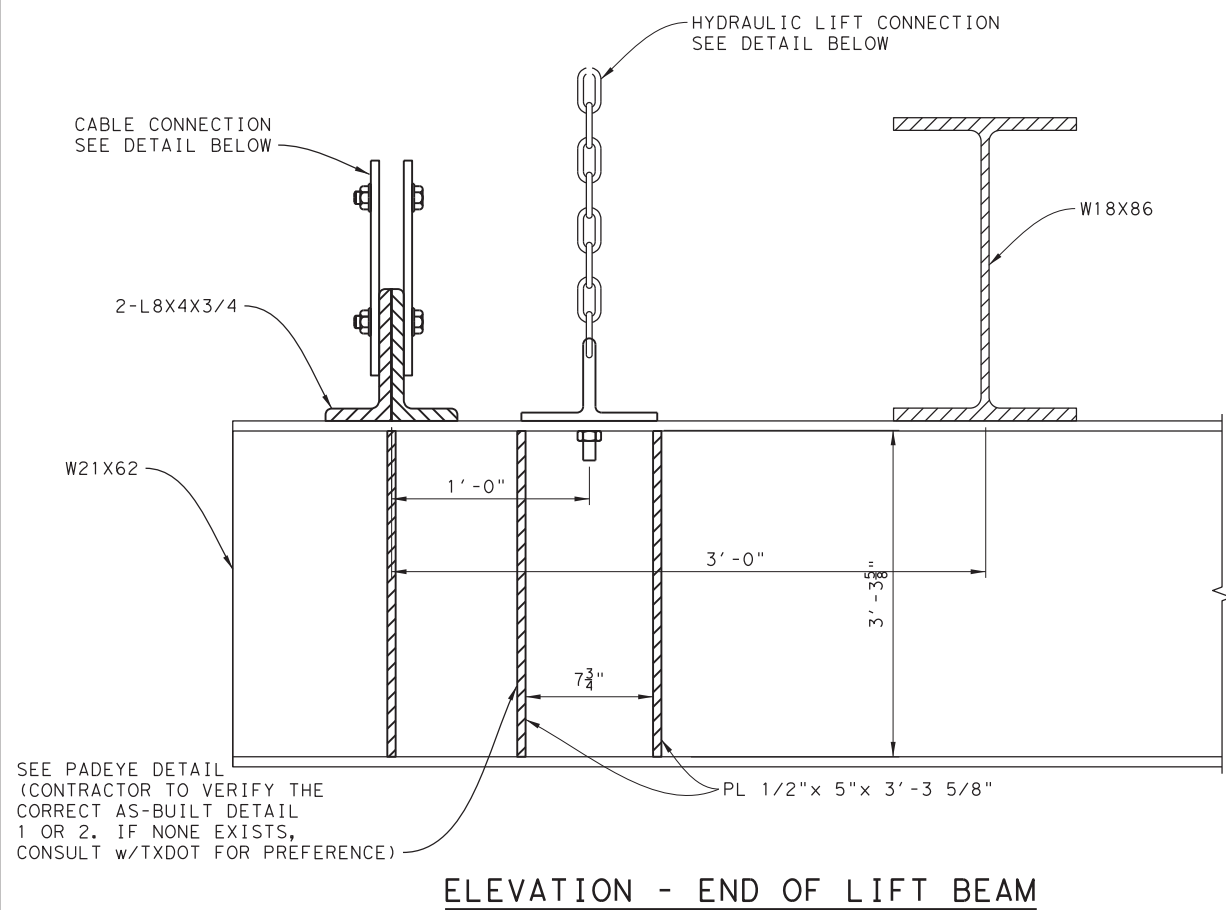
SCALE: NTS

DRAWING NAME: 949402-S-954.dgn
PLOT DATE: 4/6/2023 3:43:40 PM PLOTTED BY: SHIH

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FERRY LANDING MAINTENANCE
SHORE POWER CABINET DETAILS
SHEET 5 OF 5

SHEET 95 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-954
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	



*CHAIN TO BE SUBSIDIARY TO THE VARIOUS BID ITEMS.

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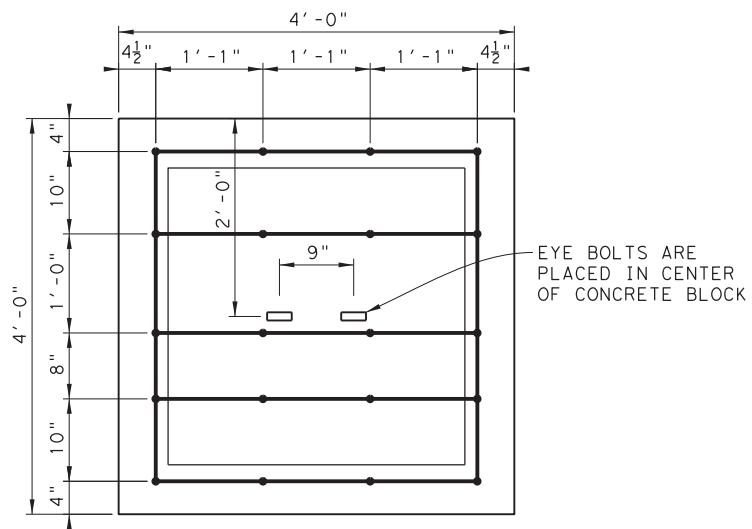
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
AS-BUILT
CONNECTION DETAILS FOR
LIFT BEAM END

SHEET 96 OF 148

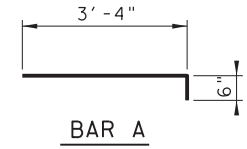
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-955
DN: 1 MM	REVISIONS			
CK: 1 SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 SH		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

SCALE: NTS

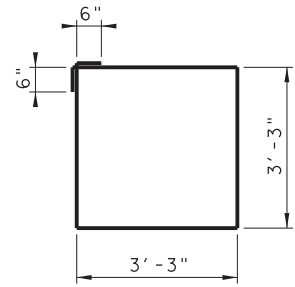
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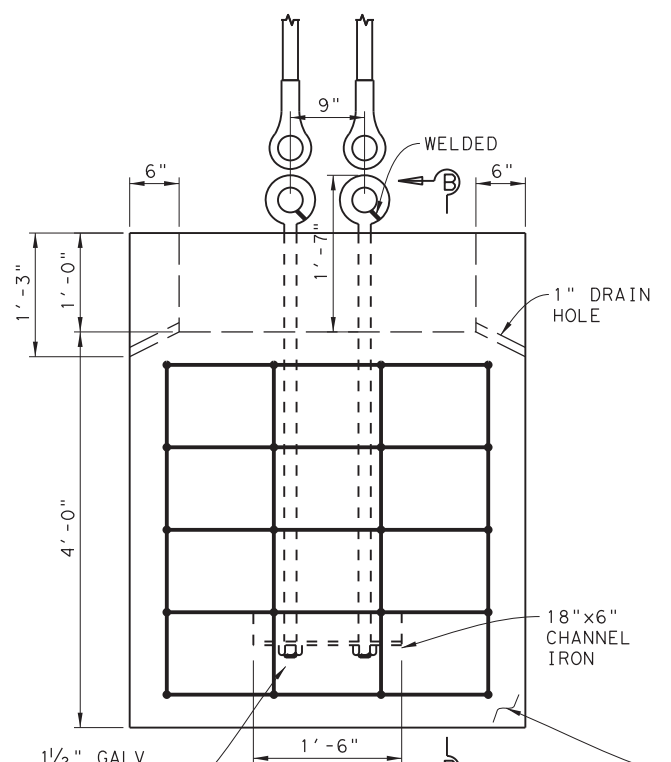
PLAN ON 4' x 4' x 5' CONCRETE BLOCK
SCALE: 1"=1'-0"



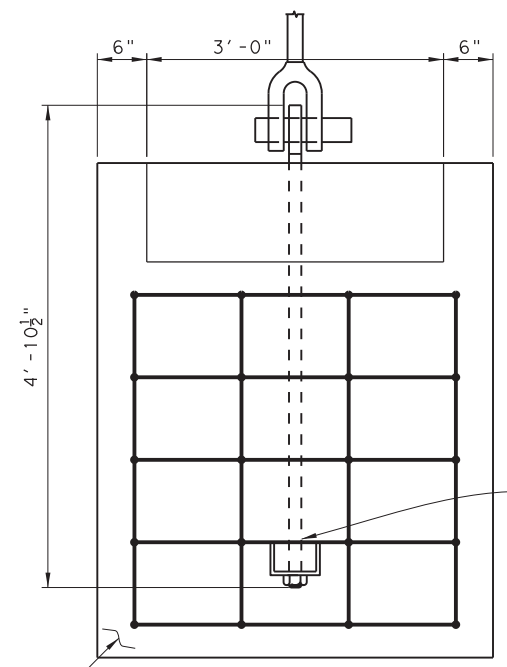
BAR A



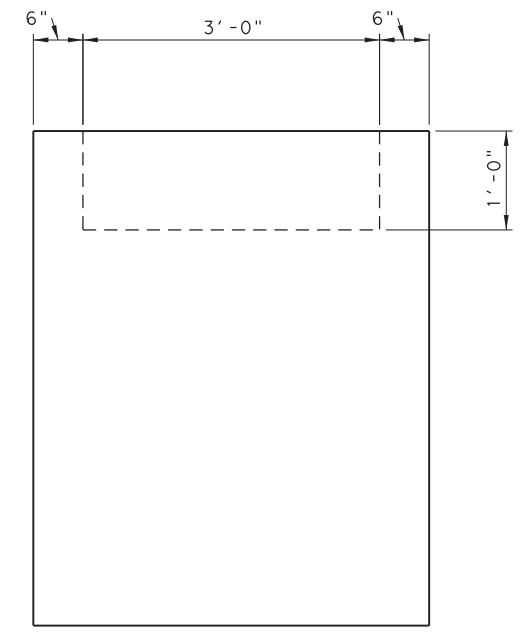
BAR B



ELEVATION
SCALE: 1"=1'-0"



SECTION B-B
SCALE: 1"=1'-0"



SECTION C-C
SCALE: 1"=1'-0"

CLASS "C" CONCRETE (MISC)

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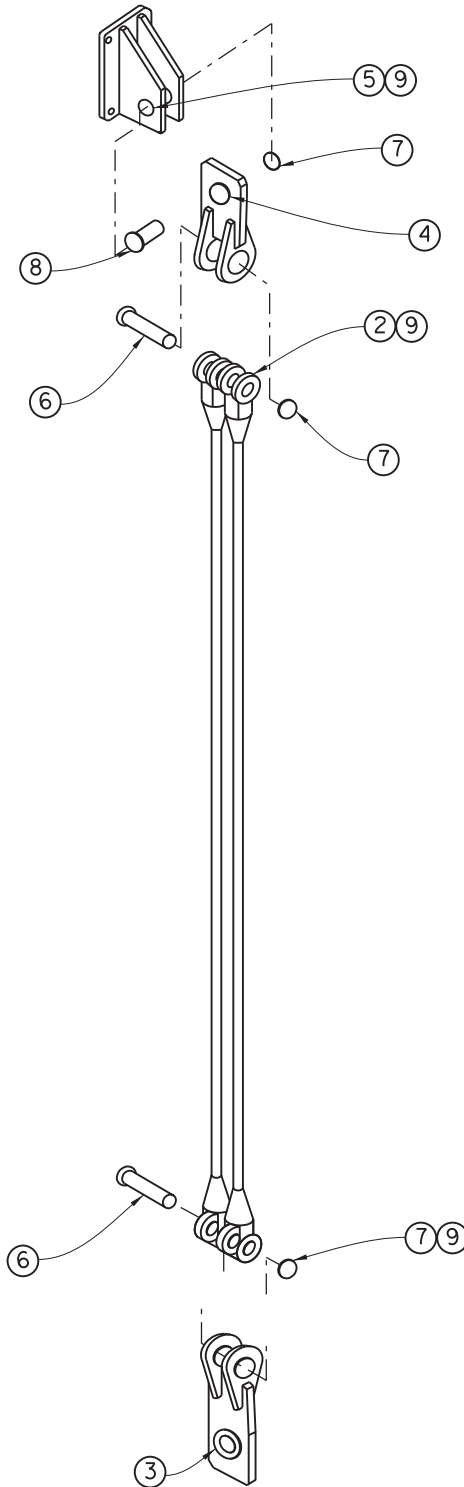


FERRY LANDING MAINTENANCE

AS-BUILT HOIST TOWER DETAILS

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-956
DN: MM	REVISIONS			
CK: SS				
DR: SH				
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-956.dgn PLOT DATE: 4/6/2023 3:44:04 PM PLOTTED BY: SHILL




NOTES:

1. All Materials And Work Shall Be In Accordance With The Requirements Of The Texas Department Of Transportation Standard Specifications For Construction Of Highways Street and Bridges Dated 2009 And As Amended By The Special Provisions And Special Specifications.

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SCALE: 1:24

6	9		SHCS	1/2" - 13 X 1.38"		
1	8	1124A136 6	PIN			
3	7	1124A136 2	CAP			
2	6	1124A136 3	PIN			
1	5	1124A137-1	UPPER CW BEAM CLEVIS ASSY	UPPER CW BEAM CLEVIS ASSY		
1	4	1124A135-1	UPPER DRAG LINK CLEVIS ASSY	UPPER DRAG LINK CLEVIS ASSY		
1	3	1124A134-1	LOWER DRAG LINK CLEVIS ASSY	LOWER DRAG LINK CLEVIS ASSY		
2	2	1124A133-1	WIRE ROPE ASSY	WIRE ROPE ASSY		
-	1	1124A132-1	DRAG LINK ASSY			
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT



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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
DRAG LINK ASSY

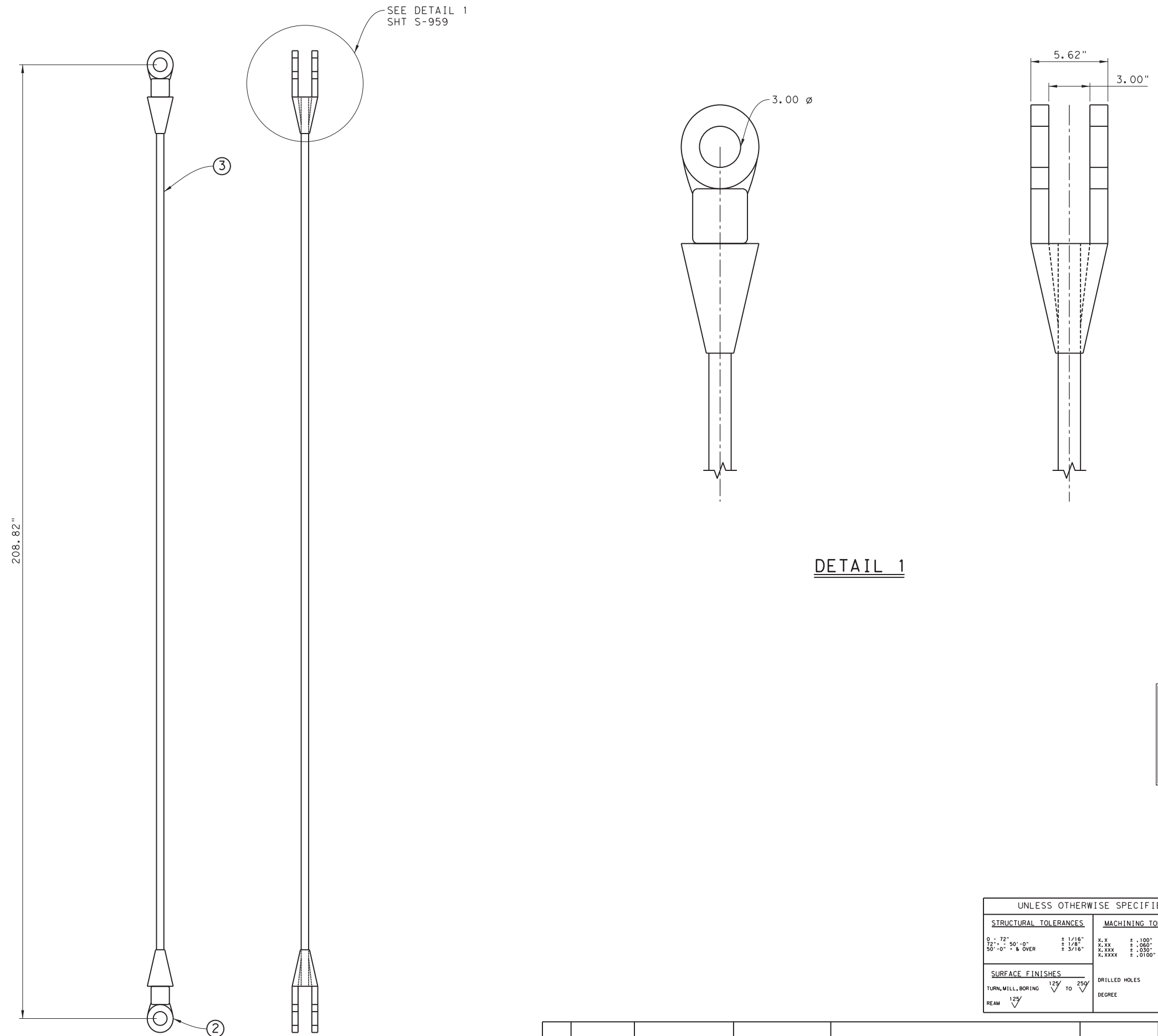
SHEET 98 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN: 1 MM	12		RMC 6428-78-001	S-958
CK: 1 SS	COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH	GALVESTON		6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0' - 72"	± 1/16"	X, X	± .100" (2.54 MM)
72' - 50' - 0"	± 1/8"	X, XX	± .060" (1.52 MM)
50' - 0" * & OVER	± 3/16"	X, XXX	± .030" (0.76 MM)
		X, XXXX	± .0100" (0.254 MM)
SURFACE FINISHES		DRILLED HOLES	+1/32"
TURN, MILL, BORING	125/ TO 250/		-0
REAM	125/	DEGREE	±1/2"

DRAWING NAME: 949402-S-958.dgn PLOT DATE: 4/6/2023 3:44:10 PM PLOTTED BY: SHIH



NOTES:

1. Wire Rope Design Specification per AASHTO LRFD Moveable Highway Bridge Design Specifications 1st Edition 2000 Section 655 Operating Ropes.
2. All Sockets Used with Wire Ropes should Conform to the Requirements of AASHTO and Federal Specifications RG S-55C Latest Revision.
3. One Wire Rope Assembly, Built from the same Rope Lot, S-all be Tested to Destruction to verify unknown Tensile Breaking Resistances.

DETAIL 1

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SCALE: 1:12

SCALE: 1:4

UNLESS OTHERWISE SPECIFIED:			
STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0 - .72"	± 1/16"	X, X	± .100" (±2.54 MM)
.72" - .50'-0"	± 1/8"	X, XX	± .060" (±1.52 MM)
.50'-0" - & OVER	± 3/16"	X, XXX	± .050" (±1.27 MM)
		X, XXXX	± .0100" (±0.254 MM)
SURFACE FINISHES		DRILLED HOLES	
TURN, MILL, BORING	125/ TO 250/	DEGREE	-1/32"
REAM	125/	DEGREE	-0
			±1/2"

1124A133-1 WIRE ROPE ASSY

QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT

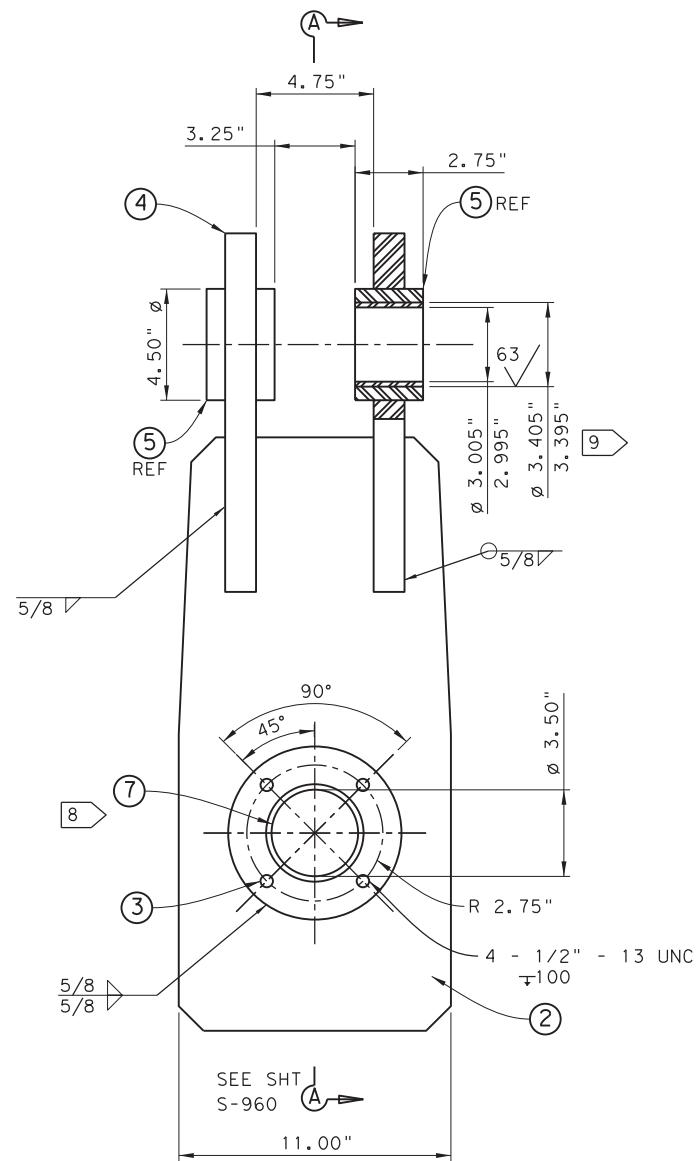


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FERRY LANDING MAINTENANCE
WIRE ROPE ASSY

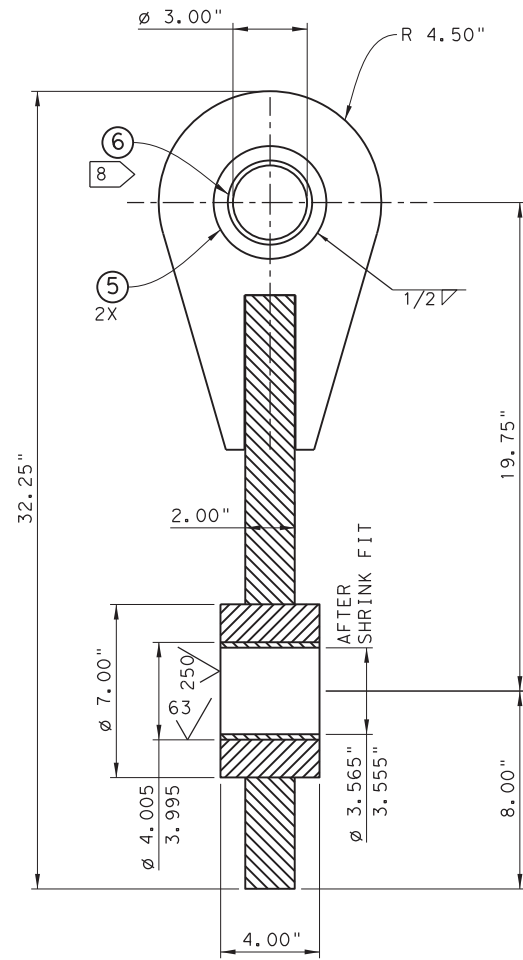
SHEET 99 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-959
CK: 1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN: 1	SH	GALVESTON		6428 78	001 SH87
CK: 1	RW	REV	DESCRIPTION	DATE	

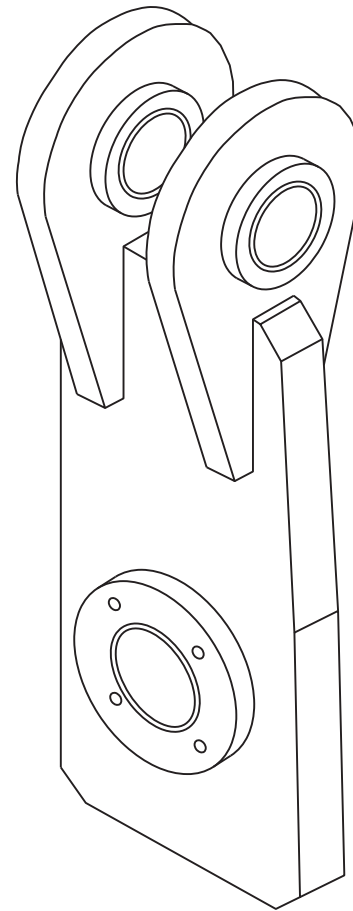
DRAWING NAME: 949402-S-959.dgn
 PLOT DATE: 4/6/2023 3:44:15 PM PLOTTED BY: SHIH



ELEVATION VIEW



SECTION A
SCALE: 1:4



NOTES:

1. Fabrication and Erection Shall be in Accordance With Item 441 "Steel Structures" of the Standard Specification.
2. All Rolled Sections, Plates, and Bars of the Lower Drag Link Clevis Shall Have Charpy V-Notch Impact Testing in Accordance With Supplementary Requirements 584 of ASTM A709 For Temperature Zone 1.
3. Welding Shall Be In Accordance With AWS01.5 Bridge Welding Code As Amended By Item 441 "Steel Structures" of The Standard Specifications.
4. Entire Drag Link Clevis Assy Shall be Coated With Thermal Sprayed Aluminum (TSA) Coating In Accordance With Special Specification (Marine Structures) (Section 09970)
TSA Coating Shall Be Applied To All Surfaces Of The
5. Assembly After Fabrication. Insure All Faying Surfaces Are Coated Per Special Specifications (Section 09970)
6. Mask All Through Bearing Holes Prior To TSA Coating To Insure No Overspray On Interior Bearing Surfaces.
7. Mt Inspect All Fallet Welds Per AWS D1.5 Section 628.
8. Bushings Are Intereference Fit Per Orsot Installation Instructions Preferred Method Is To Freeze Fit With Liquid Nitrogen.
9. Line Bore Through Item 5 After Welding.
10. Permissable To Cut ASTM A709 Hub Components From Plate Or Bar If Required.

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.


1124A134 1 LOWER DRAG LINK CLEVIS ASSY
SCALE: 1:4

SCALE: 1:4

DRAWING NAME: 949402-S-960.dgn PLOT DATE: 4/6/2023 3:44:23 PM PLOTTED BY: SHILL

UNLESS OTHERWISE SPECIFIED:	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0' - 72" ± 1/16"	X, X ± .100" (2.54 MM)
72' - 50' - 0" ± 1/8"	X, XX ± .060" (1.52 MM)
50' - 0" ± 3/16"	X, XXX ± .030" (0.76 MM)
	X, XXXX ± .0100" (0.254 MM)
SURFACE FINISHES	
TURN, MILL, BORING 125/10 250/10	DRILLED HOLES +1/32"
REAM 125/10	DEGREE ±1/2"

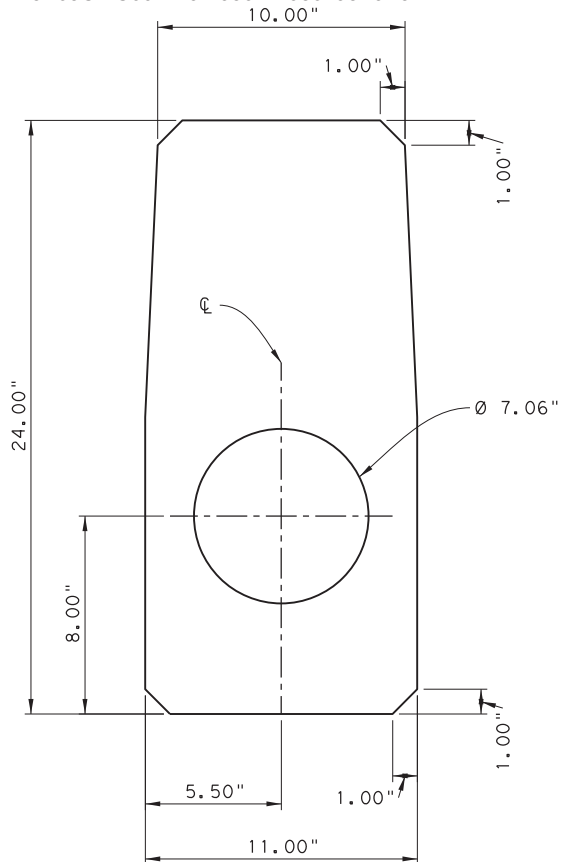
1	7	1124A136-4	BEARING			
2	6	1124A136-3	BEARING			
2	5	1124A134-5	HUB	4.5" O.D. x 3" I.D. x 2.75", ASTM A709, GRADE 50		
2	4	1124A134-4	EAR	PL 1.25" x 9" x 14.5", ASTM A709, GRADE 50		
1	3	1124A134-3	HUB	7" O.D. x 3" I.D. x 4.00", ASTM A709, GRADE 50		
1	2	1124A134-2	PLATE	PL 2" x 11" x 24", ASTM A709, GRADE 50		
-	1	1124A134-1	LOWER DRAG LINK CLEVIS ASSY			
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT

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FERRY LANDING MAINTENANCE
LOWER DRAG LINK CLEVIS ASSY
OVERVIEW AND WELD DETAILS

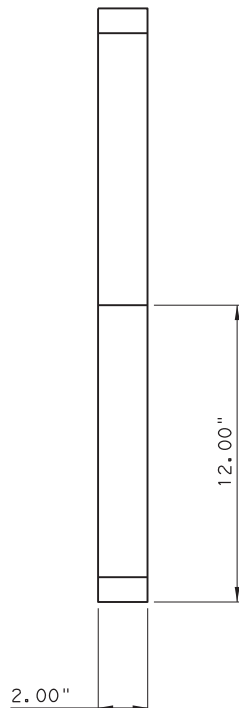
SHEET 100 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN: 1 MM	12		RMC 6428-78-001	S-960
CK: 1 SS	COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
DN: 1 SH	GALVESTON		6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

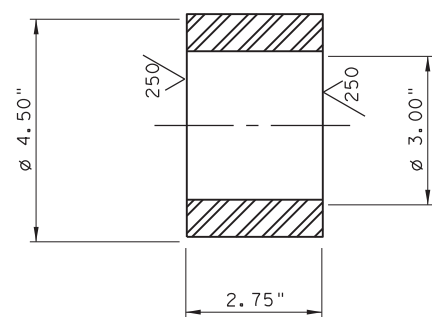
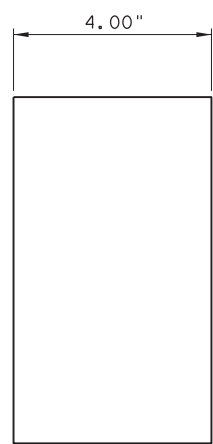
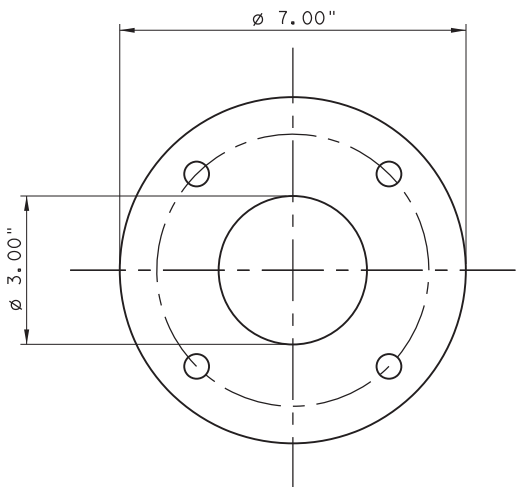
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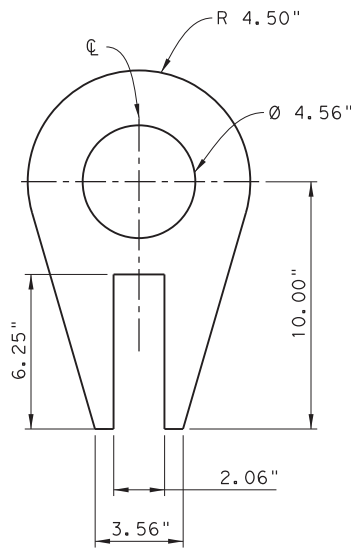
DETAIL 2
SCALE: 1:4



DETAIL 3
SCALE: 1:2



DETAIL 5
SCALE: 1:2




DETAIL 4
SCALE: 1:4

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SCALE: 1:4

DRAWING NAME: 949402-S-961.dgn PLOT DATE: 4/6/2023 3:44:28 PM PLOTTED BY: SHIH

UNLESS OTHERWISE SPECIFIED:	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0' - 72" ± 1/16"	X, X ± .100" (2.54 MM)
72" - 50' - 0" ± 1/8"	X, XX ± .060" (1.52 MM)
50' - 0" & OVER ± 3/16"	X, XXX ± .030" (0.76 MM)
	X, XXXX ± .0100" (0.254 MM)
SURFACE FINISHES	
TURN, MILL, BORING 125° TO 250°	DRILLED HOLES +1/32"
REAM 125°	DEGREE ±1/2"



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FERRY LANDING MAINTENANCE

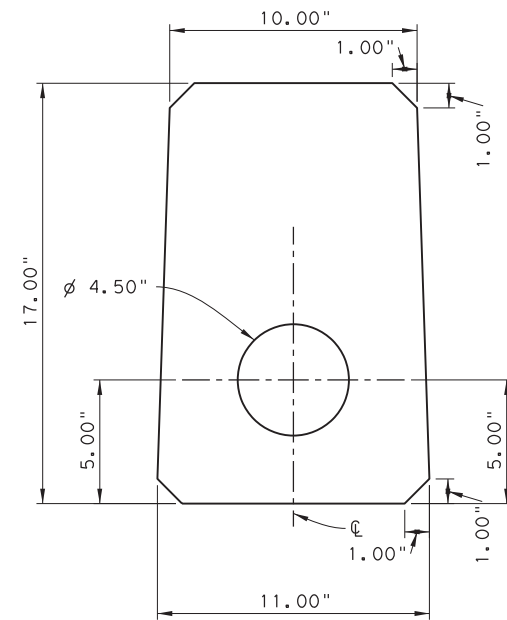
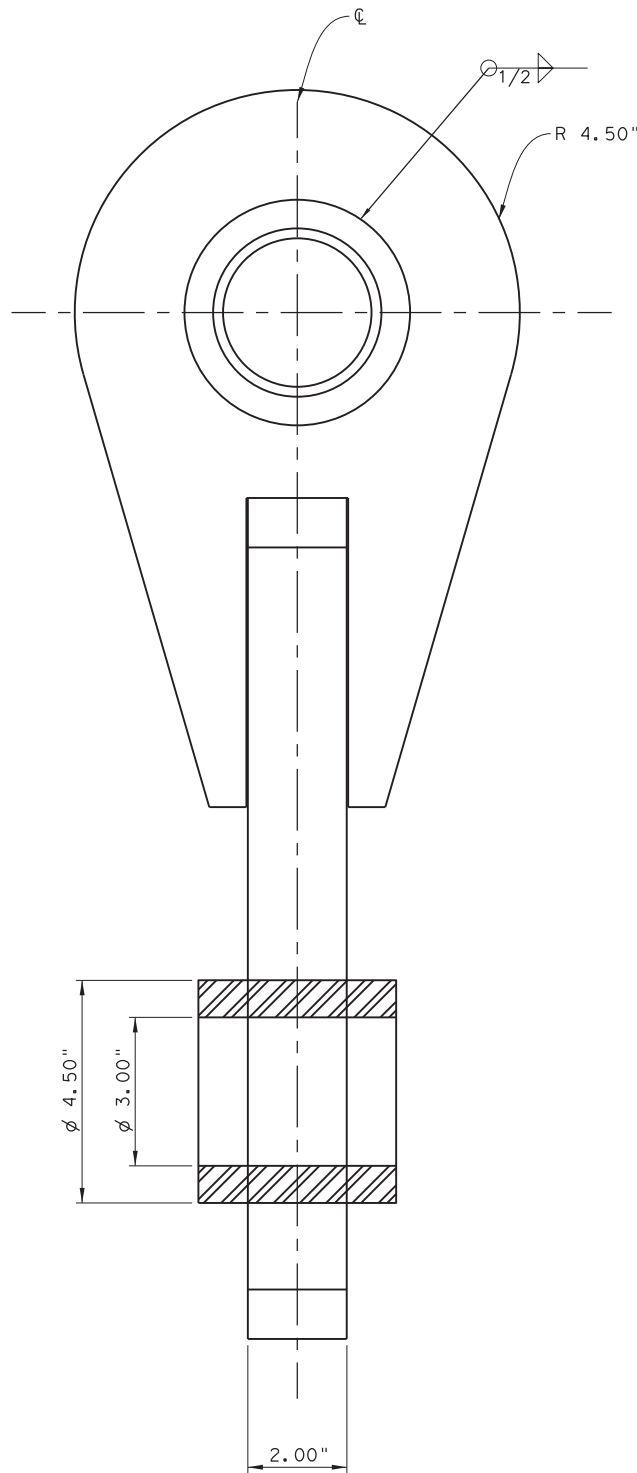
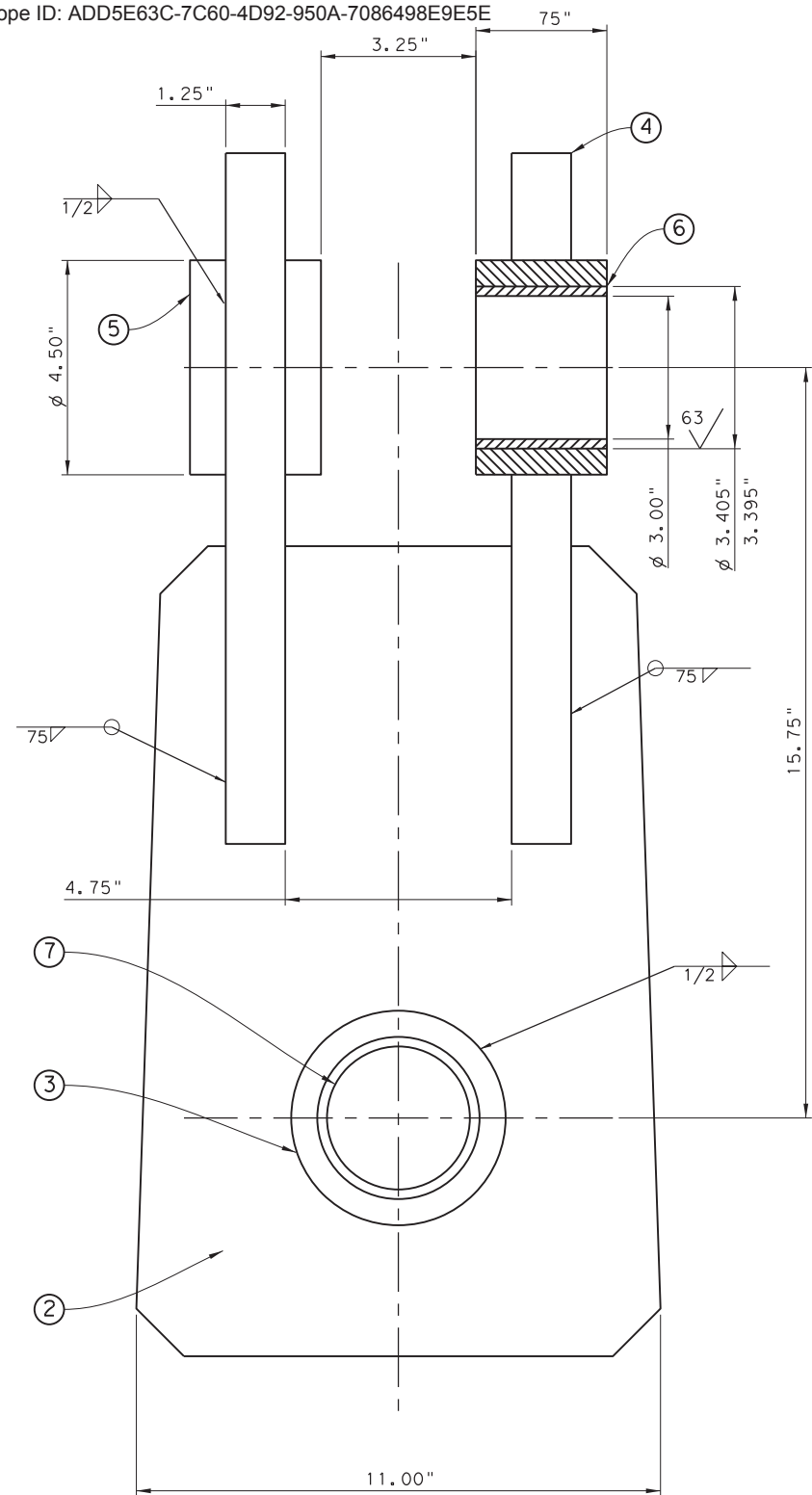
LOWER DRAG LINK CLEVIS ASSY

PART DETAILS

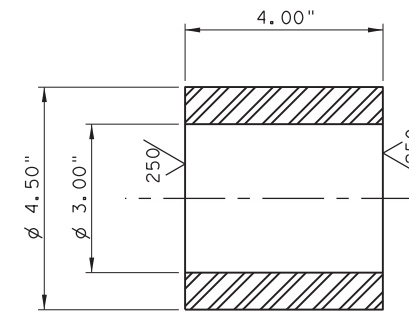
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
		12		RMC 6428-78-001	S-961
DN:1 MM	REVISIONS				
CK:1 SS					
DR:1 SH					
CK:1 RW	REV	DESCRIPTION	DATE	COUNTY	CONTROL SECTION JOB HIGHWAY
				GALVESTON	6428 78 001 SH87

SHEET 101 OF 48

3:44:28 PM 4/6/2023



DETAIL 2



DETAIL 3

NOTES:

1. Fabrication And Erection Shall Be In Accordance With Item 441 "Steel Structures" Of The Standard Specifications.
2. All Rolled Sections, Plates, and bars Of The Lower Drag Link Clevis Shall Have Charpt V Notch Impact Testing In Accordance With Supplementary Requirements 584 of ASTM A709 For Temperature Zone 1.
3. Welding Shall Be In Accordance With AWS Di 5 Bridge Welding Code As Amended By Item 441 OSTEE Structures Of The Standard Specifications.
4. Entire Drag Link Clevis Assy Shall Be Coated With Thermal Sprayed Aluminum (TSA) Coating In Accordance With special Specification (Marine Structures) (Section 09970)
5. TSA Coating Shall Be Applied To All Surfaces Of The Assembly After Fabrication To Insure All Fraying Surfaces Are Coated Per Special Specifications(Section 09970)
6. Mask All Through Bearing Holes Prior To TSA Coating To Insure No Overspray On Interior Bearing Surfaces.
7. MT Inspect All Fillet Welds Per AWS D1.5 Section 626.
8. Bushings Are Interference Fit Per Orkot Installation Instructions. Preferred Method Is To Freeze Fit With Liquid Nitrogen.
9. JNE Bore Through Items After Welding.
10. Permissible To Cut ASTM A709 H & Components From Plate Or Bar I Required.

