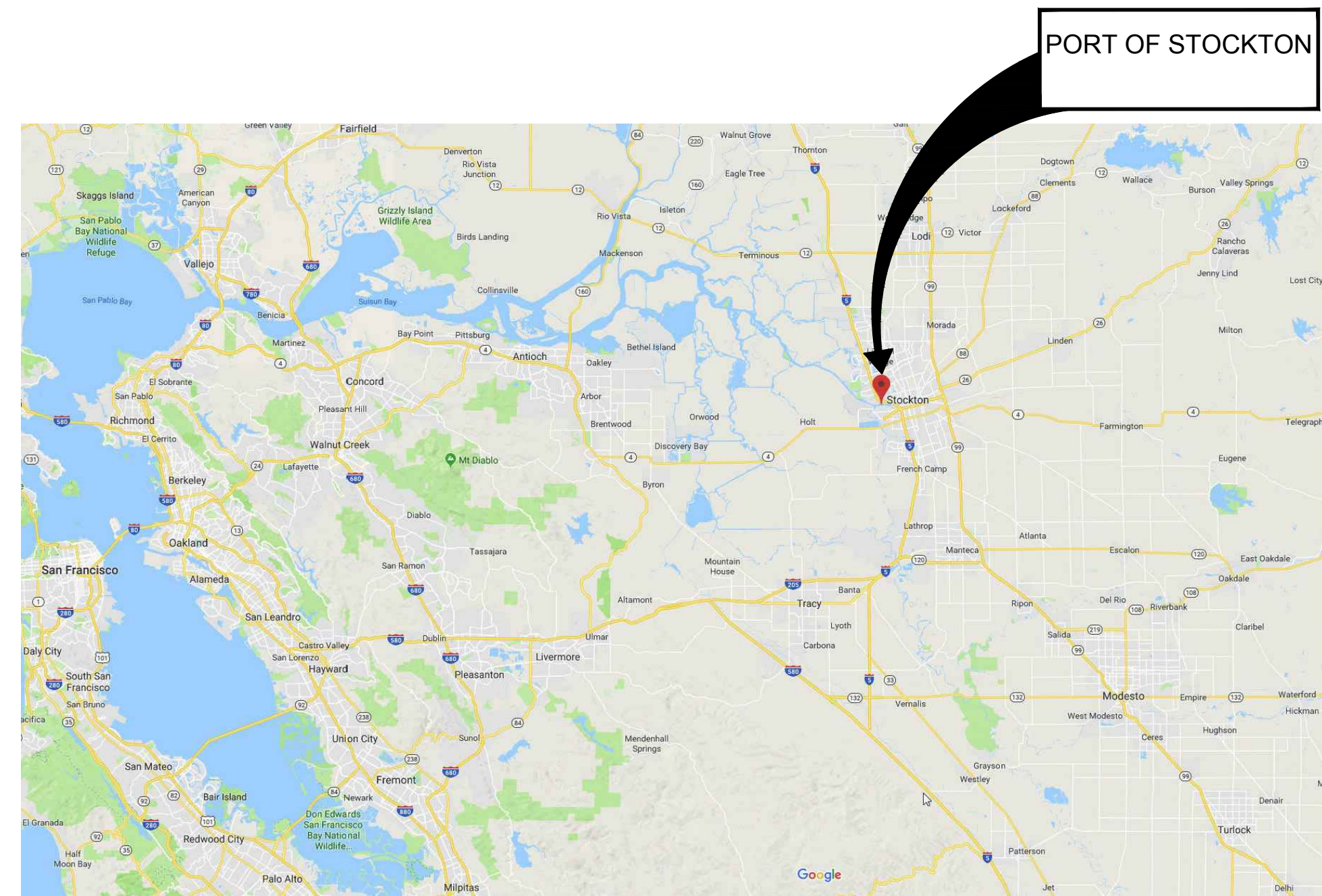
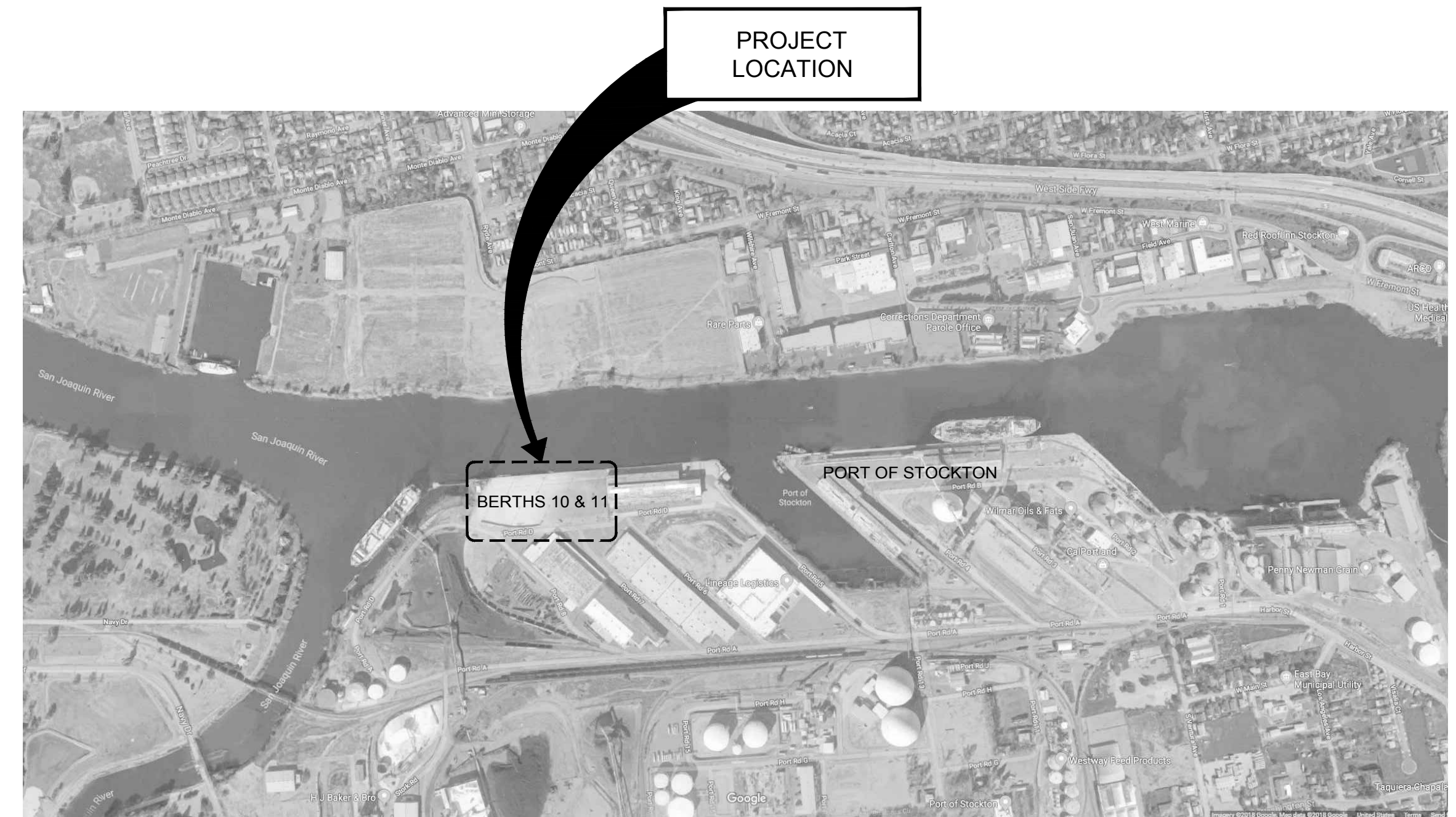


MARINE OIL TERMINAL

PORT OF STOCKTON BERTHS 10 & 11 STOCKTON, CALIFORNIA



Vicinity Map



Site Plan

Drawing Index

DRAWING NO.	SHEET TITLE	DRAWING NO.	SHEET TITLE
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G2	GENERAL NOTES & SYMBOLS	S9	Vault FOUNDATION AND FRAMING SECTIONS
G3	GENERAL NOTES & SYMBOLS	S10	TYPICAL CONCRETE DETAILS
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NOTES:
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REFERENCE DRAWINGS:

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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21		
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PROJECT LOCATION:

DRAWN BY: GPN/JRT	DATE: 12/24/2020
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SCALE: NONE	

PORT OF STOCKTON BERTH 10 & 11
CIVIL/STRUCTURAL DRAWING INDEX
SITE PLAN

ORIGINAL PROJECT NO. -
DRAWING NO. G0
REV.

Revised and Reissued for Construction



Boston
Chicago
Houston
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Washington, DC

PROJECT SCOPE

This project involves the installation of new mooring hooks, new fenders, and a transfer manifold vault to support oil transfer operations. This design has been done in accordance with Chapter 31F of the 2019 California Building Code, otherwise known as the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS).

GENERAL

- General notes and typical details apply to all structural features, unless otherwise indicated.
- If certain features are not fully shown or called out on the Drawings or in the Specifications, their construction shall be of the same character as for similar conditions.
- The project Specifications form a part of the contract documents.
- Specifications, codes and standards noted in the contract documents shall be of the latest edition, unless otherwise noted.
- Dimensions shall not be scaled off of the drawings.
- All work shall conform to minimum standards of the 2019 CBC, MOTEMS, of any codes listed in the Drawings or Specifications, and of any regulating agencies which have authority over any portion of the work, including the California Health and Safety Code.
- The Contractor shall coordinate all work with _____ in order to maintain an operational facility during construction of this work
- Prior to submitting shop drawings and product data, the Contractor shall verify that the submittals meet the requirements of the Drawings and Specifications. The Contractor shall specifically note any exceptions to these requirements with the submittal.
- Openings, pockets, etc. shall not be placed in structural members unless specifically detailed on the structural drawings. Notify when work requires openings, pockets, etc. in structural members not shown on the structural drawings.
- The Contractor shall be responsible for coordinating the work of all trades.
- All work to be performed by the Contractor shall be performed in a continuous scheduled manner regardless of tidal conditions.
- All electrical work is under separate permit.

EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- Contractor shall verify all dimensions and conditions at the job site prior to the start of any construction or fabrication. Any discrepancies between the conditions found and those shown on these drawings shall be brought to the attention of _____ for clarification before work proceeds.
- All omissions and conflicts between the various elements of the drawings and/or Specifications shall be brought to the attention of _____ before proceeding with any work so involved.
- Unless the condition is specifically detailed or referenced, use typical details whether or not they are cross-referenced elsewhere.
- Conditions shown for existing construction reflect information shown on available Construction Drawings and on conditions observable at the time these documents were prepared. The Contractor shall notify if the conditions encountered are different from the conditions indicated prior to performing any work affected by such conditions.

PROTECTION OF LIFE AND PROPERTY

- All work shall be done in accordance with all applicable safety codes, standards, and regulations.
- The Contractor shall exercise extreme caution when working near flammable materials, and shall maintain a fire watch and employ the necessary protective devices as directed by _____
- The Contractor shall exercise all necessary care and precautions to prevent any damage to existing utilities, substructures, structures, and facilities by or as a result of Contractor operations. Any damage resulting from Contractor operations shall be repaired as directed by _____ at no additional cost to _____
- The Contractor shall be responsible for the design and installation of temporary shoring, bracing, work platform, etc., as necessary for the protection of life and property during the construction of the work shown on the contract drawings and as required by OSHA and other applicable safety regulations.
- The Contractor shall phase the construction activities so vehicle and pedestrian traffic have safe access at all times along the access road that serves the berths. The Contractor shall coordinate all construction with _____ to prevent disruptions to terminal operations. The Contractor shall secure the work areas at the end of each work day.

NDPES / WATER POLLUTION PREVENTION NOTES

- Best Management Practices (BMPs) shall be consistently employed to help prevent pollutants from entering the Bay waters. Employees, Subcontractors, and Vendors must be informed, educated and trained to understand the applicable practices and procedures for the various construction activities being done.
- No equipment or vehicles shall be stored, maintained or washed in any area on the Loading Platform or Approach Trestle in order to reduce the potential for any spills or debris entering the water column.
- Protect vehicle fueling areas to prevent run-on, run-off, and to contain spills. Absorbent materials shall be used on small spills instead of hosing down or burying. Keep an ample supply of spill cleanup material on the site.
- All fuel, waste, oils, and solvents shall be stored away from the construction site. Any spills shall be contained and properly disposed.
- All vehicles and equipment shall be properly maintained to reduce the potential for spills of petroleum-based products. Containment booms and sorbent materials shall be available during the activity and shall be deployed immediately in the event of a spill to limit its spread.
- The construction site shall be maintained by the contractor in such a condition that any storms do not carry wastes or pollutants off the site. At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed of by the Contractor in the appropriate trash or recycle bins. Upon completion of the project, all equipment and debris will be safely demobilized from the area and properly disposed.
- Do not allow slurry residue from wet coring or saw-cutting to enter the water.
- If any materials or wastes are released to the water, Project Supervisors shall immediately halt all work and utilize all available resources to assure containment and removal.
- All required jurisdictional agency permits will be obtained by _____ prior to start of any work.

DESIGN DATA

- Code: 2019 California Building Code
- Risk Category per CBC Table 1604.5: II
- Design Live Loads – Vaults:

Area	Design Live Load	Remarks
Live Load	500 psf	Deflection Limit L/240
Concentrated Live Load	60 kips	No Deflection Limit over 10 in. sq. area
H2O Truck Load	16 kips	15% Impact Loading
4. Wind Design Data:		
Design Method:	Envelope Procedure	
Nominal Design Wind Speed:	110 mph (3-sec. gust)	
Wind Importance Factor:	1.0	
Wind Exposure:	D	
5. Earthquake Design Data – Vaults:		
Design Criteria:	ASCE 7-16 Chapter 12	
Site Class:	D	
S _{ps} :	0.603 g	
Seismic Force-Resisting System:	Steel Special Cantilever Column System	
Response Modification Coeff., R:	2.5	
Analysis Procedure:	Equivalent Lateral Force	

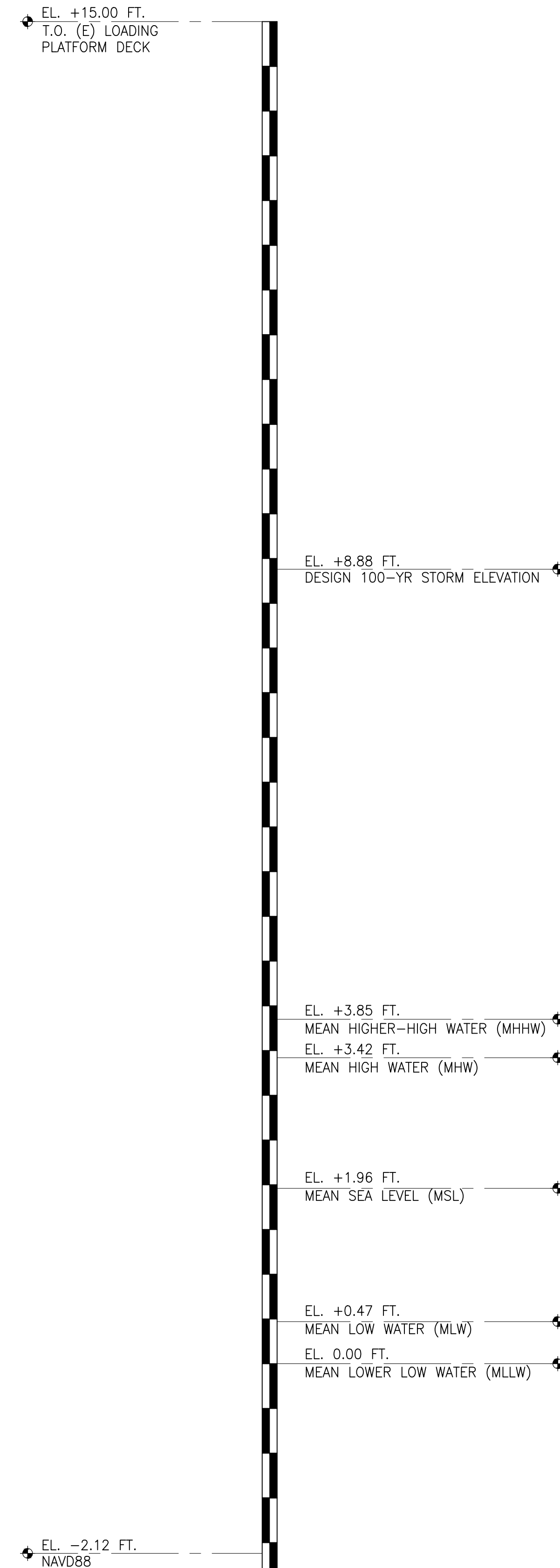
DATUM AND ELEVATIONS

- Vertical Datum
 - All elevations shown in these drawings are relative to Mean Lower Low Water (MLLW), unless otherwise noted.
 - MLLW is based on NOAA Tide Station 9414867, Borden Highway Bridge, San Joaquin River.
 - Relationship between NAVD88 datum and MLLW is based on NOAA Tide Station 9414867, Borden Highway Bridge, San Joaquin River at elevation +2.12ft.
- Elevation of (E) Structures
 - Elevations for existing structures are based on information provided in As-built drawings 15-20D-421 to 435 by Hallanger Engineers, dated 26 March 1982.
 - Key elevations for this project are as follows:
Low point of (E) loading platform deck +15.00 ft.
- Sea Level Rise
 - Sea Level Rise primarily effects coastal sites and areas of low elevation. The Port of Stockton is located about 50 miles inland from the San Francisco Bay. It is not mapped by NOAA for sea level rise due to its location and elevation. SLR is negligible for this site.
 - Assumed highest SLR rate is 0.385 in. per year (27 in. over 70 years from 2000 to 2070)
 - Design SLR = 1.44 ft over 45 years
- Tidal Elevations
 - Tidal elevations are based on NOAA Tide Station 9414867, Borden Highway Bridge, San Joaquin River.
 - Key tidal elevations for this project are as follows:

TIDE	MLLW Elevation (ft)	NAVD88 Elevation (ft)
Max. Observed Tide	None Reported	
Mean Higher High Water (MHHW)	+3.85	+5.97
Mean High Water (MHW)	+3.42	+5.54
Mean Sea Level (MSL)	+1.96	+4.08
Mean Low Water (MLW)	+0.47	+2.59
Mean Lower Low Water (MLLW)	+0.00	+2.12
Min. Observed Tide	None Reported	

- Storm Flood Elevation
 - 100-yr flood elevations are based on FEMA Flood Insurance Rate Map (FIRM) No. 06077C0455F, dated 16 October, 2009. The reported flood elevation is +10.0 ft. NAVD88 (+7.88 ft. MLLW).
 - Design storm wave height = 1.0 ft.
 - Design 100-yr storm flood elevation = +8.88 ft. (FIRM + Wave + SLR)
- Tsunami Elevation & Current
 - The project site is not located within a tsunami inundation zone.
- Wave
 - The terminal is not exposed to spectral waves. wave effects are negligible for this site.
 - Wave heights are based on the Army Corps of Engineers' Coastal Engineering Manual (CEM)
 - Significant wave height = 1.6 ft
 - Wave period = 2.0 seconds.
- Current
 - Design Current for Mooring: +-0.4 knots (Flood and Ebb)

STRUCTURAL ELEVATIONS & DATUMS



NOTES:
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PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
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APPROVED: WMB	DATE: 12/24/2020
SCALE: NONE	

PORT OF STOCKTON BERTH 10 & 11	
GENERAL – NOTES & SYMBOLS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. G1	REV. _____

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Chicago
Houston
Los Angeles
New York
San Francisco
Washington, DC

EXISTING CONSTRUCTION

- Work shown is new unless noted as existing: (E).
- Existing construction shown on these drawings was obtained from site investigation and can be used for bidding purposes. The contractor shall verify all existing job conditions, review all drawings and verify dimensions prior to construction. The Contractor shall notify the Engineer of all discrepancies and exceptions before proceeding with the work.
- The removal, cutting, drilling, etc. of existing work shall be performed with care in order not to jeopardize the structural integrity of the building. If structural members or mechanical, electrical or architectural features not indicated for removal interfere with the new work, notify immediately and obtain approval before removal of members.
- The Contractor shall safely shore existing construction wherever existing supports are removed for the new work.
- The Contractor shall perform the work with minimal inconvenience to and without interruption of day-to-day work operations. The Contractor shall ensure safe travel of persons around areas of construction and shall coordinate all operations with .
- The Contractor shall promptly repair any damage caused during operations, using materials and workmanship similar to that which was damaged.
- All removed items, materials and debris, unless otherwise noted, shall be removed promptly from the site and disposed of in a legal manner.

NEW CONSTRUCTION

- Non-structural features not fully shown or noted on the structural drawings may include but are not limited to:
 - A. Mechanical, plumbing and electrical features
 - pipe runs, sleeves, hangers, trenches, wall, roof and floor openings, etc.
 - electrical conduit runs, boxes, outlets in walls and slabs
 - anchorage and bracing for electrical, mechanical or plumbing equipment
 - anchor bolts for motor mounts
 - size and location of machine and equipment bases
- The contract documents represent the finished structure. They do not indicate the method of construction. The Contractor shall provide all measures necessary to protect life and property during construction. Such measures shall include, but are not limited to, bracing and shoring for loads due to construction equipment and materials. Observation visits to the site by the Engineer shall not include inspection of the above items.
- The lateral system of the structure is designed with lateral restraint at each level. Structural frames are not laterally self supporting until the entire design lateral-restraint system is in place.

**MATERIALS OF CONSTRUCTION
CONCRETE & REINFORCING STEEL**

- All concrete shall be ready-mix in accordance with ASTM C94.
- Cement: ASTM C150 Type II.
- Aggregate: ASTM C33.
- Non-shrink Grout: ASTM C1107, premixed, non-staining, non-shrink grout.
- Grout or concrete containing more than 0.1 percent of soluble chloride shall not be used.
- Mixes are to be reviewed by and submitted to _____ for approval. Do not cast concrete without approval by

Concrete	Strength	Max. Agg. Size	Max. W/C Ratio	Air Content
Foundations	4000psi	1½"	0.45	1½% ±1%
Walls	4000psi	¾"	0.45	1½% ±1½%

See specifications for additional requirements. All concrete shall be hard rock aggregate, regular-weight concrete, 145 pcf, unless otherwise noted.

- Inserts: All items to be cast in concrete, such as reinforcing dowels, bolts, anchors, pipes, sleeves, etc., shall be securely positioned in the forms before placing the concrete.
- Pipes and electrical conduits shall not be embedded in structural concrete, except where specifically approved by
- Provide sleeves for plumbing and electrical openings in concrete before placing. Do not cut any reinforcing which may interfere. Coring in concrete is not permitted except as shown.
- Construction joints: Provide as detailed on drawings. Expose clean coarse aggregate solidly embedded in mortar matrix by sandblasting, bushhammer, or other approved method. Location of construction joints shall be approved by
- Dry pack or place non-shrink grout under base plates, sill plates, etc., as required for full bearing.
- Reinforcing steel:
 - ASTM A615 Grade 60.
 - ASTM A706 where welded or otherwise indicated.
- All reinforcement shall be continuous. Stagger splices where possible. Laps shall be per typical details, unless otherwise noted.
- Headed terminators shall be HRC 100-Series T-heads (ICC ER-5292), HRC 555 T-heads (IAPMO ER-0177) or Lenton Terminators (IAPMO ER-0188).
- Minimum clear concrete cover for reinforcement shall be 3 inches, unless otherwise noted:

STRUCTURAL STEEL & MISC. METALS

- Fabrication and erection of structural steel shall be in accordance with the "Code of Standard Practice for Steel Buildings and Bridges" AISC 303-10.
- Materials:
 - A. W shapes: ASTM A992 (F_y = 50 ksi)
 - B. Channels & angles: ASTM A36 (F_y = 36 ksi)
 - C. All other shapes & plates: ASTM A572 Grade 50 u.o.n.
 - D. Structural tubes (rectangular HSS): ASTM A500 Grade C (F_y = 50 ksi)
 - E. Structural tubes (round HSS): ASTM A500 Grade C (F_y = 46 ksi)
 - F. Structural pipes: ASTM A53 Grade B (F_y = 35 ksi)
- Bolts, unless otherwise noted on drawings:
 - A. High-strength bolts: ASTM A325-N
 - B. Machine bolts: ASTM A307
 - C. Anchor rods: ASTM F1554 Grade 55
- Joint type for bolted connections shall be snug-tightened (ST), unless otherwise noted as pretensioned (PT) or slip-critical (SC).
- Faying surface for slip-critical (SC) bolts shall be Class A, unless otherwise noted, with bolt slip considered at the factored load level.
- Bolt holes in steel shall be ⅛ inch larger diameter than nominal size of bolt used, unless otherwise noted.
- For bolted connections, provide 1½ inch edge and end distance, unless otherwise noted.
- All welds shall be prequalified or qualified by test in conformance with the "Structural Welding Code - Steel" (AWS D1.1-10) of the American Welding Society. Submit Welding Procedure Specifications for approval prior to performing work. Submit Procedure Qualification Reports with Welding Procedure Specifications for welds qualified by test.
- Minimum tensile strength of weld metal shall be 70 ksi typical, unless otherwise noted. Welding electrodes shall be as recommended by their manufacturer for the position and other conditions of actual use.
- Weld symbols shown on the drawings do not necessarily differentiate between shop weld and field welds. When field welds are necessary due to construction procedure or sequence, welds shall be provided and be inspected per Specifications. All welds shown as field welds shall be done in field as indicated.
- All structural steel surfaces are to be galvanized, unless noted otherwise. Steel that is to be encased in concrete shall be left uncoated. Faying surfaces of high-strength bolted connections and areas within 3 inches of field welded joints shall be left uncoated until welding and bolting operations are complete. See Specifications for coating requirements.
- All structural steel, miscellaneous metal and connectors shall be hot-dip galvanized after fabrication.
- All faying surfaces for friction-bolted connections of galvanized members shall be roughened by means of hand wire brushing after galvanizing and before erection.
- No penetrations through structural steel columns, beams, or braces are allowed except as indicated on the structural drawings.
- Camber:
 - A. Provide upward camber to all members shown to have camber. Amount measured in field prior to installation shall not deviate more than allowed by the AISC specifications.
 - B. Beams detailed without specified camber shall be fabricated so that after erection, any minor camber due to rolling or shop assembly shall be upward. Top of all members shall be clearly identified.
- Furnish shop and erection drawings of all structural steel for review before fabrication.

**STRUCTURAL STEEL:
SEISMIC FORCE RESISTING SYSTEM
(SFRS) REQUIREMENTS**

- Structural steel elements of the Seismic Force Resisting System (SFRS) are indicated on the drawings.
- Fabricate elements of the SFRS in accordance with AISC 341-10 "Seismic Provisions for Structural Steel Buildings," with changes per the City of Long Beach Municipal Code (Title 18).
- Perform welding related to elements of the SFRS in accordance with AWS D1.8-09 "Structural Welding Code - Seismic Supplement," with changes per the City of Long Beach Municipal Code (Title 18).
- CVN toughness for all welds in the SFRS: 20 ft.-lb. at 0 degrees Fahrenheit.
- CVN toughness for all Demand Critical (DC) Welds indicated on the drawings: 40 ft.-lb. at 70 degrees Fahrenheit.
- All bolted joints in the SFRS shall be installed as required for Slip-Critical (SC) joints including the preparation of faying surfaces and tensioning.
- Protected Zones of members that are part of the SFRS are indicated on the drawings. The Contractor shall mark all locations of Protected Zones, in an apparent and easily visible manner, directly on the affected steel members. Welded, bolted, screwed, or shot-in attachments of any kind, other than puddle welds for the attachment of metal decking, are prohibited within the Protected Zones.

POST-INSTALLED ANCHORS

- Post-Installed anchors include all adhesive anchors (reinforcing bar dowels and threaded rods) expansion anchors, screw anchors and undercut anchors set in holes drilled in existing concrete or masonry.
- Installation of post-installed anchors shall conform to all requirements of the applicable code evaluation or IAPMO reports and manufacturers' recommendations.
- Mark the location of all existing reinforcing in the substrate material within 12 inches of the proposed locations of all post-installed anchors. Notify _____ of any conflicts discovered between the proposed anchor locations and the existing reinforcing prior to fabrication of any steel and prior to any hole drilling, so as to avoid disturbing, cutting, or otherwise harming the existing reinforcing.
- Holes for adhesive anchors in concrete shall be drilled. Cored holes are not permitted.
- Do not install adhesive anchors in concrete if concrete strength is less than 2500 psi, age is less than 21 days, or temperature is less than 50 degrees Fahrenheit.
- Adhesive Anchors in Concrete (reinforcing bar dowels or threaded rods):
 - A. HILTI "HIT-HY 200" ICC ESR-3187.
- Anchors that fail the proof test shall be replaced by the contractor at no additional cost to
- Re-testing of replaced anchors that fail tests shall be paid for by the Contractor.
- Typical embedment depths and proof loads for testing are indicated in the tables below.

ADHESIVE ANCHORS		
ANCHOR SIZE	TYPICAL EMBEDMENT (U.O.N.)	PROOF LOAD NORMAL WEIGHT CONCRETE
#3 OR ⅜"Ø	3½"	2,100 lb.
#4 OR ½"Ø	8"	9,600 lb.
#5 OR ⅝"Ø	12"	14,900 lb.
#6 OR ¾"Ø	12"	21,120 lb.
#7 OR 7⁄8"Ø	7⁄8"	11,500 lb.
#8 OR 1"Ø	9⁄8"	12,400 lb.
#9 OR 1⅛"Ø	10¼"	19,000 lb.

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PORT OF STOCKTON BERTH 10 & 11 GENERAL - NOTES & SYMBOLS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. G2	REV. _____

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SUBMITTALS

The following submittals are required. Submittals shall include those indicated on the following list as well as any other items indicated in the Specifications. This list is provided for convenience only and may not incorporate all requirements indicated in the project specifications.

DEMOLITION

- Demolition plan shall include the following:
 - Extents of concrete to be removed.
 - Means and methods for removal of concrete.
 - Means and methods for protecting the existing structure to remain, including the existing steel reinforcement.
 - Means and methods for protection of the public and environment.

CONCRETE FORMS AND ACCESSORIES

- Submit drawings and calculations for shoring of each concrete element for review. Indicate pertinent dimensions, materials, bracing, anchorages, and arrangement of joints and ties. Drawings and calculations shall be sealed by a Professional Engineer registered in the State of California.

CONCRETE REINFORCEMENT

- Shop drawings complying with the requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- Welding procedure specifications (WPSs) for each unique type of weld of reinforcing steel, characterized by (position, process, size, material).
- Product data and code evaluation reports for the following products: Mechanical couplers, deformed bar anchors, and headed reinforcement.
- Reports: Certified copies of mill test reports for each heat of reinforcing provided to the project, documenting compliance with the applicable ASTM specification, including chemical analysis, tensile tests and bend tests.

CAST-IN-PLACE CONCRETE

- Mix designs and test data for concrete mixes, at least 15 days prior to intended placement. Mix design submittals shall include, as a minimum, the following:
 - List of materials proposed weights and volumes of each material per cubic yard.
 - Specification of source for each material.
 - Gradation listing of aggregates and certification that coarse and fine aggregates meet the requirements listed in the Concrete Materials Article of the cast-in-place concrete section of the specifications.
 - List of admixtures, with manufacturer's data sheets.
 - Certification that all aggregates are compatible with the proposed cement.
 - Laboratory test reports from trial batches of field experience, as applicable for the specific mix proposed for use.
- Product data, Material Safety Data Sheets (MSDS) and code evaluation reports, as applicable, for proprietary materials and items, including curing compounds, epoxy resins, surface treatments and proprietary anchoring systems.
- Drawings indicating proposed locations of construction joints and control joints.
- Description of curing methods proposed and products to be employed.

POST-INSTALLED ANCHORS

- Product data and code evaluation reports for anchors proposed as alternatives to those specified.
- Preparation instructions and recommendations.
- Installation methods.
- Storage and handling requirements and recommendations.

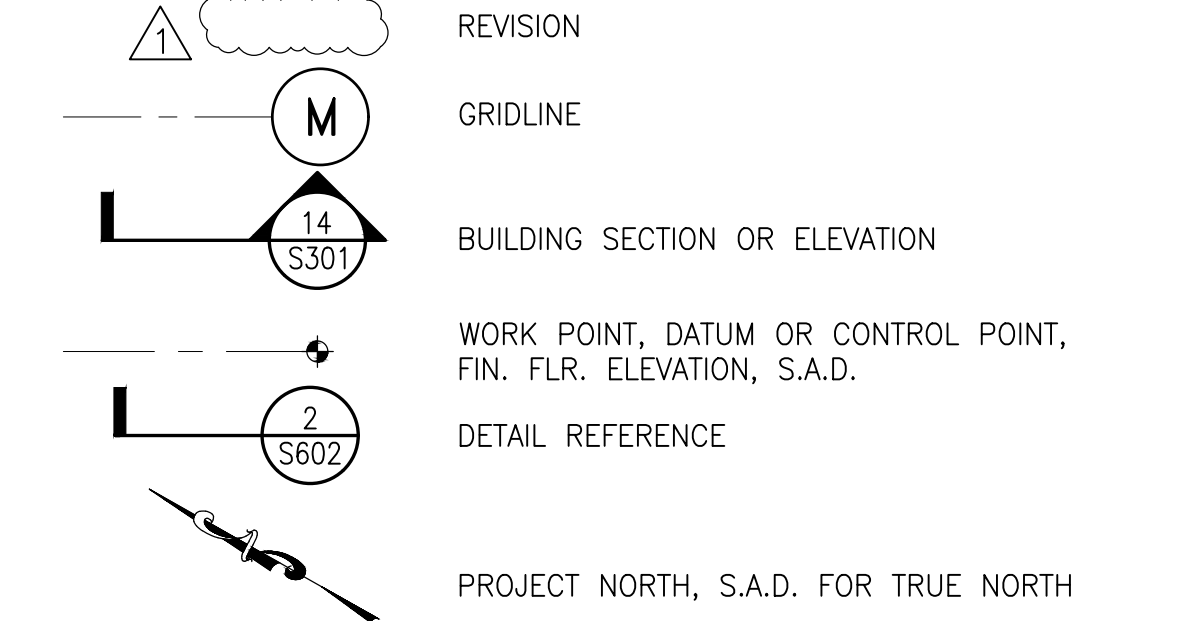
CONCRETE REPAIR

- Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- Material Safety Data Sheets (MSDS) for all components of all repair materials.
- Certifications: Written certificates from the system manufacturer stating that all installers of the patching and sacking materials have successfully completed a training workshop for installation of the materials, or have met alternative workmanship qualifications acceptable to the manufacturer, or provide written certification from the manufacturer that the Contractor has contracted for on-site training services.
- Proposed mix designs for concrete used as a repair material.

STRUCTURAL STEEL (INCLUDING STAIRS)

- Shop Drawings and Erection Drawings:
 - Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths and sizes. Distinguish between shop and field welds. Identify welds by WPS number.
 - Include details of cuts, connections, splices, camber, holes, stiffeners, doubler plates, and other pertinent data, such as surface preparation. Include setting drawings, templates, and directions for installation of embedded items to be installed by others.
 - Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify high-strength bolted slip-critical, direct-tension, or tensioned shear/bearing connections.
- Manufacturer's Mill Certificates: Certify that products meet or exceed specified requirements.
- Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
 - Structural steel including chemical and physical properties and Charpy V-notch test results, where specifically required.
 - Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - Direct-tension indicators.
 - Tension-control, high-strength bolt-nut-washer assemblies.
 - Weld filler metals, including Charpy V-notch test results, where specifically required.
- Weld filler metal manufacturer's data sheets, indicating filler metal classification, characteristics, recommended ranges of heat inputs, permissible positions, strength and CVN toughness, if applicable.
- Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- Welding Procedure Specifications (WPS) per AWS D1.1-10 for each type of welded joint, with changes per the City of Long Beach Municipal Code (Title 18).
- Welding Procedure Qualification Record (PQR) for each weld procedure that is not prequalified by AWS D1.1-10, with changes per the City of Long Beach Municipal Code (Title 18).

GENERAL SYMBOLS AND LEGEND



STATEMENT OF STRUCTURAL OBSERVATION

Structural Observation is required by Chapter 17 of the CBC. Types of work listed below shall be observed during periodic site visits by the Engineer. Contractor is responsible for notifying Engineer 48 hours before work is ready for observation. Structural Observation does not constitute Special Inspection.

- Structural observation is the visual observation of the elements and connections of the structural system by a Registered Engineer for general conformance to the approved construction documents at significant construction stages and at the completion of the structural system. Structural observation does not include or waive the responsibility for the inspection required by CBC Section 1704. Structural observation shall be provided in accordance with CBC Section 1704.
- shall employ a Structural Observer to perform structural observations as defined in CBC Section 1702.
- Pre-construction meeting:
 - Prior to construction commencement, the Structural Observer, as representative, shall coordinate and preside over a pre-construction meeting with the Registered Engineer responsible for the structural design (if different than the Structural Observer), Contractors and affected Subcontractors.
 - The purpose of the pre-construction meeting is to identify the major structural elements and connections that affect the vertical and lateral force-resisting systems of the structure and to review the scheduling of required structural observations.
 - The first report shall include a record of the pre-construction meeting and name of the designated Structural Observer to perform the structural observation program.
 - Additional construction meetings may be required at different stages and/or for different trades.
- The Structural Observer shall complete, sign, wet stamp and submit a "Structural Observation Report" form after each site visit requiring structural observations.
- Observation schedule: Where the structural observation is required, the structural Observer shall perform site visits at each significant construction stages in the progress of the work that allow for correction of deficiencies without substantial effort or uncovering of the work involved. The Structural Observer shall, as a minimum, perform structural observation for the following structural elements and their connections at the scheduled intervals or stages of construction:
 - Concrete & Reinforcing Steel: Reinforcing steel, anchor rods, and other embedments shall be observed prior to placement of cast-in-place concrete and/or shotcrete elements.
 - Structural Steel: Steel elements and welded connections shall be observed once erected.
- Observed deficiencies:
 - Observed deficiencies by the Structural Observer shall be reported in writing to
 - The Contractor shall resolve all identified deficiencies to the satisfaction of the Structural Observer prior to requesting the next inspection.
 - At the conclusion of the project, the Structural Observer shall submit a final written statement on the "Structural Observation Report" form that the site visits have been made and report that all observed deficiencies, to the best of the Structural Observer's knowledge, has been resolved and that the structural system generally conforms to the approved construction documents.

ABBREVIATIONS

&	And	HGD	Hot-dip Galvanized	SYMM.,SYM.	Symmetrical
@	At	HGR.	Hanger	T&B	Top and Bottom
A.B.	Anchor Bolt	HOOK	Hook	T&G	Tongue & Groove
ACI	American Concrete Institute	HORIZ.	Horizontal	T.N.	Toe Nail
ADD'L	Additional	H.R.	Hand Rail	T.O.C.	Top of Concrete
AESS	Architectural Exposed Structural Steel	HSB	High Strength Bolt	T.O.S.	Top of Steel
AISC	American Institute of Steel Construction	HSS	Hollow Structural Section	T.O.W.	Top of Wall
ALT.	Alternate	HT.	Height	TS	Tube Steel (Hollow Structural Section)
APPROX.	Approximate	IBC	International Building Code	TYP.	Typical
ARCH.	Architect	ICC	International Code Council	U.O.N.	Unless Otherwise Noted
ASD	Allowable Strength Design	IN.	Inch, Inches	VERT.	Vertical
ASTM	American Society for Testing and Materials	INT.	Interior	V.I.F., ±	Verify in Field
AWPA	American Wood Preservers Assoc.	INV.	Inverted	W/	With
AWS	American Welding Society	JST.	Joist	W/O	Without
		K	Kips	WCLIB	West Coast Lumber Inspection Bureau
BLK'G	Blocking	KSI	Kips per Square Inch	W.P.	Work Point
BM.	Beam	LBS.	Pounds	WHS	Welded Headed Stud
B.N.	Boundary Nail	LL	Live Load	WTS	Welded Threaded Stud
BOCA	Building Officials and Code Administrators International, Inc.	LLH	Long Leg Horizontal	WWR	Welded Wire Reinforcing
		LLV	Long Leg Vertical	WWPA	Western Wood Products Association
BOT.	Bottom	LONG.	Longitudinal		
BRG.	Bearing	LTWT.	Lightweight		
B.S.	Both Sides	LVL	Laminated Veneer Lumber		
BTWN.	Between				
C	Camber	MAX.	Maximum		
CBC	California Building Code	M.B.	Machine Bolt		
C.C.	Center to Center	MECH.	Mechanical		
CCR	California Code of Regulations	MFR.	Manufacturer		
		M.I.	Malleable Iron		
C.J.	Control Joint	MIL	0.001 Inch		
C.I.P.	Cast-in-place	MIN.	Minimum		
C.L., CL	Center Line	MISC.	Miscellaneous		
CLG.	Ceiling				
CLR.	Clear	(N)	New		
CMU	Concrete Masonry Unit	NO.#	Number		
COL.	Column	N.S.	Near Side		
CONC.	Concrete	N.T.S.	Not to Scale		
CONN.	Connection	NWT.	Normal Weight		
CONT.	Continuous				
CJP	Complete Joint Penetration	O.C.	On Center		
		O.D.	Outside Diameter		
		O.H.	Opposite Hand		
CSK.	Countersink	OPNG.	Opening		
CTBR.	Counterbore	OPP.	Opposite		
CTR.	Center	OSHPD	Office of Statewide Health Planning and Development		
DBA	Deformed Bar Anchor				
DBL.	Double				
DC	Demand Critical (Weld)				
DET., DTL.	Detail	P.A.F.	Powder-Actuated Fasteners		
DF	Douglas Fir	PART.	Partial		
DIA., Ø	Diameter	PCF	Pounds per Cubic Foot		
DIAG.	Diagonal	PL., CL	Plate		
DL	Dead Load	PLY.	Plywood		
DN.	Down	PP	Partial Penetration		
DO.	Ditto	PSF	Pounds per Square Foot		
DSA	Division of the State Architect	PSI	Pounds per Square Inch		
		P.T.	Pressure Treated		
DWG(S).	Drawing(s)	PW	Puddle Weld		
		PWJ	Plywood Web Joists		
(E)	Existing				
EA.	Each	RAD.	Radius		
E.A.	Each Face	R.D.	Roof Drain		
E.J.	Expansion Joint	REINF.	Reinforcing		
ELEV., EL.	Elevation	REQ.	Required		
EMB., EMBED.	Embedment	RF.	Roof		
E.N.	Edge Nail	R.O.	Rough Opening		
EQ.	Equal	RND.	Round		
EQUIP.	Equipment	R.R.	Remove & Replace		
E.S.	Each Side				
E.W.	Each Way	S.A.D.	See Architectural Drawings		
		SCHED.	Schedule		
FDN.	Foundation	SFBC	San Francisco Building Code		
F.F.	Finish Floor	SFRS	Seismic Force Resisting System		
F.G.	Finish Grade	SHT.	Sheet		
FIN.	Finish	SHTG.	Sheathing		
FLR.	Floor	SIM.	Similar		
F.O.C.	Face of Concrete	SLRS	Seismic Load Resisting System		
F.O.M.	Face of Masonry	S.M.D.	See Mechanical Drawings		
F.O.S.	Face of Stud	S.O.G.	Slab on Grade		
FRMG.	Framing	S.P.	Southern Pine		
FRP	Fiber Reinforced Polymer	S.S.	Stainless Steel		
F.S.	Far Side	STAGG'D., STG.	Staggered		
FT.	Foot, Feet	STD.	Standard		
FTG.	Footing	STIFF.	Stiffener		
		STL.	Steel		
G.A.	Gauge	STRUCT.	Structural		
GALV.	Galvanized				
G.L.	Grid Line				
GLB	Glued Laminated Beam				
GR.	Grade				

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20		
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21		
NO.	REVISION	BY	DATE	APR	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: NONE	

PORT OF STOCKTON BERTH 10 & 11	
GENERAL - NOTES & SYMBOLS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. G3	REV. _____

Revised and Reissued for Construction

Boston
Chicago
Houston
Los Angeles
New York
San Francisco
Washington, DC

STATEMENT OF SPECIAL INSPECTIONS

Tests and inspections indicated on the drawings are required for this project. The tests and inspections indicated here are the responsibilities of the Owner's Special Inspector, as required by Chapter 17 of the CBC.

- The Special Inspector shall observe the work assigned for conformance with the approved design drawings and specifications.
- The Special Inspector shall furnish inspection reports to
- The Special Inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and applicable standards of quality and workmanship of the CBC.
- The Contractor shall hold a pre-construction meeting involving the Engineer, and the Special Inspector in order to discuss the specific requirements of this project.

CONCRETE

CONCRETE FORMWORK

- Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

CONCRETE REINFORCEMENT AND CAST-IN-PLACE ANCHORS

- Reinforcing Steel Placement. Verify the following:
 - The reinforcing grade, size, number, location, and bend detailing are as shown on the drawings and are in acceptable condition.
 - All required devices have been properly installed to secure the reinforcement in place during the placement of concrete.
- Installation of Mechanical Couplers on Reinforcing Bars. Verify the following:
 - The specific manufacturer and model of couplers have been approved for the application by
 - The couplers are installed according to the manufacturer's recommendations.
- Installation of Headed Reinforcing Bars. Verify the following:
 - The specific manufacturer and type of headed reinforcing bars (with applicable product labeling) have been approved for the application by
 - The reinforcing bars are installed according to the manufacturer's recommendations.
- Welding of Reinforcing Steel. Verify the following:
 - An appropriate approved welding procedure specification (WPS) is available at the site and that the welder has properly considered the process to be performed and the joint configuration.
 - The welder follows the essential variables of the WPS.
 - The materials and process comply with the applicable provisions of AWS D1.1 and AWS D1.4, and the project specifications.
 - Each welder has satisfactorily passed appropriate AWS qualification tests for the procedure to be performed, and if pertinent, has undergone recertification.
- Installation of Cast-in-Place Anchors and other embedments. Verify the following:
 - The anchor diameter, length, type, grade, and depth of embedment into the concrete.
 - All required items have been properly installed to secure the embedded item during placement of concrete.

CAST-IN-PLACE CONCRETE

- Placement of concrete. Verify the following:
 - The concrete delivered to the job has been prepared with the approved mix design appropriate for the application and is transported and placed within the time and under the conditions permitted by ASTM C94 and the project specifications.
 - The concrete is placed, consolidated, and finished as indicated on the drawings.
 - Test specimens are taken and cured as indicated in the project specifications.

- Sampling of Fresh Concrete: ASTM C 172, except as modified for slump to comply with ASTM C 94.
 - Slump: ASTM C 143; one test at point of placement for each set of compression test specimens; additional tests when concrete consistency seems to have changed.
 - Concrete Temperature: ASTM C 1064; One test hourly when air temperature is 40 degrees Fahrenheit and below or 80 degrees Fahrenheit and above, and one test for each set of compressive-strength specimens.
 - Compression Test Specimens: ASTM C 31; One set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - Compressive-Strength Tests: ASTM C 39; One specimen shall be tested at 7 days, two specimens tested at 28 days, and one specimen retained for later testing if required.
 - Frequency of tests: A minimum of one set of cylinders shall be tested for any individual structure or each day's placement of a class of concrete exceeding 25 cu. yd. An additional set of cylinders shall be tested for each 100 cu. yd. of each class of concrete. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
- Provide continuous inspection during concrete placement.
- Verify maintenance of specified curing temperature and techniques.

POST-INSTALLED ANCHORS

- Verify the following:
 - The specific manufacturer and model of anchors have been approved for the application by the Architect/Engineer.
 - The holes are drilled at the angle required and of the diameter and depth required.
 - The holes are clean prior to installation of the anchors.
 - The adhesive packaging indicates an expiration date and that the expiration date has not passed.
 - The adhesive is mixed properly and that the initial portion of adhesive coming out of the nozzle is wasted, as required by the manufacturer.
 - The anchors are installed according to the manufacturer's recommendations.
- Perform tests of anchors according to ASTM E 488 and as follows:
 - Test 25 percent of each application of anchors to the tensile or torque proof load as indicated on the drawings.
 - One application of anchors or dowels shall be defined as those anchors or dowels installed by a single crew in a single day.
 - Test locations are random at the discretion of the testing lab, unless otherwise directed by
 - Tension test loads shall be maintained for a minimum of two minutes.
- Tension Test criteria: Anchor displacement at the end of the loading period shall be limited to one-fifth of the nominal anchor diameter. Displacement following release of load shall return to zero.
- Torque Test criteria: Test torque must be reached within a half turn of the nut, except for 3/8" diameter anchors, for which test torque must be reached within a quarter turn of the nut.
- If any anchor fails the test, test all anchors in the same application not previously tested until 10 consecutive anchors pass

STRUCTURAL STEEL

INSPECTION AND TESTING OF WELDED JOINTS

- Inspection of welded connections shall include the following:
 - Verification that applicable and approved Welding Procedure Specifications (WPS) are available for all welds to be performed.
 - Verification that manufacturer certifications for filler metals and fluxes (welding consumables) are available for all welds to be performed.
 - Verification that base material and welding consumable selection conforms to the requirements of the approved WPS.
 - Verification that welders are appropriately qualified for the type, position, and class of weld to be performed.
 - Verification of the contractor's welder identification system.
 - Inspection of materials handling, packaging, and storage.
- Continuous inspection of the following is required for the duration of welding procedures, except for single-pass fillet welds (throat less than 5/16") and for all welding performed in fabrication shops approved by the authority having jurisdiction.
 - Inspection of joint fit-up for groove welds shall include the following: joint preparation; dimensions including alignment, root opening, root face, and bevel; cleanliness of steel surfaces; tack weld quality and location; and backing type and fit (if applicable).
 - Inspection of joint fit-up for fillet welds shall include the following: dimensions including alignment and gaps at root; cleanliness of steel surfaces; and tack weld quality and location.
 - Inspection of configuration and finish of access holes.
 - Verification that welding is not performed over cracked tack welds.
 - Verification that welding is not performed in adverse environmental conditions.
 - Verification of applicable requirements of the approved WPS shall include the following: inspection of welding equipment settings; verification of travel speed, welding materials, shielding gas type and flow rate, application of preheat, interpass temperature control, proper position, and that intermixing of filler metals is avoided.
 - Verification of welding techniques implemented shall include the following: interpass and final cleaning, each pass is within the profile limitations, and each pass meets the applicable quality requirements.
- Inspection of finished joints shall include the following:
 - Verification of the weld size, length, and location.
 - Verification that welds meet visual acceptance criteria including crack prohibition, weld/base-metal fusion, filling of craters, weld profile conformance, weld size, and undercuts and porosity within limits.
 - Inspection of any arc strikes, reinforcing or contouring fillet welds (if required), and approved repair activities performed.
 - Inspection of the web k-area for cracks within 3 inches of the weld when welding of doubler plates, continuity plates, or stiffeners in the k-area has been performed.
 - Verification that backing and weld tabs have been removed (if required).
- Nondestructive testing (NDT) of welded joints that are part of the seismic force resisting system (SFRS) shall conform to Chapter J of AISC "Seismic Provisions for Structural Steel Buildings" (AISC 341-10), with Long Beach changes.
 - Ultrasonic testing (UT) shall be performed in accordance with ASTM E164.
 - Magnetic particle testing (MT) shall be performed in accordance with ASTM E709.
 - Demand critical (DC) welds: NDT shall include UT and MT for 100 percent of DC welds. (Demand critical welds are indicated by the symbol "DC" in the tail of the weld symbol.)

