JORDAN VALLEY WATER CONSERVANCY DISTRICT

Jordan Valley Water Treatment Plant
Sodium Chlorite Tank Supply and Installation

September 2019

DESCRIPTION OF WORK: This project includes the supply and installation of one new 6,000 gallon sodium chlorite tank to operate in parallel with the two existing tanks. Tanks are to meet the original specifications and submittals for the two original tanks purchased in year 2010. Installation is on an existing pad via an existing roll-up door each sized for this purpose.

PROJECT SCHEDULE: The work shall be completed within 140 calendar days from the date of acceptance of the Award of Purchase Order. If the work is not completed within the specified time frame, the bidder herein agrees to accept liquidated damages in the amount of $100 per day.

RECEIPT OF BIDS: Bids will be received by Jordan Valley Water Conservancy District, attention Stephen Blake at 15305 South 3200 West, Herriman, Utah 84065, or via email to StephenB@jvwcd.org before 1:00 pm October 17, 2019. A public bid opening will be held. Attendance is not mandatory. Results will be posted to the JVWCD.org website following the bid in accordance with state law.

OBTAINING CONTRACT DOCUMENTS: The Contract Documents are entitled: "Jordan Valley Water Treatment Plant Sodium Chlorite Tank Supply and Installation". All Contract Documents may be obtained on the District's website (www.jvwcd.org) beginning September 26, 2019. Prospective bidders must register at the District's web site under the project to receive project notifications and addenda, if any. Contractors are required to check the District's web site for any addenda prior to submitting a responsive bid. Bids determined to be non-responsive may be rejected.

JVWCD project manager/contact person: Stephen Blake, Treatment Plant Manager
Telephone Number: (801) 446-2000.

PRE-BID SITE VISIT: A non-mandatory pre-bid site visit will be held at the site of the work at 12:30 pm on October 3, 2019.

SITE OF WORK: Jordan Valley Water Treatment Plant 15305 South 3200 West, Herriman, Utah 84065.

AWARD OF CONTRACT: An Award of Contract, if awarded, will be made within 60 calendar days of the opening of bids. Contract will be awarded based upon the lowest cost responsive bid.

BONDS: Bid bonds and Performance Bonds will not be required for any bid with a total bid price of less than $50,000.

BIDDER REQUIREMENTS: The bidder shall have a valid Utah Business license and a valid Utah Contractors license appropriate for the work.

The successful bidder will have completed a minimum of three similar projects exceeding $25,000 within the last five years. One of these must have been at a municipal water or wastewater treatment plant. Project name, description and contact person must be provided for each submitted project. The Owner shall be entitled to contact each reference listed by the contractor. The owner reserves the option not to award to the lowest bidder if the bidder does not meet the experience requirements or does not provide positive references for performance.

ADDRESS AND MARKING OF BID: The envelope enclosing the bid shall be sealed and addressed to the Jordan Valley Water Conservancy District and delivered or mailed to 15305 South 3200 West, Herriman, Utah 84065. The envelope shall be plainly marked in the upper left-hand corner with the name and address of the bidder and shall bear the words "Bid for," followed by the title of the Contract Documents for the work and the date and hour of opening of bids. Electronic bids shall be submitted to the project manager as an email attachment with the words “Bid for,” followed by the title of the Contract Documents for the work and the date and hour of opening of bids in the subject line of the email.

PROJECT ADMINISTRATION: All questions relative to this project prior to the opening of bids shall be directed to the Project Manager for the project.

OWNER'S RIGHTS RESERVED: The Owner reserves the right to reject any or all bids, to waive any informality in a bid, and to make awards in the interest of the Owner.

Owner/ Engineer
Jordan Valley Water Conservancy District
Project Manager: Stephen Blake, Treatment Plant Manager
15305 South 3200 West
Herriman, Utah 84065
Telephone: (801) 446-2000
Email: StephenB@jvwcd.org

JORDAN VALLEY WATER CONSERVANCY DISTRICT

INSTRUCTIONS TO BIDDERS

WARRANTY: The successful bidder shall warrant the equipment and installation to be free of defects in materials and workmanship for a period of one (1) year following satisfactory start-up and testing of the equipment.

INSURANCE REQUIREMENTS: Prior to awarding a purchase order the bidder must furnish certificates of insurance to include the following policies. The limits of liability for the insurance required in this project shall provide for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation

   A. State: Utah — Statutory

2. Comprehensive General Liability

   A. Bodily Injury (including completed operations and products liability):

$500,000	Each Occurrence
$1,000,000	Annual Aggregate
or a combined single limit of	$1,000,000

   B. Property Damage liability insurance including Explosion, Collapse and Underground coverages where applicable.

   C. Personal Injury, with employment exclusion deleted.

$1,000,000	Annual Aggregate

3. Comprehensive Automobile Liability:

   A. Bodily Injury

$500,000	Each Person
$1,000,000	Each Occurrence

   B. Property Damage:

$500,000	Each Occurrence
or combined single limit of	$1,000,000

BID SCHEDULE A

Item	Units	Quantity	Unit Price	Extended Price
1. Tank Supply	LS	1	$_____	$_____
2. Tank Installation including specified appurtenances	LS	1	$_____	$_____

Total Price: $_____

The successful bidder will have completed a minimum of three similar projects exceeding $25,000 within the last five years. One of these must have been at a municipal water or wastewater treatment plant. Project name, description and contact person must be provided for each submitted project. The Owner shall be entitled to contact each reference listed by the contractor. The owner reserves the option not to award to the lowest bidder if the bidder does not meet the experience requirements or does not provide positive references for performance.

Bidder (Company name): _____

By: _____ Dated: _____
(Signature)

Name: _____ Title: _____
(Print)

The Bidder shall furnish the following information. Failure to comply with this requirement may render the Bid non-responsive and subject to rejection. Additional sheets shall be attached as required. No bid for the work will be considered from a bidder who does not hold an active license in good standing applicable to the type of work bid upon at the time of submission of the bid.

1. Contractor's name: _____

2. Contractor's address: _____
_____
_____

Contractor's Primary Contact: _____

Email address of Contractor's primary contact: _____

Contractor's telephone number: _____

3. Utah Department of Commerce Information
Business Entity Number: _____
Delinquent Date: _____

4. Contractor's Utah License Number:_____
Expiration Date:_____
Primary Classification:_____
Supplemental Classification held, if any: _____

5. Number of years as a contractor in work of this type:

_____

6. Contractor projects required for Bidder requirements:

	Job Name/Description	Contact
1.		
2.		
3.		

7. As necessary, attach to your bid technical information showing compliance with the defined scope of work and/or technical specifications.

Scope of Work:
Description, and project drawings.

Project Drawings:
Attached.

Appendices

1. **Project Drawings**
2. **Tank Specification**
3. **OEM Tank Submittal**
4. **Level Transmitter Specification**
5. **Recent quote for a suitable tank**
6. **Project Site Photos**

1. Project Drawings

Jordan Valley Water Conservancy District

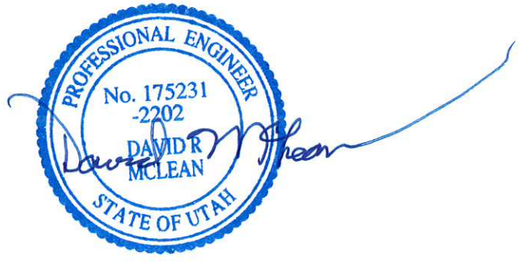
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

PROJECT NUMBER: 4134
SEPTEMBER 2019

GENERAL NOTES:

1. CONTRACTOR TO PROVIDE INSTRUMENTATION, CONDUIT, AND CONDUCTORS TO EXISTING PROGRAMMABLE LOGIC CONTROLLER (PLC). PLC TERMINATIONS AND PROGRAMMING BY OWNER.
2. PROVIDE AND INSTALL ON NEW TANK [BOLD ON DRAWING].
3. PROVIDE TANK APPURTENANCES TO MATCH EXISTING CONSTRUCTION.



Sheet List Table	
Sheet Number	Sheet Title
G1	COVER SHEET
P1	PROCESS AND INTRUMENTATION DIAGRAM
M1	MECHANICAL
I1	INSTRUMENTATION
D1	TYPICAL INSTALLATION DETAILS
D2	TYPICAL INSTALLATION DETAILS

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

LINE IS 1 INCH AT FULL SIZE (IF NOT 1" - SCALE ACCORDINGLY)

DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

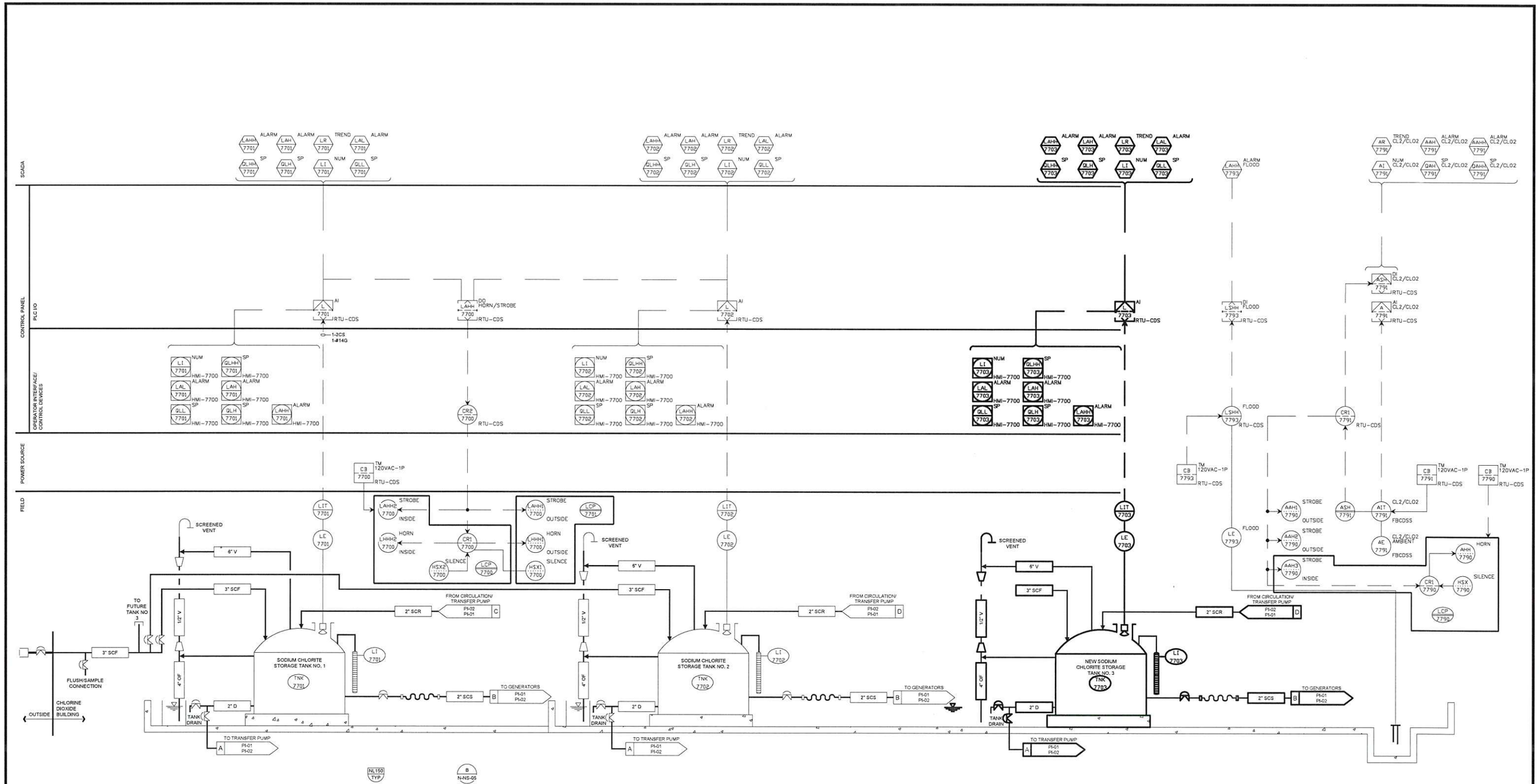
CHLORINE DIOXIDE BUILDING UPGRADES

COVER SHEET

SCALE: NA
DATE 9/10/19
PROJECT NUMBER 4134
DRAWING NUMBER G1
SHEET NUMBER 1 OF 6

I:\WATER TREATMENT PLANTS\JVWTP\4134- NEW SODIUM CHLORITE TANK\DRAWINGS\4134 1.DWG

0.93M



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

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DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