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SCALE: 1:2

1124A135 1 UPPER DRAG LINK CLEVIS ASS

QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT
1	7	1124A136 6	BEARING			
2	6	1124A136 3	BEARING			
2	5	1124A134 5	HUB	FB OD 4.5" x ID 3.40" x 2.75", ASTM A709, GRADE 50		
2	4	1124A134 4	EAR	PL 1.25" x 9.00" x 14.50", ASTM A709, GRADE 50		
1	3	1124A135-3	HUB	4 50" OD x 3.00" ID x 4.00", ASTM A709, GRADE 50		
1	2	1124A135-2	PLATE	PL 2" x 11" x 17", ASTM A709, GRADE 50		
-	1	1124A135	UPPER DRAG LINK CLEVIS ASSY			

UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0'-72"	± 1/16"	X, X	± .100" (2.54 MM)
72"-50'-0"	± 1/8"	X, XX	± .060" (1.52 MM)
50'-0" & OVER	± 3/16"	X, XXX	± .030" (0.76 MM)
		X, XXXX	± .0100" (0.254 MM)

SURFACE FINISHES		DRILLED HOLES	
TURN, MILL, BORING	125/250	DRILLED HOLES	+1/32"
REAM	125/250	DEGREE	±1/2"

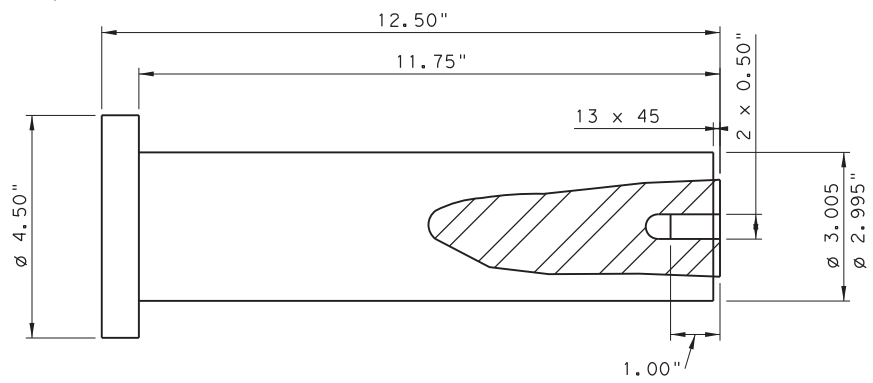
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
UPPER DRAG LINK CLEVIS ASSY
OVERVIEW AND WELD DETAILS

SHEET 102 OF 148

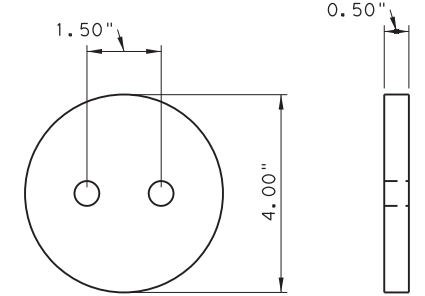
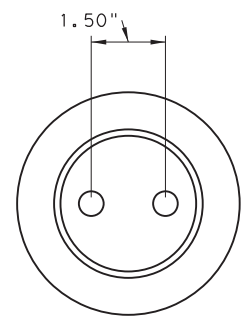
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	12		RMC 6428-78-001	S-962
REV. 1	REV. 2	REV. 3	REV. 4	REV. 5
CK, 1	SS	DR, 1	SH	CK, 1
REV	DESCRIPTION	DATE	COUNTY:	CONTROL SECTION JOB HIGHWAY
			GALVESTON	6428 78 001 SH87

3:44:36 PM 4/6/2023

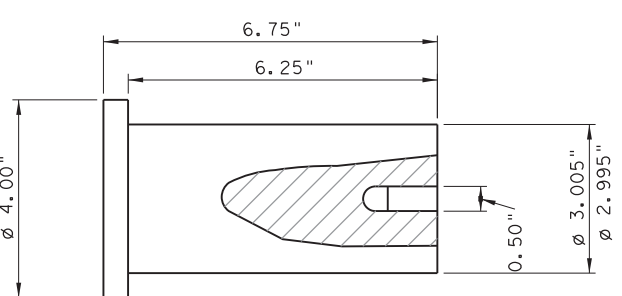
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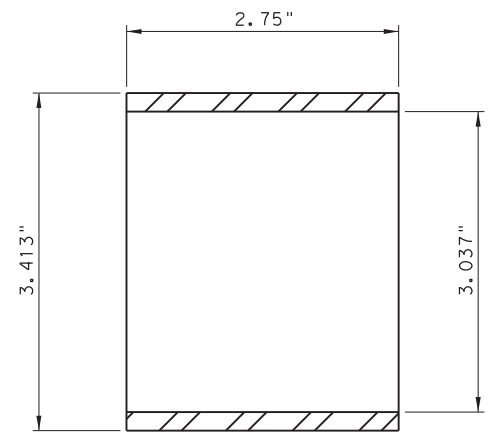
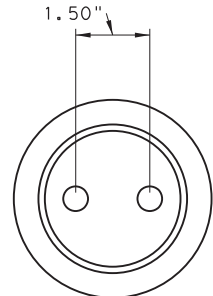
DETAIL 1
SCALE: 1:2



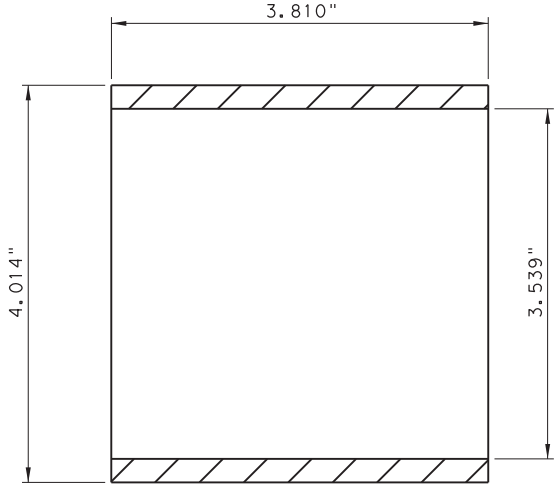
DETAIL 2
SCALE: 1:2



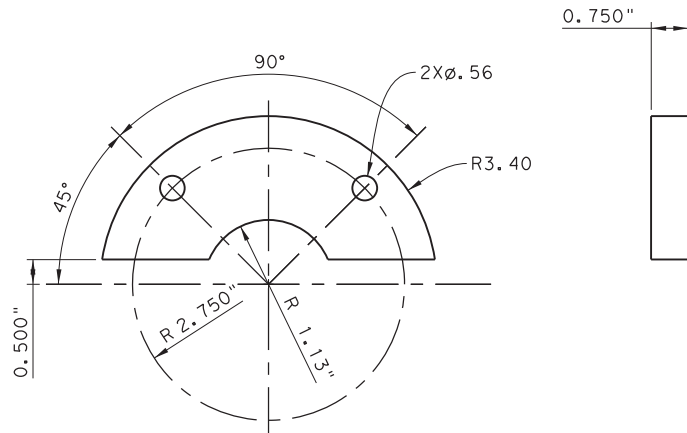
DETAIL 5
SCALE: 1:2



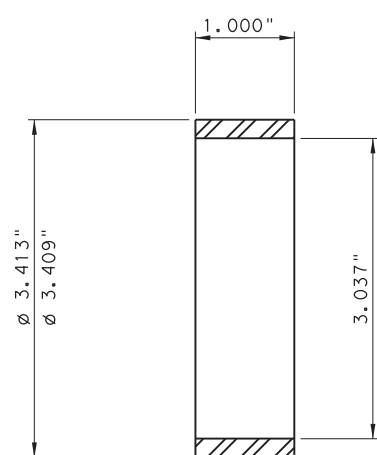
DETAIL 3
SCALE: 1:1



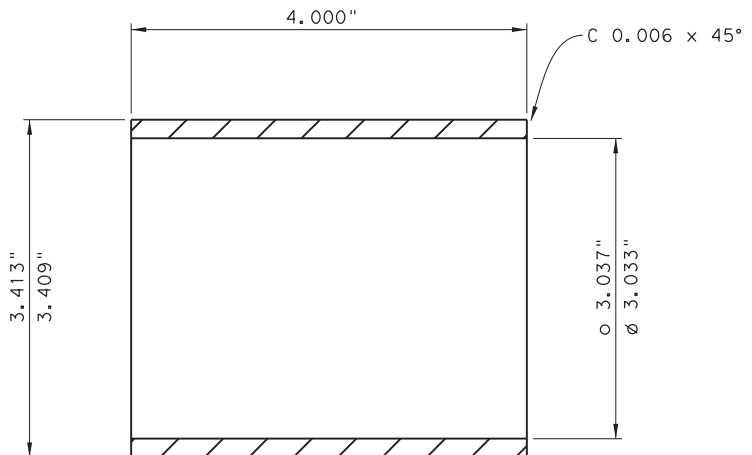
DETAIL 4
SCALE: 1:1



DETAIL 8
SCALE: 1:2



DETAIL 6
SCALE: 1:1



DETAIL 7
SCALE: 1:1

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SCALE: 1:1
SCALE: 1:2

DRAWING NAME: 949402-S-963.dgn PLOT DATE: 4/6/2023 3:44:42 PM PLOTTED BY: SHIH

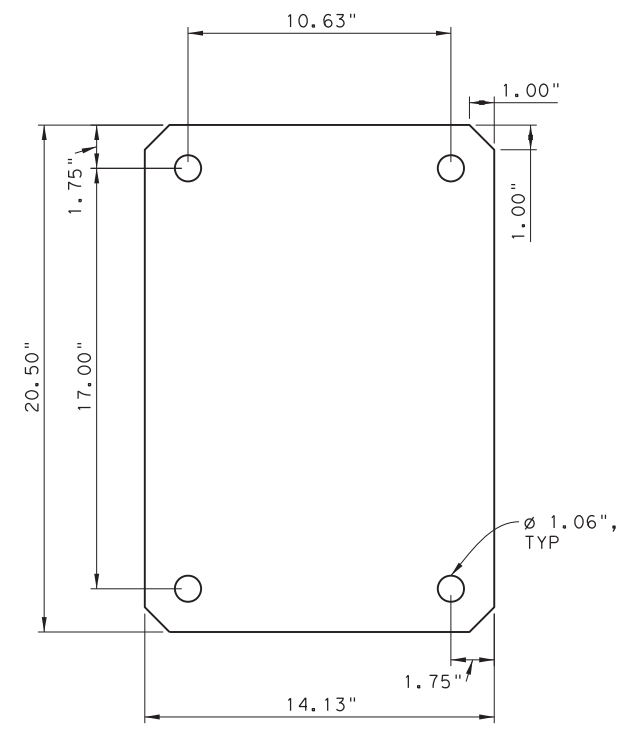
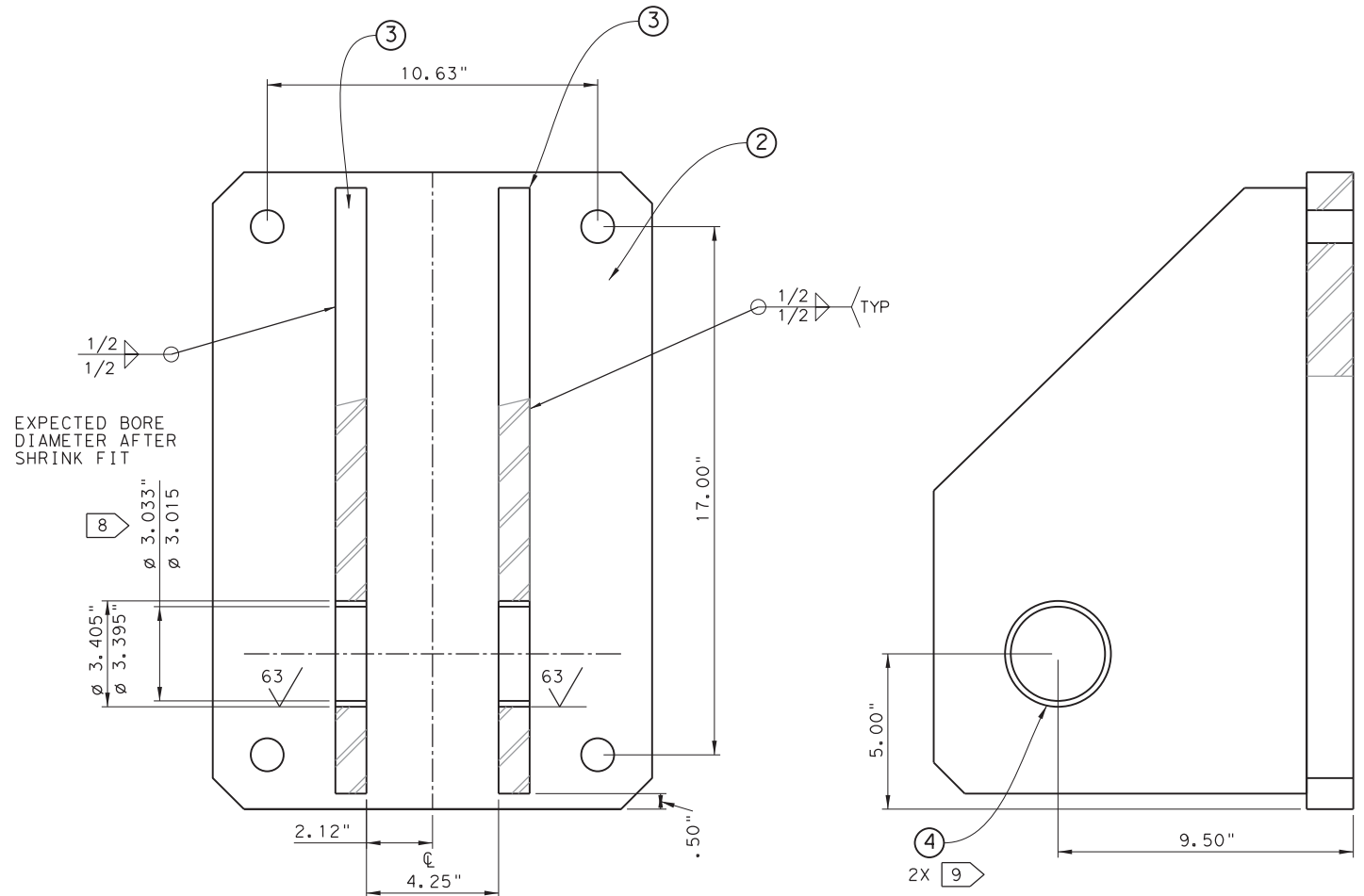
UNLESS OTHERWISE SPECIFIED:	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0'-72" ± 1/16"	X, X ± .100" (2.54 MM)
72"-50'-0" ± 1/8"	X, XX ± .060" (1.52 MM)
50'-0" & OVER ± 3/16"	X, XXX ± .030" (0.76 MM)
	X, XXXX ± .0100" (0.254 MM)
SURFACE FINISHES	
TURN, MILL, BORING 125/ TO 250/	DRILLED HOLES +1/32"
REAM 125/	DEGREE ±1/2"

QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT
8		1124A136-9	RETAINER	PL 0.75" x 6.75" x 3.5", ASTM B505, UNS C95400		
7		1124A136-8	BEARING	FIBER REINFORCED PLASTIC BEARING		
6		1124A136-7	BEARING	FIBER REINFORCED PLASTIC BEARING		
5		1124A136-6	PIN	ASTM A693 TYP C 630. CONDITION H1150 (17-4-PH-55)		
4		1124A136-4	BEARING	FIBER REINFORCED PLASTIC BEARING		
3		1124A136-3	BEARING	FIBER REINFORCED PLASTIC BEARING		
2		1124A136-2	CAP	ASTM A693 TYP C 630. CONDITION H1150 (17-4-PH-55)		
-	1	1124A136-1	PIN	ASTM A693 TYP C 630. CONDITION H1150 (17-4-PH-55)		

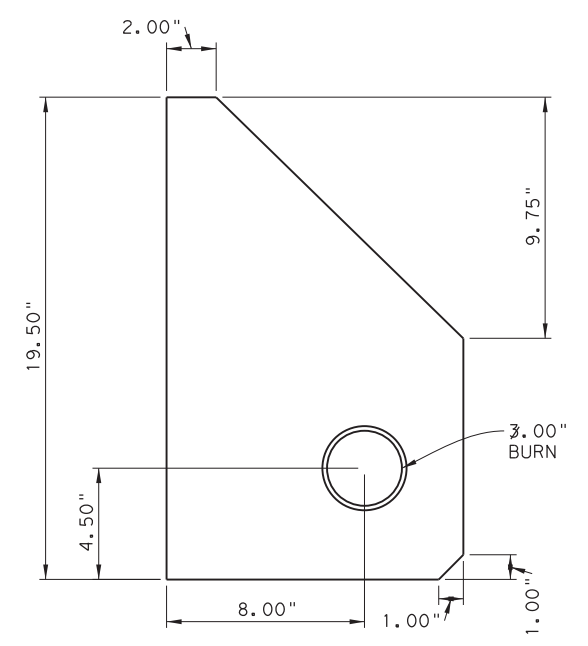
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
DRAG LINK PINS AND BUSHINGS
PART DETAILS

SHEET 103 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-963
REV. 1	REV. 2	REV. 3	REV. 4	REV. 5
DR. 1	DR. 2	DR. 3	DR. 4	DR. 5
CK. 1	CK. 2	CK. 3	CK. 4	CK. 5
DATE:	DATE:	DATE:	DATE:	DATE:



DETAIL 2



DETAIL 3

NOTES:


1. Fabrication And Erection Shall Be In Accordance With Item 441 "Steel Structures" Of The Standard Specifications.
2. All Rolled Sections And Plates Of The Upper Drag Link Clevis Shall Have Charpy V-Notch Impact Testing In Accordance With Supplementary Requirements 583 Or 584 Of ASTM A 709 For Temperature Zone 1.
3. Welding Shall Be In Accordance With AES D15 Bridge Welding Code As Amended By Item 441 - Steel Structures Of The Standard Specifications.
4. Entire CW Beam Clevis Assy Shall Be Coated With Thermal Sprayed Aluminum (TSA) Coating In Accordance With Special Specification "Marine Structures" (Section 09970).
5. TSA Coating Shall Be Applied To All Surfaces Of The Assembly After Fabrication. Insure All Faying Surfaces Are Coated Per Special Specifications (Section 09970).
6. Mask All Through Bearing Holes Prior To TSA Coating To Insure No Overspray On Interior Bearing Surfaces.
7. MT Inspect All Fillet Welds Per AWS D15 Section 626.
8. Line Bore Detail Through Item 3 After Welding.
9. Bushings Are Interference Fit Per Orkot Installation Instructions Preferred Method Is To Freeze Fit With Liquid Nitrogen.

1124A137-1 UPPER CW BEAM CLEVIS ASSY

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QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT
3	4	1124A136-4	BEARING			
2	3	1124A136-3	PLATE	ASTM A693 TYP C 630. CONDITION H1150 (17-4-PH-55)		
1	2	1124A136-2	PLATE	ASTM A693 TYP C 630. CONDITION H1150 (17-4-PH-55)		
	1	1124A136-1	UPPER CW BEAM CLEVIS ASSY			

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0.72"	± 1/16"	X, X	± .100"
1.50"	± 1/8"	X, XX	± .060"
3.00"	± 3/16"	X, XXX	± .030"
		X, XXXX	± .0100"

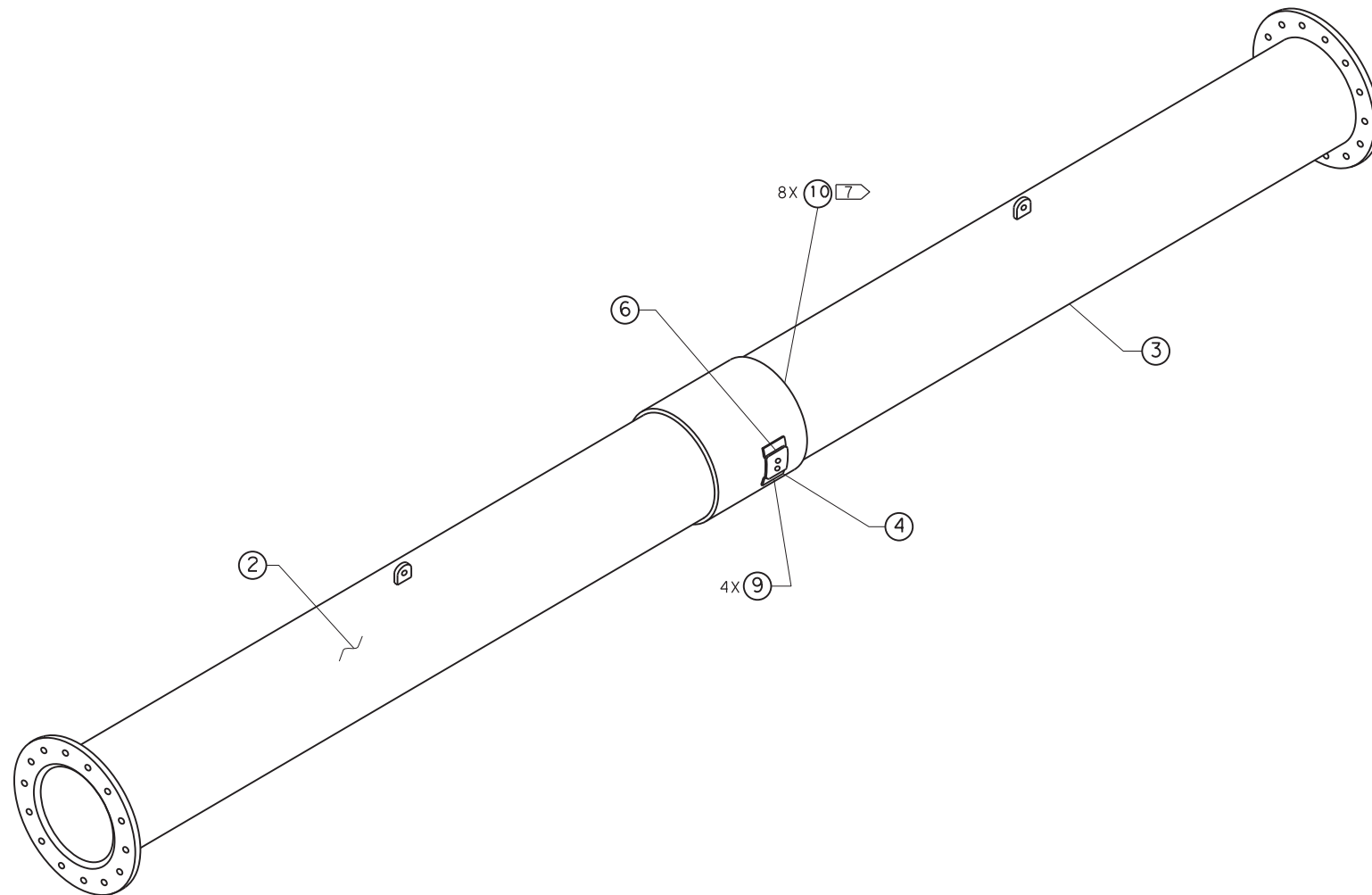

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
UPPER CW BEAM CLEVIS ASSY
OVERVIEW AND WELD DETAILS

SHEET 104 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-964
DN: I MM	CK: I SS	REV: I SH	REV: I RW	DATE:
COUNTY:		CONTROL SECTION:	JOB:	HIGHWAY:
GALVESTON		6428 78	001	SH87

3:44:56 PM 4/6/2023

DRAWING NAME: 949402-S-964.dgn PLOTTED BY: SHILL PLOT DATE: 4/6/2023 3:44:56 PM



NOTES:


1. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS.
2. ENTIRE TORQUE TUBE ASSEMBLY SHALL BE COATED WITH THERMAL SPRAYED ALUMINUM (TSA) COATING IN ACCORDANCE WITH SPECIAL SPECIFICATION "MARINE STRUCTURES" (SECTION 09970).
3. TSA COATING SHALL BE APPLIED TO THE INNER SURFACES OF THE TORQUE TUBE HALVES UP TO AND INCLUDING THE WELDED SEAL PLATE IN THE TUBE END.
4. TSA COATING SHALL BE APPLIED TO ALL SURFACES OF THE ASSEMBLY AFTER FABRICATION. ALL BEARING SURFACES MUST BE MASKED PRIOR TO TSA COATING. ENSURE INTERIOR OF ALL THROUGH HOLES AND ALL FAYING SURFACES ARE COATED PER SPECIAL SPECIFICATIONS (SECTION 09970).
5. BOLTS ARE TO BE DACROMET COATED PRIOR TO INSTALLATION.
6. BEARING DESIGNED TO BE PRESS FIT INTO STBD TORQUE TUBE.
7. HOLES THROUGH DOUBLER (ITEM B) AND BEARING HOUSING (1124A161-2) ARE FOR ALIGNMENT OF TUBE HALVES DURING INSTALLATION.

1124A160-1 TORQUE TUBE ASSEMBLY ISOMETRIC VIEW

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SCALE: NTS

8	10		HEX BOLT	1/4" - 20 UNC x 1.00 316 SS		
4	9		HEX BOLT	1/2" - 13 UNC x 2.25" ASTM 325		
4	8	1124A160-2	DOUBLER	PL 0.38" x 2.00" x 6.00" ASTM A709 GR 50		
2	7	1124A154-5	THORDON SPACER		1	
2	6	1124A164-5	THORDON BEARING		5.7	
1	5	1124A164-4	RETAINING RING		2.25	
1	4	1124A163-1	SHEAR TUBE			
1	3	1124A162-1	PORT TORQUE TUBE			
1	2	1124A161-1	STBD TORQUE TUBE			
	1	1124A160-1	TORQUE TUBE ASSY			
QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SH

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FERRY LANDING MAINTENANCE
TORQUE TUBE ASSEMBLY
1 OF 3

SHEET 105 OF 148

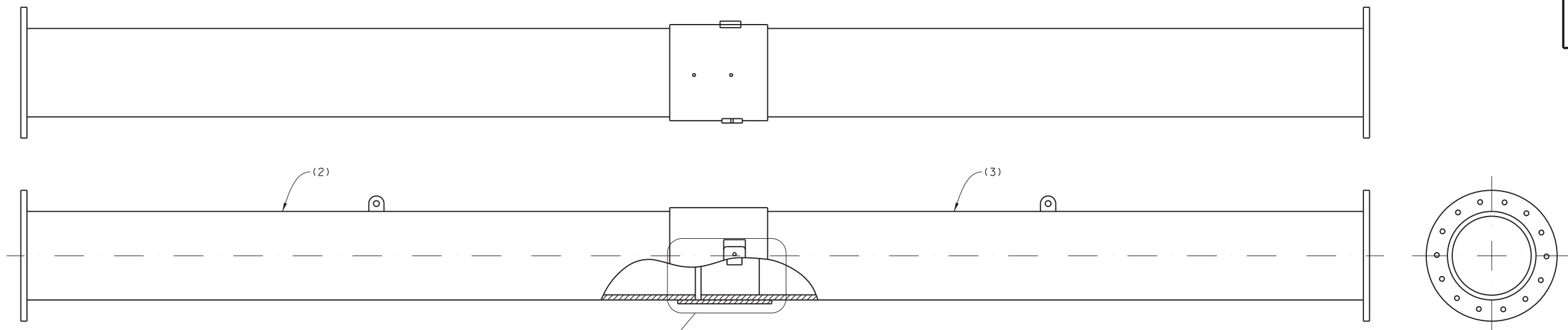
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-965
CK: 1	SS	COUNTY		CONTROL SECTION JOB	HIGHWAY
DN: 1	SH	GALVESTON		6428 78 001	SH87
CK: 1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-965.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:45:07 PM

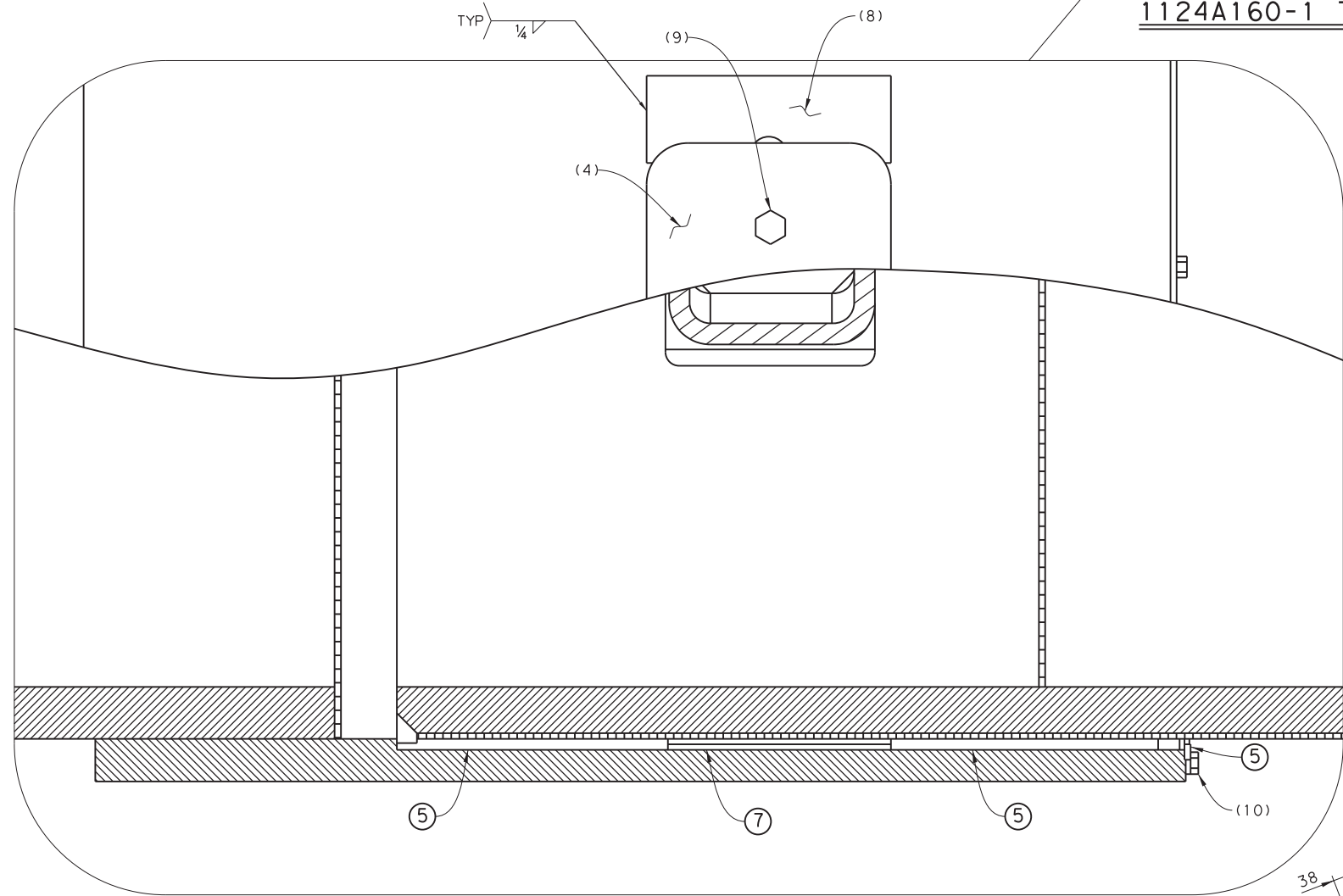
UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0' - 72"	± 1/16"	X, X	± .100" (2.54 MM)
72' - 50' - 0"	± 1/8"	X, XX	± .060" (1.52 MM)
50' - 0" & OVER	± 3/16"	X, XXX	± .030" (0.76 MM)
		X, XXXX	± .0100" (0.254 MM)

SURFACE FINISHES		DRILLED HOLES	
TURN, MILL, BORING	125° TO 250°		+1/32"
REAM	125°		-0
		DEGREE	±1/2"

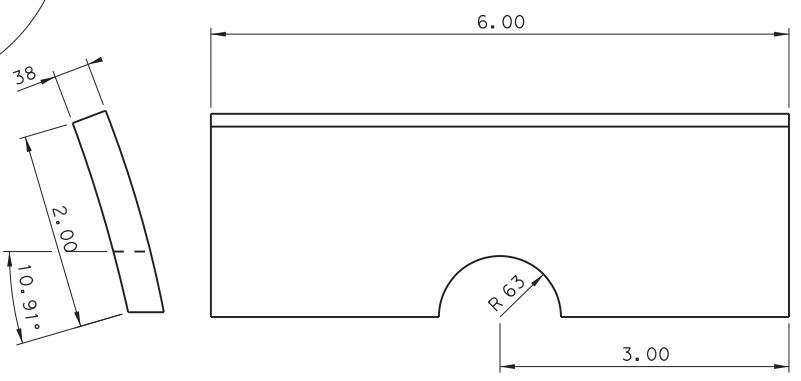


1124A160-1 TORQUE TUBE ASSEMBLY




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SCALE: NTS



DETAIL 17

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FERRY LANDING MAINTENANCE
TORQUE TUBE ASSEMBLY
2 OF 3

SHEET 106 OF 148

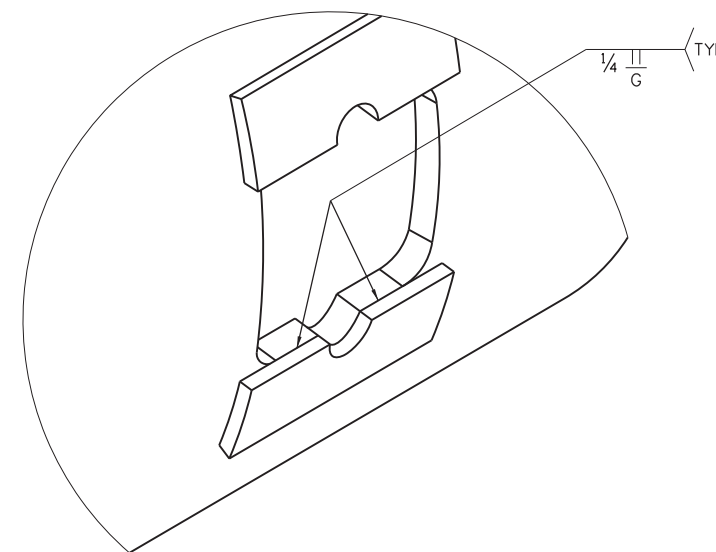
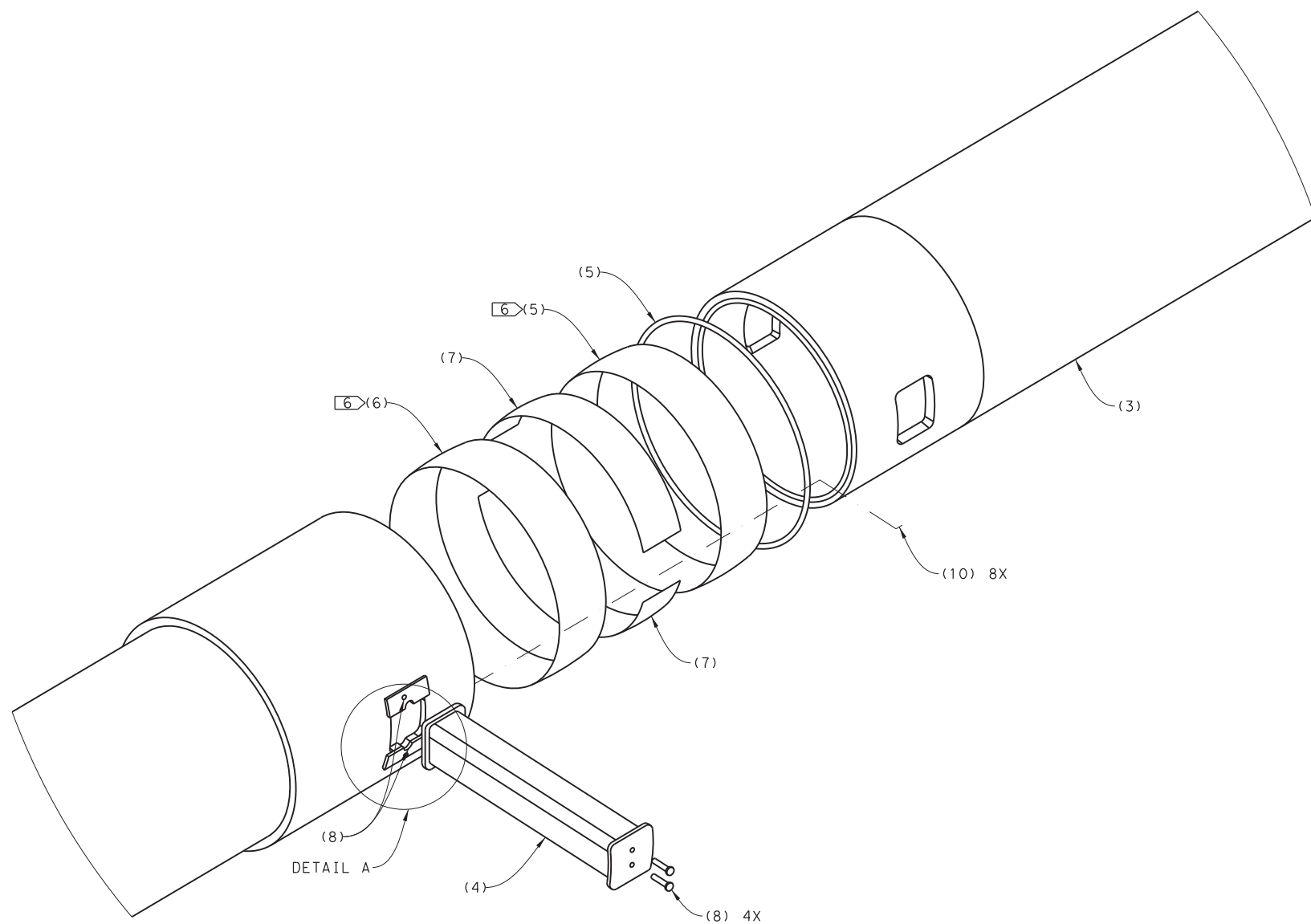
UNLESS OTHERWISE SPECIFIED:

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0' - 72"	± 1/16"	X.X	± .100" (2.54 MM)
72' - 50' - 0"	± 1/8"	X.XX	± .060" (1.52 MM)
50' - 0" & OVER	± 3/16"	X.XXX	± .030" (0.76 MM)
		X.XXXX	± .0100" (0.254 MM)

SURFACE FINISHES		DRILLED HOLES	
TURN, MILL, BORING	125° TO 250°		+1/32"
REAM	125°		-0
		DEGREE	±1/2"

ORIGINAL DRAWING DATE:		STATE	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-966
CK:1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN:1	SH	GALVESTON		6428 78	001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-966.dgn PLOT DATE: 4/6/2023 3:45:26 PM PLOTTED BY: SHILL



DETAIL A

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SCALE: NTS

EXPLODED VIEW 1124A160-1

DRAWING NAME: 949402-S-967.dgn PLOT DATE: 4/6/2023 3:45:37 PM PLOTTED BY: SHIH

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0' - 72"	± 1/16"	X, X	± .100" (2.54 MM)
72" - 50' - 0"	± 1/8"	X, XX	± .060" (1.52 MM)
50' - 0" & OVER	± 3/16"	X, XXX	± .030" (0.76 MM)
		X, XXXX	± .0100" (0.254 MM)

SURFACE FINISHES		DRILLED HOLES	
TURN, MILL, BORING	125° TO 250°		+1/32"
REAM	125°		-0
		DEGREE	±1/2"



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FERRY LANDING MAINTENANCE
TORQUE TUBE ASSEMBLY
3 OF 3

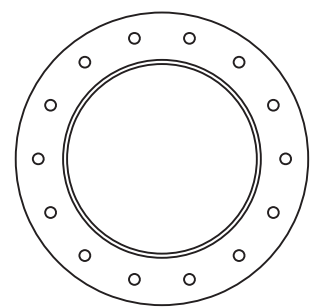
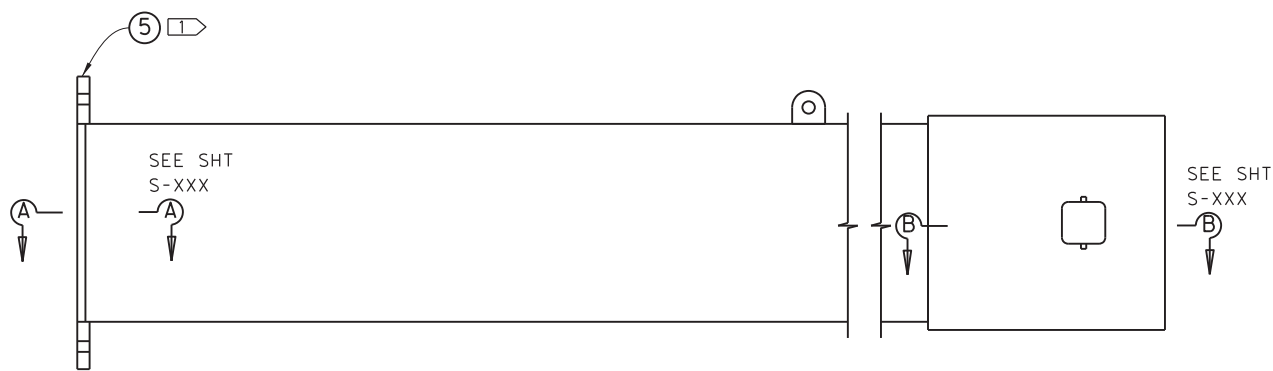
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: 1	MM	12		RMC 6428-78-001	S-967
CK: 1	SS	COUNTY		CONTROL SECTION JOB	HIGHWAY
DN: 1	SH	GALVESTON		6428 78 001	SH87
CK: 1	RW	REV	DESCRIPTION	DATE	

SHEET 107 OF 148

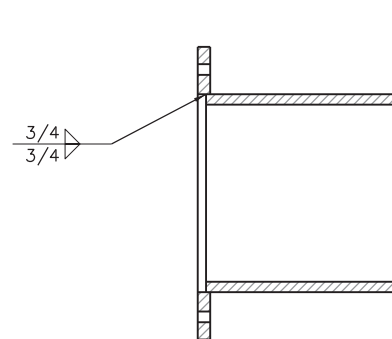
3:45:37 PM 4/6/2023

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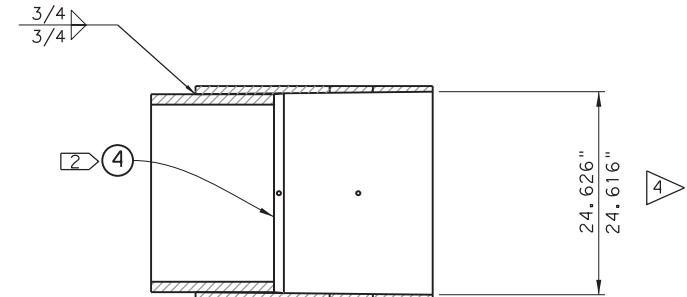
- 1. Flange Is To Be Welded To Pipe With Bolt Hole Aligned With Drain Hole To Allow Proper Rotation Of Torque Tube.
- 2. Item 4 Is To Be Seal Welded Onto Pipe Along With Bearing Housing.
- 3. Entire Torque Tube Assy Shall Be Coated With Thermal Spray Alluminum (TSA) Coating In Accordance With Special Specification Section 09970.
- 4. After TSA Coating, Clean Bore Up To Tolerance Shown To Accept Bearings.



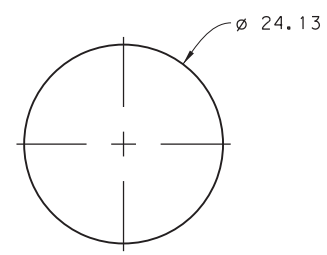
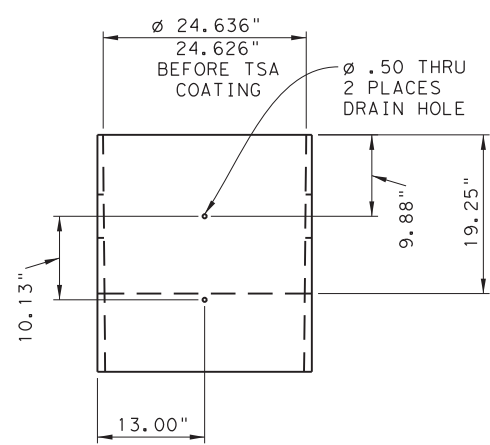
1124A161-1 STBD TORQUE TUBE
SCALE: 1"=1'-0"



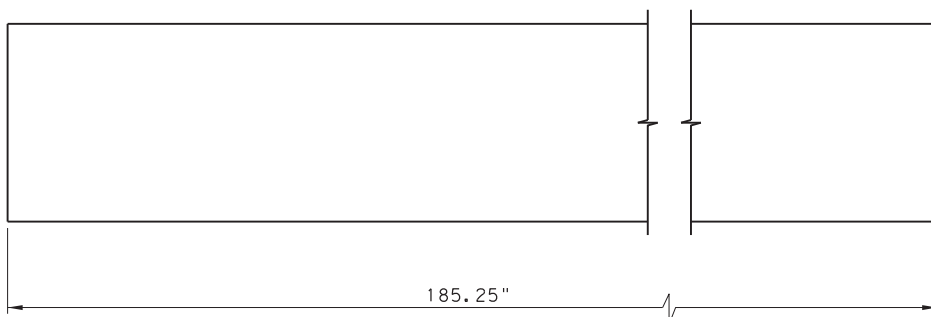
SECTION A
SCALE: 1"=1'-0"



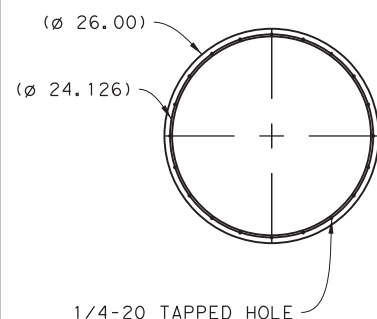
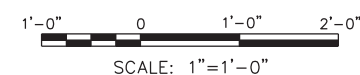
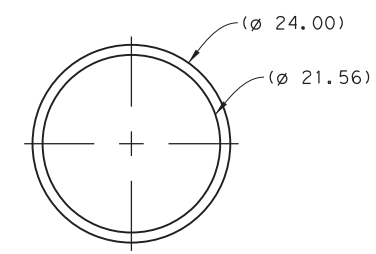
SECTION B
SCALE: 1"=1'-0"



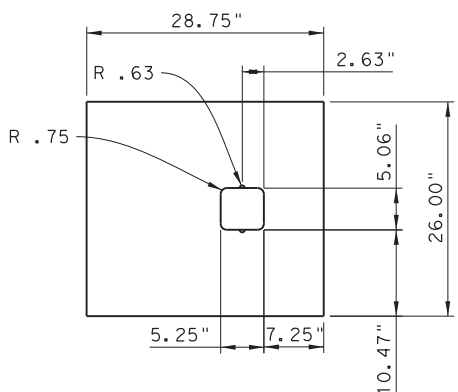
DETAIL 4



DETAIL 3
SCALE: 1"=1'-0"



DETAIL 2
SCALE: 1"=1'-0"



QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT
1	6	1124A164-2	LIFTING PLATE			
1	5	1124A164-3	END FLANGE	UPPER CW BEAM CLEVIS ASSY		
1	4	1124A161-4	PLATE	UPPER DRAG LINK CLEVIS ASSY		
1	3	1124A161-3	PIPE	LOWER DRAG LINK CLEVIS ASSY		
1	2	1124A161-2	BEARING HOUSING	WIRE ROPE ASSY		
-	1	1124A161-1	STBD TORQUE TUBE			

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0.72"	± 1/16"	X, X	± .100"
1.27"	± 1/8"	X, XX	± .060"
50.00"	± 3/16"	X, XXX	± .030"
		X, XXXX	± .0100"

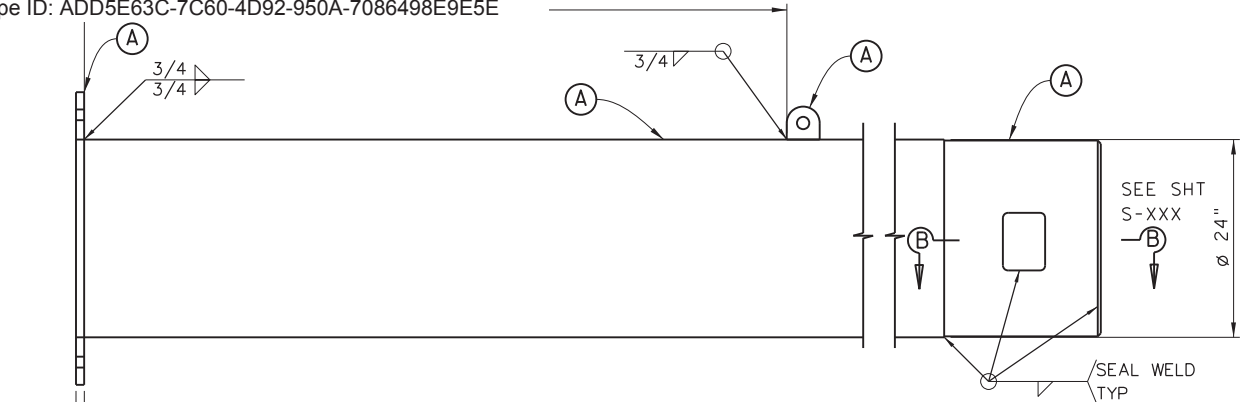
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FERRY LANDING MAINTENANCE
STARBOARD TORQUE TUBE

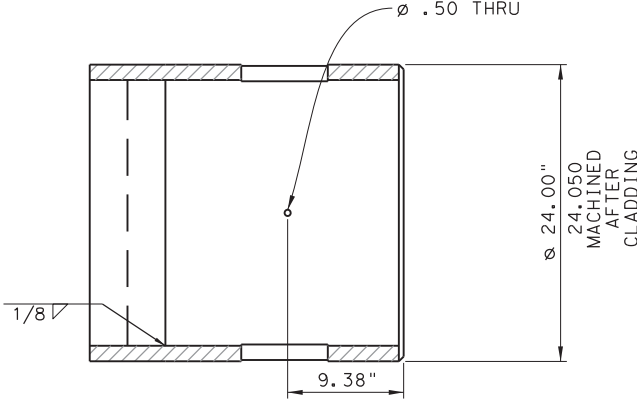
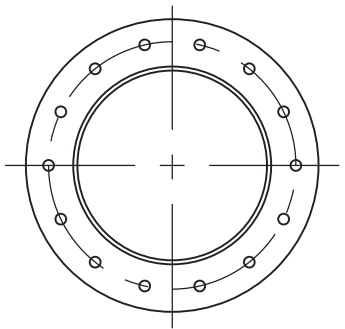
SHEET 108 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-968
DN: MM	REVISONS	COUNTY:	CONTROL SECTION:	JOB:
CK: SS		GALVESTON	6428 78	001
DR: SH	DESCRIPTION	DATE:		SH87
CK: RW				

DRAWING NAME: 949402-S-968.dgn
 PLOT DATE: 4/6/2023
 PLOTTED BY: SHIH



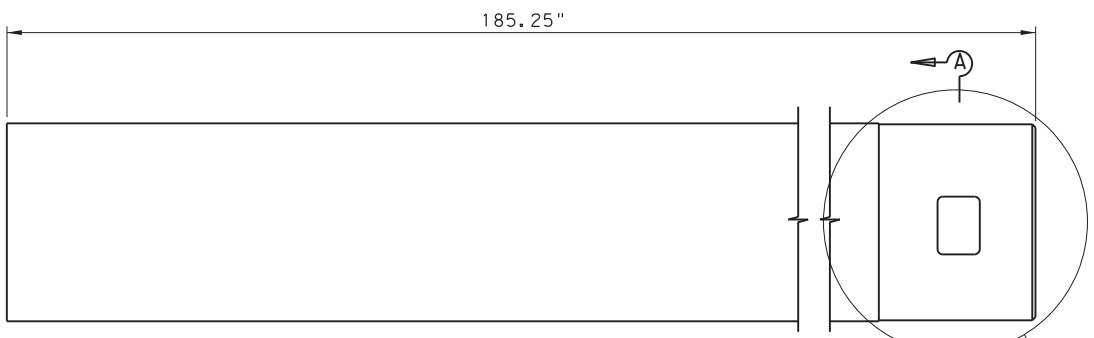
1124A162-1 PORT TORQUE TUBE
SCALE: 1" = 1'-0"



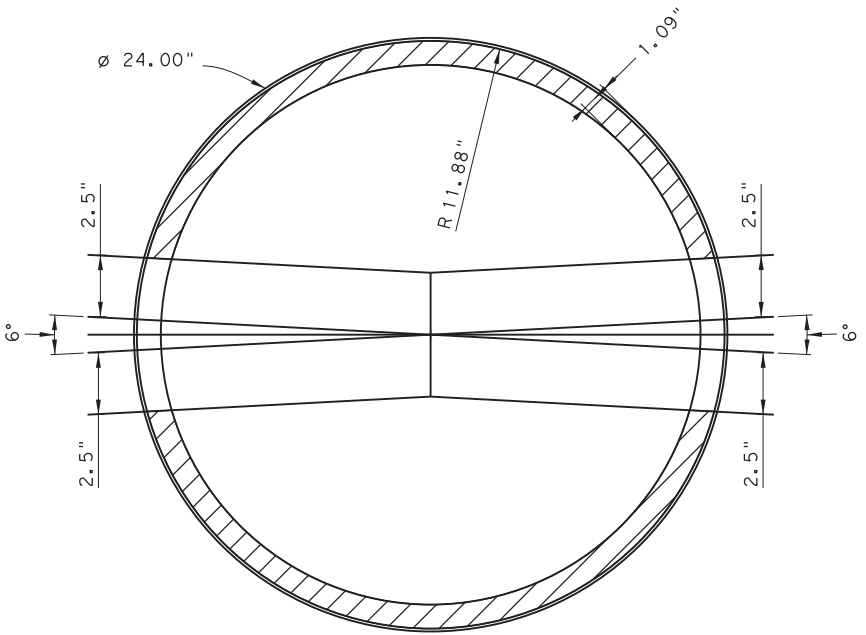
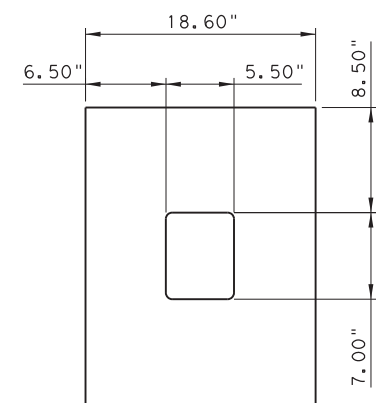
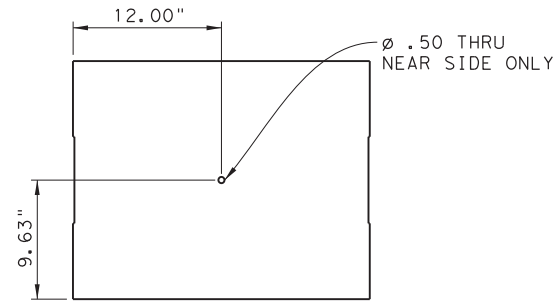
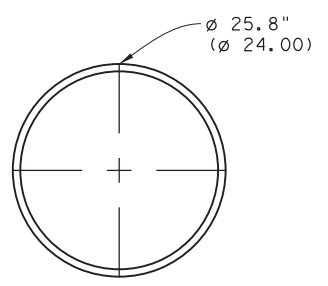
SECTION B
SCALE: 1 1/2" = 1'-0"

NOTES:

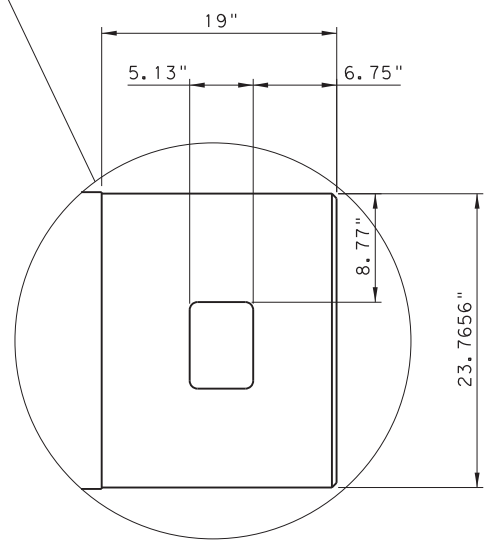
- Item 3 Is To Be Heated And Shrink-Fit To Item 3. Holes Cutout, Then Seal Welded At Edges And Around Holes. Then Machined To Final OD Dimension.