- NDT for other welds that are part of the SFRS shall include the following:
 - CJP groove welds: UT and MT for 100 percent of welds.
 - PJP groove welds and fillet welds (throat 5/16" or greater): MT for 25 percent of welds.
 - PJP groove welds and fillet welds (throat less than 5/16"): No requirements for NDT.
- Where required by AISC 341-10 Section J6.2, NDT of welded joints shall include the following: MT of the k-area, UT of base metal, MT of beam copes and access holes, MT of reduced beam section (RBS) repairs, and MT of weld tab removal sites.
- NDT of welded joints not part of the SFRS is not required, unless specifically noted on the drawings. Where noted, NDT shall conform to Chapter N of AISC "Specification for Structural Steel Buildings" (AISC 360-10), with Long Beach changes.

INSPECTION AND TESTING OF BOLTED JOINTS USING HIGH-STRENGTH BOLTS

- Inspection of connections using high-strength bolts shall include the following:
 - Verification that manufacturer certifications for fastener components are available for all joints.
 - Verification that the proper bolting procedure and fasteners (grade, type, and length) are selected for each joint detail. The fasteners shall be marked in accordance with ASTM requirements.
 - Verification that all connected plies within the grip of the bolt and any materials used under the bolt head or nut are composed of steel only.
 - Verification that the connecting elements, including the appropriate faying surface condition and hole preparation, meet applicable requirements for the joint type.
 - Verification of the nominal dimensions of bolt holes.
 - Verification that burrs larger than 1/16 inch in height have been removed or reduced to 1/16 inch in height or less from the faying surfaces of all joints.
 - Inspection and documentation of pre-installation verification testing by the installation personnel for fastener assemblies and methods used.
 - Inspection of materials handling, packaging, and storage.
- Inspection of the following is required for the duration of high-strength bolting procedures.
 - Verification that fastener assemblies of suitable condition are placed in all holes and that washers (if required) are properly positioned.
 - Verification that fastener components that are not turned by the wrench are prevented from rotating.
 - Verification that nuts in snug-tight joints cannot be removed without the use of wrench.
 - For pretensioned or slip-critical joints, verification that the joint is brought to the snug-tight condition prior to the pretensioning operation and that the fasteners are pretensioned in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", dated December 31, 2009.

OTHER STRUCTURAL STEEL INSPECTIONS

- Inspection of anchor rods and other embedments supporting structural steel shall include verification of the following prior to the placement of concrete: diameter, grade, type, and length of the anchor rod or embedded item; and the extent or depth of embedment into the concrete.
- Inspection of the fabricated steel or erected steel frame to confirm compliance with the details shown on the drawings shall, as a minimum, include the following: verification of member locations and proper application of joint details at each connection.
- Inspection of steel members that are part of the seismic force resisting system (SFRS) shall include the following:
 - Verification of the contour, finish, and dimensional tolerances of any reduced beam section (RBS) flange cuts.
 - Verification that no holes or miscellaneous attachments occur within the member protected zones as identified on the drawings.

NOTES:
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21		
NO.	REVISION	BY	DATE	APR	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: NONE	

PORT OF STOCKTON BERTH 10 & 11	
GENERAL - NOTES & SYMBOLS	
ORIGINAL PROJECT NO. _	
DRAWING NO. G4	REV.

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PIPE

- Unless indicated otherwise, minimum pipe thickness for seamless (1" thru 3") and ERW (4" and larger) steel pipe shall be as follows:

3" and smaller	4" to 24"
Schedule XS	Schedule Standard

- Heavier or thinner wall thicknesses will be specified and so noted on P&IDs.
- 2" and smaller straight run piping in socket weld line classes shall be joined using socket weld unions or couplings.
- Straight run piping in threaded line classes shall be joined with threaded unions or couplings.
- Mitered pipe shall not be used without prior written authorization.

Size		
From	To	
1"	3"	Schedule XS, threaded, plain, or beveled ends, A106 SMLS, Grade B (or as otherwise noted on P&ID).
4"	24"	Schedule Standard, beveled ends, API 5L ERW, Grade B, PSL2 (or as otherwise noted on P&ID).
26"	48"	Beveled end, ERW. Consult project engineering for thickness / material determination.

PIPE NIPPLES

- Schedule XS seamless steel
- Grade B only per ASTM A106

Size		
From	To	
1/2"	2"	Threaded both ends, beveled both ends, plain both ends, or threaded x plain. 3" or 6" long. Schedule XS, ASTM A106-B, SMLS.

FITTINGS

- The thickness of a fitting must match the thickness of the pipe. When fitting wall thickness is specified "to match pipe", fittings of commercially available wall thickness shall be used even though wall thickness of such fittings may be slightly heavier than the pipe. Taper bore fittings internally if thickness exceeds that of the pipe by more than 1/16-inch. Taper boring shall not result in infringement of the minimum wall thickness.
- Mitered elbows shall not be used without prior written authorization by
- Piping shall be designed with long radius elbows.
- Reducing elbows may be used in place of standard elbow-reducer combinations where economically advantageous or where shorter connections are needed.
- Butt-welding fittings shall be dimensioned in accordance with ASME B16.9.
- Forged screwed and socket weld fittings shall be dimensioned in accordance with ASME B16.11. Forged screwed and socket weld Class 3000 unions shall be dimensioned in accordance with MSS SP-83.
- For concentric and eccentric swages and reducers, the connection types must match the attached pipes.
- Unions: 2" and smaller, 3000#, forged steel, socket weld/threaded, per MSS SP-83, ASTM A105.
- Swage Fittings: 3" and smaller, Schedule XS, ASTM A105-2, beveled large end, socket weld small end.

Size		
From	To	
1/2 "	2"	Sockolets: 3000#, forged steel per ANSI B16.11, ASTM A105 to be socket welded to root valve.
1/2 "	2"	3000# SW, steel per ASTM A105. Cap, 90 and 45 deg elbows, tees, sockolets, elbolet, coupling, union, threaded cap, threaded hex plug, solid steel, threaded elbolet. Threadolet. 3000#, forged steel fittings per ASME B16.11, ASTM A105, threaded or socket weld.
1 "	36"	Seamless steel butt weld fittings per ASME B16.9, ASTM A234 WPB. Cap, 90 and 45 deg elbows, tees. Weldolets: Forged steel, ASME B16.11, ASTM A105

FLANGES

- Raised face, forged steel w/ welding neck per ANSI B16.5, bore to match pipe.
- Flanges 24" and smaller shall be dimensioned in accordance with ASME B16.5. 26" and larger flanges shall be per MSS SP-44.
- Use flat face flanges and full face gaskets against flat faced cast iron or fiberglass flanged valves or equipment.
- All flanges with raised faces shall be supplied with a commercial finish conforming to ASME B16.5. Flange finish shall be with a circular lay either concentric or serrated-spiral finish, unless specified otherwise, flange finish shall be limited to 125-250 AARH.
- All flanged connections 1 1/2" and smaller shall be socket weld flanges. All flanged connections 2" and larger shall be weldneck flanges. Slip-on flanges, reducing or standard may only be used with approval by Company. All slip-on flanges shall be dye penetrant or magnaflux tested.
- Large diameter flanges (26-inch and larger) shall be investigated so that O.D., bolt circle and bolt holes match the flange on the equipment.
- Reducing flanges may be used in place of standard flange-reducer combinations, where economically advantageous, or where shorter connection is needed.
- All flanges shall be 2-holed unless authorized by Company.
- RF, steel per ASTM A105.

ORIFICE FLANGES:

- Unless otherwise specified in the line class, orifice flanges shall be 300# RFWN limited to 2-inch minimum size, matching pipe ID and supplied with 1/2" threaded taps.

- Grind the internal portion of the WN weld flush.
- Flanges shall be ordered in pairs without bolts or gaskets, but with two (2) extra bolts w/ hex nuts as jackscrews.

Size		
From	To	
1/2"	1 1/2"	SW, bore = Schedule XS
2"	3"	WN, bore = Schedule XS
4"	24"	WN, bore = Schedule Standard
1"	36"	Blind

BRANCH CONNECTIONS

Primary instrument connections to piping		
Temperature connection		1" to 2" flanged/threaded
Pressure connection		See Instrument Connections Below
Orifice taps 1/2" threaded		Orifice taps 1/2" threaded
Secondary pipe SS tubing		Secondary pipe SS tubing
Temperature connection 1" to 2" flanged/threaded		Temperature connection 1" to 2" flanged/threaded

Instrument Connections

Pressure gauge/transmitter assemblies shall include a one (1) inch SW x SW 3000# ball valve at the branch connection and a one (1) inch SW x THR 3000# ball valve at the instrument (for bleed off). Where the threaded end of the instrument is smaller than one (1) inch, the appropriate THR x THR reducing bushing shall be used. Piping and flange rating/facing shall be as specified herein for Class 150 piping systems.

TUBING

Size		
From	To	
1/4"	1/2"	Seamless 316 SS fully annealed. Grade TP316 per ASTM A269. 0.035" WT. Fittings: 316 SS compression-type connectors, elbows, tees, and unions.

GASKETS

- Spiral Wound, 1/8" thick center ring, flexible graphite filler, 316L/304 stainless steel winding, carbon steel outer ring. (Flexitallic Style CG, yellow w/ gray stripe, or approved equal)
- Full face neoprene on flat face flanges.

Size		
From	To	
1"	18"	Spiral wound 316L/304 SS with graphite filler, 1/8" thick centering ring, Flexitallic style CG, yellow w/ gray stripe
20"	36"	Spiral wound 316L/304 SS with graphite filler, 1/8" thick centering ring, Flexitallic style CGI, yellow w/ gray stripe.

BOLTING

Size		
From	To	
1"	36"	Studs: Grade B7 per ASTM A193, full thread, (1/2' longer than standard bolt lengths). Nuts: Grade 2H per ASTM A194, heavy hex head, two (2) required per stud.

BLEED

Size		
From	To	
3/4"	24"	Grade 70 steel per ASTM A516. Raised flange. Tap must be 3/4" SW or threaded.

SPECIFICATIONS FOR FIRE PROTECTION SYSTEMS

GENERAL:

- ALL PRIVATE UNDERGROUND FIRE SYSTEMS, INCLUDING HYDRANT SYSTEMS AND UNDERGROUND MAINS FOR SPRINKLER SYSTEMS AND FIRE PUMPS SERVING SPRINKLER SYSTEMS, CROSS-CONNECTED TO UNAPPROVED WATER SOURCES AND CONNECTED TO DOMESTIC WATER MAINS SHALL HAVE BACKFLOW PREVENTION AS REQUIRED BY AWWA M-14 FOR CLASSES III, IV, V, AND VI FIRE SYSTEMS.
- PLANS SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE DEPARTMENT AND CITY MUNICIPAL UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION. "AS-BUILT" DRAWINGS SHALL BE PROVIDED PRIOR TO CONSTRUCTION TO THE PUBLIC WATER SYSTEM. (THE SAME PLAN SUBMITTAL REQUIREMENTS APPLY TO INSTALLATIONS CONNECTED TO CALIFORNIA WATER SERVICE COMPANY MAINS.)
- ALL UNDERGROUND FIRE PROTECTION SYSTEMS SHALL BE DISINFECTED PRIOR TO CONNECTING TO PUBLIC WATER SYSTEM IN ACCORDANCE WITH CITY OF STOCKTON STANDARD SPECIFICATION SECTION 76.
- WITHIN THE CITY WATER SERVICE AREA, ALL ON-SITE FIRE HYDRANT SYSTEMS 300"-0" OR MORE FROM THE PROPERTY LINE SHALL HAVE A DETECTOR CHECK LOCATED AT THE PROPERTY LINE IMMEDIATELY DOWNSTREAM OF THE MAIN SHUT OFF VALVE. PLANS AND SPECIFICATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE MUNICIPAL UTILITIES DEPARTMENT.
- SYSTEM DESIGN SHALL BE BASED ON THE CALIFORNIA FIRE CODE. APPLICABLE PROVISION OF NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS 13 AND 24, AND REQUIREMENTS OF THE STOCKTON FIRE DEPARTMENT. NOTE: CALIFORNIA WATER SERVICE COMPANY MAY HAVE OTHER REQUIREMENTS WHEN CONNECTION TO THEIR MAINS. THRUST BLOCK LOCATION AND THRUST BLOCK SIZE, HYDRANT SPACING, PIPE SIZES AND LENGTHS AND OTHER RELEVANT INFORMATION IS REQUIRED ON THE PLANS. PLANS MUST CLEARLY SHOW THAT BOLTS AND TIE RODS WILL BE COATED WITH A BITUMINOUS MATERIAL AND WRAPPED PRIOR TO COVERING.
- THE STOCKTON FIRE DEPARTMENT REQUIRES CLASS 200 C-900 PIPE FOR PRESSURIZED UNDERGROUND MAINS. POST INDICATOR VALVES AND FIRE DEPARTMENT CONNECTIONS FOR SPRINKLER SYSTEMS SHALL BE AT LEAST 40 FEET FROM BUILDINGS. SECTIONAL VALVES SHALL BE UL LISTED FIRE PROTECTION VALVES. ALL VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS SHALL BE MONITORED BY A UL LISTED CENTRAL STATION. THIS REQUIRES THE CONTRACTOR TO PROVIDE PVC PIPE FOR LOW VOLTAGE CONNECTION OF THE VALVE'S TAMPER SWITCH TO THE FIRE ALARM PANEL NORMALLY LOCATED IN THE BUILDING. THIS REQUIREMENT IS MANDATORY, REGARDLESS IF THE BUILDING CONTAINS LESS THAN 100 SPRINKLER HEADS. TRACER WIRE IS REQUIRED FOR ALL UNDERGROUND MAINS FOR BOTH HYDRANT AND SPRINKLER SYSTEMS.
- FIRE PUMP MUST BE CAPABLE OF DELIVERING 3,000 GPM TO THE TERMINAL IN ACCORDANCE WITH MOTEMS TABLE 31F-8-3.

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20		
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/25/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	03/09/21		
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PROJECT LOCATION

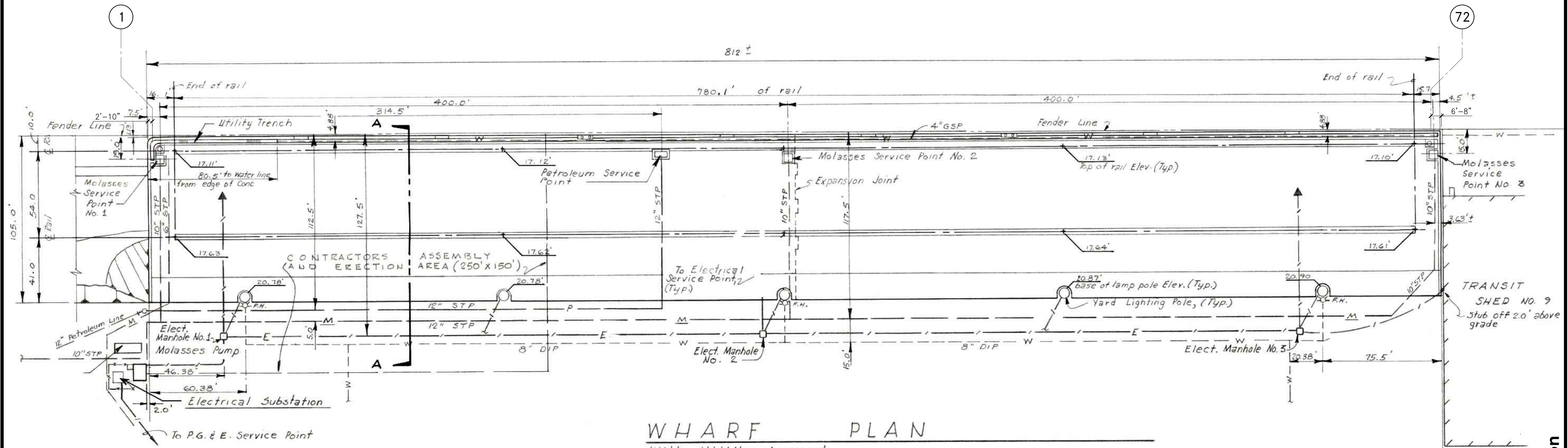
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CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE:	

PORT OF STOCKTON BERTH 10 & 11 PIPING SPECIFICATIONS

ORIGINAL PROJECT NO. _
DRAWING NO. G5
REV.

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WHARF PLAN
 With Utility Layout
 Scale: 1" = 40'

SYMBOLS

MOLASSES	———— M ————
PETROLEUM	———— P ————
ELECTRICAL DUCT	—— / — E — / ——
WATER LINE	—— — W ————
DIP =	DUCTILE-IRON PIPE
STP =	STEEL PIPE
GSP =	GALVANIZED STEEL PIPE

NON-ST OVERALL SITE PLAN

1 EXISTING SITE PLAN WITH UTILITY LAYOUT
 SCALE: 1" = 30'-0"

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NOTES:
 1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	
NO.	REVISION	BY	DATE	APR

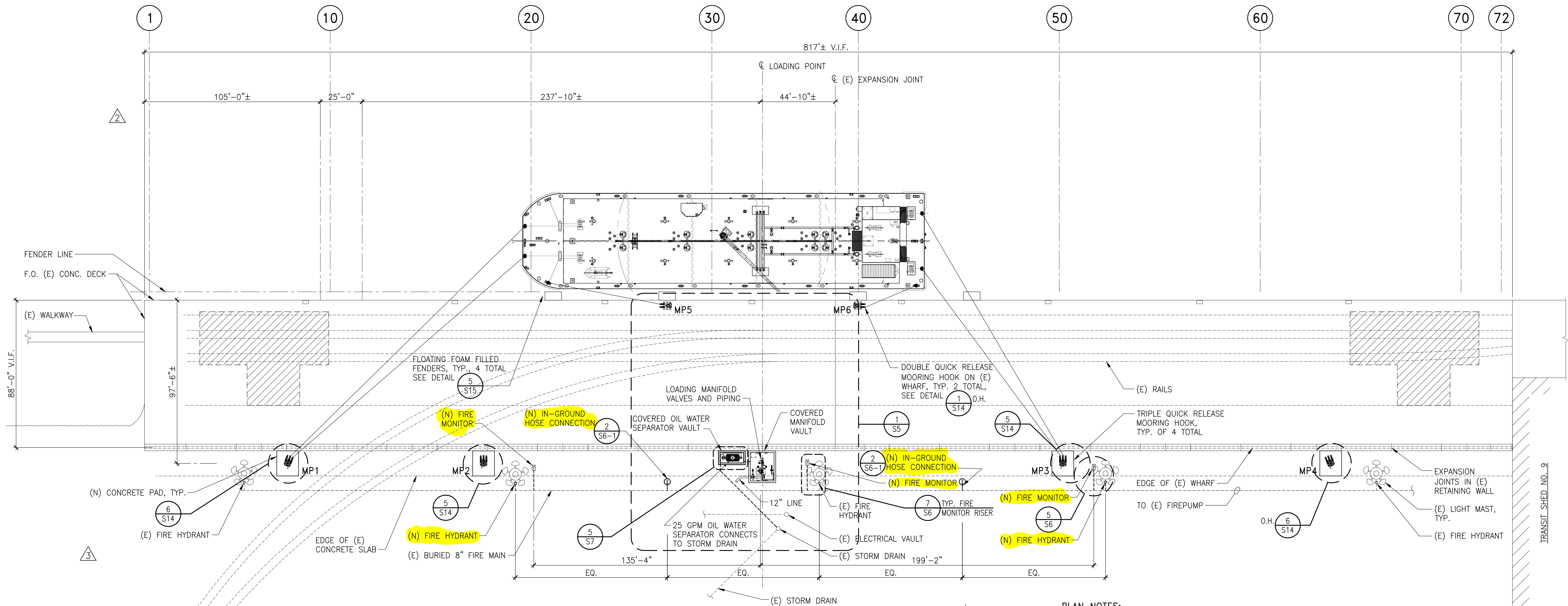
PROJECT LOCATION:

DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11
 EXISTING SITE PLAN WITH
 UTILITY LAYOUT

ORIGINAL PROJECT NO. _____	REV. _____
DRAWING NO. S1	

EBB ← SAN JOAQUIN RIVER → FLOOD



NON-S2-1 SITE PLAN - FDH

1 SITE PLAN - FDH 35

SCALE: 1"=30'-0"

PLAN NOTES:

1. FOR EXISTING PILE LAYOUT, SEE DRAWING NO. S3.
2. FOR EXISTING WHARF CROSS-SECTION, SEE DRAWING NO. S4.
3. OIL WATER SEPARATOR TO REMOVE DIESEL FROM RAIN WATER THAT MAY COLLECT IN MANIFOLD VAULT BEFORE DISCHARGING TO STORM DRAIN.

TRAFFIC BOLLARDS THAT PROTECT FIRE MONITORS AND FIRE HYDRANTS SHALL COMPLY WITH ALL OF THE FOLLOWING REQUIREMENTS:

1. CONSTRUCTED OF STEEL NOT LESS THAN 4 INCHES (102 mm) IN DIAMETER AND CONCRETE FILLED.
2. SPACED NOT MORE THAN 4 FEET (1219 mm) BETWEEN POSTS ON CENTER.
3. SET NOT LESS THAN 3 FEET (914 mm) DEEP IN CONCRETE FOOTING OF NOT LESS THAN 15 INCHES (381 mm) DIAMETER.
4. SET WITH THE TOP OF THE POSTS NOT LESS THAN 3 FEET (914 mm) ABOVE GROUND.
5. LOCATED NOT LESS THAN 3 FEET (914 mm) FROM THE PROTECTED OBJECT.

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

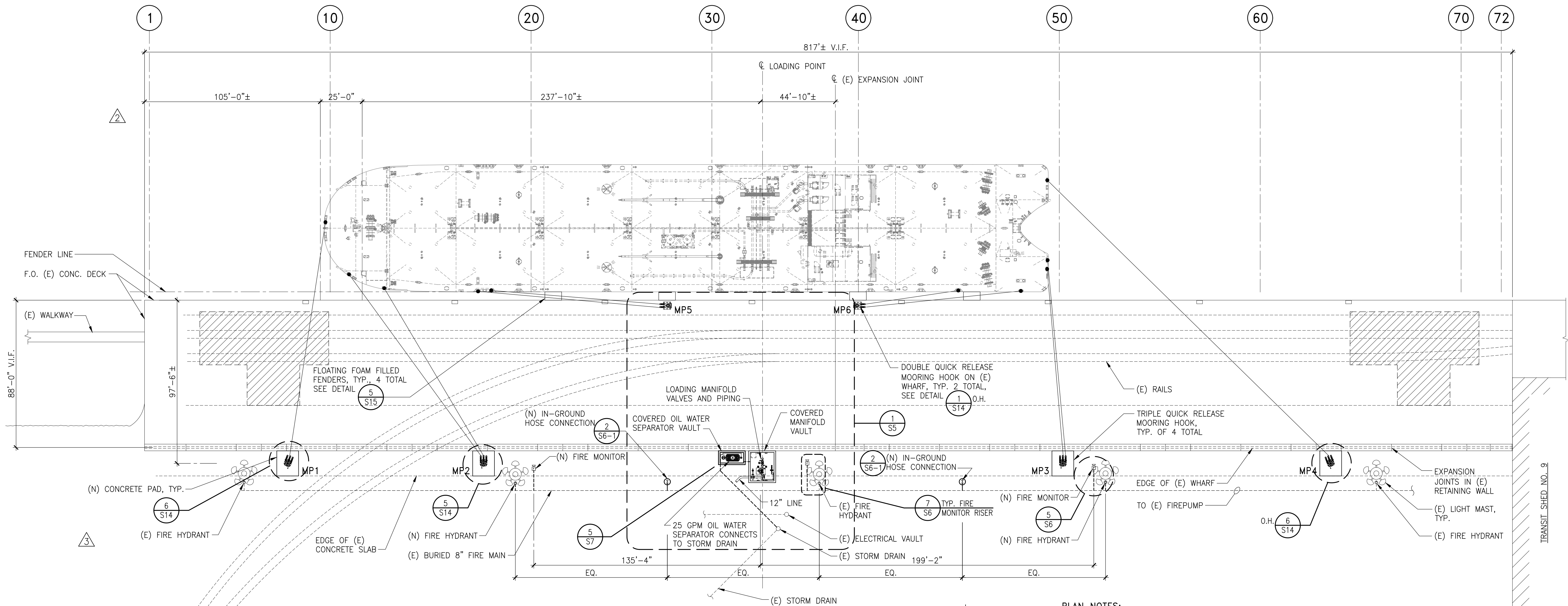
PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11	
SITE PLAN - FDH-35	
ORIGINAL PROJECT NO. _	
DRAWING NO. S2-1	REV. _

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NON-S2-2 SITE PLAN - SUNSET

1 SITE PLAN - SUNSET

SCALE: 1"=30'-0"

- PLAN NOTES:**
- FOR EXISTING PILE LAYOUT, SEE DRAWING NO. S3.
 - FOR EXISTING WHARF CROSS-SECTION, SEE DRAWING NO. S4.
 - OIL WATER SEPARATOR TO REMOVE DIESEL FROM RAIN WATER THAT MAY COLLECT IN MANIFOLD VAULT BEFORE DISCHARGING TO STORM DRAIN.

TRAFFIC BOLLARDS THAT PROTECT FIRE MONITORS AND FIRE HYDRANTS SHALL COMPLY WITH ALL OF THE FOLLOWING REQUIREMENTS:

- CONSTRUCTED OF STEEL NOT LESS THAN 4 INCHES (102 mm) IN DIAMETER AND CONCRETE FILLED.
- SPACED NOT MORE THAN 4 FEET (1219 mm) BETWEEN POSTS ON CENTER.
- SET NOT LESS THAN 3 FEET (914 mm) DEEP IN CONCRETE FOOTING OF NOT LESS THAN 15 INCHES (381 mm) DIAMETER.
- SET WITH THE TOP OF THE POSTS NOT LESS THAN 3 FEET (914 mm) ABOVE GROUND.
- LOCATED NOT LESS THAN 3 FEET (914 mm) FROM THE PROTECTED OBJECT.

NOTES:
 1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20		
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21		
NO.	REVISION	BY	DATE	APR	

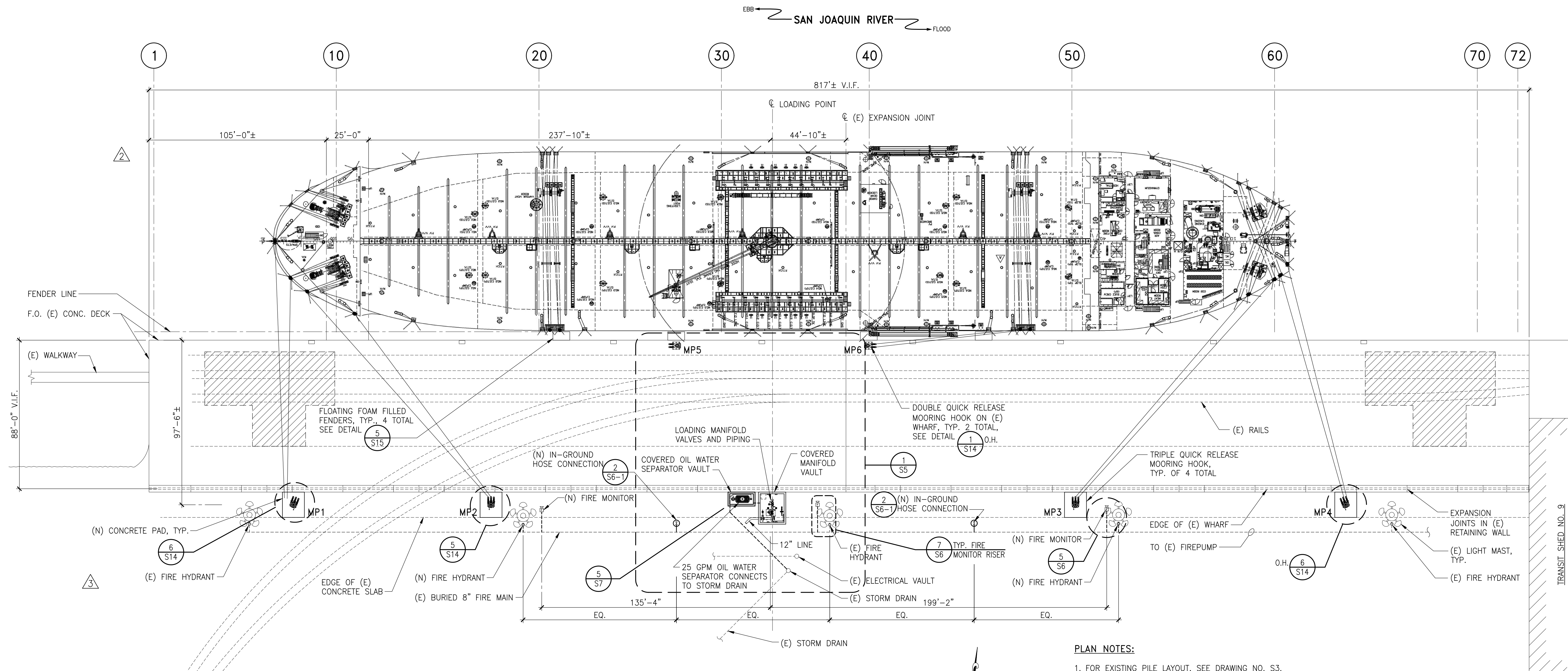
PROJECT LOCATION:

DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11	
SITE PLAN - SUNSET	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S2-2	REV. _____

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1 SITE PLAN - 55k DWT VESSEL
 SCALE: 1"=30'-0"

- PLAN NOTES:**
- FOR EXISTING PILE LAYOUT, SEE DRAWING NO. S3.
 - FOR EXISTING WHARF CROSS-SECTION, SEE DRAWING NO. S4.
 - OIL WATER SEPARATOR TO REMOVE DIESEL FROM RAIN WATER THAT MAY COLLECT IN MANIFOLD VAULT BEFORE DISCHARGING TO STORM DRAIN.

TRAFFIC BOLLARDS THAT PROTECT FIRE MONITORS AND FIRE HYDRANTS SHALL COMPLY WITH ALL OF THE FOLLOWING REQUIREMENTS:

- CONSTRUCTED OF STEEL NOT LESS THAN 4 INCHES (102 mm) IN DIAMETER AND CONCRETE FILLED.
- SPACED NOT MORE THAN 4 FEET (1219 mm) BETWEEN POSTS ON CENTER.
- SET NOT LESS THAN 3 FEET (914 mm) DEEP IN CONCRETE FOOTING OF NOT LESS THAN 15 INCHES (381 mm) DIAMETER.
- SET WITH THE TOP OF THE POSTS NOT LESS THAN 3 FEET (914 mm) ABOVE GROUND.
- LOCATED NOT LESS THAN 3 FEET (914 mm) FROM THE PROTECTED OBJECT.

NOTES:
 1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21

NO.	REVISION	BY	DATE	APR

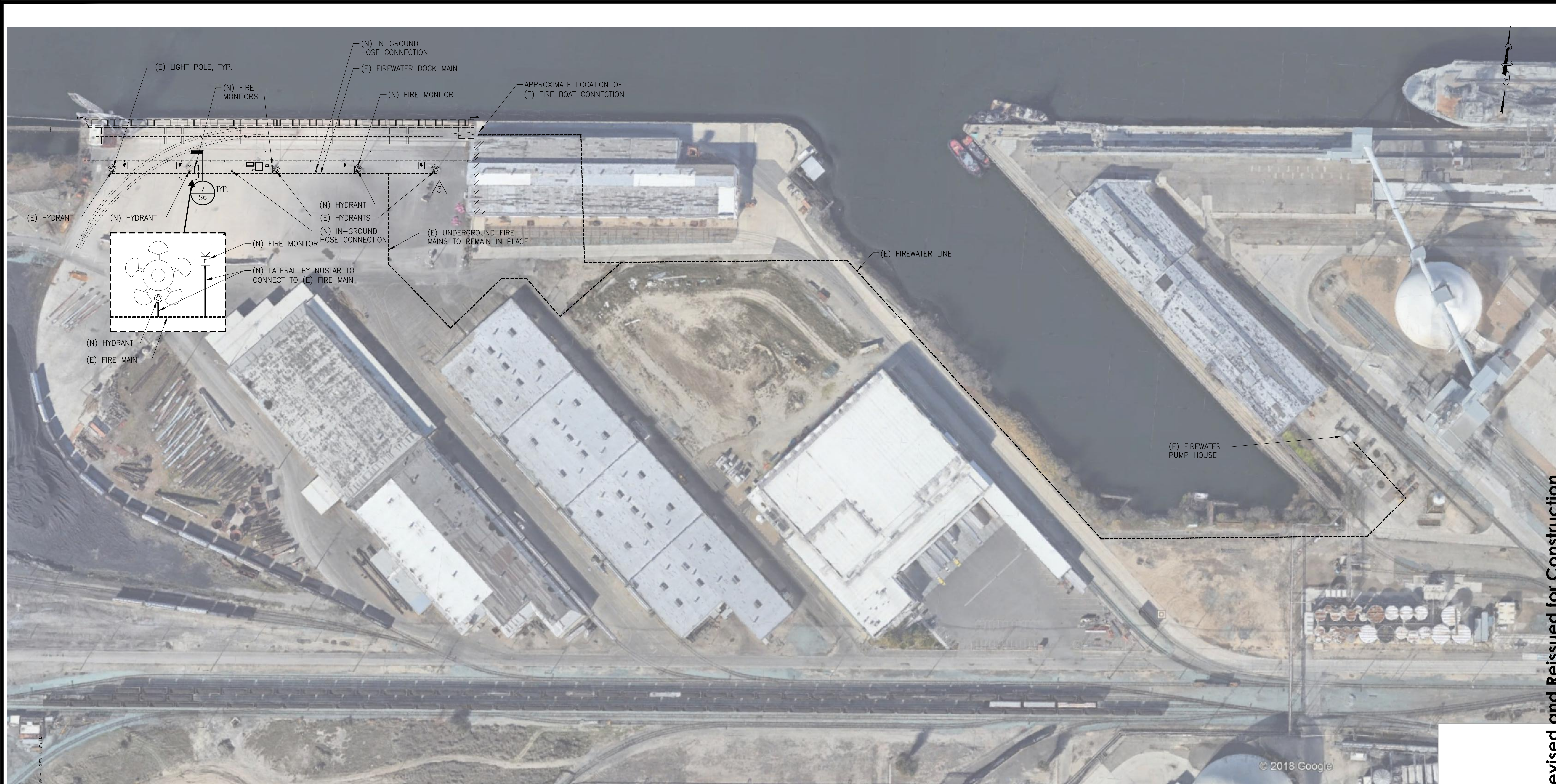
PROJECT LOCATION:
PORT OF STOCKTON BERTH 10 & 11

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CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
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SITE PLAN - 55k DWT VESSEL
ORIGINAL PROJECT NO. _____
DRAWING NO. S2-4
REV. _____

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1 FIREWATER SITE PLAN
SCALE: 1"=100'-0"

- NOTES:**
- COORDINATE DEMO OF ANY UNNEEDED SECTIONS OF THE (E) FIRE MAIN WITH THE PORT AND WITH
 - COORDINATE CONNECTION OF NEW FIRE MONITORS TO THE (E) FIRE SYSTEM WITH THE PORT AND WITH
 - FIRE MAIN LAYOUT AND LOCATION APPROXIMATE. VERIFY IN FIELD.
 - FIRE PUMP PROVIDES 3000 GPM TO DOCK 10₁ IN ACCORDANCE WITH MOTEMS TABLE 31F-8-3.

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	
NO.	REVISION	BY	DATE	APR

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	
NO.	REVISION	BY	DATE	APR

PROJECT LOCATION:

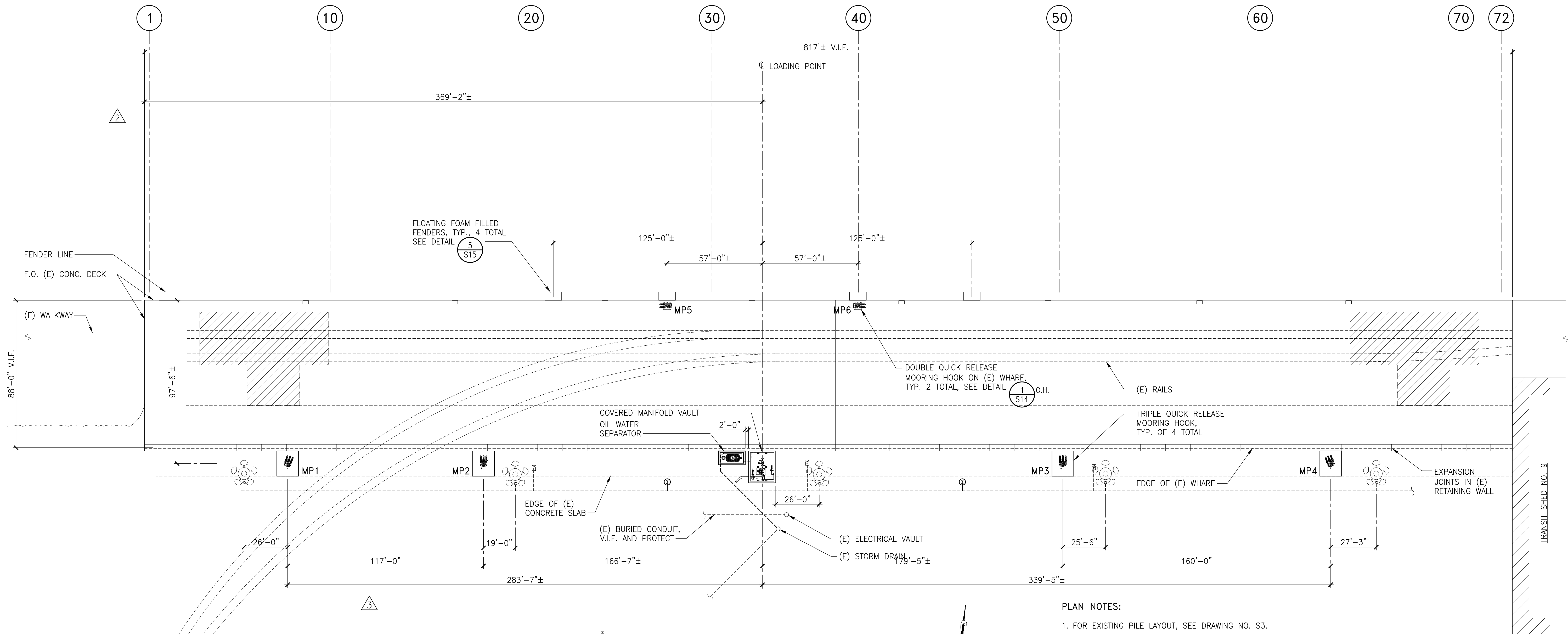
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: 1"=100'-0"	

PORT OF STOCKTON BERTH 10 & 11 SITE PLAN FIRE WATER SYSTEM	
ORIGINAL PROJECT NO.: _____	
DRAWING NO.: S2-5	REV.: _____

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NOTE: S2-6 MOORING HOOK PLAN

1 SITE PLAN - MOORING HOOKS
SCALE: 1"=30'-0"

- PLAN NOTES:**
1. FOR EXISTING PILE LAYOUT, SEE DRAWING NO. S3.
 2. FOR EXISTING WHARF CROSS-SECTION, SEE DRAWING NO. S4.
 3. FOR INFORMATION SHOWN BUT NOT NOTED, SEE SHEETS S2-1 THROUGH S2-4.

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

NO.	REVISION	BY	DATE	APR

PROJECT LOCATION:

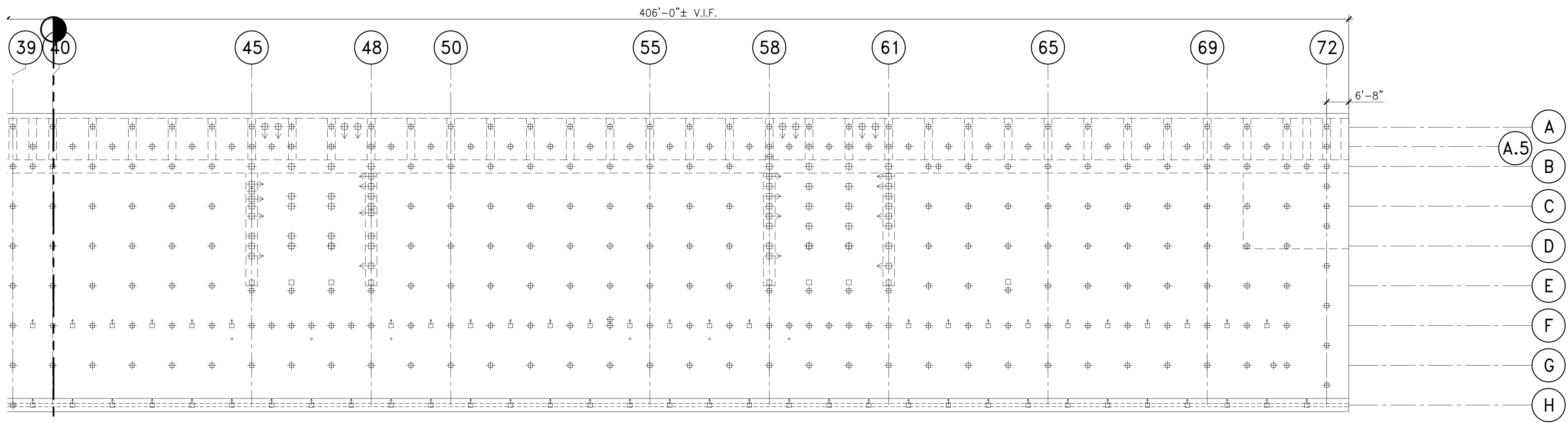
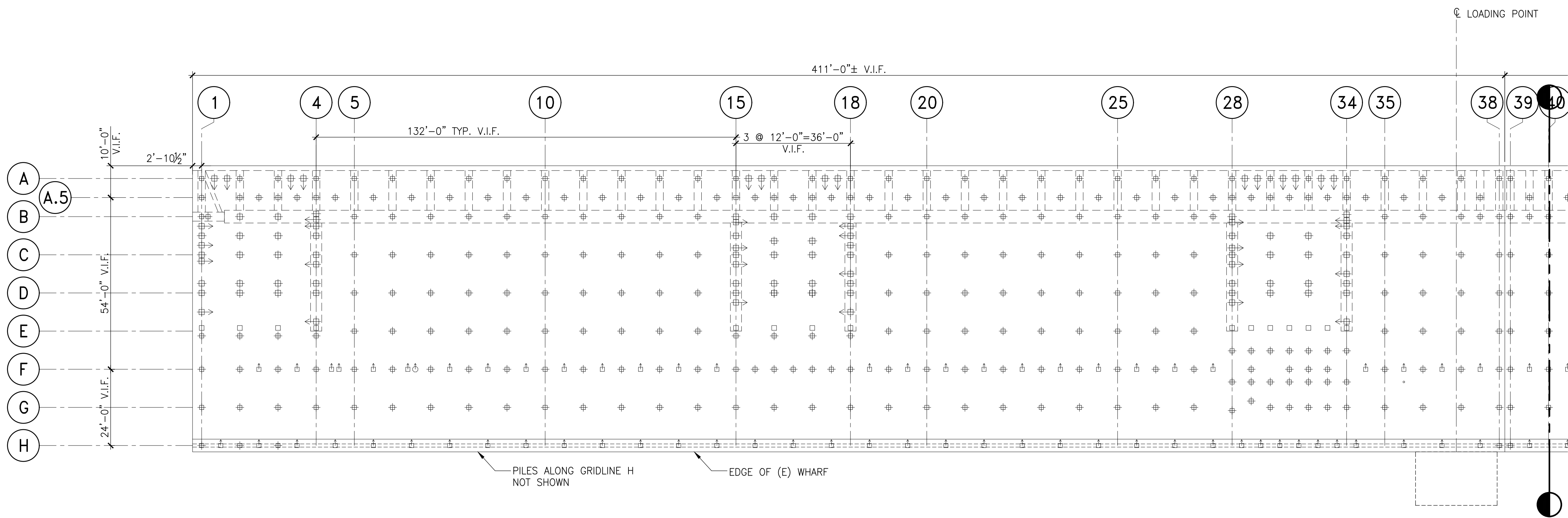
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11
SITE PLAN - MOORING HOOKS

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DRAWING NO. S2-6
REV.: _____

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1 EXISTING PILE LAYOUT PLAN
SCALE: 1"=20'-0"

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

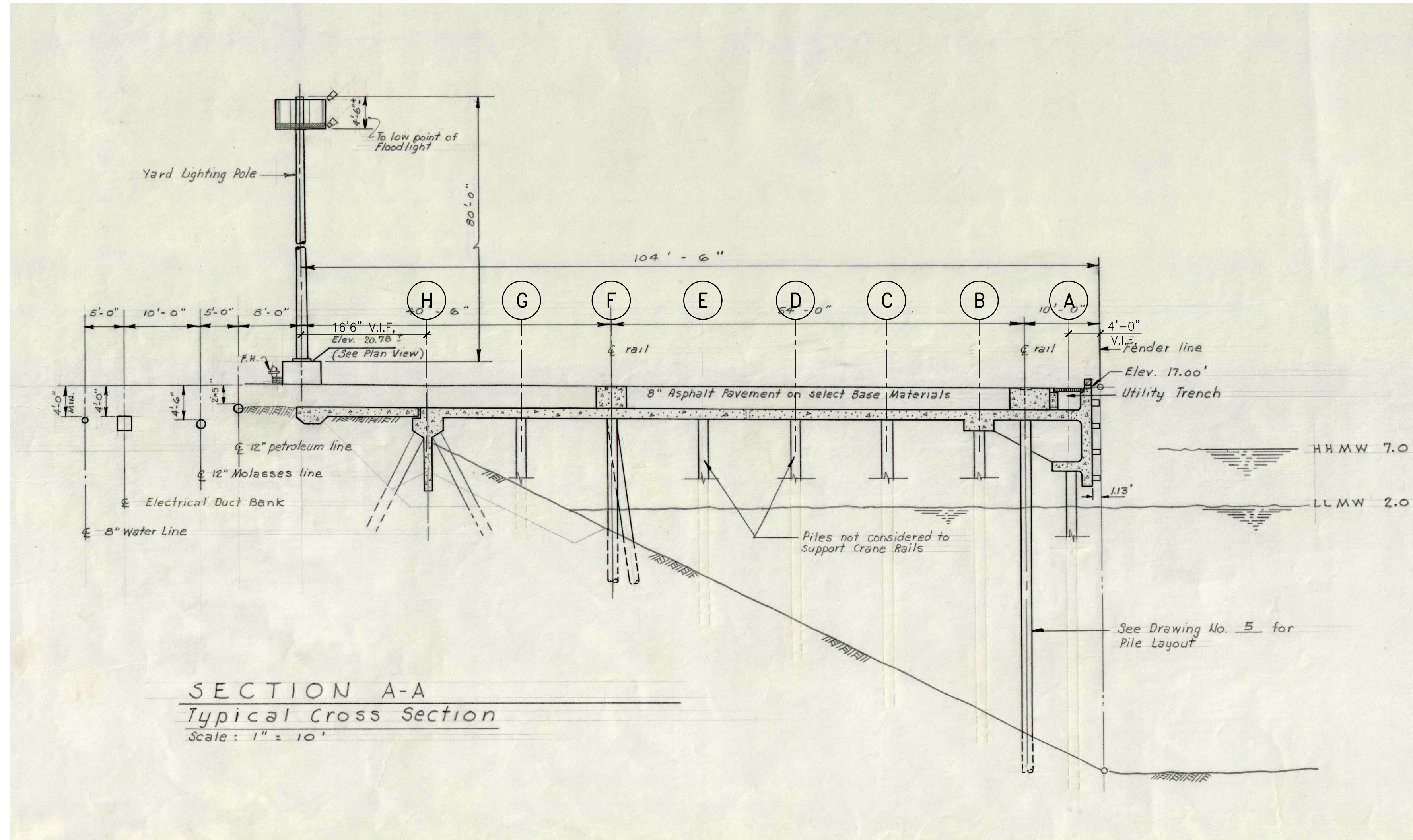
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△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	
NO.	REVISION	BY	DATE	APR

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 EXISTING PILE LAYOUT PLAN	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S3	REV. _____

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SECTION A-A
 Typical Cross Section
 Scale: 1" = 10'

1 EXISTING SECTION SCALE: 1"=10'-0"

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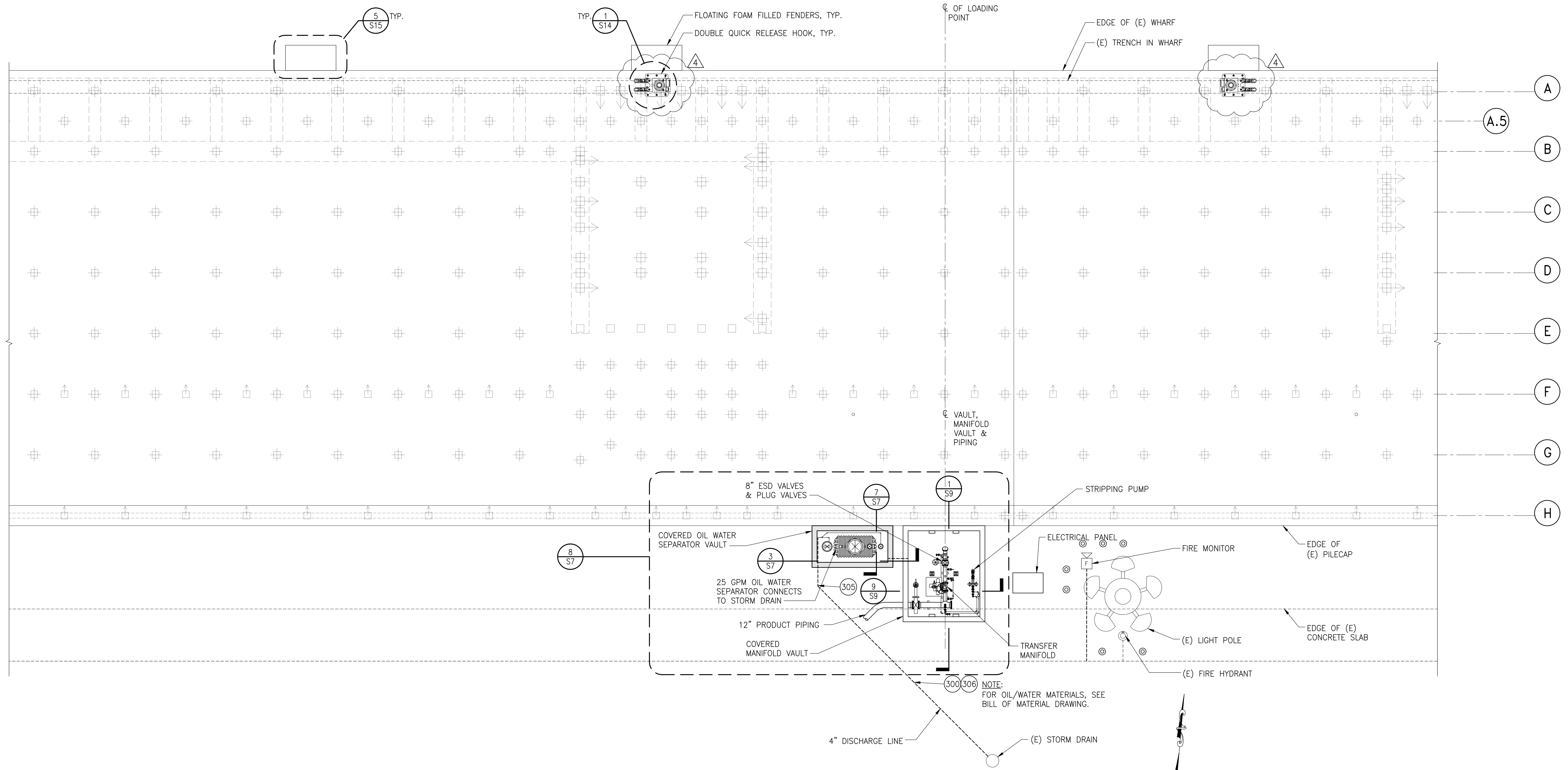
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 EXISTING SECTION	
ORIGINAL PROJECT NO. _	
DRAWING NO. S4	REV.