JVWTP NEW SODIUM CHLORITE TANK PROCESS AND INTRUMENTATION DIAGRAM

SCALE: NTS

DATE 8/22/19

PROJECT NUMBER 4134

DRAWING NUMBER P1

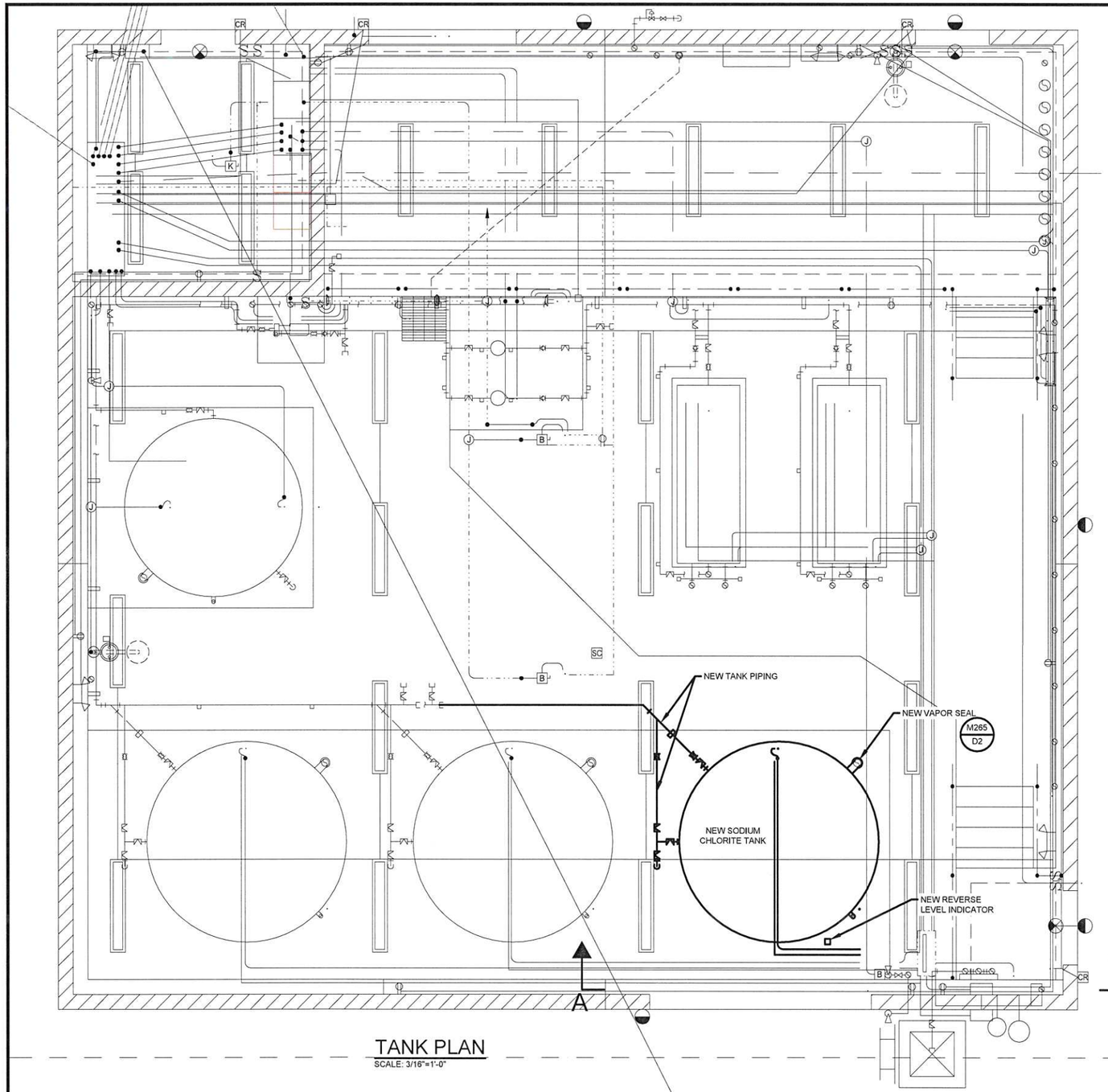
SHEET NUMBER 2 OF 6

I:\WATER TREATMENT PLANTS\JVWTP\4134- NEW SODIUM CHLORITE TANK\DRAWINGS\4134 1.DWG

0.93M

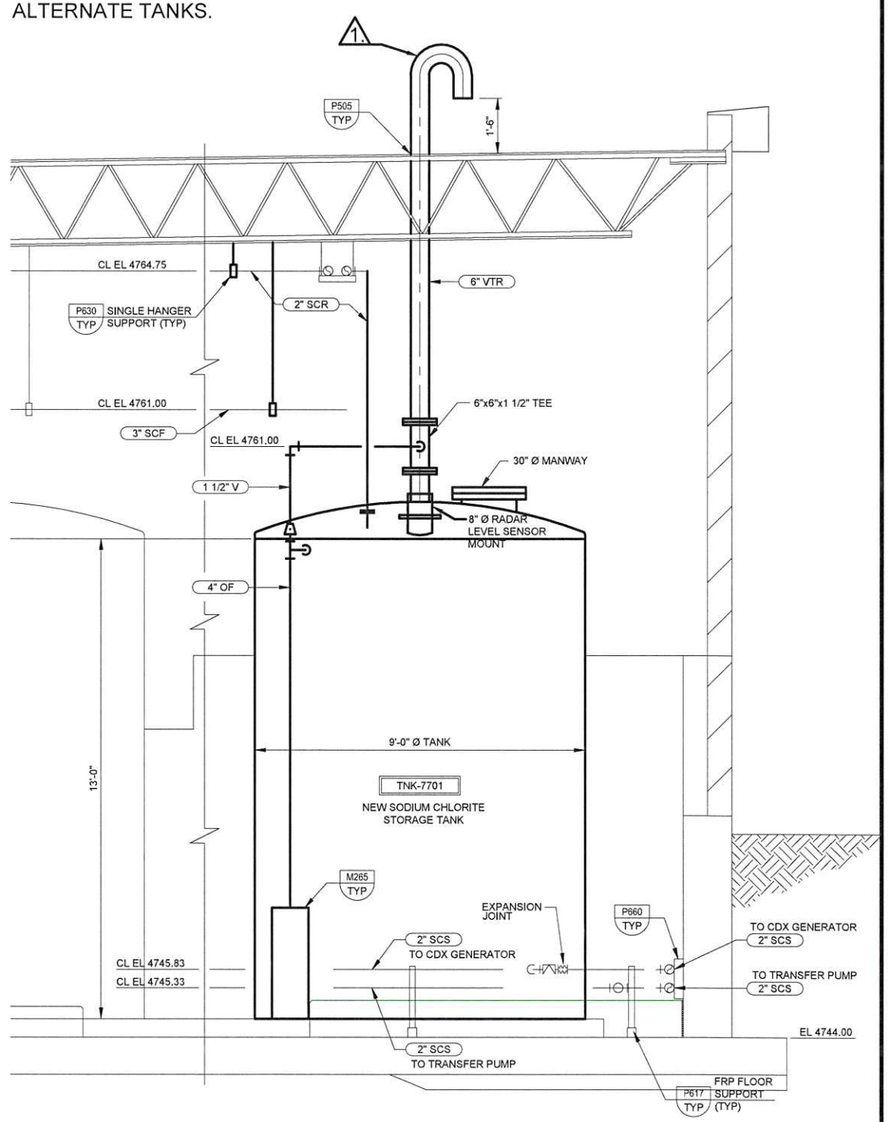
NOTE:

1. INSTALL ALUMINUM AIR TERMINAL (LIGHTNING ROD), ALUMINUM CONDUCTOR AND GROUND CABLE TO INTERFACE AND MATCH EXISTING AIR TERMINALS ON ALTERNATE TANKS.



TANK PLAN

SCALE: 3/16"=1'-0"



A-A TANK ELEVATION

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

M-CD-02

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

LINE IS 1 INCH AT FULL SIZE (IF NOT 1" - SCALE ACCORDINGLY)

DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

JVWTP NEW SODIUM CHLORITE TANK
MECHANICAL

SCALE: -
DATE 8/22/19
PROJECT NUMBER 4134
DRAWING NUMBER M1
SHEET NUMBER 3 OF 6

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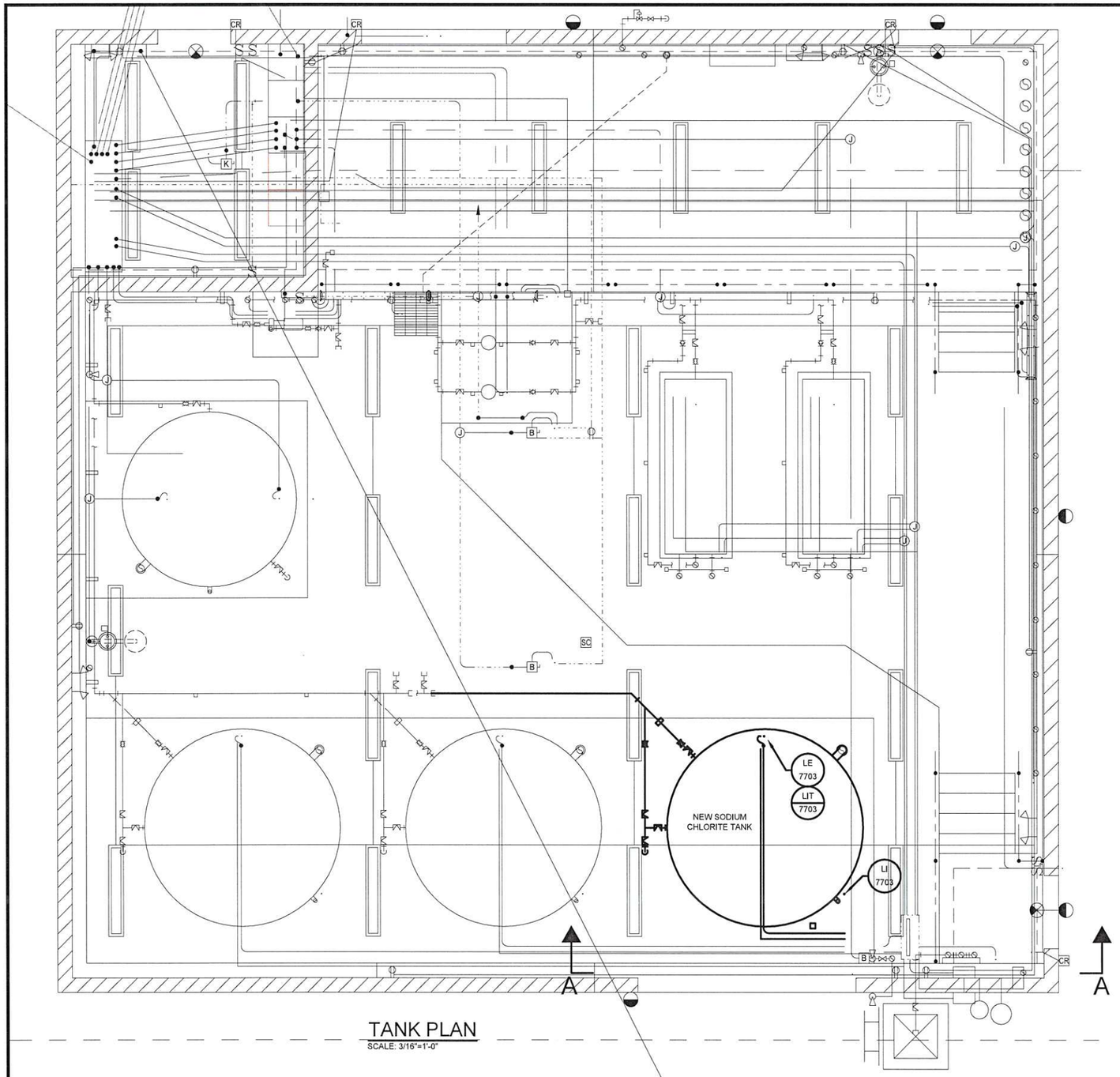
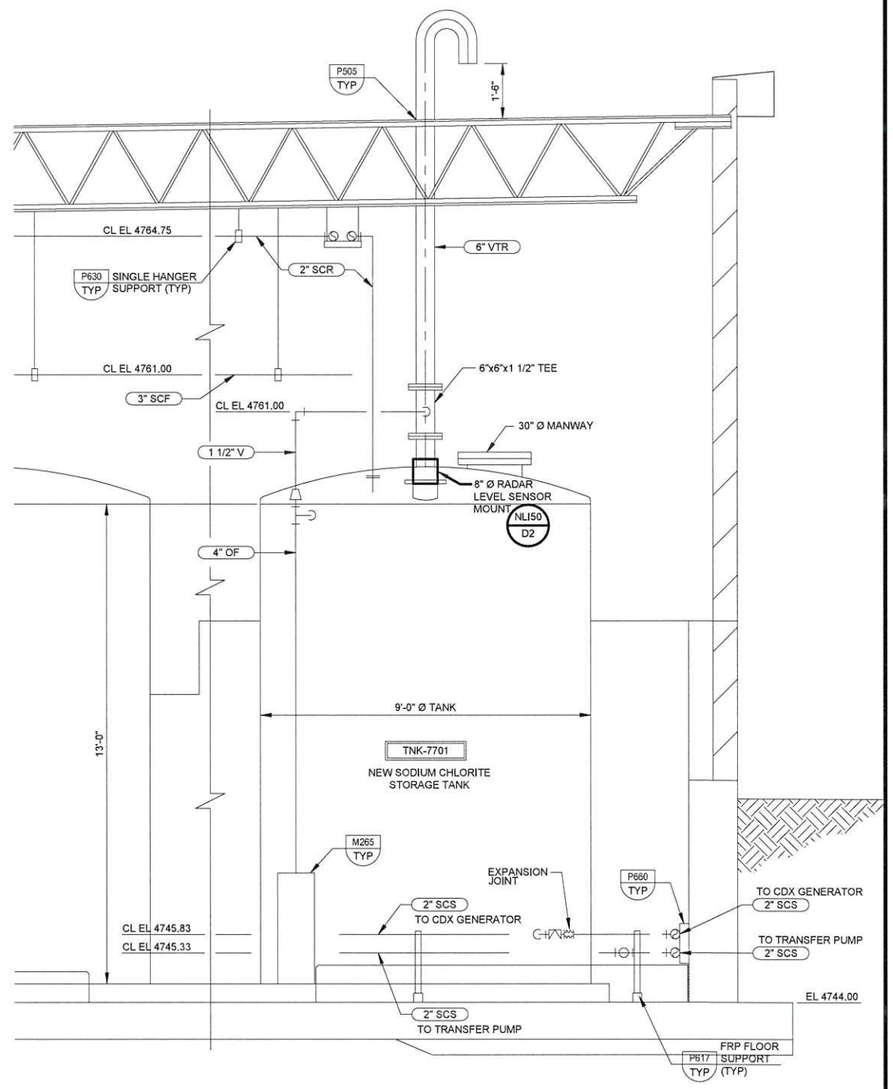
0.87M



TANK PLAN
SCALE: 3/16"=1'-0"



A-A
-
M-CD-02
TANK ELEVATION
SCALE: 1/4"=1'-0"
FILE: NA

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

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DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

JVWTP NEW SODIUM CHLORITE TANK
INSTRUMENTATION

SCALE: -
DATE 8/22/19
PROJECT NUMBER 4134
DRAWING NUMBER 11
SHEET NUMBER 4 OF 6

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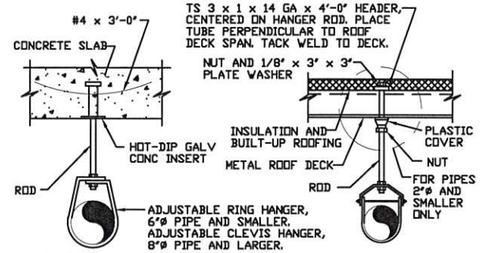
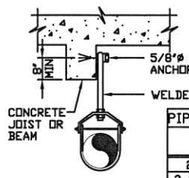
0.87M



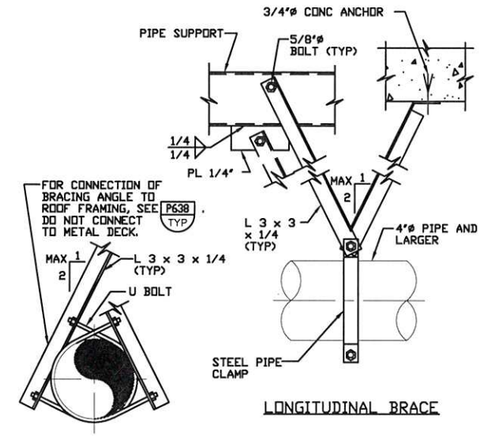


PIPE HANGER RODS AND SUPPORT SPACING		
PIPE DIA (INCHES)	ROD DIA (INCHES)	MAX SUPPORT SPACING
2 AND LESS	3/8	5 FEET
2 1/2 TO 3 1/2	1/2	10 FEET
4 TO 5	5/8	10 FEET
6	3/4	10 FEET
8	7/8	10 FEET
10	7/8	10 FEET
12	7/8	10 FEET

NOTES:

1. ISOLATE ALL COPPER PIPE FROM SUPPORT WITH PVC TAPE.
2. ALL MATERIALS SHALL BE HOT-DIP GALVANIZED.
3. PROVIDE ADDITIONAL HANGER AT EACH SIDE OF ALL VALVES 4 INCHES AND LARGER.

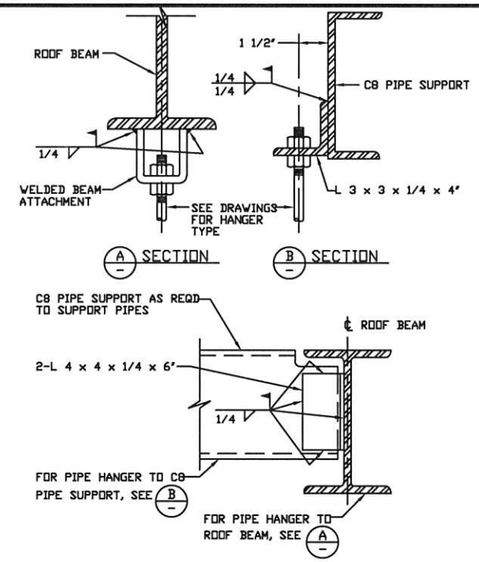
P630 TYP N PIPE HANGER
SHEET 1 OF 2 07-31-08



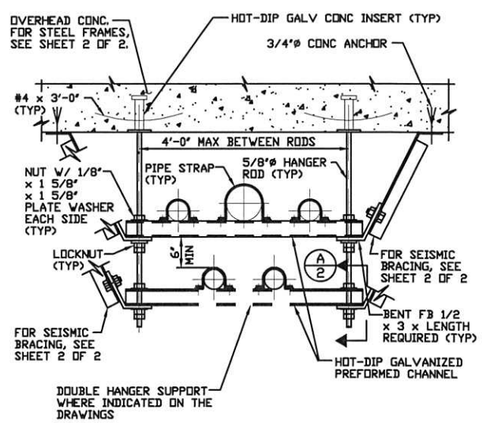
NOTES:

1. MAXIMUM LONGITUDINAL BRACE SPACING = 20'-0".
2. MAXIMUM TRANSVERSE BRACE SPACING = 20'-0".
3. DO NOT CONNECT BRACE TO BOTTOM OF ROOF BEAM OR C8 PIPE SUPPORT, EXCEPT AS SHOWN IN P638 TYP.
4. USE LONGITUDINAL AND TRANSVERSE BRACES FOR PIPES 4" AND LARGER.

P630 TYP N PIPE HANGER
SHEET 2 OF 2 07-31-08



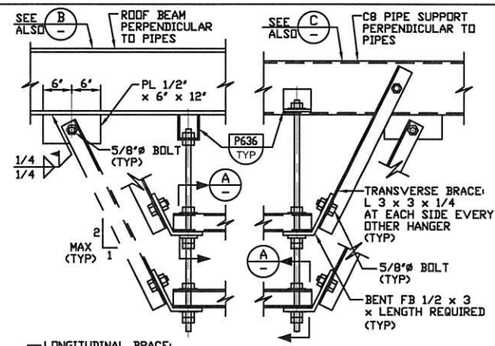
P636 TYP PIPE HANGER SUPPORT
08-01-05



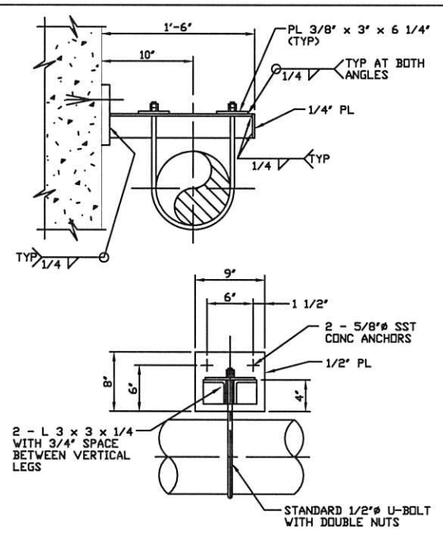
NOTES:

1. HANGER SPACING SHALL BE BASED ON MAXIMUM SPAN ALLOWABLE FOR ANY INDIVIDUAL PIPE.
2. ALL-THREAD ROD SHALL BE USED ONLY FOR DOUBLE SUPPORTS.
3. ALL MATERIALS SHALL BE HOT-DIP GALVANIZED.