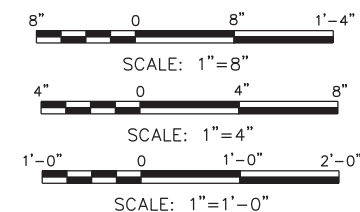
DETAIL 2
SCALE: 1" = 1'-0"



SECTION A
SCALE: 1/4" = 1'-0"



SECTION 1



DRAWING NAME: 949402-S-969.dgn PLOT DATE: 4/6/2023 3:46:04 PM PLOTTED BY: SHILL

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0'-72"	± 1/16"	X.X	± .100"
72'-50'-0"	± 1/8"	X.XX	± .050"
50'-0'-0" & OVER	± 3/16"	X.XXX	± .030"
		X.XXXX	± .0100"

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QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	W	SHT
1	6	1124A164-2	LIFTING PLATE			
1	5	1124A164-3	END FLANGE	UPPER CW BEAM CLEVIS ASSY		
1	4	1124A161-4	PLATE	UPPER DRAG LINK CLEVIS ASSY		
1	3	1124A161-3	PIPE	LOWER DRAG LINK CLEVIS ASSY		
1	2	1124A161-2	BEARING HOUSING	WIRE ROPE ASSY		
-	1	1124A161-1	STBD TORQUE TUBE			

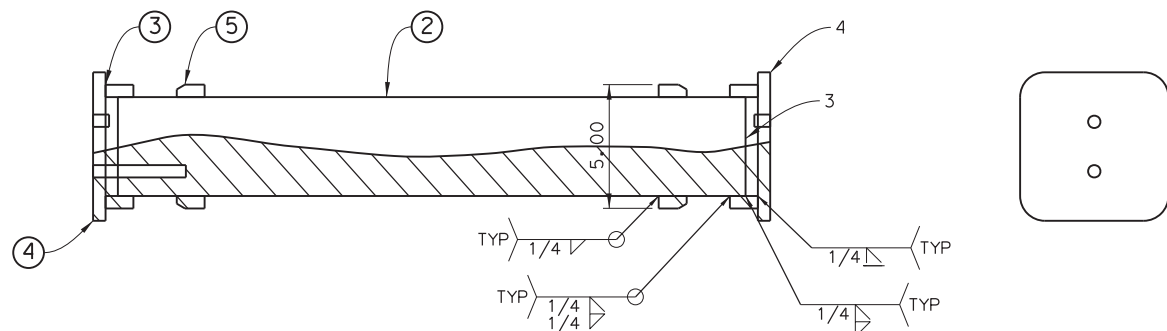
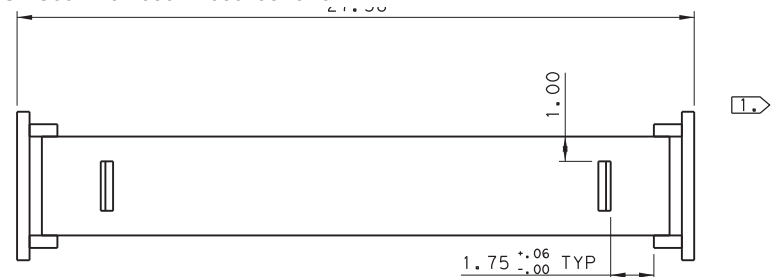
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FERRY LANDING MAINTENANCE
PORT TORQUE TUBE

SHEET 109 OF 148

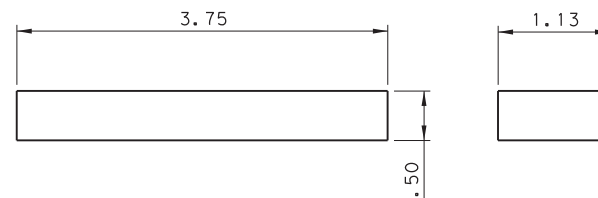
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-969
REVISONS:	COUNTY:	CONTROL SECTION:	JOB:	HIGHWAY:
	GALVESTON	6428 78	001	SH87

NOTES:

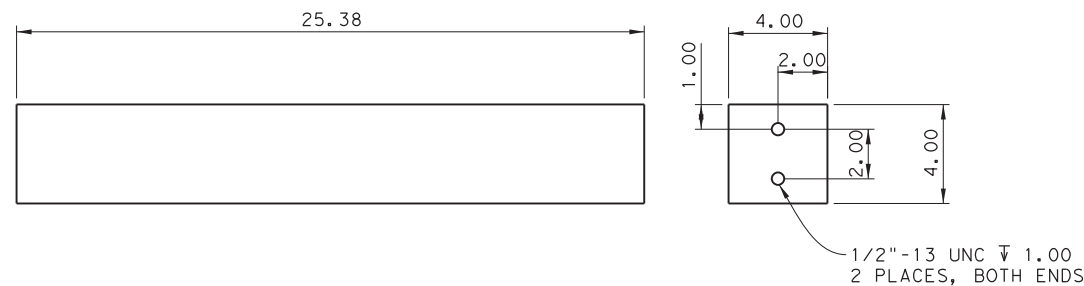
Item 4 Is Bolted To Shear Tube Per Drawing 11224A160 Sheet 1.



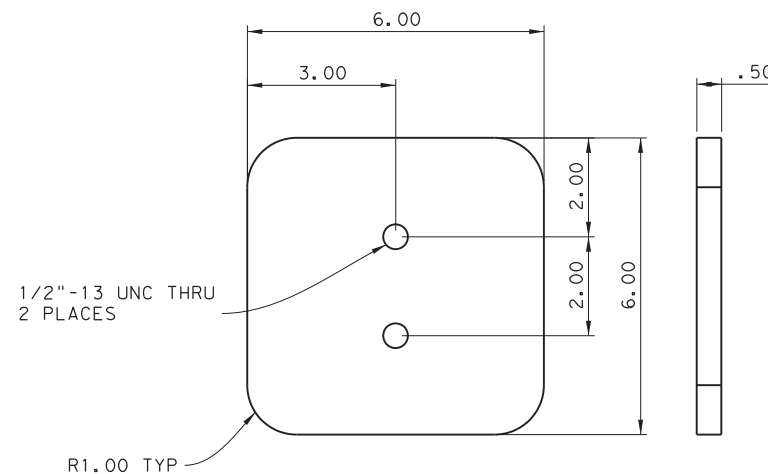
1124A163-1 SHEAR TUBE
SCALE: 1/4"=1"



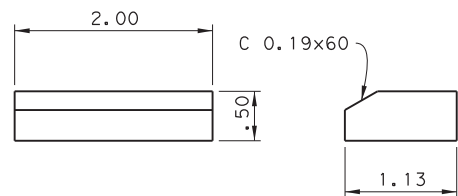
DETAIL 3
SCALE: 1"=1"



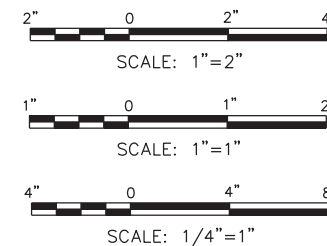
DETAIL 2
SCALE: 1/4"=1"



DETAIL 4
SCALE: 1"=2"



DETAIL 5
SCALE: 1"=1"



DRAWING NAME: 949402-S-970.dgn PLOT DATE: 4/6/2023 3:46:16 PM PLOTTED BY: SHH

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
0'-72"	± 1/16"	X, X	± .100" (2.54 MM)
72'-50'-0"	± 1/8"	X, XX	± .060" (1.52 MM)
50'-0" & OVER	± 3/16"	X, XXX	± .030" (0.76 MM)
		X, XXXX	± .0100" (0.254 MM)
SURFACE FINISHES		DRILLED HOLES	+1/32"
TURN, MILL, BORING	125° TO 250°	DEGREE	± 1/2"
REAM	125°		

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QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SHT
4	5	1124A163-5	AUGMENT PLATE	PL 2.00x1.13x0.50, ASTM A36 GRADE 36	0	
2	4	1124A163-4	END PLATE	PL 6.00x6.00x0.50, ASTM A36 GRADE 36	5	
8	3	1124A163-3	BEARING PLATE	PL 3.75x1.13x0.50, ASTM A36 GRADE 36	1	
1	2	1124A163-2	SHEAR BLOCK	PL 4.00x4.00x25.38, ASTM A36 GRADE 36	126	
	1	1124A163-1	SHEAR TUBE ASSEMBLY			

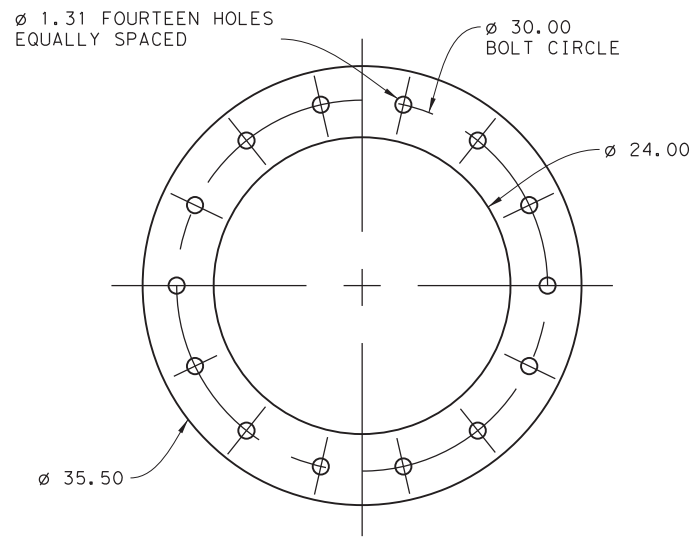
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FERRY LANDING MAINTENANCE
SHEAR TUBE ASSY

SHEET 110 OF 148

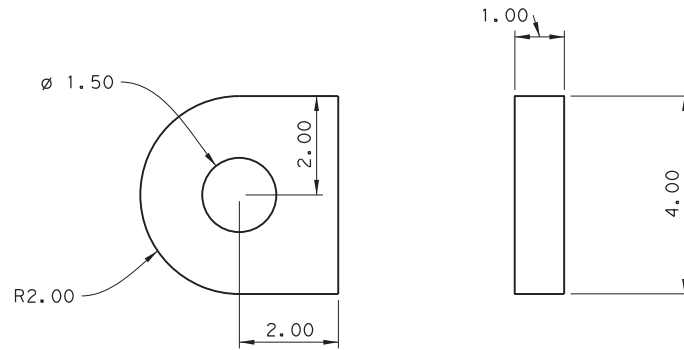
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	12		RMC 6428-78-001	S-970
DN: I MM	CK: I SS	REV	DESCRIPTION	DATE
DR: I SH	CK: I RW			

COUNTY:	CONTROL SECTION:	JOB:	HIGHWAY:
GALVESTON	6428 78	001	SH87

3:46:16 PM 4/6/2023



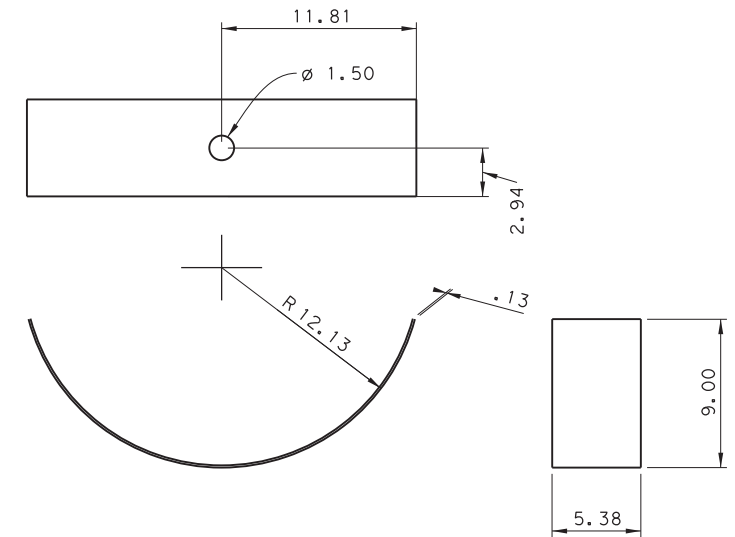
DETAIL 1
SCALE: 1"=8"



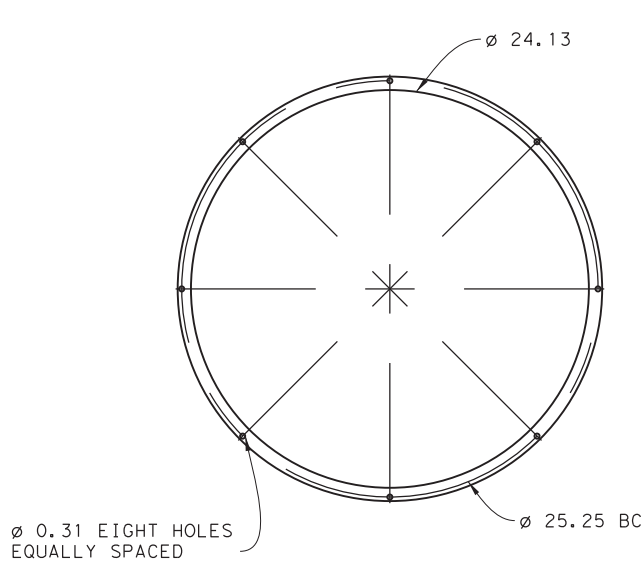
DETAIL 2
SCALE: 1"=2"

NOTES:

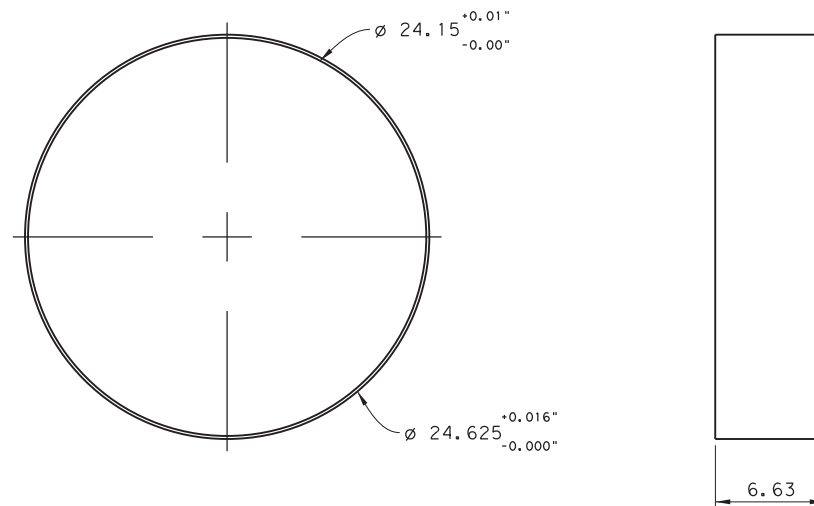
➤ Fiber Reinforced Polymer Bearing Material. Fiber Reinforce Polymer Bearing Materials Shall Be Luytex C335 (Contact Eric Bucci (Trelleborg Sealing Solutions Southwest 10801 Hammerly Blvd. Suite 246, Houston, Tx. 77043, Tel. (713) 461-3495) Or Engineer Approved Equivalent.



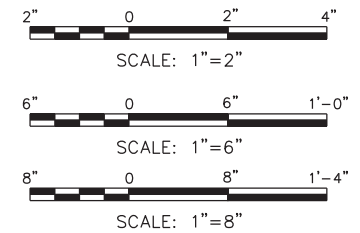
➤ **DETAIL 3**
SCALE: 1"=6"



DETAIL 4
SCALE: 1"=6"



➤ **DETAIL 5**
SCALE: 1"=6"




DRAWING NAME: 949402-S-971.dgn PLOT DATE: 4/6/2023 3:46:21 PM PLOTTED BY: SHIL

STRUCTURAL TOLERANCES		MACHINING TOLERANCES	
Ø .72" ± 1/16"	X.X ± .100"	(22.54 MM)	
12" ± 1/8"	X.XX ± .060"	(15.24 MM)	
50" ± 3/16"	X.XXX ± .030"	(10.76 MM)	
	X.XXXX ± .0100"	(10.254 MM)	

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QTY	ITEM NO.	PART NUMBER	PART NAME	DESCRIPTION	WT	SHT
1	5	1124A164-5	ORKOT BEARING	UPPER CW BEAM CLEVIS ASSY		
1	4	1124A164-4	RETAINING RING	UPPER DRAG LINK CLEVIS ASSY		
1	3	1124A164-6	ORKOT SPACER	LOWER DRAG LINK CLEVIS ASSY		
1	2	1124A164-2	LIFTING PLATE	WIRE ROPE ASSY		
1	1	1124A164-3	END FLANGE			



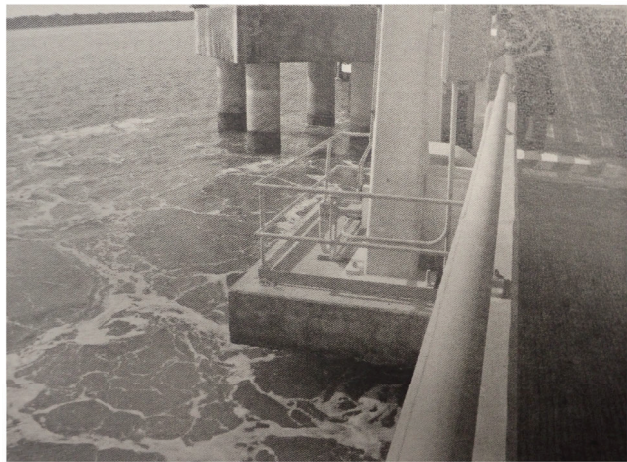
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
TORQUE TUBE ASSY

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
		12		RMC 6428-78-001	S-971
REVISONS		COUNTY:	CONTROL SECTION:	JOB:	HIGHWAY:
		GALVESTON	6428 78	001	SH87

SHEET 111 OF 148

3:46:21 PM 4/6/2023

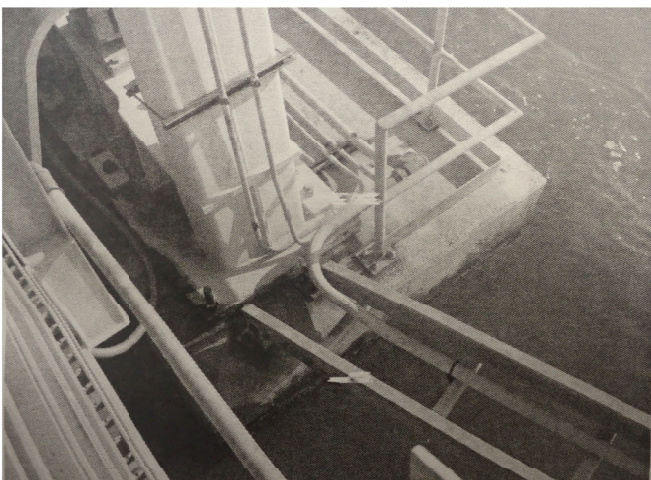
FOR REFERENCE



LANDING 3 - PHOTO 1



LANDING 3 - PHOTO 4



LANDING 3 - PHOTO 2

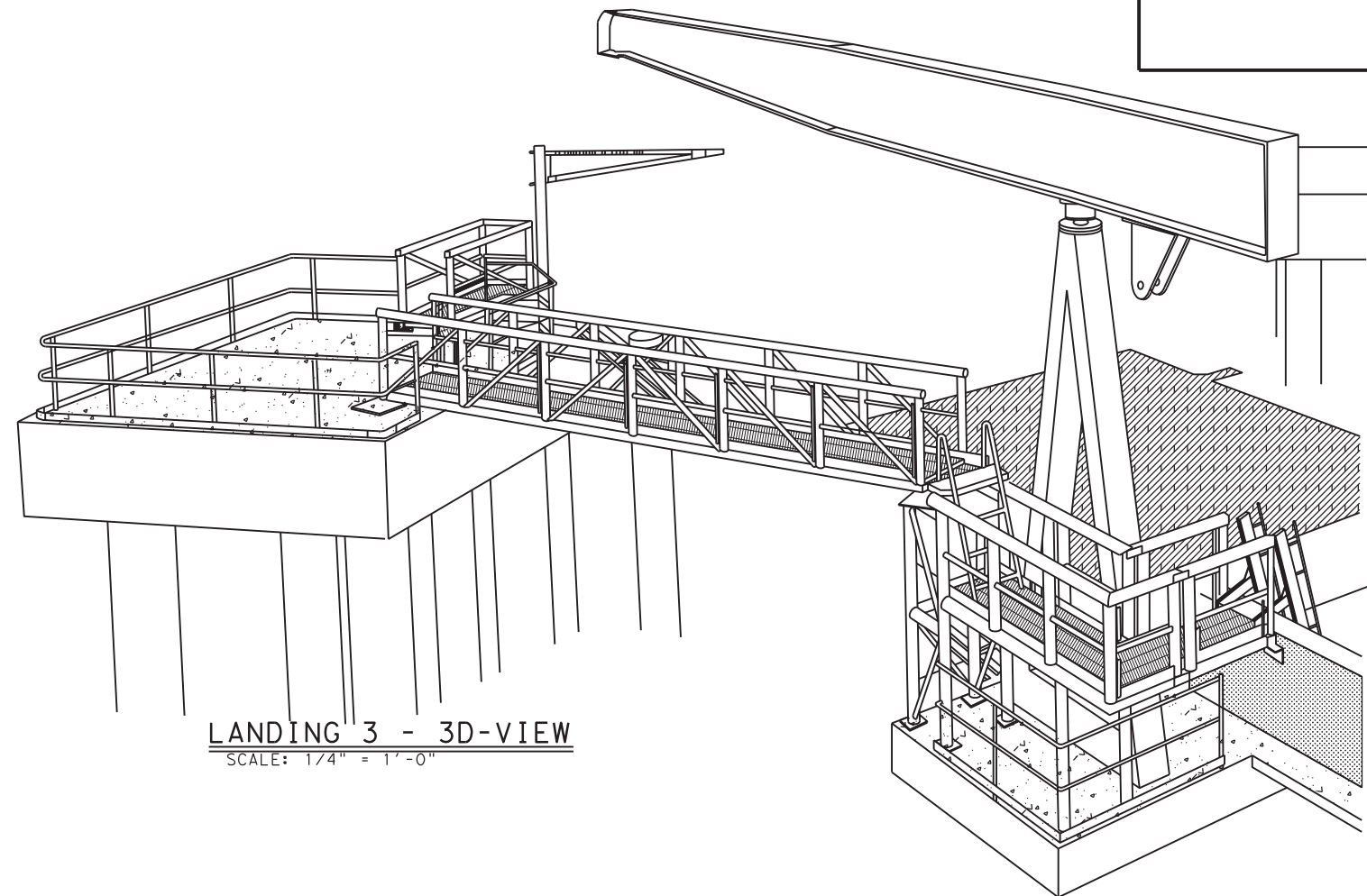


LANDING 3 - PHOTO 3

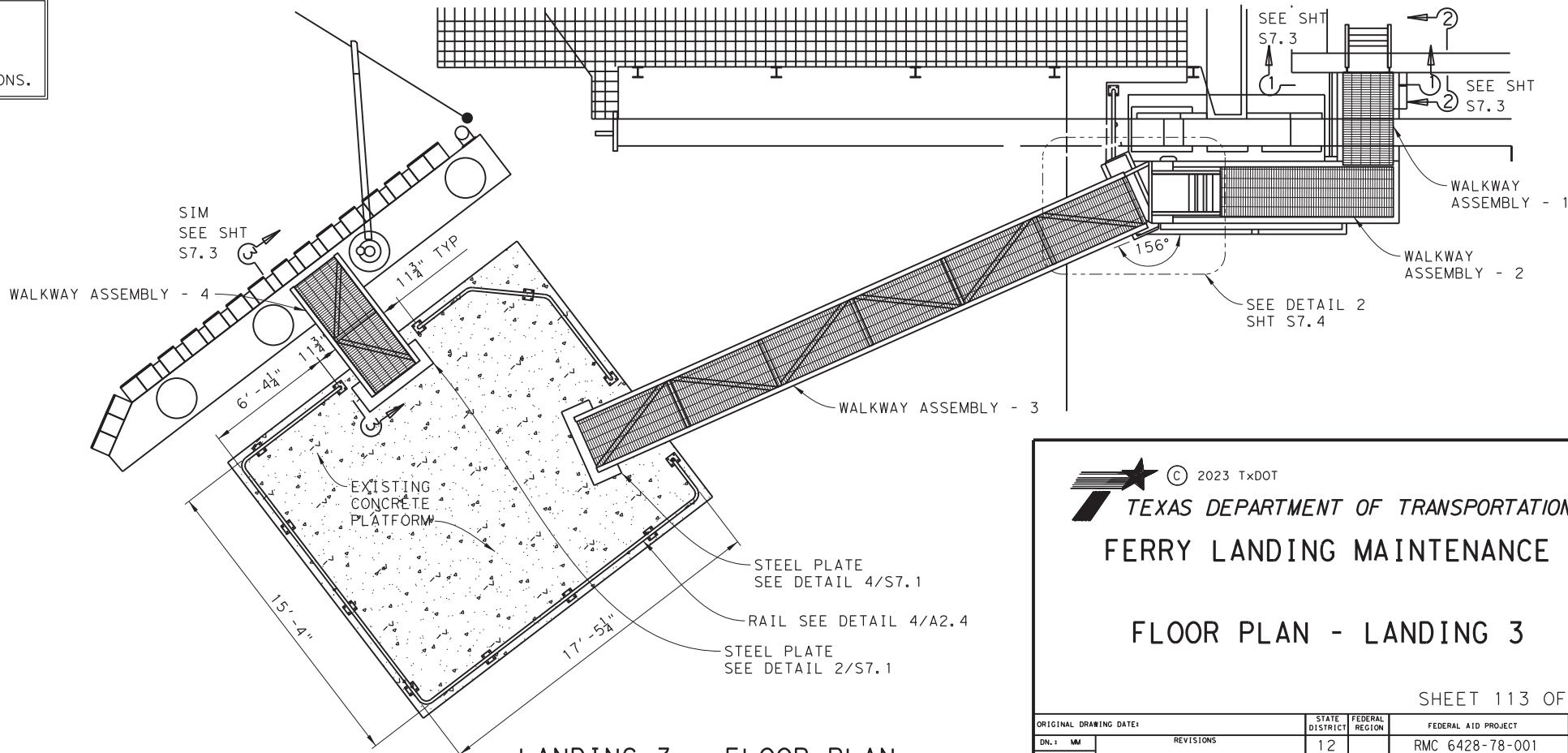
DEMOLITION NOTES:

1. Remove Existing Guardrail.
2. Any Disconnection Of Utilities Will Have To Be Reconnected At End Of Each Work Activity That Affect The Utility.

NOTE:
DIMENSIONS ARE FOR
INFORMATION PURPOSES ONLY.
CONTRACTOR SHALL VERIFY
ALL DIMENSIONS AND ELEVATIONS.



LANDING 3 - 3D-VIEW
SCALE: 1/4" = 1'-0"



LANDING 3 - FLOOR PLAN
SCALE: 1/4" = 1'-0"

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FERRY LANDING MAINTENANCE
FLOOR PLAN - LANDING 3

SHEET 113 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-973
DN: I MM	REVISIONS		COUNTY:	JOB:
CK: I SS			GALVESTON	6428 78 001
DR: I SH	REV	DESCRIPTION	DATE	HIGHWAY:
CK: I RW				SH87

DRAWING NAME: 949402-S-973.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:47:02 PM



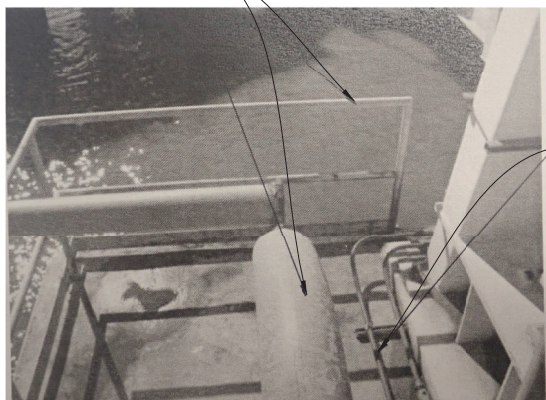
LANDING 5 - PHOTO 1



LANDING 5 - PHOTO 4



LANDING 5 - PHOTO 2

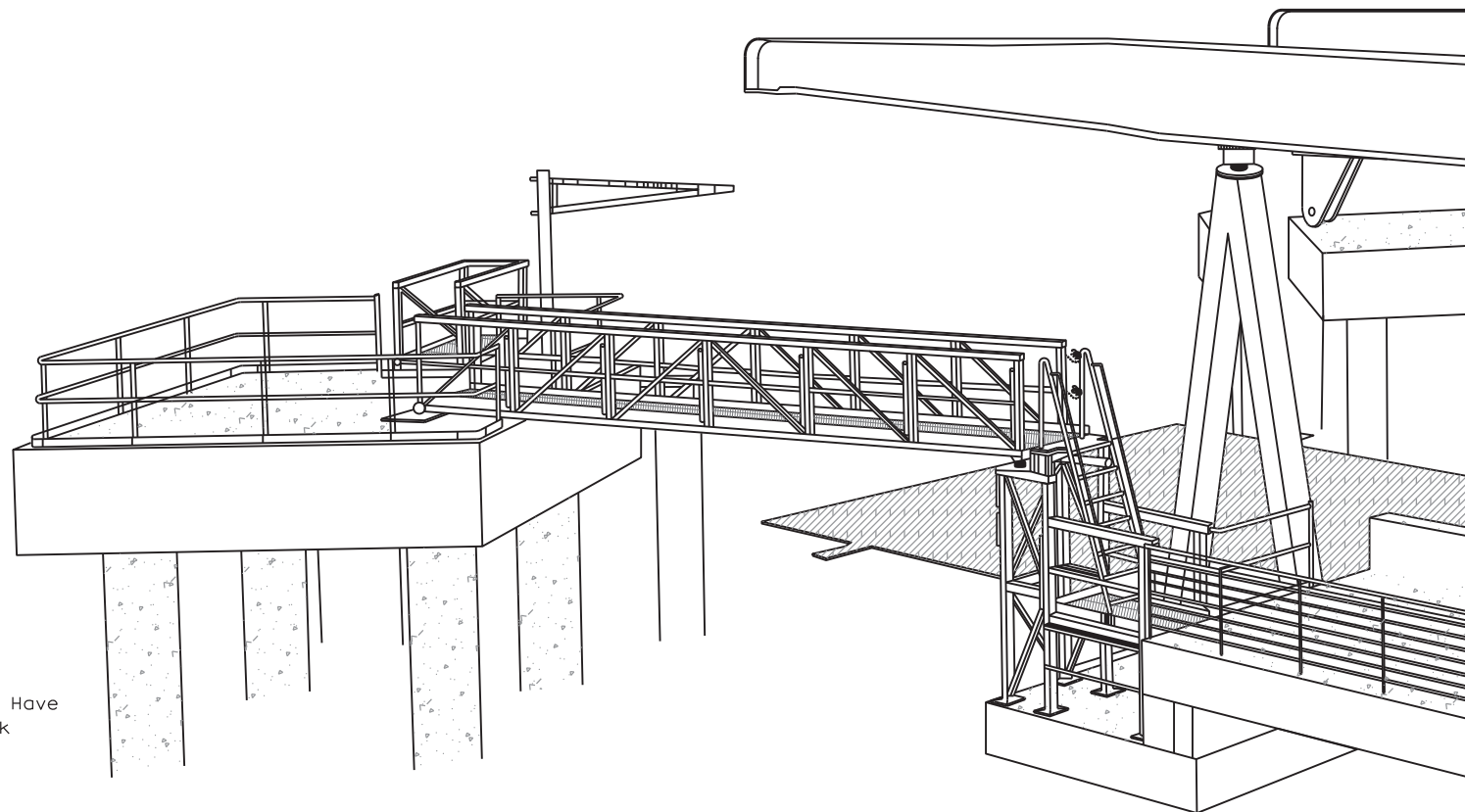


LANDING 5 - PHOTO 3

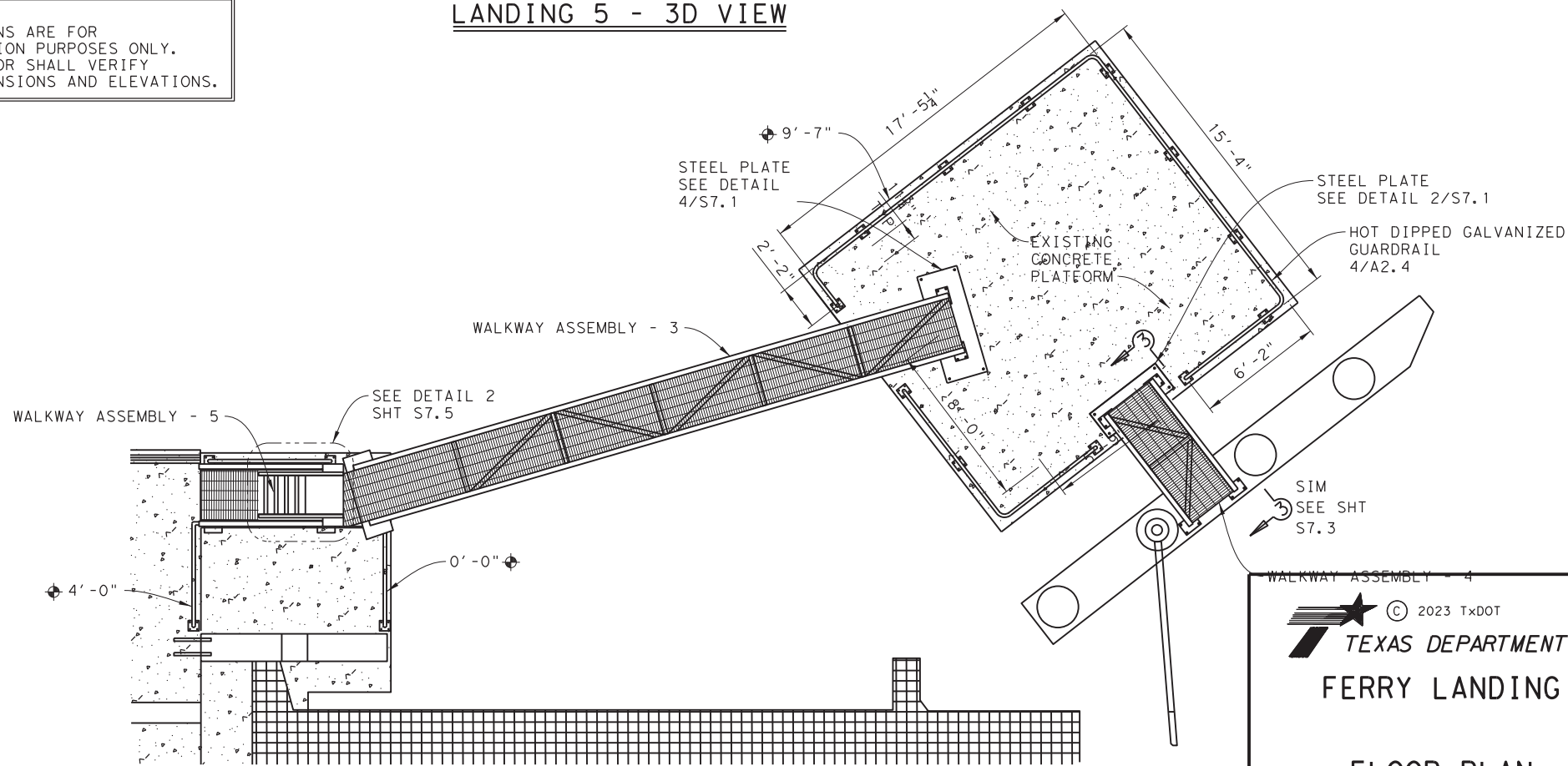
DEMOLITION NOTES:

1. Remove Existing Guardrail.
2. Any Disconnection Of Utilities Will Have To Be Reconnected At End Of Each Work Activity That Affect The Utility.

NOTE:
DIMENSIONS ARE FOR
INFORMATION PURPOSES ONLY.
CONTRACTOR SHALL VERIFY
ALL DIMENSIONS AND ELEVATIONS.



LANDING 5 - 3D VIEW



LANDING 5 - FLOOR PLAN

SCALE: 1/4" = 1'-0"

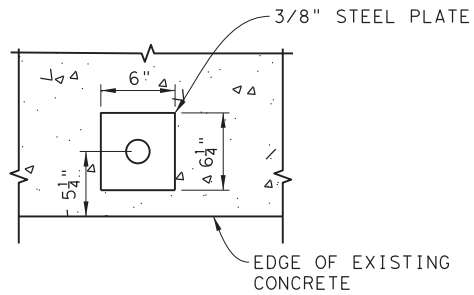
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FERRY LANDING MAINTENANCE
FLOOR PLAN - LANDING 5

SHEET 114 OF 148

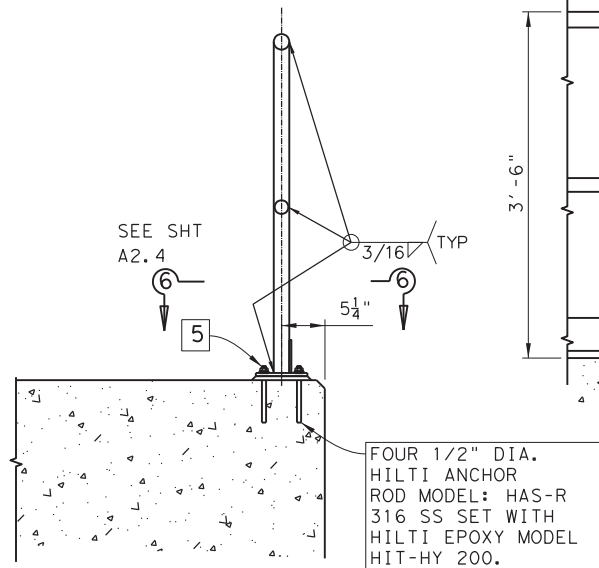
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DN: 1 MM	REVISIONS			
CK: 1 SS		COUNTY:	CONTROL SECTION:	JOB:
DR: 1 SH		GALVESTON	6428 78	001
CK: 1 RW	REV	DESCRIPTION:	DATE:	HIGHWAY:
				SH87

DRAWING NAME: 949402-S-974.dgn
PLOT DATE: 4/6/2023 3:47:45 PM PLOTTED BY: SHIL



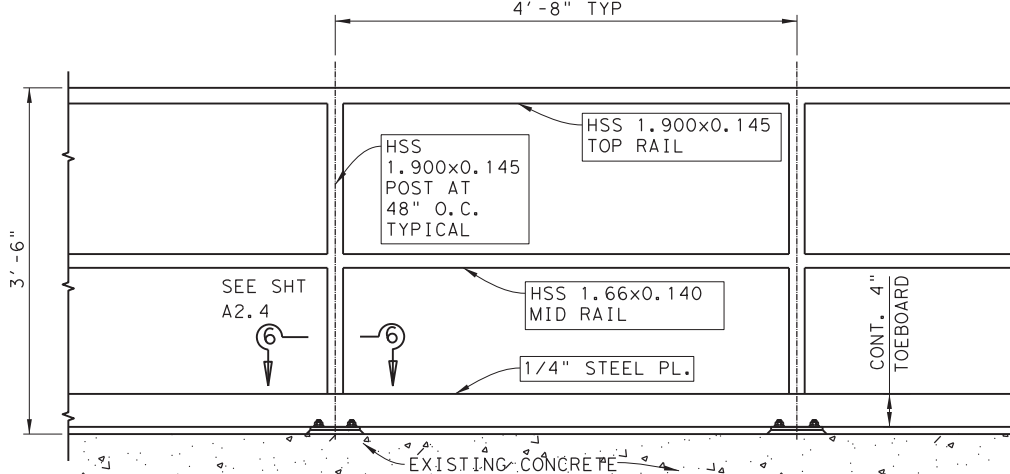
TYPICAL GUARDRAIL POST BASE PLATE

SCALE: 1 1/2"=1'-0"



SECTION 2.3

SCALE: 1"=1'-0"



TYPICAL GUARDRAIL ELEVATION

SCALE: 1"=1'-0"

CONSTRUCTION NOTES:

1. Apply Galvanizing Repair Paint To Meet The Requirements Of DMS-8103. Use A.R.C. Galvilite Or Equal, Recommendations Before Applying.
2. Rail Posts Base Must Be Perpendicular To Top Of Adjacent Concrete Grade. Use type VII Epoxy Mortar Under Post Base Plates If Gaps Larger Than 1/16" Exist.
3. Round Or Chanfer Exposed Edges Of HSS Rail and HSS Rail Posts To Approximately 1/16" By Ginding.

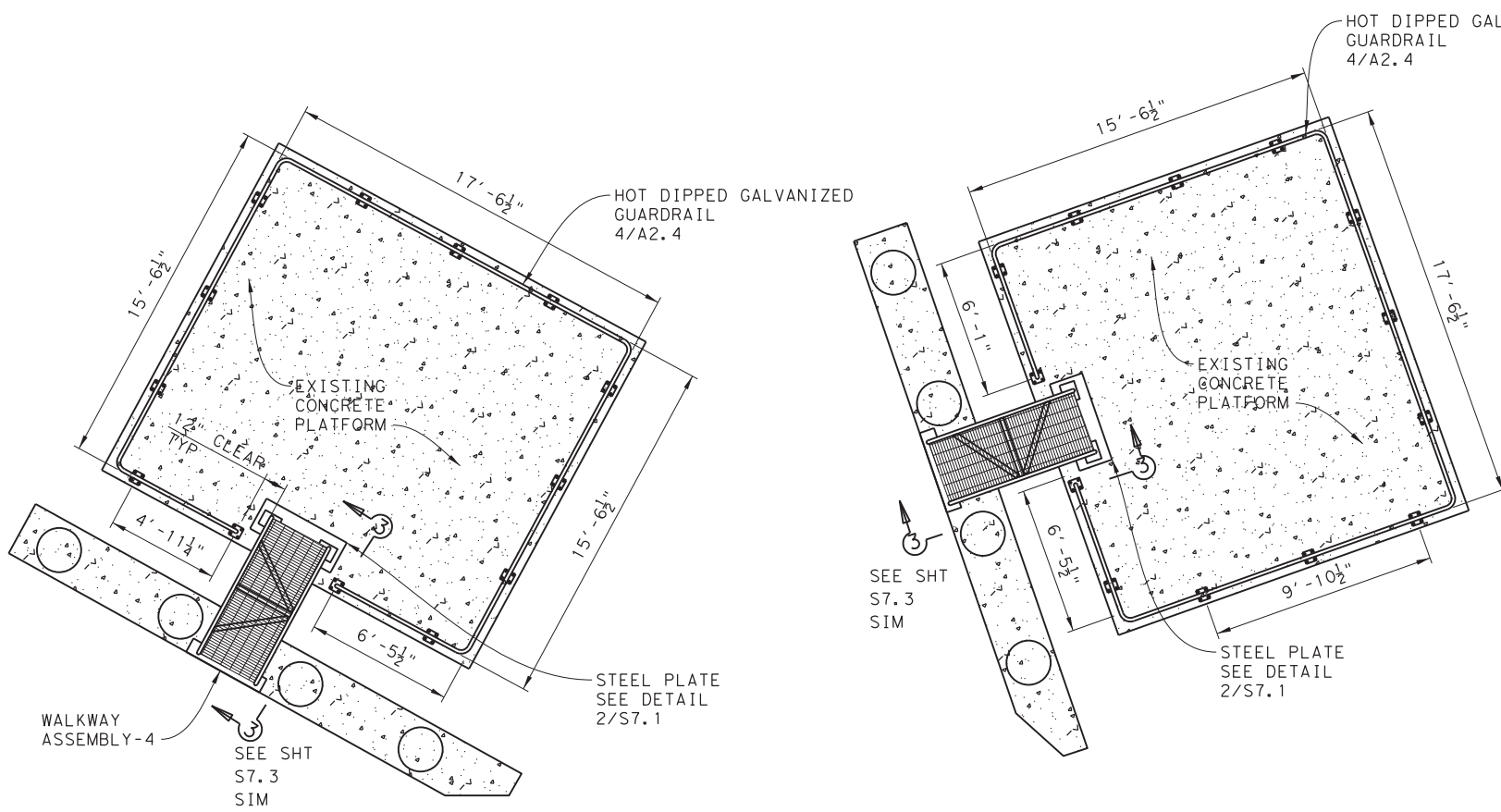
MATERIAL NOTES:

1. Provide ASTM-A500 Grade B, A1085 Or A53 Grade B For All HSS. Provide ASTM-A36 For Plates.
2. Hot Dip Galvanize Assembly After Fabrication In Accordance With ASTM A123.
3. Anchor Bolts Must Be Four 1/2" Dia. Hilti Anchor Rod Model-HAS-R 316 SS. Set With Hilti Epoxy Model HIT-HY 200. Washer And Nut Shall Be SS 316
4. For All Rails, Submit Erection Drawings Showing Section Lengths, Splice Locations, Rail Post Spacing And Anchor Bolt Setting For Approval.

COATINGS:

5. Coal_Tar Epoxy: (Severe Exposure)
 - A. Apply A Coat Around Nut And Bolt Once The Guardrail Structure Has Been Installed.
 - B. Apply A Coat At Bottom Of Steel Plates Prior To Installation.
 - C. Apply A Coat At Surface That Will Be Installed Against Concrete Surface.
 - D. Primer: As Recommended By Painting System Manufacturer.