1 PARTIAL PLAN AT TRANSFER MANIFOLD
SCALE: 1"=10'-0"

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NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

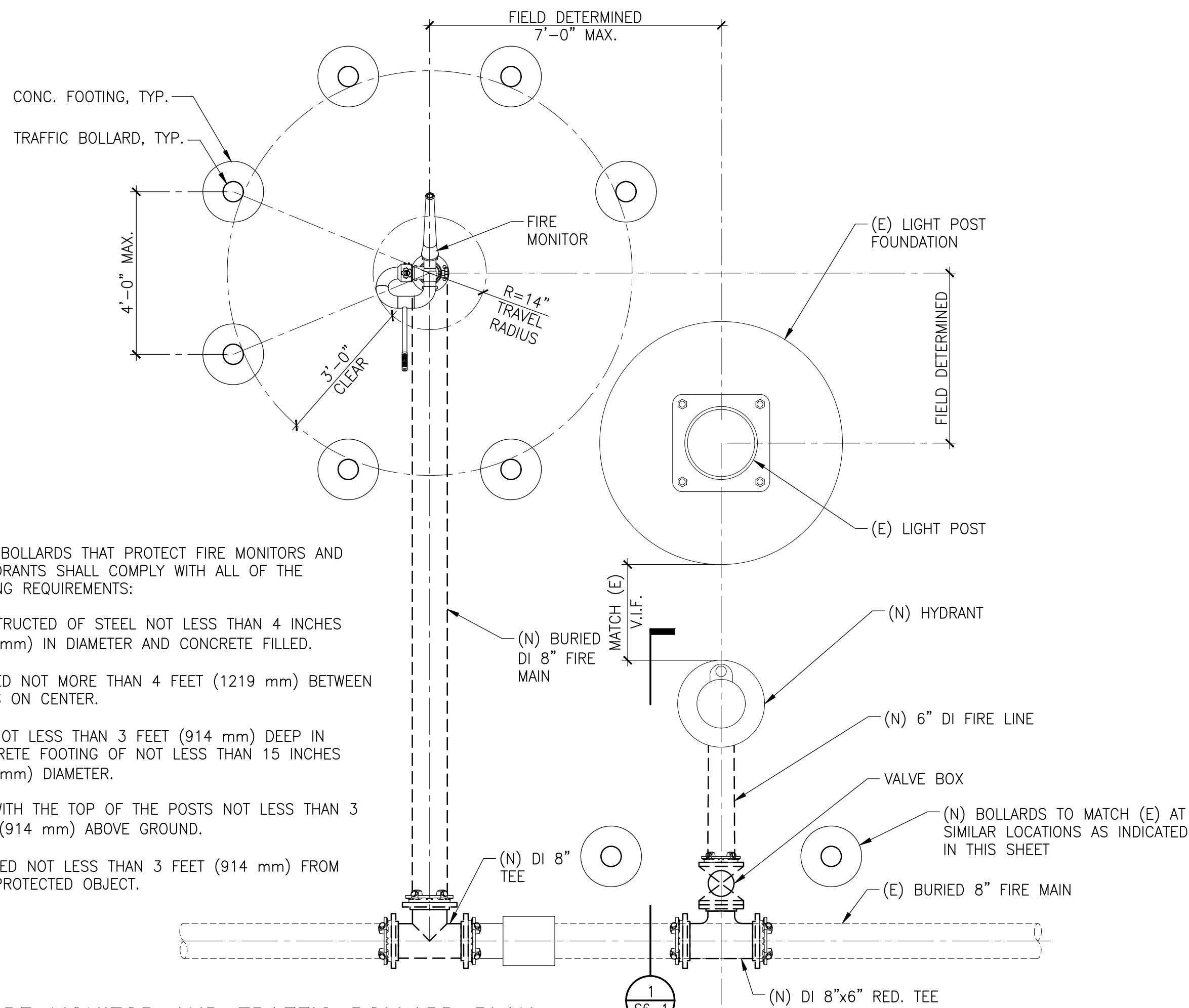
REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20		
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21		
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21		
NO.	REVISION	BY	DATE	APR	

PROJECT LOCATION:

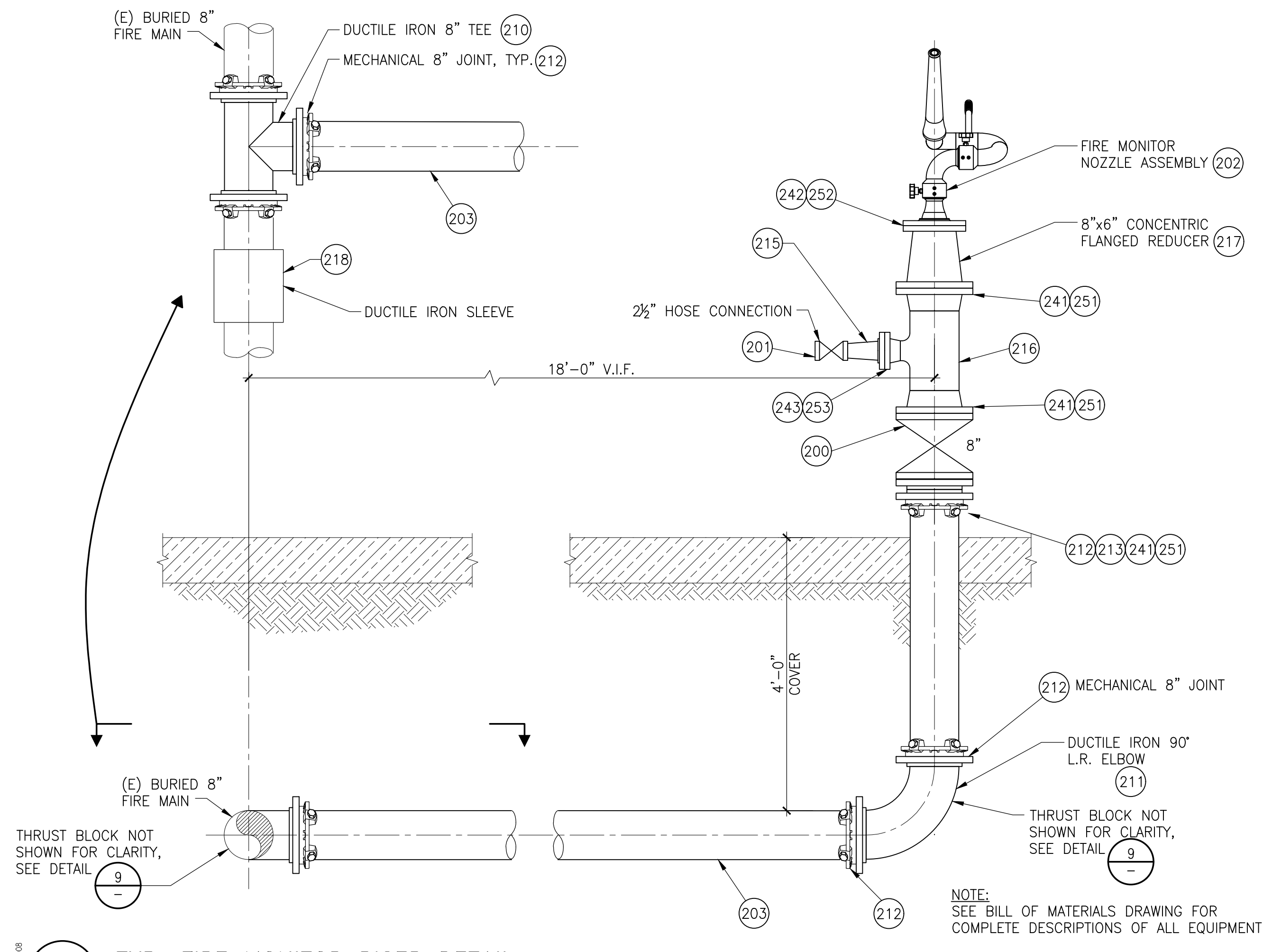
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11	
PARTIAL PLAN AT TRANSFER MANIFOLD/SIV VAULT	
ORIGINAL PROJECT NO. -	
DRAWING NO. S5	REV.



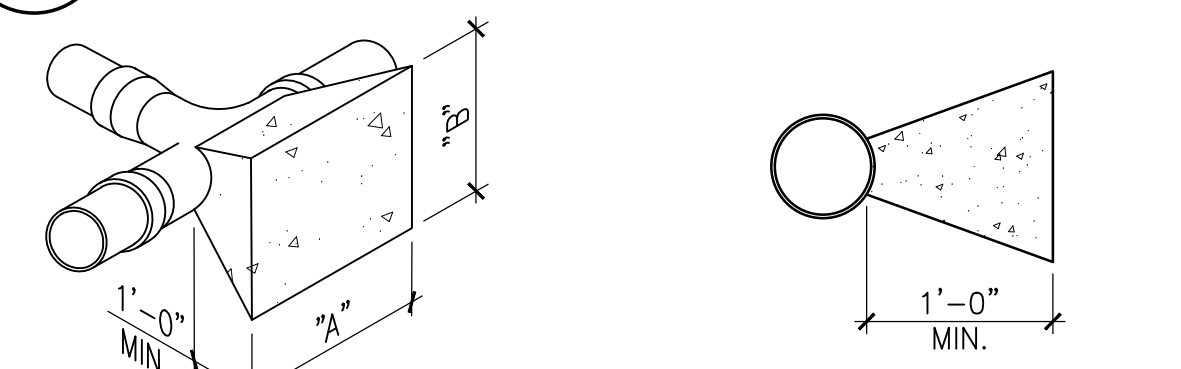
5 FIRE MONITOR AND TRAFFIC BOLLARD PLAN

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



7 TYP. FIRE MONITOR RISER DETAIL

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



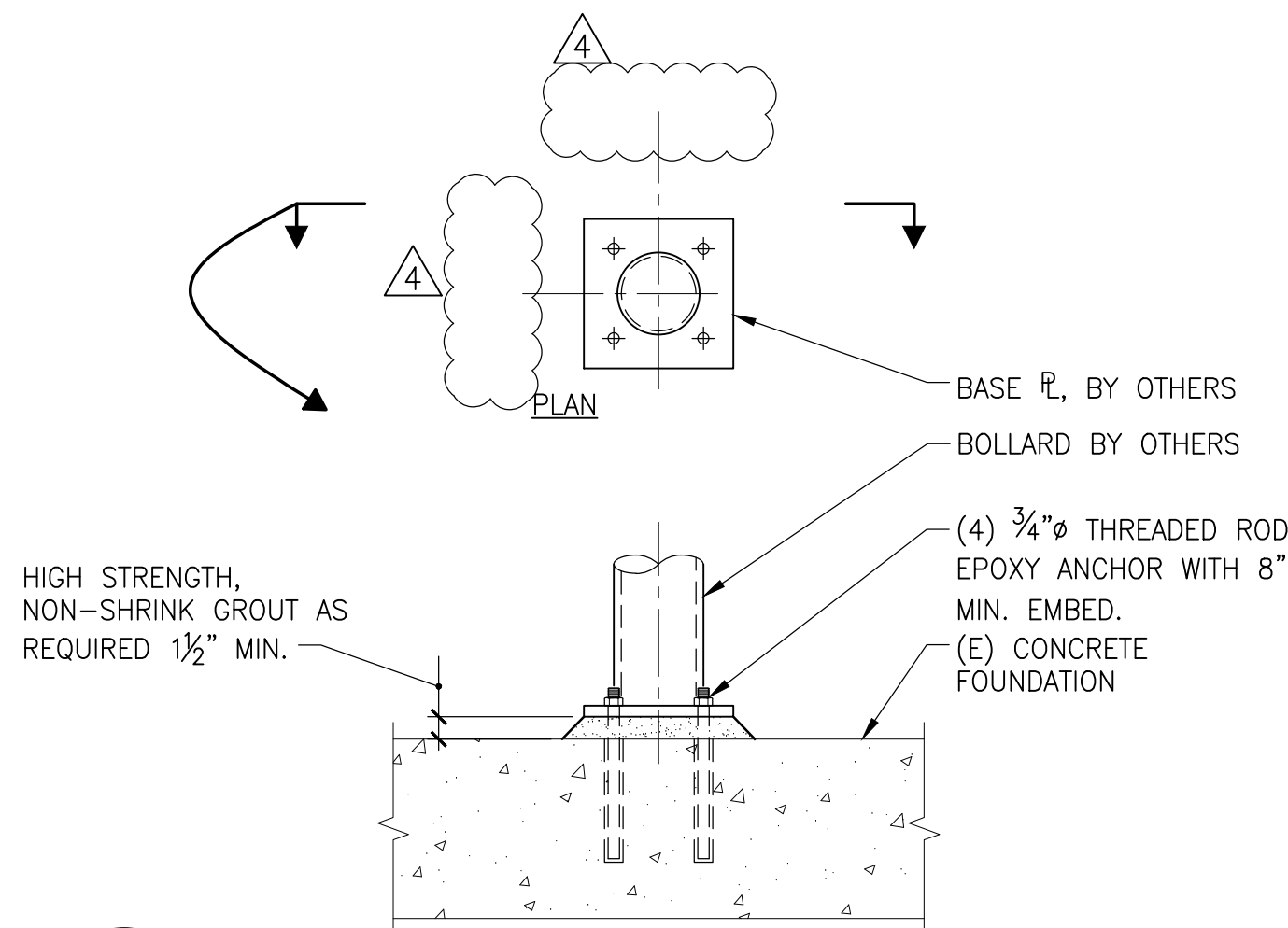
THRUST BLOCK TEE OUTLET

THRUST BLOCK AREA REQUIRED			
FITTINGS	LINE SIZE	ALLOWABLE SOIL BEARING VALUE	
		1000 LBS. PER SQ. FT.	
		"A"	"B"
TEE OUTLET	8"	3'-0"	3'-0"
90° EL.	8"	4'-0"	3'-0"
TEE OUTLET	6"	2'-6"	2'-0"
90°	6"	3'-0"	2'-6"

- NOTES:
 1. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
 2. RESTRAINT SYSTEM FOR VERTICAL PIPE BENDS SHALL BE APPROVED BY THE CITY ENGINEER.

9 THRUST BLOCK DETAIL

N.T.S.



10 BOLLARD DETAIL

SCALE: 1"=1'-0"

NOTES:
 1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 FIRE WATER LINE DETAILS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S6	REV. _____

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925 | MANUAL

2.5" Station Monitor (Lock Knob)

2.5"
Waterway

1000
Max GPM

360°
Rotation

Stang Industries Inc.
P: +1-951-479-9810
F: +1-951-479-9810
sales@stangindustries.com
www.stangindustries.com

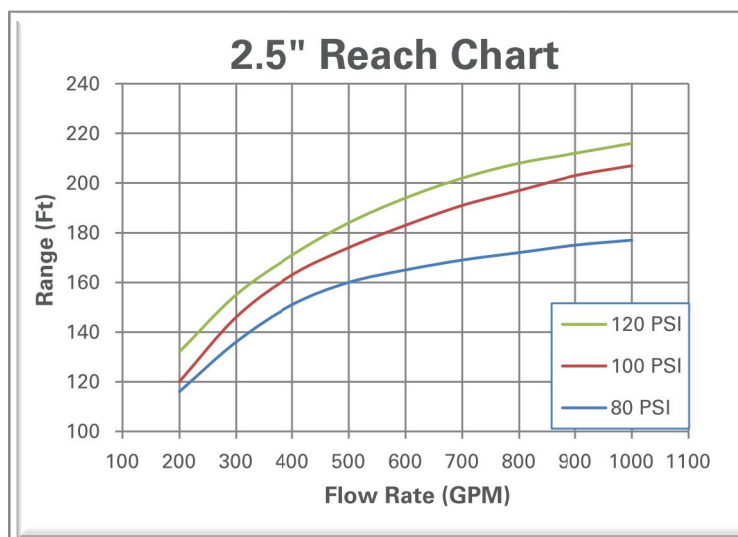


Overview
Stang's 2.5" Station Monitor is a manually controlled water monitor that has a vertical & horizontal rotation. Horizontal & vertical rotation is controlled via a single fixed tiller bar handle, circular handle (C-handle) or parallel handle (P-handle) with a satin black vinyl coated grip at the customer's option. Both horizontal and vertical swivel joints shall be capable of being manually locked at any position, even when in use.
This style of monitor is fabricated using heavy wall seamless steel or stainless steel pipe at the customer's option. The welded single waterway design allows for an efficient & performance enhanced flow.
Our standard paint finish is 'Stang Fire Red'

- Features**
- Lock Knob Style Design
 - Corrosion Resistant Materials
 - Heat Treated Bronze Rotation Swivels
 - 2.5" NH Threaded Outlet
 - Molded Handgrip for Rotation Operation
 - Inlet Options Available
 - Pressure Gauge Optional (Includes Safeguard)
 - Contact Stang for Further Info

Technical Data

(Without Nozzle)



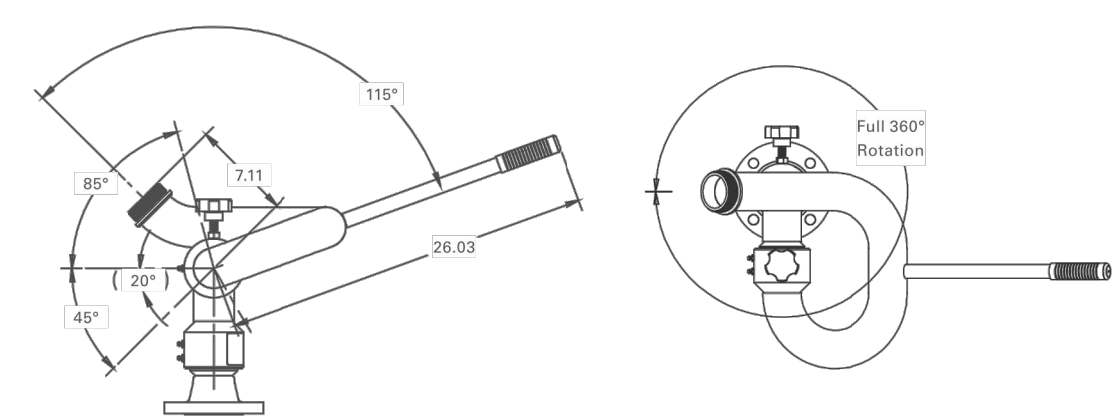
All technical data relative to standard configuration

Max Flow		Max Pressure	
GPM	LPM	PSI	BAR
1000	3780	150	10

Weight		Travel	
Lbs.	Kg.	Vert.	Hori.
35	16	+85°-45°	360°

Vertical Clearance		Horizontal Clearance	
In.	mm.	In.	mm.
21	530	30	750

Factory Hydro Testing
Pressure tested @ 300psig
for a minimum of 5 mins



Options

- Inlet**
- Standard Per ANSI B 16.5
 - Metric Per BS EN 1092-1
 - 2.5" NPT (M) or (F)

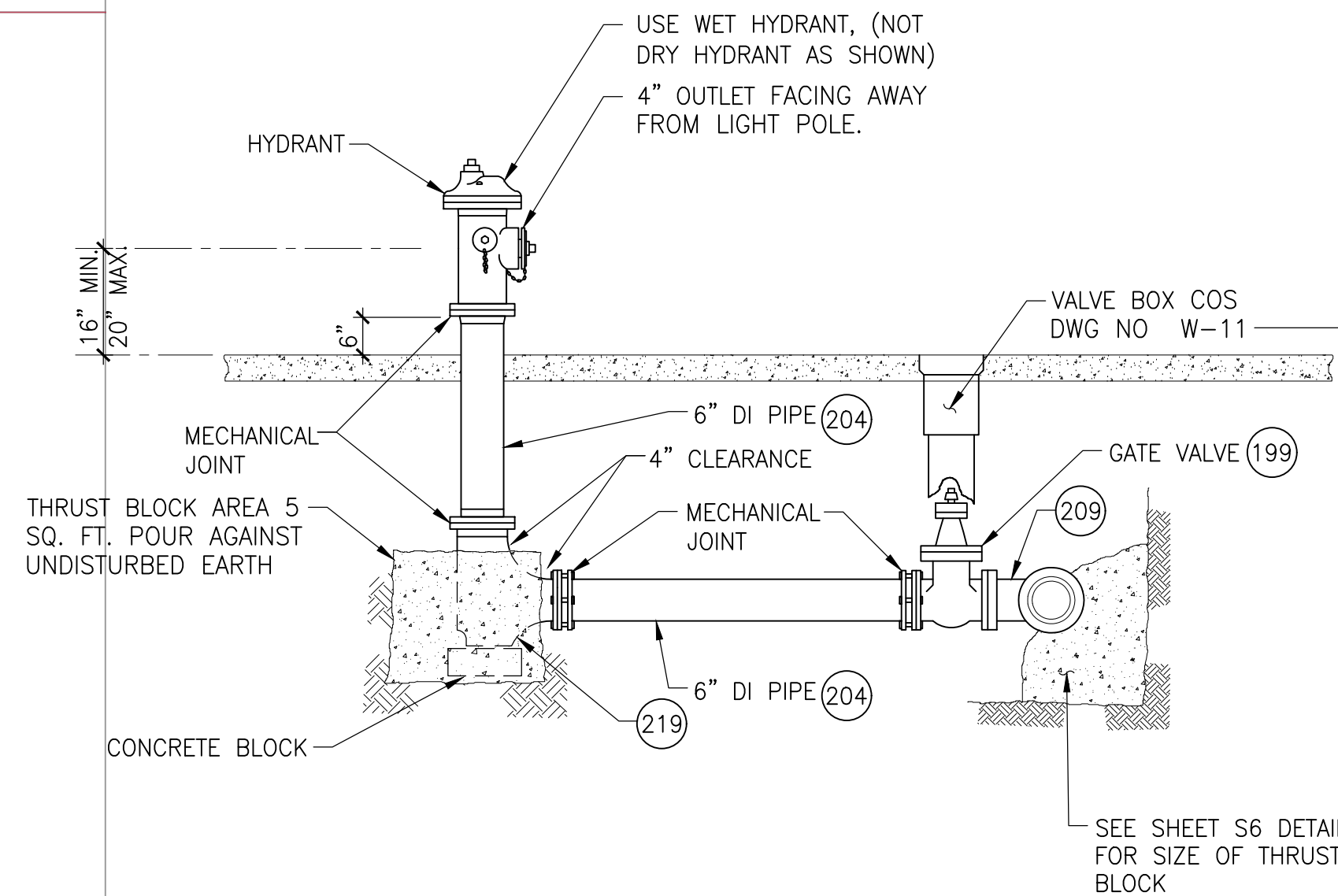
- Waterway Material**
- 304SS Stainless Steel
 - Carbon Steel (Standard)

- Finish**
- Stang Fire Red (RAL 3000)
 - Customer Specified

Controls

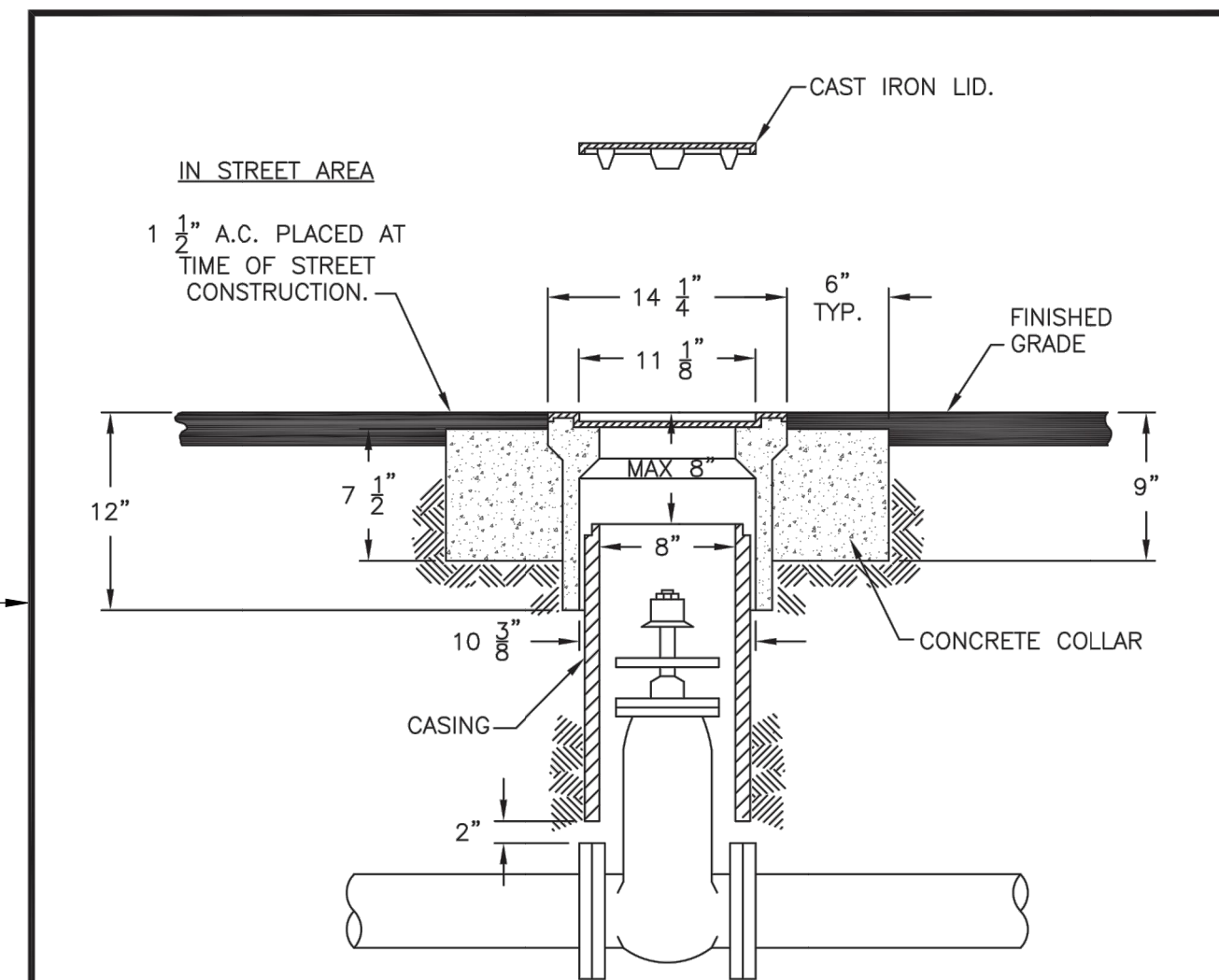


Accessories



HYDRANTS & VALVE NOTES

1. HYDRANTS SHALL BE ONE OF THE FOLLOWING: CLOW "MEDALLION", KENNEDY "GUARDIAN K81" OR MUELLER "SUPER CENTURIAN" (VERTICAL SHOE HYDRANTS ONLY).
2. WET BARREL HYDRANT MODEL AS INDICATED BY CITY FIRE MARSHAL.
3. HYDRANTS SHALL HAVE 1-1/4" PENTAGON OPERATING AND CAP NUTS.
4. DRIP PLUGS, IF ANY, SHALL BE PLUGGED.
5. HYDRANTS SHALL BE LOCATED AT NEAR LIGHT POLES, LOCATION TO MATCH SIMILAR EXISTING HYDRANTS ON THE WHARF.
6. GATE VALVE TO BE EITHER CLOW "RESILIENT WEDGE", MUELLER "RESILIENT SEAT", AMERICAN DARLING, OR KENNEDY RESILIENT WATEROUS SERIES 500.



NOTES:

1. VALVE BOX AND LID SHALL BE CHRISTY NO. G5 OR EQUAL.
2. ALL LIDS SHALL HAVE MACHINED SEATING SURFACES.
3. CASING SHALL BE C900 PVC WATER PIPE OR SDR 35 PVC SEWER PIPE. CASING SHALL BE ONE CONTINUOUS PIECE.
4. FOR BLOWOFF INSTALLATION, REFER TO DRAWING NO. W-10.
5. CONCRETE COLLAR NOT REQUIRED WHEN VALVE BOX IS LOCATED IN CONCRETE SIDEWALK AREA.
6. OPERATING NUT EXTENSION REQUIRED IF DEEPER THAN 6 FEET.

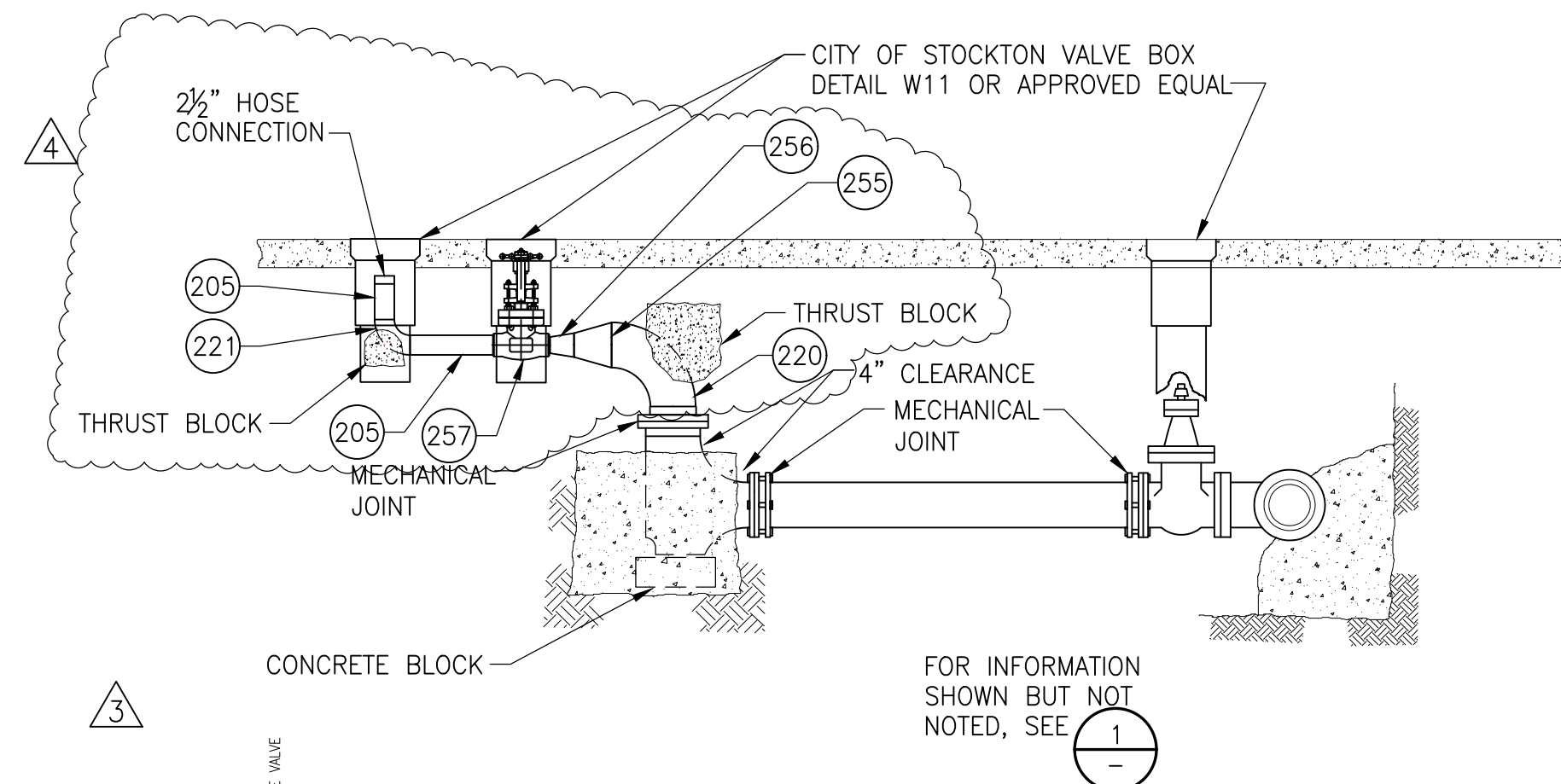
VALVE BOX DETAILS

CITY OF STOCKTON
DEPARTMENT OF PUBLIC WORKS

REVISION NO.	APPROVED BY CITY ENGINEER:
6	<i>[Signature]</i>
DATE: 09/27/2016	
SCALE	DRAWING NO.
NONE	W-11
SUPERSEDES DWG. DATED	
01/09/02	

NEW HYDRANT INSTALLATION DETAIL

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



NEW UNDERGROUND HOSE CONNECTION

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

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	03/09/21	

PROJECT LOCATION:

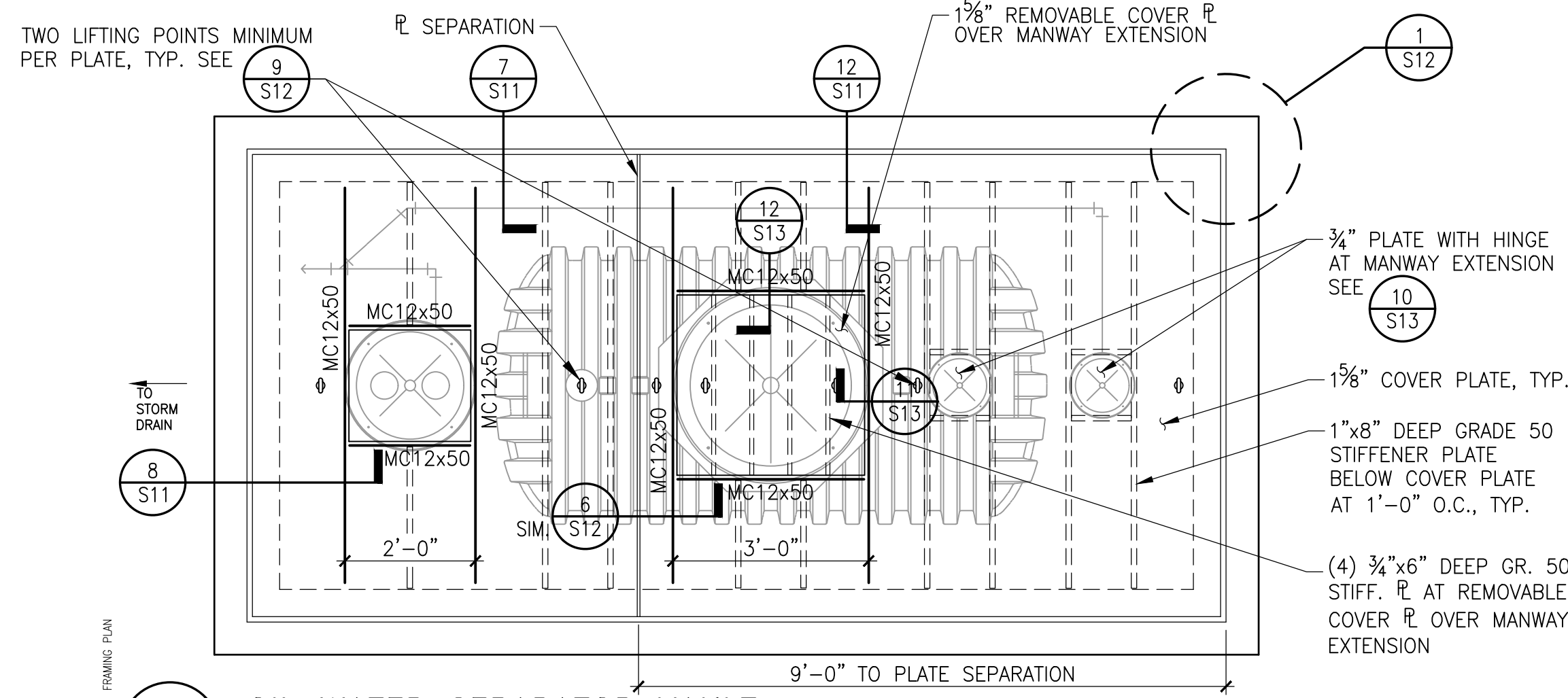
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 FIRE WATER LINE DETAILS

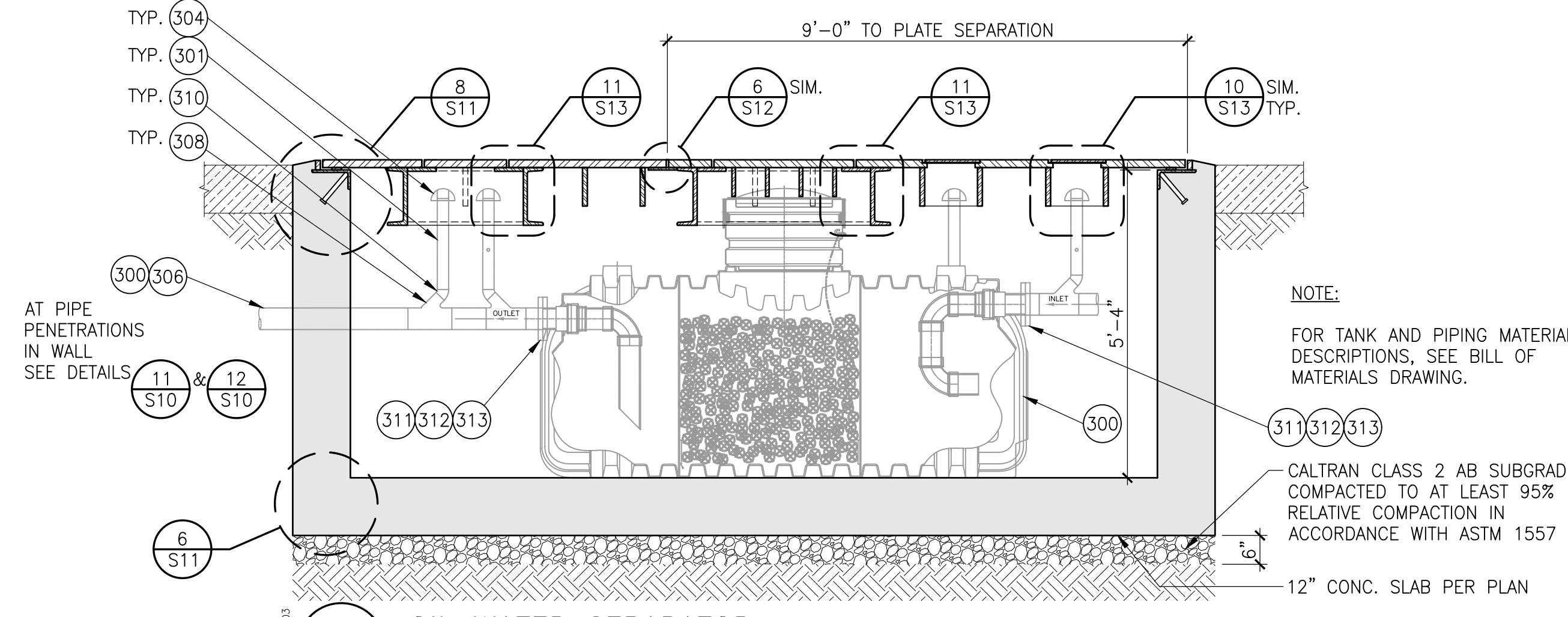
ORIGINAL PROJECT NO. _	REV.
DRAWING NO. S6-1	

Issued for Construction Set

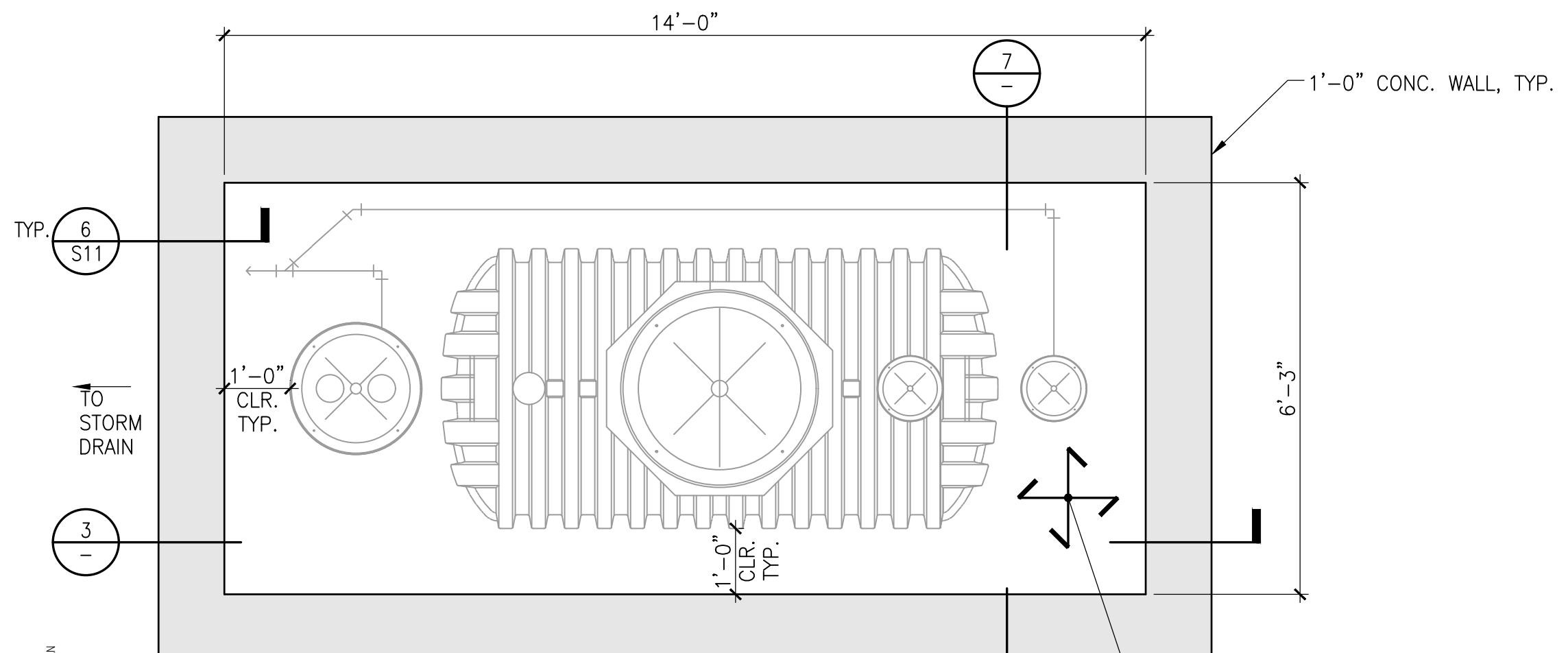
Boston
Chicago
Houston
Los Angeles
New York
San Francisco
Washington, DC



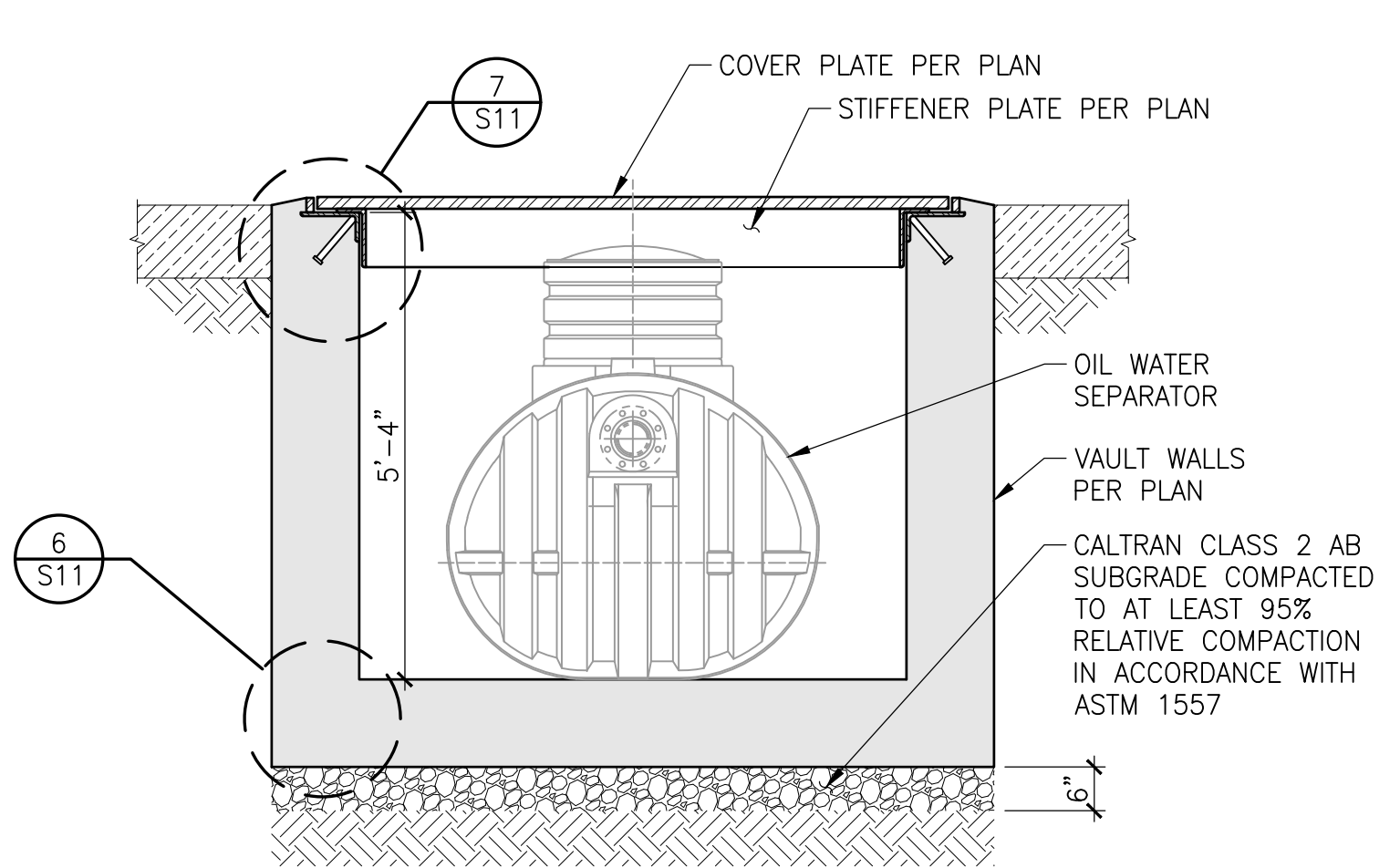
1 OIL WATER SEPARATOR VAULT FRAMING PLAN
SCALE: 1/2"=1'-0"



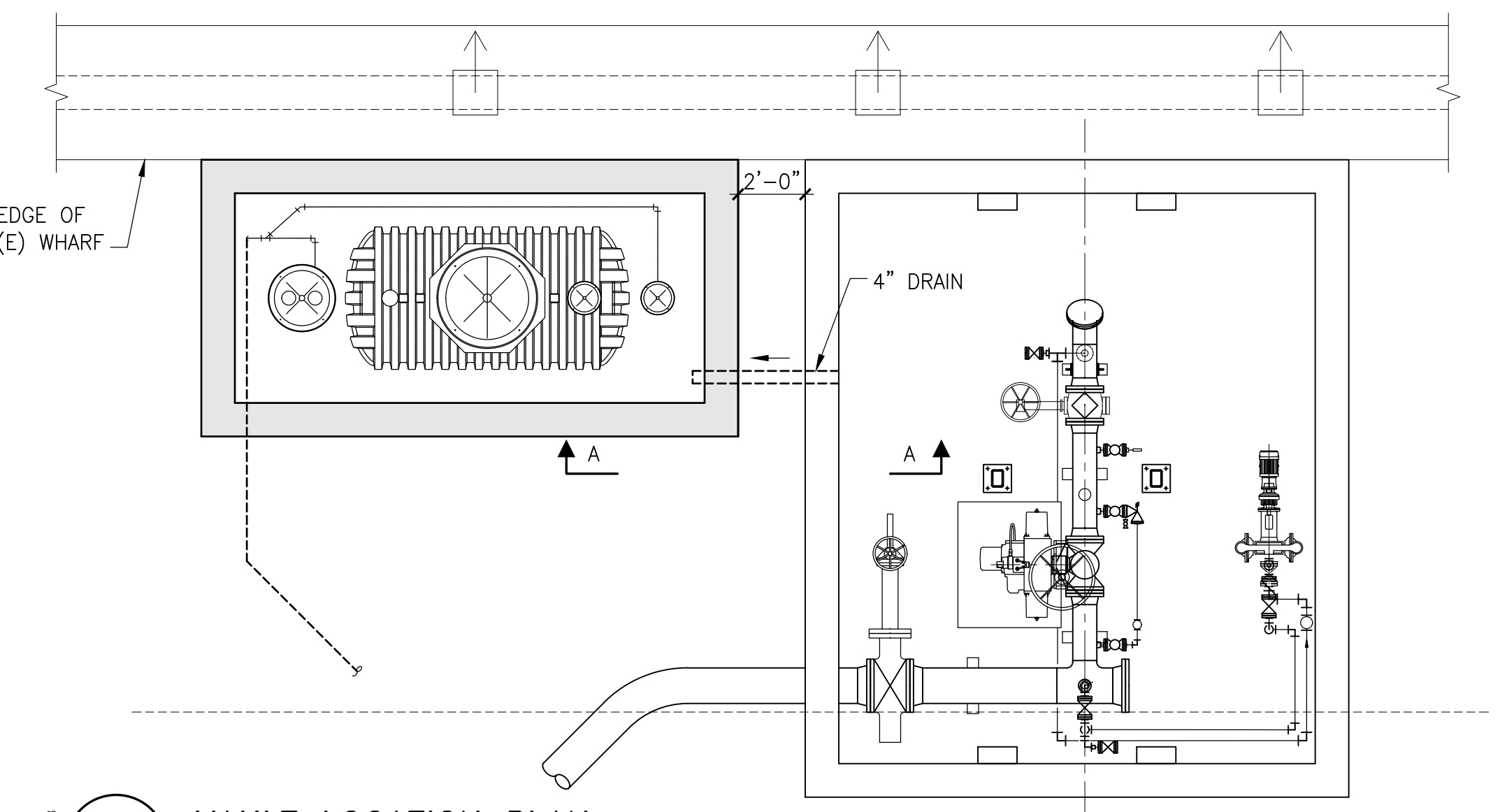
3 OIL WATER SEPARATOR SECTION
SCALE: 1/2"=1'-0"



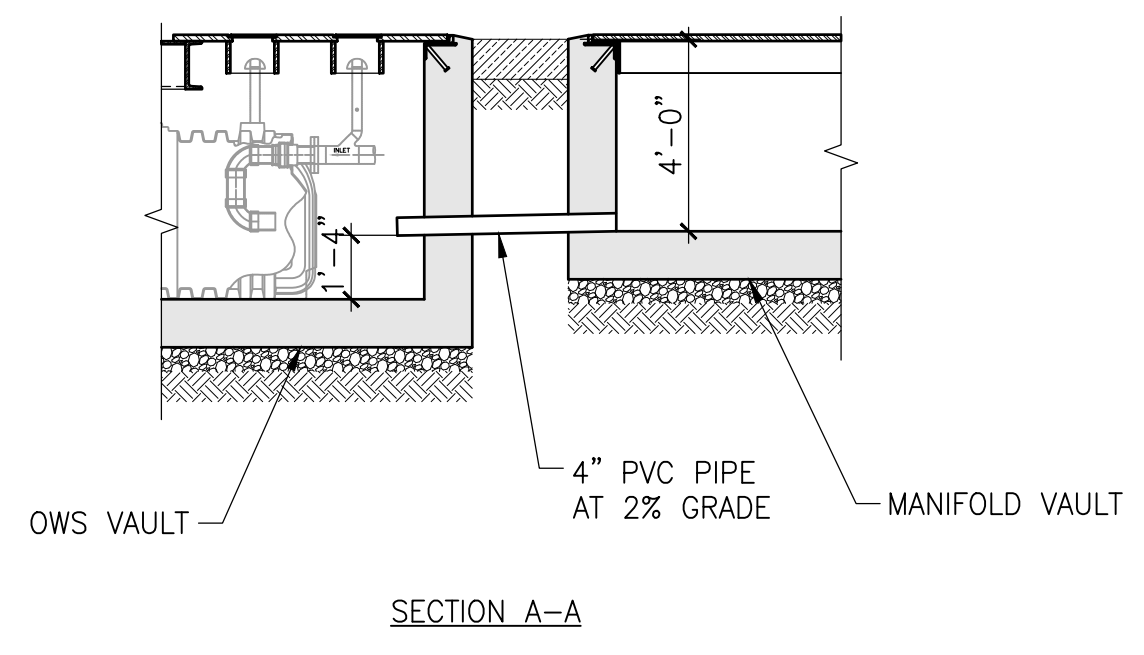
5 OIL WATER SEPARATOR VAULT FOUNDATION PLAN
SCALE: 1/2"=1'-0"



7 OIL WATER SEPARATOR END VIEW
SCALE: 1/2"=1'-0"



9 VAULT LOCATION PLAN
SCALE: 1/4"=1'-0"



SECTION A-A

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

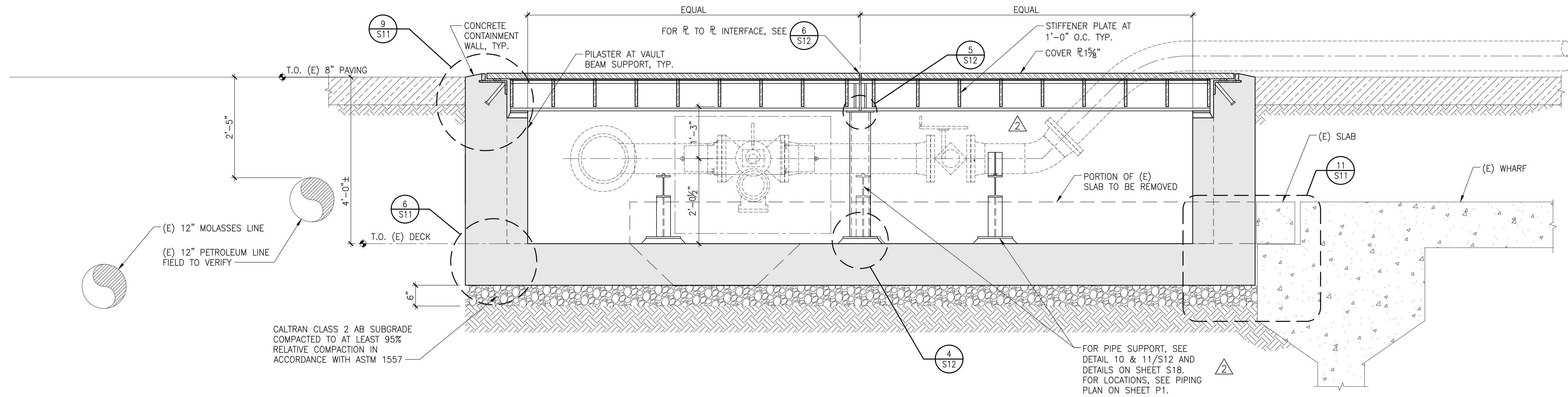
PROJECT LOCATION:

DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 OIL WATER SEPARATOR PLAN AND SECTIONS	
ORIGINAL PROJECT NO. -	
DRAWING NO. S7	REV.