P638 TYP N DOUBLE ROD PIPE HANGER
SHEET 1 OF 2 07-31-08



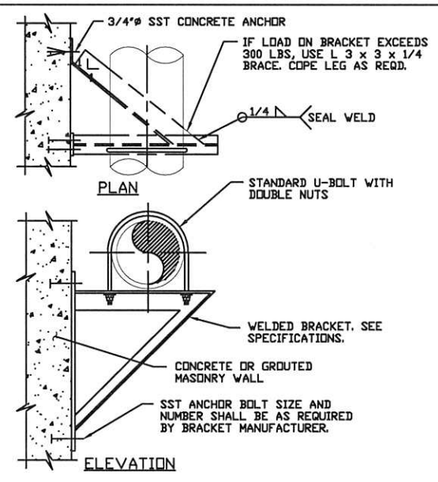
P638 TYP N DOUBLE ROD PIPE HANGER
SHEET 2 OF 2 07-31-08



NOTE:

1. HOT-DIP GALVANIZE SUPPORT AFTER FABRICATION.

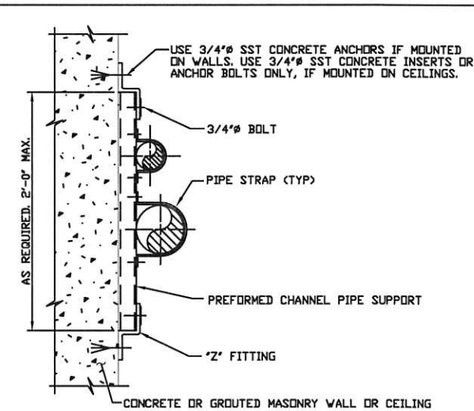
P650 TYP N PIPE SUPPORT
07-31-08



NOTES:

1. HOT-DIP GALVANIZE SUPPORT AFTER FABRICATION.
2. ISOLATE ALL COPPER PIPE W/ PVC TAPE.

P658 TYP N PIPE SUPPORT
07-31-08



NOTES:

1. SPACE FLUSH MOUNT PIPE SUPPORTS AT 5'-0" MAXIMUM.
2. IF SUPPORT IS SUBMERGED OR LOCATED BELOW THE TOP OF WALL IN WATER BEARING STRUCTURE, ALL MATERIAL SHALL BE STAINLESS STEEL. IN ALL OTHER AREAS, THE MATERIALS SHALL BE HOT-DIP GALAVANIZED STEEL UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

P660 TYP N FLUSH MOUNT PIPE SUPPORT
07-31-08

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

LINE IS 1 INCH AT FULL SIZE (IF NOT 1" - SCALE ACCORDINGLY)

DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

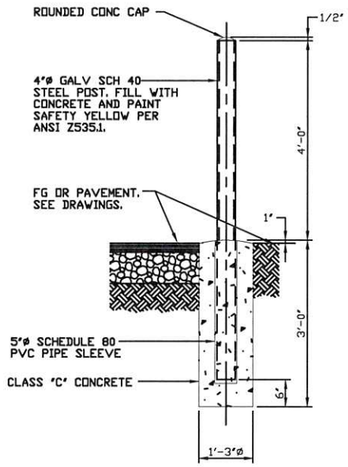
JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

JVWTP NEW SODIUM CHLORITE TANK
TYPICAL INSTALLATION DETAILS

SCALE: NTS
DATE 8/22/19
PROJECT NUMBER 4134
DRAWING NUMBER D1
SHEET NUMBER 5 OF 6

I:\WATER TREATMENT PLANTS\JVWTP\4134 - NEW SODIUM CHLORITE TANK\DRAWINGS\4134 1.DWG

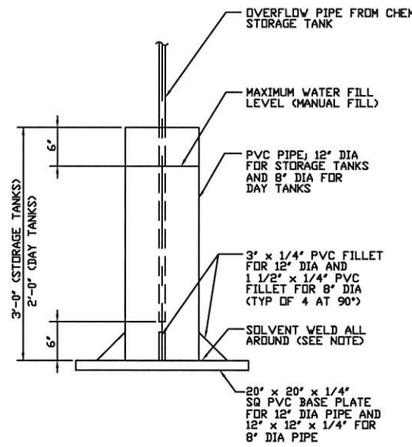
0.87M



NOTE:

1. PROVIDE 3/8" EJ MATERIAL WHERE INSTALLED IN CONC PAVING.

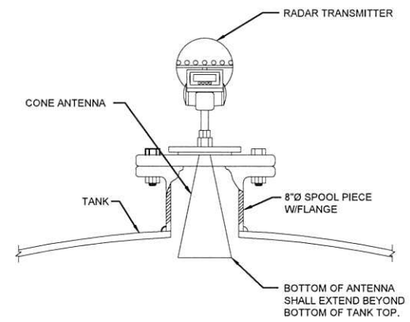
C161 TYP — REMOVABLE GUARD POST — 08-01-05



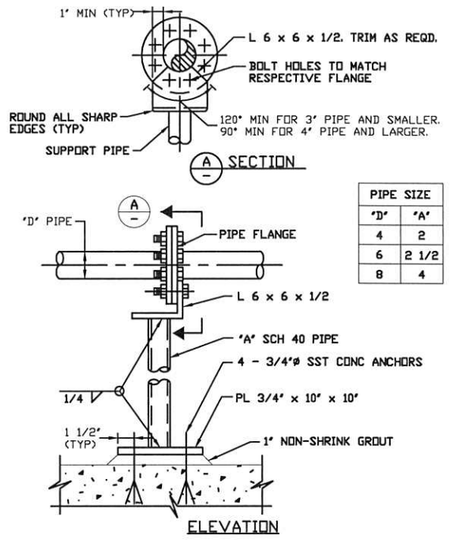
NOTES:

1. SOLVENT WELD OR EPOXY GLUE PIPE AND FITTING FOR WATERTIGHT SEAL
2. ALL PVC MATERIALS SHALL BE SCH 80 PVC

M265 TYP — VAPOR SEAL



NL150 TYP — RADAR TRANSMITTER MOUNTING DETAIL



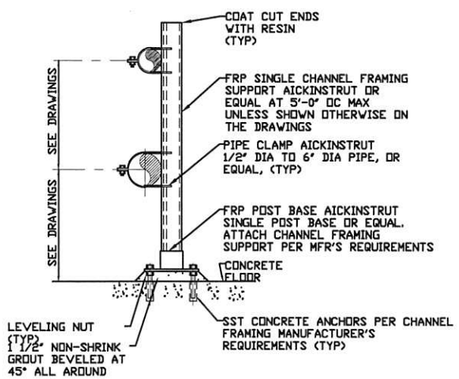
PIPE SIZE	
"D"	"A"
4	2
6	2 1/2
8	4

NOTE:

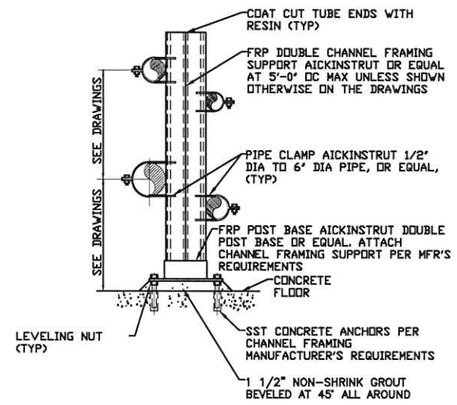
1. HOT-DIP GALVANIZE SUPPORT AFTER FABRICATION.

P626 TYP — PIPE SUPPORT — 07-31-08

NOTE:
USE NON-METALLIC OR TITANIUM BOLTS AND NUTS WITHIN FERRIC CHLORIDE (FC) AND SODIUM HYPOCHLORITE (SH) CONTAINMENT AREAS.



TYPE 1



TYPE 2

P617 TYP — FRP FLOOR PIPE SUPPORT

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

Jordan Valley Water Conservancy District
8215 SOUTH 1300 WEST
WEST JORDAN, UTAH 84088
PHONE (801) 565-4300

LINE IS 1 INCH AT FULL SIZE (IF NOT 1" - SCALE ACCORDINGLY)

DESIGN:	DAVID R MCLEAN
DRAWING:	TODD M PETERSON
PROJ. MGR:	DAVID R MCLEAN
APPROVAL:	

JVWTP CHLORINE DIOXIDE BUILDING UPGRADES

JVWTP NEW SODIUM CHLORITE TANK
TYPICAL INSTALLATION DETAILS

SCALE: NTS
DATE 8/22/19
PROJECT NUMBER 4134
DRAWING NUMBER D2
SHEET NUMBER 6 OF 6

I:\WATER TREATMENT PLANTS\JVWTP\4134 - NEW SODIUM CHLORITE TANK\DRAWINGS\4134 1.DWG

0.87M

2. Tank Specification

SECTION 13206A

FIBERGLASS REINFORCED PLASTIC ABOVEGROUND STORAGE TANKS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Fiberglass reinforced plastic aboveground storage tanks.

B. Related Sections:
   1. Section 01612 - Seismic Design Criteria.
   2. Section 06608 - Fiberglass Reinforced Plastic.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. ASME/RTP-1, Reinforced Thermoset Plastic Corrosion Resistant Equipment.

B. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME):
   1. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
   2. B16.5 - Pipe Flanges and Flanged Fittings.

C. American Society for Testing and Materials (ASTM):
   1. D 2240 - Test Method for Rubber Property - Durometer Hardness
   2. D 3299 - Standard Specification for Filament-Wound Glass Fiber Reinforced Thermoset Resin Chemical-Resistant Tanks
   3. D 4097 - Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks.

D. NSF International (NSF)/American National Standards Institute (ANSI):
   1. NSF/ANSI 61 – Drinking Water Systems Components – Health Effects

1.03 DESCRIPTION

A. Tank Configuration:
   1. Storage tanks shall be flat bottom, internal sloped to drain bottom, vertical, cylindrical, vented tank, with domed tops, and equipped with a top manway, reverse level gauges, and other openings and accessories as described in the Tank Schedule at the end of this Section and as shown on the drawings.
   2. Tanks volume noted in the Schedule, located at the end of this Section, shall include only that volume in the straight shell below the overflow pipe invert elevation to the pump suction nozzle.
      a. Nominal capacity or the inclusion of dished tops, domed tops or freeboard as additional capacity is not acceptable.

1.04 DESIGN CRITERIA

A. Design tanks in accordance with ASTM D 3299, follow the procedures and methods, utilize the equations and formulas, and incorporate safety factors and allowable design stresses and strains set forth in ASME/RTP-1 and other design requirements as specified in Section 06608.
   1. Minimum structural wall thickness: ½ inch.

B. Design and provide tank anchorage system components in accordance with seismic design criteria shall be as specified in Section 01612.

C. Each tank shall conform to the requirements in the Chemical Storage Tank Schedule included in this Section.

1.05 SUBMITTALS

A. Submit as specified in Section 06608, Fiberglass Reinforced Plastic.

B. Shop Drawings: Submit for approval the following
   1. Submit sufficient literature, detailed specifications, and drawings to show dimensions, make, style, size, type, materials used, design features, internal construction, weights, and any other information required by Engineer for review of FRP tanks and accessories.
   2. Shop drawings shall in include as a minimum the following:
      a. Resin and materials of construction including thickness of each laminate.
      b. Description of fabrications.
      c. Dimensions of tanks, fittings, pipe connections, manways, and appurtenances.
      d. Certificate of compliance with NSF/ANSI 61 Standard.