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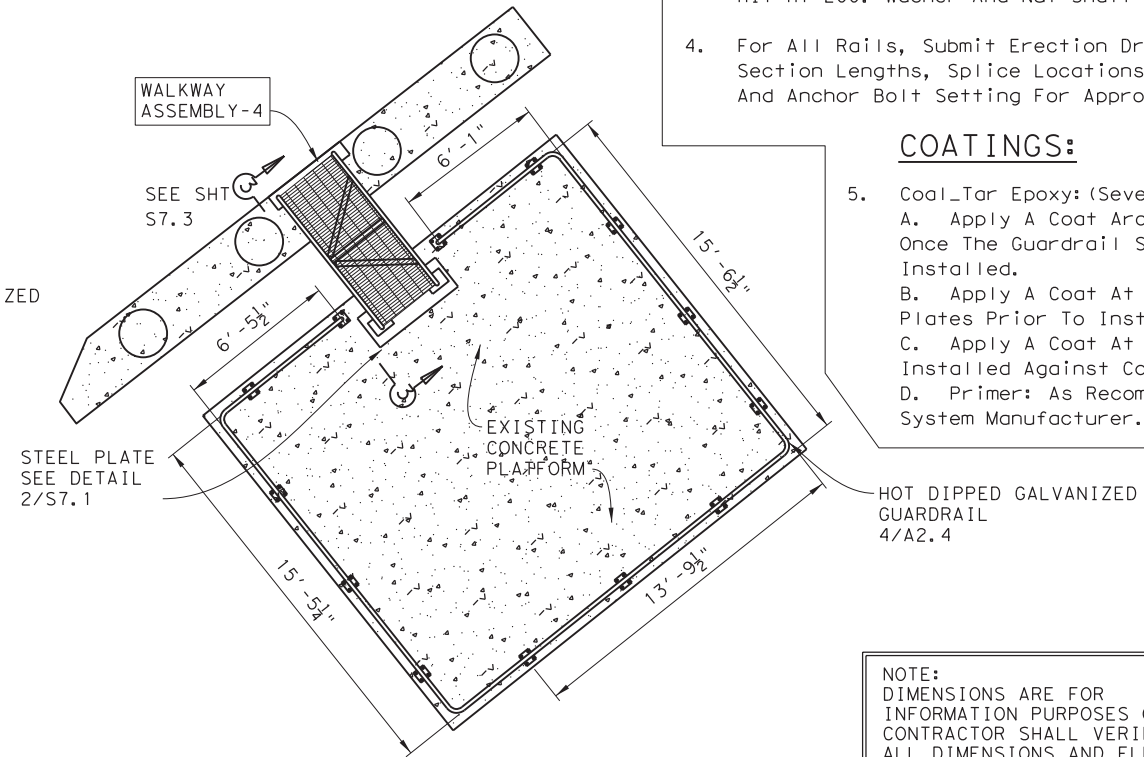


LANDING 6 - FLOOR PLAN

SCALE: 1/4"=1'-0"

LANDING 4 - FLOOR PLAN

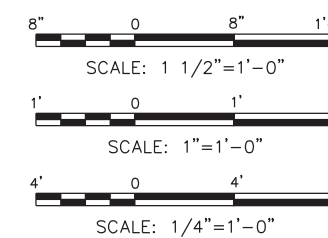
SCALE: 1/4"=1'-0"



LANDING 4 - FLOOR PLAN

SCALE: 1/4"=1'-0"

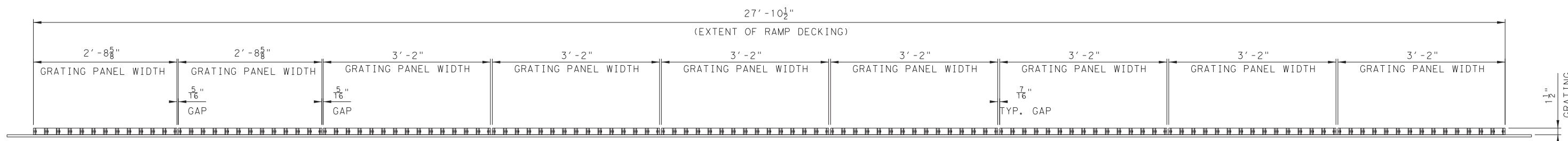
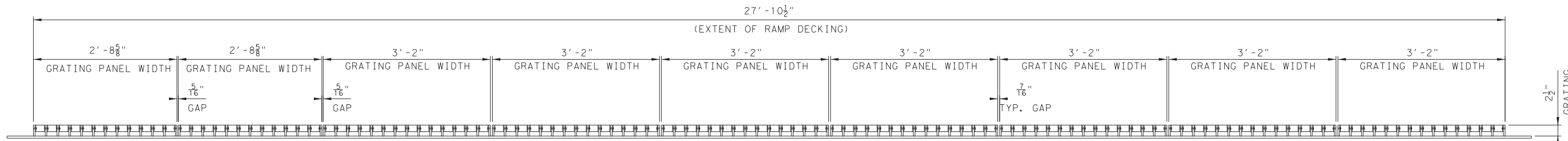
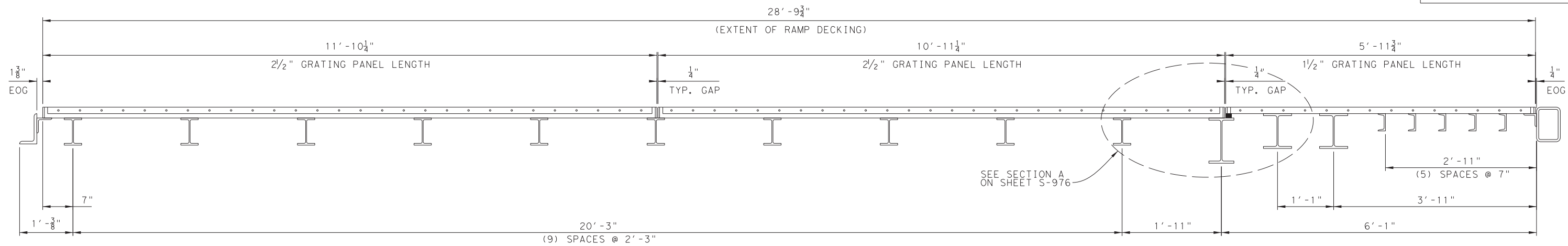
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FERRY LANDING MAINTENANCE
FLOOR PLANS - LANDING 1, 4, AND 6

SHEET 115 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-975
DN:1 MM	REVISIONS			COUNTY:
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DL:1 SH				CONTROL SECTION:
CK:1 RW	REV	DESCRIPTION	DATE	6428 78 001
				JOB HIGHWAY:
				SH87

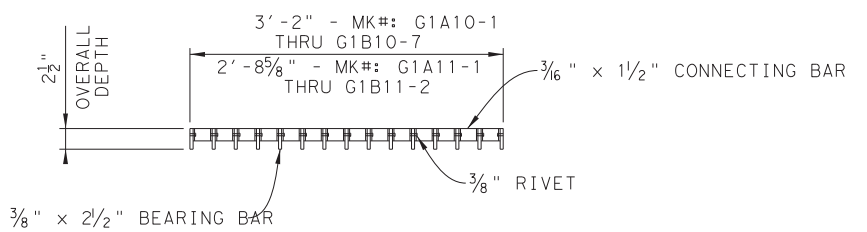
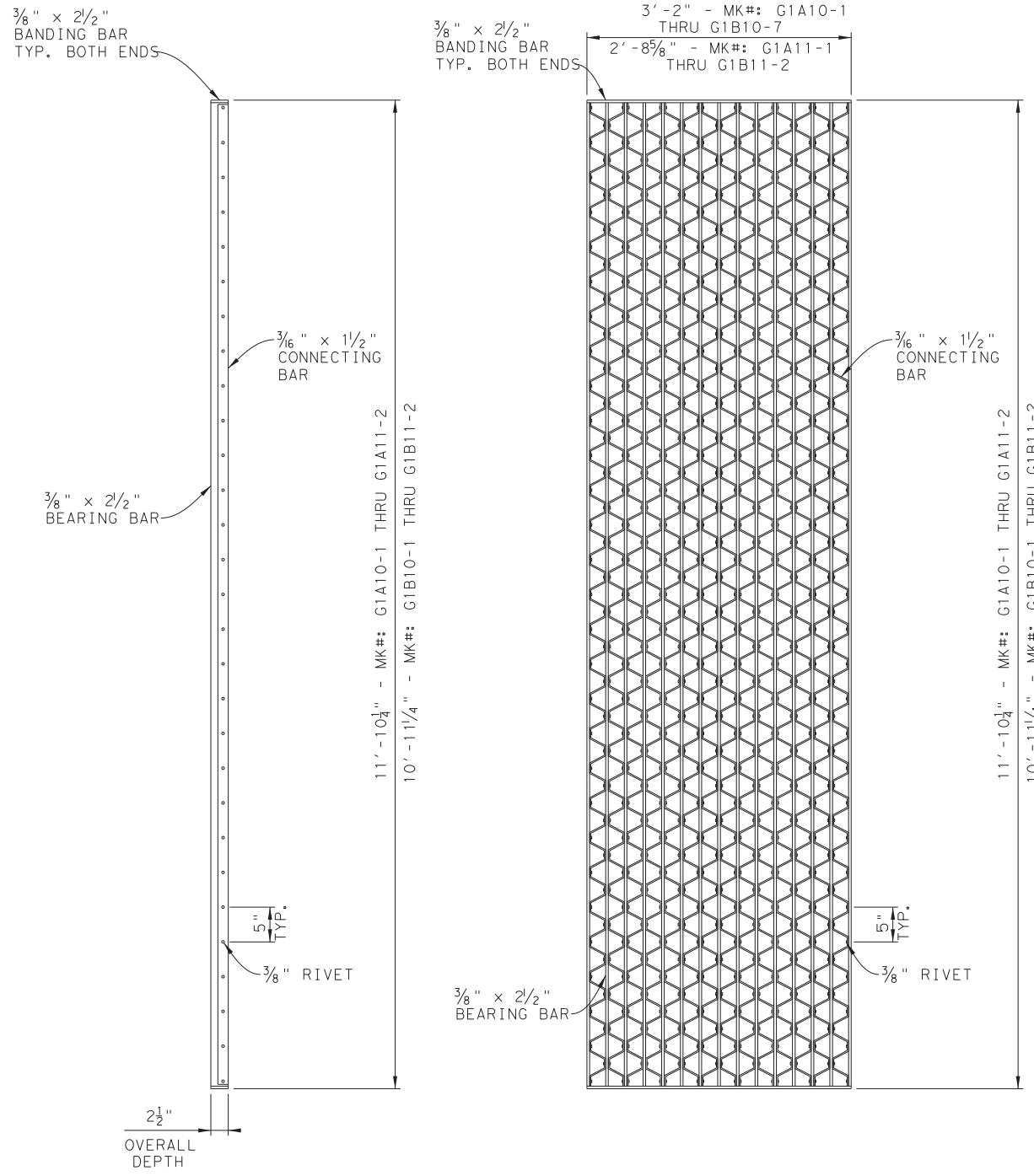


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 TEXAS DEPARTMENT OF TRANSPORTATION
 FERRY LANDING MAINTENANCE
 TYPICAL LANDING RAMP GRATING
 SHEET 2 OF 3

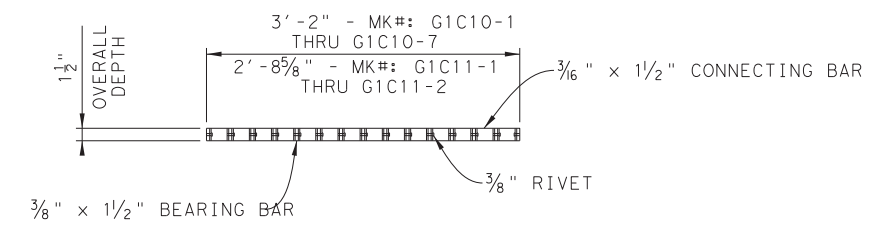
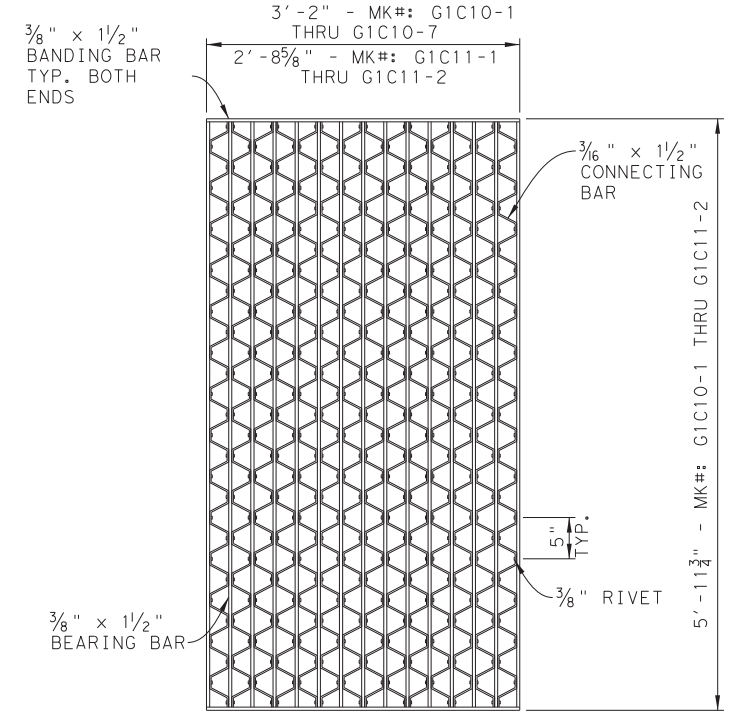
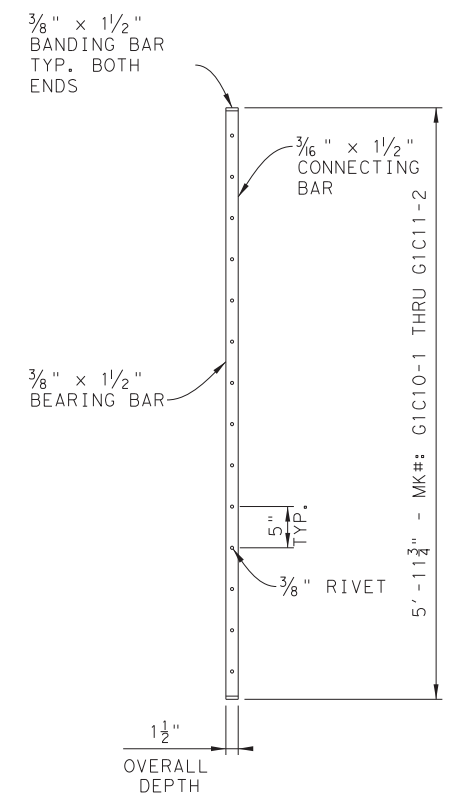
SHEET 117 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
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REVISIONS		COUNTY	CONTROL SECTION	JOB	HIGHWAY
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DN: I	MC				
CK: I	RW	REV	DESCRIPTION	DATE	

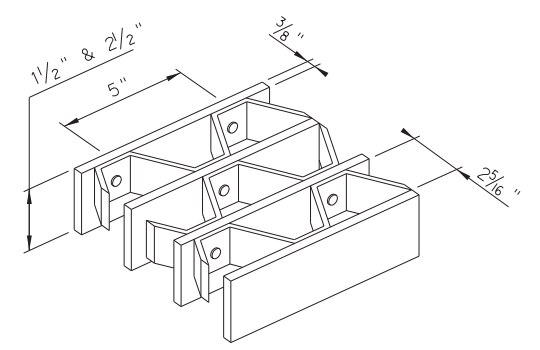
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2 1/2" GRATING
SCALE: 1"=1'-0"



1 1/2" GRATING
SCALE: 1"=1'-0"

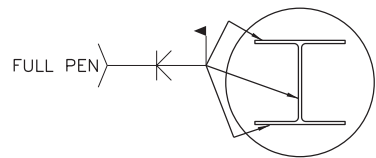


37R5 RIVETED GRATING - PLAIN SURFACE

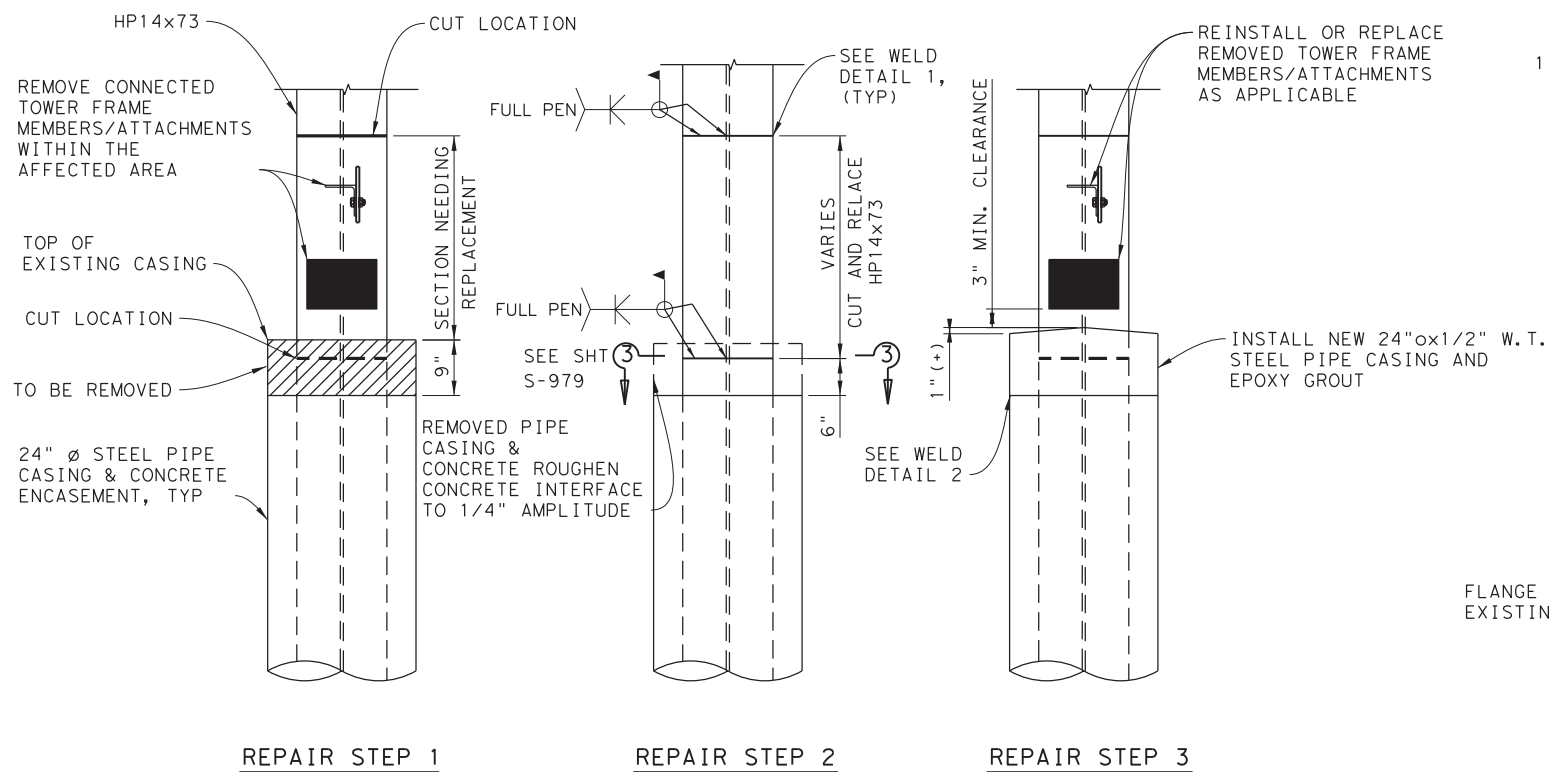
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 TEXAS DEPARTMENT OF TRANSPORTATION
 FERRY LANDING MAINTENANCE
 TYPICAL LANDING RAMP GRATING
 SHEET 3 OF 3

ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	12		RMC 6428-78-001	S-978
DN.:	REVISIONS			
CK.:		COUNTY	CONTROL SECTION	JOB HIGHWAY
DR.:		GALVESTON	6428 78	001 SH87
CR.:				

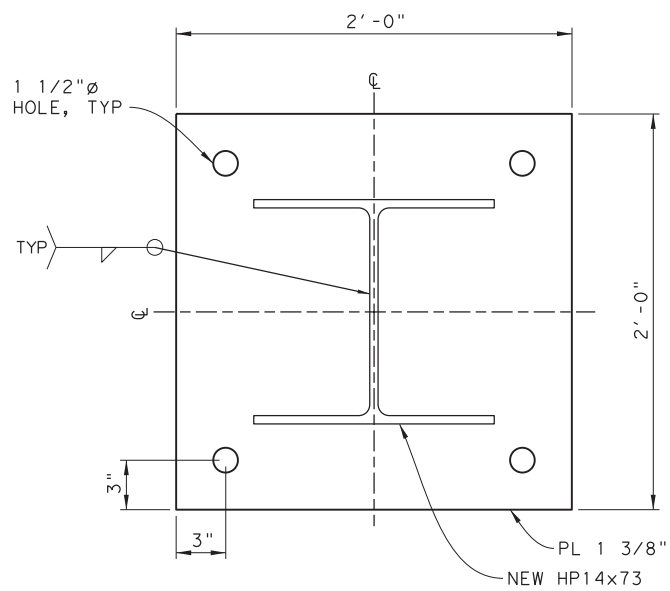
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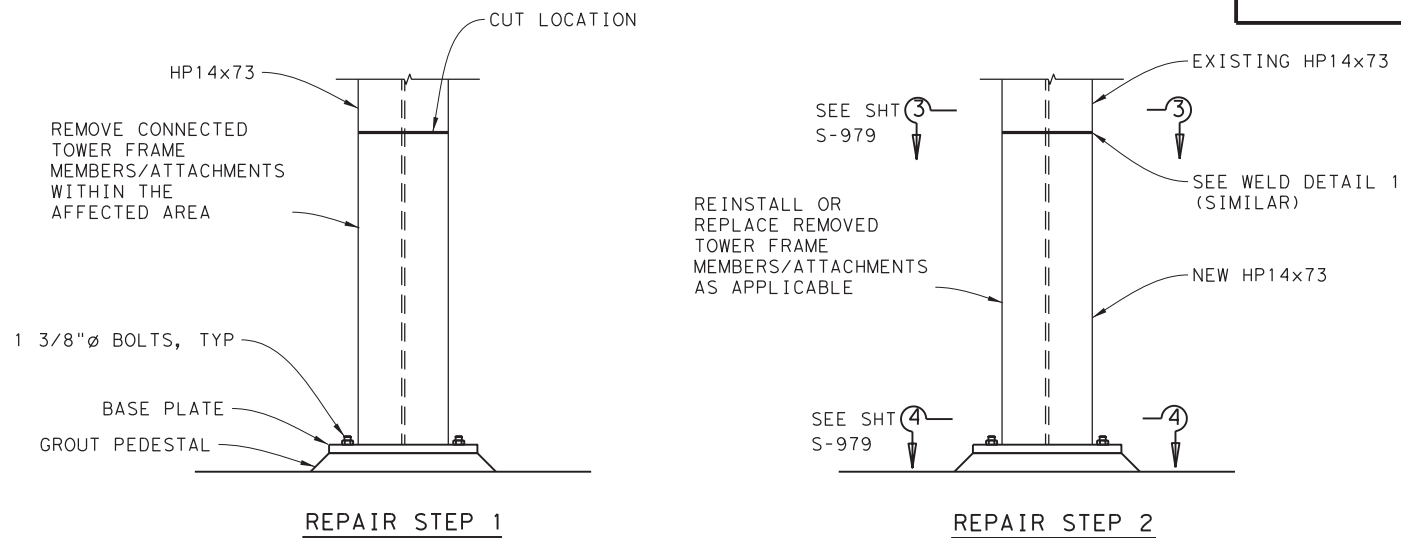
SECTION 3
SCALE: 3/4"=1'-0"



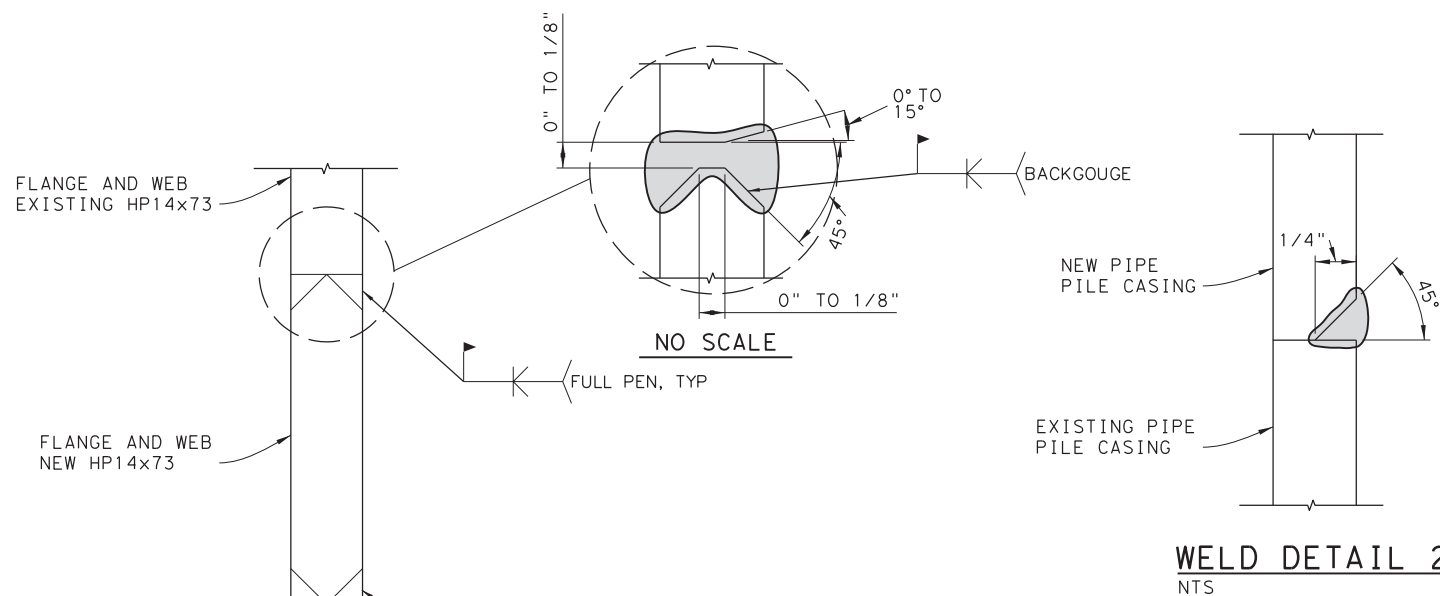
DETAIL 1 TOWER LEG REPAIR - LANDING #4
SCALE: 3/4"=1'-0"



SECTION 4



DETAIL 1 TOWER LEG REPAIR - LANDING #1 & #6
SCALE: 3/4"=1'-0"



WELD DETAIL 1
NTS

WELD DETAIL 2
NTS



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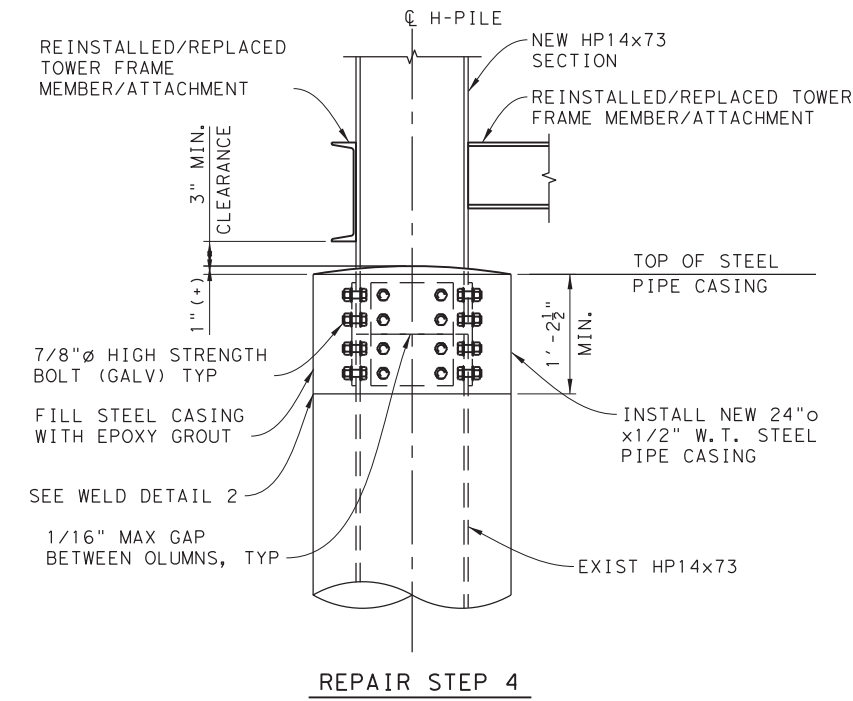
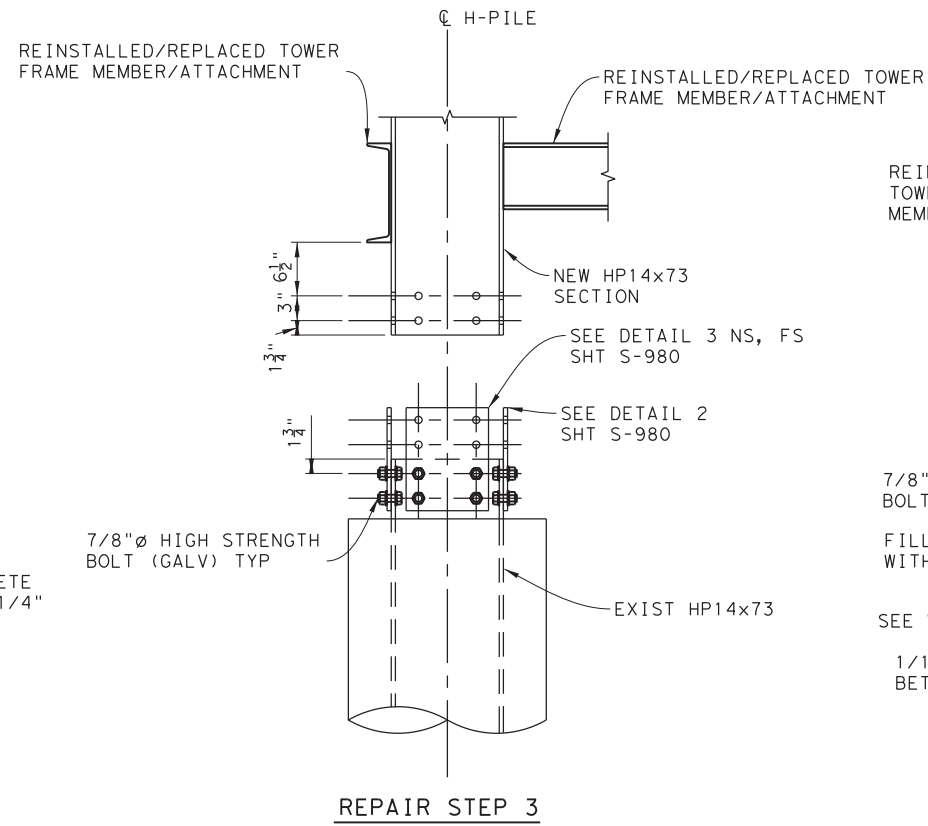
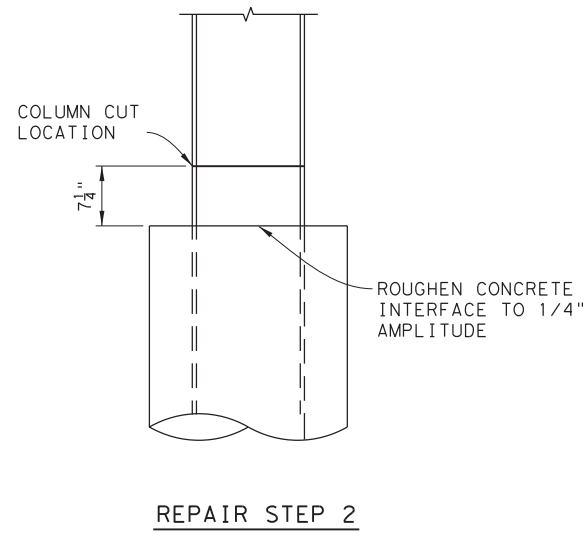
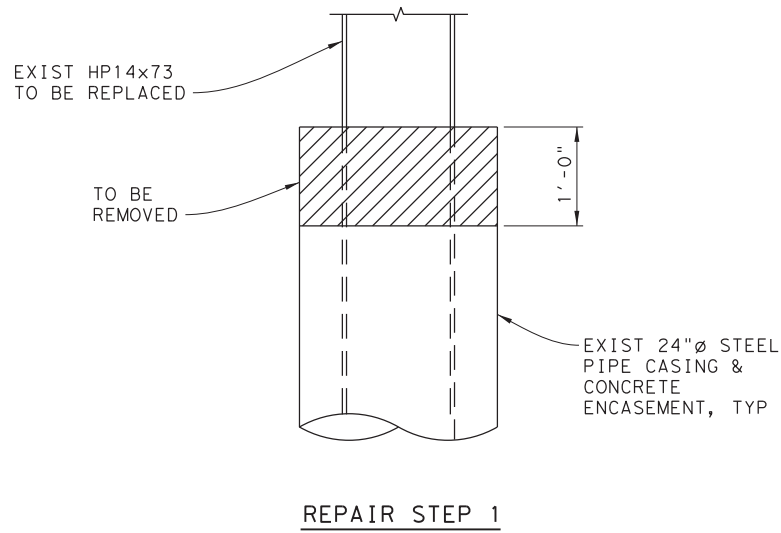
CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO BEGINNING CONSTRUCTION.

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FERRY LANDING MAINTENANCE
TOWER LEG REPAIR DETAILS

SHEET 119 OF 148

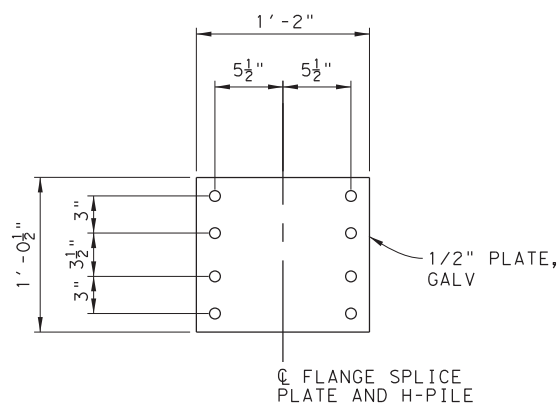
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CK: 1 SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
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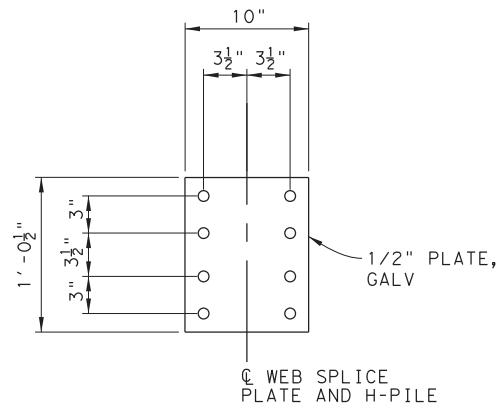
ALTERNATIVE TOWER LEG REPAIR DETAIL 1 - LANDING #4

SCALE: 1"=1'-0", SHT S-980



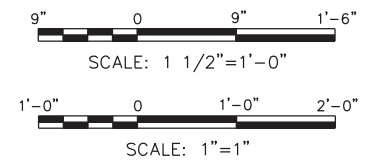
DETAIL 2 FLANGE SPLICE PLATE

SCALE: 1 1/2"=1'-0", SHT S-980



DETAIL 3 WEB SPLICE PLATE

SCALE: 1 1/2"=1'-0", SHT S-980



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FERRY LANDING MAINTENANCE
ALTERNATE TOWER LEG REPAIR DETAILS

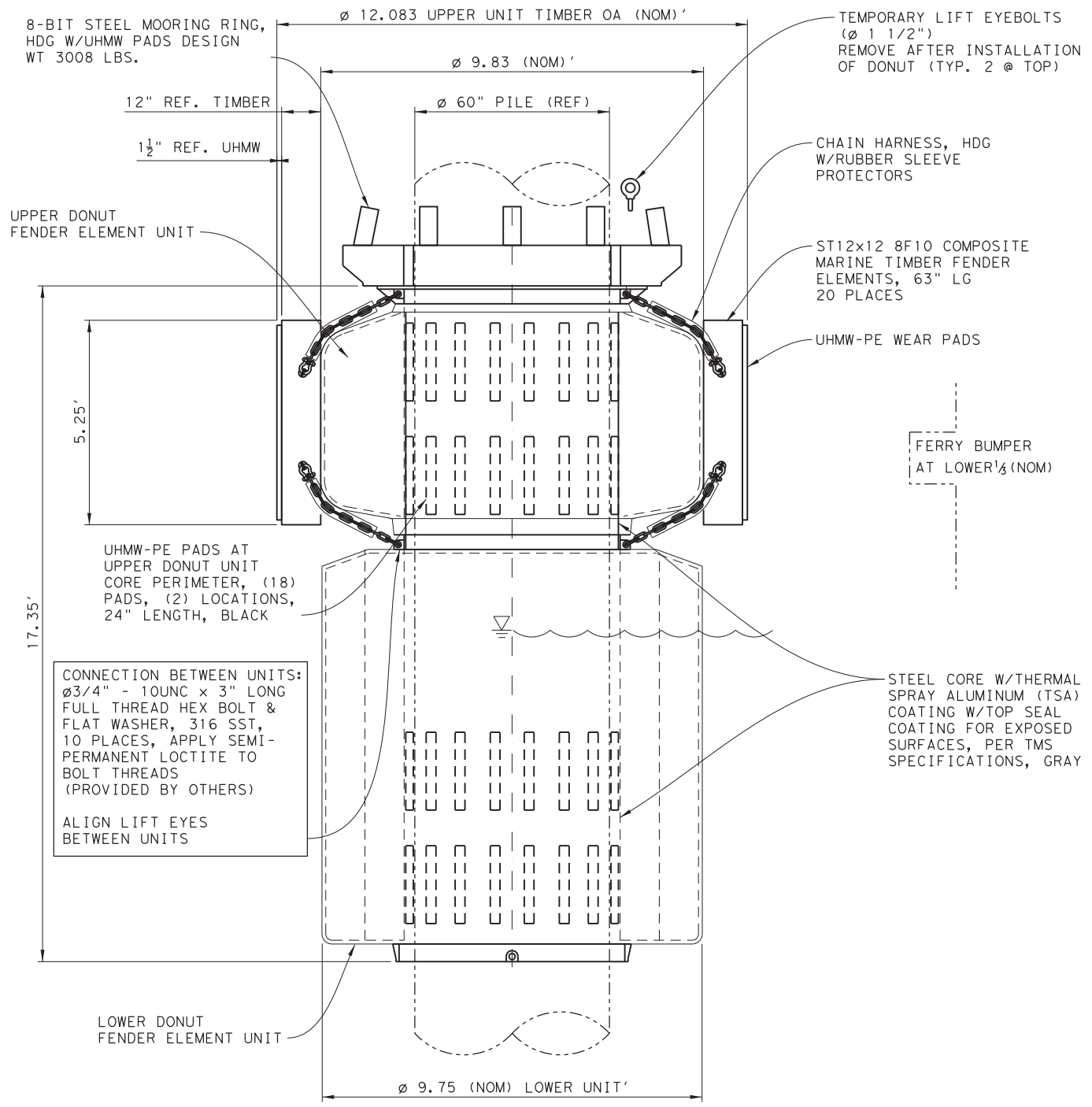
SHEET 120 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
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DN: 1 MM	REVISIONS			
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DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

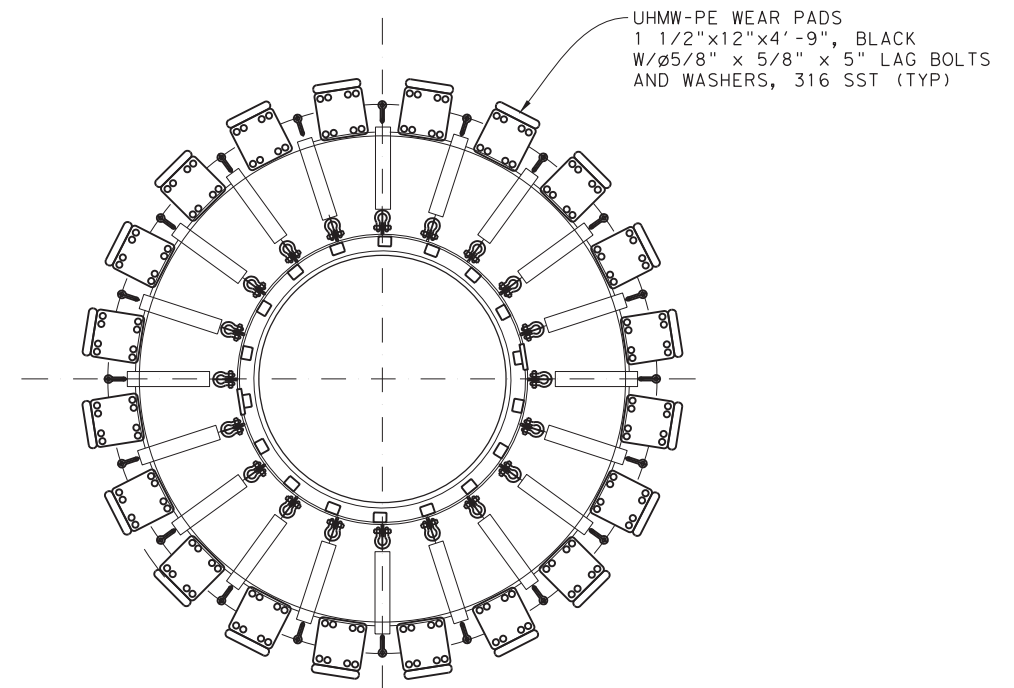
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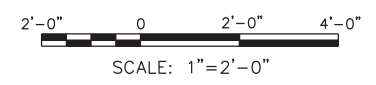
SIDE VIEW
SCALE: 1"=2'-0"



PLAN VIEW AT UPPER UNIT
SCALE: 1"=2'-0"

NOTES:

1. All Dimensions And Elevations To Be Verified By Others.
2. All Unit Weights And Dimensions Are Nominal And Subject To normal Manufacturing Tolerance.
3. All Unit Connection Hardware Is To Be AISI 316 Stainless Steel, UNO.
4. Steel Mooring Ring Is To Be Hot Dip Galvanized Per ASTM A-123.
5. All Welding Is To Be Per AWS D1.1.
6. All Exposed Steel Surfaces To Have A Thermal Spray Aluminum (TSA) Coating System Per TMS Specifications. Color: Gray.
7. All Non-Exposed Steel Surfaces To Have Epoxy Paint Coating Per TMS Specifications.