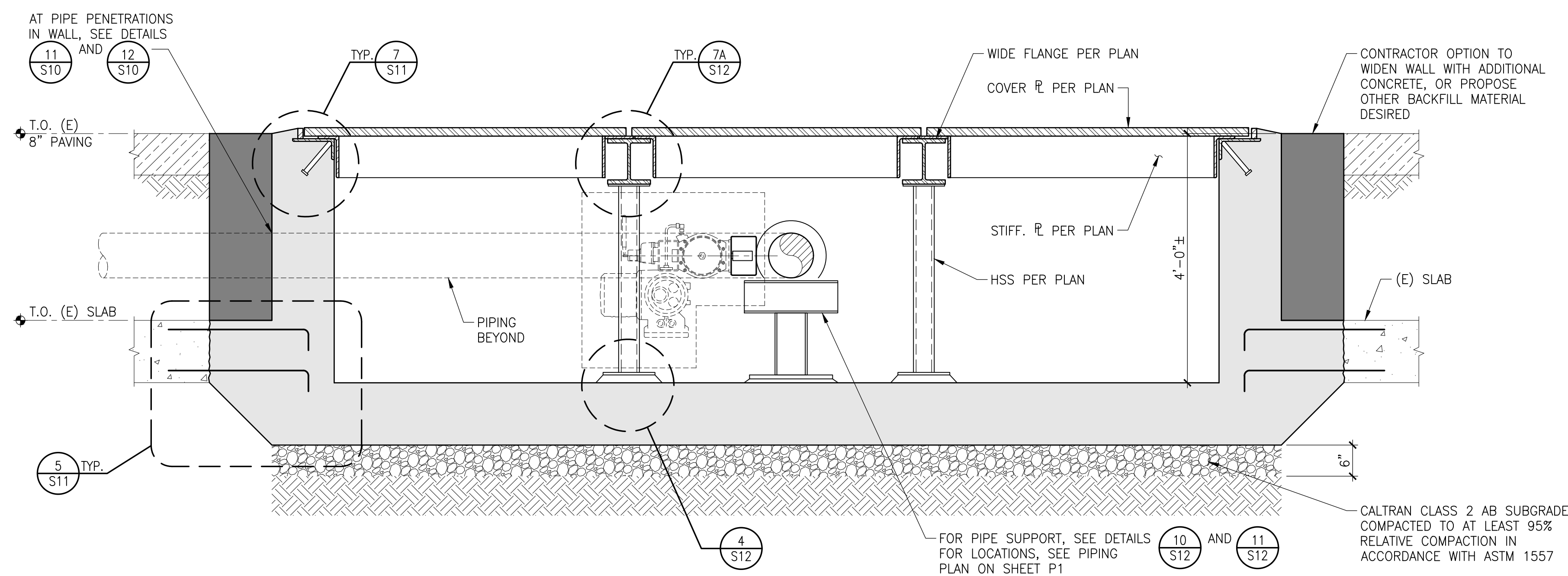
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Washington, DC



1 TRANSFER MANIFOLD/SIV VAULT SECTION

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



9 TRANSFER MANIFOLD/SIV VAULT SECTION

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

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	
NO.	REVISION	BY	DATE	APR

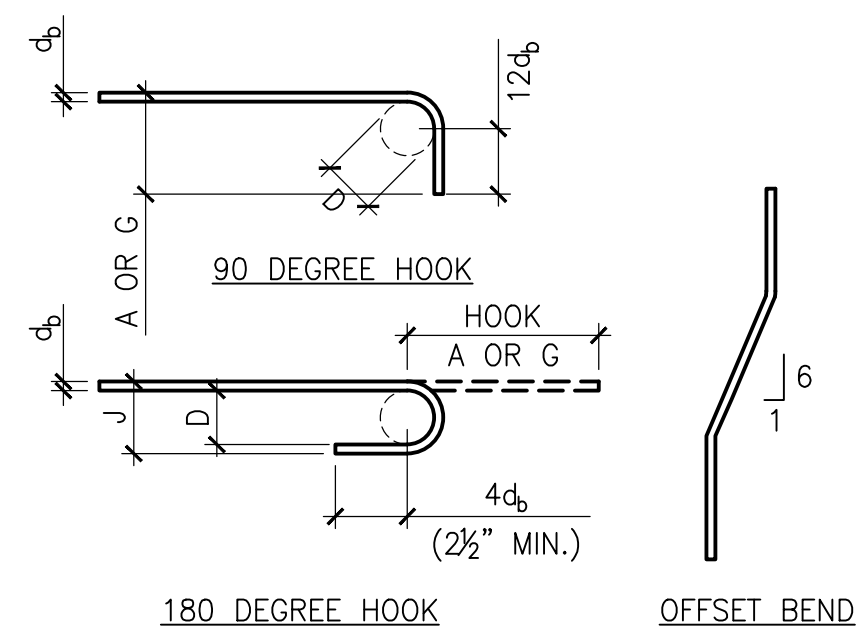
PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11 VAULT FOUNDATION AND FRAMING SECTIONS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S9	REV. _____

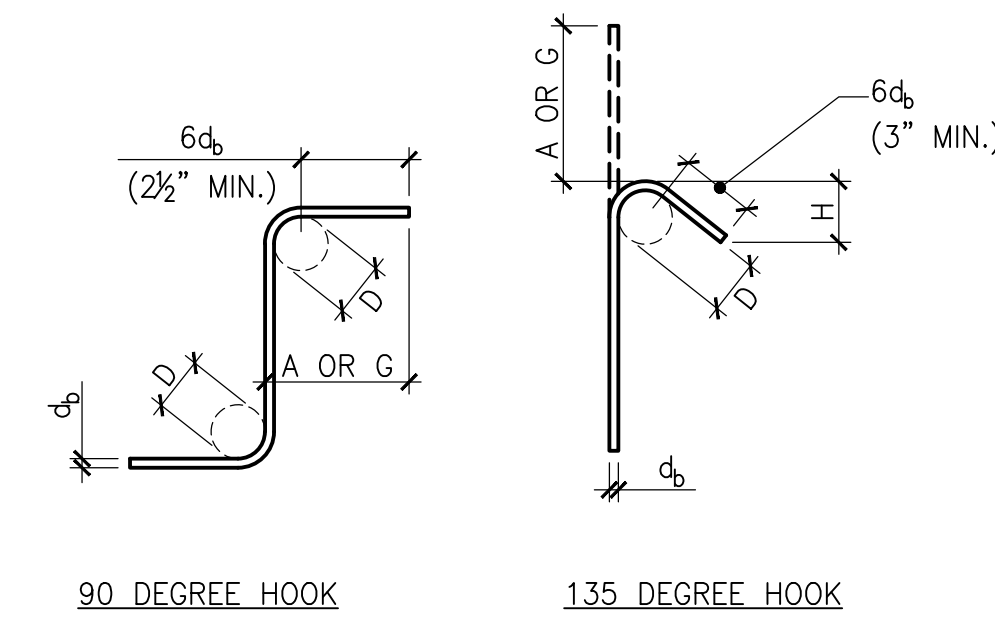
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BAR SIZE	BEND DIAMETER (D) INCHES	180° HOOKS		90° HOOKS
		A OR G INCHES	J INCHES	A OR G INCHES
#3	2¼	5	3	6
#4	3	6	4	8
#5	3¾	7	5	10
#6	4½	8	6	12
#7	5¼	10	7	14
#8	6	11	8	16
#9	9½	15	11¾	19
#10	10¾	17	13¾	22
#11	12	19	14¾	24



BAR SIZE	BEND DIAMETER (D) INCHES	90° HOOK	135° HOOKS	
		A OR G INCHES	A OR G INCHES	H (APPROX.) INCHES
#3	1½	4	4¼	3
#4	2	4½	4½	3
#5	2½	6	5½	3¾



- NOTES:
- ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
 - d_b = BAR DIAMETER.
 - D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.

- NOTES:
- ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
 - d_b = BAR DIAMETER.
 - D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.

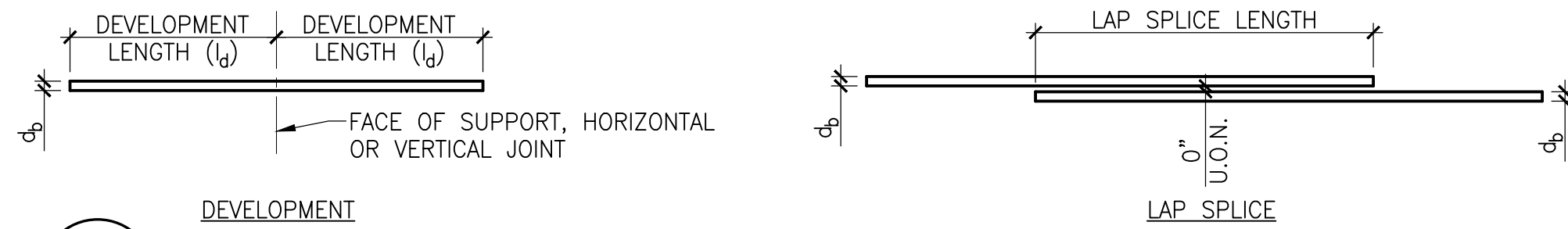
1 TYPICAL REINFORCEMENT BENDS FOR CONCRETE AND MASONRY

3 TYPICAL TIE AND STIRRUP HOOKS FOR CONCRETE AND MASONRY

BAR SIZE	DEVELOPMENT LENGTH INCHES (l_d)						LAP SPLICE LENGTH INCHES					
	TOP BARS			OTHER BARS			TOP BARS			OTHER BARS		
	3000 PSI	4000 PSI	5000 PSI	3000 PSI	4000 PSI	5000 PSI	3000 PSI	4000 PSI	5000 PSI	3000 PSI	4000 PSI	5000 PSI
#3	22	19	17	17	15	13	29	25	23	23	20	17
#4	29	25	23	22	19	17	38	33	30	29	25	23
#5	36	31	28	28	24	22	47	41	37	37	32	29
#6	43	37	34	33	29	26	56	49	45	43	38	34
#7	63	54	49	48	42	38	82	71	64	63	55	50
#8	72	62	56	55	48	43	94	81	73	72	63	56
#9	81	70	63	62	54	48	106	91	82	81	71	63
#10	91	79	71	70	61	54	119	103	93	91	80	71
#11	101	87	78	78	67	60	132	114	102	102	88	78

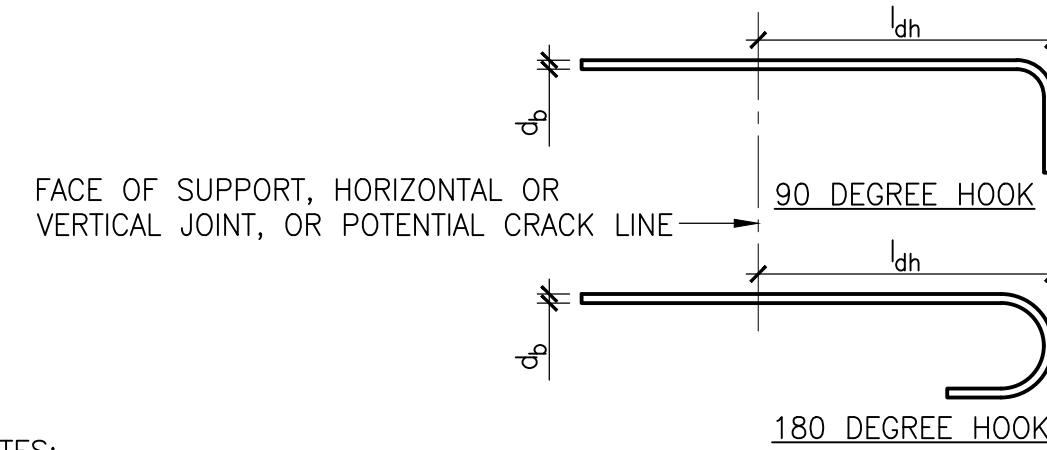
- NOTES:
- REFER TO HOOKED REINFORCEMENT TENSION DEVELOPMENT LENGTH SCHEDULE IN CONCRETE WHEN THE STRAIGHT DEVELOPMENT LENGTH IN TENSION CANNOT BE ACCOMMODATED IN THE CONCRETE SECTION.
 - TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH $F_y=60$ KSI AND NORMAL WEIGHT CONCRETE.
 - TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST IN THE MEMBER BELOW THE BARS TO BE DEVELOPED OR SPLICED. THE TOP BAR FACTOR DOES NOT APPLY TO BARS IN WALLS.
 - WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED IN TENSION, SPLICE LENGTH SHALL BE THE LARGER OF l_d OF THE LARGER BAR AND LAP SPLICE LENGTH OF THE SMALLER BAR.
 - ALL TABULATED VALUES ARE MINIMUM LENGTHS, IN CASE OF CONFLICT WITH PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
 - d_b = BAR DIAMETER.
 - l_d = DEVELOPMENT LENGTH.
 - MULTIPLY TABULATED LENGTHS BY THE FOLLOWING FACTORS WHERE APPLICABLE. NOTE THAT FACTORS ARE CUMULATIVE: (E.G. $1.33 \times 1.50 = 2.0$)

A. LIGHT WEIGHT CONCRETE:	1.33
B. 3 BUNDLED BARS:	1.20
C. 4 BUNDLED BARS:	1.33
D. CLEAR SPACING LESS THAN $2d_b$ AND CLEAR COVER LESS THAN d_b :	1.50
E. EPOXY COATED BARS:	1.50
 - USE MECHANICAL COUPLERS FOR #14 AND LARGER BARS.
 - FOR LAP SPLICES IN CONCRETE MASONRY, SEE MASONRY REINFORCEMENT DETAILS.



5 STRAIGHT REINFORCEMENT DEVELOPMENT AND LAP SPLICE LENGTH SCHEDULE FOR CONCRETE

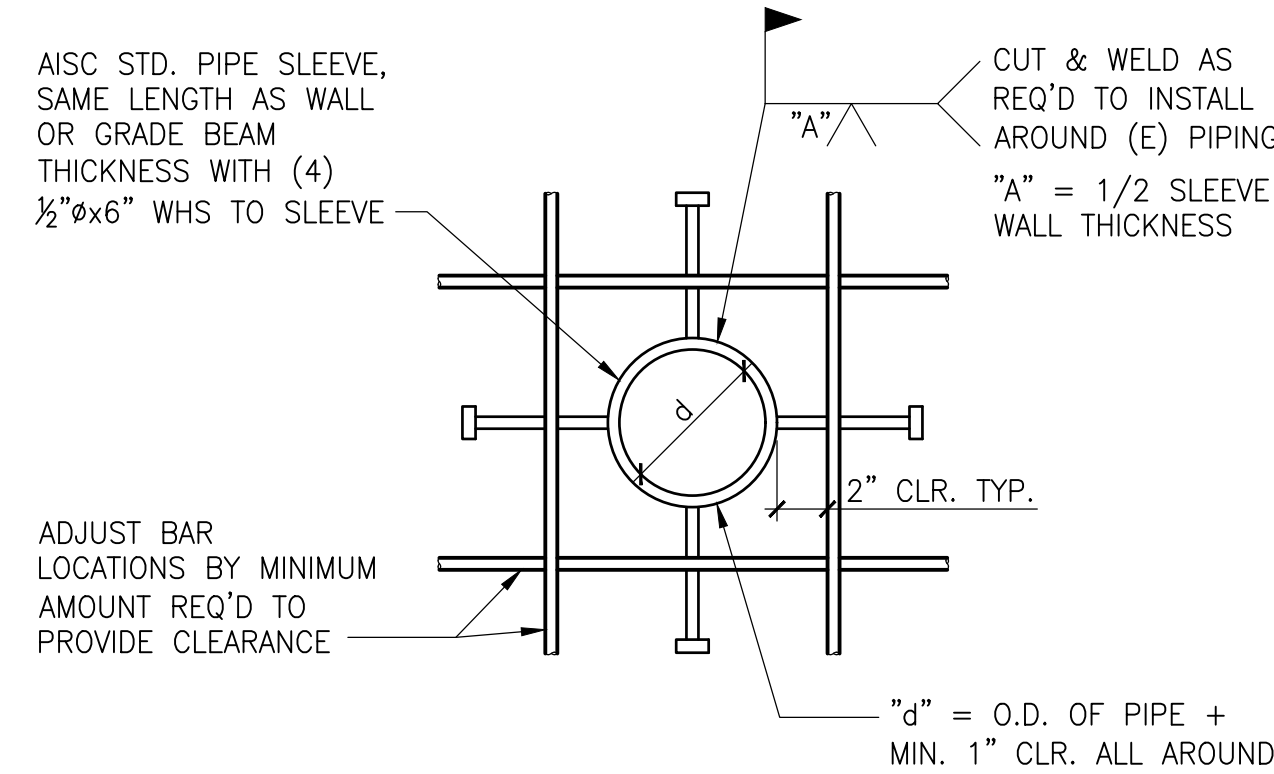
BAR SIZE	TENSION DEVELOPMENT LENGTH FOR HOOKED BARS (l_{dh}) INCHES		
	3,000 PSI	4,000 PSI	5,000 PSI
#3	9	8	7
#4	11	10	9
#5	14	12	11
#6	17	15	13
#7	20	17	15
#8	22	19	17
#9	25	22	20
#10	28	25	22
#11	31	27	24



- NOTES:
- SEE TYPICAL REINFORCEMENT BEND DETAIL FOR ADDITIONAL INFORMATION.
 - TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH ($F_y=60$ KSI) AND NORMAL WEIGHT CONCRETE.
 - ALL TABULATED VALUES ARE MINIMUM LENGTHS. IN CASE OF CONFLICT WITH THE PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
 - d_b =BAR DIAMETER
 - l_{dh} =TENSION DEVELOPMENT LENGTH (HOOK BARS)
 - ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT THE FACTORS ARE CUMULATIVE: (e.g. $1.33 \times 1.20 = 1.60$)

A. REINFORCING BAR STRENGTH OTHER THAN 60 KSI: ($F_y/60,000$)	
B. LIGHT WEIGHT CONCRETE:	1.33
C. EPOXY COATED BARS:	1.20

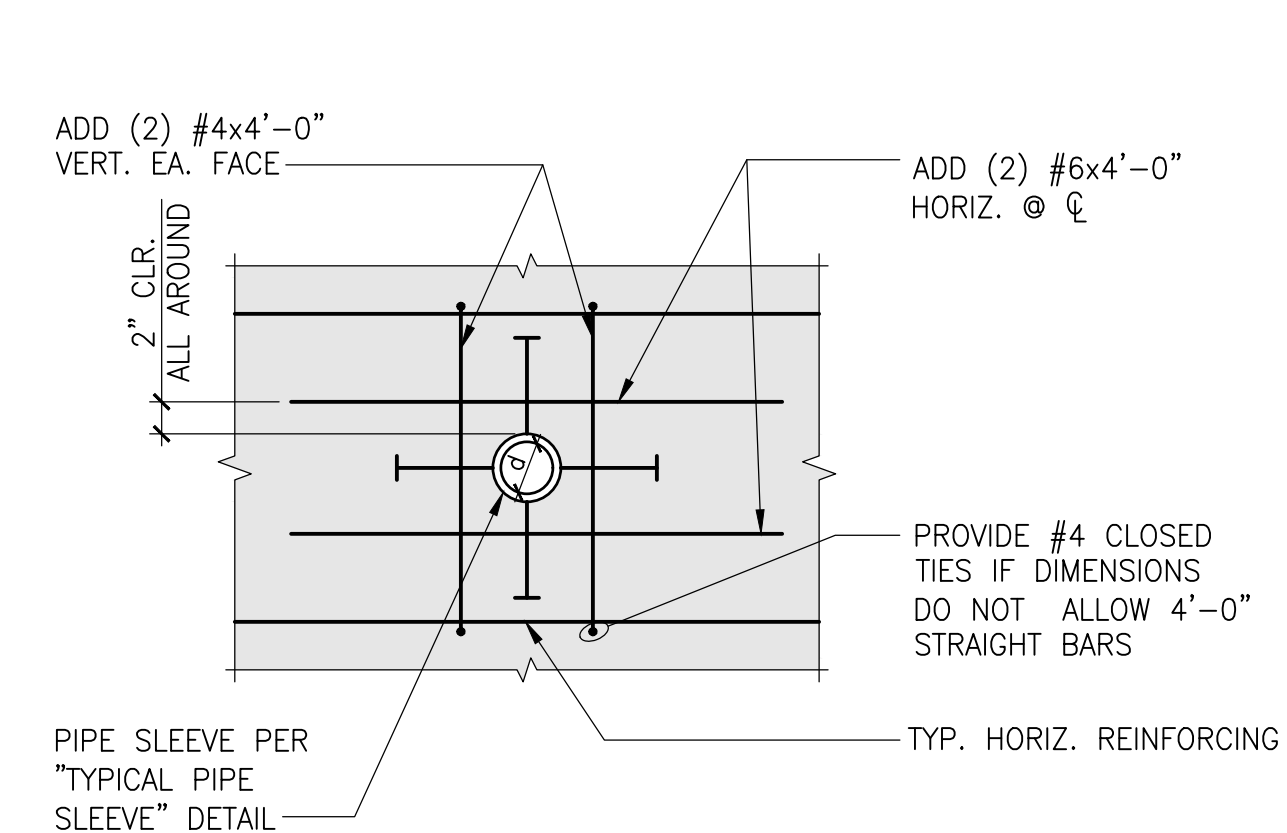
9 HOOKED REINFORCEMENT DEVELOPMENT LENGTH SCHEDULE FOR CONCRETE



- NOTE:
- ALL PIPE SLEEVE LOCATIONS & SPACING TO BE SUBMITTED TO ENGINEER FOR REVIEW & APPROVAL PRIOR TO INSTALLATION.

11 TYPICAL PIPE SLEEVE

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



12 TYPICAL ADDITIONAL REINFORCING @ PIPE SLEEVE

SCALE: 1"=1'-0"

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

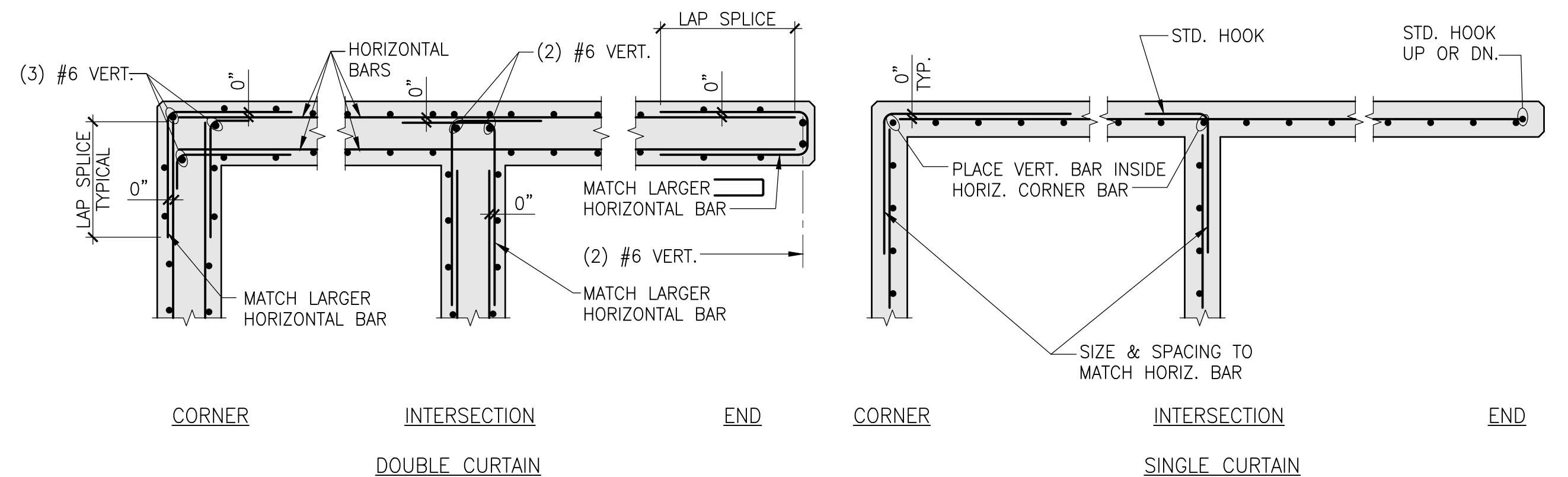
NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:

DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

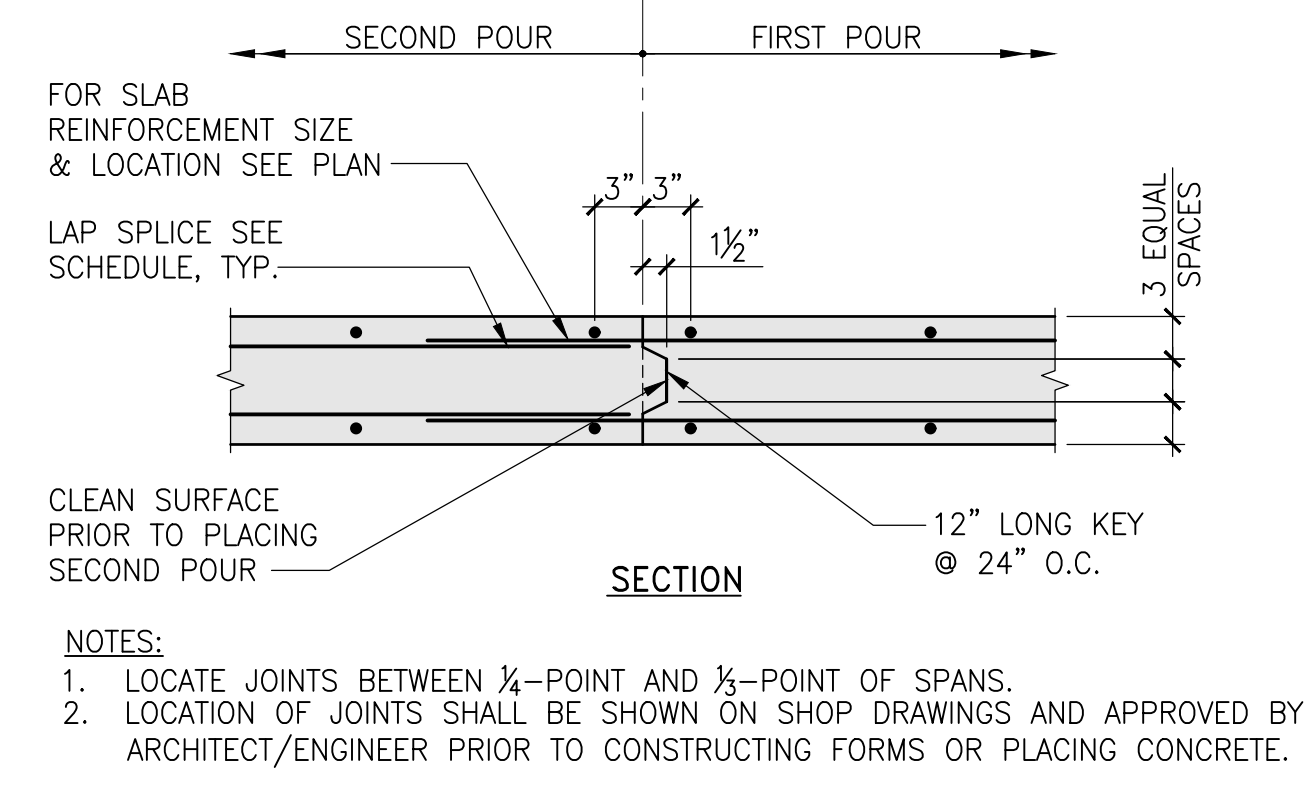
PORT OF STOCKTON BERTH 10 & 11 TYPICAL CONCRETE DETAILS

ORIGINAL PROJECT NO. _
DRAWING NO. S10
REV.



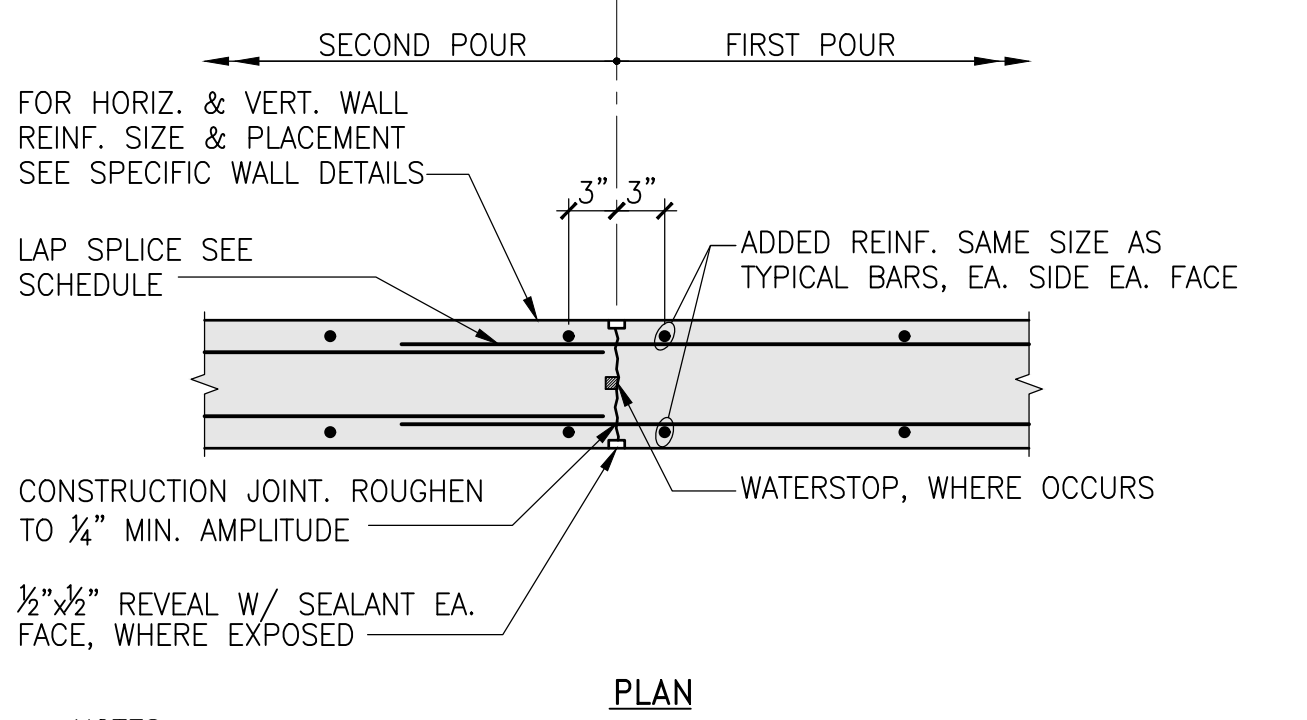
1 WALL AND FOOTING REINFORCEMENT DETAILS

SHOWN ON: N.T.S.



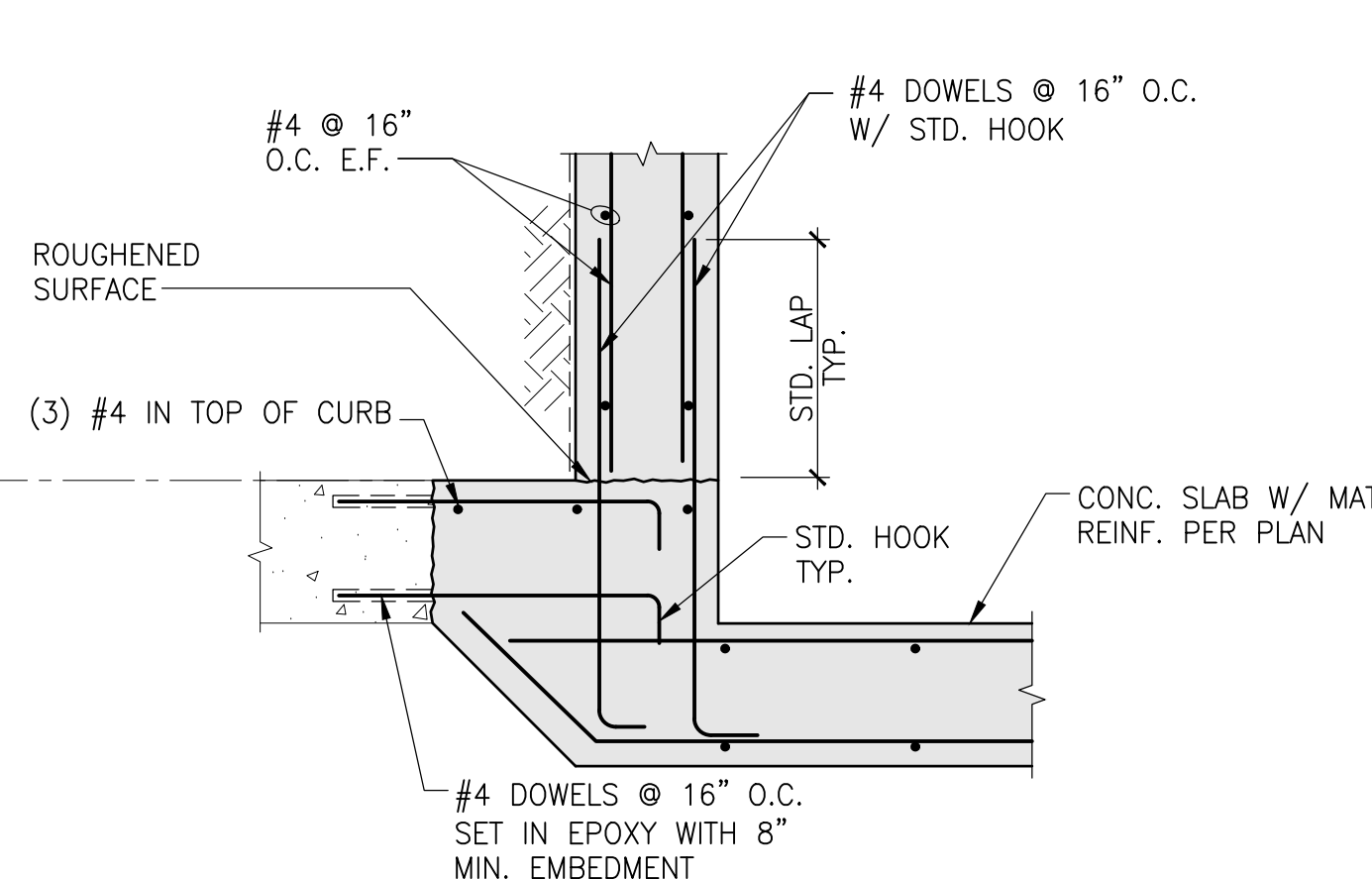
3 TYP. ELEVATED SLAB CONSTRUCTION JOINT

SHOWN ON: N.T.S.



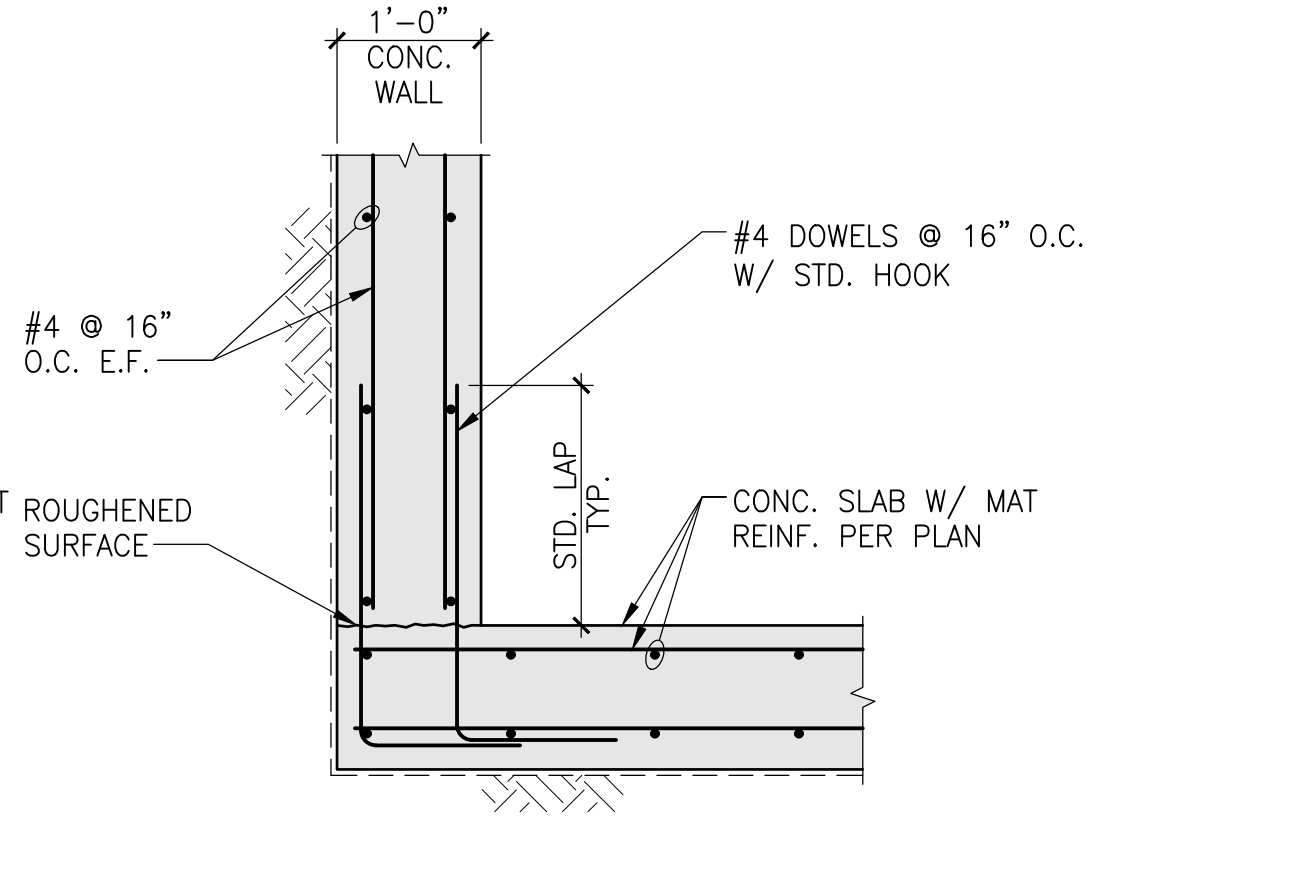
4 TYPICAL WALL VERTICAL CONSTRUCTION JOINTS

SHOWN ON: N.T.S.