C. Structural Design:
   1. Design tank anchorage system, connections, and related details for seismic design criteria as specified in Section 01612 as described herein.
      a. Provide calculations for:
         1) Determination of operating weight and centroid.
         2) Determination of seismic forces and overturning moments.
         3) Determination of shear and tension forces in connections.
         4) Design of connection details based on calculated shear and tension forces.
         5) Calculations shall be stamped and signed by a Professional Engineer registered in the state of Utah.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of proposed corrosion resistant fiberglass reinforced plastic structures for a minimum of 5 years with satisfactory performance record as specified in Section 06608.

B. The manufacturer approved installer shall have installed products of similar fiberglass reinforced plastic equipment on a minimum of 5 projects with a satisfactory performance record.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the Following or Equal:
   1. Palmer Industrial Products, Garden City, KS.
   2. Xerxes Corporation, Anaheim, CA.
   3. Ershings, Inc., Bellingham, WA.
   4. Tankinetics, Harrison, AR.
   5. Corrosion Controllers, Inc. Washougal, WA.
   6. Edward Fiberglass, Sedalia, MO.
   7. American Fiberglass, Phoenix, AZ.
   8. Paramount Fabricators, Rancho Cucamonga, CA.

2.02 MATERIALS

A. Materials as specified in Section 06608.

B. Resin:
   1. For Fire Retardant Applications: Premium grade vinyl ester resin as recommended by the resin manufacturer for the specific operating environment. Add antimony trioxide or pentoxide for Class I fire rating to the structural laminate only.
      a. Manufacturers: One of the following or equal:
         1) Derakane
         2) Ashland Hetron
         3) Interplastic
         4) Reichhold Dion

C. Minimum Corrosion Liner:
   1. 1 "C" or synthetic veil.
   2. In addition to 1"C" or synthetic veil, include 1-1/2 ounce per square foot mat to a total minimum thickness of 0.096 inches on surfaces exposed to the service environment.

2.03 FABRICATION

A. Fabrication Method: Hand lay-up or filament wound at construction with integral molded bottom knuckle in accordance with applicable portions of Section 06608.

B. Color: Tank exterior shall be painted white in color.

C. Legs and Tie-Down Lugs: Components laminated onto tank wall shall be Type 316 stainless steel.

D. Anchor Bolts: Tank manufacturer shall provide all necessary Type 316 stainless steel anchor bolts.

E. Flanges:
   1. All flange dimensions, except thickness, and bolting shall conform to the following standards:
      a. 2 inch through 24 inch: ANSI B16.5 Class 150.
      b. 30 inch through 42 inch: ANSI B16.1 Class 125.

2. Flange faces shall be perpendicular to the centerline of the tank within 1 degree and shall be flat to plus or minus 1/32 inch up to and including 18 inch equivalent diameter and plus or minus 1/16 inch for equivalent diameters greater than 18 inches. The minimum flange shear thickness shall be 4 times the flange thickness. The flange thickness shall be in accordance with PS 15-69 for 25 pounds per square inch pressure-rated flanges.
3. Flanges shall be made by hand lay-up construction with nozzle neck and flange made integrally in one piece as specified in Section 06608.
4. Press molded or filament wound flanges not allowed.
5. Use 3/16 inch thick full-faced elastomeric gaskets having a Shore A Durometer hardness of 60, within plus or minus 5, as determined by ASTM D 2240 for flanged joints. Elastomer to be resistant to chemical service identified in the Tank Schedule.
6. Area on the back of all flanges around each bolt hole shall be diameter of a standard washer and shall be flat and parallel to flange face.

F. Nozzles:
1. Nozzles for connecting piping and accessories shall be provided on the tank at the locations and sizes as indicated on the Drawings and as described in the schedule at the end of this section.
2. Nozzles shall be flanged, with flange diameter and drilling conforming to ANSI B16.5, Class 150.
3. Nozzles shall extend at least 4 inches from outside face of tank to face of flange.
4. Flanged nozzles shall be fabricated of the same material as the tank and shall be gusseted to the tank.
5. Nozzles for drain connections shall be installed so the invert is flush with the bottom of the tank to allow complete draining of the tank.
6. Tank outlet nozzle:
   a. Outlet nozzles shall be located on the side near the bottom of the storage tanks as shown on the Drawings with the size as shown in the Schedule.
7. Tank overflow nozzle:
   a. Centerline of overflow pipe shall be located a minimum of 12 -inches below the seam line separating the domed top from the vertical walls. Provide upturned pipe within the tank that allows contents to overflow once liquid level has exceeded the seam height.
8. Chlorine Dioxide Recirculation Nozzle:
   a. Provide 3" diameter CPVC pipe with diffuser within the chlorine dioxide batch tank for circulation return of chlorine dioxide.
      1) Pipe shall extend vertically from nozzle on top of the tank to 1-foot above internal tank wall floor and then 90 bend into 5-foot long length of CPVC pipe that parallels the tank floor.
      2) The 5-foot CPVC pipe shall be capped on one the opposite end and drilled every 6-inches on two sides of the pipe with 3/4-inch holes for a total of 20 holes along the 5-foot length.
      3) Tank Supplier shall provide means to support the diffuser piping inside the tank. Coordinate diffuser piping and supports with Radar Level Sensor location to prevent interference.
9. All nuts, bolts and washers utilized shall be fabricated of titanium.
10. All edges cut out (e.g., nozzles or manways) shall be trimmed to have smooth edges.

G. Manway:
   1. Provide an access manway at the top of the storage tanks. The size shall be as provided in the Schedule and location on the top of the tank as per the Drawings. Manways in the side shell of the tank shall not be allowed.

H. Gussets:
   1. Reinforce nozzles, except manways, with plate or conical gussets to match piping.
   2. Conical gussets having comparable strength may be substituted for plate gussets.

I. Reinforcement of Nozzle and Manhole Openings in Vessel Walls:
   1. In accordance with ASTM D 3299 for filament wound vessels or ASTM D 4097 for contact-molded, hand lay-up vessels as specified in Section 06608.
   2. When reinforcing materials are cut to facilitate placement around an installed nozzle or opening, stagger joints in successive reinforcing layers to avoid overlapping and do not place so that the joints are parallel to the axis of the tank. The principle fiber direction of the woven roving reinforcement (0 degree/90 degree) shall be parallel to the tank axis.

J. Lifting Lugs:
   1. Capable of withstanding weight of empty tank with minimum safety factor of five to one. A minimum of three lugs shall be furnished for the tank. Lifting lugs shall be type 316 stainless steel for the storage tanks, and attached to tank wall with hand-layed up laminate equal to or greater than the tank wall thickness.

K. Supports:
   1. Storage tanks shall be provided with external integrally-fabricated FRP structural members or struts for mounting and support of reverse level gauges and piping as shown on the drawings.

L. Gaskets
   1. Gaskets for storage tanks shall be fully resistant to the corrosive effects of 25% or 31% sodium chlorite and 0.3% chlorine dioxide. Use full-face Viton of a minimum thickness of 1/8-inch.

M. Reverse Level Indicator:
   1. Where indicated on the Drawings, chemical storage tanks shall be equipped with a 2-inch PVC float type reverse level sight gauge.
      a. An internal Promo type tank pipe support as provided by Poly Processing Co., or equal, shall be provided to support the interior tank pipe for the sight gauge.
      b. Calibration tape shall be provided with each sight gauge.
         1) Contractor is responsible to calibrate the tanks and apply the calibration tape in increments of 1000 gallons.
         2) Calibration of tanks must be approved by Engineer.
   2. Manufacturer (or equal):
      a. Poly Processing Co
         1) #4089 for vertical tanks under 7-feet.
         2) #3356 for vertical tanks over 7-feet.

2.04 VESSEL ASSEMBLY

A. All cutouts from the equipment shall be marked, indicating their original location, and retained. All cutouts shall become the property of the OWNER.

B. Do not remove centerlines marked on the equipment for use in assembly until after inspection by the ENGINEER.

C. Install flanged nozzles with boltholes straddling principle centerlines of the vessel. For tank tops, nozzle boltholes straddle radial centerlines.

D. Fabricator shall supply to the CONTRACTOR, at the earliest possible time, a template which locates anchor boltholes within plus or minus 1/8 inch for each vessel.

E. A non-skid surface shall be provided on the exterior surface of the cover. Silica grit may be applied in conjunction with the final resin coat. Other methods may be submitted.

F. Furnish and overlay on the outside of the equipment a plastic nameplate showing the following information:
   1. Name of manufacturer.
   2. Date of manufacture.
   3. OWNER's purchase order number.
   4. Equipment name/number.
   5. Resin number and manufacturer.
   6. Design pressure and temperature.
   7. Vessel diameter, height, and weight.

G. Butt joints or shell joints shall be in the number and location(s) as indicated on the fabrication drawings. Additional joints are not allowed. Slip joints, "mod joints," or other methods not conforming to the fabrication drawings are not allowed. If joint locations are not indicated on the fabrication drawings, Fabricator shall submit number and location.

H. Allowable tolerances shall be as listed in ASTM D 3299 or ASTM D 4097, except as modified herein or on the fabricator drawings.

I. When joining components, gaps at mating edges shall be limited to 1/4 inch maximum, and misalignment of inside surfaces shall not exceed 1/3 inch of the lesser wall thickness.

J. The outside surface of vessel flat bottoms after assembly shall be flat within plus or minus 1/2 inch. In addition, localized indentations or protrusions shall not exceed plus or minus 1/4 inch within 2 feet.

PART 3 EXECUTION

3.01 TANK INSTALLATION

A. For flat bottom vessels without legs, the foundation must provide full non-elastic support to the flat bottom, preferably through the use of grout, which will allow continuous support even though surfaces may not be flat.

B. All anchor lugs or leg pads shall be set on a 1-inch thick layer of non-shrink grout. Do not use hard shim to fill void between the lugs and foundation.

C. Unless otherwise agreed, independently support all piping so as not to apply loads to the vessel nozzles. Isolate potential load due to thermal expansion of piping from the vessel. During installation, do not force piping into alignment, which can create excessive stresses in the tank.