REFERENCE WEIGHTS:

MOORING RING:	3008 LBS
UPPER UNIT:	14491 LBS
LOWER UNIT:	7126 LBS
TOTAL WEIGHT:	24625 LBS

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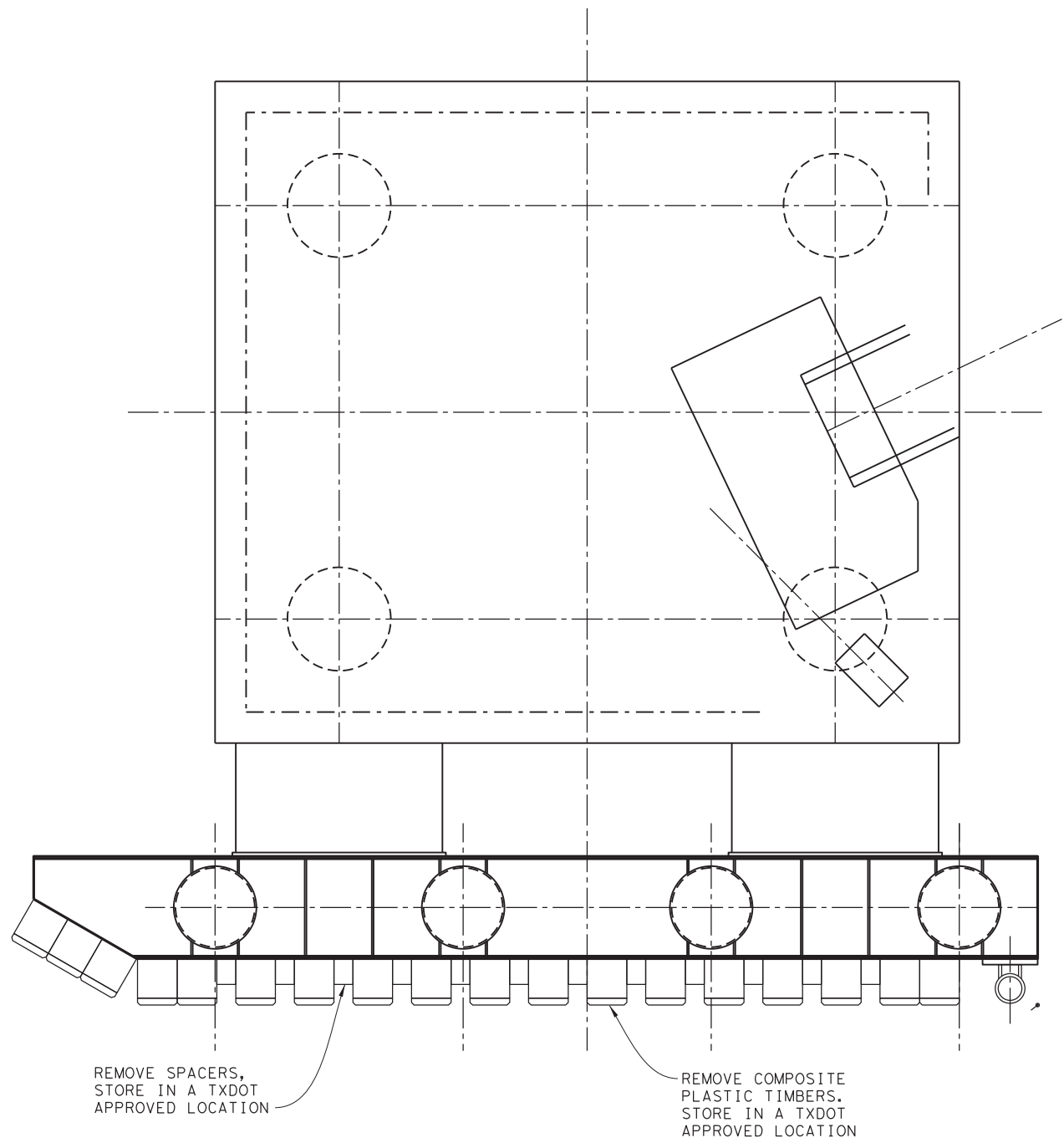
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
UPPER & LOWER UNITS W/ MOORING RING REPLACEMENT

SHEET 121 OF 148

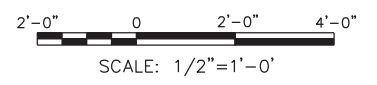
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-981
DN: 1 MM	REVISIONS			
CK: 1 SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-981.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:49:16 PM

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NOTE: SEE SHEET S-130 FOR EXISTING MEMBER INFORMATION AND COATING REQUIREMENTS



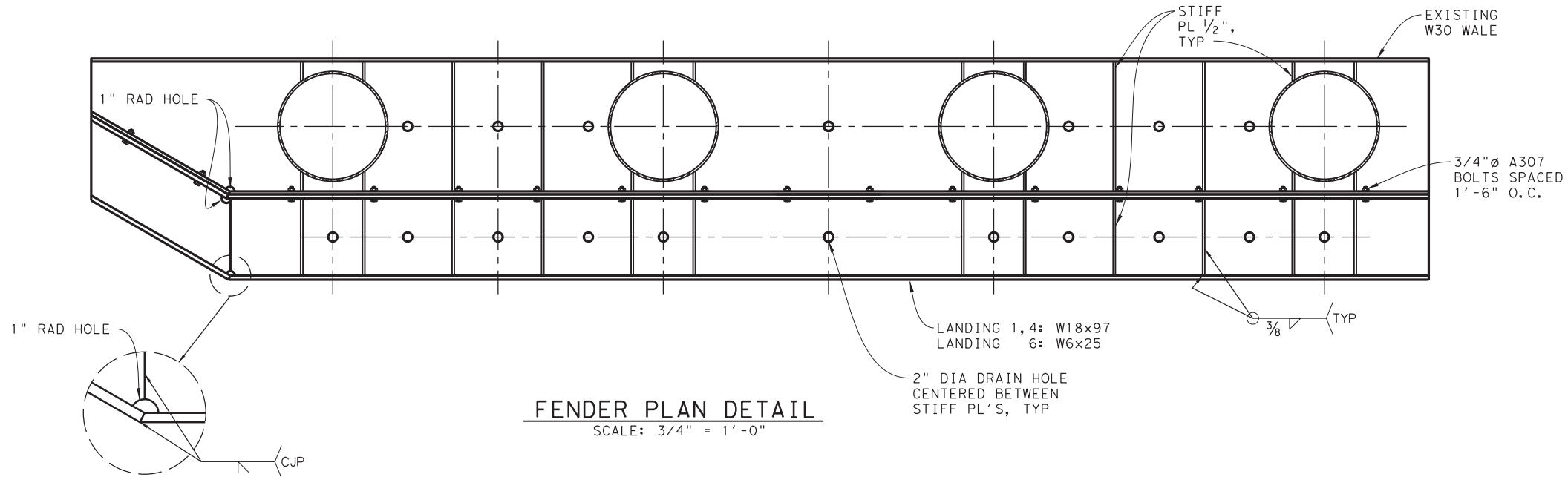
PLAN
SCALE: 1/2" = 1'-0"

DRAWING NAME: 949402-S-982.dgn
PLOT DATE: 4/6/2023 3:49:39 PM PLOTTED BY: SHIH

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
WING WALL REFURBISHMENT
SHEET 1 OF 3

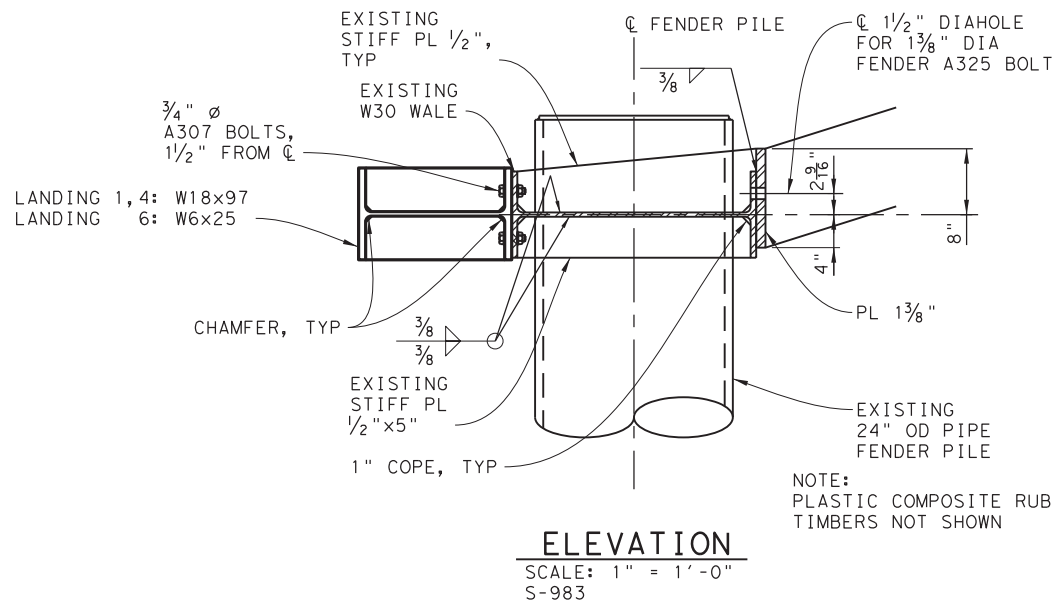
SHEET 122 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-982
CK:1	SS	COUNTY			HIGHWAY
DR:1	SH	GALVESTON	6428	78	001
CK:1	RW	REV	DATE		SH87



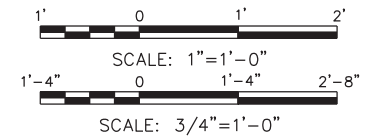
FENDER PLAN DETAIL
SCALE: 3/4" = 1'-0"

NOTE: SEE SHEET S-132 FOR EXISTING MEMBER INFORMATION AND COATING REQUIREMENTS




ELEVATION
SCALE: 1" = 1'-0"
S-983

NOTE: PLASTIC COMPOSITE RUB TIMBERS NOT SHOWN



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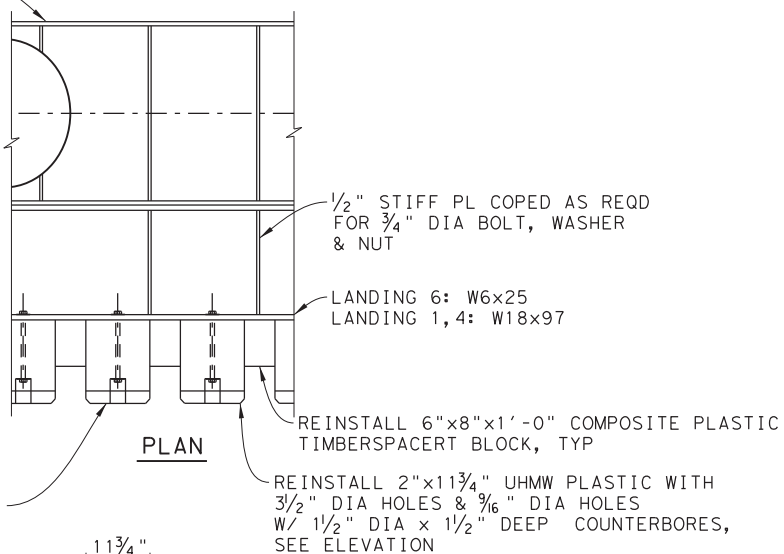
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
WING WALL REFURBISHMENT
SHEET 2 OF 3

SHEET 123 OF 148

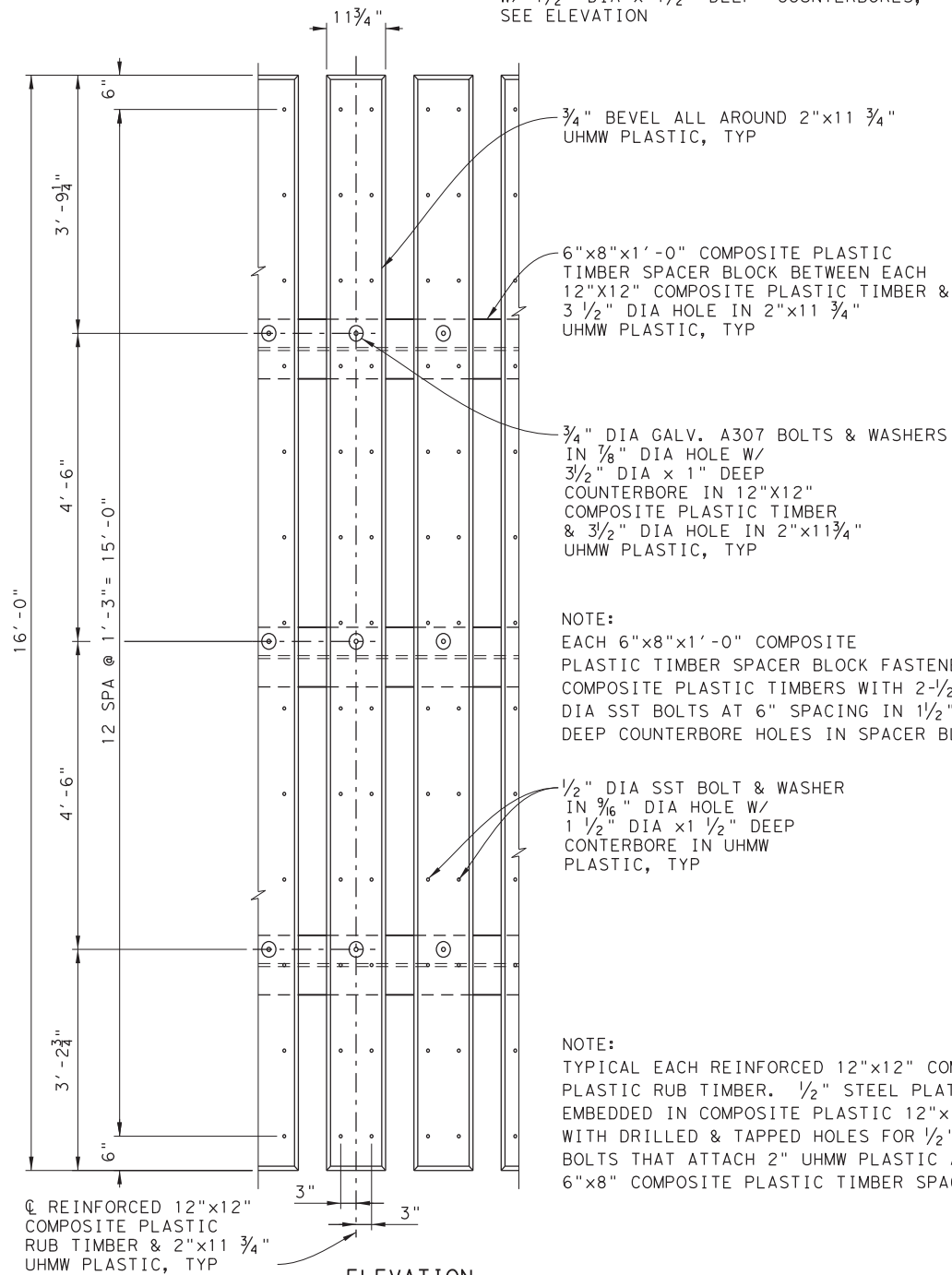
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DN: 1	MM	12		RMC 6428-78-001	S-983
CK: 1	SS	COUNTY			HIGHWAY
DN: 1	SH	GALVESTON	6428	78	001
CK: 1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-983.dgn PLOTTED BY: SHIL PLOT DATE: 4/6/2023 3:49:50 PM

3/4" DIA GALV. A307 BOLTS & WASHERS IN 7/8" DIA. HOLE W/ 3/2" DIA x 1" DEEP COUNTERBORE IN 12"x12" COMPOSITE PLASTIC TIMBER, TYP



PLAN



ELEVATION

RUB TIMBER DETAIL

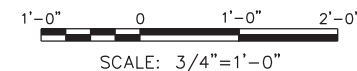
S-130

NOTE:
EACH 6"x8"x1'-0" COMPOSITE PLASTIC TIMBER SPACER BLOCK FASTENED TO 12"x12" COMPOSITE PLASTIC TIMBERS WITH 2-1/2" DIA SST BOLTS AT 6" SPACING IN 1 1/2" DIA x 1" DEEP COUNTERBORE HOLES IN SPACER BLOCKS.

NOTE:
TYPICAL EACH REINFORCED 12"x12" COMPOSITE PLASTIC RUB TIMBER. 1/2" STEEL PLATES EMBEDDED IN COMPOSITE PLASTIC 12"x12" TIMBERS WITH DRILLED & TAPPED HOLES FOR 1/2" SST. BOLTS THAT ATTACH 2" UHMW PLASTIC AND 6"x8" COMPOSITE PLASTIC TIMBER SPACERS.

NOTE: SEE SHEET S-133 FOR EXISTING MEMBER INFORMATION AND COATING REQUIREMENTS

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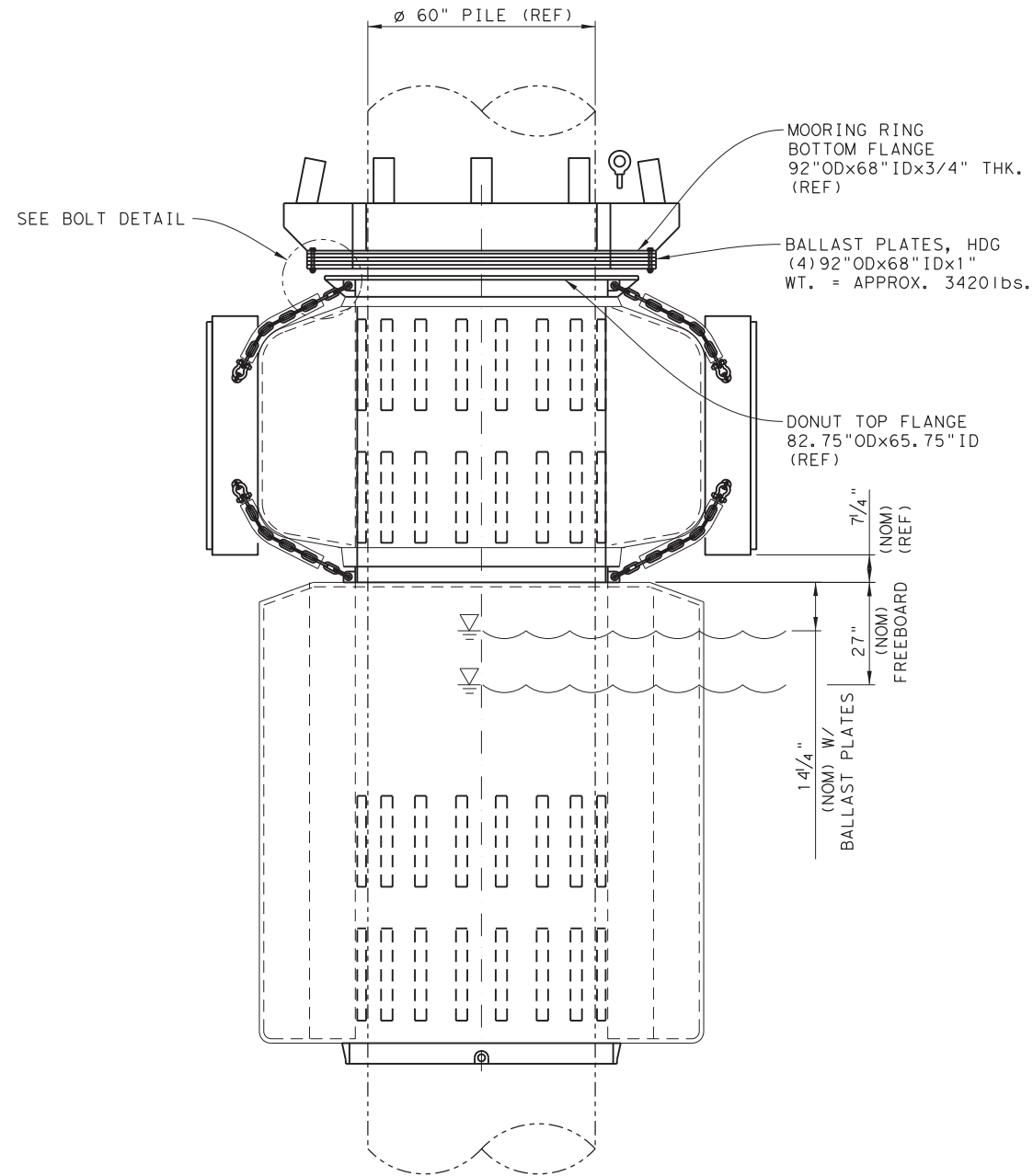
FERRY LANDING MAINTENANCE

WING WALL REFURBISHMENT
SHEET 3 OF 3

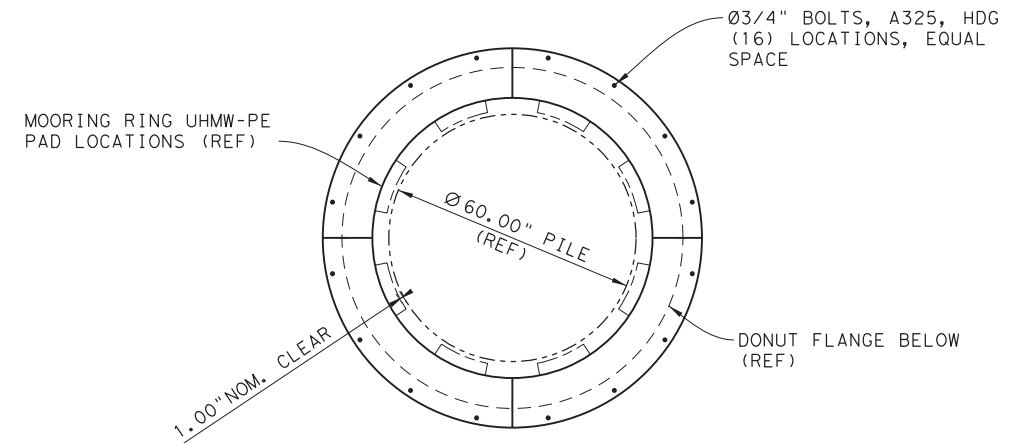
SHEET 124 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN:1	MM	12		RMC 6428-78-001	S-984
CK:1	SS	COUNTY:			HIGHWAY:
DN:1	SH	GALVESTON			6428 78 001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	

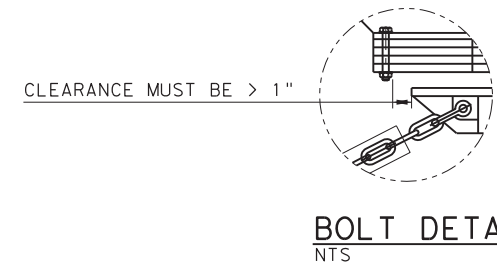
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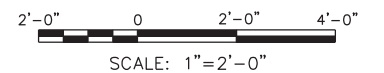
SIDE VIEW - ASSEMBLY
SCALE: 1"=2'-0"



PLAN VIEW - BALLAST PLATES
SCALE: 1"=2'-0"



BOLT DETAIL
NTS



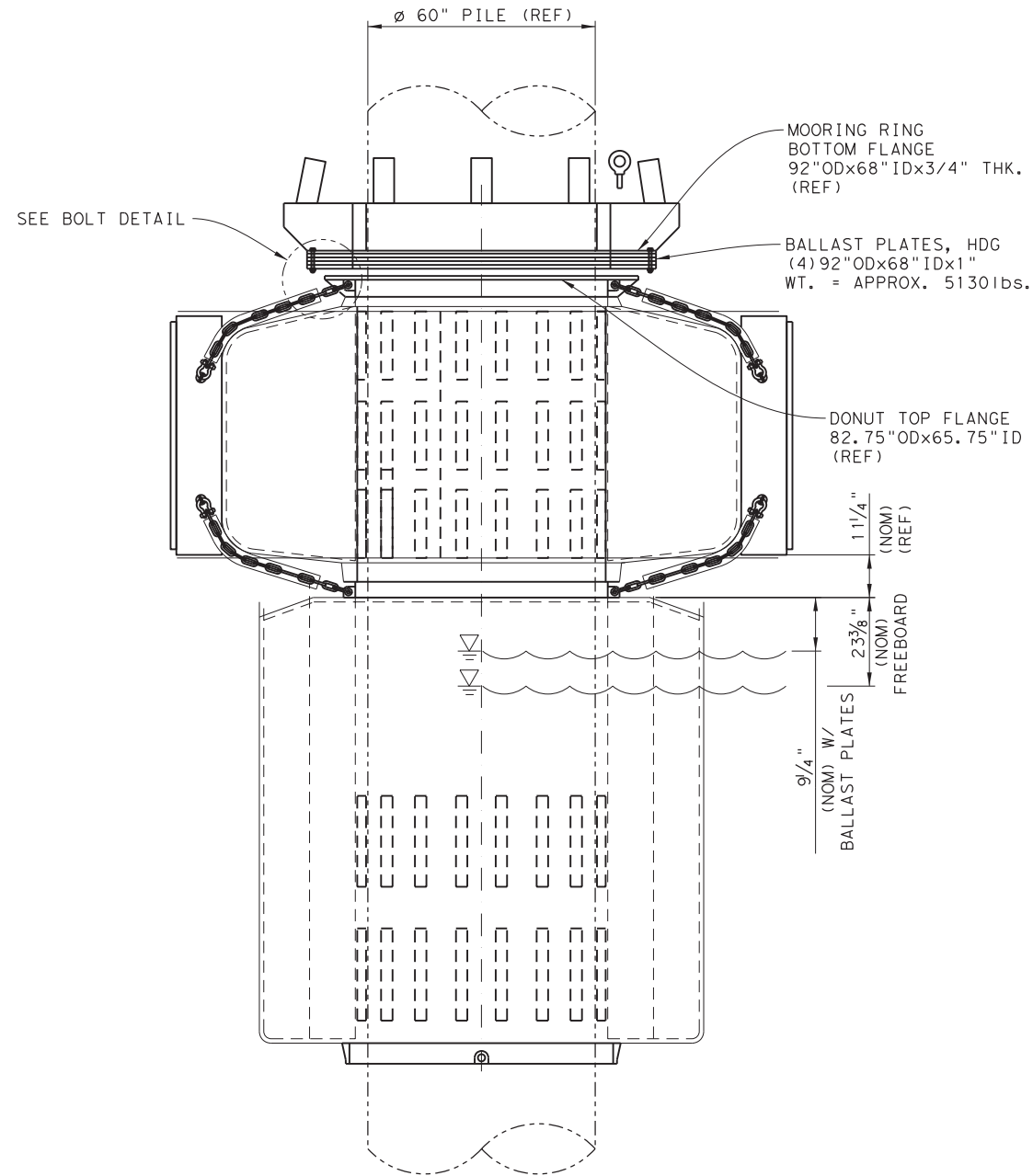
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FERRY LANDING MAINTENANCE
9'-10" DONUT FENDER W/
MOORING RING BALLAST
PLATE OPTION

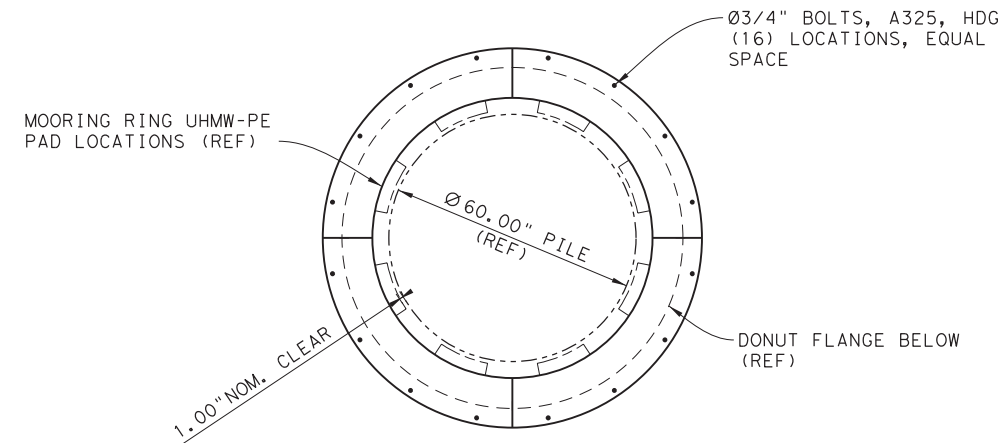
SHEET 125 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-990
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION:	JOB:
DR: SH		GALVESTON	6428 78	001
CK: RW	REV	DESCRIPTION	DATE	HIGHWAY:
				SH87

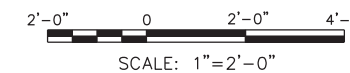
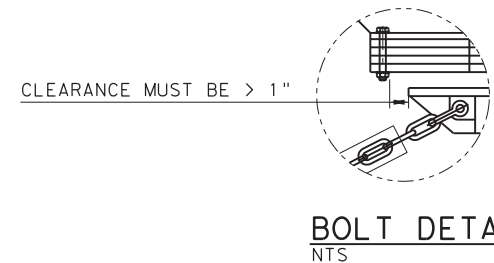
DRAWING NAME: 949402-S-990.dgn PLOTTED BY: SHIH PLOT DATE: 4/6/2023 3:50:01 PM



SIDE VIEW - ASSEMBLY
SCALE: 1"=2'-0"



PLAN VIEW - BALLAST PLATES
SCALE: 1"=2'-0"



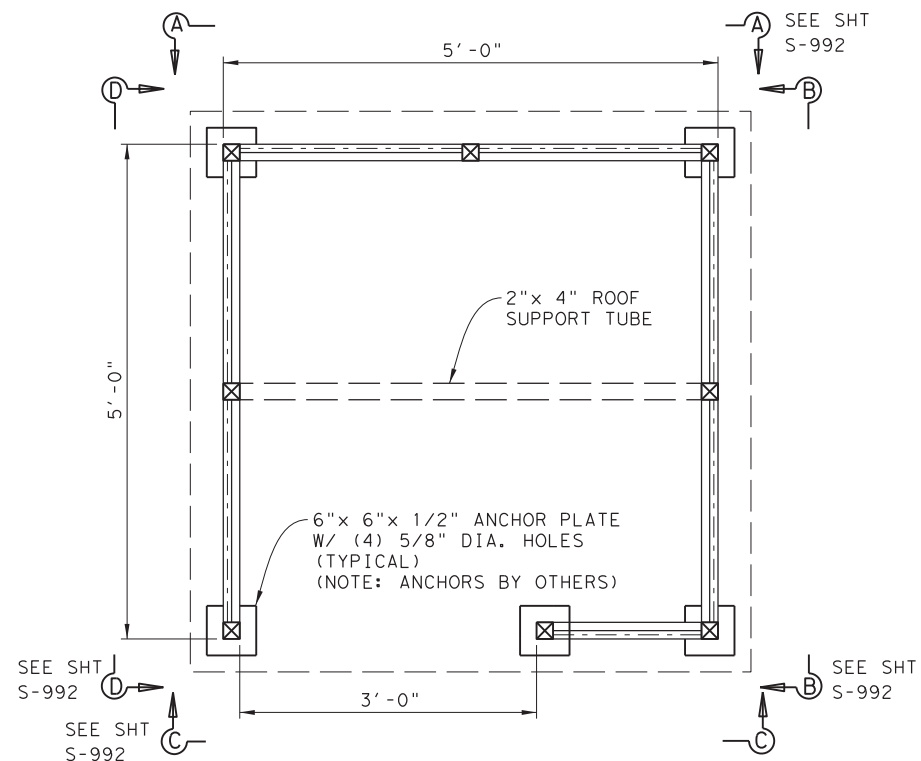
THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TxDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

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FERRY LANDING MAINTENANCE
**13'-8" DONUT FENDER W/
MOORING RING BALLAST
PLATE OPTION**

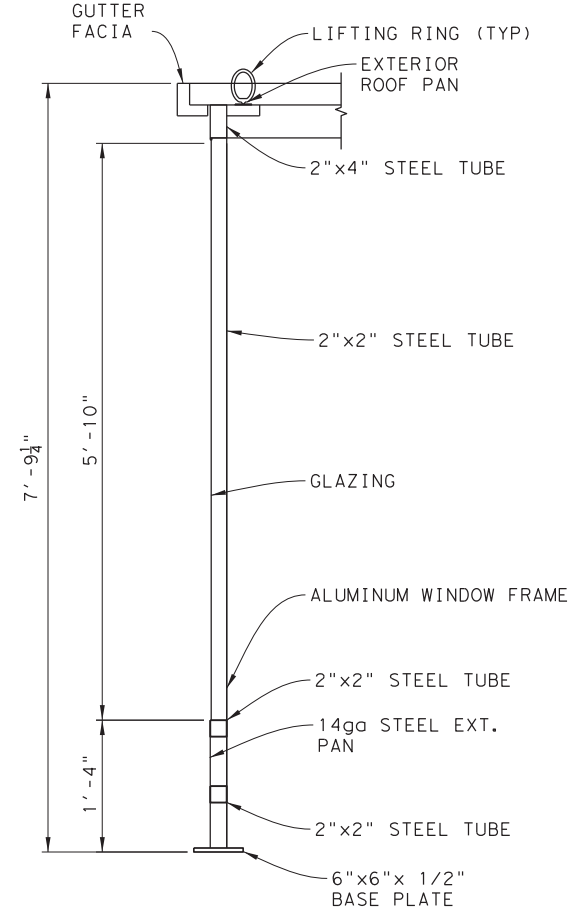
SHEET 126 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-991
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-991.dgn
PLOT DATE: 4/6/2023 3:50:06 PM PLOTTED BY: SHIH



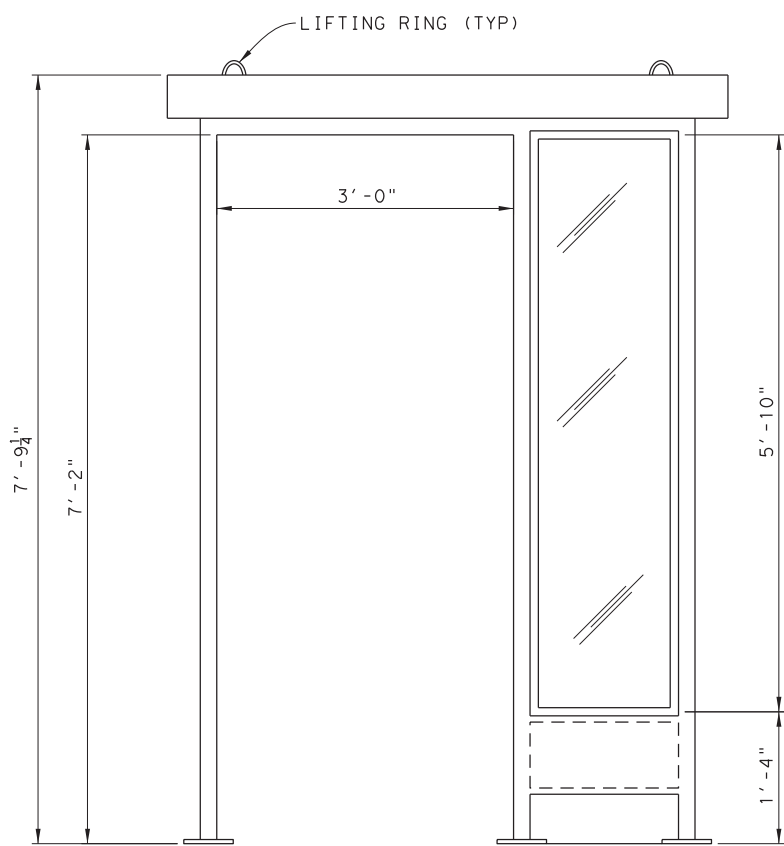
PLAN VIEW - STYLE "B"
SCALE: 1"=1'-0"



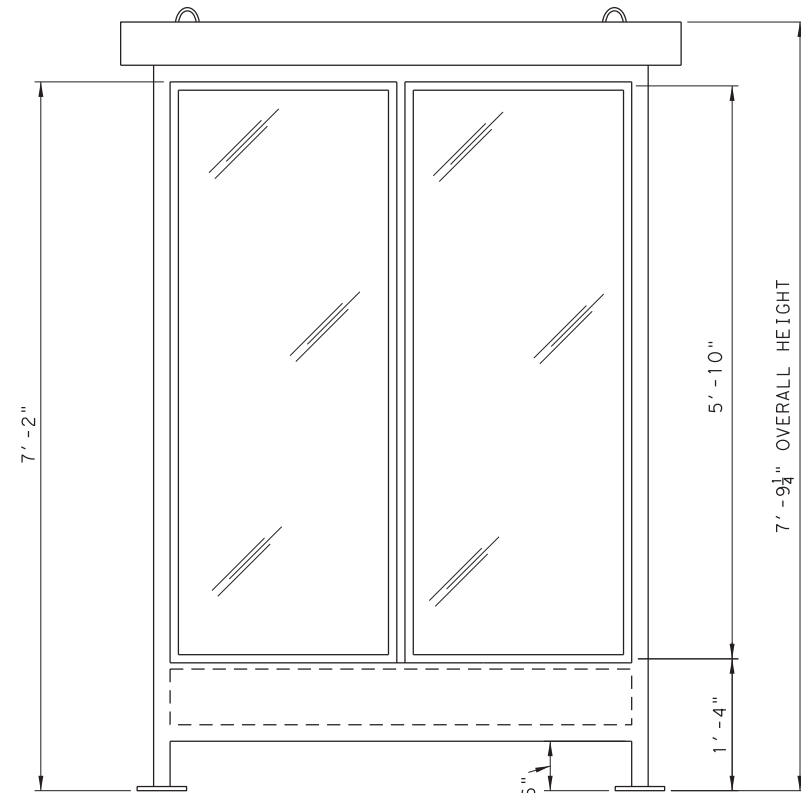
PARTIAL ELEVATION VIEW
SCALE: 1"=1'-0"

SHELTER MODEL SHL86 NOTES:

- * WELDED STEEL CONSTRUCTION, PAINTED ONE COLOR (WHITE)
- * 3" OVERHANG EXTERIOR ROOF w/ LIFTING RINGS
- * CLEAR ANODIZED ALUMINUM FIXED WINDOW FRAMES
- * CLEAR TEMPERED GLAZING
- * w/ 14GA STEEL PANS BELOW WINDOWS

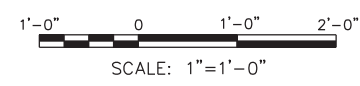



ELEVATION C
SCALE: 1"=1'-0"



ELEVATIONS A, B, & D
SCALE: 1"=1'-0"

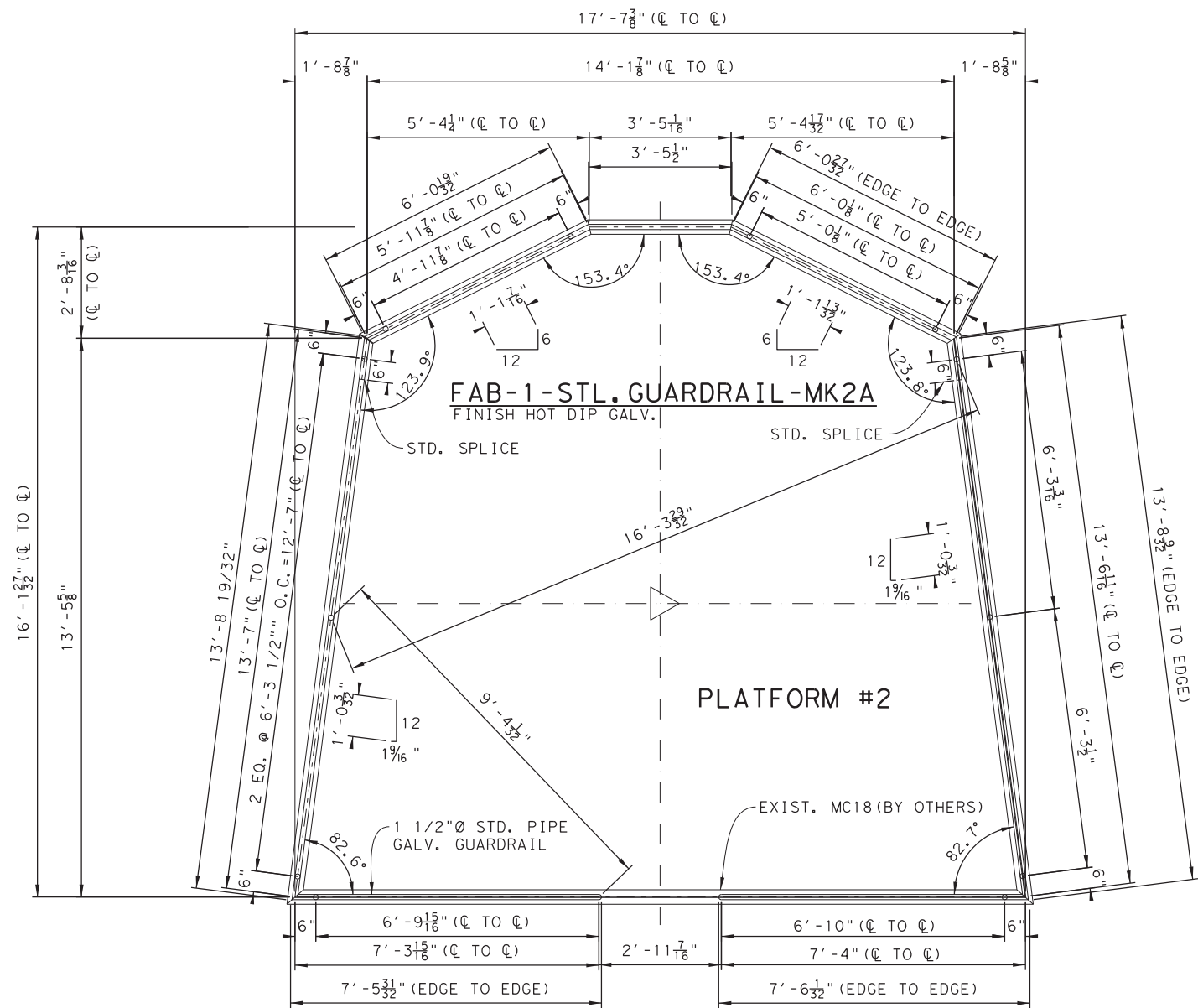
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FERRY LANDING MAINTENANCE
BUS SHELTER REPLACEMENT

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN:1	MM	12		RMC 6428-78-001	S-992
CK:1	SS	COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
DR:1	SH	GALVESTON		6428 78	001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	

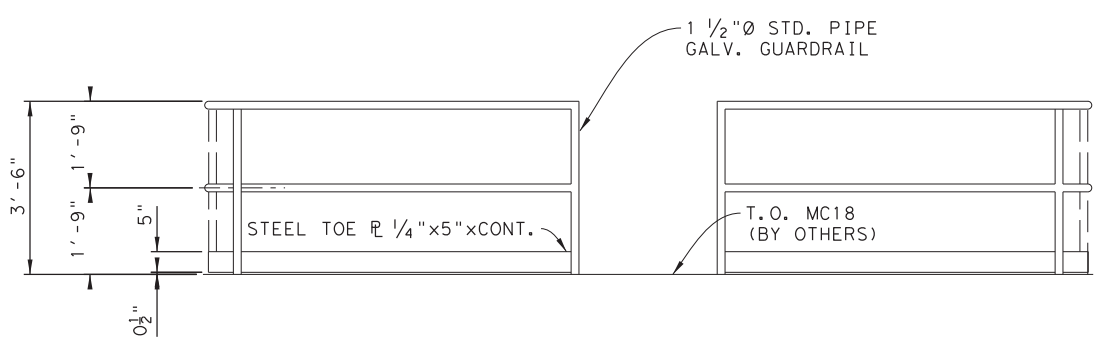
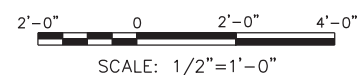
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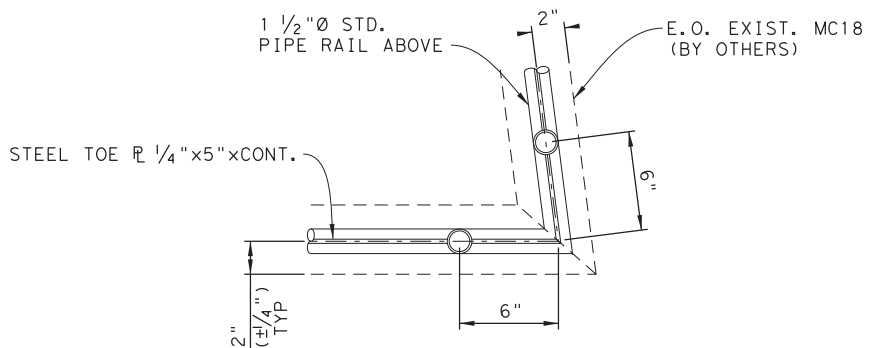
FAB-1-GALV. GUARDRAIL-MK2B
FINISH HOT DIP GALV.

FAB-2-GALV. GUARDRAIL-MK2C
FINISH HOT DIP GALV.

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TYP. ELEVATION
SCALE: 1/2"=1'-0"



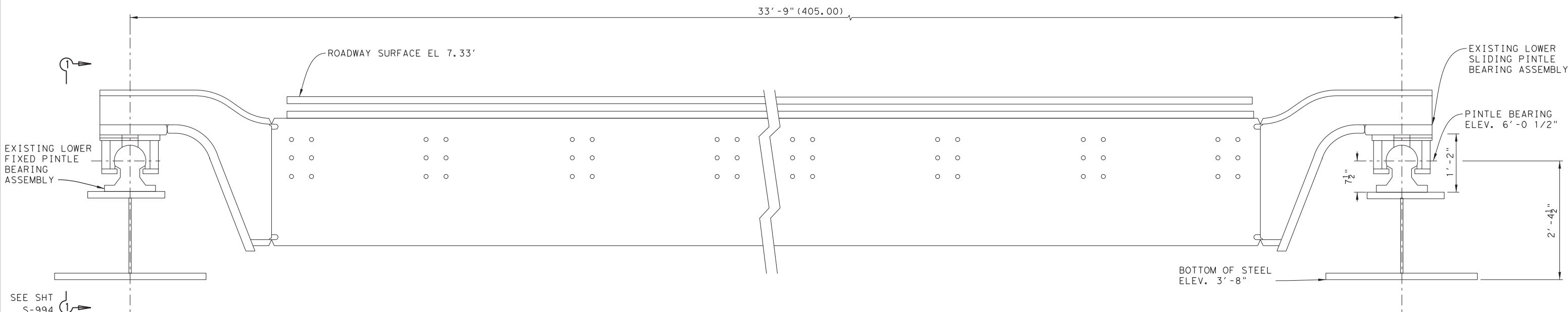
DETAIL @ CORNERS
NTS

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FERRY LANDING MAINTENANCE
 OUTER DOLPHIN
 HANDRAIL REPLACEMENT

SHEET 128 OF 148

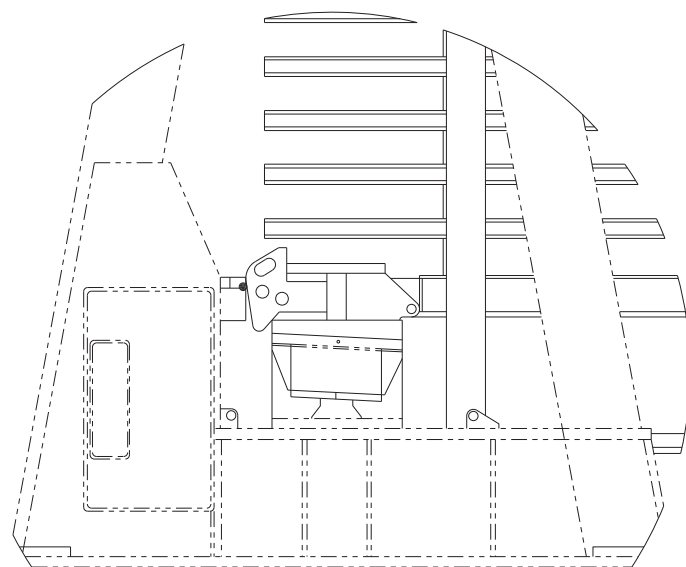
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	12		RMC 6428-78-001	S-993
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-993.dgn
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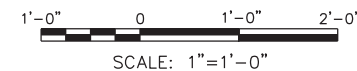


SECTION A
SCALE: 1"=1'-0"

SEE SHT
S-994




DETAIL 1
EXISTING SENSOR
BRACKET AND GUARD
RAIL REMOVED FOR
CLARITY



DRAWING NAME: 949402-S-994.dgn
PLOT DATE: 4/6/2023 3:50:27 PM PLOTTED BY: SHII

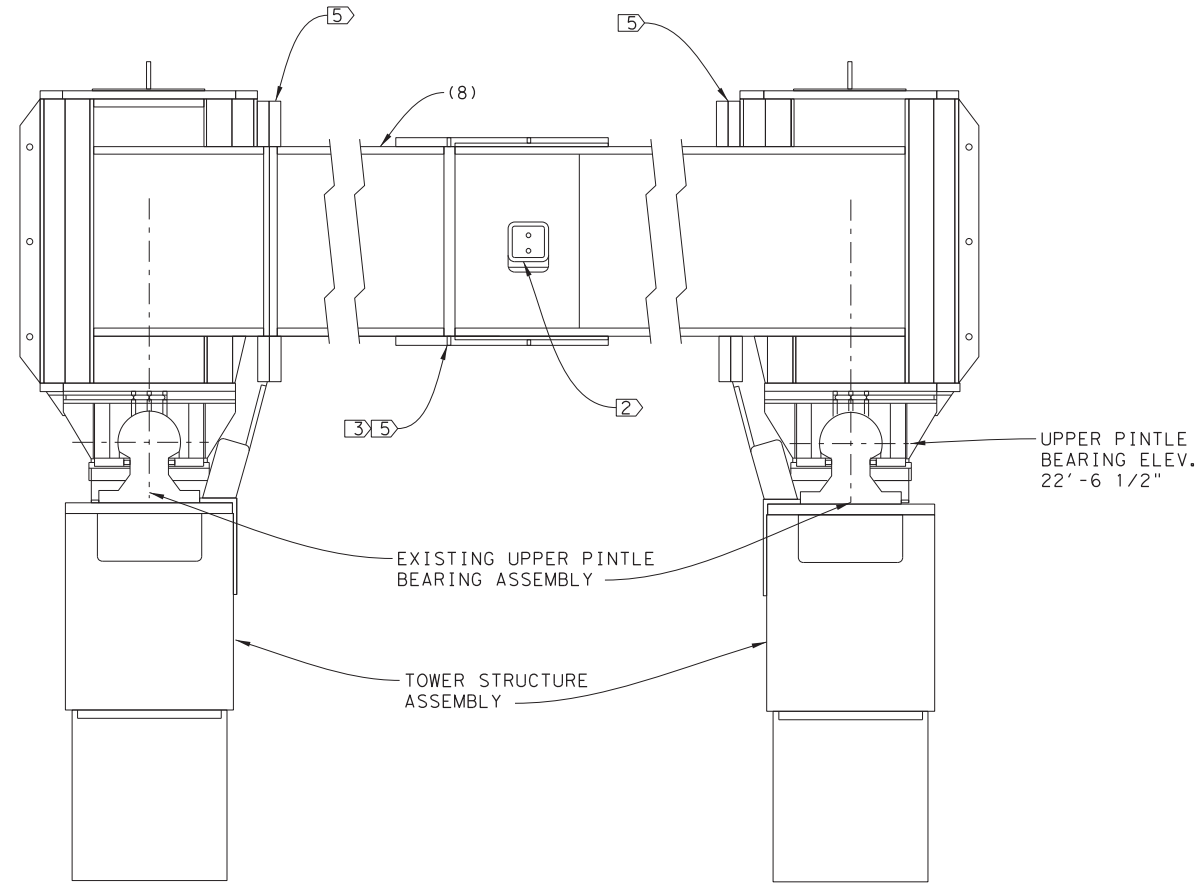
UNLESS OTHERWISE SPECIFIED	
STRUCTURAL TOLERANCES	MACHINING TOLERANCES
0 - 72" ±1/16"	X, X ±.100"
72" - 50'-0" ±1/8"	X, XX ±.060"
50'-0" - & OVER ±3/16"	X, XXX ±.030"
	X, XXXX ±.0100"
SURFACE FINISHES	
TURN, MILL, BORING TO REAM	DRILLED HOLES .1/32
	DEGREE ±1/2



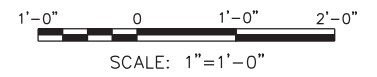
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
GENERAL ARRANGEMENT OF LOWER PINTLE BEARING ASSEMBLY

SHEET 129 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-994
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	




SECTION C



DRAWING NAME: 949402-S-995.dgn PLOT DATE: 4/6/2023 3:50:32 PM PLOTTED BY: SHIL

UNLESS OTHERWISE SPECIFIED	
STRUCTURAL TOLERANCES	
0 - 72"	±1/16"
72" + - 50' - 0"	±1/8"
50' - 0" + - & OVER	±3/16"
SURFACE FINISHES	
TURN, MILL, BORING	TO 32
REAM	TO 32
MACHINING TOLERANCES	
X, X	±.060"
X, XX	±.030"
X, XXX	±.010"
X, XXXX	±.0010"
DRILLED HOLES	
	±.002
	±.001
DEGREE	
	±1/2