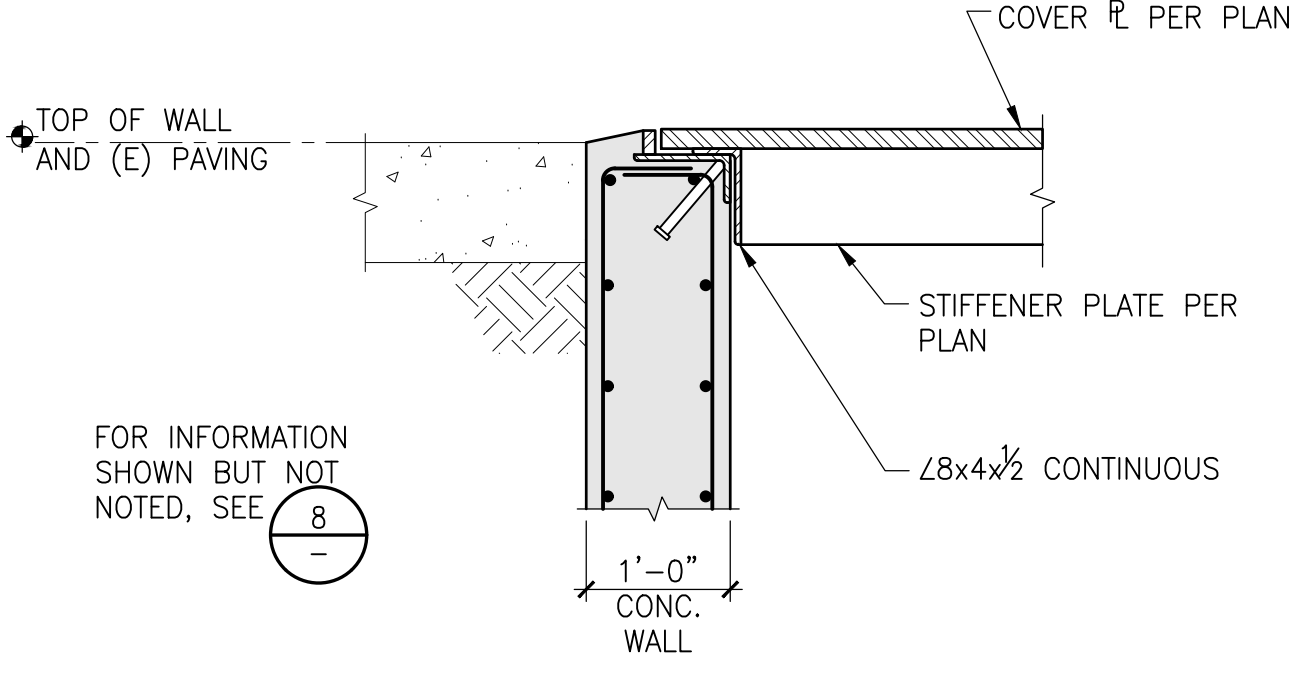
5 VAULT WALL ADJACENT TO (E) SLAB DETAIL

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



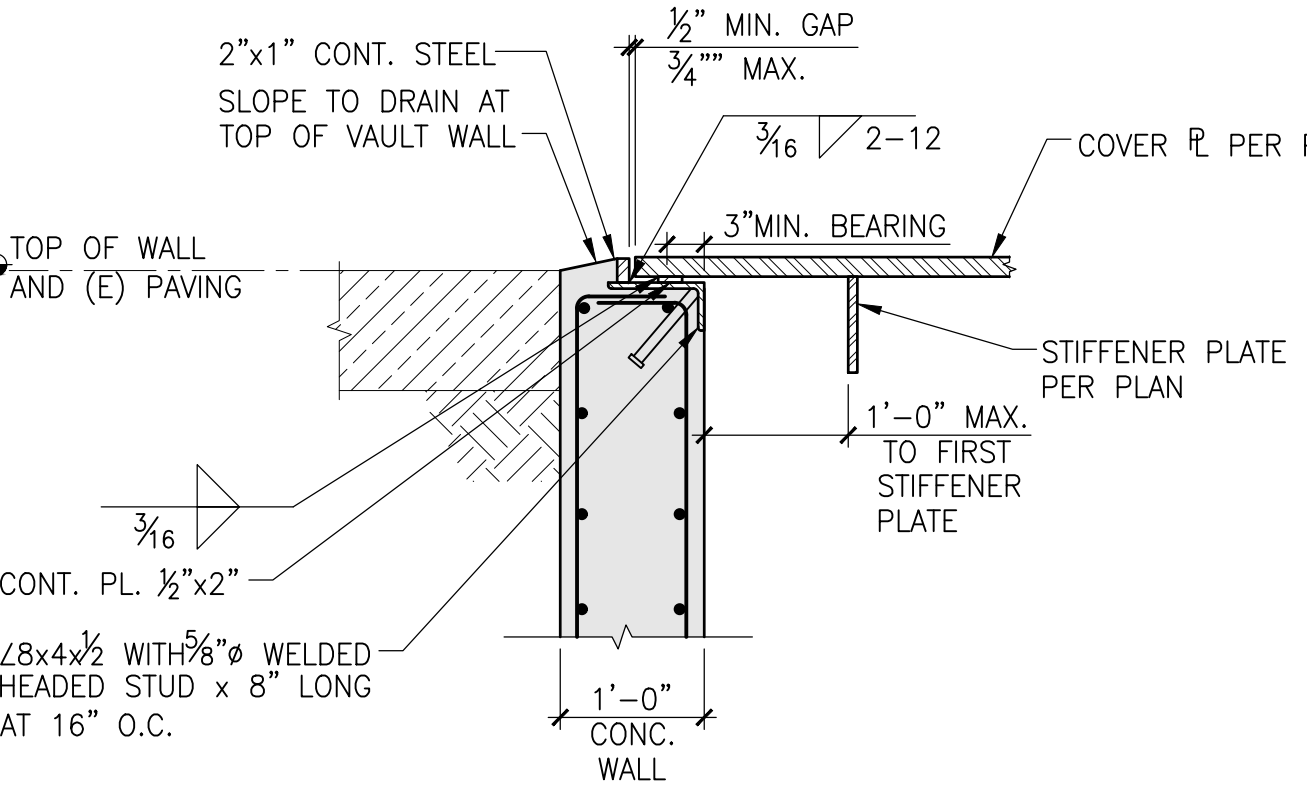
6 VAULT WALL OVER NEW SLAB DETAIL

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



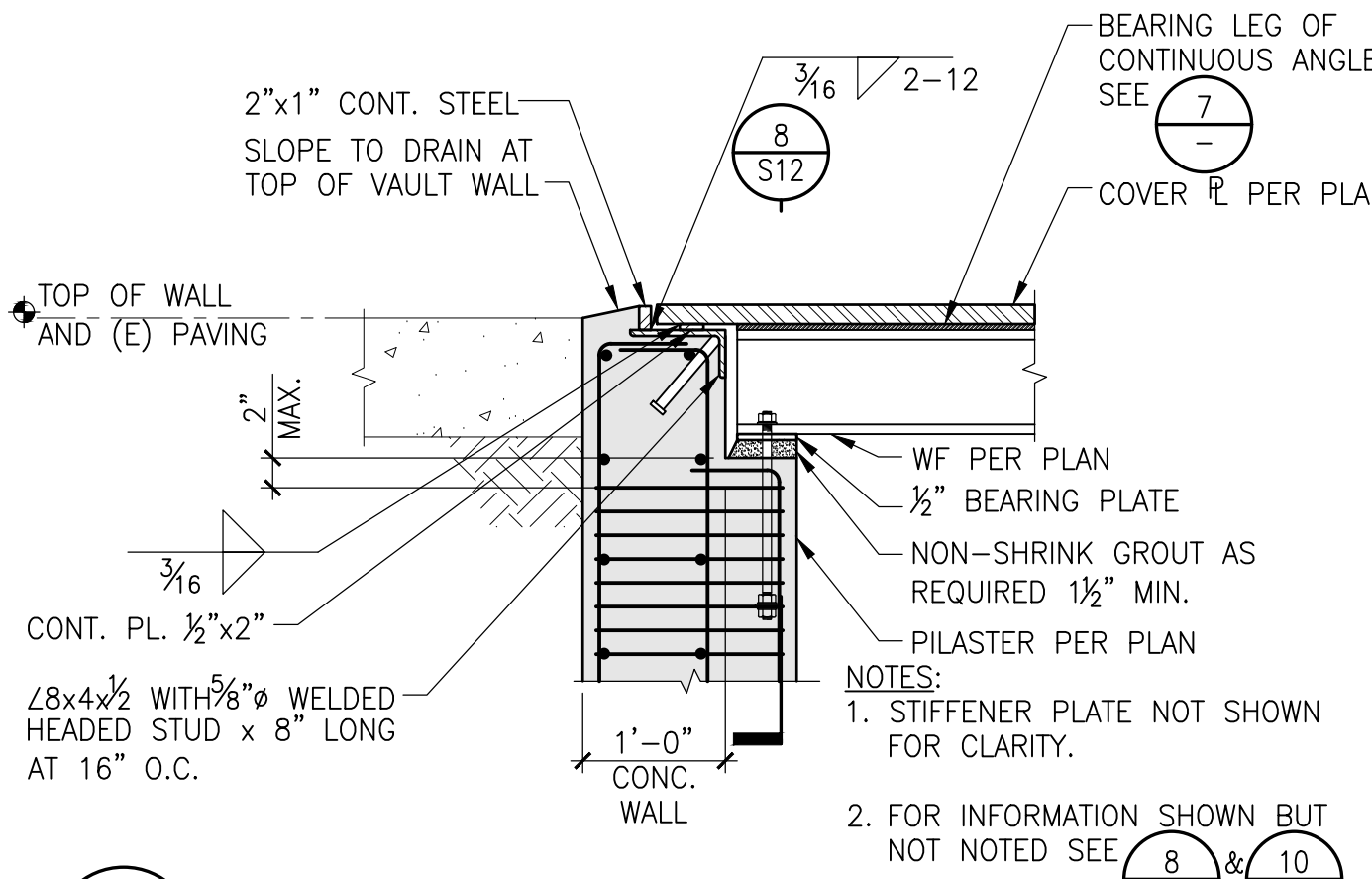
7 STIFFENER PLATE PERPENDICULAR TO VAULT WALL - DETAIL

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



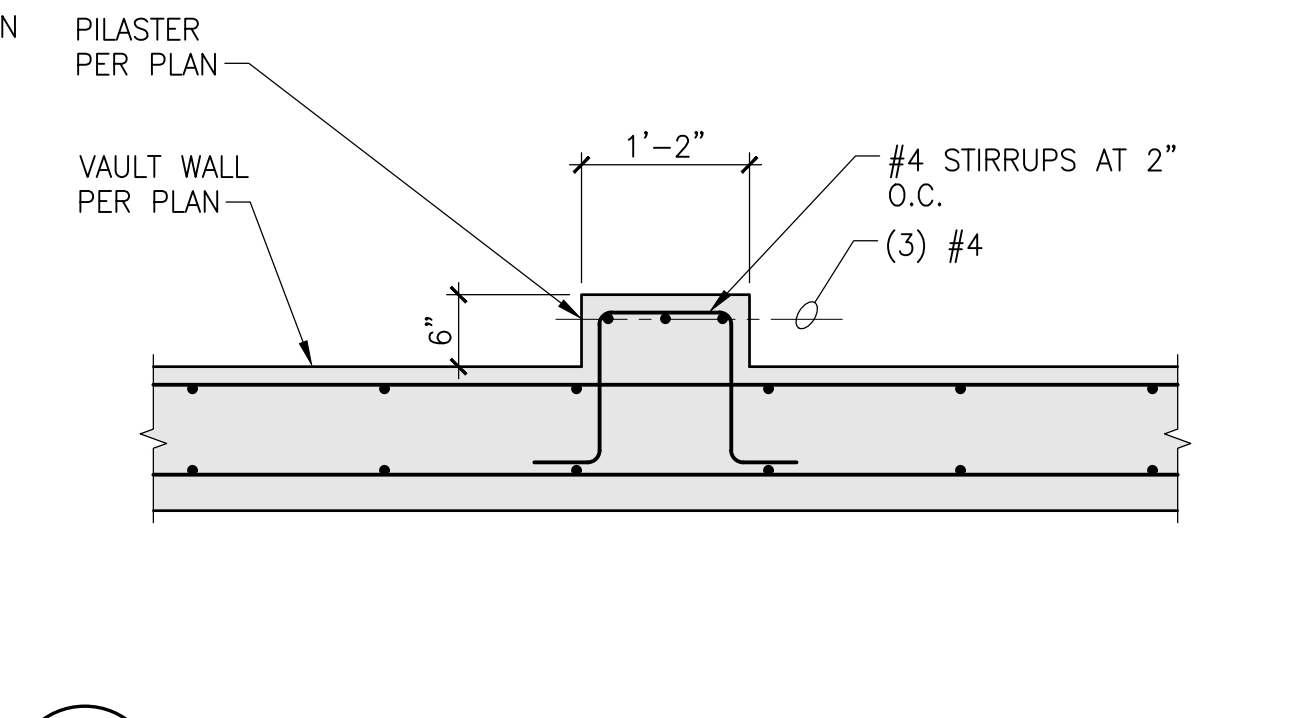
8 STIFFENER PLATE PARALLEL TO VAULT WALL - DETAIL

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



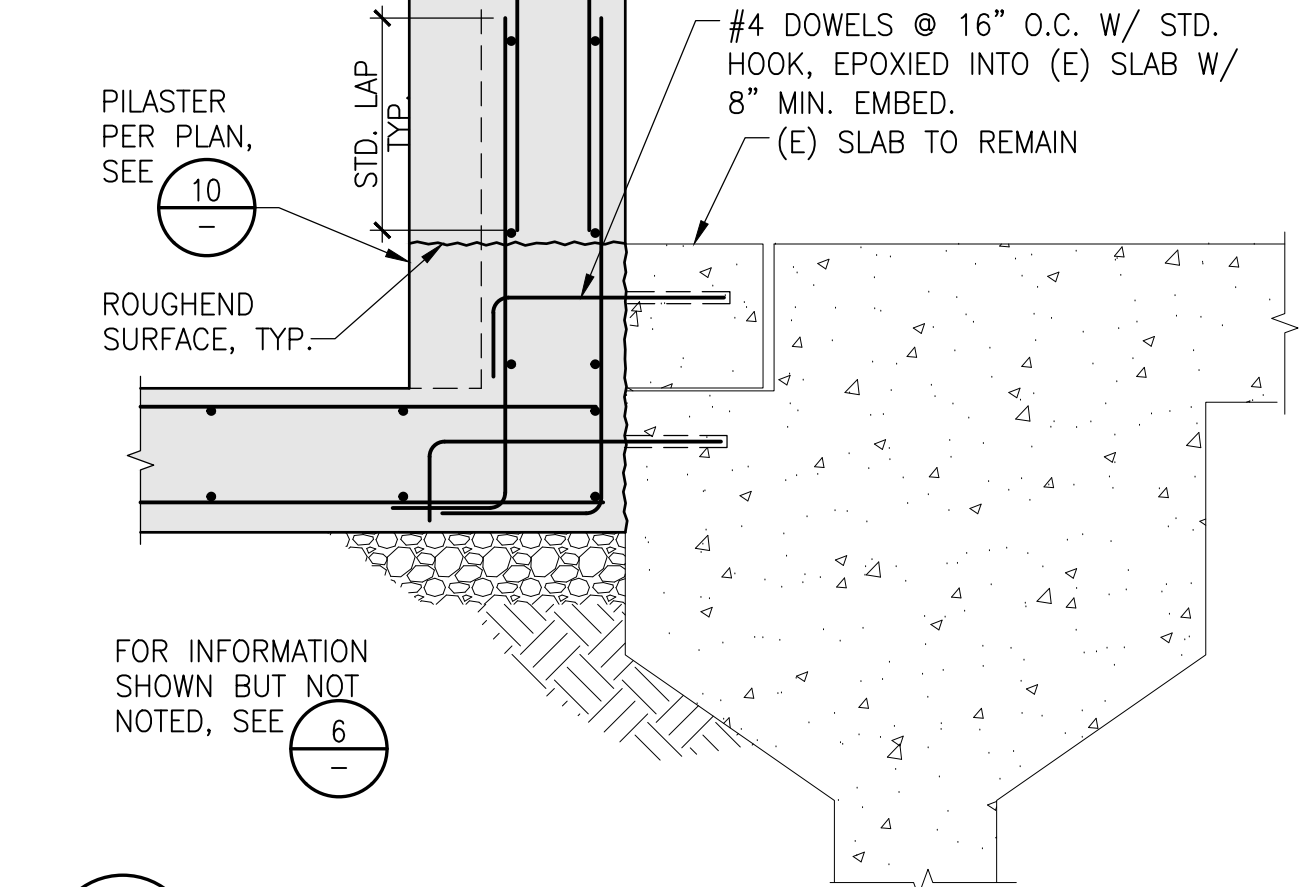
9 WF CONNECTION AT PILASTER DETAIL

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



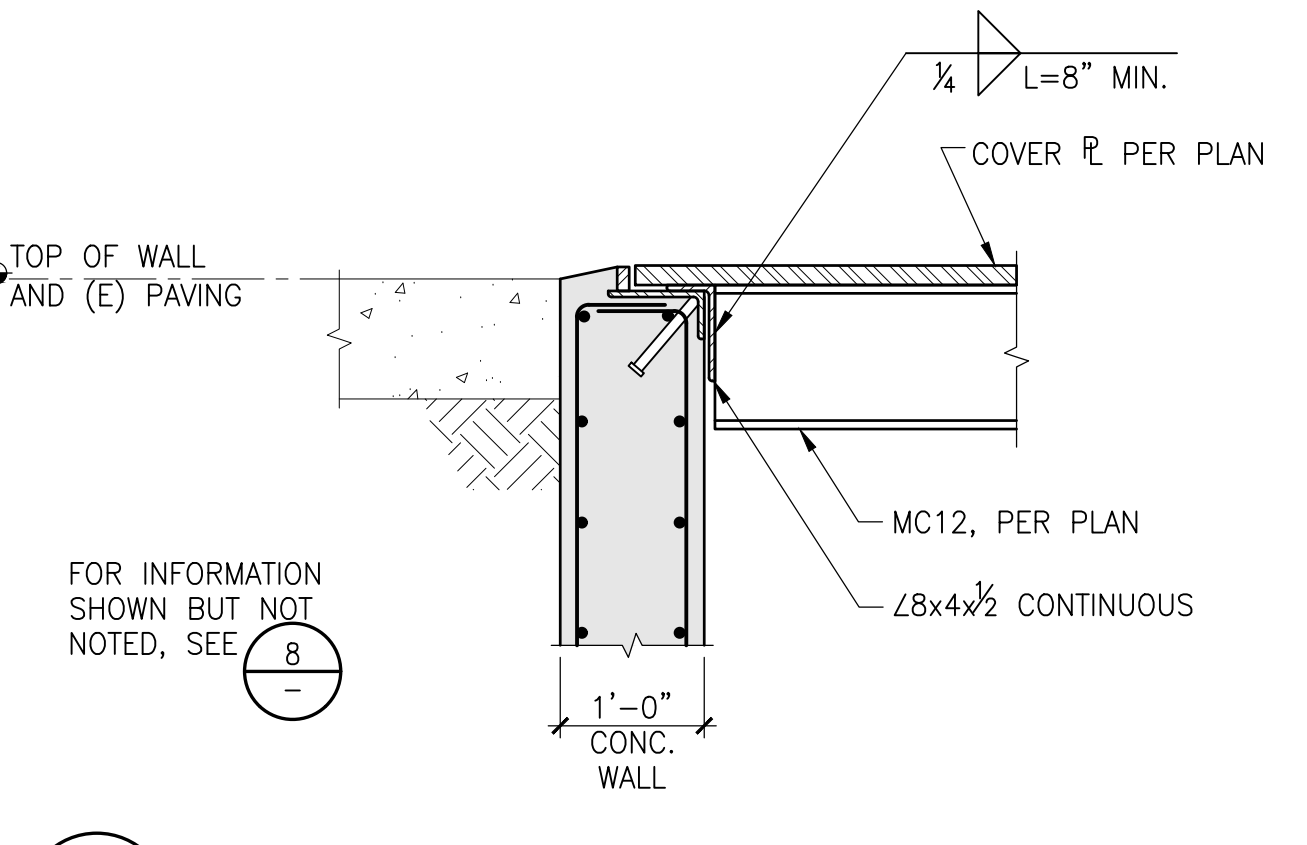
10 PILASTER REINF. PLAN

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



11 NEW SLAB TO (E) SLAB DETAIL

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



12 BEAM PERPENDICULAR TO VAULT WALL DETAIL

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

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

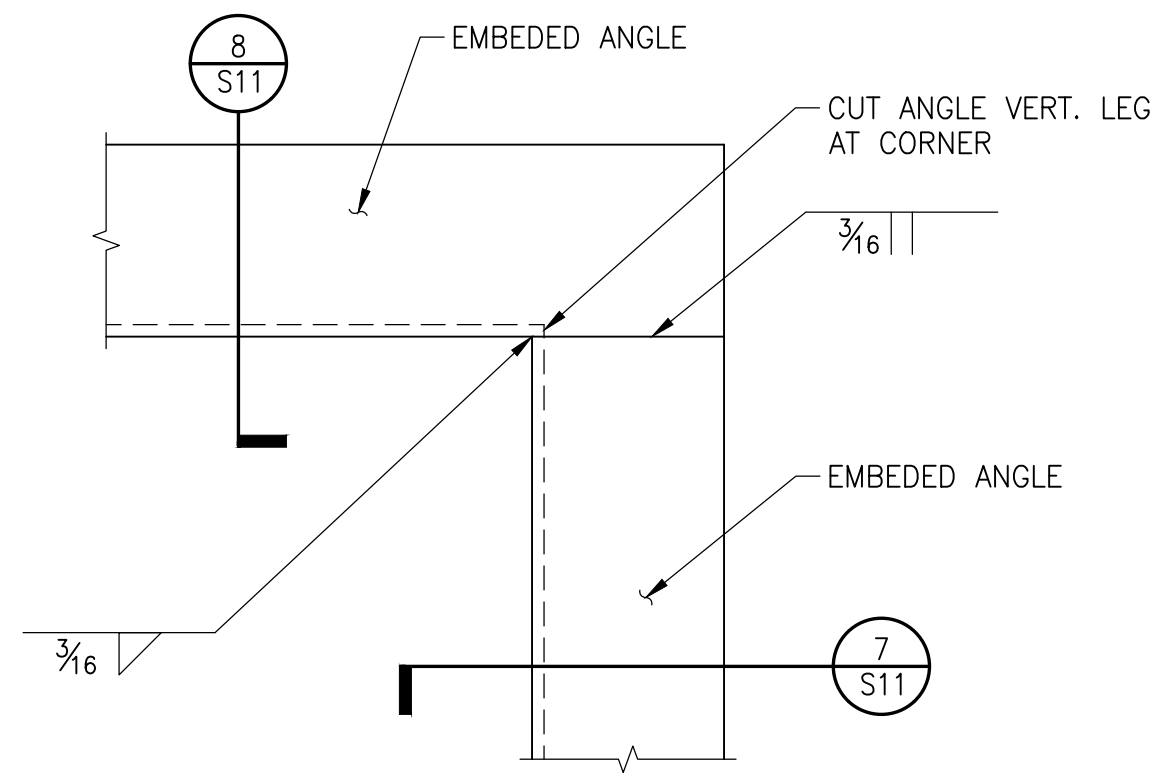
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△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

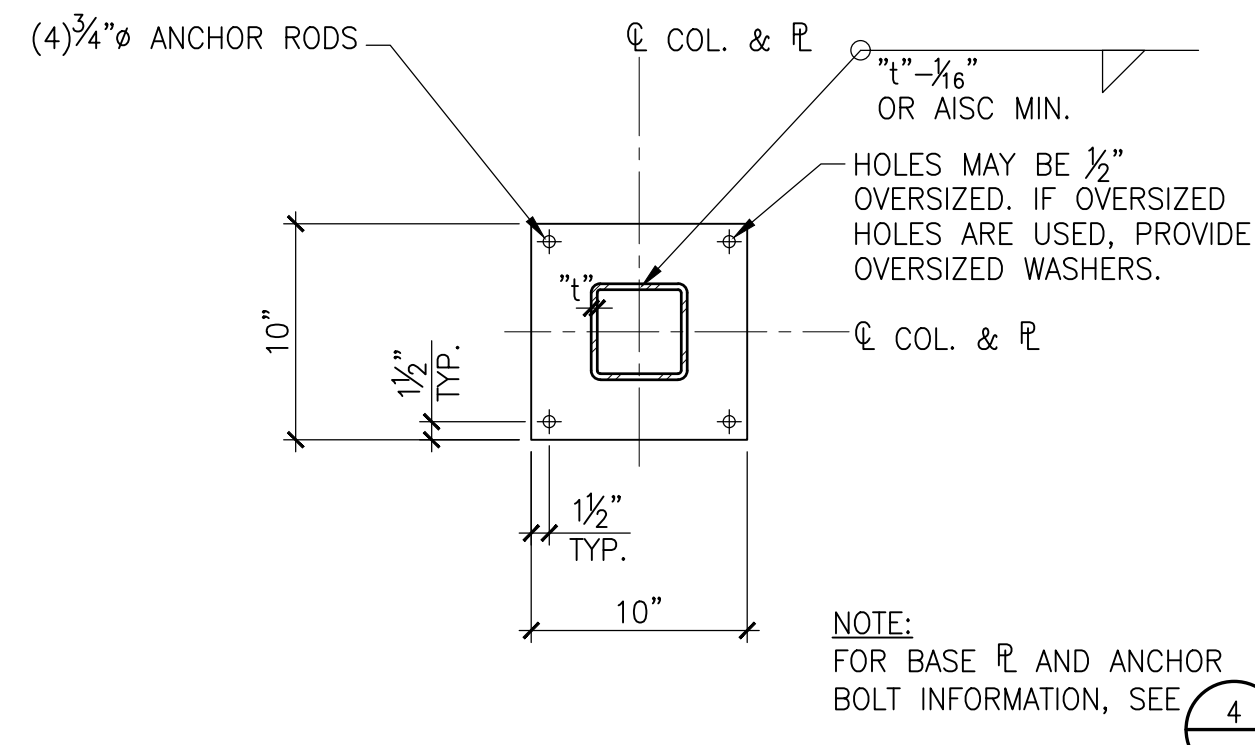
PORT OF STOCKTON BERTH 10 & 11 TYPICAL CONCRETE DETAILS	
ORIGINAL PROJECT NO. _	
DRAWING NO. S11	REV.

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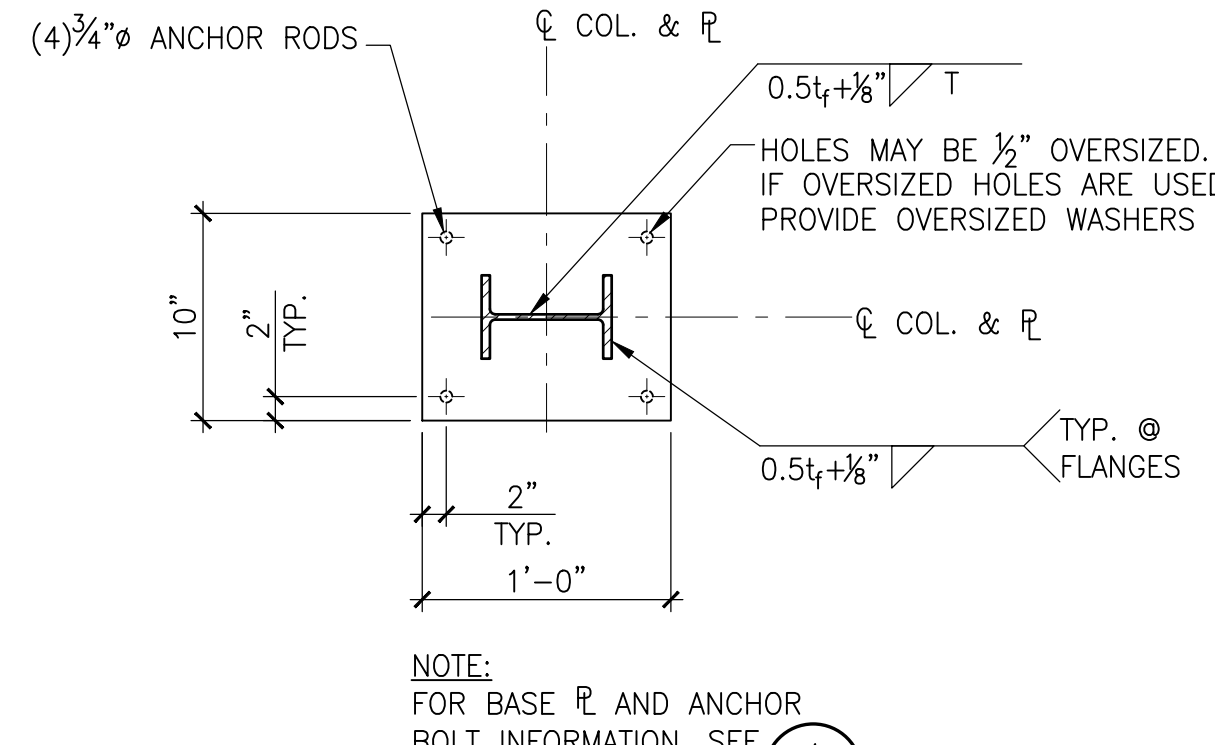
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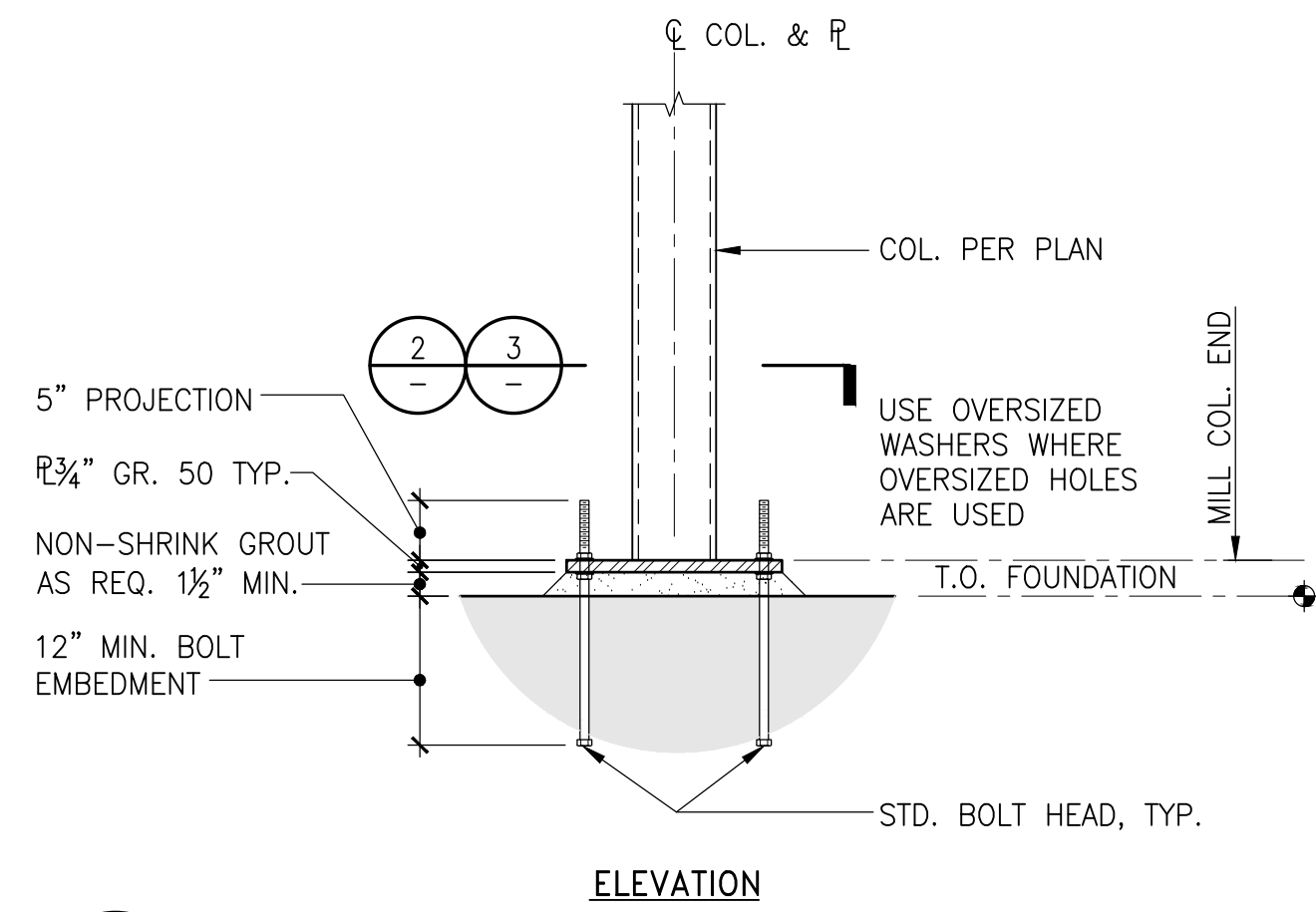
1 EMBEDDED ANGLE AT CORNER SCALE: 1 1/2"=1'-0"



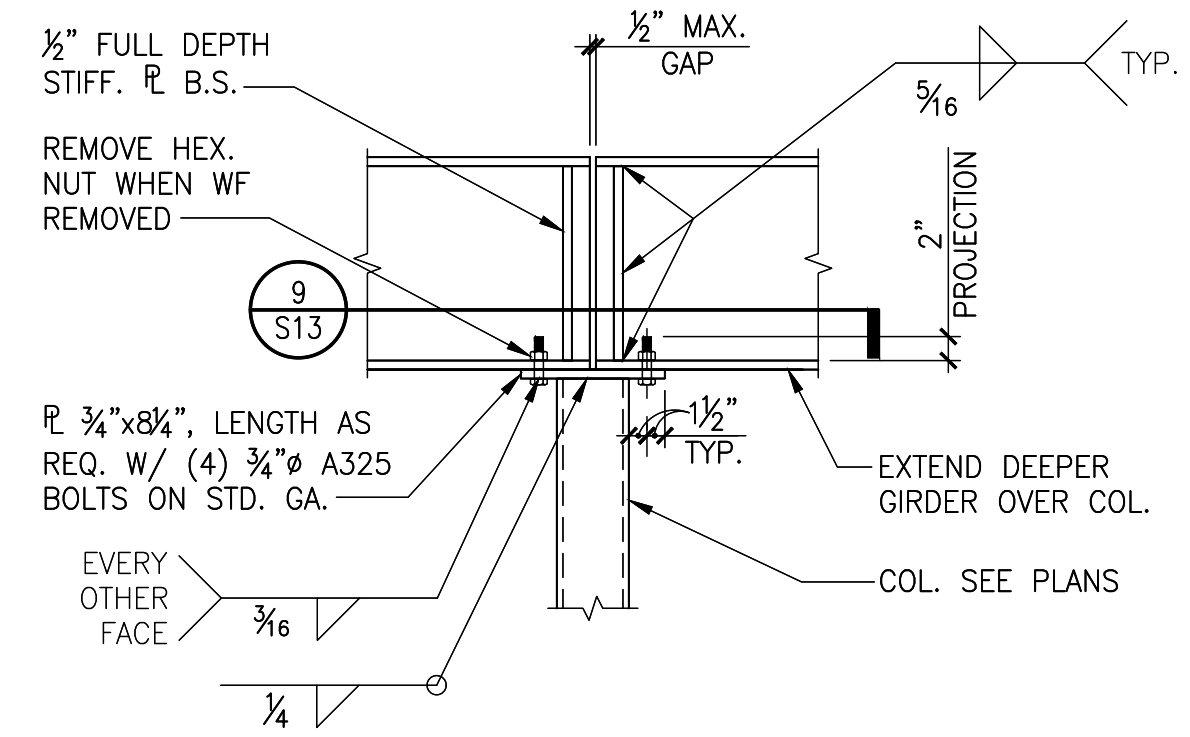
2 COLUMN BASE PLATE - PLAN N.T.S.



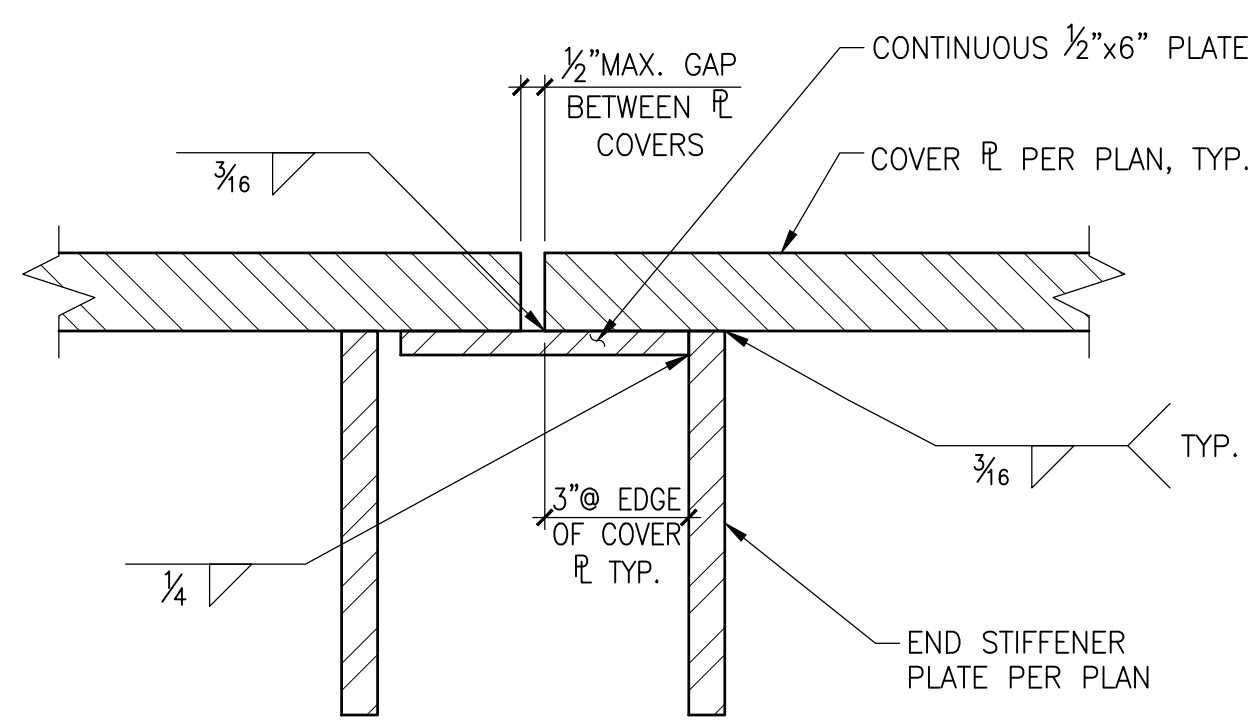
3 STEEL COLUMN BASE PLATE - PLAN N.T.S.



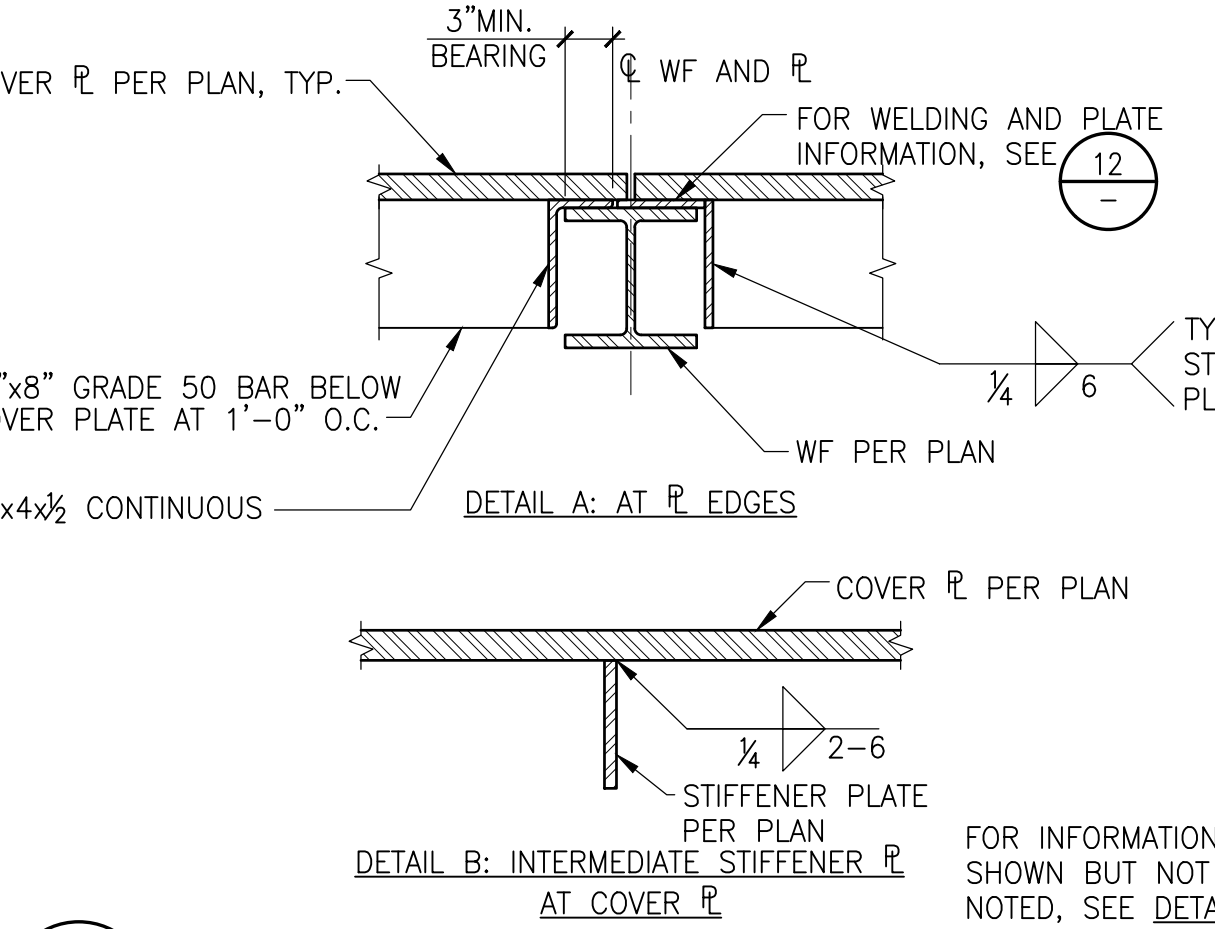
4 HSS COLUMN BASE PLATE - ELEVATION N.T.S.



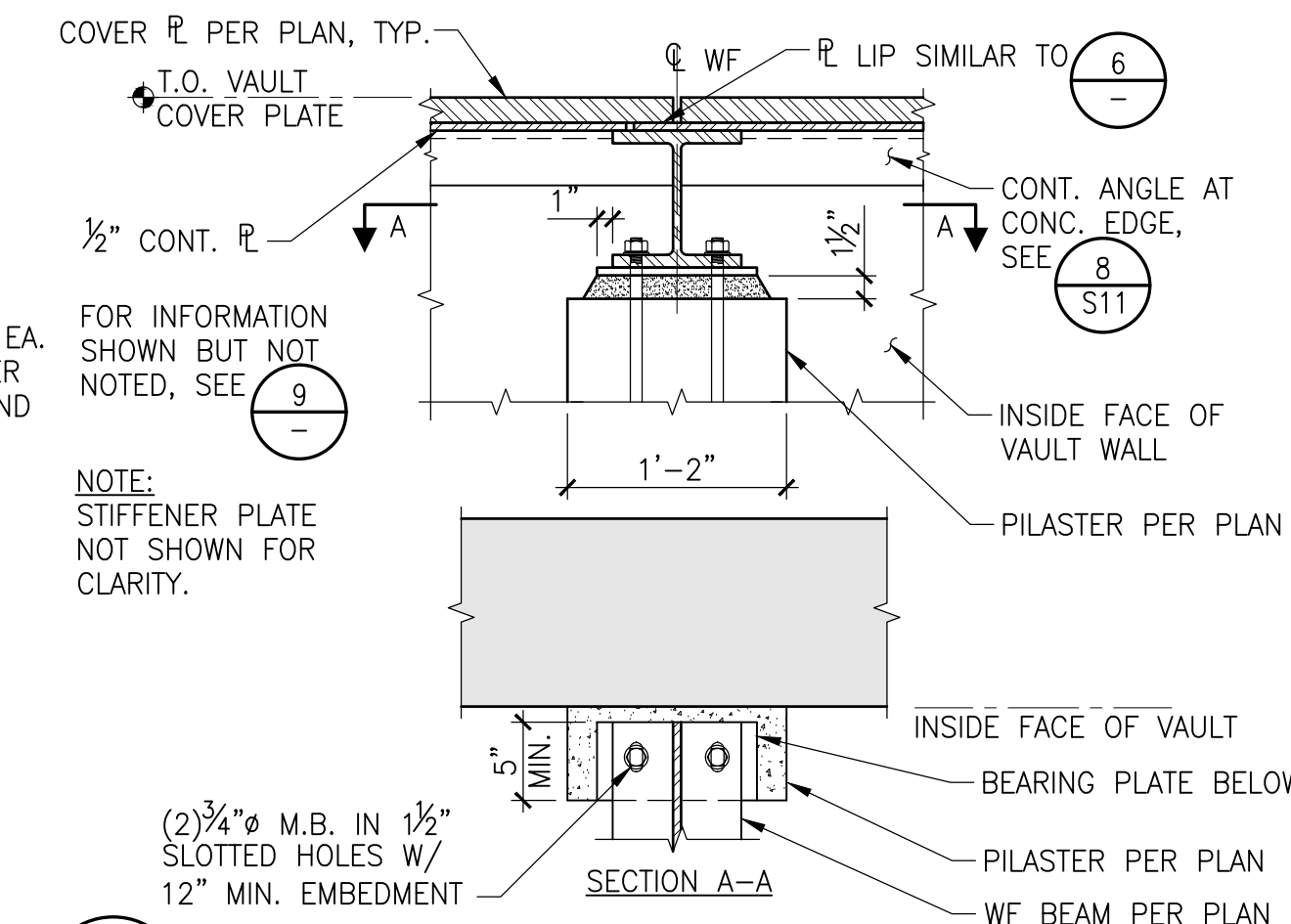
5 BEAM OVER TOP OF TUBE COLUMN N.T.S.



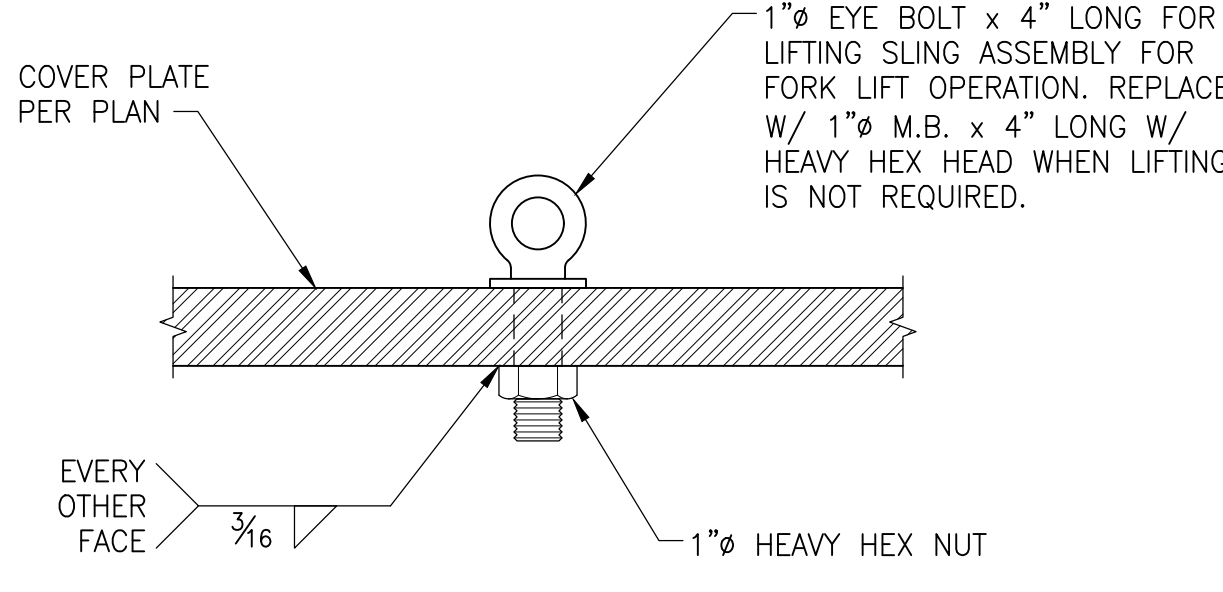
6 COVER PLATE TO COVER PLATE INTERFACE DETAIL SCALE: 3"=1'-0"



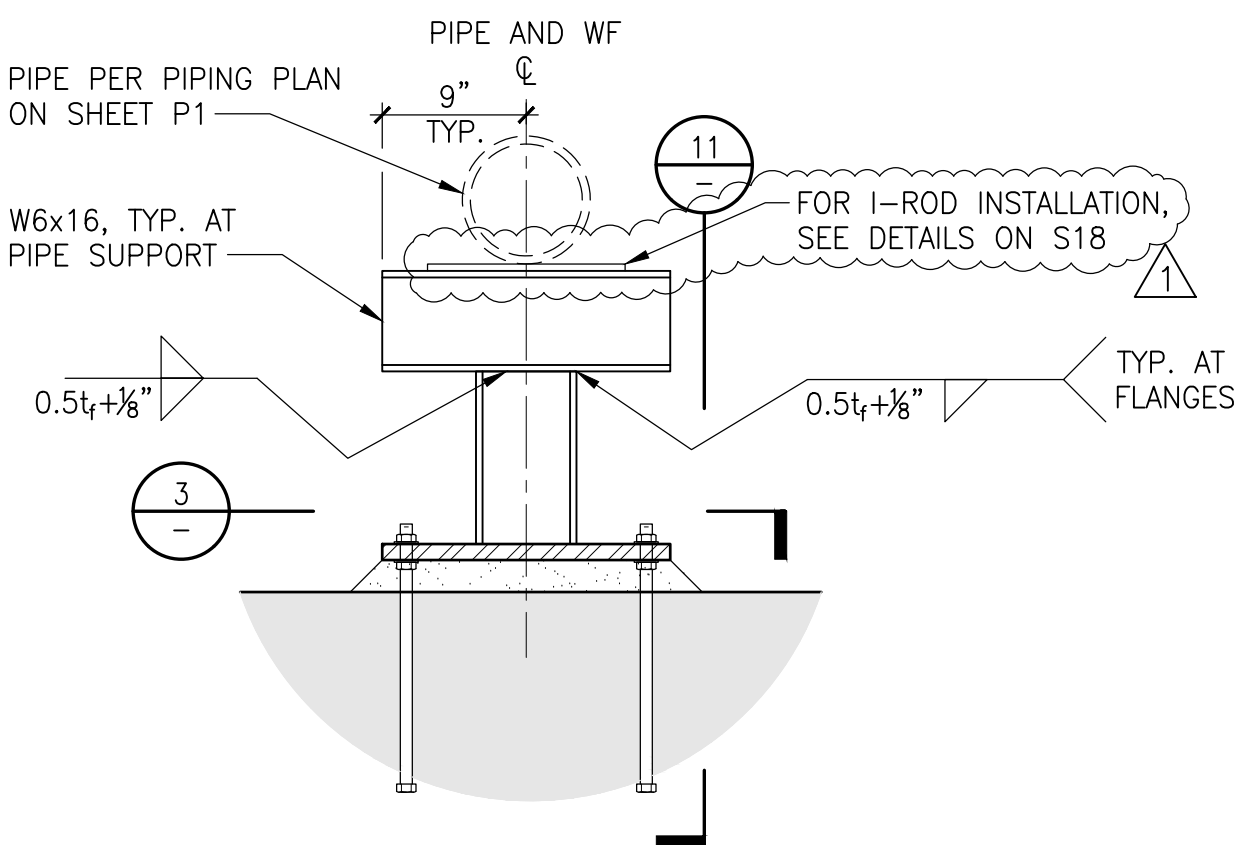
7 STIFFENER PLATE DETAIL SCALE: 1"=1'-0"



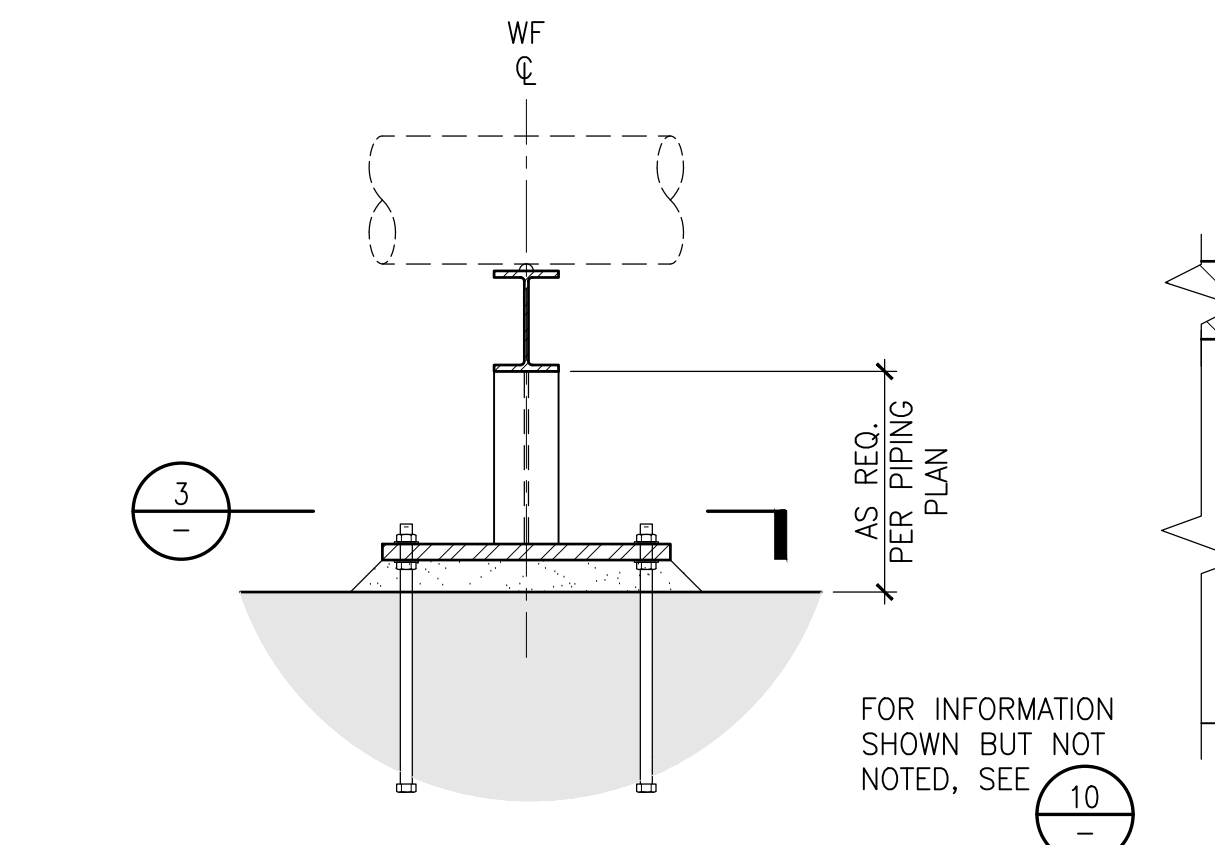
8 WF OVER PILASTER DETAIL SCALE: 1"=1'-0"