D. Do not mate raised-face flanges or ring gaskets to full-faced fiberglass reinforced plastic nozzles.

3.02 TANK SCHEDULE

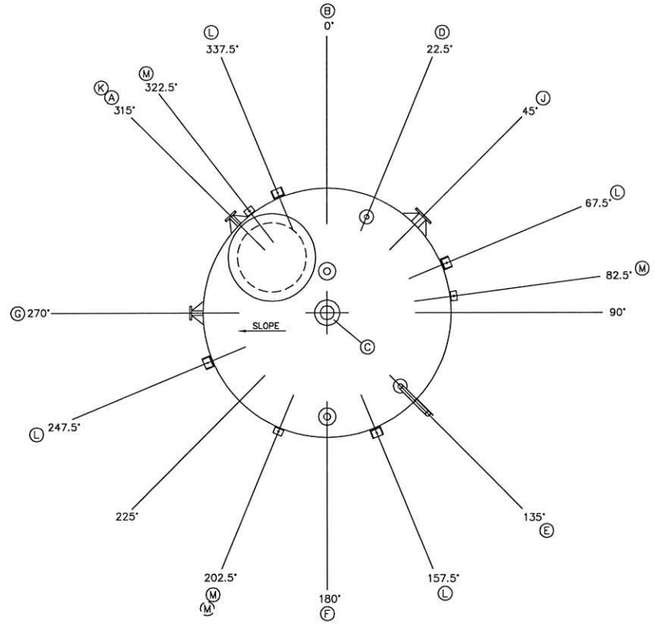
Tag Numbers	**TNK-7701, TNK-7702**	**TNK-7730**
General Characteristics:		
Service	Sodium Chlorite 25 or 31%	Chlorine Dioxide 300-3000mg/L
Specific Gravity	1.21 or 1.26	1.0
Ambient Temperature Range: ^{0}F	45-90	45-90
Pressure: psig	Atmospheric	Atmospheric
Tank Quantity	2	1
Nominal Capacity Each: gallons	6,000	2,500
Tank Diameter: feet	9	8
Straight Shell Height: feet	13	7
Top	Dome	Dome
Bottom	Flat with internal slope to drain	Flat with internal slope to drain
Chemical Fill Line Connection	Quantity: One Size: 3 inches Location: Top Connection: 150# FF	Quantity: One Size: 3 inches Location: Top Connection: 150# FF
Vent to Roof Line Connection	Quantity: One Size: 6 inches Location: Top Connection: 150# FF	Quantity: One Size: 6 inches Location: Top Connection: 150# FF

Tag Numbers	TNK-7701, TNK-7702	TNK-7730
General Characteristics:		
Drain Line Connection	Quantity: One Size: 2 inches Location: Bottom Connection: 150# FF	Quantity: One Size: 2 inches Location: Bottom Connection: 150# FF
Radar Level Indicator Connection	Quantity: One Size: 8 inches Location: Top Connection: 150# FF	Quantity: One Size: 8 inches Location: Top Connection: 150# FF
Reverse Level Gauge Connection	Quantity: Two Size: 2 inches Location: Top Connection: 150# FF	Quantity: Two Size: 2 inches Location: Top Connection: 150# FF
Level Switch Connection	None	Quantity: Two Size: 4 inches Location: Top Connection: 150# FF
Manway Size	Quantity: One Size: 30 inches Location: Top Connection: 150# FF	Quantity: One Size: 30 inches Location: Top Connection: 150# FF
Tank Overflow/Vapor Seal Line Connection	Quantity: One Size: 4 inches Location: Side Top Connection: 150# FF	Quantity: One Size: 4 inches Location: Side Top Connection: 150# FF
Transfer/Circulation Line Connection	Quantity: One Size: 2 inches Location: Top Connection: 150# FF	Quantity: One Size: 3 inches Location: Top Connection: 150# FF Provide diffuser piping as described in 2.03.G.8
Generator/Feed Pump Suction Line Connection	Quantity: One Size: 2 inches Location: Side Bottom Connection: 150# FF	Quantity: One Size: 3 inches Location: Side Bottom Connection: 150# FF

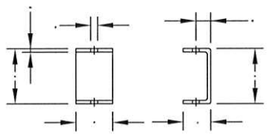
Tag Numbers	TNK-7701, TNK-7702	TNK-7730
General Characteristics:		
Forced Ventilation	None	Quantity: One Size: 2 inches Location: Top Connection: 150# FF

END OF SECTION

3. OEM Tank Submittal



PLAN VIEW



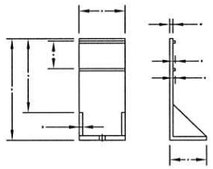
Lifting Lugs:

Quantity of Lugs: 4

Size of Lug Overwind: 5.06"

Thickness of Overwind: 0.20"

Width of Lug: 4"



Anchor Lugs:

Quantity =4

Size of attachment Bond: 8"

Thickness of Attachment Bond: .45"

Anchor Bolt needs to Accept $\frac{3}{4}$"

MRK	QTY	DESCRIPTION	DEGREE	RAD/HT.	SERVICE	PROJ.
A	1	30" TOP MANWAY WITH FRP COVER	315°	2'-10" RAD	ACCESS	5"
B	1	3" FLANGED NOZZLE WITH GUSSETS	0°	1'-6" RAD.	LEVEL SENSOR	5"
C	1	6" FLANGED NOZZLE	CTR	TOP	VENT	5"
D	1	2" FLANGED NOZZLE WITH GUSSETS	22.5°	3'-9" RAD.		5"
E	1	2" FLANGED NOZZLE WITH GUSSETS AND POLY PROCESSING REVERSE FLOAT #3358	135°	3'-9" RAD.	REVERSE FLOAT	–
F	1	3" FLANGED NOZZLE WITH GUSSETS	180°	3'-9" RAD.	FILL	5"
G	1.	2" FLANGED NOZZLE WITH GUSSETS	270°	6" HT.	DRAIN	5"
J	1	4" FLANGED NOZZLE WITH GUSSETS	45°	12'-0" HT.	OVERFLOW	5"
K	1	2" FLANGED NOZZLE WITH GUSSETS	315°	1'-6" HT.	PUMP SUCTION	5"
L	4	316 STAINLESS STEEL TYPE II HOLD DOWNS (SEE DRAWING FOR LOCATION)	(SEE DWG)	1/2" HT.	HOLD DOWNS	–
M	4	316 STAINLESS STEEL LIFTING LUGS	(SEE DWG)	(3) @ 12' (1) 1'3"	LIFTING LUGS	–
	4	0.625 INCH 316 STAINLESS STEEL ANCHOR BOLTS 8" LONG				

GENERAL NOTES:

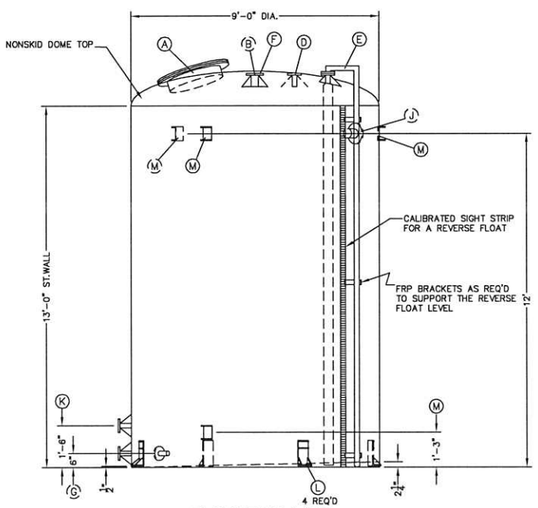
1. Flanges are drilled per ANSI B16.5 Class 150 and rated for 50 PSI. Bolt holes to straddle principle tank centerlines. Nozzles to project 5" unless otherwise noted. All flanges 4" and smaller will be conically supported. Independent supports for all piping loads to be supplied by others. Avoid pipe strain on Fiberglass fittings and use flexible connections where possible.
2. Vessel to have complete bottom support by customer.
3. Edwards Fiberglass, Inc. recommends that each tank be water filled (Hydro Tested) for a 24 hour period after the tank is installed.
4. Tank Hold Downs must be securely fastened to floor.
5. Proper venting must be utilized. If vent screams are present they should be kept clean daily.
6. Tank is designed for Atmospheric pressure storage only. Failure to observe this could result in tank failure and void tank warranty.
7. Do not enter tank unless Federal & State O.S.H.A tank entry procedures have been followed.
8. Do not located Anchor Bolts in tank pad before receipt of tank. Edwards Fiberglass, Inc. will not be responsible for preset Anchor Bolts.
9. All electrical and mechanical connections by others.
10. All Bolts, Gasket and anchor bolts by others unless otherwise noted. (EFI to supply Titanium Bolts and $\frac{1}{8}$" gaskets for top manway.)
11. External Gel Coat to be 7 mil minimum thickness. No field painting provided by EFI.
12. All Dimensions are in inches.
13. Anything not listed on this drawing is not provided by EFI.

BECAUSE OF CONTENTS OF TANK, A BPO/DMA CURING SYSTEM IS REQUIRED WHICH DOES NOT ALLOW FOR AN NSF61 RESIN TO BE UTILIZED.

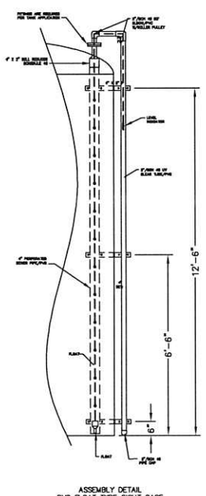
TANK	TANK DIA.	9'-0" DIA.
	TANK ST. WALL\HEIGHT	13'-0" ST.WALL
	TANK TOP	DOME WITH NONSKID SURFACE
	TANK BOTTOM	FLAT WITH INTERNAL 1/4" PER FOOT SLOPE
	TANK THICKNESS	1/2" MINIMUM THICKNESS
GENERAL	NO. REQ'D	TWO
	VESSEL CONTENT:	SODIUM CHLORITE
	VESSEL CAPACITY:	NOMINAL 6,175 GALLONS
	ESTIMATED EMPTY WEIGHT:	2,210 lbf
	ESTIMATED FULL WEIGHT:	67,214 lbf
	BOLTING MATERIAL:	TITANIUM FOR MANWAY
	GASKET MATERIAL:	1/8" VITON FOR 30" TOP MANWAY
	EXT. SURFACE:	WHITE
RESIN	DESIGN CODE:	ASTM D 3299 AND BUILD PER RPT 1 NO STAMP OR CERT
	ADDITIONAL SPECIFICATION:	N/A
	SPECIFIC GRAVITY:	1.28
	DESIGN PRESSURE:	ATMOSPHERIC
	DESIGN TEMPERATURE:	AMBIENT
	SEISMIC LOADING:	1.133
	WIND LOADING	90 MPH
	LINER VEIL:	NEXUS
	LINER RESIN:	COREZYN 6300 WITH BPO/DMA OR EQUAL
	TOTAL LINER THICKNESS:	100 MIL MINIMUM
	STRUCTURE TYPE:	FILAMENT WOUND
	STRUCTURE RESIN:	COREZYN VE8441 WITH 3% ANTIMONY TRIOXIDE
	CATALYST SYSTEM:	BPO/DMA
	NOZZLE RATING	25 PSI
TESTS	VIS. ACCEPT:	N/A
	BARCOL TEST:	N/A
	HYDROTEST:	N/A
	BURN TEST:	N/A
	SPECIAL TESTS:	N/A
OTHER	POSTCURE:	4 HOUR
	NOZZLE CUTOUTS:	N/A
	MATERIAL CERTIFICATIONS:	N/A
	ADD'L DOCUMENTATION:	N/A

Design Summary

0.44 INCH	CB, 7(c,FW),c	SHELL LAMINATE
0.37 INCH	CB, 3(MR)M	TOP DISH HEAD
0.26 INCH	CB, MRMM	VESSEL FLAT BOTTOM
0.60 INCH	CB, MRMM, 7(c, FW), c	BOTTOM KNUCKLE
0.16 INCH	MRMM	2" NOZZLE "C" & "J" REINFORCEMENT
0.45 INCH	18(FW)	ANCHOR LUG ATTACHMENT BOND
0.20 INCH	8(FW)	LIFT LUG ATTACHMENT BOND



ELEVATION VIEW



ASSEMBLY DETAIL
PVC FLOAT TYPE SIGHT GAGE

REV	DATE	DESCRIPTION	CHK'D

EDWARDS FIBERGLASS, INC.
660-826-3915
P.O. BOX 1252 • BOONVILLE & HARDING
SEDALIA, MISSOURI 65302-1252

DATE MAILED: _____

FOR APPROVAL

PLEASE CHECK LOCATIONS & MEASUREMENTS SHOWN. NOTE ALL CHANGES IN RED AND RETURN PRINT

DATE APPROVED: _____

APPROVED BY: _____

EDWARDS REF.:
25-31% SODIUM CHLORITE TNK-7701

CUSTOMER:
NELSON BROTHERS
347 WEST 1600 SOUTH
SALT LAKE CITY, UT.