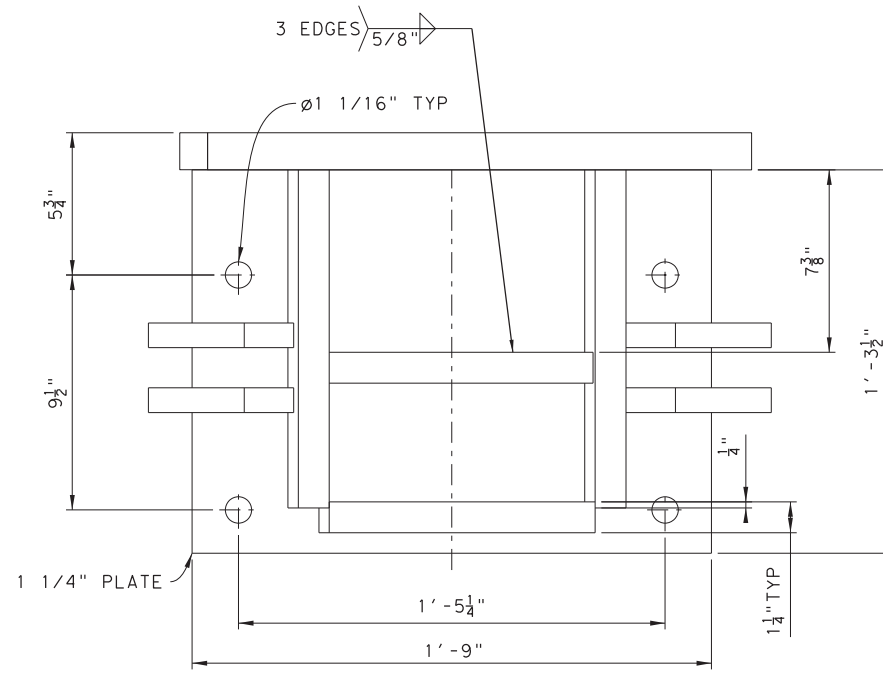
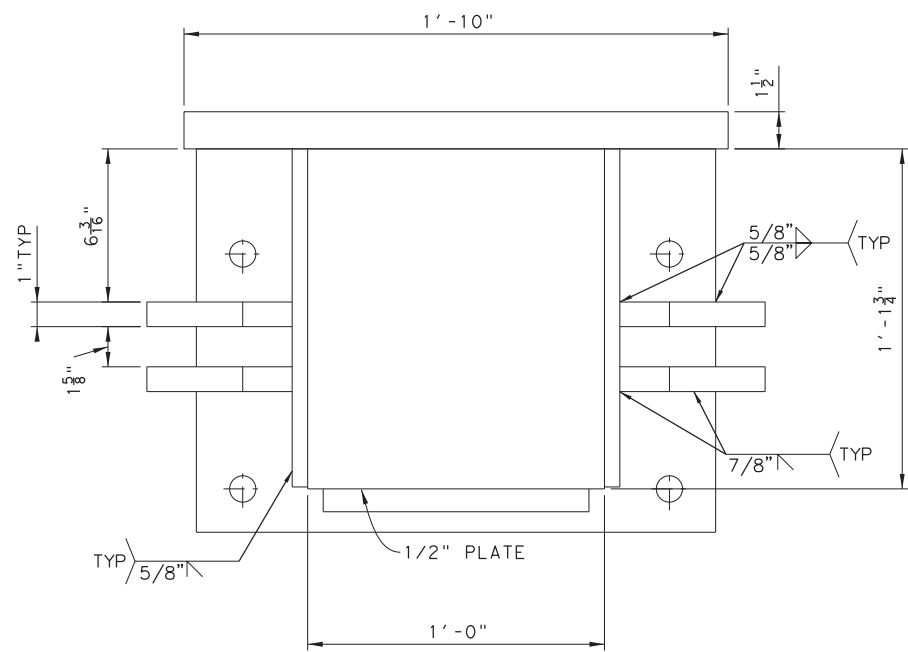
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FERRY LANDING MAINTENANCE
GENERAL ARRANGEMENT OF UPPER PINTLE BEARING ASSEMBLY

SHEET 130 OF 148

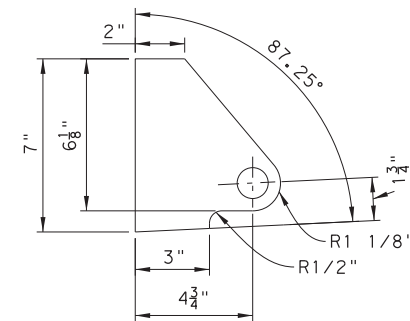
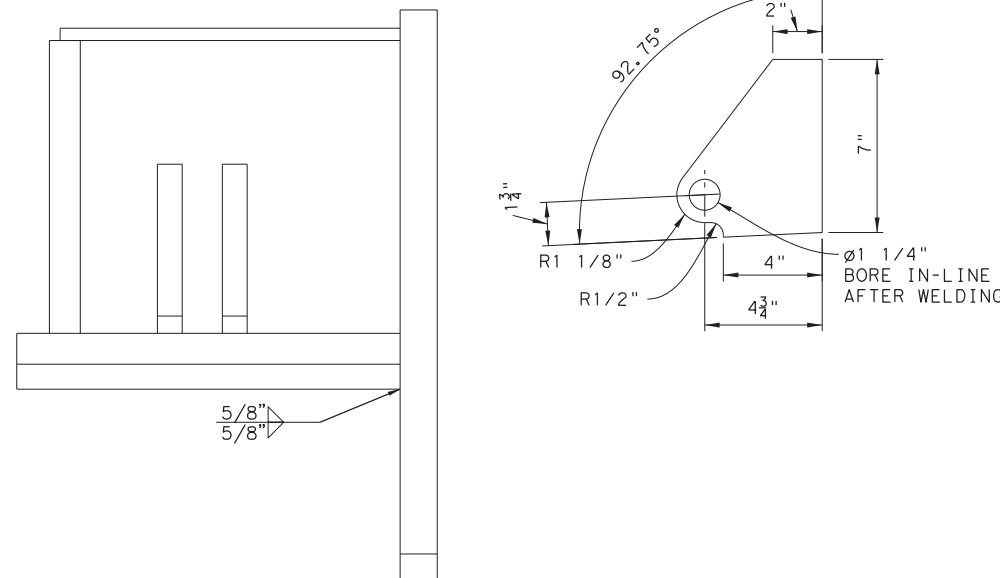
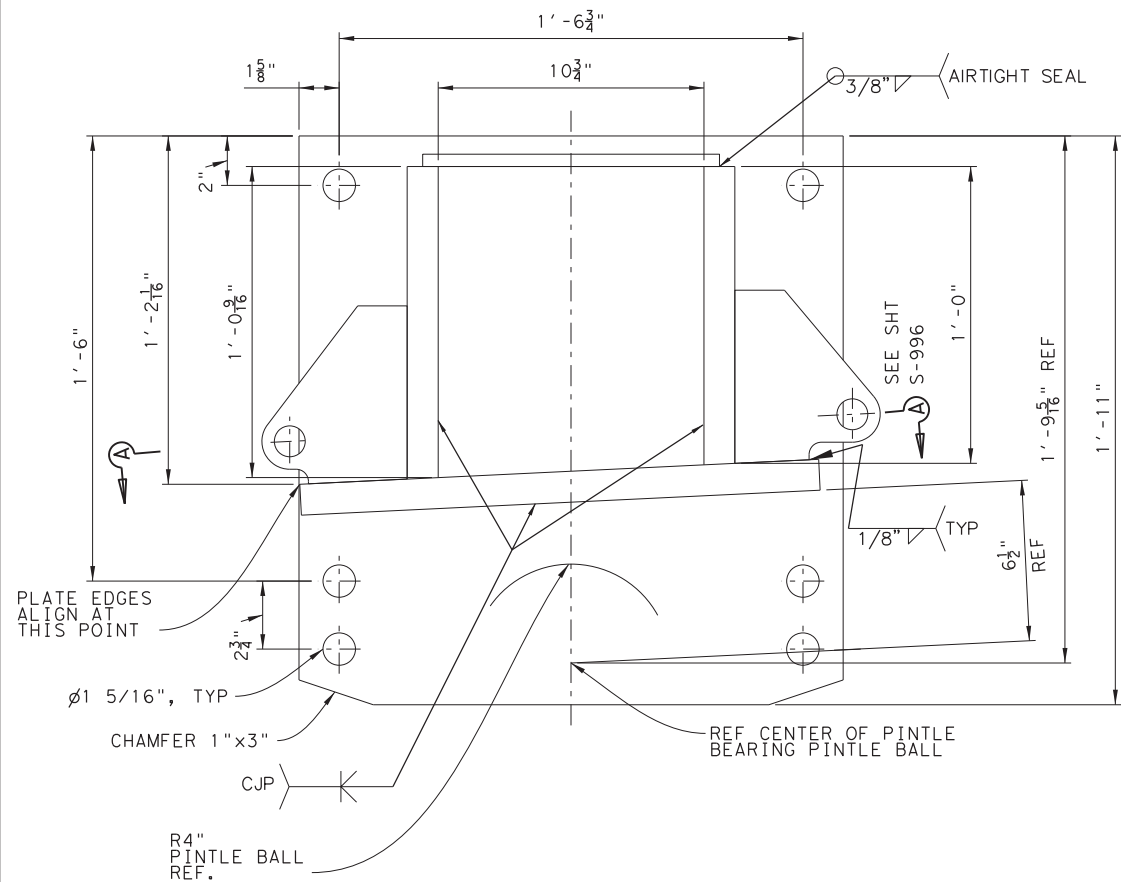
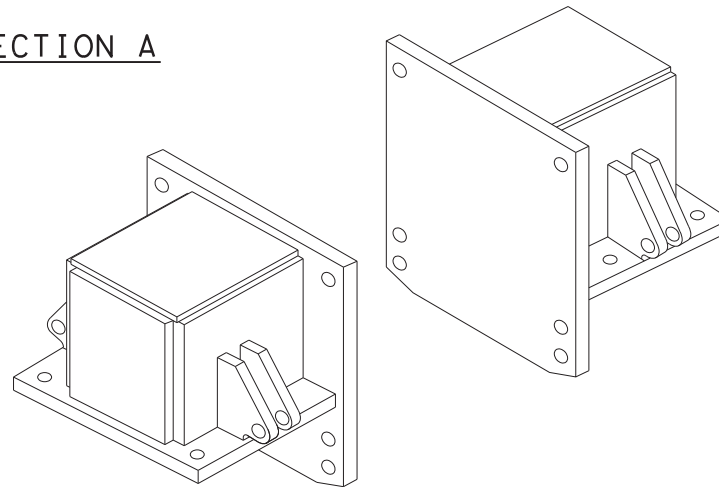
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: I	MM	12		RMC 6428-78-001	S-995
CK: I	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
CK: I	RW	GALVESTON	6428	78	001 SH87

NOTES:

- DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
- BRIDGE SEAT PINTLE BEARING MOUNTING BRACKET FOR LEFT HAND PINTLE (WHEN LOOKING OFFSHORE) IS SHOWN. BRACKET FOR RIGHT SIDE IS OPPOSIT HAND.
- CODES AND STANDARDS:**
ALL MATERIALS AND WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, DATED 1993 AND AS AMENDED BY THE SPECIAL PROVISIONS AND SPECIAL SPECIFICATIONS.
- DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, 2002 AND INTERIMS.
- LIVE LOADING: AASHTO HS25. TWO VEHICLE LANES.
- MATERIALS:**
STRUCTURAL STEEL:
MATERIALS:
PLATES, SHAPES AND BARS: ASTM A709, GRADE 50
- FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATION.
- WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5, BRIDGE WELDING CODE AS AMENDED BY ITEM 441 "STEEL STRUCTURES" OF THE STANDARD SPECIFICATIONS. WELDING OF HSS TUBE MEMBERS SHALL BE IN ACCORDANCE WITH AWS D1.1, STRUCTURAL WELDING CODE.
- COATINGS:**
ENTIRE MOUNTING BRACKET SHALL BE COATED WITH THERMAL SPRAYED ALUMINUM (TSA) COATING IN ACCORDANCE WITH SPECIAL SPECIFICATION "MARINE STRUCTURES" (SECTION 09970).
- THIS COMPONENT SHALL BE FABRICATED AND TEST FIT ONTO THE TRANSFER SPAN PRIOR TO APPLYING COATINGS.
- AFTER VERIFYING FIT, REMOVE FROM TRANSFER SPAN FOR COATING.



SECTION A



FULL SIZE SCALE: 3"=1'-0"
HALF SIZE SCALE: 1 1/2"=1'-0"

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
BRIDGE SEAT PINTLE BEARING MOUNTING BRACKET

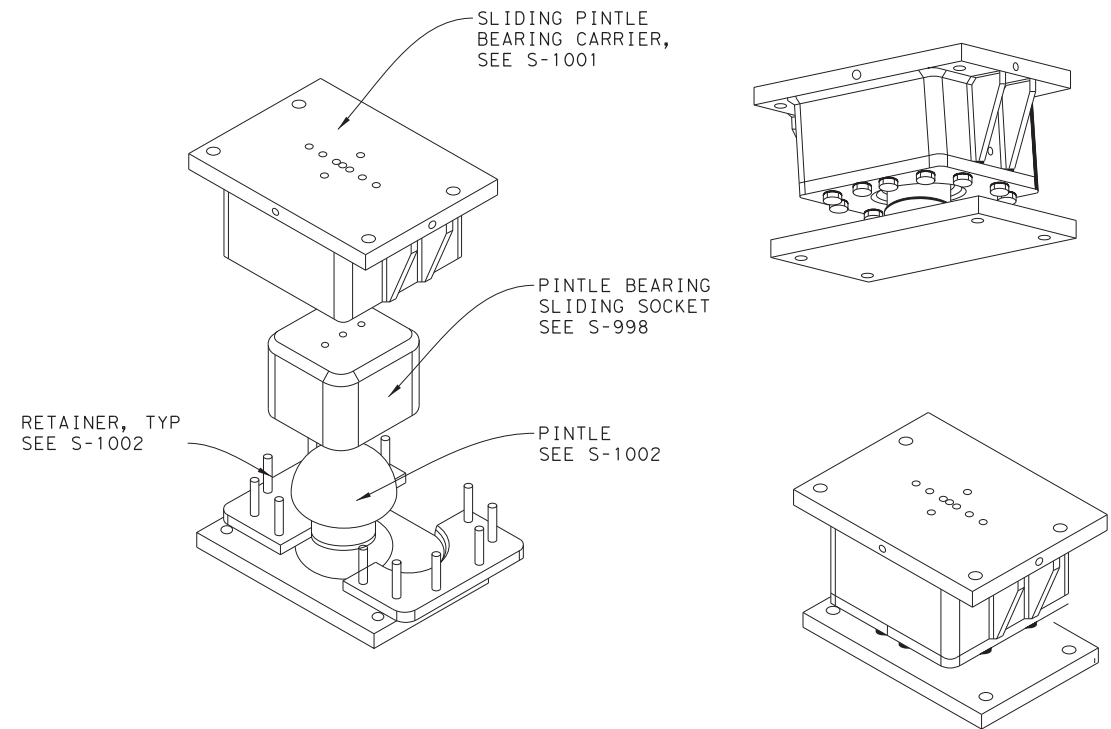
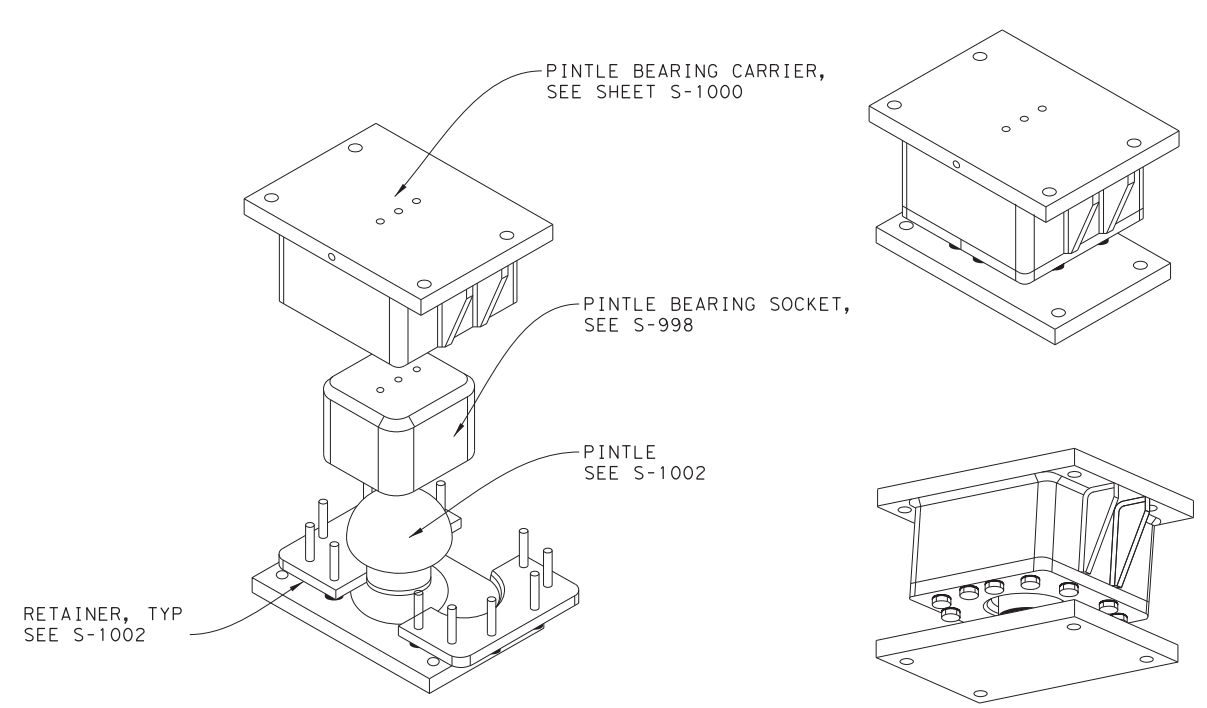
SHEET 131 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-996
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: MC		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

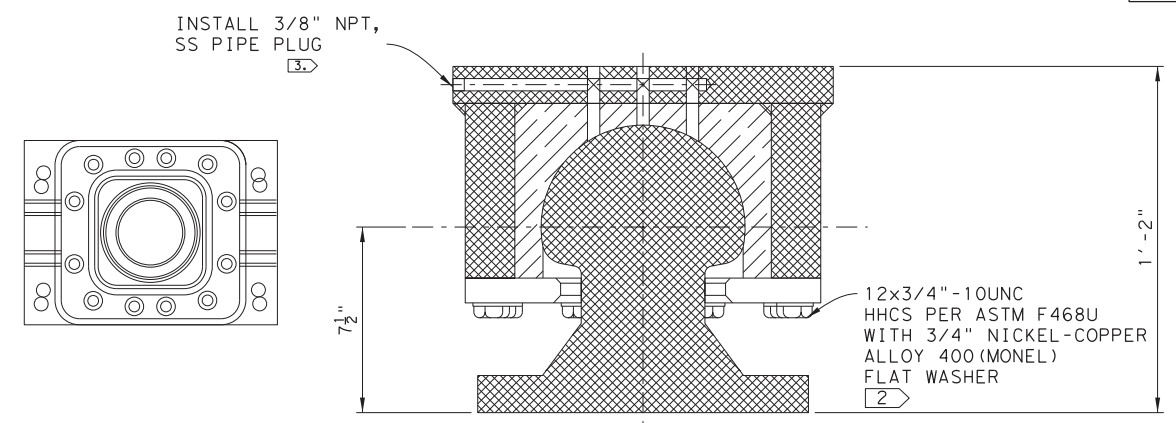
DRAWING NAME: 949402-S-996.dgn
PLOT DATE: 4/6/2023 3:50:39 PM PLOTTED BY: SHII

NOTES:

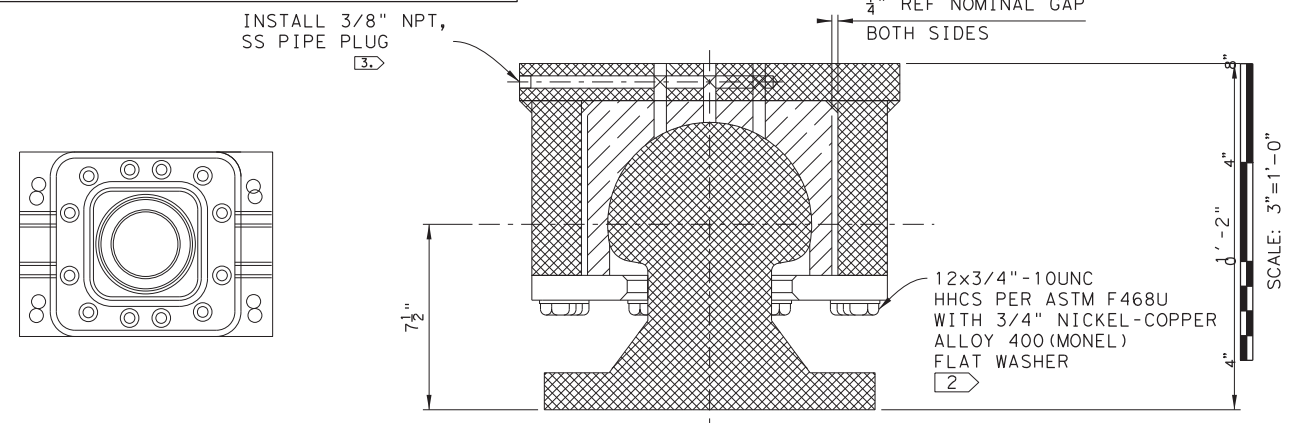
1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. INSTALL HHCS USING LOCTITE 242 MEDIUM STRENGTH THREAD LOCKING COMPOUND OR APPROVED EQUAL. TORQUE HHCS TO 63LB-FT USING CALIBRATED TORQUE WRENCH.
3. INSTALL HHCS USING LOCTITE 242 MEDIUM STRENGTH THREAD LOCKING COMPOUND OR APPROVED EQUAL.
4. THE CONTRACTOR SHALL SUPPLY ONE (1) SPARE LOWER FIXED PINTLE BEARING ASSEMBLY AND ONE (1) SPARE LOWER SLIDING PINTLE BEARING ASSEMBLY FOR THE ENTIRE PROJECT.
5. SPARE ASSEMBLIES SHALL BE PROVIDED FULLY ASSEMBLED AND SHALL BE DELIVERED TO THE OWNER PRIOR TO COMMISSIONING OF THE SYSTEM.



THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

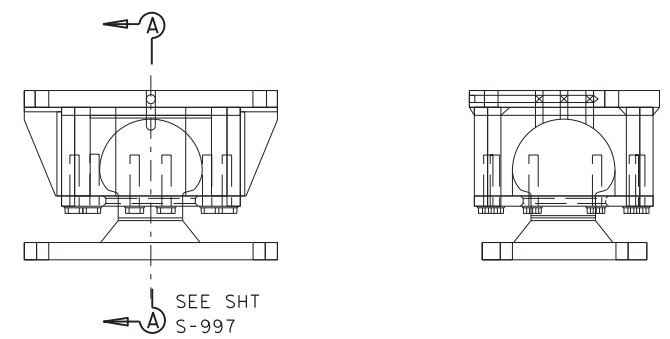


SECTION A

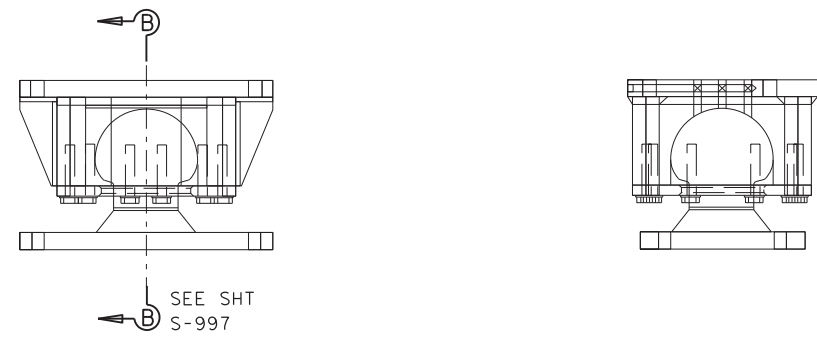


SECTION B

FULL SIZE SCALE: 3"=1'-0"
HALF SIZE SCALE: 1 1/2"=1'-0"



LOWER FIXED PINTLE BEARING ASSEMBLY



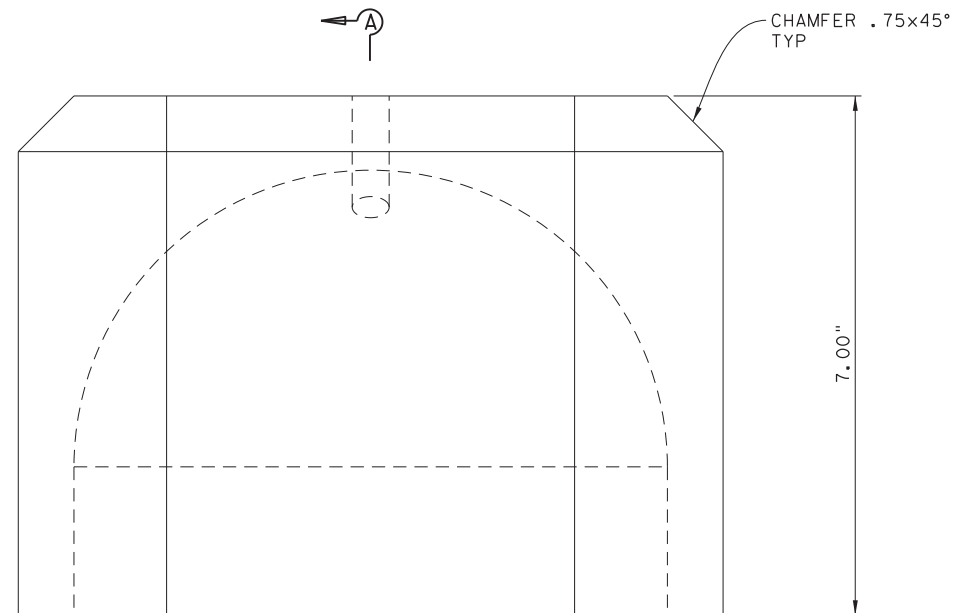
LOWER SLIDING PINTLE BEARING ASSEMBLY

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FERRY LANDING MAINTENANCE
LOWER PINTLE BEARING ASSEMBLY

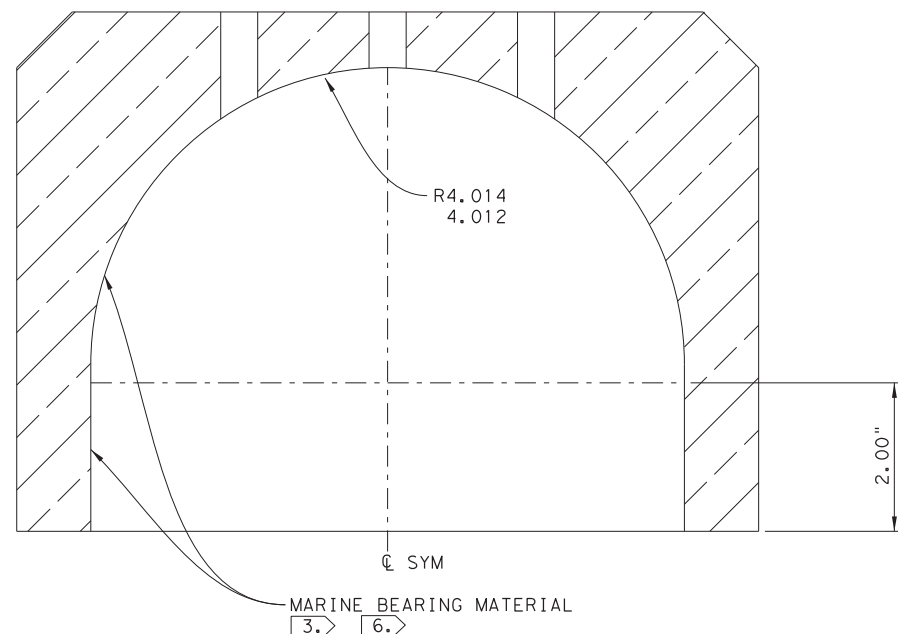
SHEET 132 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-997
DN: MM	CK: SS	DR: SH	CK: RW	REV
REVISIONS		DESCRIPTION	DATE	
GALVESTON		6428 78 001		SH87

DRAWING NAME: 949402-S-997.dgn PLOT DATE: 4/6/2023 3:50:59 PM PLOTTED BY: SHIH



SEE SHT S-998

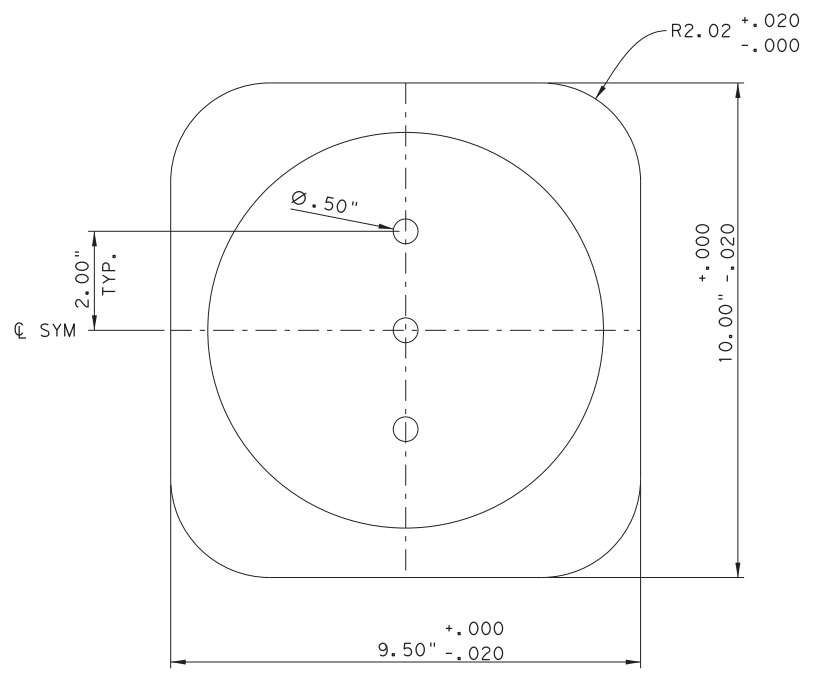


SECTION A

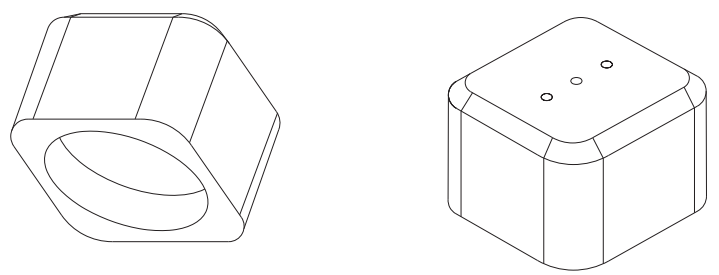
NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. MATERIAL: COPPER NICKEL TIN BRUSH WELLMAN T3CX105 (C96900) OR EQUIVALENT.
3. MARINE BEARING MATERIAL SHALL BE FACTORY BONDED NON-METALLIC LOW FRICTION KAMATICS KARON V OR EQUIVALENT. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. MATERIAL PROPERTIES, APPLICATION, AND FIELD USAGE HISTORY TO BE EQUIVALENT. BEARING MATERIAL TO BE .018-.022 THICK AFTER GRINDING.
4. DIMENSIONS SHOWN ON DRAWING ARE TO THE SURFACE OF THE BEARING MAT'L AFTER GRINDING.
5. FINISH ALL OVER.
6. FINISH PER KAMATICS STD.

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.



PINTLE BEARING SOCKET DETAIL



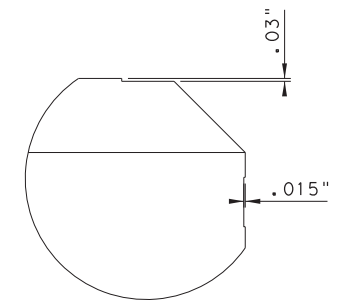
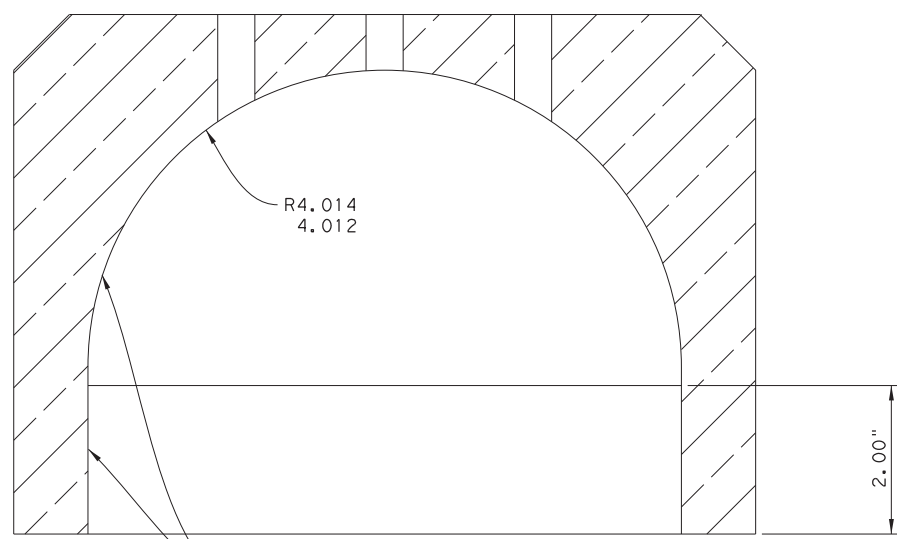
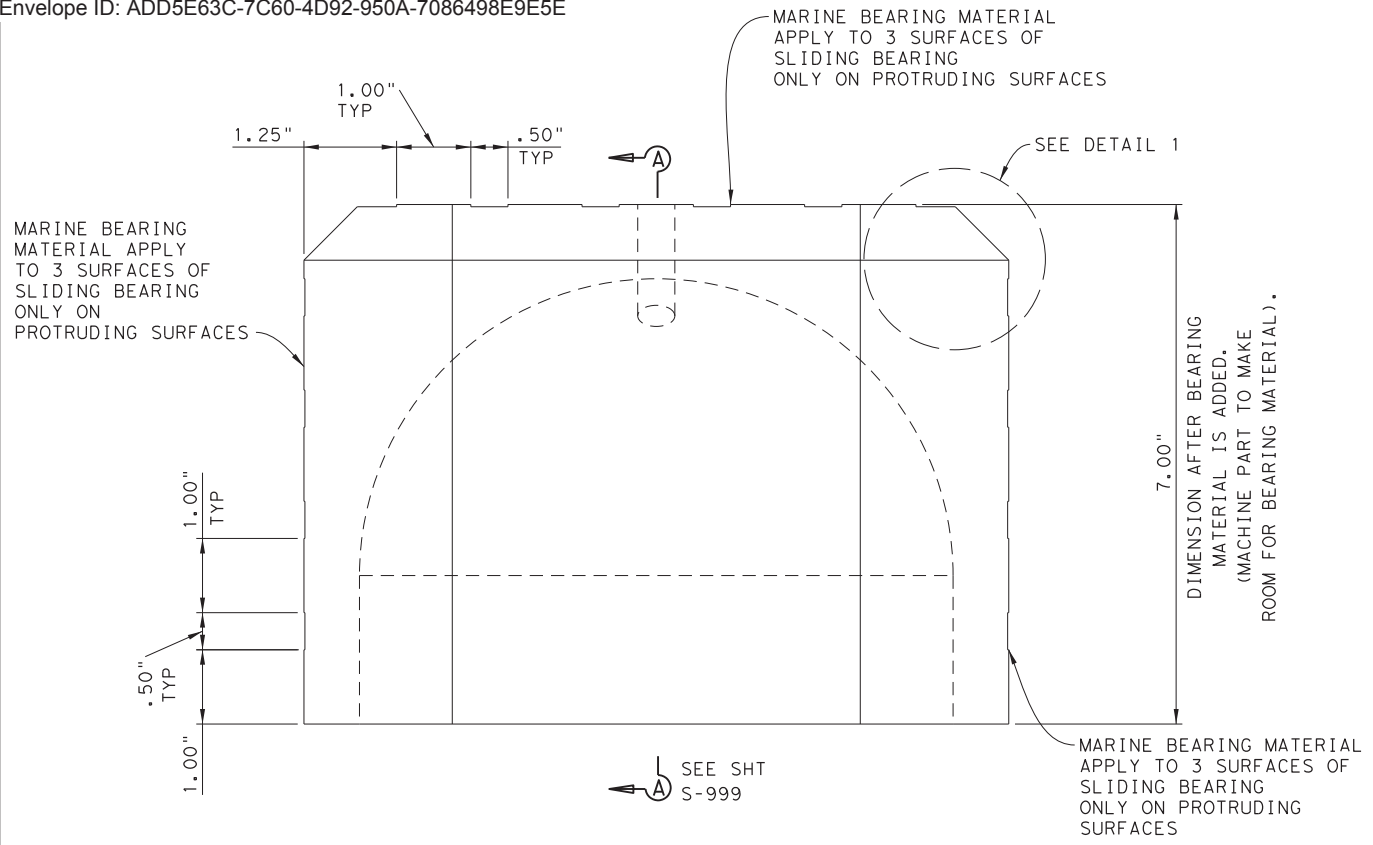
SCALE: 1/2"=1"

DRAWING NAME: 949402-S-998.dgn PLOT DATE: 4/6/2023 3:51:04 PM PLOTTED BY: SHIH

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
FIXED PINTLE BEARING SOCKET

SHEET 133 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-998
DN: MM	REVISIONS		COUNTY:	CONTROL SECTION JOB HIGHWAY
CK: SS			GALVESTON	6428 78 001 SH87
DR: SH	REV	DESCRIPTION	DATE	
CK: RW				



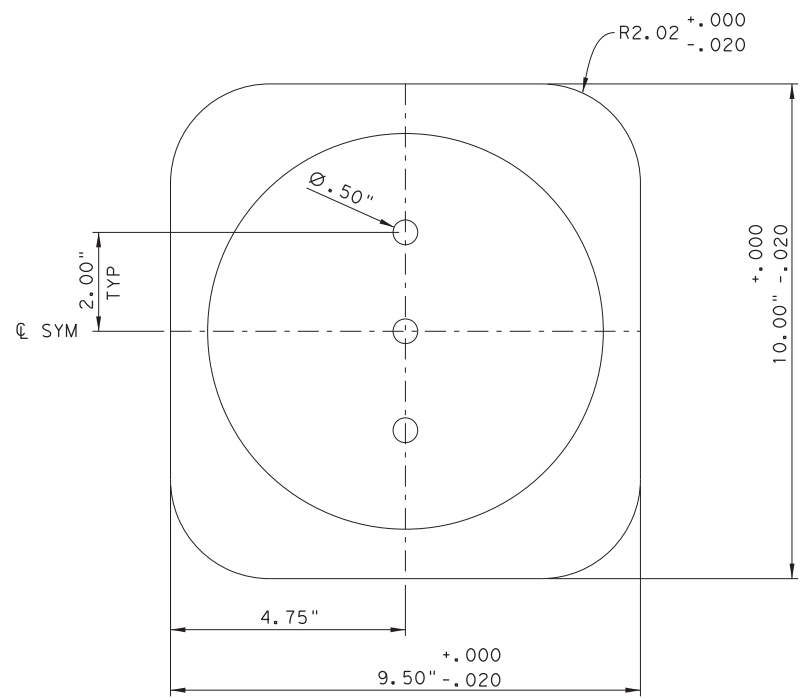
DETAIL 1
SCALE: 1"=1"

SECTION A

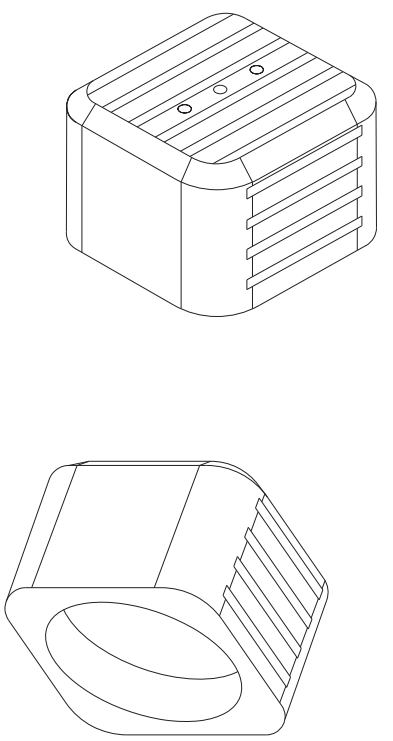
NOTES:

- DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
- MATERIAL: COPPER NICKEL TIN (BRUSH WELLMAN T3CX105 (C96900) OR EQUIVALENT.
- MARINE BEARING MATERIAL SHALL BE FACTORY BONDED NON METALLIC LOW FRICTION KAMATICS KARON V OR EQUIVALENT. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. MATERIAL PROPERTIES, APPLICATION, AND FIELD USAGE HISTORY TO BE EQUIVALENT. BEARING MATERIAL TO BE .018 - .022 THICK AFTER GRINDING.
- DIMENSIONS SHOWN ON DRAWING ARE TO THE SURFACE OF BEARING MAT'L AFTER GRINDING.
- FINISH ALL OVER.
- FINISH PER KAMATICS STD.

SCALE: 1/2"=1"



PINTLE BEARING SOCKET DETAIL



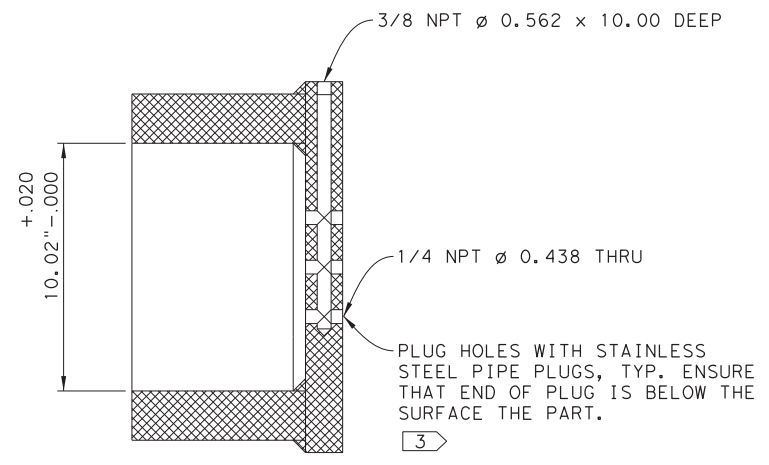
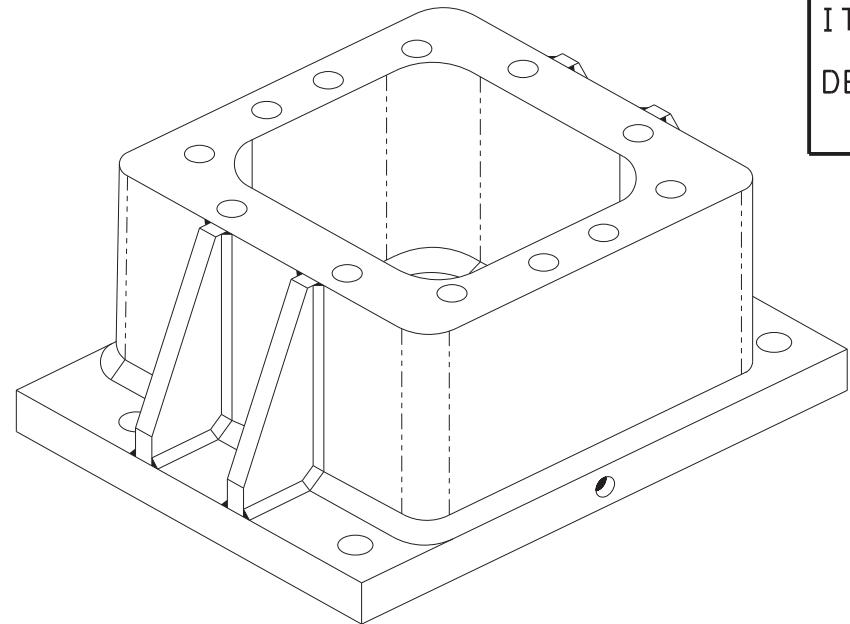
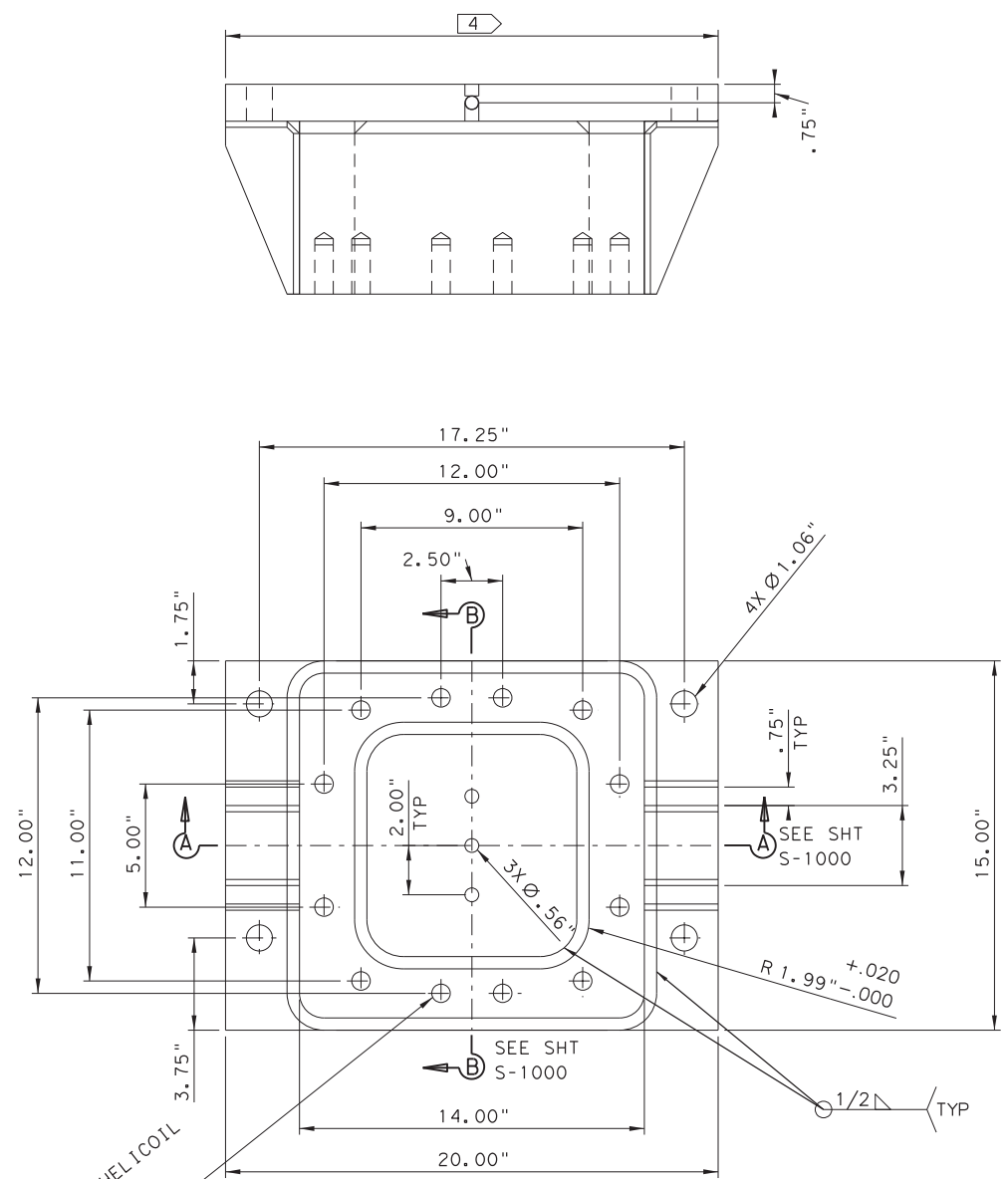
THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
LOWER SLIDING PINTLE BEARING SOCKET

SHEET 134 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-999
DN:1 MM	REVISIONS			
CK:1 SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DIR:1 MC		GALVESTON	6428 78	001 SH87
CK:1 RW	REV	DESCRIPTION	DATE	

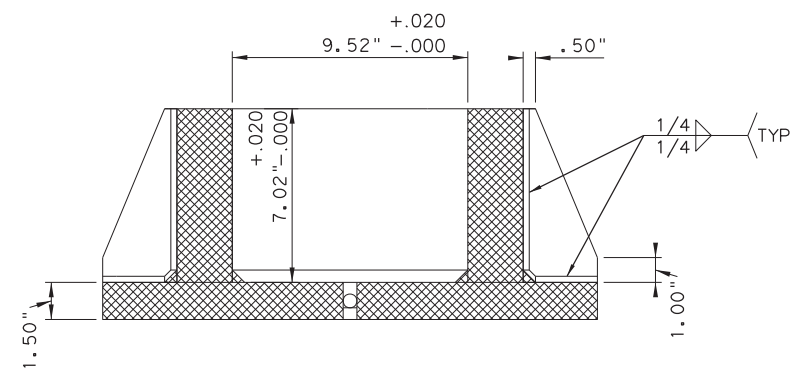
DRAWING NAME: 949402-S-999.dgn
PLOT DATE: 4/6/2023 3:51:13 PM PLOTTED BY: SHILL



NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. MATERIAL: 316L SS, FORGED.
3. INSTALL HHCS USING LOCTITE 242 MEDIUM STRENGTH THREAD LOCKING COMPOUND OR APPROVED EQUAL.
4. APPLY EPOXY COATING IN ACCORDANCE WITH SPECIAL SPECIFICATION "MARINE STRUCTURES" (SECTION 09980).