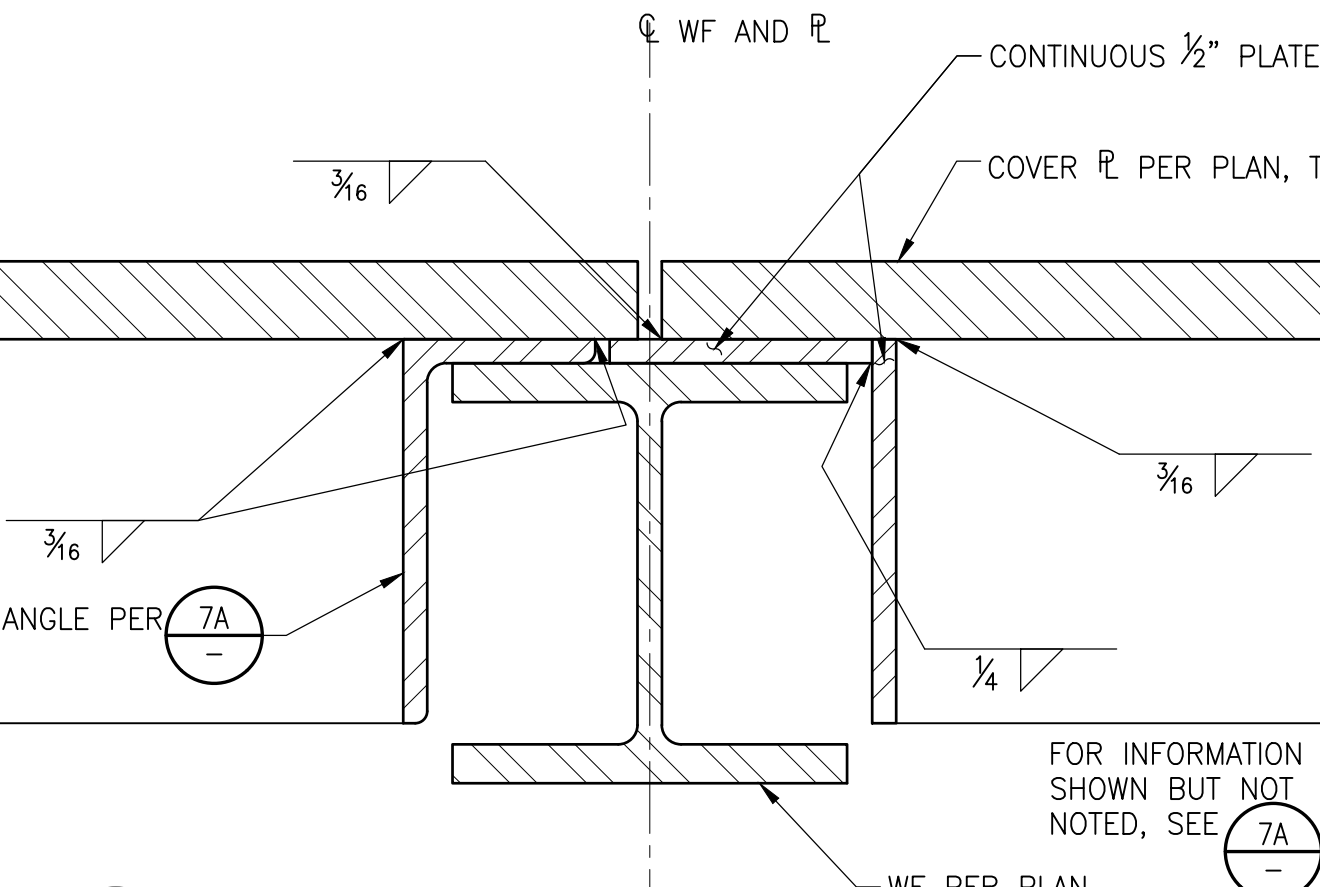
9 LIFTING LUG DETAIL SCALE: 3"=1'-0"



10 PIPE SUPPORT DETAIL SCALE: 1"=1'-0"



11 PIPE SUPPORT DETAIL SCALE: 1"=1'-0"



12 STIFFENER PLATE CONNECTION TO WF DETAIL SCALE: 3"=1'-0"

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

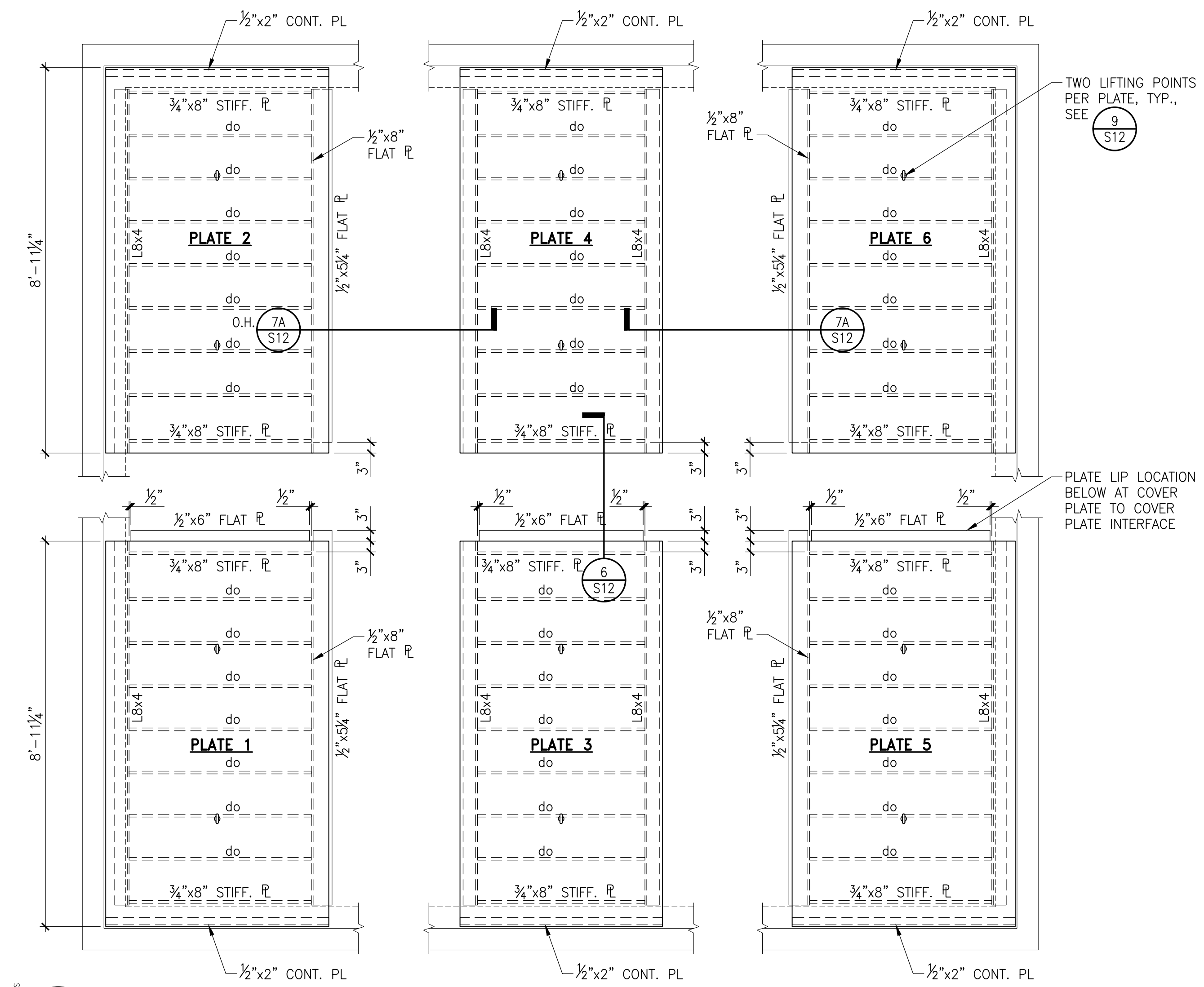
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△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

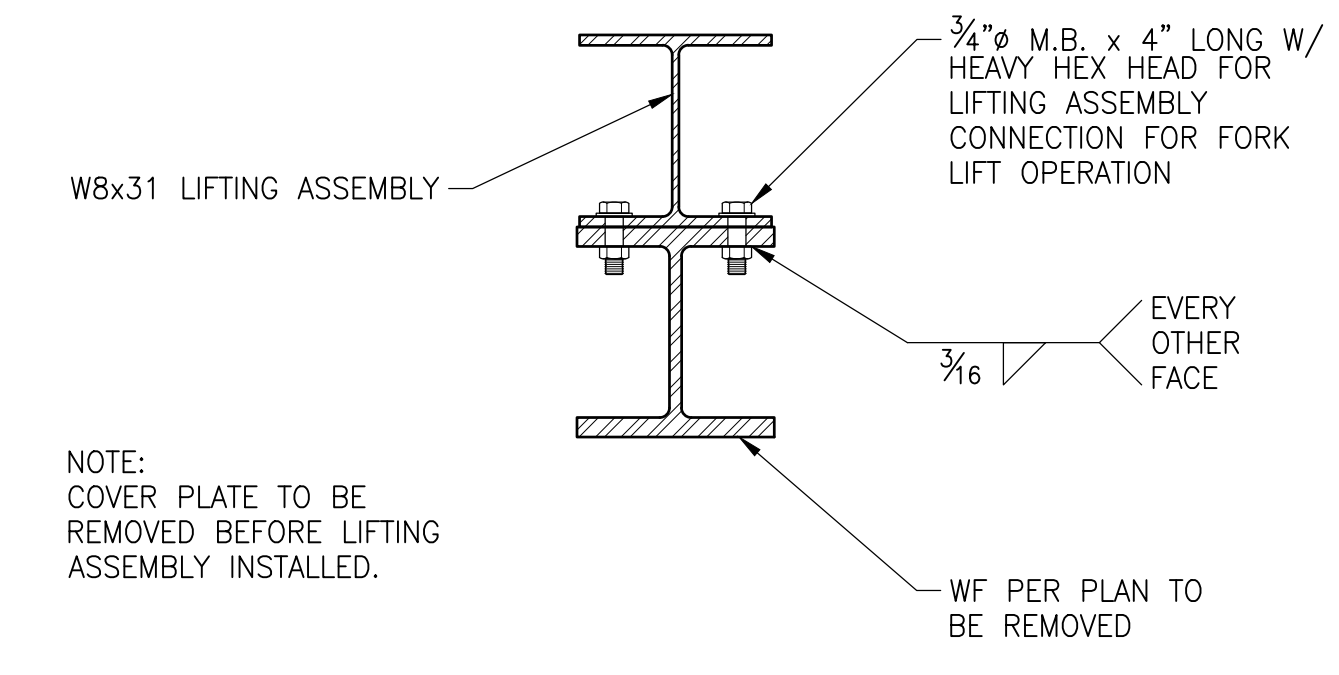
PORT OF STOCKTON BERTH 10 & 11 TYPICAL STEEL DETAILS	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S12	REV. _____

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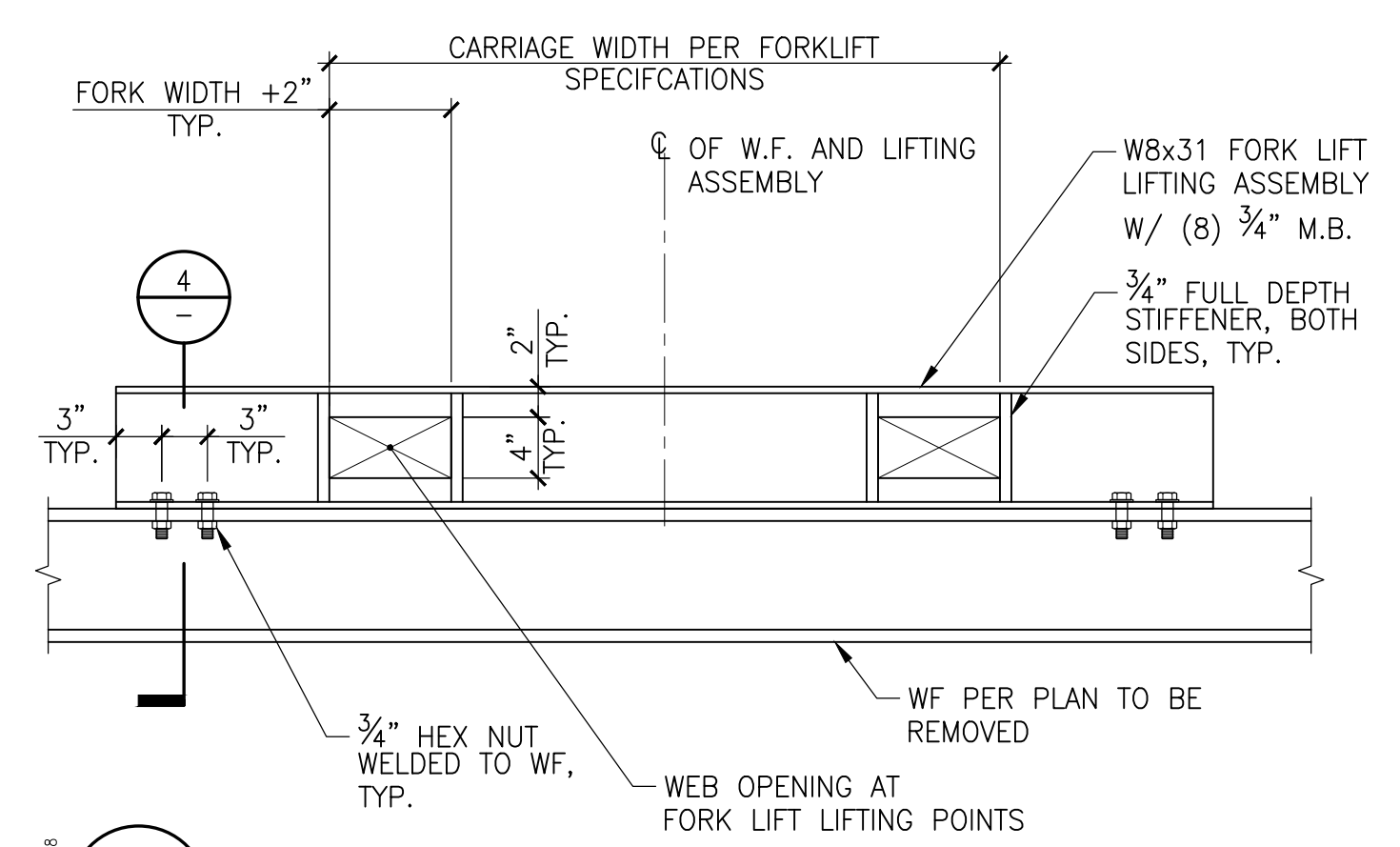
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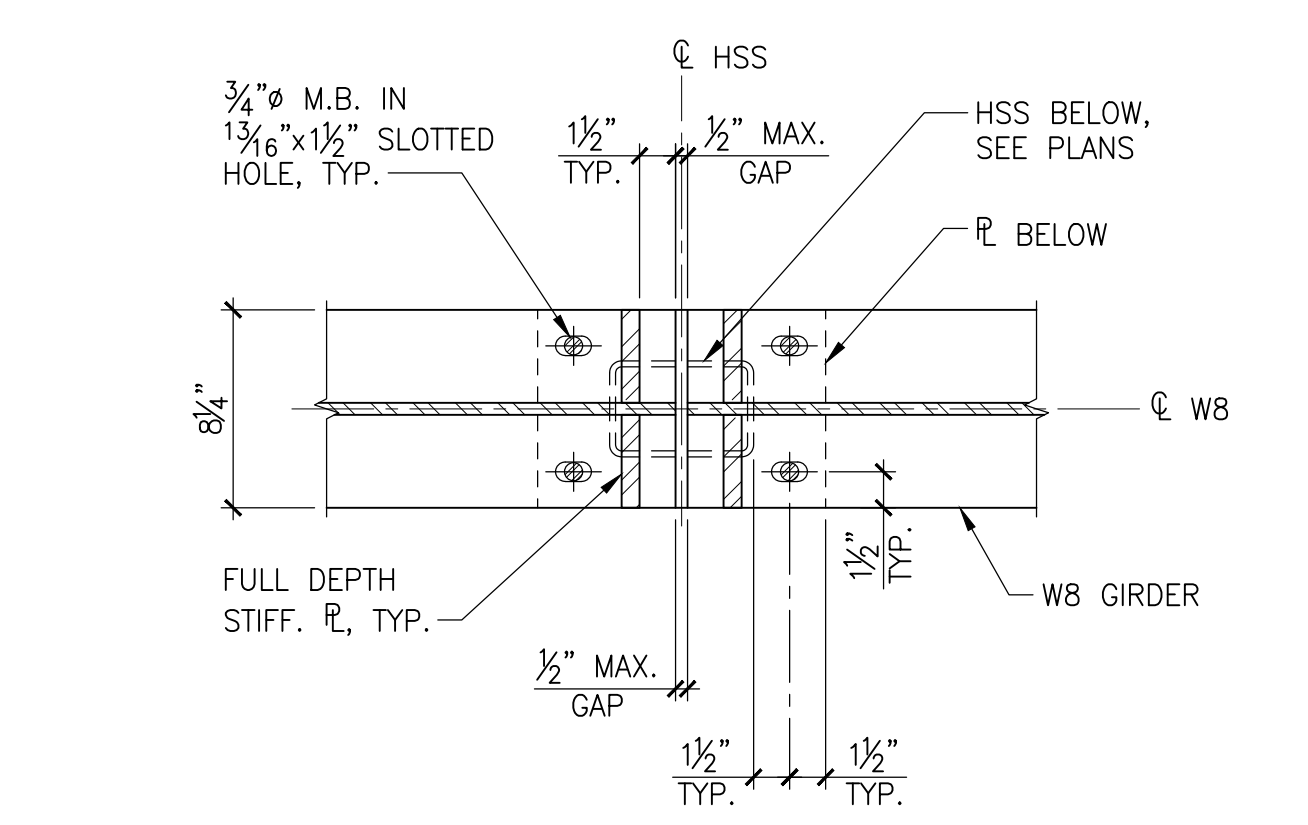
5 EXPLODED PLATE PLAN SCALE: 1/2"=1'-0"



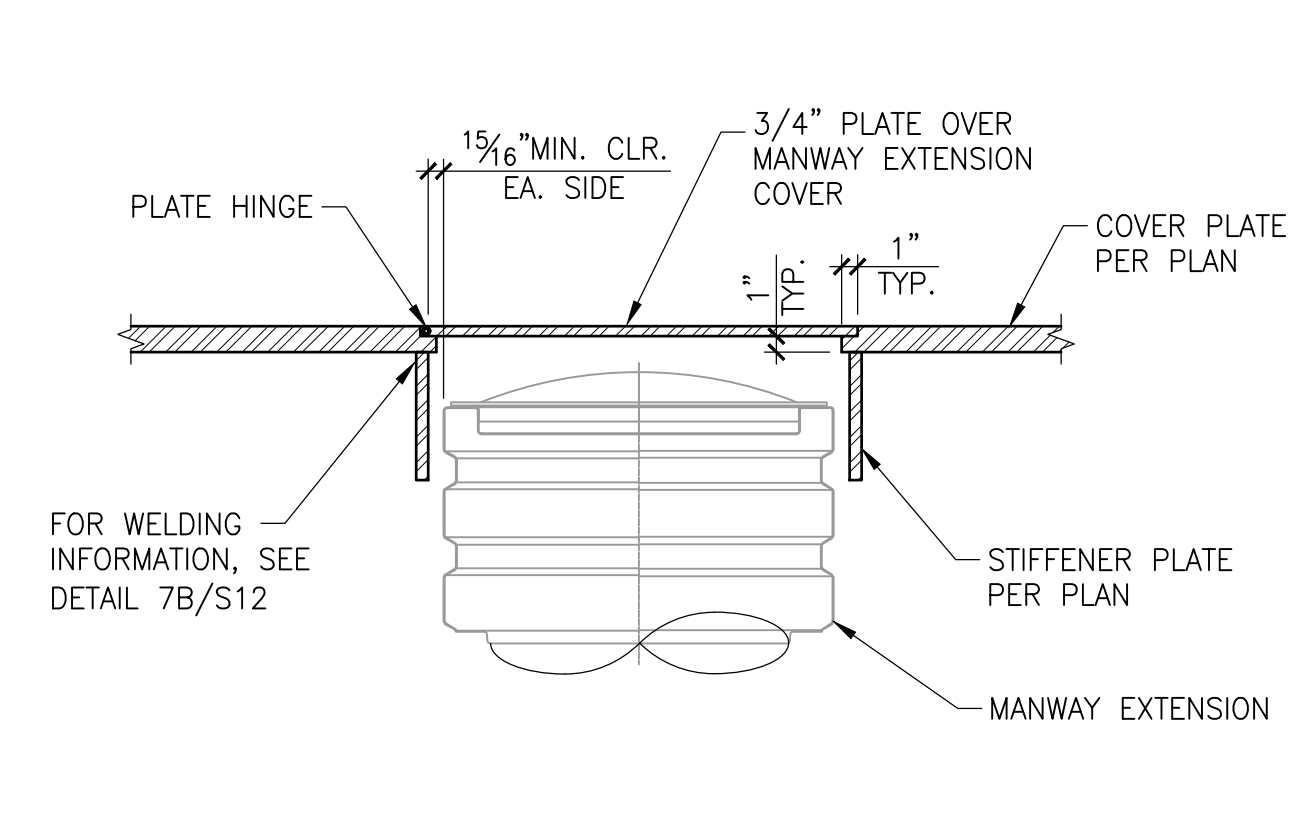
4 LIFTING ASSEMBLY SECTION SCALE: 1 1/2"=1'-0"



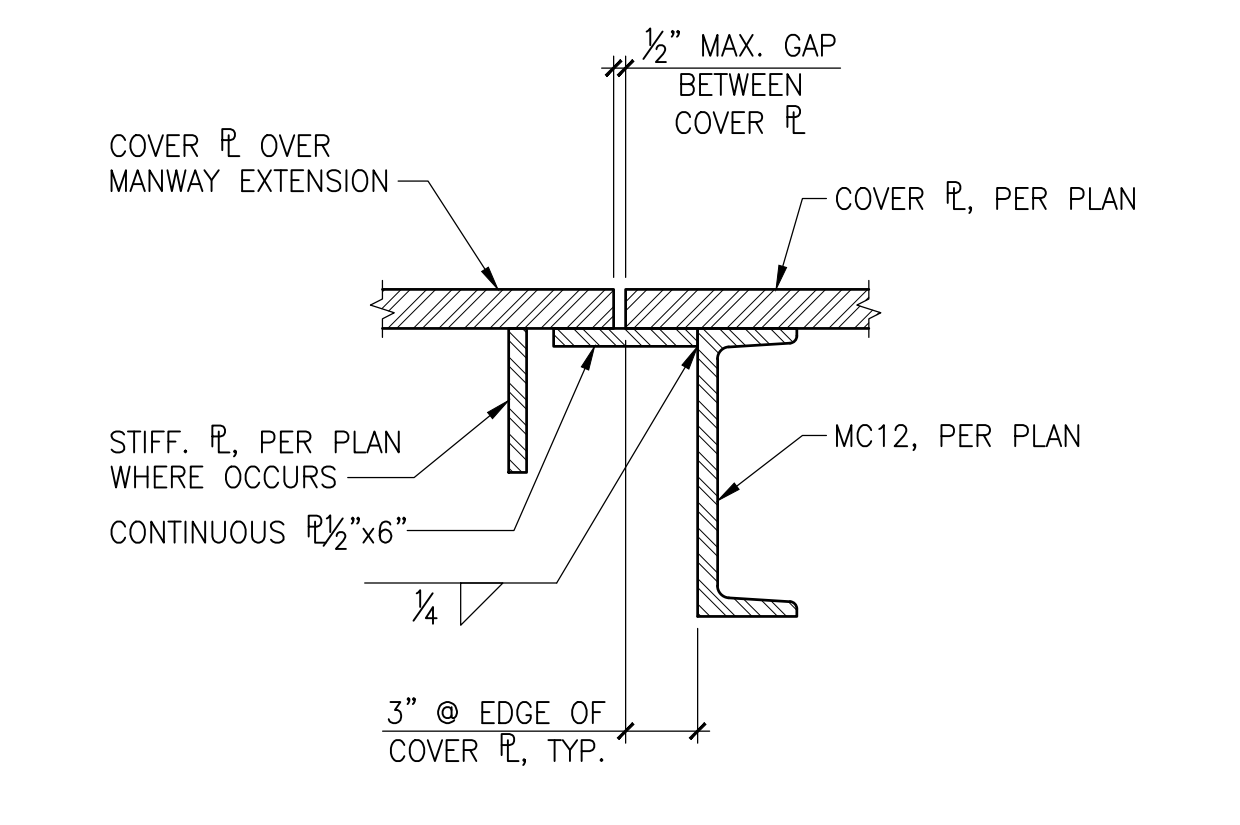
8 LIFTING ASSEMBLY ELEVATION SCALE: 1"=1'-0"



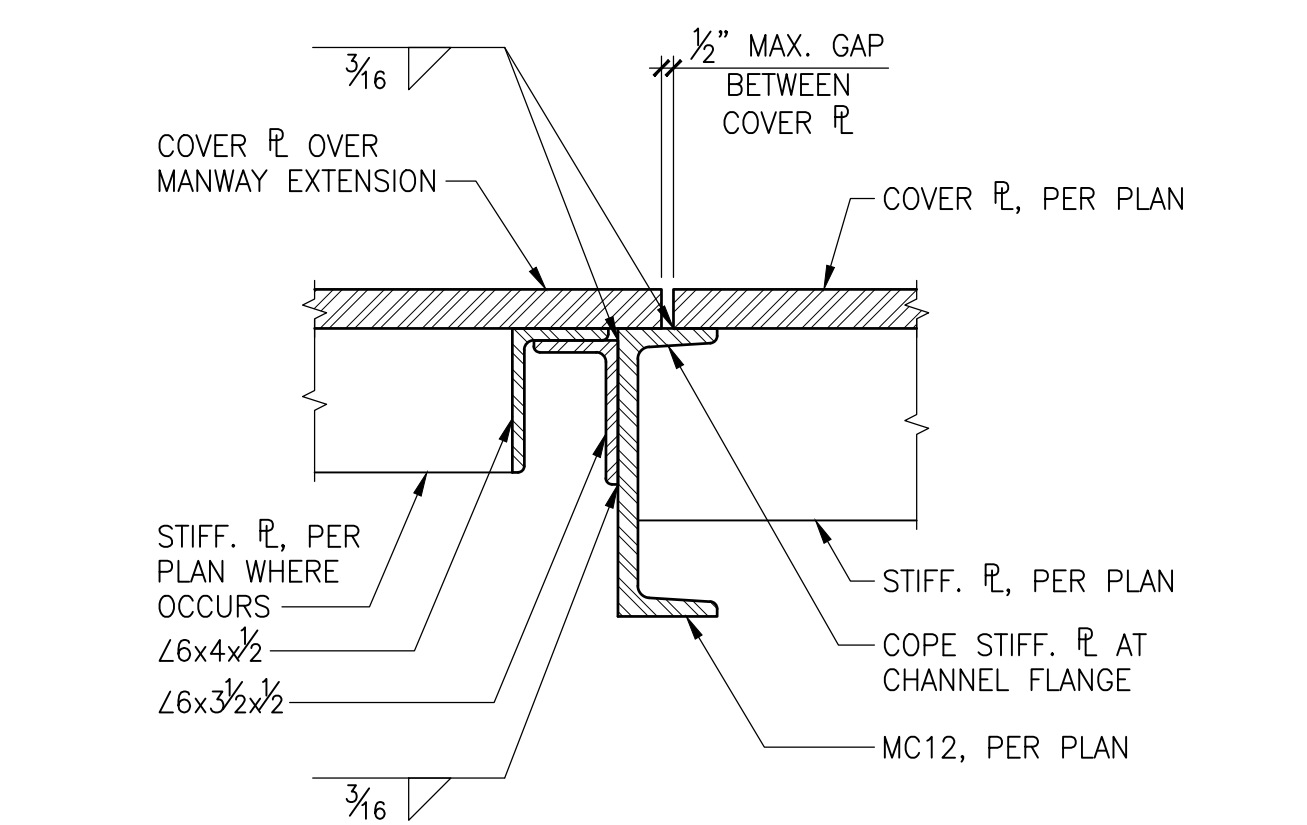
9 SECTION N.T.S.



10 OIL WATER SEPARATOR TANK MANHOLE DETAIL SCALE: 1"=1'-0"



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



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

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

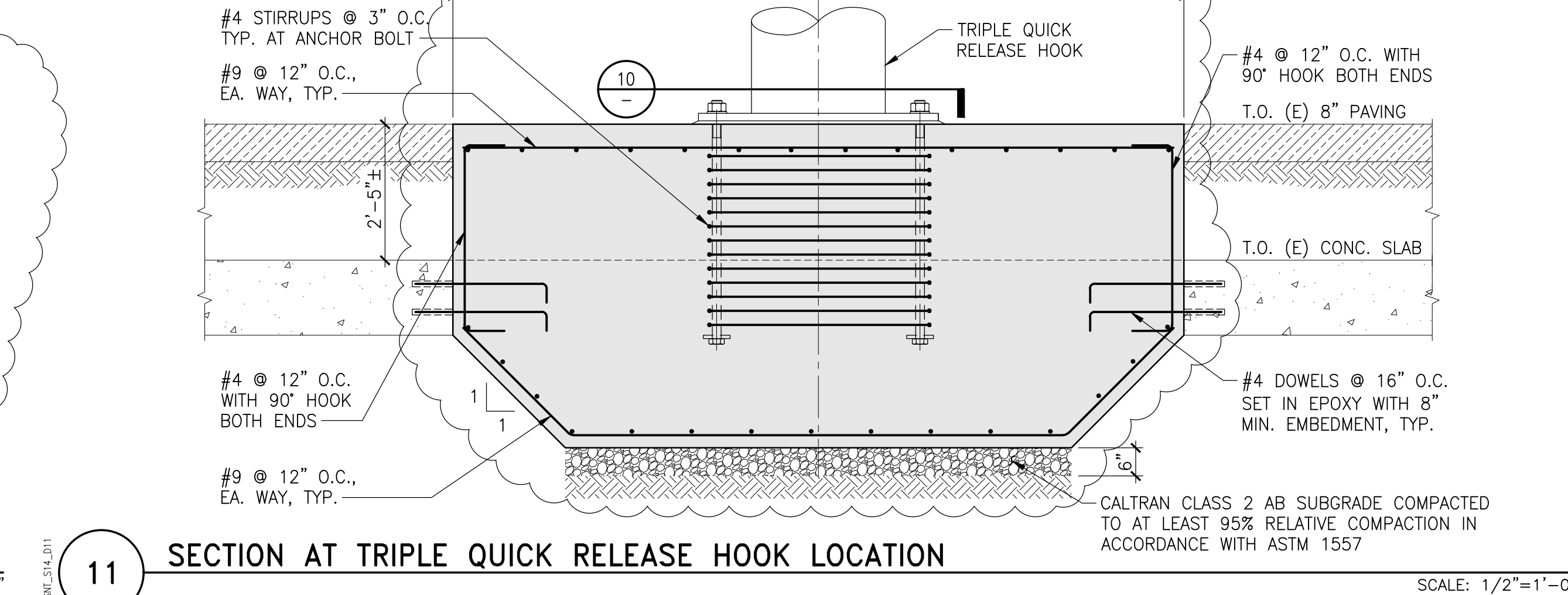
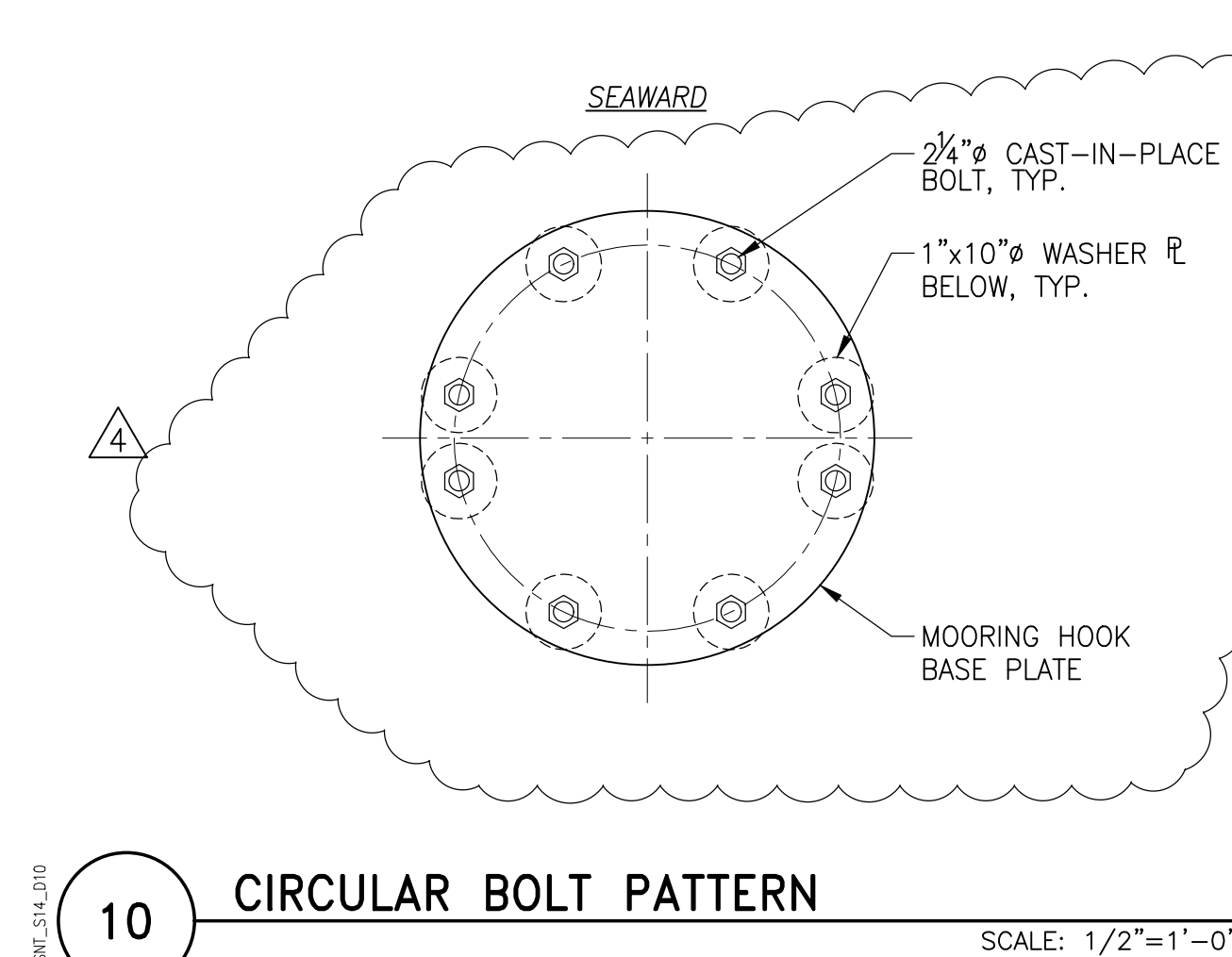
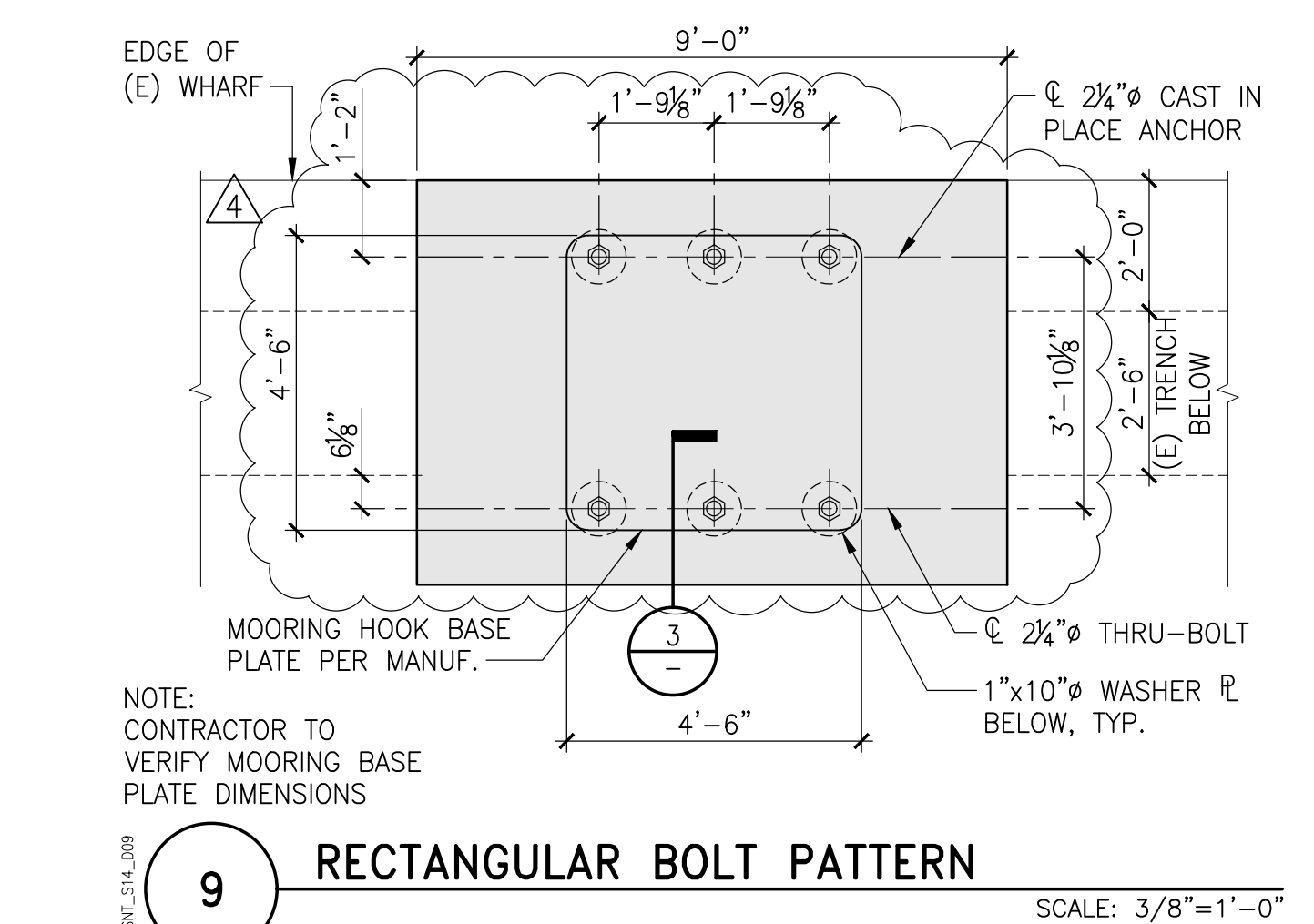
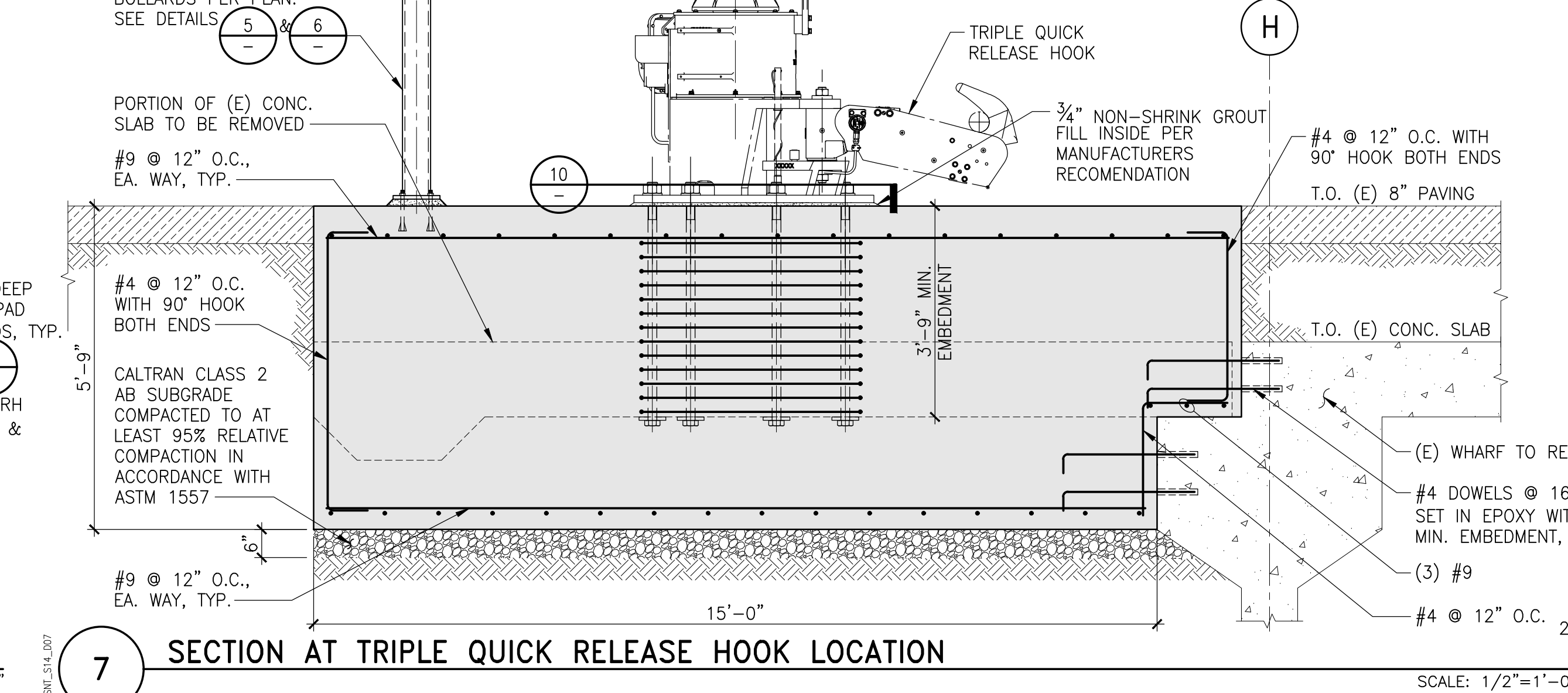
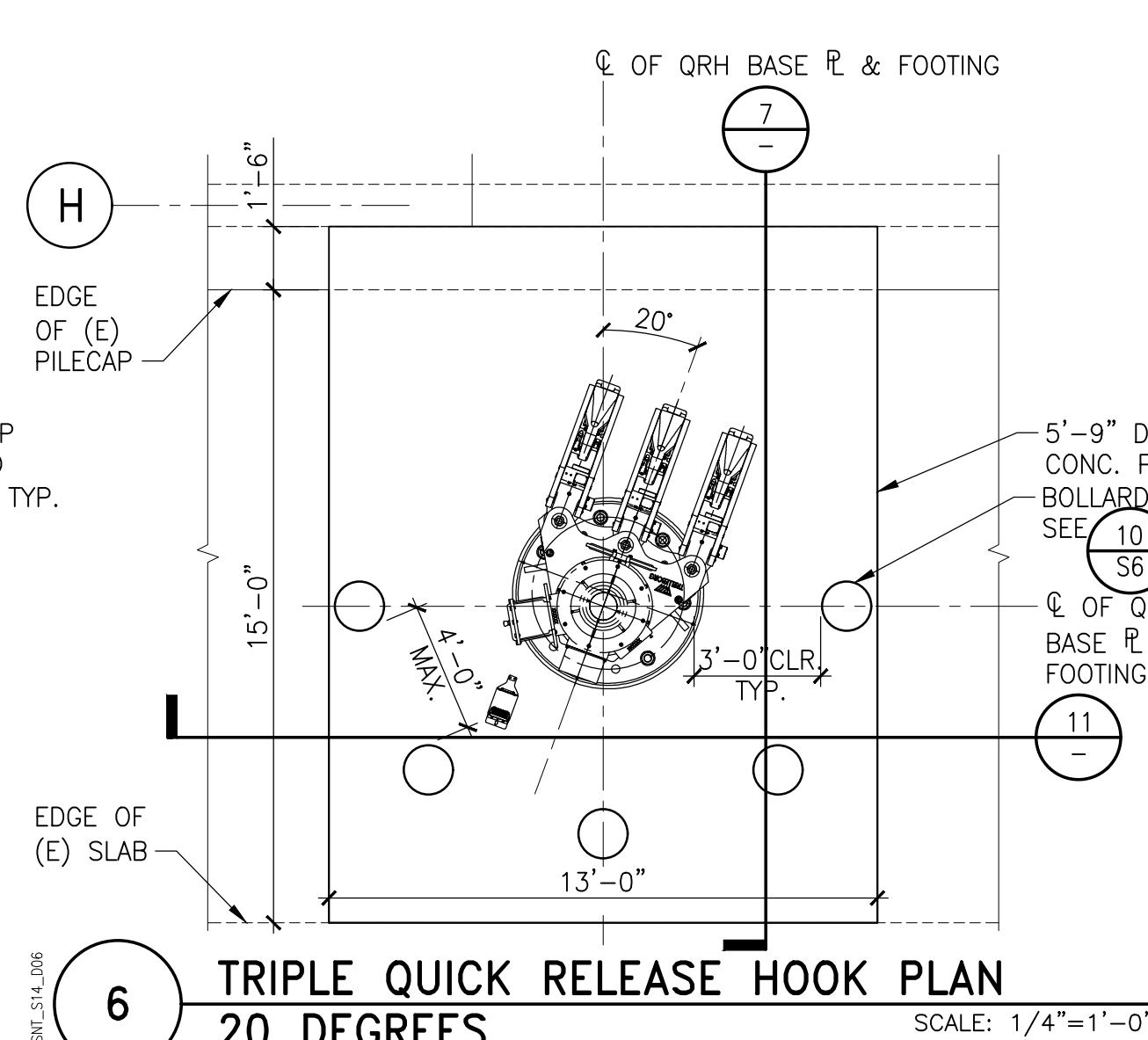
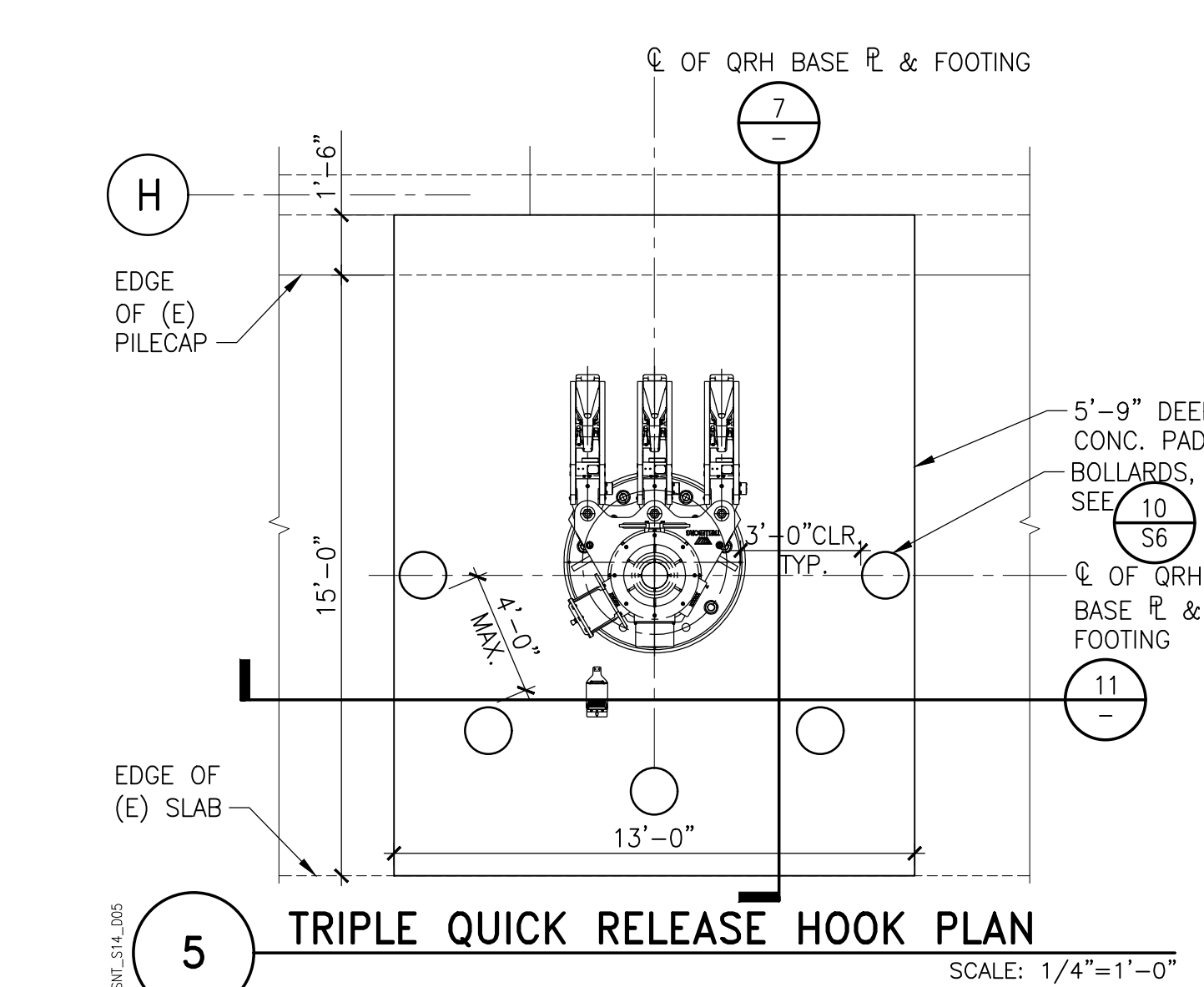
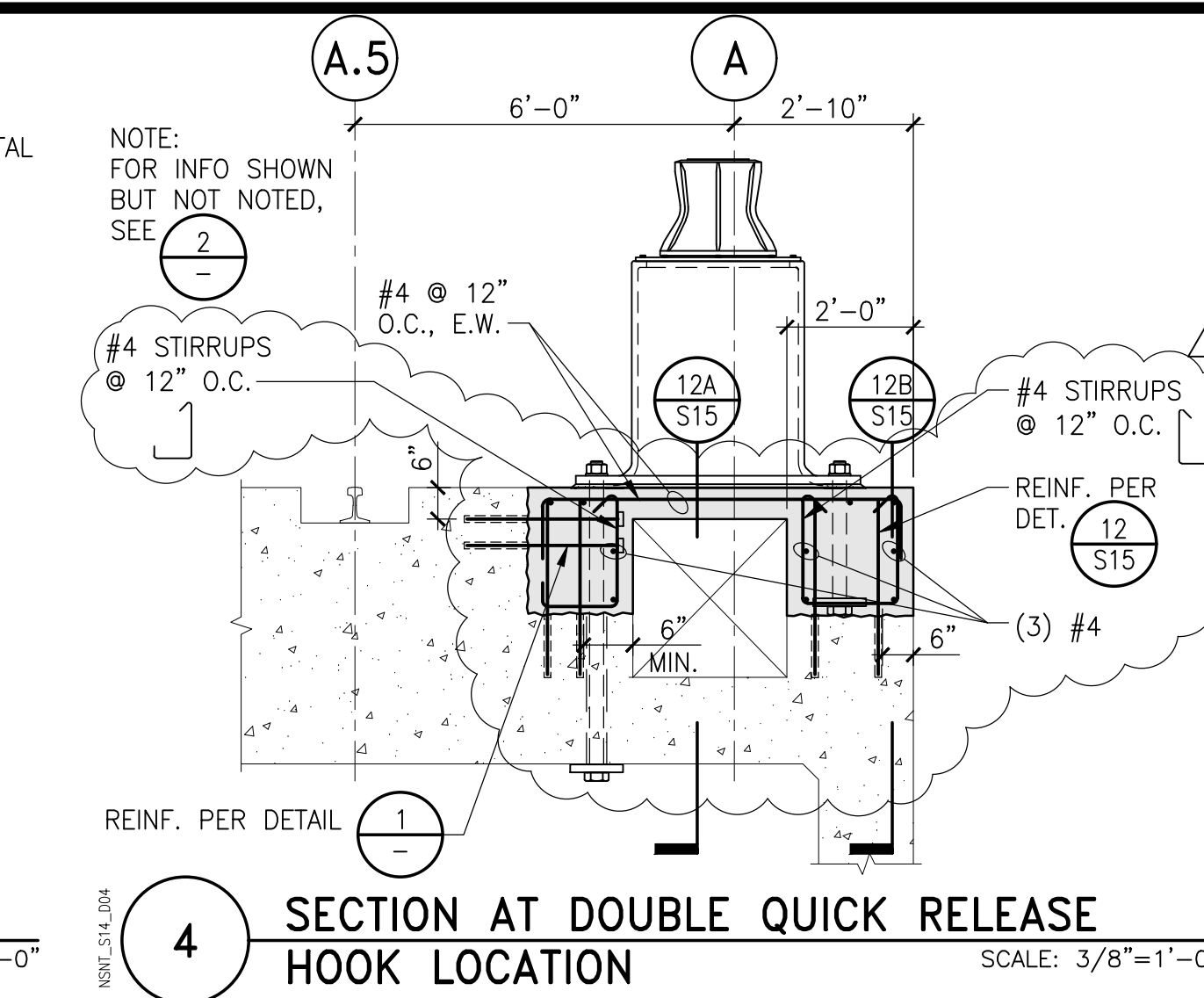
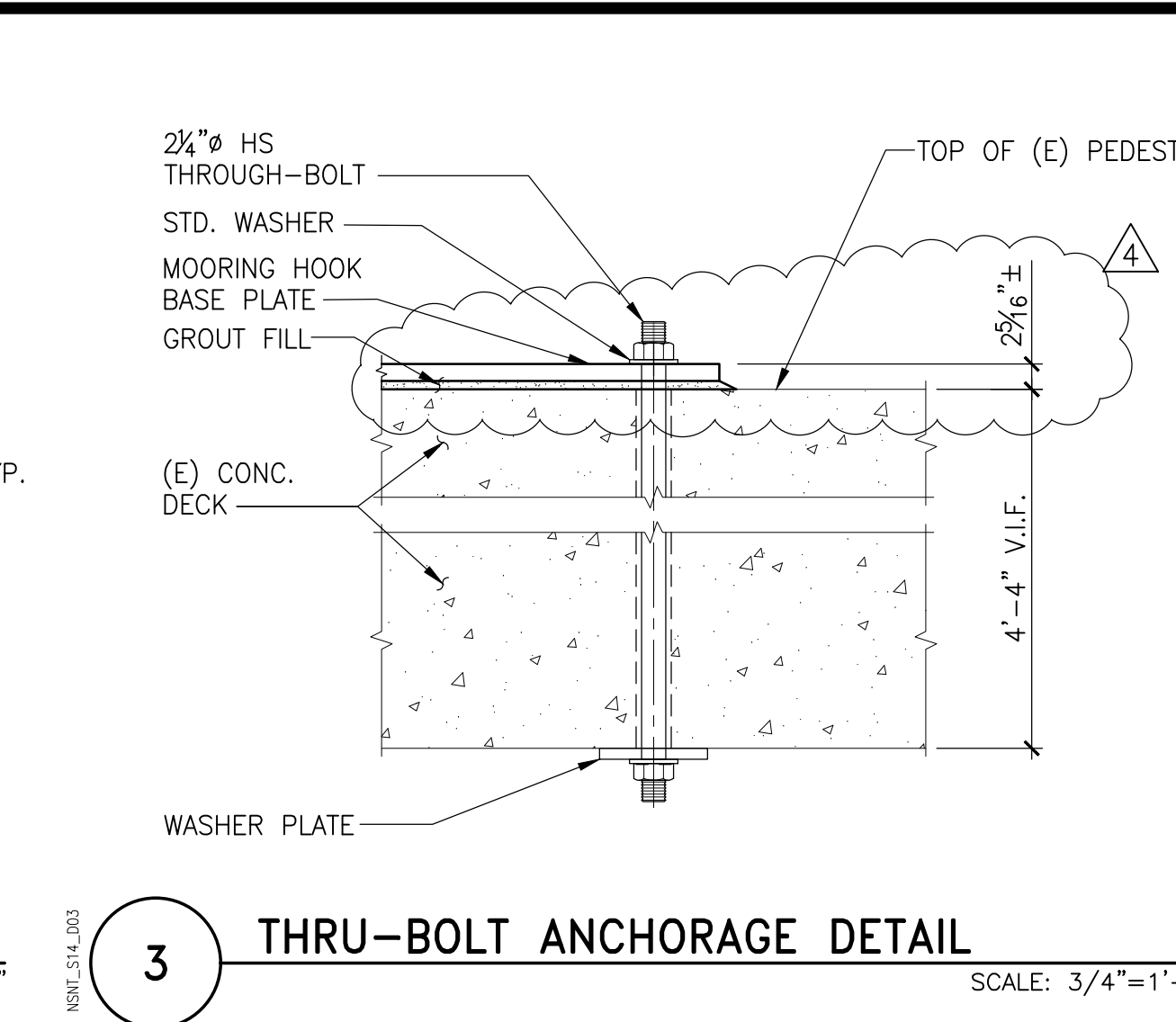
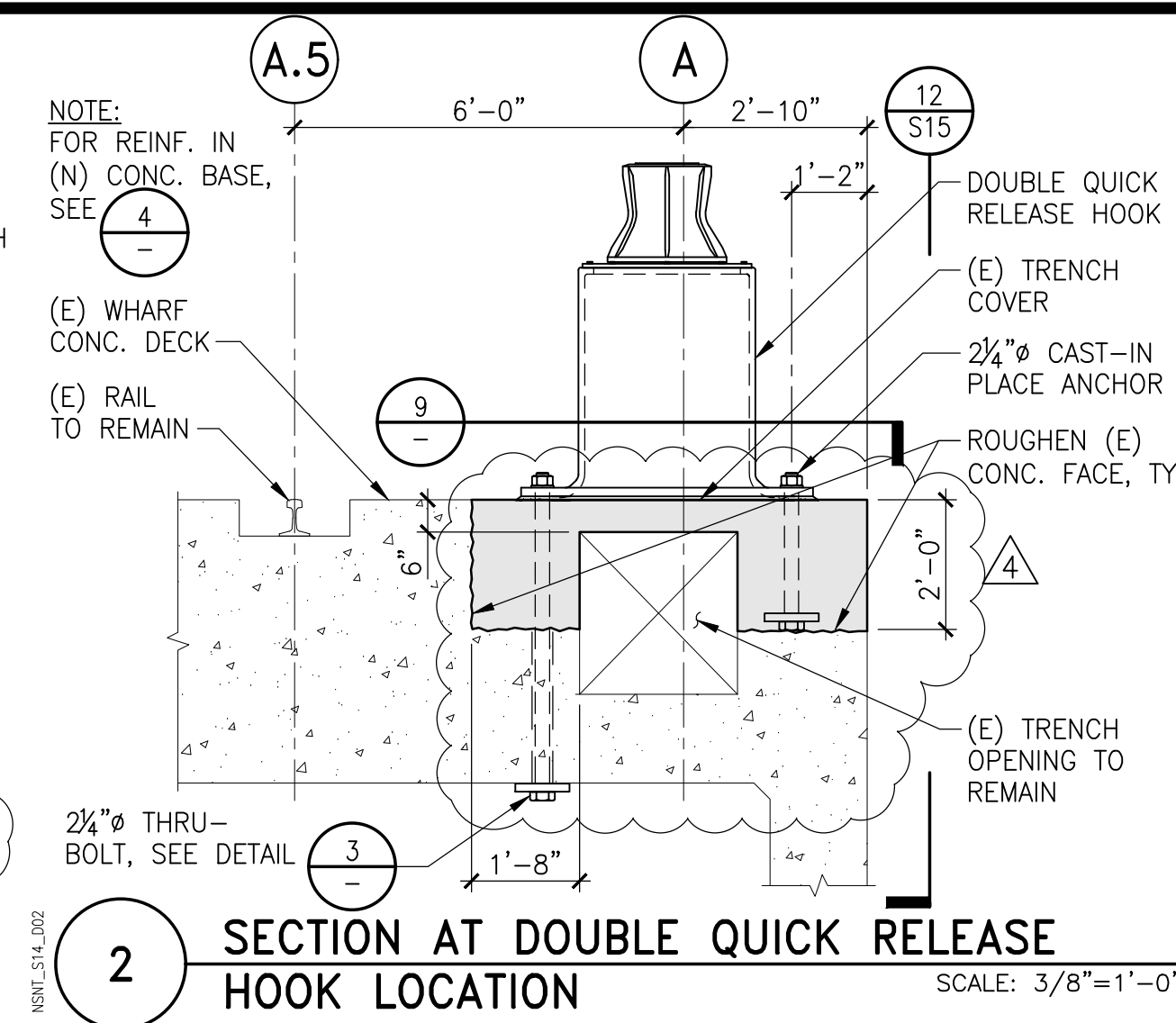
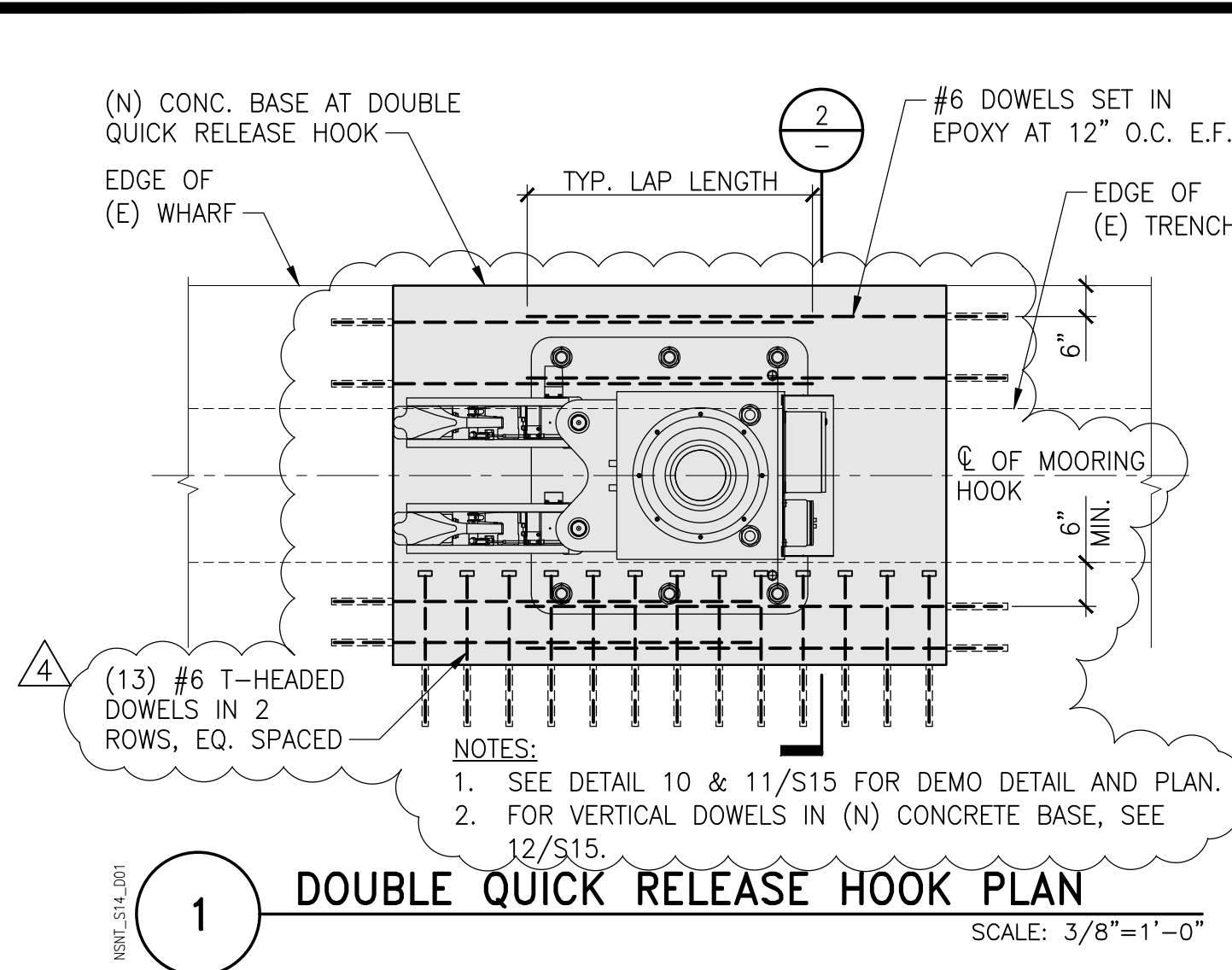
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
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APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11	
EXPLODED PLATE PLAN VIEW	
ORIGINAL PROJECT NO. -	
DRAWING NO. S13	REV. -