PO# 1003-L177

TITLE:
CHLORINE DIOXIDE PROJECT
JORDAN VALLEY WATER TREATMENT PLANT

P.O. NO. 1003-L177
DRAWN BY: SHAUN
DATE DRAWN: 1/20/2011
REV. DATE: 3/15/2011
INITALS:
DRAWING NUMBER: 7418
REV. B

4. Level Transmitter Specification

SECTION 17208

RADAR LEVEL TRANSMITTER - PULSE TIME OF FLIGHT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes requirements for:
   1. Guided Radar (PTOF - pulse time of flight) level transmitters.

B. Related Sections:
   1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
   2. It is the CONTRACTOR's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of CONTRACTOR's Work.
   3. The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the CONTRACTOR to see that the completed Work complies accurately with the Contract Documents.
      a. Section 01330 - Submittal Procedures.
      b. Section 17050 - Process Control and Instrumentation Systems General Requirements.

C. Provide all instruments identified in the Contract Documents.

1.02 REFERENCES

A. Refer to Section 17050.

1.03 DEFINITIONS

A. Refer to Section 17050.

1.04 SUBMITTALS

A. Furnish submittals in accordance with Sections 01300 and 17050.

1.05 QUALITY ASSURANCE

A. Refer to Section 17050.

B. Examine the complete set of Contact Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.

C. Notify the ENGINEER if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 17050.

1.07 PROJECT OR SITE CONDITIONS

A. Refer to Section 17050.

1.08 WARRANTY

A. Refer to Section 17050.

1.09 MAINTENANCE

A. Refer to Section 17050.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The following, no equal:
   1. Endress+Hauser, Micropilot M FMR230.

2.02 MANUFACTURED UNITS

A. Pulse Time of Flight (PTOF):
   1. General:
      a. Instrument emits radar pulses via a transmitter, with a frequency range of 8.6 Hz to 26 GHz.
      b. The pulses reflect from the surface being measured and are received back at the instrument via a sensor.
      c. The instrument measures the pulse travel time between the transmitter, surface, and receiver to calculate the level.
      d. Safety:
         1) Shall not generate frequency waves with power levels hazardous to humans.
   2. Performance requirements:
      a. Accuracy: Level:
         1) 0.25 inch.
   3. Element:
      a. Level Element must conform to the Process Material compatibility as indicated on the Instrument Data Sheets or the Instrument Index.
      b. Connections:
         1) Process: The antenna design shall be suitable for mounting in a nozzle as indicated on the Instrument Data Sheets or the Instrument Index:
         2) The design shall be such that product condensation on the antenna shall not affect the performance of the gauge. It shall be possible to choose between either parabolic-, cone-, rod-shaped antennas.

4. Transmitter:
    a. Microprocessor-based signal converter/transmitter.
    b. Power supply:
        1) 24 VDC - 2 wire loop powered.
        2) Power consumption: 15 VA maximum.
    c. Outputs:
        1) Isolated 4-20mA DC.
    d. Backlit digital display for level or volume.
    e. Self-diagnostics and automatic data checking.
    f. Signal Integrity:
        1) Immune to radio frequency and electromagnetic interference with field strength of 15 Volts/Meter or less over a frequency range of 50 Hz to 460 MHz.
        2) Able to ignore momentary level spikes or momentary loss of echo and indicate loss of echo condition on indicating transmitter unit.
    g. Protected terminals and fuses in a separate compartment which isolates field connection from electronics.
        1) Indication: Local - 5 digit display.

2.03 ACCESSORIES

A. Software: Provide Windows based PC software for configuration and echo mapping.

2.04 SOURCE QUALITY CONTROL

A. Refer to Section 17050.

B. Factory calibrate each level transmitter at a facility that is traceable to the National Institute of Testing Standards.

C. Provide complete documentation covering the traceability of all calibration instruments.

PART 3 EXECUTION

3.01 INSTALLATION

A. Refer to Section 17050.

B. Coordinate the installation with all trades to ensure that the mechanical system has all necessary appurtenances including weld-o-lets, valves, etc. for proper installation of instruments.

3.02 FIELD QUALITY CONTROL

A. Refer to Section 17050.

B. Provide manufacturer's services to perform start-up and calibration or verification.

3.03 ADJUSTING

A. Verify factory calibration of all instruments in accordance with the manufacturer's instructions:
   1. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.04 CLEANING

A. Refer to Section 17050.

3.05 DEMONSTRATION AND TRAINING

A. Refer to Section 17050.

B. Demonstrate performance of all instruments to the ENGINEER before commissioning.

3.06 PROTECTION

A. Refer to Section 17050.

3.07 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be shown on the Drawings, in the Specifications or both.

A/E:	Carollo Engineers	RADAR LEVEL INSTRUMENTS					
						Spec. No. 17208	Rev.
Contractor:		No	By	Date	Revision		
Project:	Chlorine Dioxide Chem. Feed System					Contract	Date
Customer:	Jordan Valley WCD						
Plant:	Jordan Valley WTP					Req.	P.O.
Location:							
BOM No.:						By / Chk / App	
File:							

GEN	1	Instrument Tag Number	LE/LIT-7701	LE/LIT-7702	LE/LIT-7730
	2	Service	$NaClO_2$ Storage Tank 1	$NaClO_2$ Storage Tank 2	ClO_2 Batch Tank
	3	P&ID	PI-01	PI-01	PI-03
	4	Other			
PROBE	5	Type	Pulse Time of Flight (PTOF)	Pulse Time of Flight (PTOF)	Pulse Time of Flight (PTOF)
	6	Housing Mat'l	Alloy C4	Alloy C4	Alloy C4
	7	Measurement Range	0 – 15 feet	0 – 15 feet	0 – 9 feet
	8	Op. Temp. Range			
	9	Manufacturer	Endress-Hauser	Endress-Hauser	Endress-Hauser
	10	Model	Micropilot M FMR230	Micropilot M FMR230	Micropilot M FMR230
	11	Model Number			
	12	Antenna Style	Horn	Horn	Horn
	13	Antenna Seal	Viton	Viton	Viton
	14	Other			
	15	Other			
	16	Other			
TRANSMITTER	17	Type	Microprocessor	Microprocessor	Microprocessor
	18	Operating Mode			
	19	Enclosure	NEMA 4X	NEMA 4X	NEMA 4X
	20	Mounting			
	21	Temperature Range			
	22	Voltage Requirements	24 VDC, loop-powered	24 VDC, loop-powered	24 VDC, loop-powered
	23	Power			
	24	Accuracy	+/- 0.1% of range	+/- 0.1% of range	+/- 0.1% of range
	25	Calibrated Range	0 – 15 feet	0 – 15 feet	0 – 9 feet
	26	Display	Multi Character LCD	Multi Character LCD	Multi Character LCD
	27	Output	4-20 mA	4-20 mA	4-20 mA
	28	Calibration			
	29	Status Relay			
	30	Manufacturer	Endress-Hauser	Endress-Hauser	Endress-Hauser
	31	Model No.	Micropilot M FMR230	Micropilot M FMR230	Micropilot M FMR230
	32	Damping			
	33	Elect. Entry			
	34	Other			
OPTS	35				
	36				
	37				
	38				

Notes:

END OF SECTION

90 North Cutler Drive • P.O. Box 540445
North Salt Lake, Utah 84054-0445
Phone: (801) 292-2956 • Fax: (801) 292-4164
www.vfcinc.com

DATE: May 16, 2011

INSTRUMENTATION SUBMITTAL NO.: 2.1

JVWCD CHLORINE DIOXIDE CHEMICAL FEED SYSTEM

SPECIFICATION SECTION:
17208-Radar Level Transmitter

RE-SUBMITTAL NO. 1

PREPARED BY: Dick Franklin
Engineering Services

MORRIS REVIEW BY:

Albuquerque
Local Installer
P: (575) 993-0041

Dallas
1240 Texan Trail
Suite 108
Grapevine, TX 76501
P: (817) 488-4788
F: (817) 488-4757

Denver
14 Inverness Drive East
No. A140
Englewood, CO 80112
P: (303) 649-4905
F: (303) 649-4906

Las Vegas
Local Installer
P: (702) 206-3155

Phoenix
1230 West Southern Ave
Suite 105
Tempe, AZ 85282
P: (480) 966-0175
F: (480) 966-0184

Raleigh / Durham
14460 New Falls Neuse Rd
Suite 149-288
Raleigh, NC 27614
P: (252) 213-9900

Pennington - NJ
800 Denow Road
Suite C #375
Pennington, NJ 08534
P: (609)915-7757

San Antonio
1015 Creek Corner
San Antonio, TX 78253
P: (210) 724-5004
F: (210) 679-5310

Salt Lake City
90 North Cutler Drive
North Salt Lake, UT
84054
P: (801) 292-2956
F: (801) 292-4164

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Salt Lake City
90 North Cutler Drive
North Salt Lake, UT
84054
P: (801) 292-2956
F: (801) 292-4164

DATE: May 16, 2011

INSTRUMENTATION SUBMITTAL NO.: 2.1

SPECIFICATION SECTION:
17208- Radar Level Transmitter

COMPLIANCE CERTIFICATION

Spec. Section	Compliance	Exception
Part 1	Yes	None
Part 2.01 A	No	We are furnishing the FMR244 instead of the specified FMR230. Vendor advises us that the FMR244 is better suited to the application and it is the model that they have been selling to JVWCD.
Part 2.02A1	Yes	None
Part 2.02A2	Yes	None
Part 2.02A3a	Yes	None
Part 2.02A3b1	No	Antenna design does not utilize a nozzle.
Part 2.02A3b2	Yes	
Part 2.02A4	Yes	
Part 2.03	Yes	
Part 2.04B	No	Transmitter will be field calibrated at the time of installation.
Part 2.04C	Yes	
Part 3	Yes	

This re-submittal is in compliance with discussions between Matt Hatch and Randy Schafer (Weidner & Assoc.)
All re-submittal changes are in red.