12X TAP FPR 3/4-10UNC HELICOIL
THREAD DEPTH 1.35"
INSTALL 3/4 INL-SSP HELICOIL
LENGTH 2.00", TYP.



SECTION A

LOWER FIXED PINTLE BEARING HOLDER

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

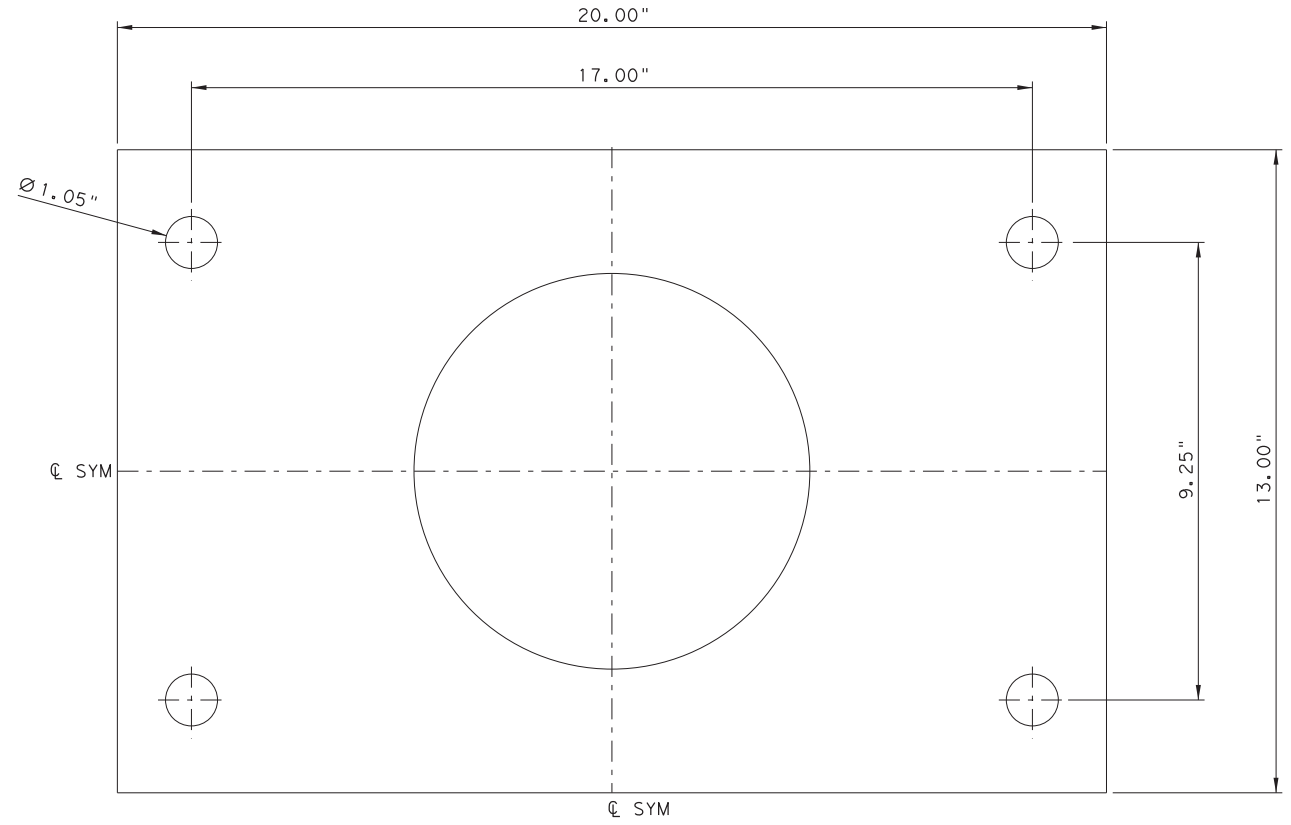
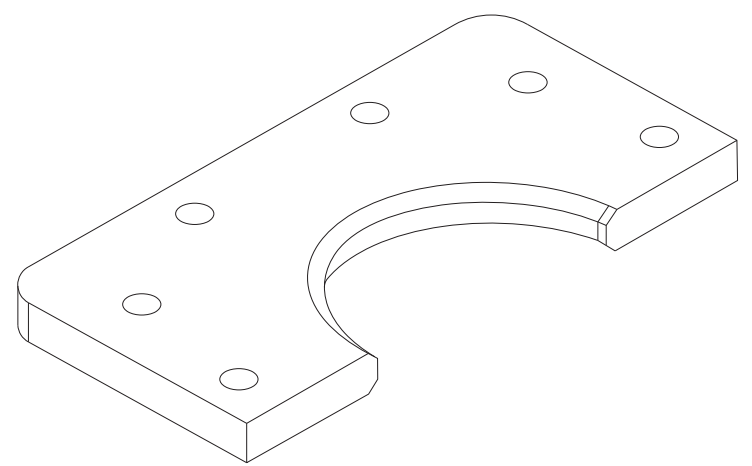
SCALE: 1/4" = 1"

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
LOWER FIXED PINTLE BEARING HOLDER

SHEET 135 OF 148

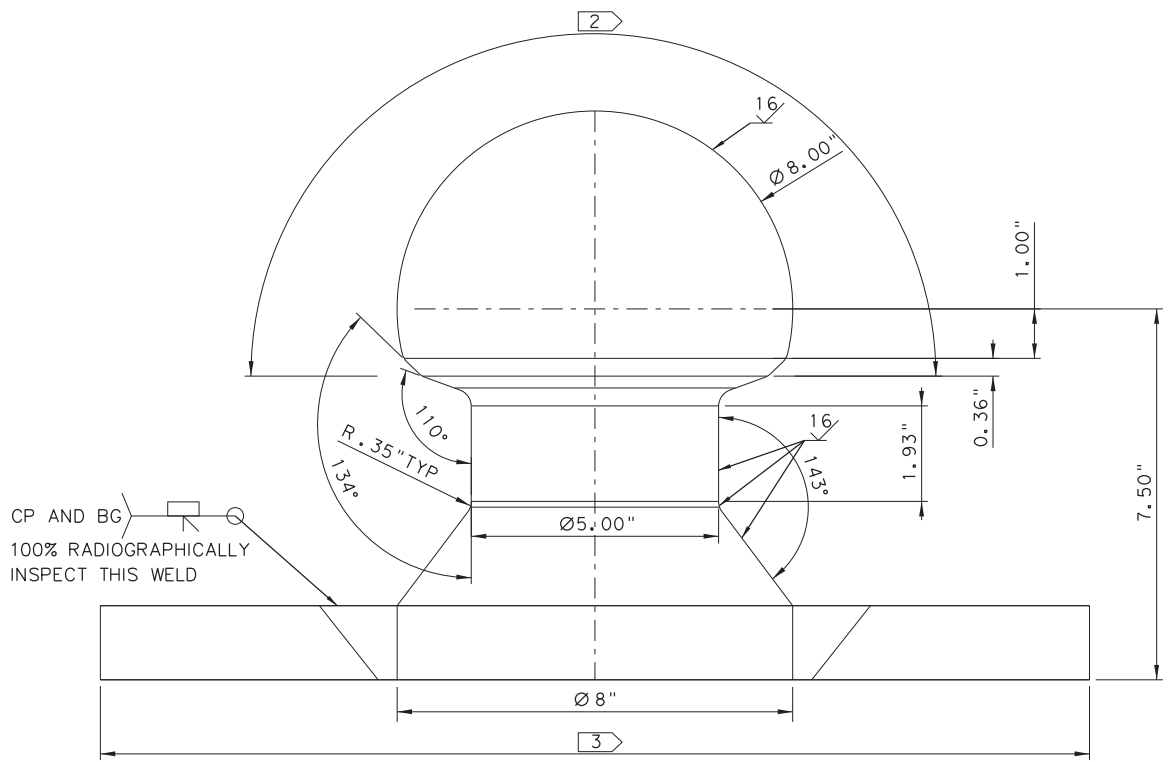
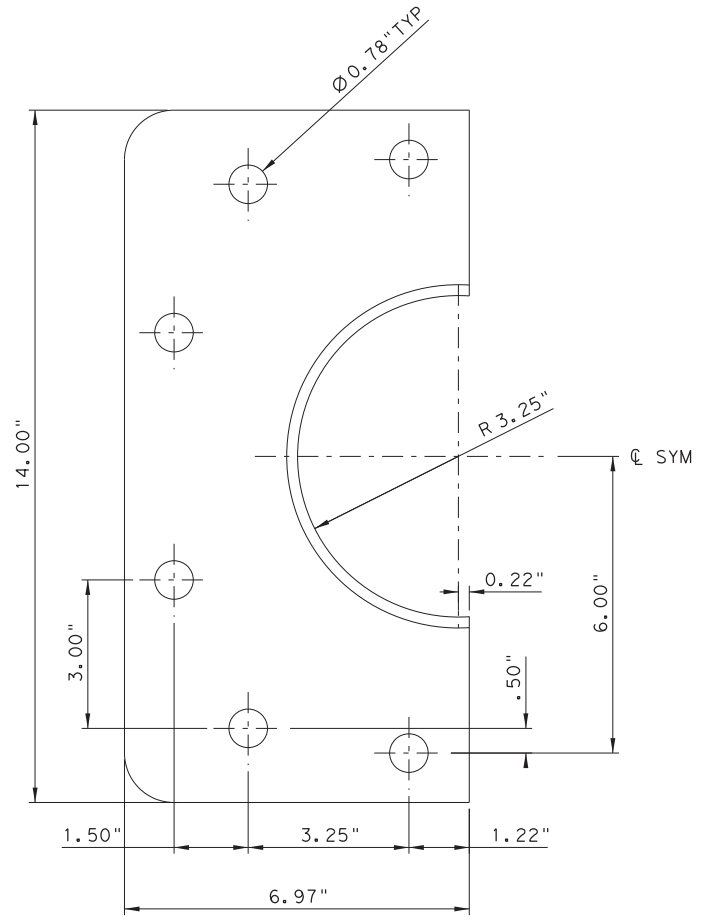
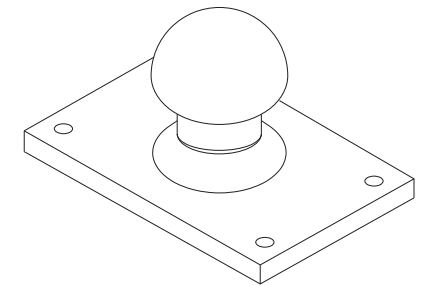
ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1000
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1000.dgn
PLOT DATE: 4/6/2023 3:51:18 PM PLOTTED BY: SHIH

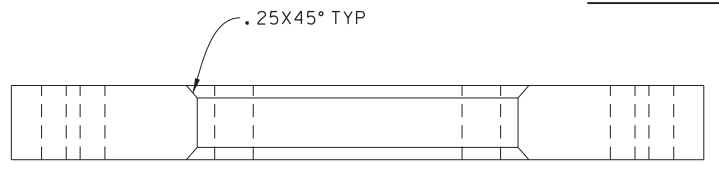


NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. PINTLE TO BE TRIPLE CHROME PLATED 0.004-0.009 THICK ON BALL SURFACE PER FEDERAL SPEC QQ-C-320B CLASS 2B, SURFACE TO BE GROUND AFTER EACH CHROME DEPOSIT.
3. APPLY EPOXY COATING IN ACCORDANCE WITH SPECIAL SPECIFICATION "MARINE STRUCTURES" (SECTION 09980).
4. MATERIAL: PINTLE BALL AND SHANK ASTM A-564 TYPE 630 (17-4 PHSS). PLATE ASTM A 693 TYPE 630.
5. MATERIAL: PINTLE BEARING RETAINER 316 SS.



PINTLE DETAIL



SECTION B

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

SCALE: 1/4" = 1"

PINTLE BEARING RETAINER DETAIL
SCALE: 1/4" = 1"

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FERRY LANDING MAINTENANCE
PINTLE AND RETAINER

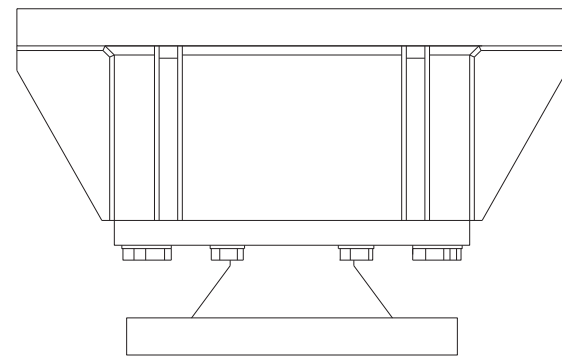
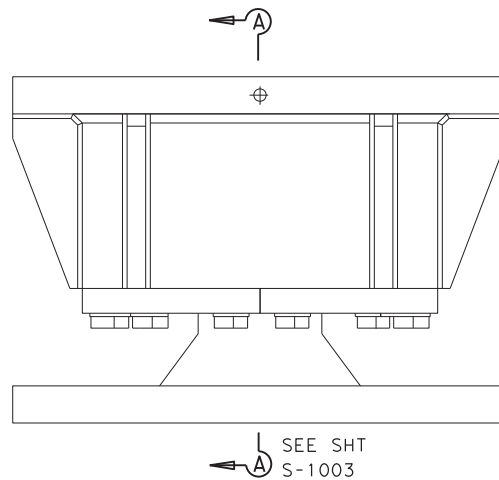
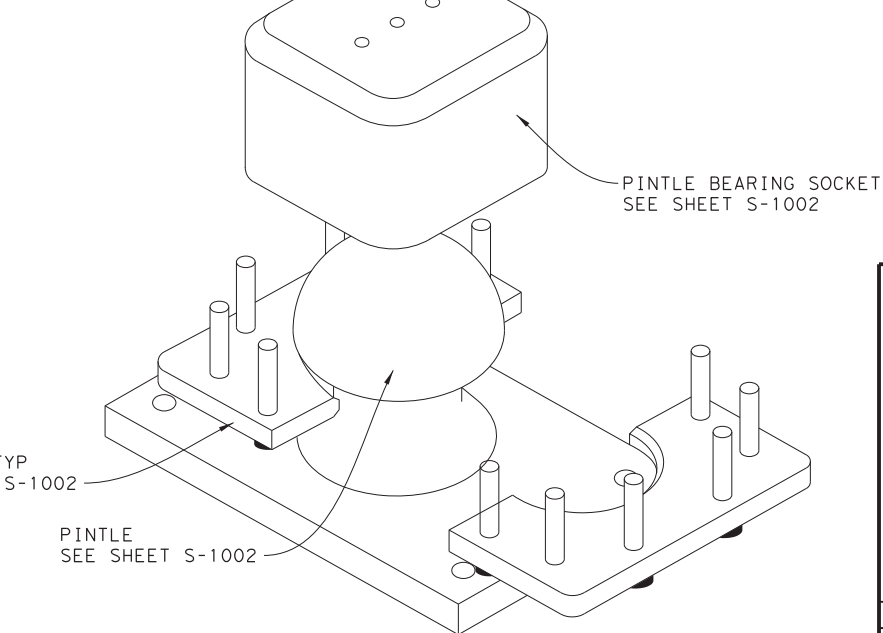
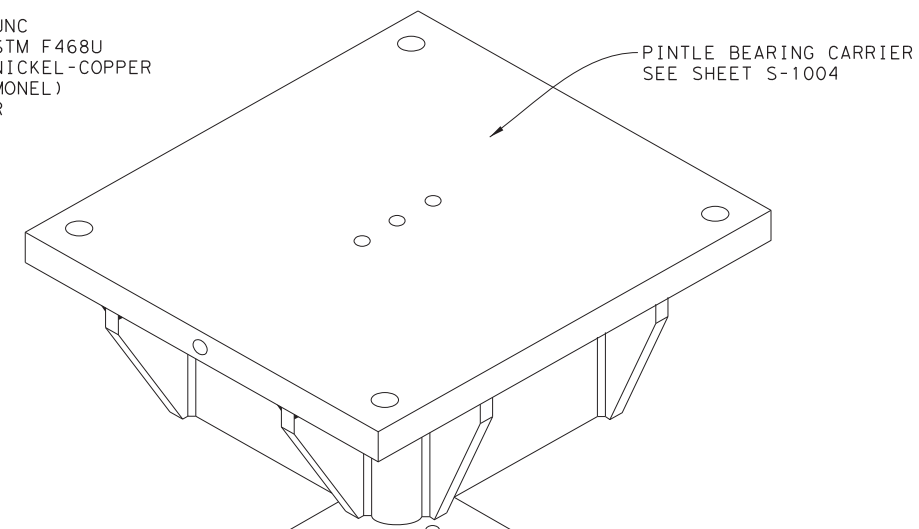
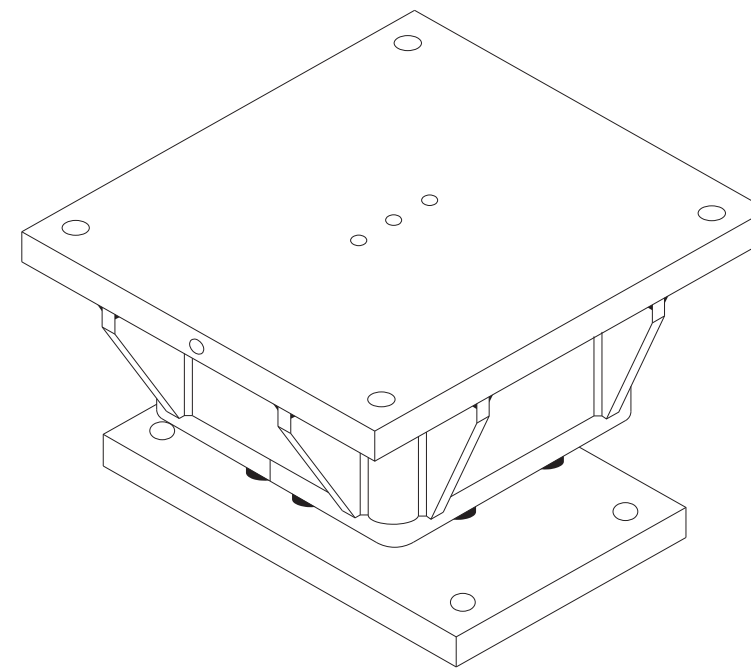
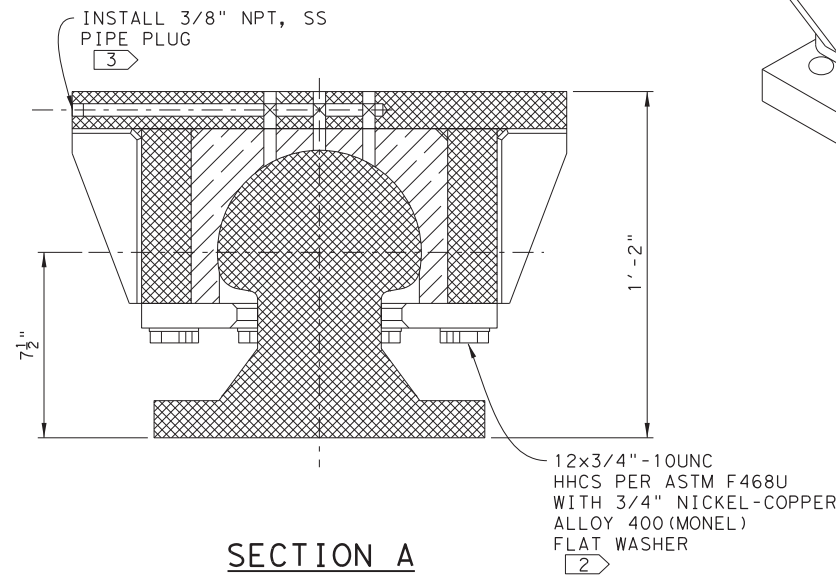
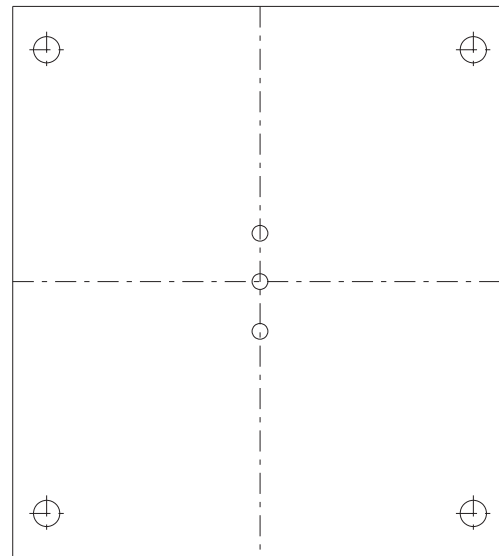
SHEET 137 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1002
DN: MM	REVISIONS			
CK: SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1002.dgn
PLOT DATE: 4/6/2023 3:51:28 PM PLOTTED BY: SHIL

NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. INSTALL HHCS LOCTITE 242 MEDIUM STRENGTH THREAD LOCKING COMPOUND OR APPROVED EQUAL. TORQUE HHCS TO 63LB-FT USING CALIBRATED TORQUE WRENCH.
3. INSTALL HHCS USING LOCTITE 242 MEDIUM STRENGTH THREAD LOCKING COMPOUND OR APPROVED EQUAL.



UPPER PINTLE BEARING ASSEMBLY

SCALE: 1/8" = 1"

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

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FERRY LANDING MAINTENANCE
UPPER PINTLE BEARING ASSEMBLY

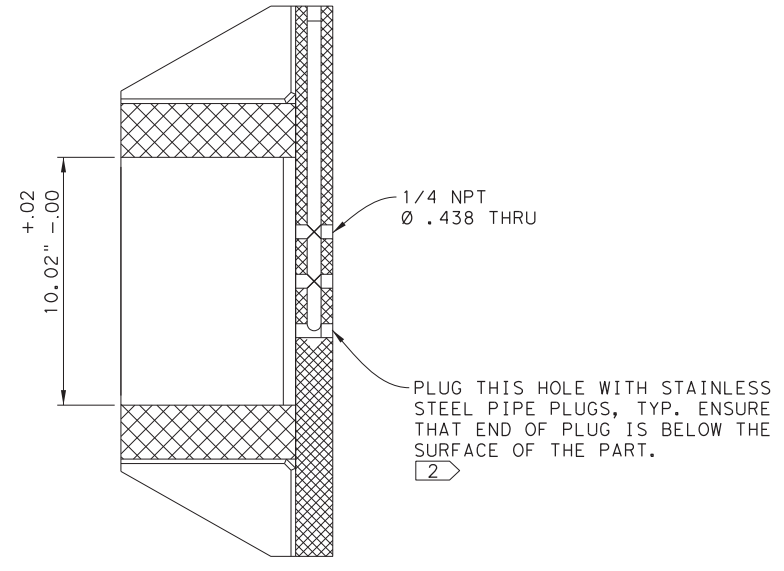
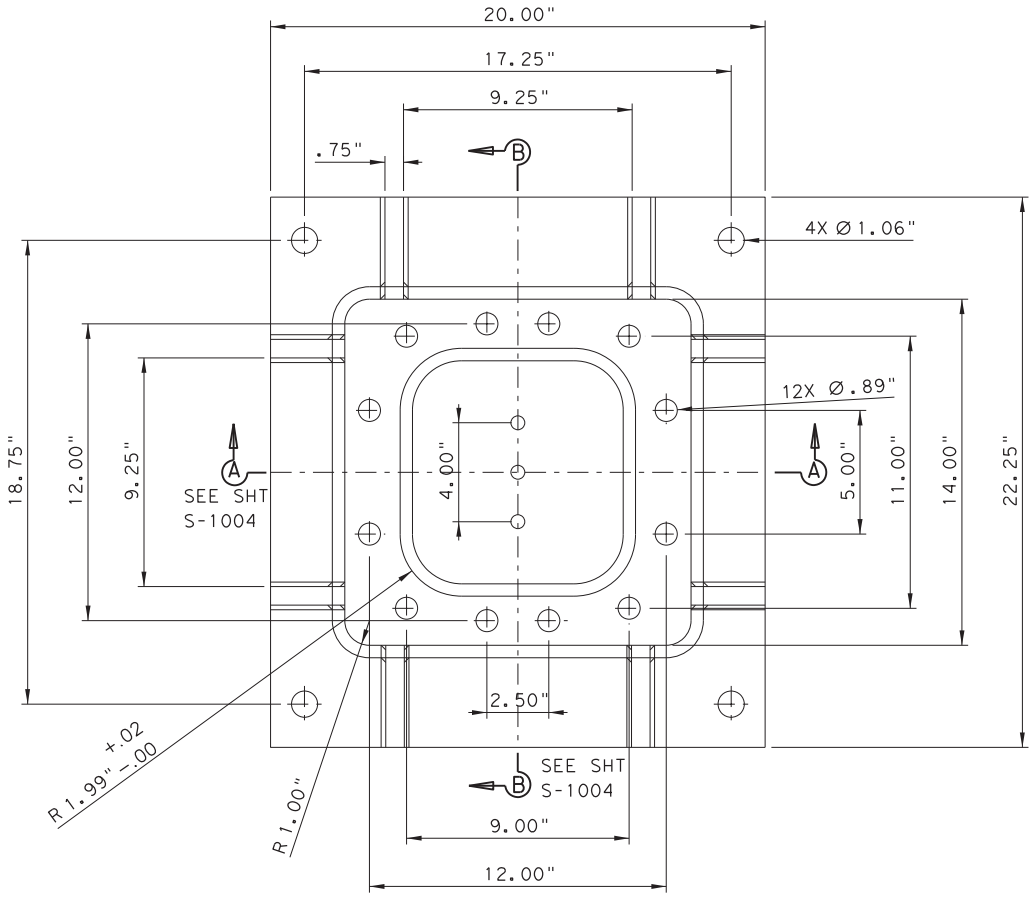
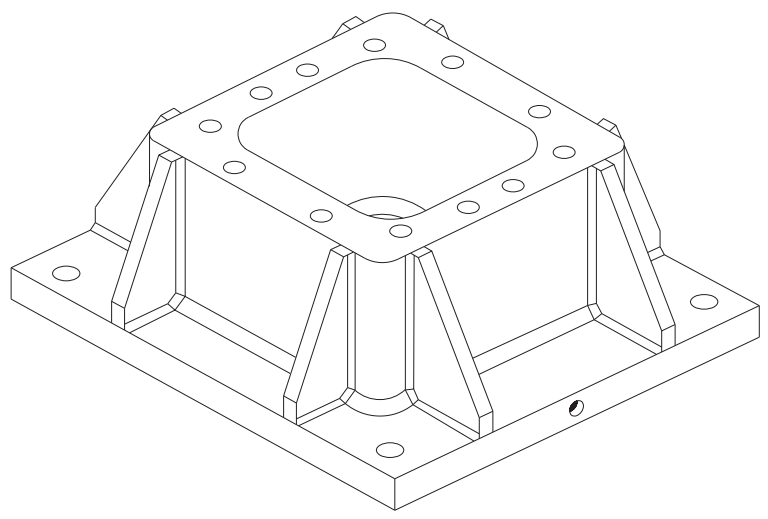
SHEET 138 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1003
DN: I MM	REVISIONS			
CK: I SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: I SH		GALVESTON	6428 78 001	SH87
CK: I RW	REV	DESCRIPTION	DATE	

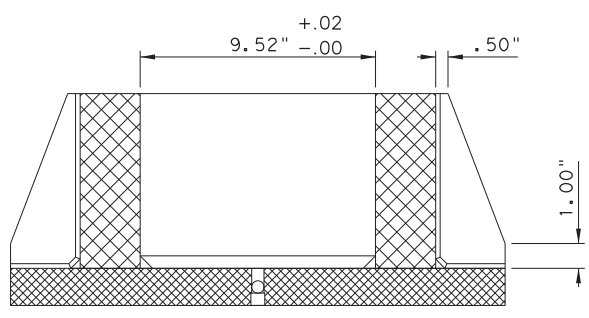
DRAWING NAME: 949402-S-1003.dgn
 PLOT DATE: 4/6/2023 3:51:32 PM PLOTTED BY: SHIL

NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. INSTALL PIPE PLUG USING LOCTITE 262 PERMINANT STRENGTH THREAD LOCKING COMPOUND.
3. APPLY EPOXY COATING IN ACCORDANCE WITH SPECIAL SPECIFICATION "MARINE STRUCTURES" (SECTION 09980).



SECTION B



SECTION A

UPPER PINTLE BEARING HOLDER

THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

SCALE: 1/8" = 1"

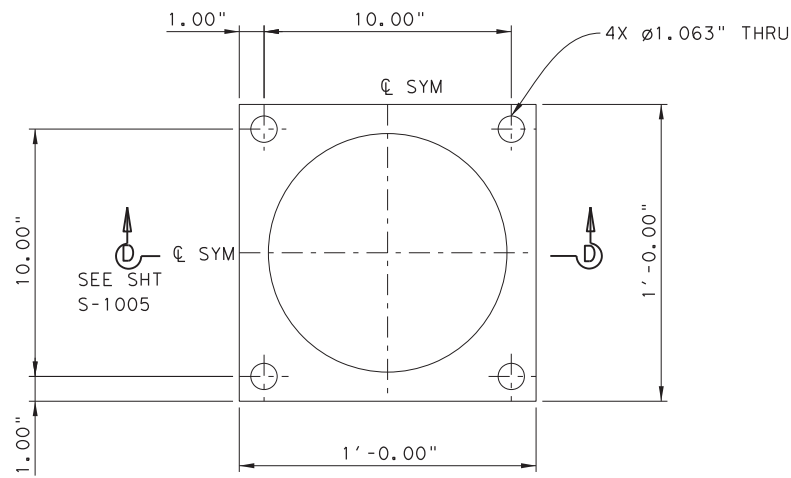
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE

UPPER PINTLE BEARING HOLDER

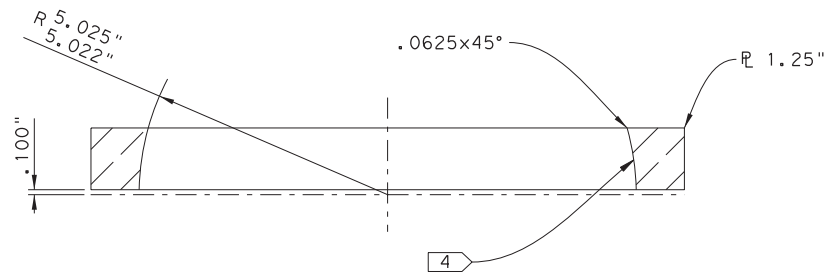
SHEET 139 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1004
DN: 1 MM	REVISIONS			
CK: 1 SS		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: 1 SH		GALVESTON	6428 78 001	SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

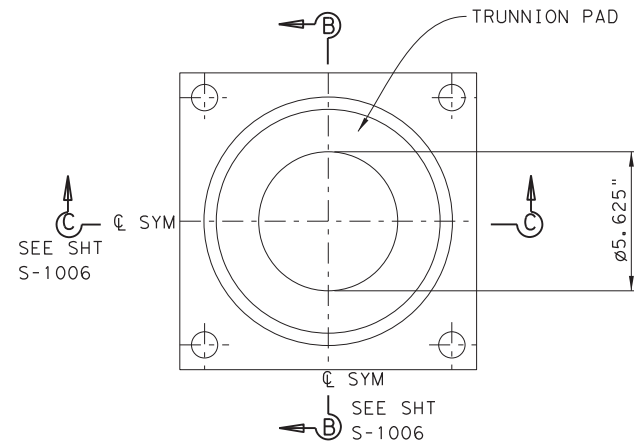
DRAWING NAME: 949402-S-1004.dgn
 PLOT DATE: 4/6/2023 3:51:37 PM PLOTTED BY: SHILL



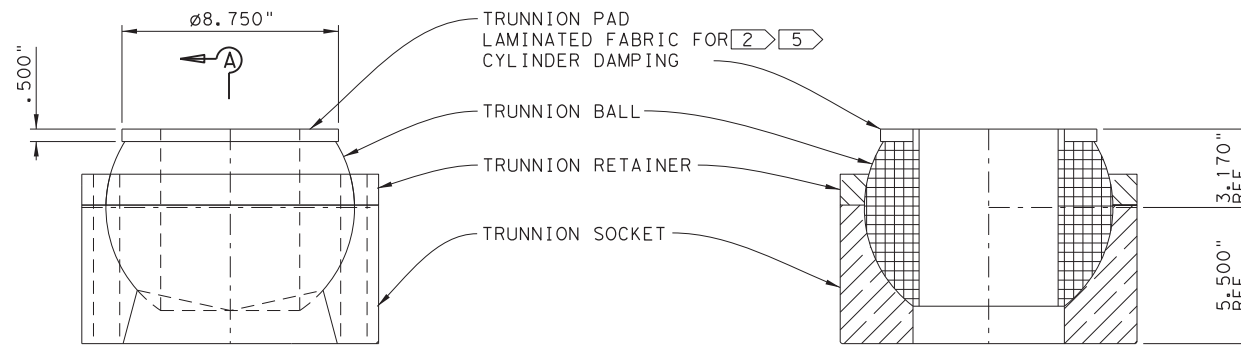
TRUNNION RETAINER



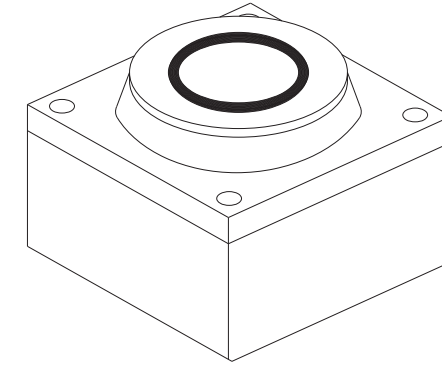
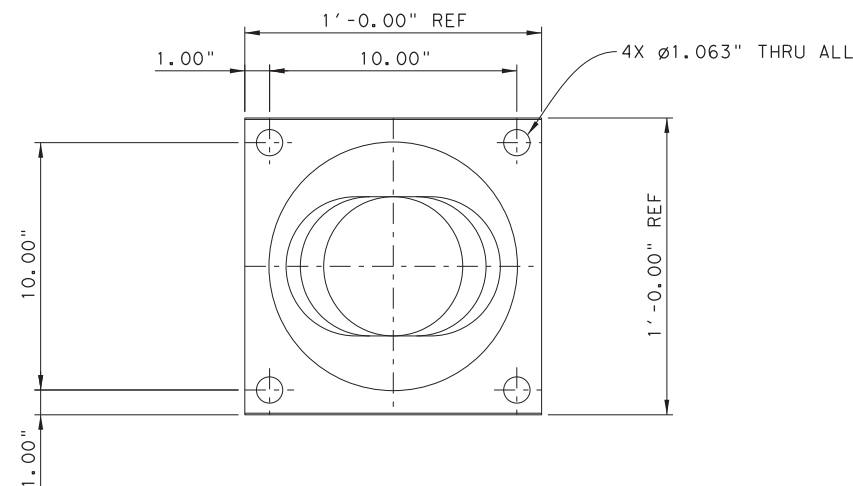
SECTION D
SCALE: 6"=1'-0"



PLAN
TRUNNION BALL
REMOVED FOR CLARITY



SECTION A



NOTES:

1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. FABREEKA SA-47 BEARING PAD OR EQUIVALENT. FABREEKA INTERNATIONAL
PO BOX 210
1023 TURNPIKE STREET
STOUGHTON, MA 02072
800-322-7352
www.fabreeka.com
3. TRUNNION RETAINER MATERIAL: COPPER NICKEL TIN-BRUSH WELLMAN T3CX105 (C96900) OR EQUIVALENT.
4. MARINE BEARING MATERIAL SHALL BE FACTORY BONDED NON METALLIC LOW FRICTION KAMATICS KARON V OR EQUIVALENT. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. MATERIAL PROPERTIES, APPLICATION, AND FIELD USAGE HISTORY TO BE EQUIVALENT. BEARING MATERIAL TO BE .018-.022 THICK AFTER GRINDING.
5. EPOXY BOND FABREEKA PAD TO TRUNNION.
6. THE CONTRACTOR SHALL SUPPLY ONE(1) SPARE TRUNNION BALL ASSEMBLY FOR THE ENTIRE PROJECT.
7. SPARE ASSEMBLIES SHALL BE PROVIDED FULLY ASSEMBLED AND SHALL BE DELIVERED TO THE OWNER PRIOR TO THE COMMISSIONING OF THE SYSTEM.

SCALE: 1 1/2" = 1'-0"

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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
TRUNNION BALL ASSEMBLY

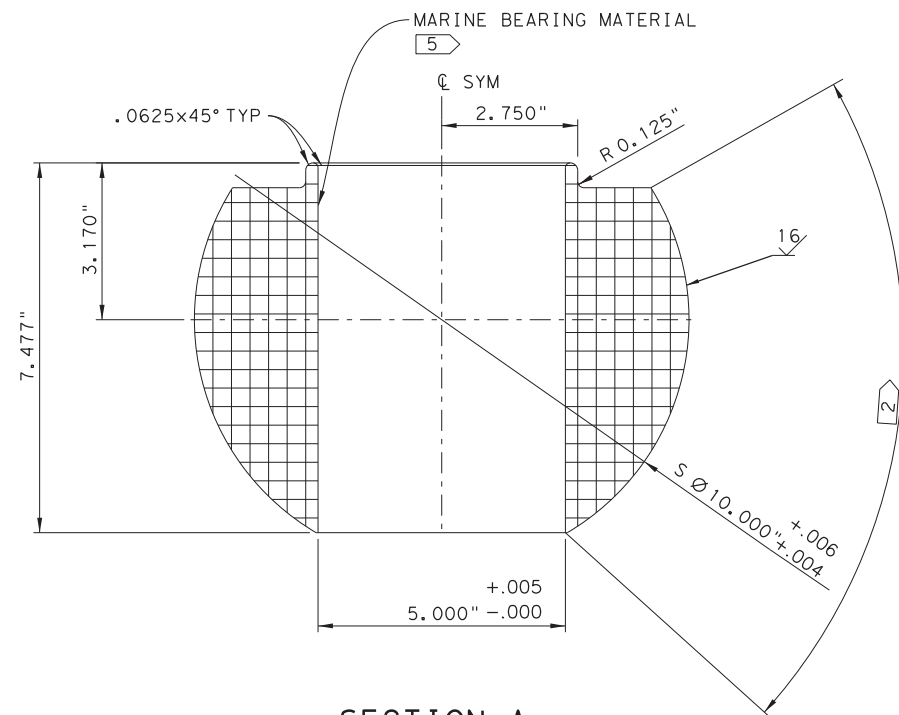
SHEET 140 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1005
DN: 1 MM	REVISIONS			
CK: 1 SS		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: 1 SH		GALVESTON	6428 78	001 SH87
CK: 1 RW	REV	DESCRIPTION	DATE	

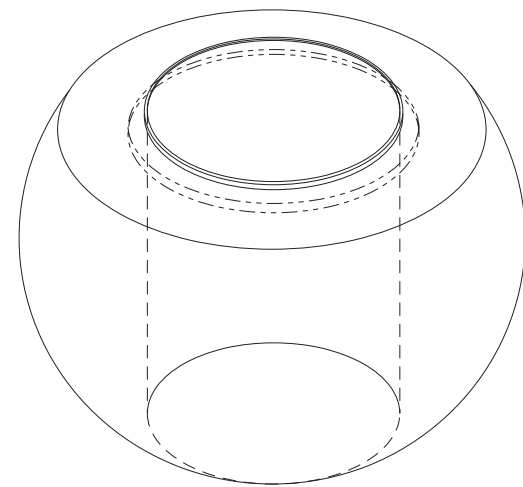
DRAWING NAME: 949402-S-1005.dgn
PLOT DATE: 4/6/2023 3:51:41 PM PLOTTED BY: SHIH

NOTES:

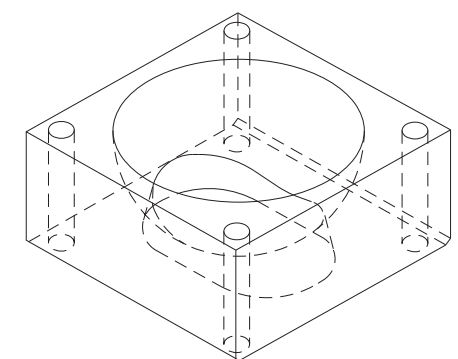
1. DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. TRUNNION TO BE TRIPLE CHROME PLATED .004" TO .009" THICK ON BALL SURFACE PER FEDERAL SPEC QQ-C-320B CLASS 2B. SURFACE TO BE GROUND AFTER EACH CHROME DEPOSIT.
3. TRUNNION BALL MATERIAL: ASTM A-564 TYPE 630 CONDITION H1150(17-4 PH SS).
4. TRUNNION SOCKET MATERIAL: COPPER NICKEL TIN-BRUSH WELLMAN T3CX105 (C96900) OR EQUIVALENT.
5. MARINE BEARING MATERIAL SHALL BE FACTORY BONDED NON METALLIC LOW FRICTION KAMATICS KARON V OR EQUIVALENT. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. MATERIAL PROPERTIES, APPLICATION, AND FIELD USAGE HISTORY TO BE EQUIVALENT. BEARING MATERIAL TO BE .018-.022 THICK AFTER GRINDING.
6. DIMENSIONS SHOWN ON DRAWING ARE AFTER ALL SURFACE PROCESSING AND FINISHING.



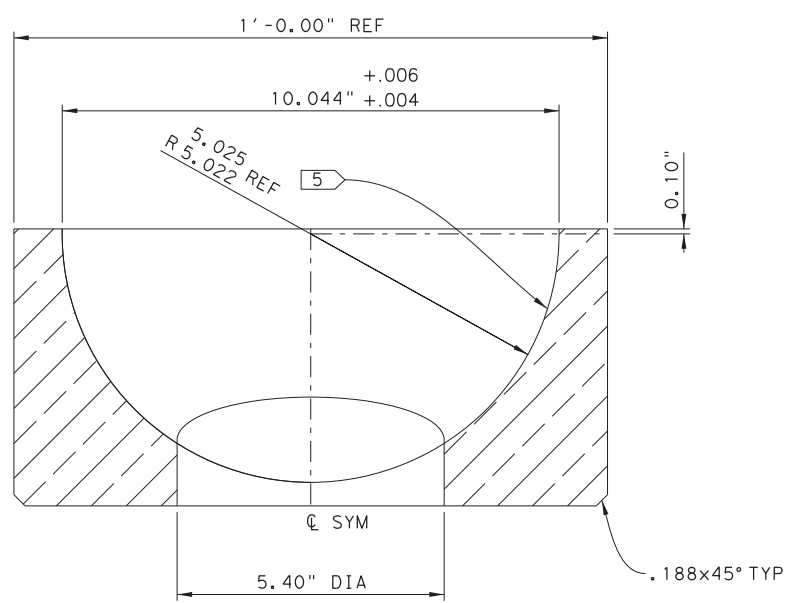
SECTION A
SEE S-1005



TRUNNION BALL 3

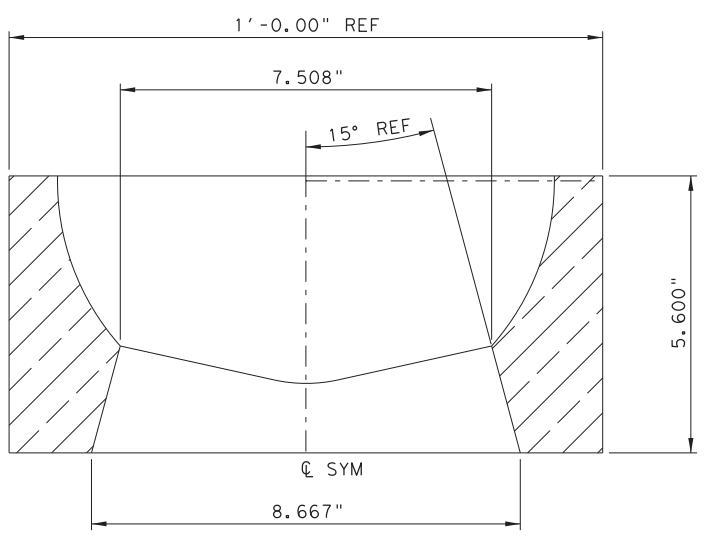


TRUNNION SOCKET 4



SECTION B
SEE S-1005


VIEW ROTATED
90DEG CW



SECTION C
SEE S-1005

SCALE: 3" = 1'-0"

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FERRY LANDING MAINTENANCE
TRUNNION BALL DETAILS

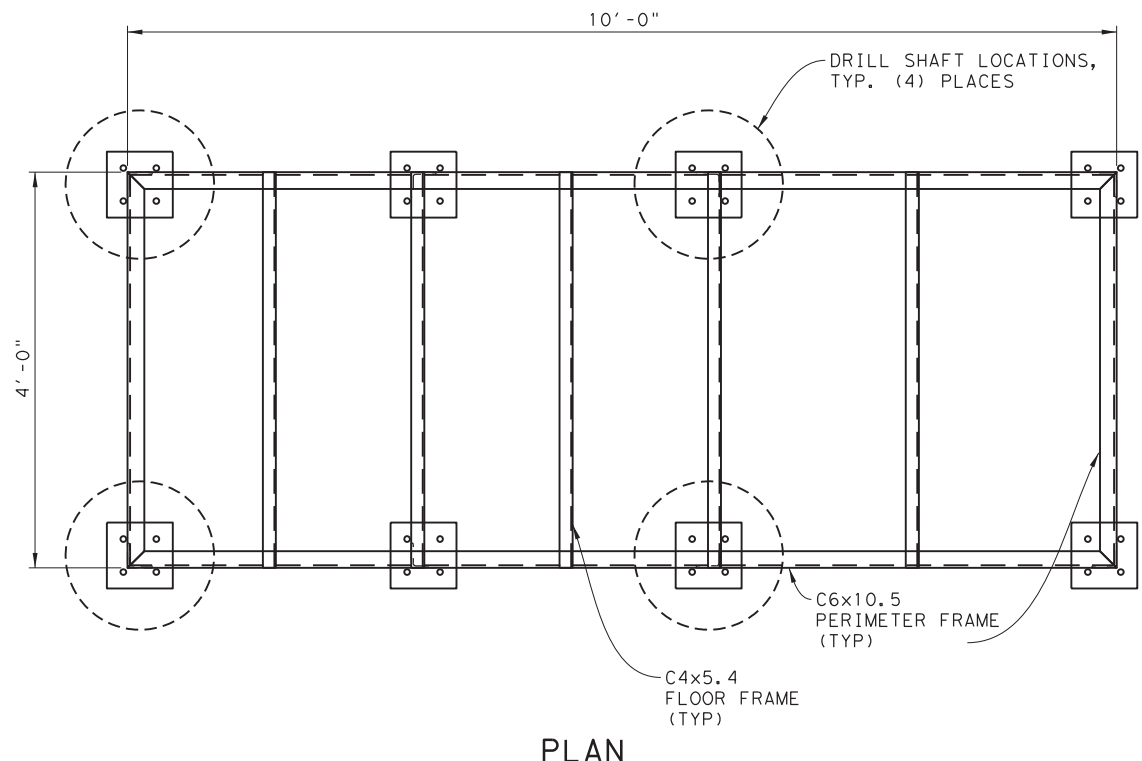
SHEET 141 OF 148

ORIGINAL DRAWING DATE:		STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
DN: MM	REVISIONS	12		RMC 6428-78-001	S-1006
CK: SS		COUNTY:		CONTROL SECTION:	JOB HIGHWAY:
DN: SH		GALVESTON		6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE		

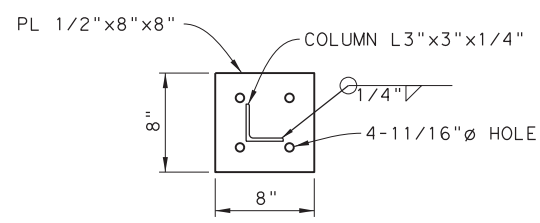
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PLOT DATE: 4/6/2023 3:51:46 PM PLOTTED BY: SHII

NOTES:

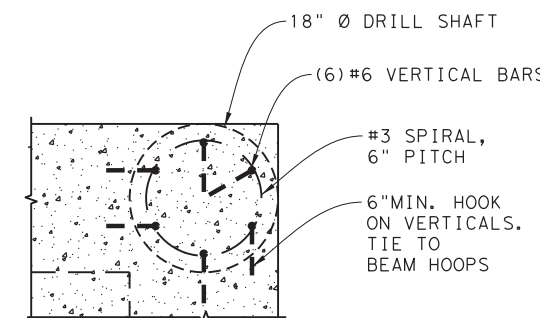
1. STRUCTURAL FRAMING SHALL BE CARBON STEEL ASTM A36 AND OF WELDED CONSTRUCTION OR OF BOLTED CONSTRUCTION WITH STD. AISC CONNECTIONS.
2. BUILDING BASE AND PLATFORM INCLUDING STAIRS AND RAILINGS SHALL BE HOT DIP GALV. AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
3. CAULK ALL WALL AND ROOF PENETRATIONS WITH WEATHER-PROOF SEALANT.
4. MANUFACTURER OF BUILDING TO DETERMINE ACTUAL SIZE OF FRAME INCLUDING STAIR/PLATFORM TO MEET REQUIREMENTS SHOWN ON DRAWINGS AND SPECIFICATIONS.