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NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

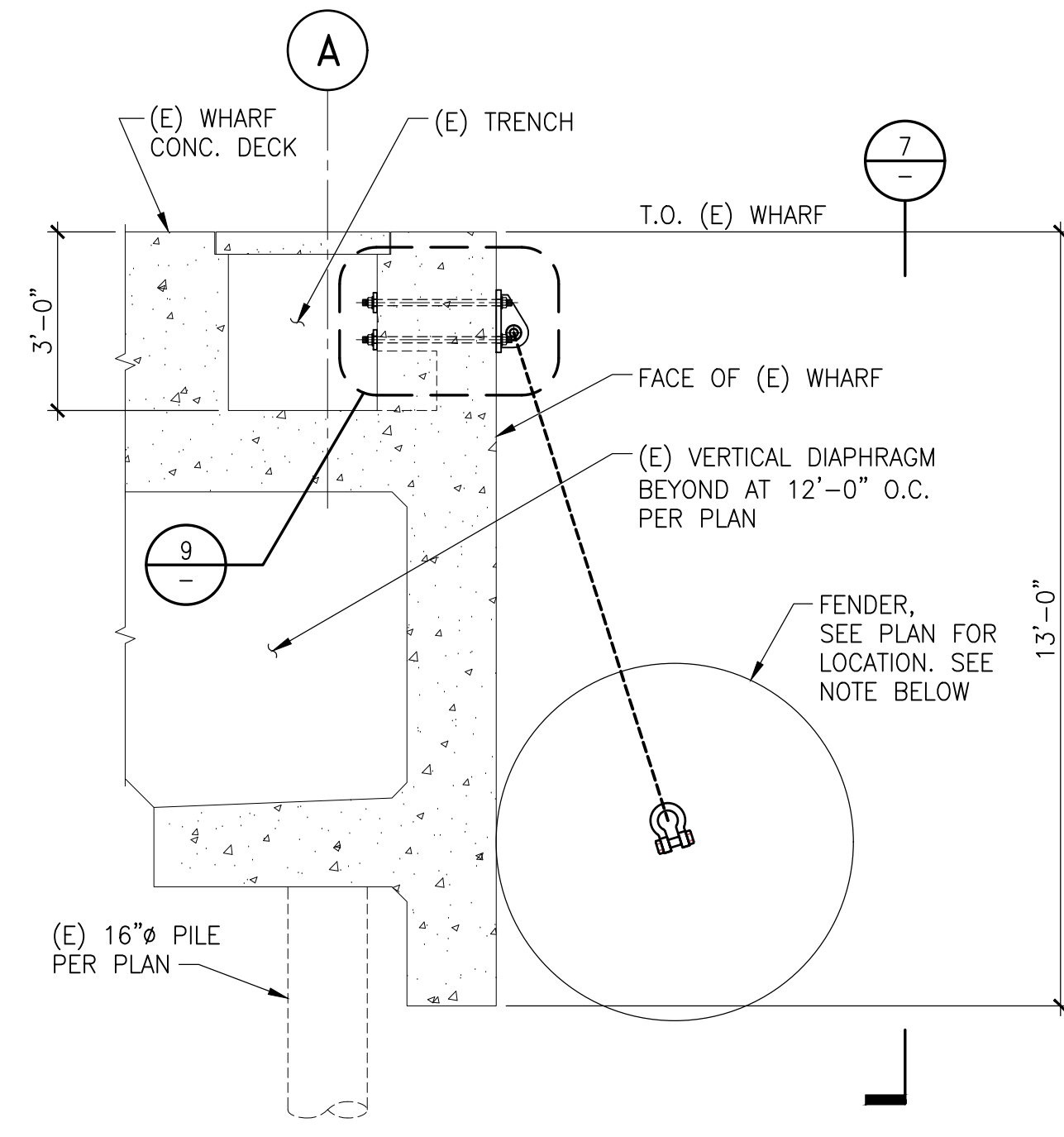
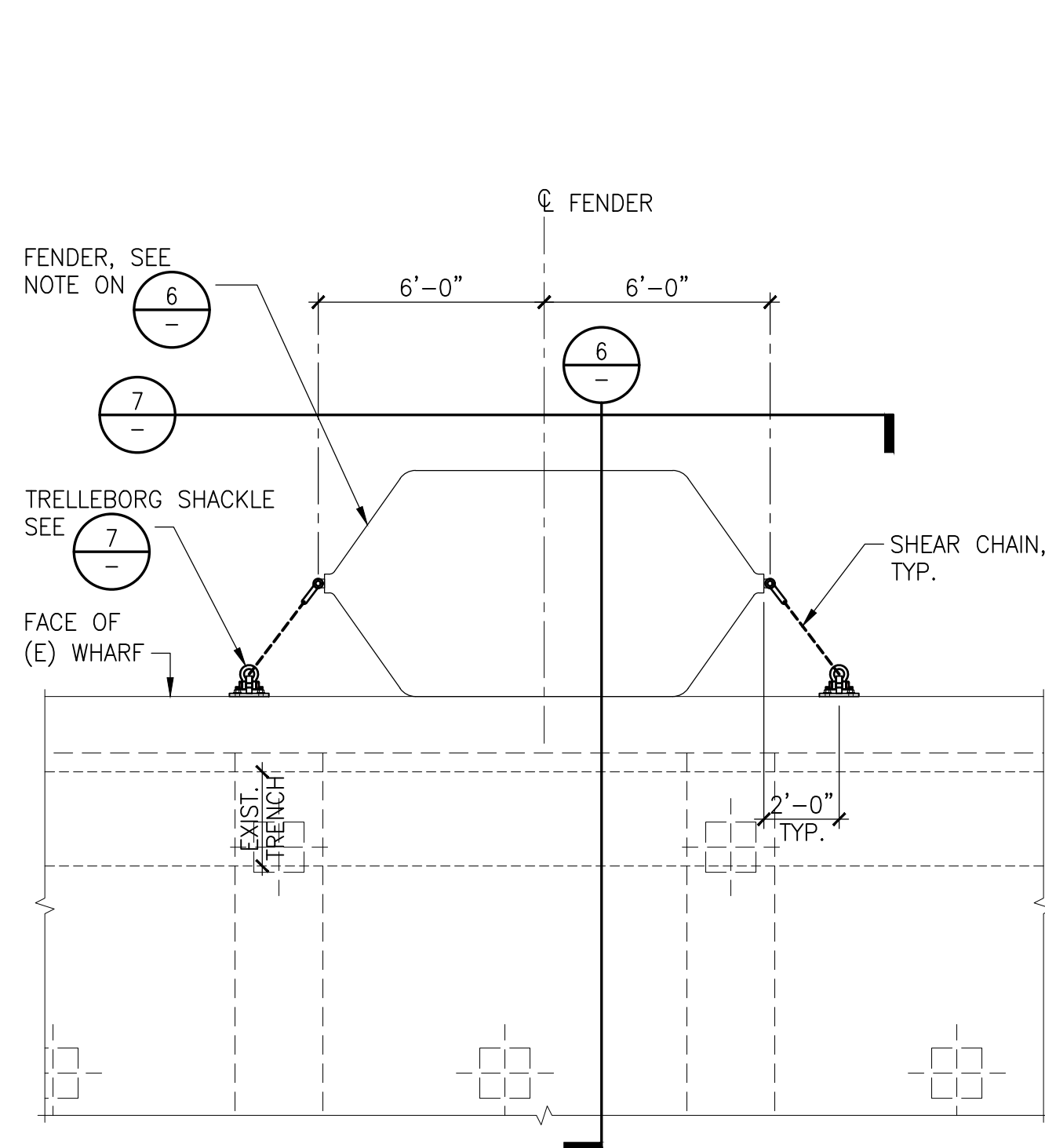
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:
DRAWN BY: GPN/JRT **DATE:** 12/24/2020
CHECKED: LHP **DATE:** 12/24/2020
APPROVED: WMB **DATE:** 12/24/2020
SCALE: AS NOTED

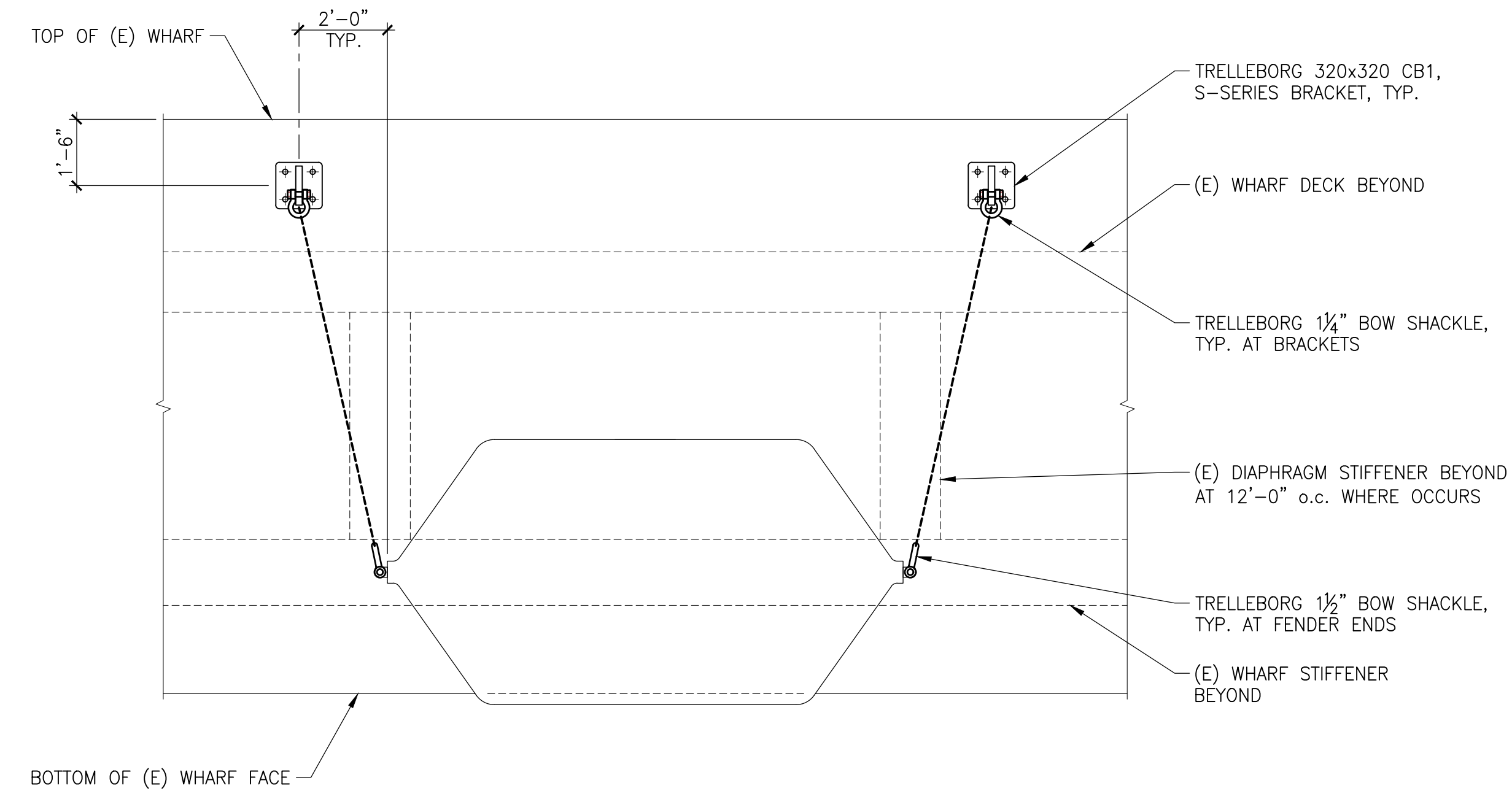
PORT OF STOCKTON BERTH 10 & 11 MOORING HOOK TYPICAL DETAILS
ORIGINAL PROJECT NO.: _____
DRAWING NO.: S14 **REV.:** _____

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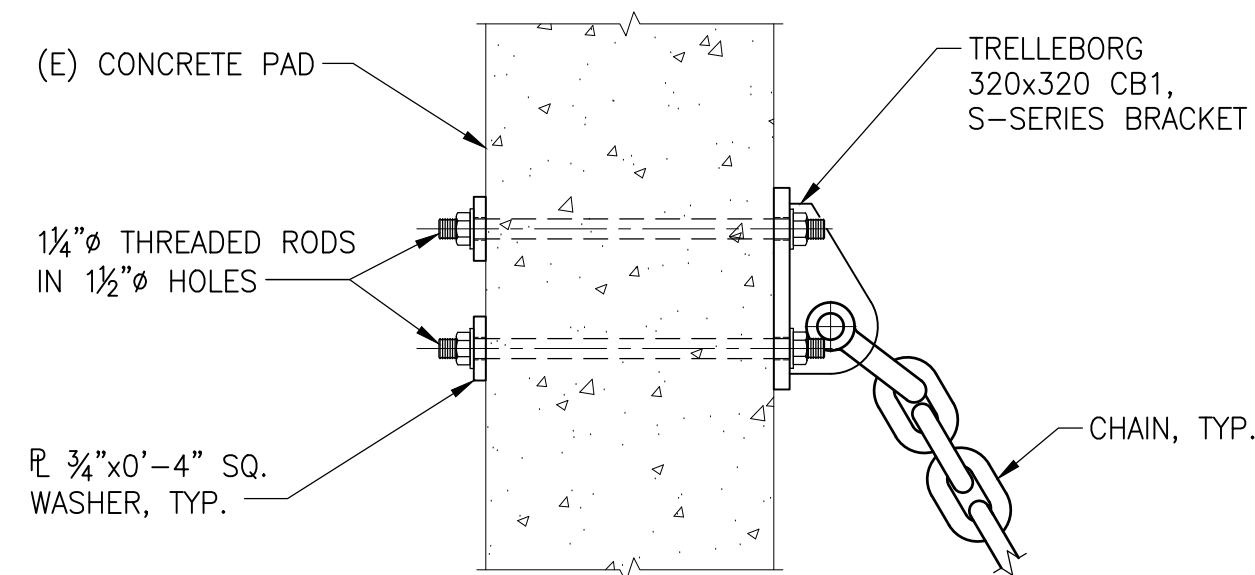
NOTE:
1. FENDERS TO BE 6FTx12FT TRELLEBORG STANDARD FOAM-FILLED FENDERS WITH A ENERGY ABSORPTION OF 300 KIP-FT OR APPROVED EQUAL.



5 PLAN AT FENDER LOCATION SCALE: 1/4"=1'-0"

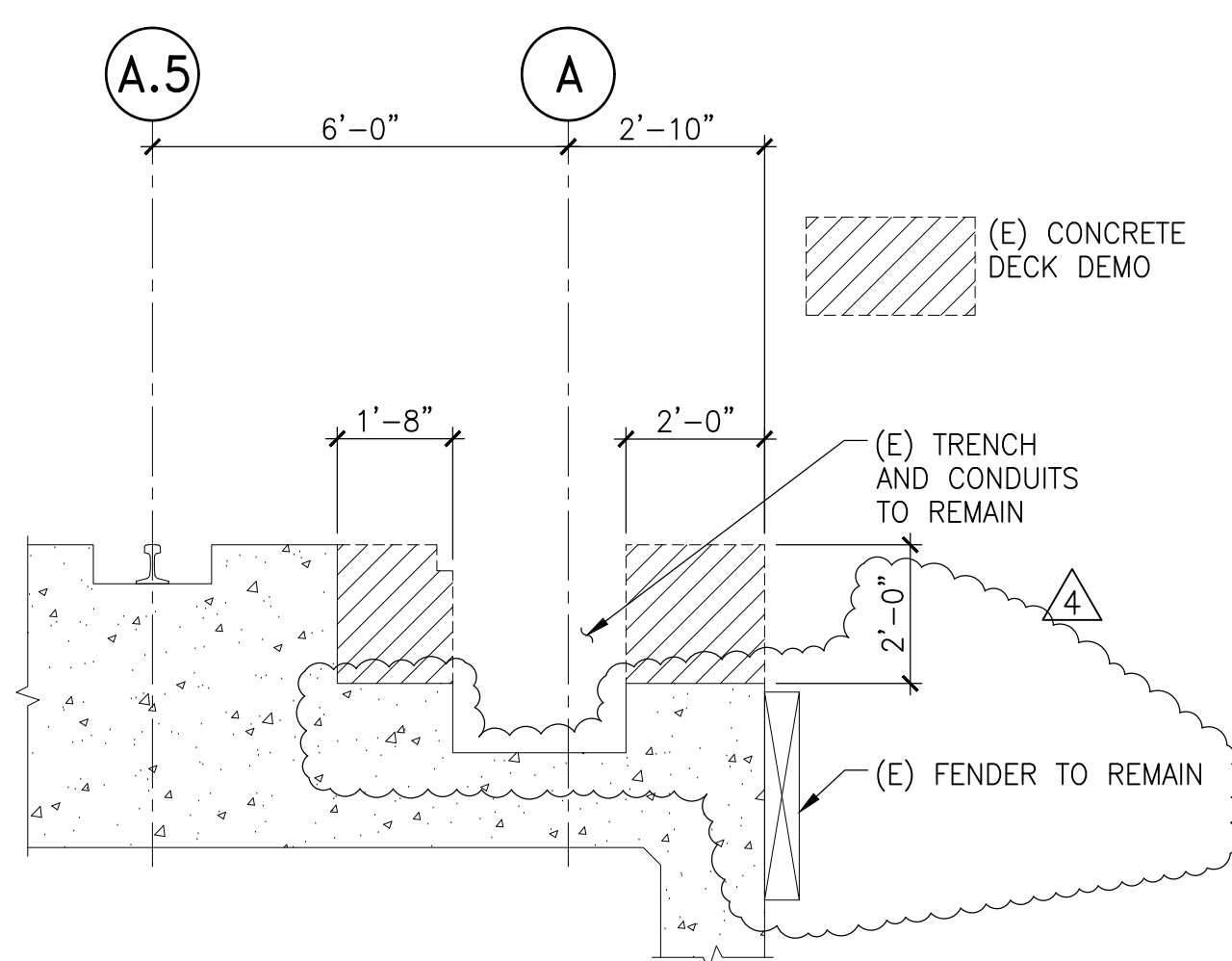
6 SECTION AT NEW FENDER SYSTEM SCALE: 3/8"=1'-0"

7 ELEVATION AT NEW FENDER SYSTEM SCALE: 3/8"=1'-0"

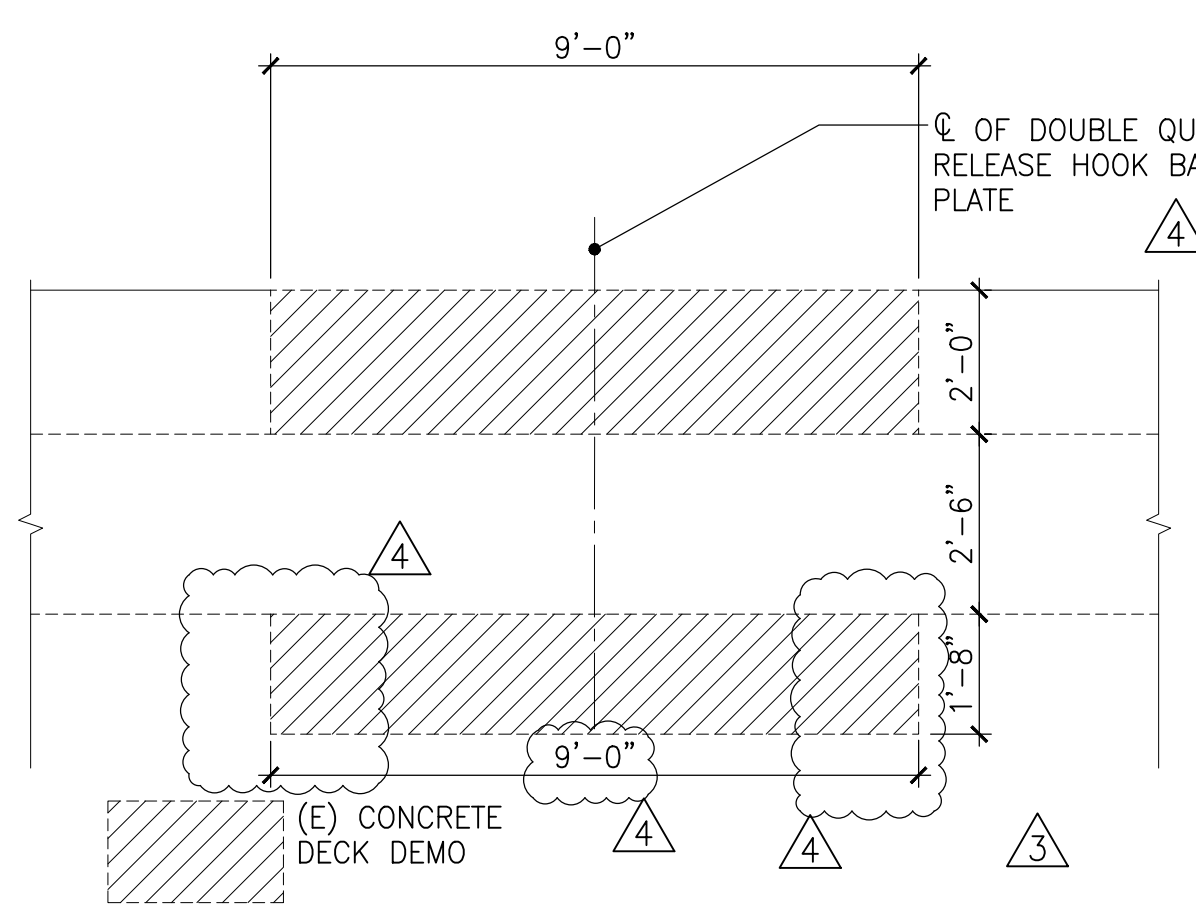


NOTE:
1. VOID SPACE IN HOLES TO BE FILLED WITH SIKA SIKACRETE 211. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. MARK THE LOCATION OF ALL EXISTING REINFORCING MATERIAL WITHIN 12" OF THE PROPOSED LOCATIONS OF THE THROUGH-BOLTS. NOTIFY MUSTAR OF ANY CONFLICTS DISCOVERED BETWEEN THE PROPOSED THROUGH-BOLT LOCATIONS AND THE EXISTING REINFORCING BEFORE AN HOLE DRILLING, SO AS TO AVOID DISTURBING, CUTTING, OR OTHERWISE HARMING THE EXISTING REINFORCING.

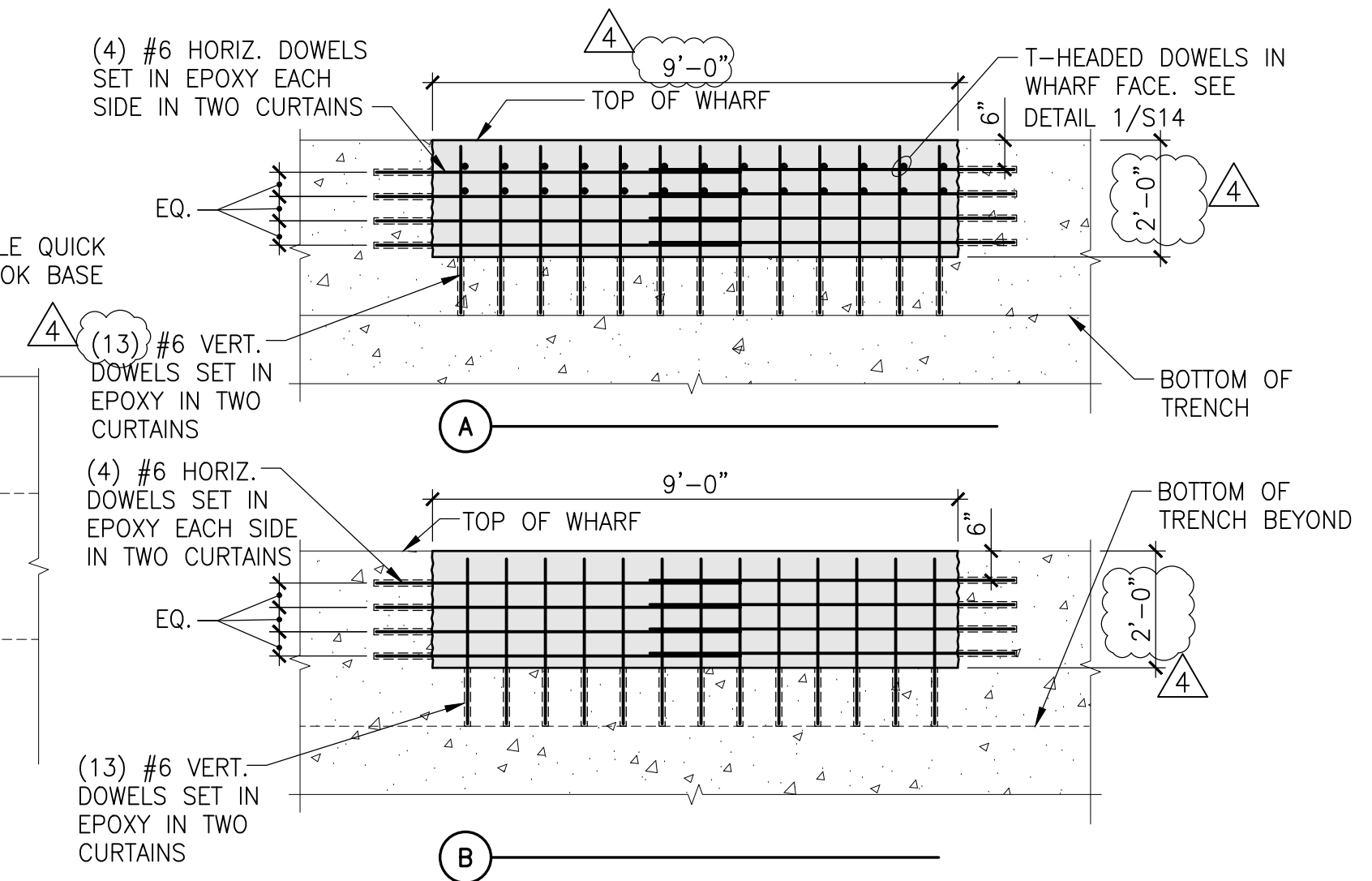
9 BRACKET CONNECTION DETAIL SCALE: 1"=1'-0"



10 DEMO AT DOUBLE QUICK RELEASE HOOK SCALE: 3/8"=1'-0"



11 DEMO AT DOUBLE QUICK RELEASE HOOK PLAN SCALE: 3/8"=1'-0"



12 BASE REINFORCEMENT AT DOUBLE QUICK RELEASE SCALE: 3/8"=1'-0"

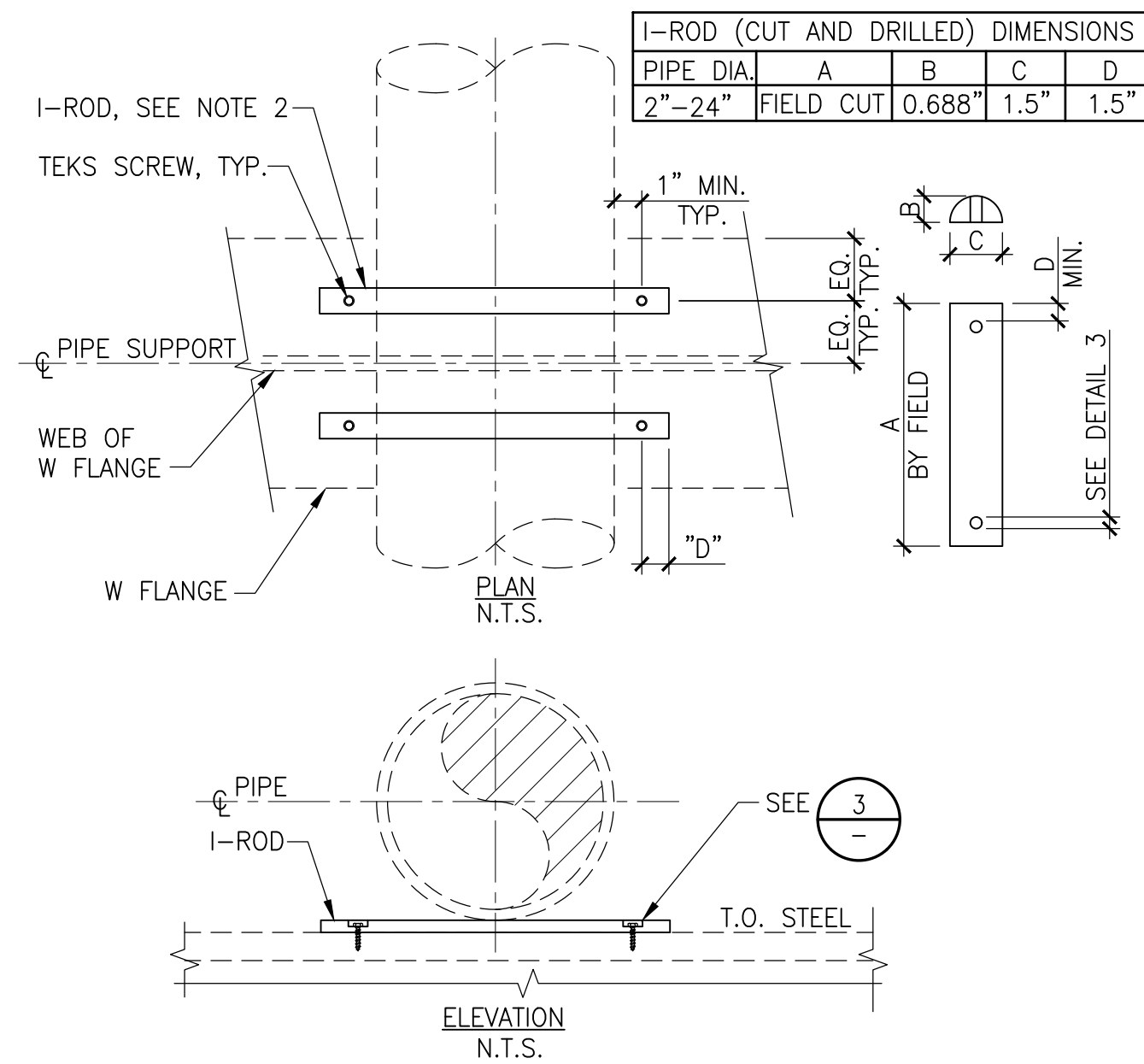
NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

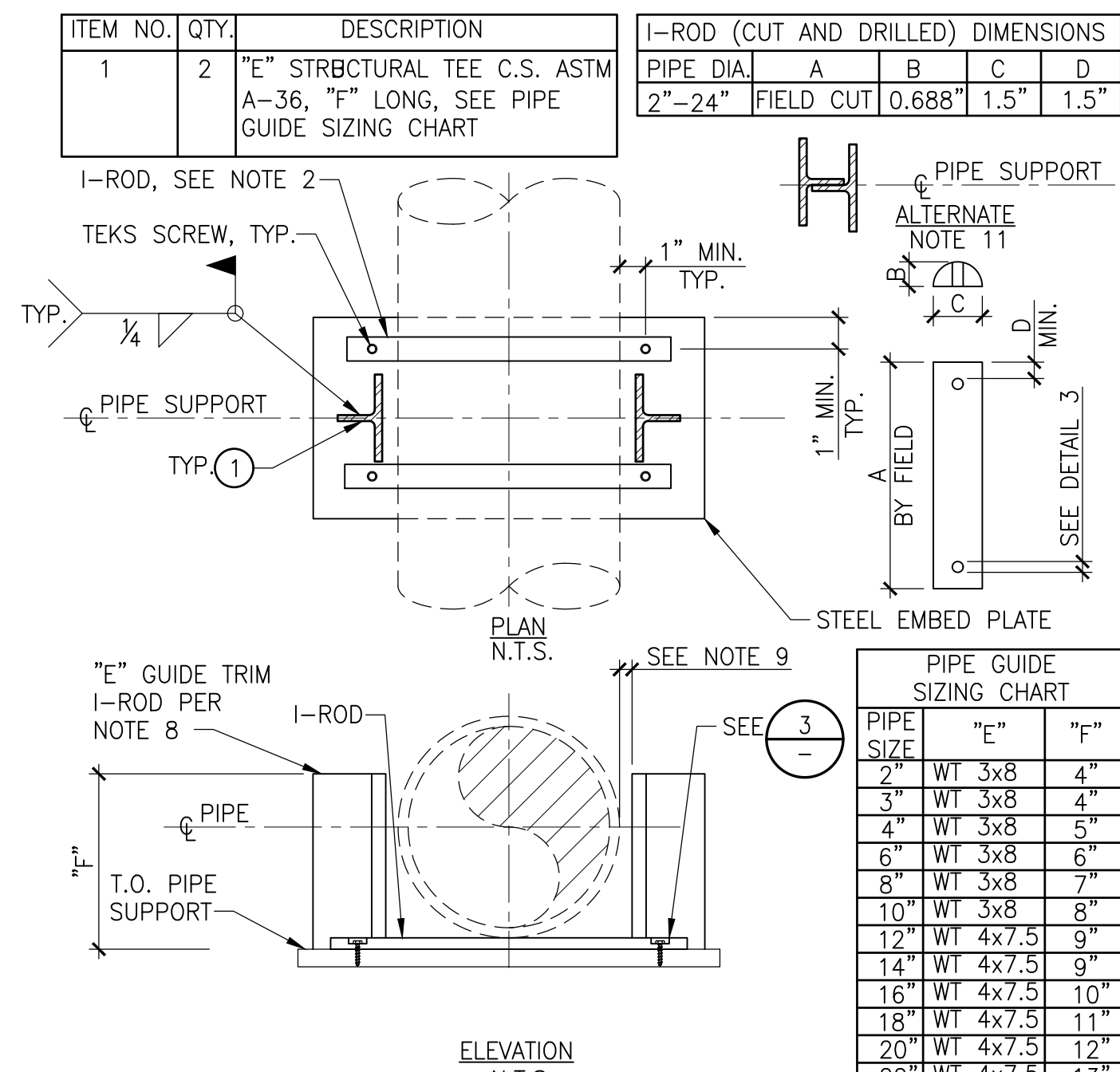
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△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
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APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

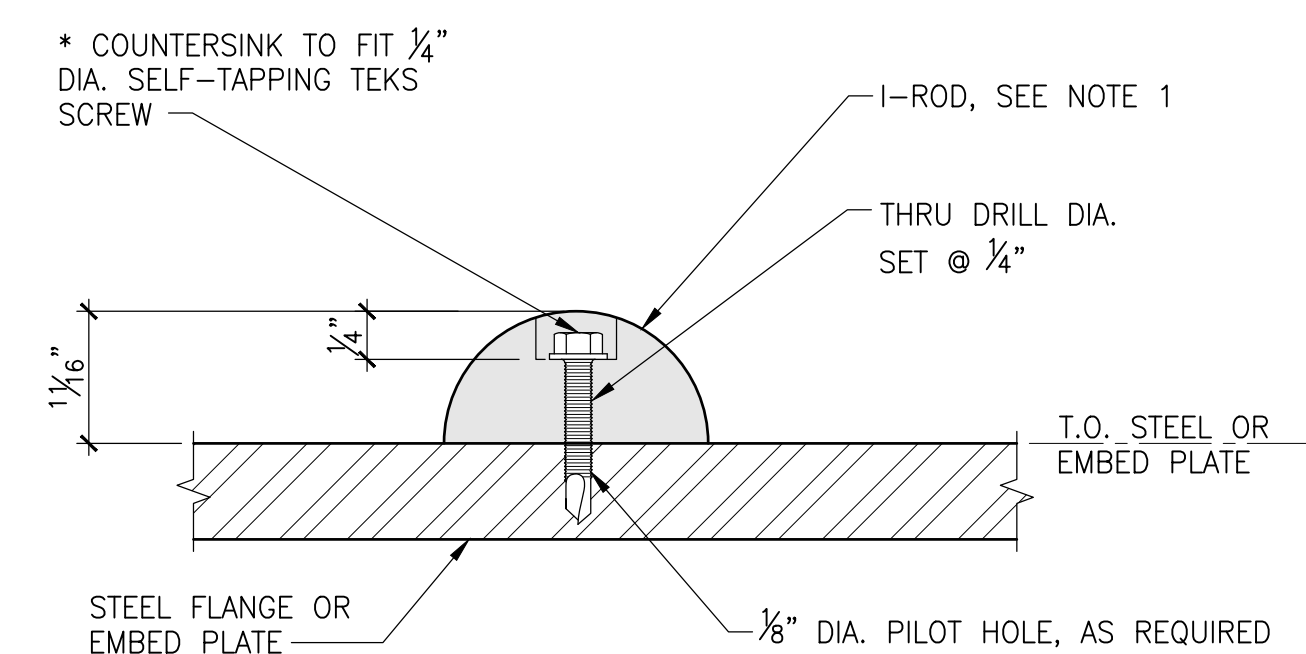
PORT OF STOCKTON BERTH 10 & 11 FENDER SYSTEM DETAILS	
ORIGINAL PROJECT NO. _	
DRAWING NO. S15	REV.



1 I-ROD INSTALLATION ON STEEL BEAM
2" DIA. THROUGH 24" DIA. PIPES



2 PIPE GUIDE (STEEL WT) W/
I-ROD ON STEEL EMBED PLATE
2" DIA. THROUGH 24" DIA. PIPES



3 I-ROD TO STEEL OR EMBED PLATE

GENERAL NOTES:

1. I-ROD SUPPLIER DEEP WATER CORROSION SERVICES, INC. I-ROD (WHITE) THERMOPLASTIC STRIP. (713) 983-7117 EMAIL SALES@STOPRUST.COM APPROVED OR EQUAL.
2. FIELD INSTALL TWO EACH I-RODS FOR ALL PIPES 2"-24".
3. I-ROD ASSEMBLY IS APPLICABLE FOR INSTALLATION UP TO 200° F. FOR HIGHER TEMPERATURES, CONTACT ENGINEER.
4. FOR PIPE SIZES NOT SHOWN, CONTACT ENGINEER.
5. FOR WIDER SUPPORTS WITH MULTIPLE PIPES, A CONTINUOUS I-ROD STRIP MAY BE USED WITH THE SAME ATTACHMENT ANCHOR PATTERN SHOWN AT EACH PIPE.
6. USE I-ROD SUPPLIED DOUBLE SIDED TAPE FOR INITIAL ALIGNMENT WHERE APPLICABLE.
7. SEE ISOMETRIC DRAWINGS FOR WHERE NU-BOLTS APPROVED OR EQUAL ARE REQUIRED.
8. KEEP I-ROD CLEAR OF HEAT EFFECTED ZONE.
9. 1/8" MINIMUM GAP REQUIRED UNLESS NOTED ON PIPING ISOMETRIC DRAWINGS.
10. WT'S AND EMBED PLATES SHALL BE GALVANIZED. GALVANIZED COATING SHALL BE REPAIRED AFTER FIELD WELDING USING "GALVALLOY" OR APPROVED EQUAL.
11. USE ALTERNATE METHOD IF INTERFERENCE OCCURS WHEN ADJACENT GUIDES ARE INSTALLED.

NOTE: 1-ROD

NOTE: 2-ROD

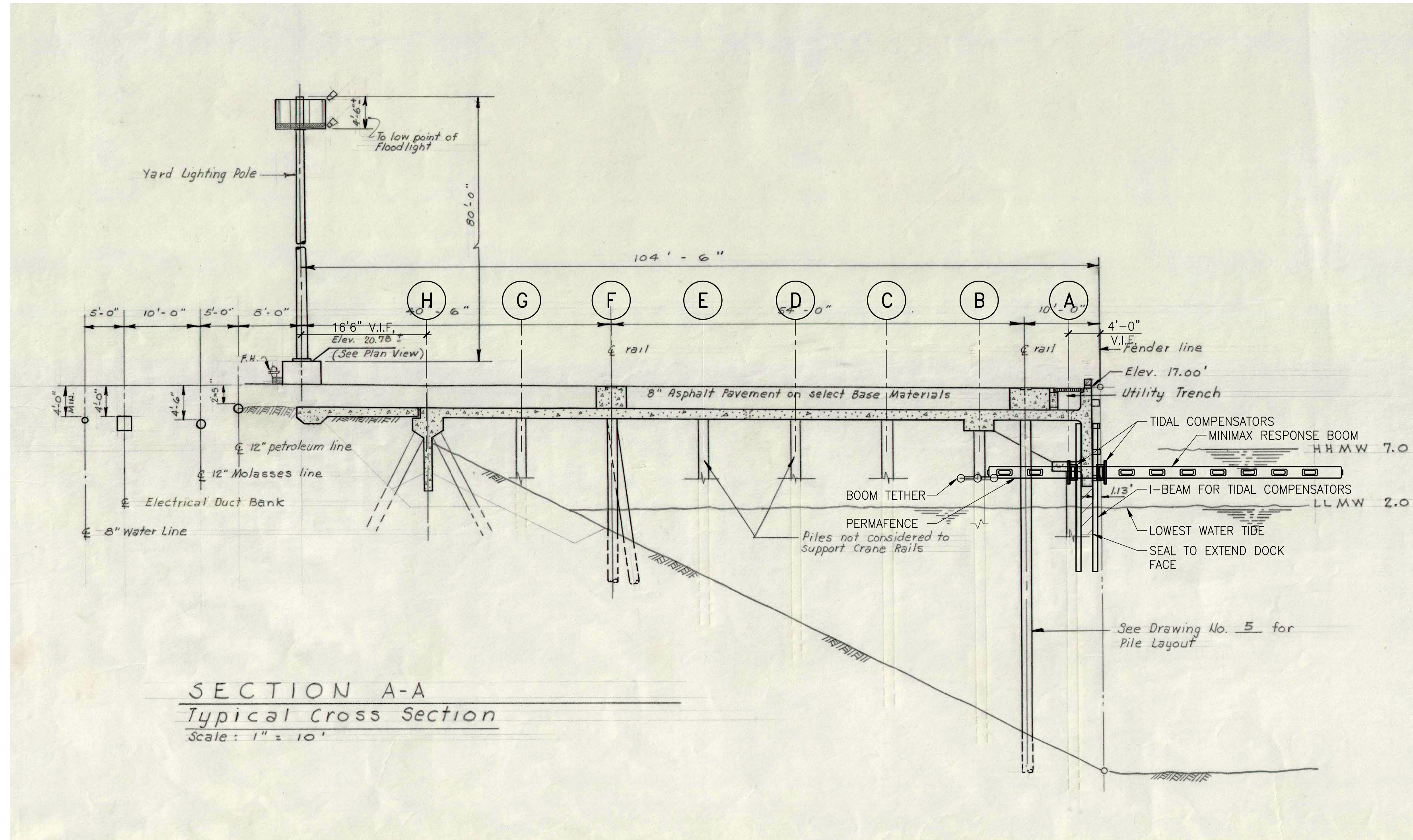
NOTE: 3-ROD

2

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								PIPE SUPPORT DETAILS																																											
								DRAWING NO. S18																																											
								REV.																																											



NOTE: S19-1 BOOM SECTION
1 BOOM SECTION
 SCALE: 1"=10'-0"

NOTES:
 1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

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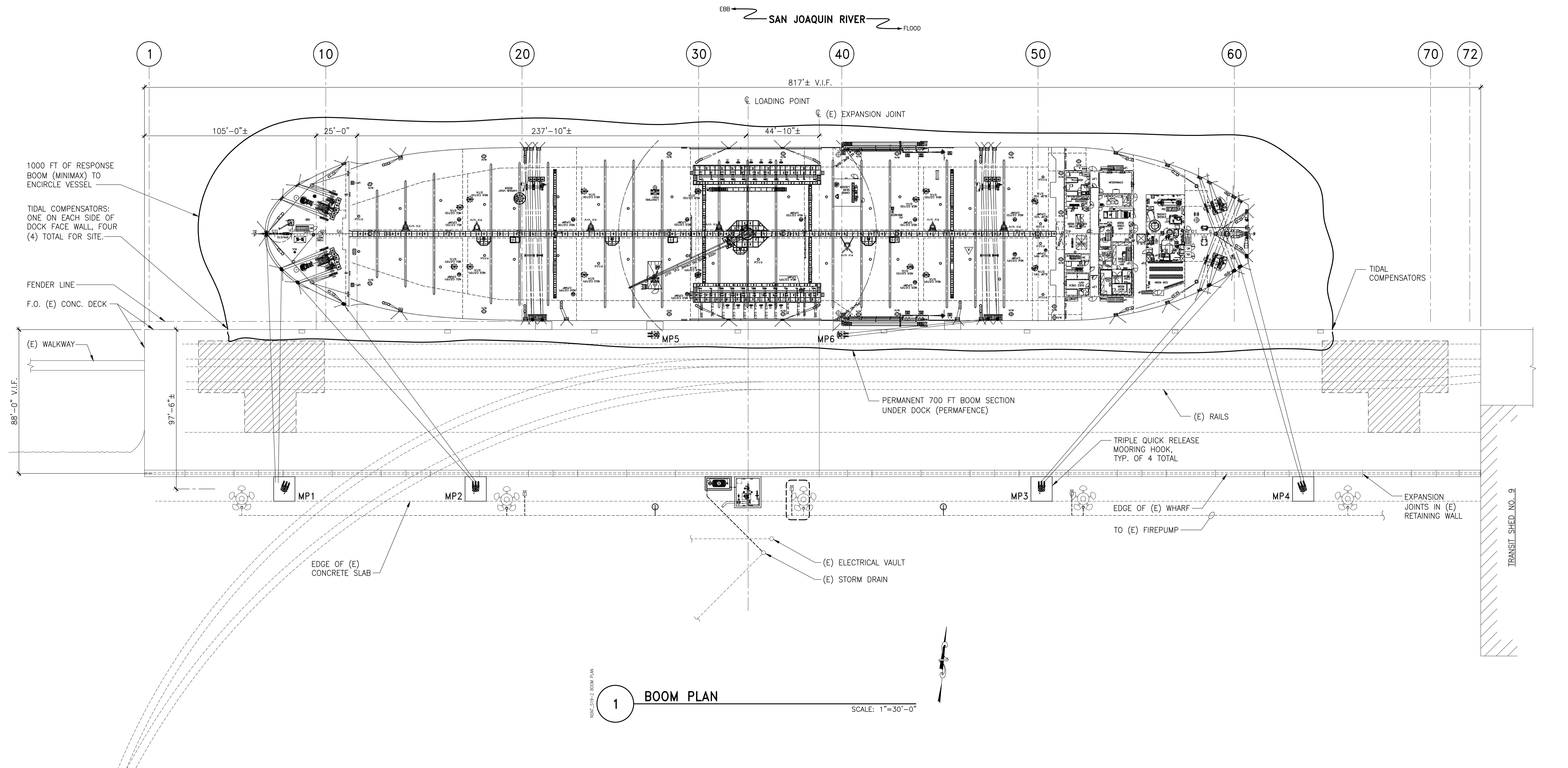
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PROJECT LOCATION:		PORT OF STOCKTON BERTH 10 & 11	
BOOM SECTION			
DRAWN BY: GPN/JRT	DATE: 12/24/2020		
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SCALE: AS NOTED			

DRAWING NO. S19-1		REV.
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1 BOOM PLAN
 SCALE: 1"=30'-0"

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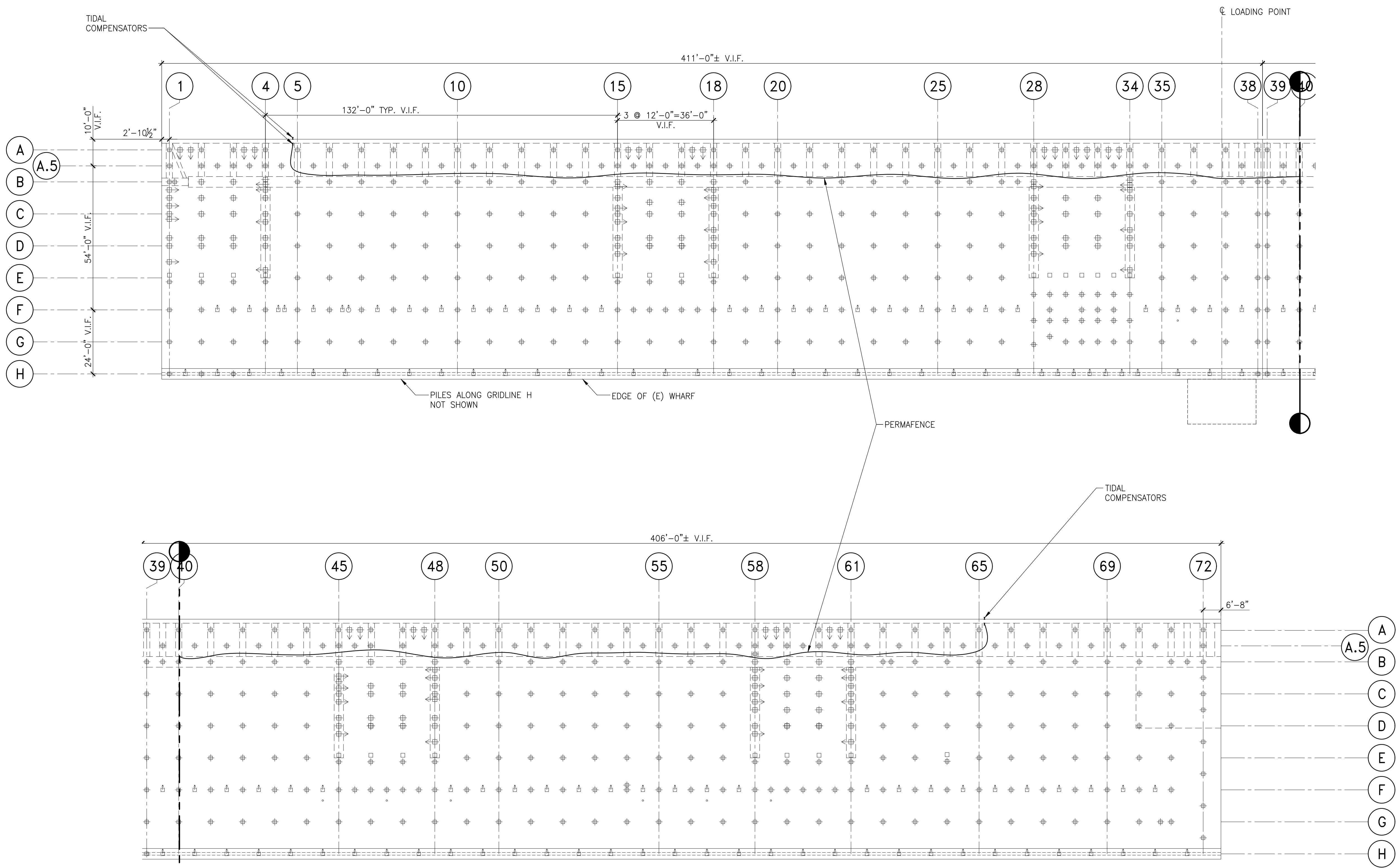
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PORT OF STOCKTON BERTH 10 & 11 BOOM PLAN	
ORIGINAL PROJECT NO. _____	
DRAWING NO. S19-2	REV. _____



1 BOOM PILE PLAN
SCALE: 1"=20'-0"

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

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NO.	REVISION	BY	DATE	APR
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△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/GPN	03/09/21	

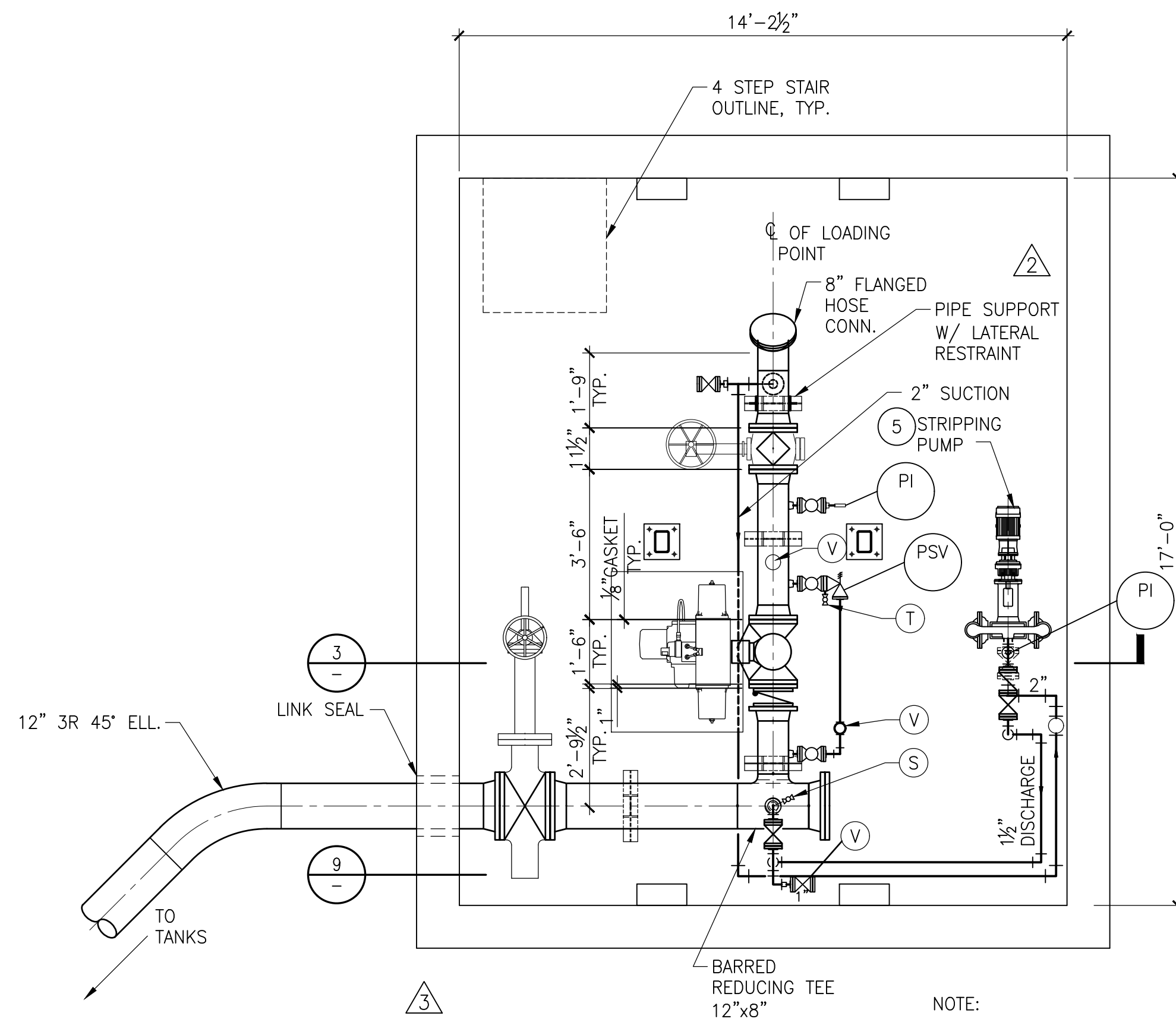
PROJECT LOCATION:
PORT OF STOCKTON BERTH 10 & 11
BOOM UNDERDECK PLAN

DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

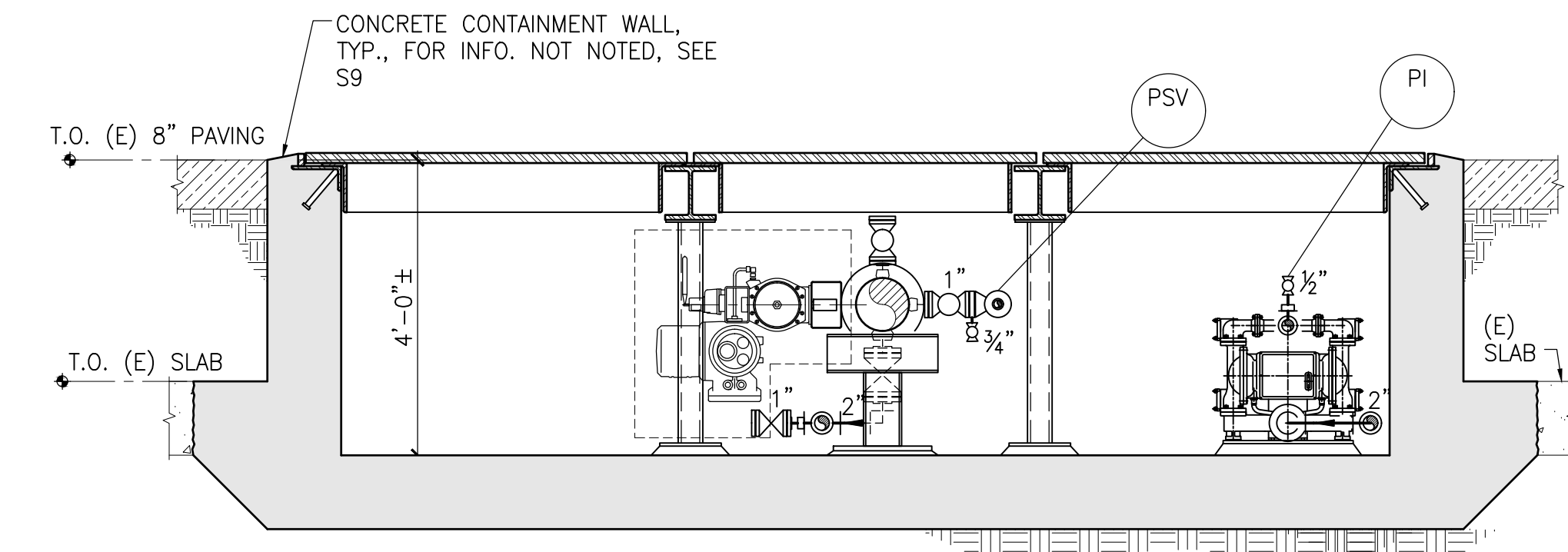
ORIGINAL PROJECT NO. _____
DRAWING NO. S19-3
REV. _____

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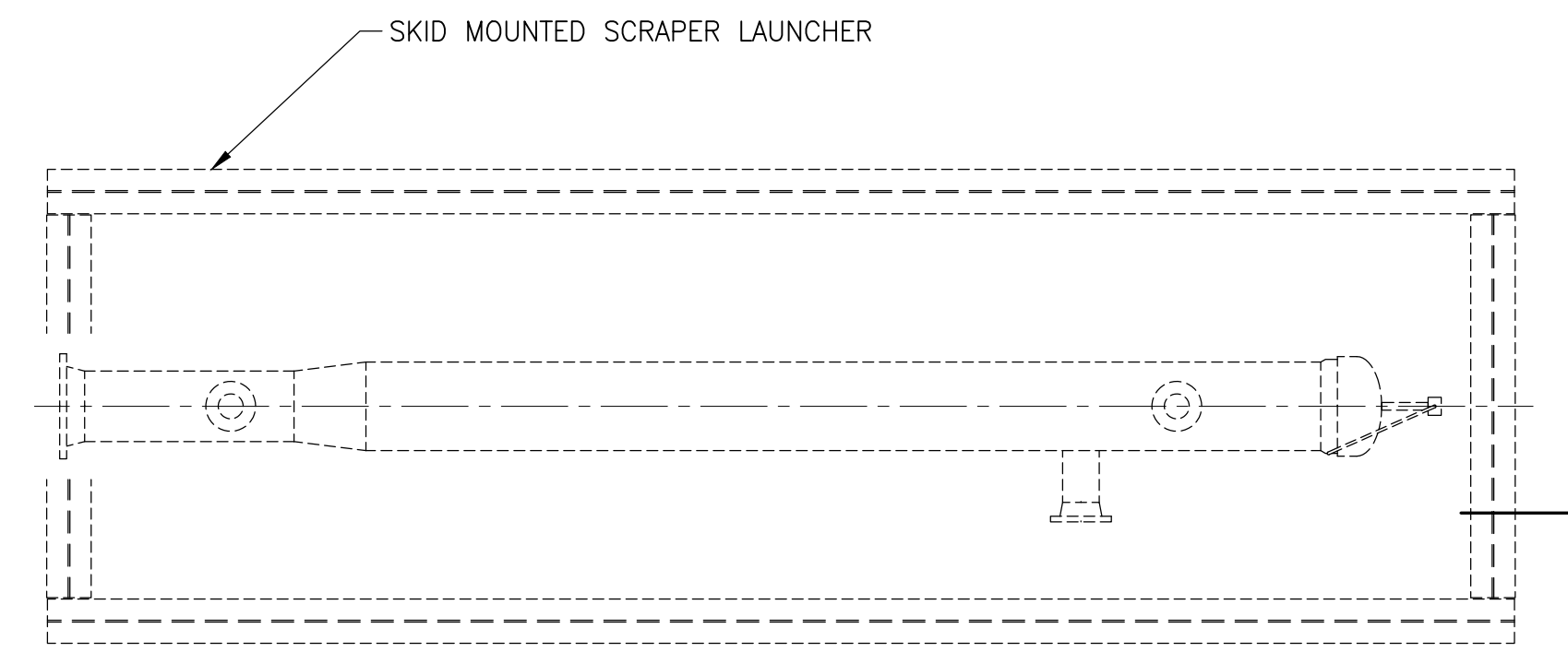


NOTE:
SEE BILL OF MATERIALS DRAWING
FOR DESCRIPTIONS OF ITEMS
SHOWN WITH CIRCLED NUMBERS. (300)
SEE ISOMETRIC DRAWING FOR ALL
OTHER MATERIAL CALLOUTS.

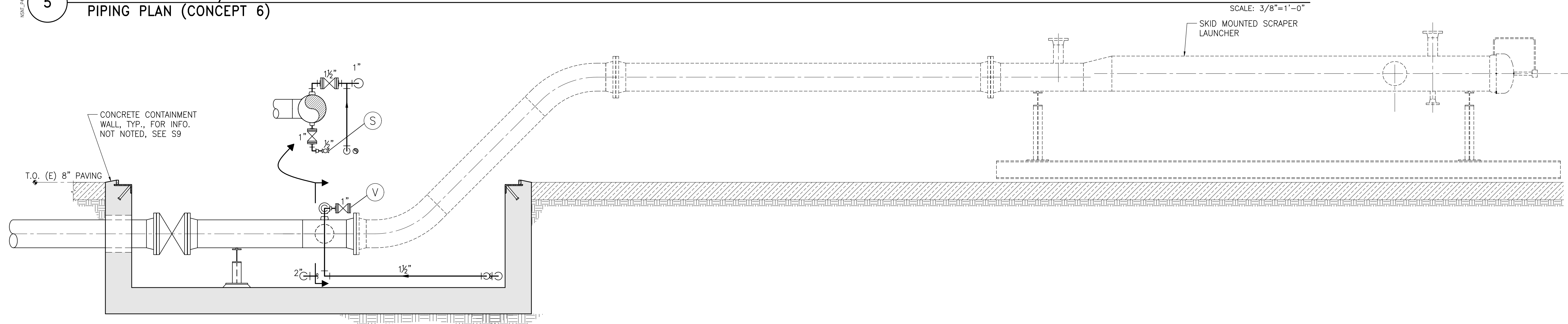


3 TRANSFER MANIFOLD/SIV VAULT SECTION

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



5 TRANSFER MANIFOLD/SIV VAULT
PIPING PLAN (CONCEPT 6)



9 TRANSFER MANIFOLD/SIV VAULT SECTION

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

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND
ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	03/09/21	

PROJECT LOCATION:

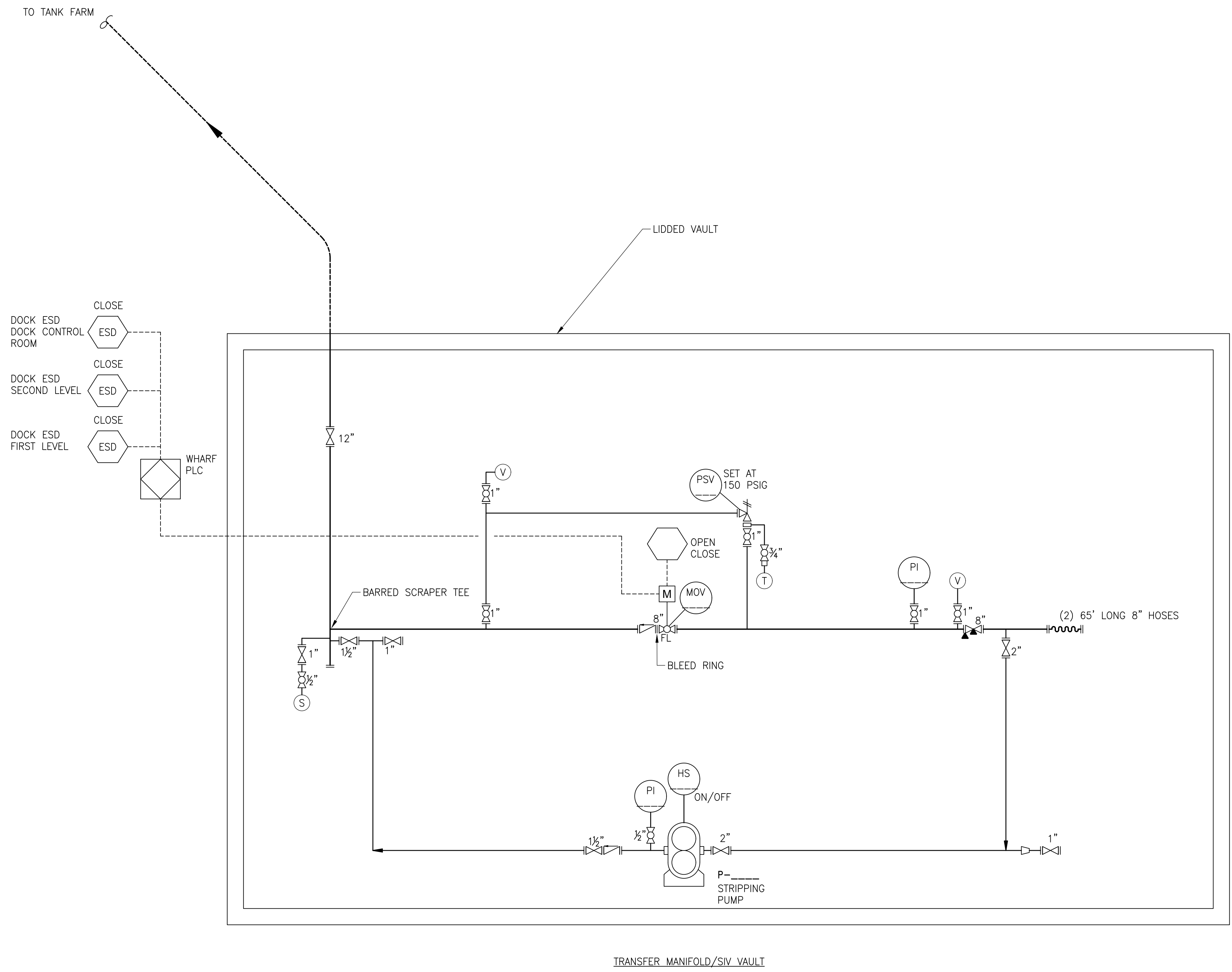
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11
PIPING PLAN AND SECTIONS
AT TRANSFER MANIFOLD/SIV VAULT

ORIGINAL PROJECT NO. _	REV.
DRAWING NO. P1	

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TRANSFER MANIFOLD/SIV VAULT

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San Francisco
Washington, DC

NOTES:
1) CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND INSTALLATION.

REFERENCE DRAWINGS:

NO.	REVISION	BY	DATE	APR
△	ISSUED FOR CONSTRUCTION	LHP/JOT	12/24/20	
△	REVISED FIREWATER LINES AND ISSUED FOR CONSTRUCTION	LHP/JOT	01/14/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/11/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	02/25/21	
△	REVISED AND ISSUED FOR CONSTRUCTION	LHP/JOT	03/09/21	

PROJECT LOCATION:	
DRAWN BY: GPN/JRT	DATE: 12/24/2020
CHECKED: LHP	DATE: 12/24/2020
APPROVED: WMB	DATE: 12/24/2020
SCALE: AS NOTED	

PORT OF STOCKTON BERTH 10 & 11	
P&ID FOR	
TRANSFER MANIFOLD/SIV VAULT	
ORIGINAL PROJECT NO. -	
DRAWING NO. P2	REV.

BILL OF MATERIALS

ITEM NO.	SIZE	DESCRIPTION	QUANTITY	
LARGE VALVES & EQUIPMENT >2" (totals)				
1	12"	150# R.F. GATE VALVE, GEAR OPERATED	1	EA.
2	8"	ESD VALVE, MICROFINISH TRUNNION BALL VALVE, FULL-PORT, METAL-SEATED ANSI 150, RAISED FACE FLANGED, WCB BODY CF8M BALL & SEAT, VALVE P/N 8" MT84F2-13FN529URB7-SS0, MOUNTED WITH ROTORK SKILMATIC SI-PRO, SELF-CONTAINED, 1/4 TURN SPRING RETURN ACTUATOR. PROCESS INSTRUMENTS ASSEMBLY P/N TS 8" MT84F2/SI-PRO OR APPROVED EQUIVALENT	1	EA.
3	8"	PLUG VALVE, CAMERON MODEL 8811, R.F., C.S. BODY ASME 150 GEAR OPERATED	1	EA.
4	8"	CHECK VALVE, CLASS 150, FLANGELESS BODY, WAFER STYLE WITH ROUND PORT AND SPRING ASSISTED CLOSURE KF SERIES 10	1	EA.
5	2" x 1 1/2"	STRIPPING PUMP - ABEL EM ELECTROMECHANICAL MEMBRANE PUMP MODEL EM140 WITH 2" NPT FEMALE SUCTION AND 1 1/2 NPT FEMALE DISCHARGE	1	EA.
LARGE PIPE (totals)				
10	12"	API 5L ERW, GRADE B, PSL2 SCH. STANDARD	4	LF
11	8"	API 5L ERW, GRADE B, PSL2 SCH. STANDARD	6	LF
LARGE FITTINGS >2" (totals)				
20	12"x8"	REDUCING TEE WITH SCRAPER BARS FOR PIG LAUNCHING, SCH. 40, ASTM A-234 GR WPB, SMLS, BE, ASME B16.9	1	EA.
21	8"	ELL 45 DEG. LONG RADIUS, SCH. 40, ASTM A-234 GR WPB, SMLS, BE, ASME B16.9	1	EA.
27	12"	FLANGE, WELD NECK, 150#, R.F., C.S., ASTM 105, BORE TO MATCH 0.375" WALL PIPE	3	EA.
28	12"	BLIND FLANGE 150# ASTM 105	1	EA.
29	8"	FLANGE, WELD NECK, 150#, R.F., C.S., ASTM 105, BORE TO MATCH 0.322" WALL PIPE	5	EA.
30	8"	BLIND FLANGE 150# ASTM 105	1	EA.
31	8"	BLEED RING, ANSI 150 W/ 3/4" SW SIDE OUTLET	1	EA.
40	12"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	3	EA.
41	8"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	7	EA.
50	7/8"x4 3/4"	STUD BOLT, ASTM A193 GR. B7 CLASS 2A FULL THREAD, W/ ASTM A194 HEAVY HEX NUTS GRADE 2H CLASS 2B COATED W/ XYLAN 1424 BLUE FOR 12" 150# FLANGE (12 PER FLANGE)	36	EA.
51	3/4" x 4 1/4"	STUD BOLT, ASTM A193 GR. B7 CLASS 2A FULL THREAD, W/ ASTM A194 HEAVY HEX NUTS GRADE 2H CLASS 2B COATED W/ XYLAN 1424 BLUE FOR 8" 150# FLANGE (8 PER FLANGE)	40	EA.
52	3/4" x 1 1/2"	STUD BOLT, ASTM A193 GR. B7 CLASS 2A FULL THREAD, W/ ASTM A194 HEAVY HEX NUTS GRADE 2H CLASS 2B COATED W/ XYLAN 1424 BLUE FOR 8" 150# FLANGE AT BLEED RING AND WAFER CHECK VALVE (8 PER FLANGE)	8	EA.
ITEMS 2" AND SMALLER (totals)				
Small Valves (totals)				
54	1"x1/2"	REDUCING HEX BUSHING, 3000 LB. FORGED STEEL, THREADED, ASTM A105	1	EA.
55	1/2"	THREADED PIPE PLUG, 3000 LB., ASTM 105	2	EA.
56	1/2"x1/2"	RELIEF VALVE, MALE NPT INLET, FEMALE NPT OUTLET	1	EA.
57	1/2"x1/2" x 1/2"	3-WAY, L - SIDE PORT, 2 SEATED,	1	EA.
59	2"	GATE VALVE, ANSI 150 RAISED FACE FLANGED ENDS, ASTM A216 GRADE WCB CAST STEEL BODY AND GATE, VALVE TRIM COMPATIBLE WITH SPECIFIED PRODUCT	2	EA.
60	1 1/2"	GATE VALVE, ANSI 150 RAISED FACE FLANGED ENDS, ASTM A216 GRADE WCB CAST STEEL BODY AND GATE, VALVE TRIM COMPATIBLE WITH SPECIFIED PRODUCT	2	EA.

ITEM NO.	SIZE	DESCRIPTION	QUANTITY	
61	1"	GATE VALVE, ANSI 150 RAISED FACE FLANGED ENDS, ASTM A216 GRADE WCB CAST STEEL BODY AND GATE, VALVE TRIM COMPATIBLE WITH SPECIFIED PRODUCT	4	EA.
62	1"	BALL VALVE, ANSI 150 RAISED FACE FLANGED ENDS, STANDARD PORT, CAST STEEL BODY PER ASTM A216, GRADE WCB, VALVE TRIM COMPATIBLE WITH SPECIFIED PRODUCT	5	EA.
63	1"	BALL VALVE, THREADED x SW, 3000 LB. (MARPA MODEL E325)	2	EA.
65	3/4"	BALL VALVE, THREADED x SW, 3000 LB. (MARPA MODEL E325)	2	EA.
66	1/2"	BALL VALVE, SW x THREADED, 3000 LB. (MARPA MODEL E325)	2	EA.
67	1 1/2"	CHECK VALVE, RAISED FACE FLANGED ENDS, CAST STEEL BODY PER ASTM A216 GRADE WCB, BOLTED COVER PER ASTM B16.34. VALVE TRIM COMPATIBLE WITH SPECIFIED PRODUCT	1	EA.
68	1"x1"	RELIEF VALVE, ANSI 150 x ANSI 150, RF FLANGED WITH SIZE 'D' ORIFICE SET AT 150 PSIG - INCLUDE CUTSHEET	1	EA.
Small Flange Fittings (totals)				
69	2"	FLANGE, S.W., 150#, R.F., C.S., ASTM 105, S/XS BORE, ASTM A-105	4	EA.
70	1 1/2"	FLANGE, RF, SW, ANSI 150, S/XS BORE, ASTM A-105	4	EA.
71	1"	FLANGE, RF, SW, ANSI 150, S/XS BORE, ASTM A-105	13	EA.
72	1"	BLIND FLANGE 150# ASTM 105	5	EA.
73	1/2"x3"	STUD BOLTS, ASTM A 193 GR. B7, 2/ (2) NUTS EA., ASTM A194 GR. 2H, COATED W/ XYLAN 1424 BLUE (4 PER 1 1/2" 150# FLANGE)	20	EA.
74	5/8"x3.25	STUD BOLTS, ASTM A 193 GR. B7, 2/ (2) NUTS EA., ASTM A194 GR. 2H, COATED W/ XYLAN 1424 BLUE (4 PER 2" 150# FLANGE)	16	EA.
75	1/2"x2.75	STUD BOLTS, ASTM A 193 GR. B7, 2/ (2) NUTS EA., ASTM A194 GR. 2H, COATED W/ XYLAN 1424 BLUE (4 PER 1" 150# FLANGE)	68	EA.
76	1/2"x5"	STUD BOLTS, ASTM A 193 GR. B7, 2/ (2) NUTS EA., ASTM A194 GR. 2H, FOR COATED W/ XYLAN 1424 BLUE (4 PER 1" 150# FLANGE AND BLEED RING)	4	EA.
77	1"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	18	EA.
78	1 1/2"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	5	EA.
79	2"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	4	EA.
Small Pipe Fittings (totals)				
80	2"	SOCKOLET, CLASS 3000, 8" RUN x 2" OUTLET, FORGED STEEL PER ANSI B16.11, ASTM 105	1	EA.
81	2"	ELL, 90 DEGREE, 3000 LB. FORGED STEEL, SW, ASTM A105	5	EA.
82	2"x1"	REDUCING TEE, 3000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
83	1 1/2"	ELL, 90 DEGREE, 3000 LB. FORGED STEEL, SW, ASTM A105	6	EA.

ITEM NO.	SIZE	DESCRIPTION	QUANTITY	
84	1"	ELL, 90 DEGREE, 3000 LB. FORGED STEEL, SW, ASTM A105	2	EA.
85	1 1/2"x1"	REDUCING TEE, 3000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
86	2"	TEE, 2000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
87	1 1/2"	TEE, 2000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
88	1"	TEE, 2000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
90	2"x1"	REDUCER INSERT, 3000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
91	1 1/2"x1"	REDUCER INSERT, 3000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
92	1"x1/2"	REDUCER INSERT, 3000 LB. FORGED STEEL, SW, ASTM A105	1	EA.
93	1"	BLEED RING, ANSI 150 W/ 3/4" SW SIDE OUTLET	1	EA.
94	3/4"	THREADED PIPE PLUG, 3000 LB., ASTM 105	1	EA.
95	1 1/2"	SOCKOLET, CLASS 3000, 12" RUN x 1 1/2" OUTLET, FORGED STEEL PER ANSI B16.11, ASTM 105	1	EA.
96	1"	SOCKOLET, CLASS 3000, 12" RUN x 1" OUTLET, FORGED STEEL PER ANSI B16.11, ASTM 105	1	EA.
97	1"	SOCKOLET, CLASS 3000, 8" RUN x 1" OUTLET, FORGED STEEL PER ANSI B16.11, ASTM 105	6	EA.
PIPE (totals)				
99	2"	PIPE, S/XS SMLS, ASTM A-106 GR. B PBE	26	LF
100	1 1/2"	PIPE, S/XS SMLS, ASTM A-106 GR. B PBE	20	LF
101	1"	PIPE, S/XS SMLS, ASTM A-106 GR. B PBE	5	LF
102	2"	NIPPLE, L=3", SCH XS, ASTM A106 GR. B, SMLS, PBE	6	EA.
103	1 1/2"	NIPPLE, L=3", SCH XS, ASTM A106 GR. B, SMLS, PBE	6	EA.
104	1"	NIPPLE, L=3", SCH XS, ASTM A106 GR. B, SMLS, PBE	18	EA.
105	3/4"	NIPPLE, L=3", SCH XS, ASTM A106 GR. B, SMLS, PBE	2	EA.
106	1/2"	NIPPLE, L=3", SCH XS, ASTM A106 GR. B, SMLS, TBE	3	EA.
108	1/2"	TUBING, SEAMLESS 316 SS FULLY ANNEALED. GRADE TP316 PER ASTM A269. 0.035" WT.	3	LF
109	1/2"	UNION, 1/2" MALE THREAD x COMPRESSION TYPE TUBING CONNECTION, 316 SS	2	EA.
116	4"	0-200 PSI, GLYCERINE FILLED PRESSURE GAUGE, 1/2" MALE NPT CONNECTION, SS CASE, SS INTERNALS - INCLUDE CUTSHEET	7	EA.
FIRE WATER PIPING				
LARGE VALVES >2"				
199	6"	150# FLANGED RESILIENT OS&Y GATE VALVE MUELLER A-2361, PN10/16, UL/FM APPROVED, OR APPROVED EQUAL	4	EA.
200	8"	150# FLANGED RESILIENT OS&Y GATE VALVE MUELLER A-2361, PN10/16, UL/FM APPROVED, OR APPROVED EQUAL	3	EA.
201	2 1/2"	GATE VALVE, FEMALE NPT ENDS	3	EA.
202	2.50"	MONITOR, 2.50" STATION, LOCK KNOB, INTERCHANGEABLE HANDLE, STANG INDUSTRIES MODEL 304SS-AB	3	EA.
PIPE				
203	8"	PIPE, DI, PLAIN END	66	LF
204	6"	PIPE, DI, PLAIN END	60	LF
205	2 1/2"	PIPE, DI, PLAIN END	10	LF
LARGE FITTINGS >2"				
209	8"x6"	REDUCING TEE, DI MJ ENDS	4	EA.

ITEM NO.	SIZE	DESCRIPTION	QUANTITY	
210	8"	STRAIGHT TEE, DI MJ ENDS	3	EA.
211	8"	90 DEG. LONG RADIUS ELBOW, DI, MJ ENDS	3	EA.
212	8"	MEGALUG SERIES 1100 CONNECTOR OR EQUAL	30	EA.
213	8"	150# FLAT FACE FLANGE, DI	3	EA.
214	8"	FLANGE GASKET FOR MEGALUG CONNECTOR	30	EA.
215	3"x2 1/2"	REDUCER, DI, 3" END 150# FLANGE, FF, 2 1/2" END IS MALE NPT	3	EA.
216	8"x3"	REDUCING TEE, DI, FLANGED ENDS, 150# FF	3	EA.
217	8"x6"	FLANGED REDUCER, 150# FF	3	EA.
218	8"	DI PIPE SLEEVE FOR TIE-IN TO (E) LINE	5	EA.
219	6"	TEE FOR HYDRANT RISER?	4	EA.
220	6"	90 DEG. LONG RADIUS ELBOW, DI, MJ ENDS	2	EA.
221	2 1/2"	90 DEG. LONG RADIUS ELBOW, DI, MJ ENDS	2	EA.
241	8"	GASKET, 150#, FF, 1/8" THICK NEOPRENE	13	EA.
242	6"	GASKET, 150#, FF, 1/8" THICK NEOPRENE	11	EA.
243	3"	GASKET, 150#, FF, 1/8" THICK NEOPRENE	3	EA.
251	3/4" x 4 1/4"	FLANGE BOLTS FOR 8" 150# FLANGE (8 PER FLANGE)	104	EA.
252	3/4" x 4"	FLANGE BOLTS FOR 6" 150# FLANGE (8 PER FLANGE)	80	EA.
253	5/8" x 3 3/4"	FLANGE BOLTS FOR 3" 150# FLANGE (4 PER FLANGE)	12	EA.
255	6"x3"	CONCENTRIC REDUCER	2	EA.
256	3"x2 1/2"	CONCENTRIC REDUCER	2	EA.
257	2 1/2"	2 1/2" DI GATE VALVE	2	EA.
OILY WATER SYSTEM PIPING				
Item No.	Size	Description	Quantity	
PIPE				
300	4"	4" DIAMETER PVC PIPE, SCHEDULE 40	120	FT.
301	2"	VENT PIPE, PVC	15	FT.
FITTINGS				
304	2"	VENT TOP COVER	4	EA.
305	4"	45 DEGREE ELBOW, PVC, SCHEDULE 40	2	EA.
306	4"	FULL COUPLING, PVC, SCHEDULE 40	15	EA.
307	4"	DRAIN HUB FOR 4" PVC PIPE	1	EA.
308	4"x2"	45 DEGREE WYE FITTING, PVC, SCHEDULE 40	3	EA.
309	4"	90 DEGREE ELBOW, PVC, SCHEDULE 40	1	EA.
310	2"	45 DEGREE ELBOW, PVC, SCHEDULE 40	3	EA.
311	4"	PVC FLANGE CONNECTION	2	EA.
312	4"	GASKET, 150#, 1/8" THICK CENTER RING, SPIRAL WOUND TYPE 316L/304 SS WINDING W/ GRAPHITE FILLER CARBON STEEL OUTER RING, FLEXATATIC STYLE CG, YELLOW W/ GRAY STRIPE OR APPROVED EQUAL	2	EA.
313	5/8" x 3 3/4"	STUD BOLT, ASTM A193 GR. B7 CLASS 2A FULL THREAD, W/ ASTM A194 HEAVY HEX NUTS GRADE 2H CLASS 2B COATED W/ XYLAN 1424 BLUE FOR 3" 150# FLANGE (4 PER FLANGE)	16	EA.
320	500 GAL.	OIL/WATER SEPARATOR TANK FROM MERCER INTERNATIONAL INC. SEE DWG. MI-B25-PE	1	EA.

BY	DATE	PROJ. NO. AFE#	SHOP WELD	FIELD WELD	SOCKET WELD	SCREWED JOINT	INSPECT -A-LIFT	PIPE SUPPORT	VENT	DRAIN	PIPE SPEC.	DESIGN PRESS.	DESIGN TEMP.	OPER. PRESS. NO. PSIG	OPER. TEMP. °F	HYDROTEST PSIG	
GPN	04/24/2020	DRN.BY GPN	●	✗	○	○	○	○	○	○	A	150 PSIG	*F	NO. PSIG	*F	225 PSIG	
GPN	01/14/2021	DATE 12/24/2020									X-RAY 10%	PWHT YES	PAINT SPEC NS-ES-68-002	PAINT COLOR N/A	INSUL SPEC N/A	INSUL THK N/A	TRACING N/A
GPN	02/25/2021	CHKD. LHP									P&ID NO. : _____ PIPING PLAN : NSNT-P2						
GPN	03/09/2021	APP. LHP									SERVICE REFINED PRODUCT		LINE No. NSNT-XX-XXXXX1	SHT. 1 OF 1		REV 2	

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NSNT-S17 BILL OF MATERIALS.DWG