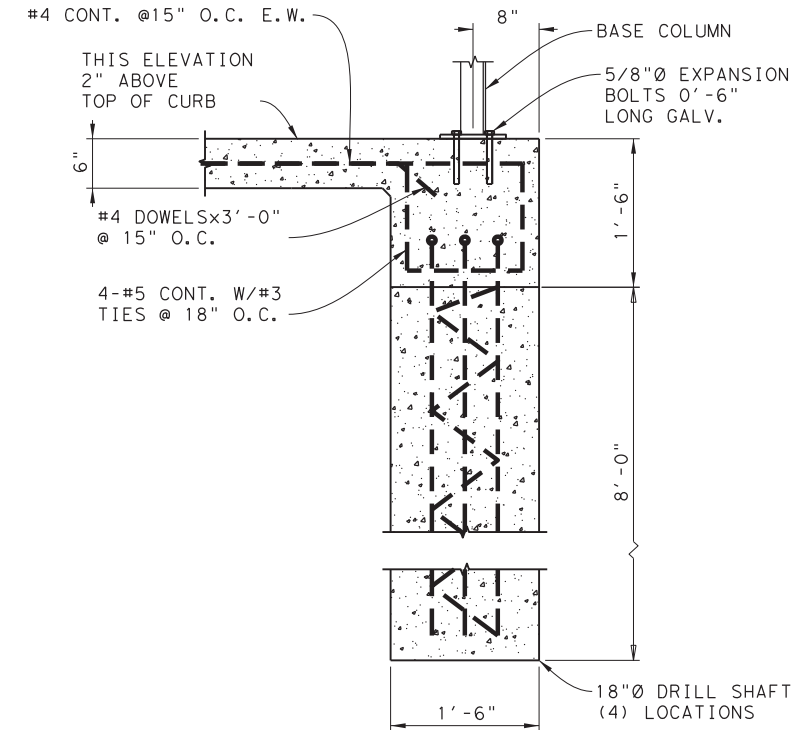
PLAN



BASE PLATE TYPICAL DETAIL
SCALE: 1 1/2" = 1'-0"

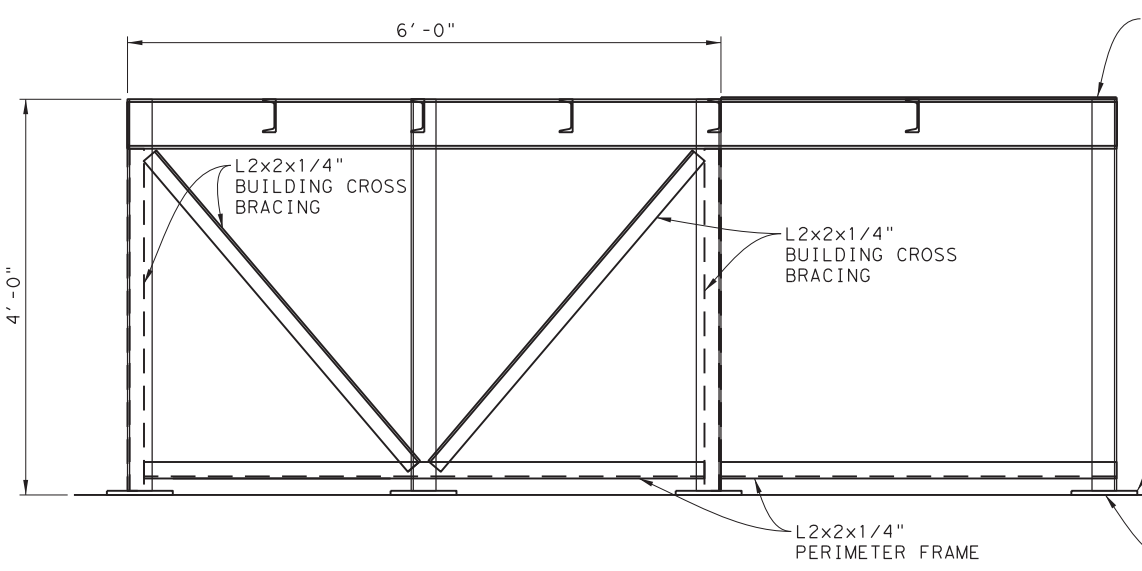


NOTE: ALL CONCRETE TO BE CLASS "C"

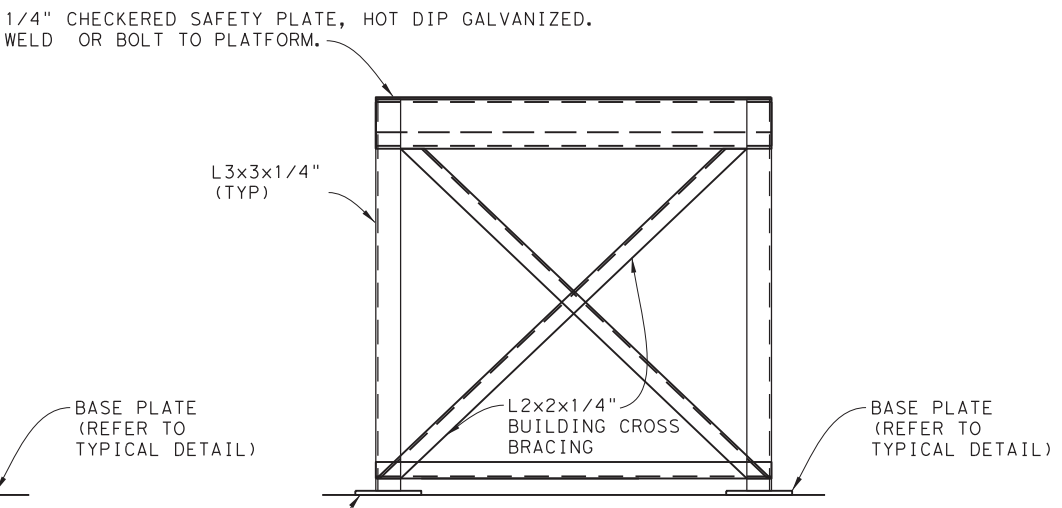


DETAIL OF CONCRETE PAD

NOT TO SCALE



SIDE ELEVATION



END ELEVATION

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THIS SHEET IS FOR INFORMATIONAL PURPOSE ONLY

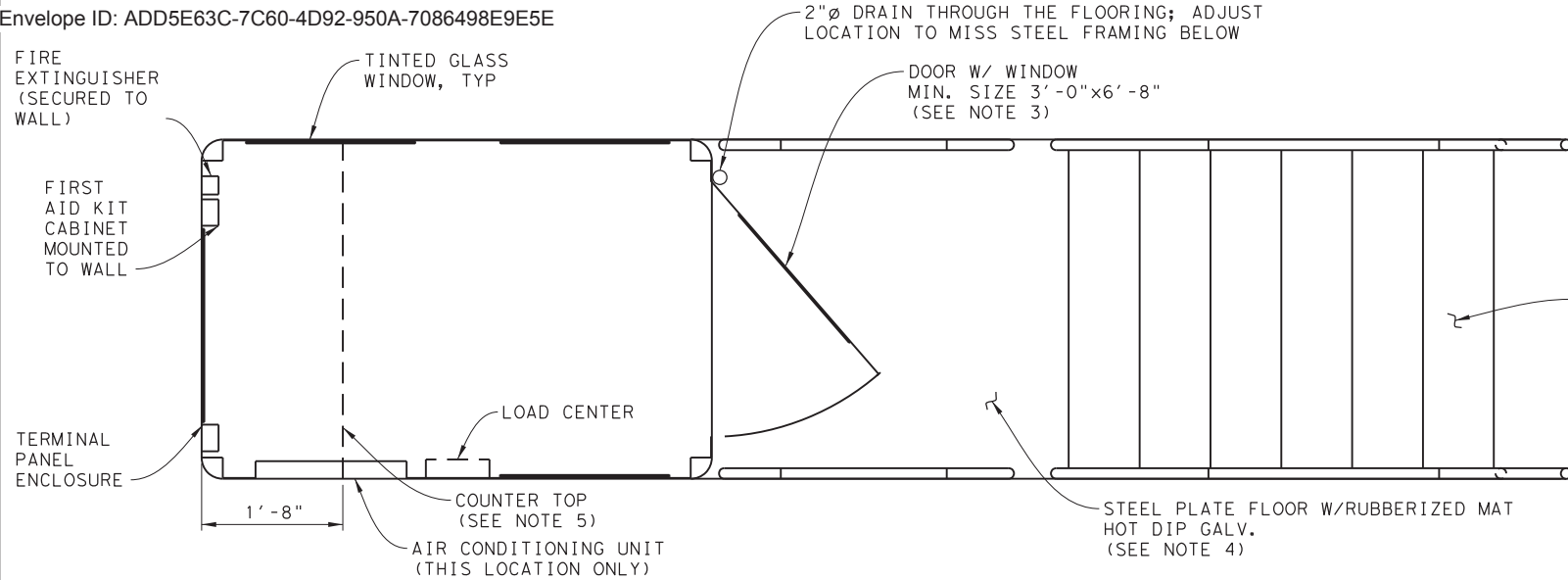
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TEXAS DEPARTMENT OF TRANSPORTATION
FERRY LANDING MAINTENANCE
STAGING AREA GUARD SHACK
SHEET 1 OF 2

SHEET 142 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1007
DN: 1 MM	REVISIONS			COUNTY:
CK: 1 SS				GALVESTON
DR: 1 SH	REV	DESCRIPTION	DATE	CONTROL SECTION JOB HIGHWAY
CK: 1 RW				6428 78 001 SH87

3:51:50 PM 4/6/2023

DRAWING NAME: 949402-S-1007.dgn PLOT DATE: 4/6/2023 3:51:50 PM PLOTTED BY: SHIL



BUILDING PLAN
N. T. S.

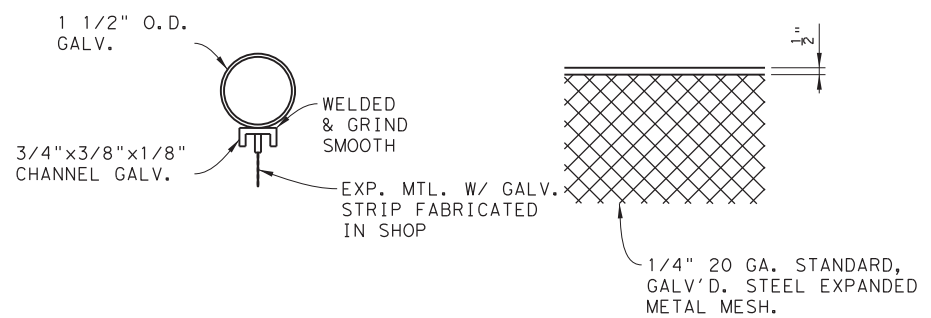
NOTES:

1. APPLY PROTECTIVE COATING ON ALL STEEL ELEMENTS.
2. BUILDING SHALL BE WEATHERPROOF/RATED FOR A WIND SPEED OF 150 MPH, HAVE AN EXTERIOR COLOR OF WHITE, AND AN INTERIOR COLOR OF LIGHT BEIGE/BROWN.
3. DOOR SHALL BE HEAVY DUTY AND WEATHERPROOF/RATED FOR A WIND SPEED OF 150 MPH. ALL DOORS SHALL BE KEYPED THE SAME.
4. FLOOR SHALL HAVE A SLIGHT SLOPE TOWARDS THE DOOR HINGE TO FACILITATE DRAINAGE.
5. PROVIDE A FOUR-LEGGED CHAIR THAT WILL MATCH THE COUNTERTOP.
6. AIR CONDITIONING UNIT:

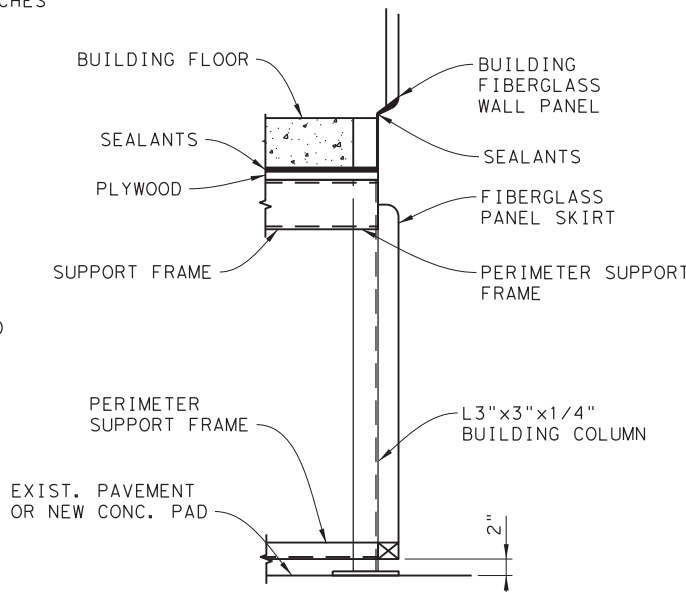
FRIEDRICH WINDOW AIR CONDITIONER
MODEL NO. KEL36A35A-C
SERIAL NO. 2003M90902
35,000 BTU COOLING CAPACITY

HOLE THROUGH WALL FOR INSTALLATION OF A/C UNIT:

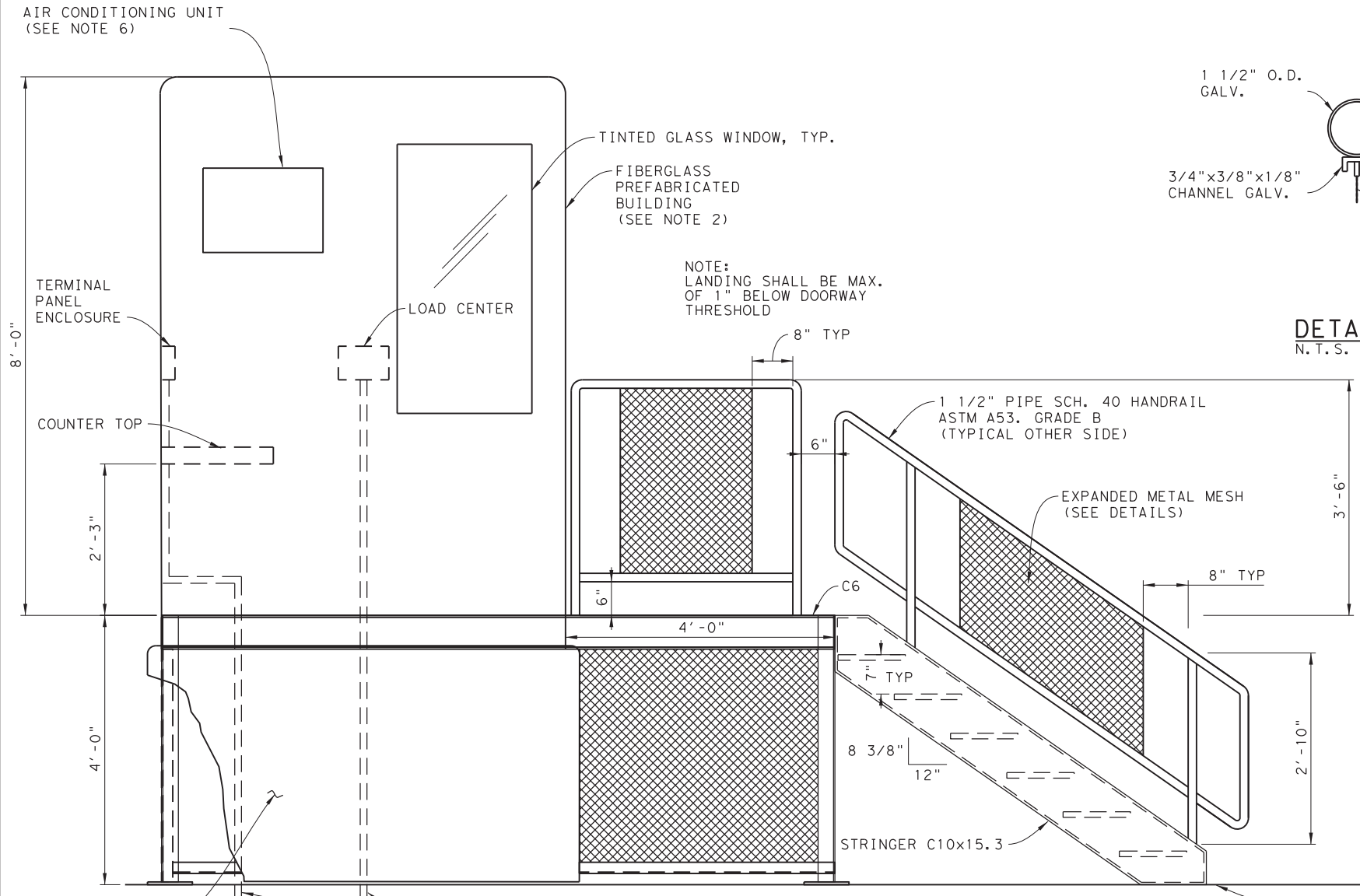
HEIGHT = 20 1/4 INCHES
WIDTH = 28 INCHES



DETAILS EXPANDED METAL MESH
N. T. S.



DETAIL SECTION @ BASE TO SKIRT
N. T. S.



BUILDING ELEVATION
N. T. S.

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NOT TO SCALE


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FERRY LANDING MAINTENANCE
STAGING AREA GUARD SHACK
SHEET 2 OF 2

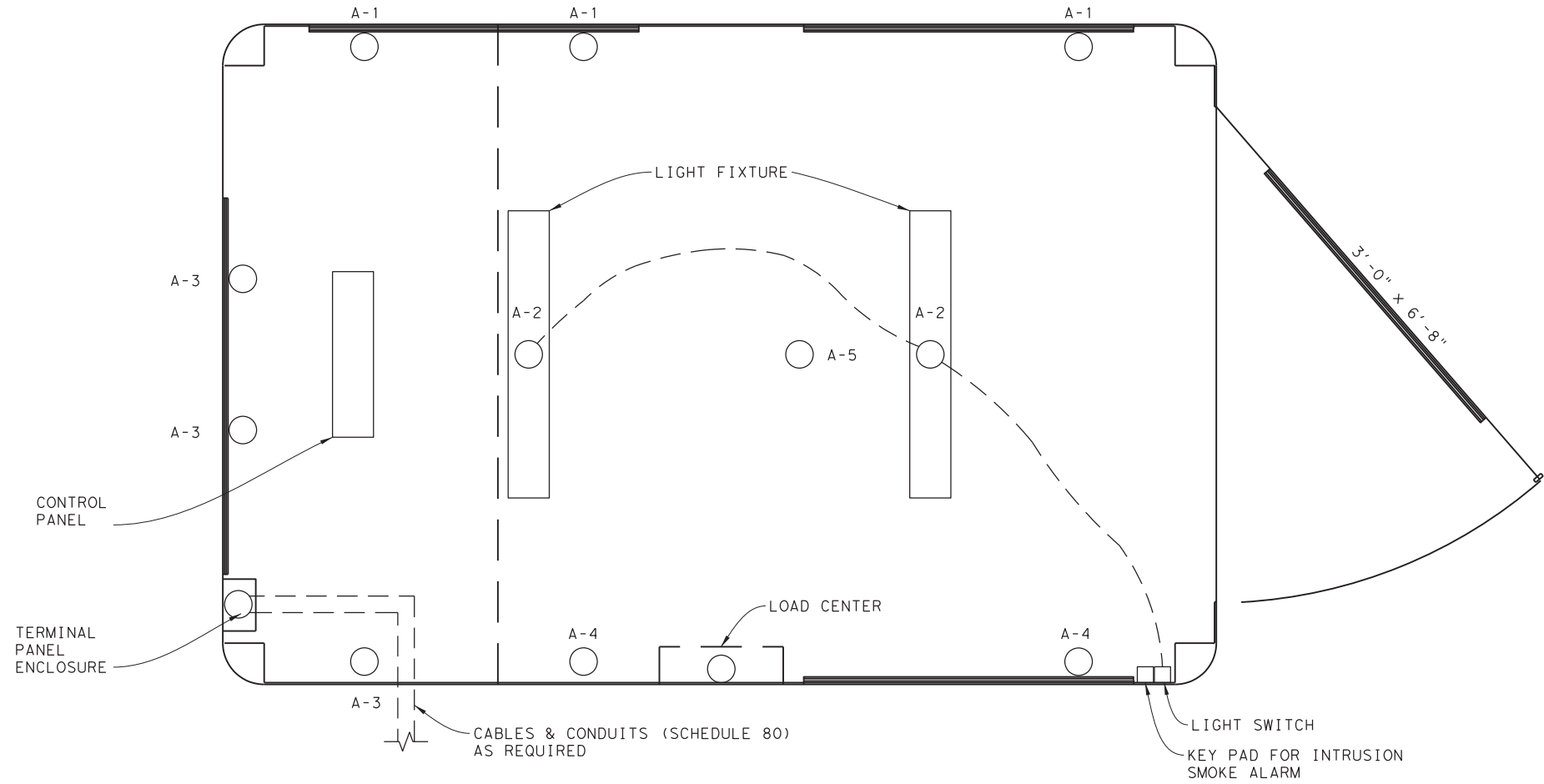
SHEET 143 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1008
NO.	BY	REVISIONS	COUNTY:	CONTROL SECTION JOB HIGHWAY
CK.1	SS		GALVESTON	6428 78 001 SH87
DR.1	SH			
CK.1	RW	REV	DATE	

DRAWING NAME: 949402-S-1008.dgn
 PLOT DATE: 4/6/2023 3:51:56 PM PLOTTED BY: SHII


NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL A BUILDING TO HOUSE THE CONTROL PANEL AND OTHER PERIPHERAL EQUIPMENT, AS DESCRIBED IN THE SPECIFICATION.
2. THE BUILDING SHALL BE DESIGNED TO WITHSTAND A WIND OF 150 MPH WITHOUT DAMAGE AND BE WATERPROOF.
3. CONDUIT ENTRANCE TO THE FOUNDATION AND BUILDING SHALL BE AS DIRECTED BY THE ENGINEER.
4. ALL POWER CONDUCTORS SHALL BE INSULATED, TYPE XHHW.
5. BRANCH BREAKERS:
 - A-1 20 AMP ONE POLE GFCI TYPE
 - A-2 15 AMP ONE POLE
 - A-3 20 AMP ONE POLE
 - A-4 20 AMP ONE POLE GFCI TYPE
 - A-5 30 AMP ONE POLE
6. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIALS NECESSARY TO ALLOW DRAINAGE OF CONDENSATION AND RAIN WATER FROM THE ROOF TOP OF THE BUILDING.
7. ALL BUILDING MATERIALS, STRUCTURAL SUPPORT BASE, FOUNDATION, CONTROLLER PANEL, STAIRS, ELECTRICAL PLUGS LIGHT FIXTURES, ETC. SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "REPLACE DETERIORATED OR DAMAGED SECURITY BOOTH".
8. ELECTRICAL OUTLETS "A-3" SHALL BE INSTALLED ABOVE THE COUNTER TOP.
9. THE ALARM SHALL BE INSTALLED IN THE TWO STAGING AREA GUARD SHACK BUILDINGS LOCATED AT THE BOLIVAR FERRY LANDING.



NOT TO SCALE

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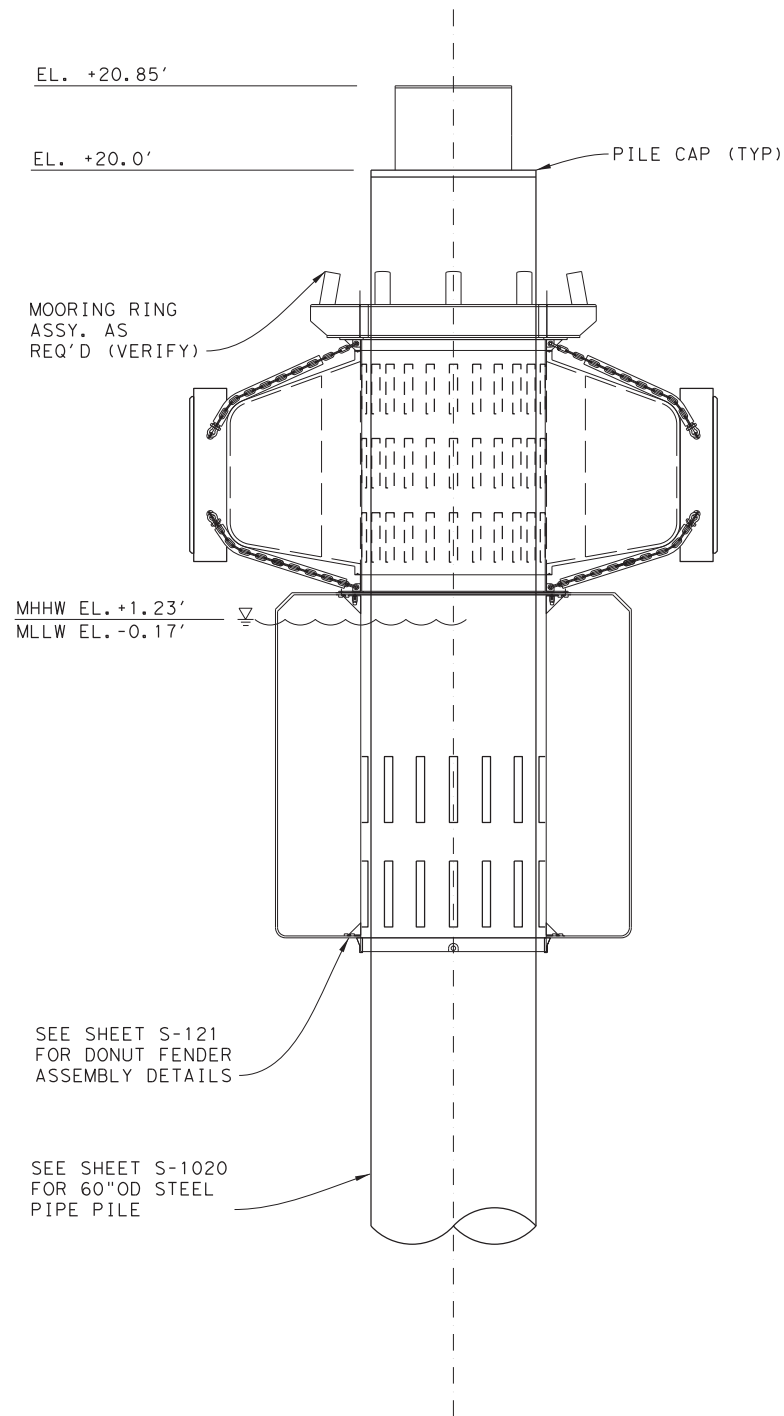

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FERRY LANDING MAINTENANCE
STAGING AREA GUARD SHACK
CIRCUIT PLAN

SHEET 144 OF 148

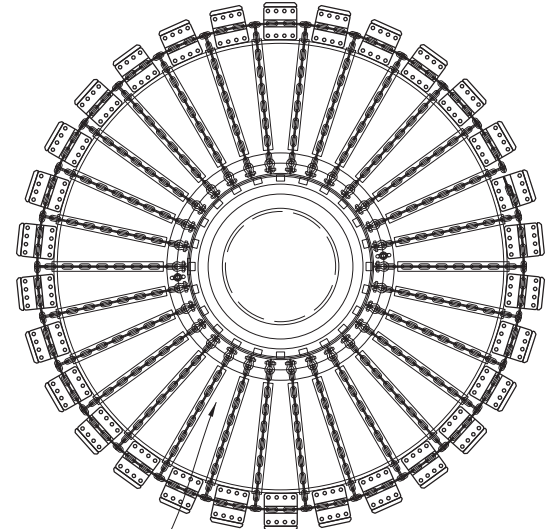
ORIGINAL DRAWING DATE:		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:1	MM	12		RMC 6428-78-001	S-1009
CK:1	SS	COUNTY		CONTROL SECTION	JOB HIGHWAY
DN:1	SH	GALVESTON		6428 78	001 SH87
CK:1	RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1009.dgn PLOT DATE: 4/6/2023 3:52:00 PM PLOTTED BY: SHIH

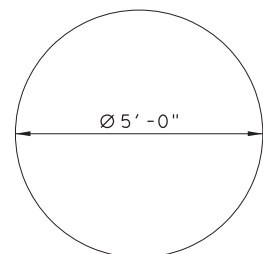
NOTES:
1. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED BY OTHERS.



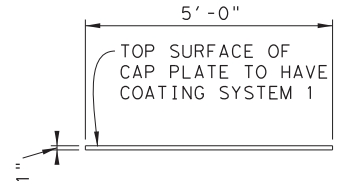
SIDE VIEW



PLAN VIEW



60"O x 1.00" THICK A572-60 CAP PLATE



NOT TO SCALE

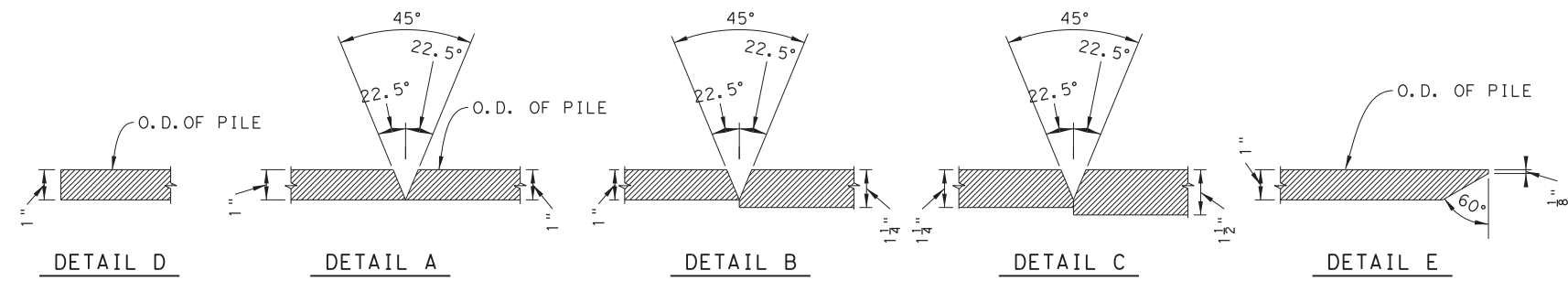
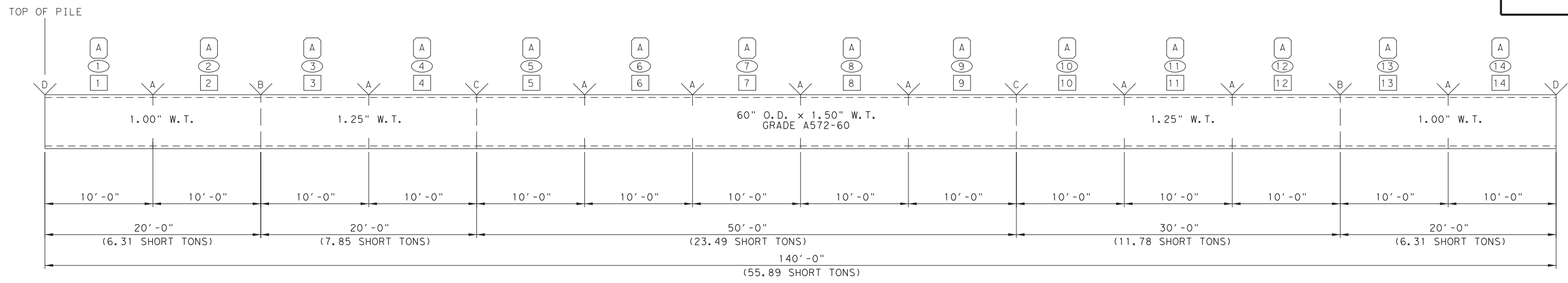
THIS RECORD DRAWING IS A COMPILATION OF COPIES OF SEALED ENGINEERING DRAWINGS, AND/OR ERECTION/INSTALLATION DRAWINGS THAT ARE RELEVANT FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED TO TXDOT BY ENGINEERING FIRMS, MANUFACTURERS, FABRICATORS, AND/OR REVISIONS TO THE ORIGINAL DRAWINGS, APPROVED EITHER VERBALLY OR IN WRITING, ARE ALSO INCLUDED. THIS SHEET IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

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FERRY LANDING MAINTENANCE
TYPE III OUTER DOLPHIN

SCALE: N.T.S. SHEET 145 OF 148

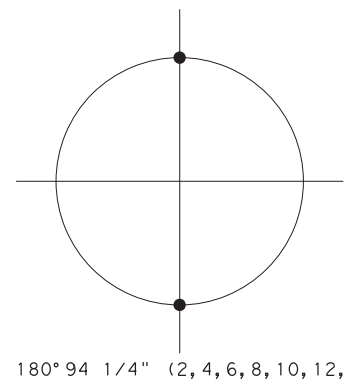
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	12		RMC 6428-78-001	S-1010
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1010.dgn
PLOT DATE: 4/6/2023 3:52:11 PM PLOTTED BY: SHH



BEVEL DETAILS

LONG SEAM ORIENTATION 60" O.D. PILE
VIEWED TOP TO BOTTOM (●)
0° 0" (1, 3, 5, 7, 9, 11, 13)



GENERAL NOTES / SPECIFICATIONS

1. DIMENSIONAL TOLERANCES TO BE PER THE LATEST ADDITION OF API-2B AND/OR API RP 2A AS APPLICABLE UNLESS OTHERWISE NOTED.
2. NON DESTRUCTIVE EXAMINATION (RT) IN ACCORDANCE WITH API-2B.

ADDITIONAL SPECIFICATIONS

1. MARKINGS - LENGTH / WEIGHT TO BE ON INSIDE AND OUTSIDE ON BOTH ENDS.
2. PIECES I.D. TO BE MARKED INSIDE AND OUTSIDE, BOTH ENDS.
3. SEE SHEET S-1021 FOR COATING INSTRUCTIONS.

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SYMBOL	DESCRIPTION
A	ROLL LETTER
14	CAN NUMBER
14	LONG SEAM
∨	BEVEL DETAIL

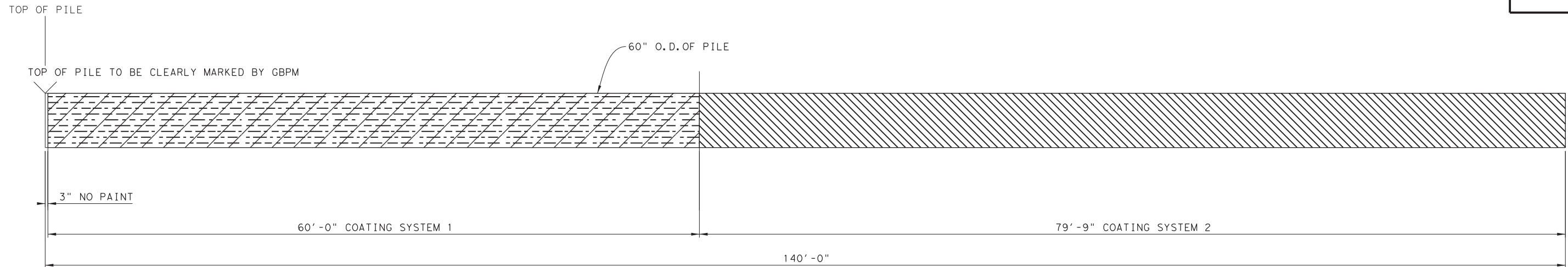
NOT TO SCALE

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FERRY LANDING MAINTENANCE
60" DIAMETER MONOPILE FABRICATION DETAILS

SCALE: N.T.S. SHEET 146 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1020
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION JOB	HIGHWAY
DR: SH		GALVESTON	6428 78 001	SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1020.dgn PLOTTED BY: SHILL PLOT DATE: 4/6/2023 3:52:16 PM



PAINT SKETCH

COATING SYSTEM 1 / GENERAL NOTES / SPECIFICATIONS

1. ABRASIVE BLAST TO Sa 3 IN ACCORDANCE WITH ISO 8501-1 - BLAST CLEANING TO VISUALLY CLEAN STEEL - THIS SURFACE PREPARATION STANDARD IS COMPARABLE TO THE SSPC-SP-5 WHITE METAL BLAST.
2. SURFACE ROUGHNESS WILL BE 3.0-5.0 MILS.
3. GARNET WILL BE ABRASIVE USED IN SURFACE PREPARATION.
4. TSA: USING 1350 GRADE ALUMINUM WIRE TO OBTAIN A 7-14 MIL APPLICATION.
5. SEALER APPLICATION - CARBOGUARD 893 AT 1-1.5 MILS DFT.

COATING SYSTEM 2 / GENERAL NOTES / SPECIFICATIONS

1. SURFACE PREPARATION - SSPC-SP-10 NEAR WHITE BLAST.
2. PRIME COAT - AMERCOAT 78HB CTE 8-10 MILS D.F.T.
3. FINISH COAT - AMERCOAT 78HB CTE 8-10 MILS D.F.T.
4. HOLIDAY TESTING REQUIRED FOR ALL COAL TAR EPOXY COATED AREAS OF PILES.
5. ALL INSPECTION WILL BE PERFORMED PER SSPC PA-2.

ADDITIONAL NOTES

1. GBPM TO HAVE TOP OF PILES CLEARLY MARKED AND PILE I.D. CLEARLY MARKED.

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NOT TO SCALE



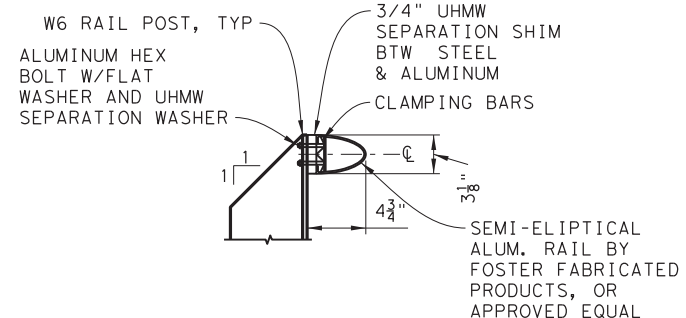
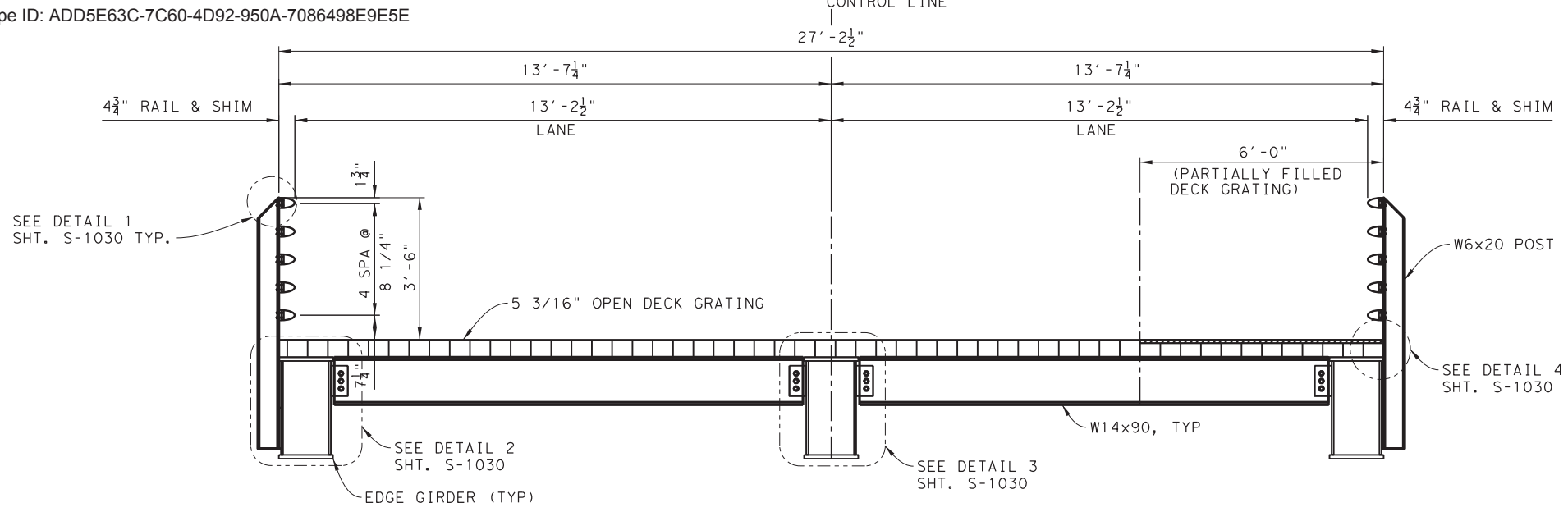
FERRY LANDING MAINTENANCE

60" DIAMETER MONOPILE COATING DETAILS

SCALE: N.T.S.

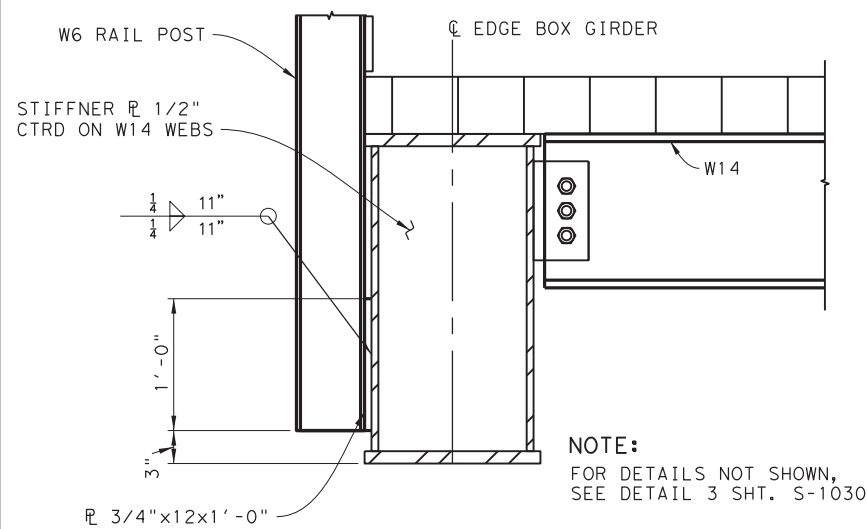
SHEET 147 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN: MM	12		RMC 6428-78-001	S-1021
CK: WB	REVISIONS			
DN: SH	COUNTY	CONTROL	SECTION	JOB
CK: RW	GALVESTON	6428	78	001
REV	DESCRIPTION	DATE	JOB	HIGHWAY
			001	SH87

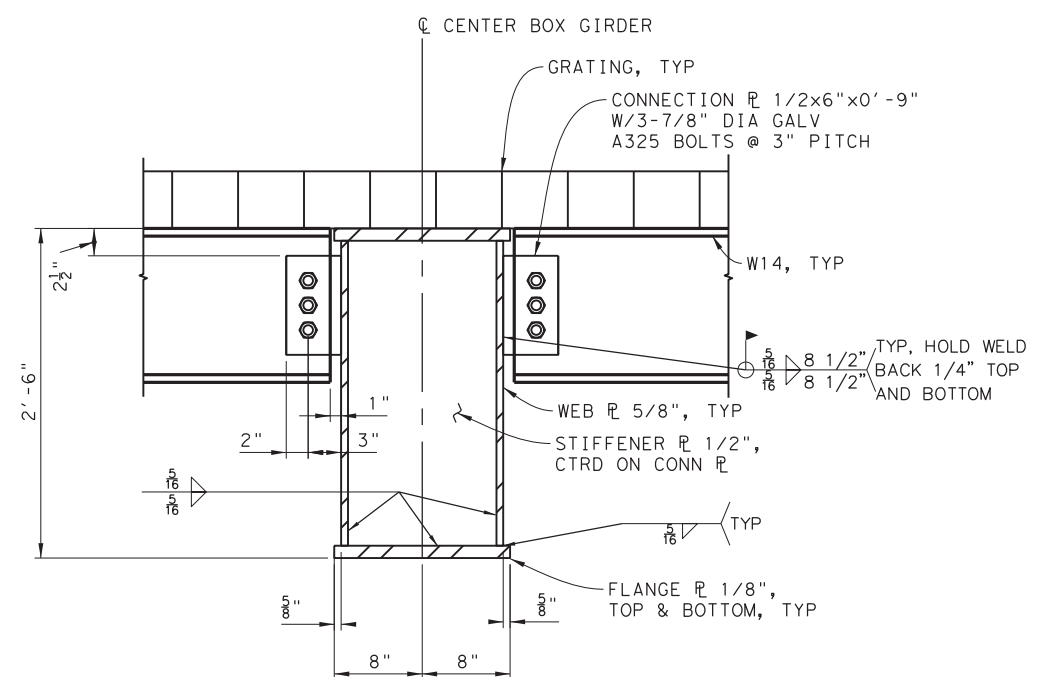


DETAIL 1
SCALE 1 1/2"=1'-0"

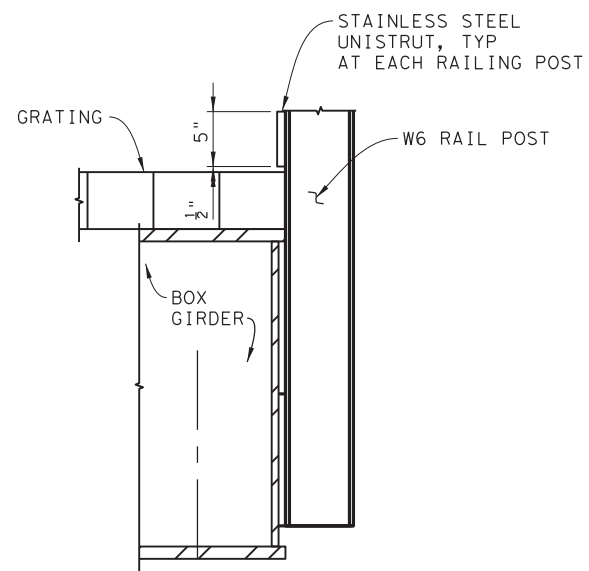
LANDING RAMP SECTION - ELEVATION VIEW
SCALE 1/2"=1'-0"



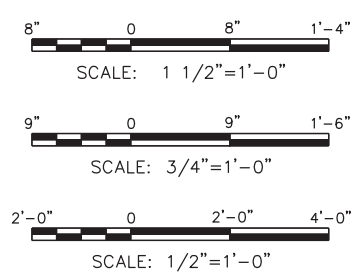
DETAIL 2
SCALE 3/4"=1'-0"



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



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



NOTE:
FOR DETAILS NOT SHOWN,
SEE DETAIL 3 SHT. S-1030

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FERRY LANDING MAINTENANCE
LANDING RAMP
FRAMING CONNECTION
DETAILS

SCALE: N.T.S. SHEET 148 OF 148

ORIGINAL DRAWING DATE:	STATE DISTRICT:	FEDERAL REGION:	FEDERAL AID PROJECT:	SHEET:
	12		RMC 6428-78-001	S-1030
DN: MM	REVISIONS			
CK: WB		COUNTY:	CONTROL SECTION:	JOB HIGHWAY:
DR: SH		GALVESTON	6428 78	001 SH87
CK: RW	REV	DESCRIPTION	DATE	

DRAWING NAME: 949402-S-1030.dgn
PLOT DATE: 4/6/2023 3:52:26 PM PLOTTED BY: SHII

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Envelope Id: C17E4EE222C942FAB537AECEFD8C8C7

Status: Completed

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Document Pages: 152

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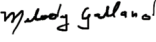
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Area Engineer

TxDOT

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Signature

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Viewed: 5/1/2023 10:18:57 PM

Signed: 5/1/2023 10:19:54 PM

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Accepted: 11/30/2016 4:08:38 PM

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TxDOT

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Texas Department of Transportation
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txdot
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Envelope Sent	Hashed/Encrypted	5/1/2023 1:10:08 PM
Certified Delivered	Security Checked	5/1/2023 10:18:57 PM
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Required hardware and software

Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	<ul style="list-style-type: none"> • Allow per session cookies

- | | |
|--|---|
| | <ul style="list-style-type: none">• Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection |
|--|---|

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