VFC CONTROLS

90 Cutler Dr.
North Salt Lake, UT 84054
801-292-2956

A/E: Carollo Engineers
Project: Chlorine Dioxide Chem. Feed System
Contractor: Morris Electric
Plant: Jordan Valley WTP
File:

RADAR LEVEL INSTRUMENTS

No	By	Date	Revision

Spec. No.	Rev.
17208	A
Contract VC10090	**Date** 1/7/2011
Req.	**P.O.**

By	Chk	App
REF	REF	

G	1	**Instrument Tag Number**	**LE/LIT-7701**	**LE/LIT-7702**	**LE/LIT-7730**
E	2	**Service**	$NaClO_2$ Storage Tank 1	$NaClO_2$ Storage Tank 2	ClO_2 Batch Tank
N	3	**P&ID**	PI-01	PI-01	PI-03
	4	**Other**			
	5	**Type**	Pulse Time of Flight (PTOF)	Pulse Time of Flight (PTOF)	Pulse Time of Flight (PTOF)
P	6	**Housing Mat'l**	PTFE Encapsulated	PTFE Encapsulated	PTFE Encapsulated
R	7	**Measurement Range**	0 – 15 feet	0 – 15 feet	0 – 9 feet
O	8	**Op. Temp. Range**	-40 to 266 deg. F	-40 to 266 deg. F	-40 to 266 deg. F
B	9	**Manufacturer**	**Endress-Hauser**	**Endress-Hauser**	**Endress-Hauser**
E	10	**Model**	**Micropilot M**	**Micropilot M**	**Micropilot M**
	11	**Model Number**	Integral w/transmitter	Integral w/transmitter	Integral w/transmitter
	12	**Antenna Style**	40mm/1-1/2" PTFE	40mm/1-1/2" PTFE	40mm/1-1/2" PTFE
	13	**Antenna Seal**	Viton	Viton	Viton
	14	**Process Connection**	1-1/2" NPT PVDF	1-1/2" NPT PVDF	1-1/2" NPT PVDF
	15	**Other**			
	16	**Other**			
	17	**Type**	Microprocessor	Microprocessor	Microprocessor
T	18	**Operating Mode**			
R	19	**Enclosure**	NEMA 4X	NEMA 4X	NEMA 4X
A	20	**Mounting**	Integral w/antenna	Integral w/antenna	Integral w/antenna
N	21	**Temperature Range**			
S	22	**Voltage Requirements**	24 VDC, loop-powered	24 VDC, loop-powered	24 VDC, loop-powered
M	23	**Power**			
I	24	**Accuracy**	+/- 0.1% of range	+/- 0.1% of range	+/- 0.1% of range
T	25	**Calibrated Range**	0 – 15 feet	0 – 15 feet	0 – 9 feet
T	26	**Display**	Multi Character LCD	Multi Character LCD	Multi Character LCD
E	27	**Output**	4-20 mA	4-20 mA	4-20 mA
R	28	**Calibration**			
	29	**Status Relay**			
	30	**Manufacturer**	**Endress-Hauser**	**Endress-Hauser**	**Endress-Hauser**
	31	**Model No.**	**FMR244-A2VGNSAA4A**	**FMR244-A2VGNSAA4A**	**FMR244-A2VGNSAA4A**
	32	**Damping**			
	33	**Elect. Entry**	½" NPT	½" NPT	½" NPT
	34	**Other**			
O	35				
P	36				
T	37				
S	38				

Notes: 1) We will furnish a 3 inch blind flange drilled and tapped for 1-1/2 inch with the antenna installed.
REV A: Item 6: Changed to PTFE encapsulated. Changed note 1.

WEIDNER & ASSOCIATES

135 West 7065 South
Midvale UT 84047
Phone 801- 565-9595 Fax (801) 565-9598
Toll Free 1-800-894-3205
Web site: http://www.weidnerandassociates.com

Submittal

Submittal: 0506RS1101
Date: May 6, 2011

To: **VFC**

Jordan Valley Chlorine Dioxide Chemical Feed System

Phone
Fax
Email:
Submitted by: Randy Schafer

Item	QTY		Description
10	3	PC	Endress+Hauser Micropilot M FMR244 Model No: **FMR244-A2VGNSAA4A** Measurement: Level, Radar, contactless. Horn antenna, Plastics. Application: liquids (antenna 40mm), liquids/solids (antenna 80mm). 2-wire connection. Open air test site authorization. Incl. Setup-/diagnostic software. :: Application safety: independent of pressure/temp./steam. independent of gas layers.
		A	Approval: Non-hazardous area
		2	Antenna: 40mm/1-1/2", PTFE encapsulated
		V	Antenna Seal; Temperature: FKM Viton GLT; -40...130oC/-40...266oF
		GNS	Process Connection: Thread ANSI NPT1-1/2, PVDF
		A	Output; Operation: 4-20mA SIL HART;4-line display VU331, Envelope curve display on site
		A	Housing: F12 Alu, coated IP65 NEMA4X
		4	Cable Entry: Thread NPT1/2
		A	Additional Option: Basic version
		1	Tags: LE/LIT-7701, LE/LIT-7702, LE/LIT-7730
			Production days: 5 days

Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Micropilot M FMR230/231/240/244/245

Level-Radar

Smart Transmitter for continuous and non-contact level measurement. Cost-effective 4 to 20 mA 2-wire technology. Suitable for hazardous locations.

Application

The Micropilot M is used for continuous, non-contact level measurement of liquids, pastes, slurries, and solids. The measurement is not affected by changing media, temperature changes, gas blankets or steam.

- The FMR230 is especially suited for measurement in buffer and process tanks.
- The FMR231 has its strengths wherever high chemical compatibility is required.
- The FMR240 with the small (1½") horn antenna is ideally suited for small vessels. Additionally, it provides an accuracy of ±3 mm (0.12").
- The FMR244 combines the advantages of the horn antenna with high chemical resistance. The 80 mm (3") horn antenna is used additionally in solids.
- The FMR245 - highly resistant up to 200 °C (392 °F) and easy to clean.

Your benefits

- 2-wire technology, low price:
  A real alternative to differential pressure, floats and displacers. 2-wire technology reduces wiring costs and allows easy implementation into existing systems.
- Non-contact measurement:
  Measurement is almost independent from product properties.
- Easy on-site operation via menu-driven alphanumeric display.
- Easy commissioning, documentation and diagnostics via Endress+Hauser operating software.
- 2 frequency ranges - FMR230/FMR231 in the C-band and FMR240/244/245 in the K-band: No compromises, the right frequency for every application.
- HART or PROFIBUS PA and FOUNDATION Fieldbus protocol.
- High temperatures:
  Suitable for process temperatures up to 200 °C (392 °F), up to 400 °C (752 °F) with high-temperature antenna.
- Rod antenna with inactive length:
  Reliable measurement in narrow nozzles, with condensation and build-up in the nozzle.
- Application in safety related systems (overspill protection) with requirements for functional safety up to SIL 2 in accordance to IEC 61508/IEC 61511-1.
- Option: gas-tight feedthrough for FMR230/231/240/245 to improve the process safety.

TI345F/24/ae/02.10

Endress+Hauser

People for Process Automation

5. Recent quote for tank matching OEM

EDWARDS FIBERGLASS, INC.
1415 E Boonville, Sedalia, MO 65301
Ph: (660) 826-3915 | Fax: (660) 827-2793
Email: sales@edwardsfiberglass.com
Web: www.edwardsfiberglass.com

Date: 8/12/2019

Jordan Valley Water Treatment Plant

Attention: Franco Huacoto
Email: francoh@jvwcd.org
Phone: 801-565-4318

FRP Tank Quotation

Job Name:

Quote Number: 87615-19 Rev. 0

From: Andy West

Description of Quote:
EFI's Quotation is conditioned upon the attached Edwards Fiberglass Terms and Conditions

Terms of Payment:

- 25% Invoiced with Approved Drawings
- Balance Net 30 Days from date of Invoice

ANY MATERIALS OR FABRICATION NOT LISTED ON OUR QUOTE WILL NOT BE FURNISHED AT THIS PRICE.

Prices will be firm for 30 days

Contact Information
For questions please call (660) 826-3915 or email:

- Andy West: andy@edwardsfiberglass.com

EDWARDS
FIBERGLASS, INC.

1415 E Boonville, Sedalia, MO 65301 • Phone: (660) 826-3915 • Fax: (660) 827-2793 • Email: sales@edwardsfiberglass.com • Website: www.edwardsfiberglass.com

Quote Number: 87615-19 Rev. 0
From: Andy West

Scope of Work - Tank Designed and built to: ASTM D-3299

(1) 9'-0" Dia. x 13'-0" St. Wall, Single Wall, Vertical tank(s) with Dome top(s) and Flat bottom(s).

Tank Specs:

6,186 Nominal Gallons | Tank Weight: 1,870 | Thickness suitable for Atmospheric pressure | 120 mil. Liner
Service: 25-31% Sodium Chlorite | Sp.G.: 1.26 | Max Temp.: Ambient | Slope: 1/4" per Foot | Foam: None
Liner Resin: Corezyn 8300 | Structural Resin: Corezyn 8441 | Veil: Nexus | Color: Grey w/ UV Inhibitor
BPO/DMA Cure: Yes | Post Cure: 4 Hr. | Hydrotest: None | Bolting: Titanium

Accessories

Calibrated Sight strip

Qty:	Item:
1	Calibrated Sight Strip

Flanges

Qty:	Item:
2	3" Flanged Nozzle w/ Gussets
1	6" Flanged Nozzle
4	2" Flanged Nozzle w/ Gussets
1	4" Flange Nozzle w/ Gussets

Hold Downs

Qty:	Item:
4	316 S.S. Type II Hold Down Lugs

Level Gauge

Qty:	Item:
1	Reverse Float

Lifting Lugs

Qty:	Item:
4	316 S.S. Standard Lifting Lug

Manways

Qty:	Item:
1	30" Top Manway w/ FRP Cover

Misc.

Qty:	Item:
1	30" Viton Gasket for Top manway

Tank Price Each..... $37,384 x 1 = $37,384

EDWARDS
FIBERGLASS, INC.

1415 E Boonville, Sedalia, MO 65301 • Phone: (660) 826-3915 • Fax: (660) 827-2793 • Email: sales@edwardsfiberglass.com • Website: www.edwardsfiberglass.com

Quote Number: 87615-19 Rev. 0
From: Andy West

Total Tanks: 1

Sub Total: $37,384

Estimated freight to from EFI facility:

Total Loads: | Freight Total: $

Total Permits: | Permit Total: $

Total Escorts: | Escort Total: $

Grand Total: $37,384

Options / Exceptions:

Anchor bolts by others.

Allow 10-14 days for submittals after Purchase Order is recieved.

8 - 10 weeks for fabrication after approved drawings.

Notes:
1. Fabrication Standards: Hand Lay-up per ASTM D 4097-01 and Filament Wound per ASTM D 3299-10
2. All fabrication, inspection and tolerances to be upheld to the referenced above industry standards.

EDWARDS
FIBERGLASS, INC.

1415 E Boonville, Sedalia, MO 65301 • Phone: (660) 826-3915 • Fax: (660) 827-2793 • Email: sales@edwardsfiberglass.com • Website: www.edwardsfiberglass.com

Quote Number: 87615-19 Rev. 0
From: Andy West

EFI Terms and Conditions

Exceptions

Unless otherwise noted above pricing does not include: All specification sections referenced and not received for review at quoting time…Steel, HDPE and all other tank shell design requirements other than FRP…Helical Winding…Concrete Filling of Saddles...Raised-Face Flanged Nozzles...Hold Down Templates and Lateral Restraint Systems...All Exotic Steels for Hold Down/Lifting Lugs and Bolting...Gaskets...Electrical Instrumentation or Piping Hook-Ups...Valves...Metering or Monitoring Equipment including Magnetic and Ultrasonic Liquid Level Gauges...Pumps...Mixers...Fasteners...Anchor Bolts/Trunbuckles/Deadmen...Testing...RTP-1 Accredidation, Stamp and Documentation...Acoustic, Physical, Strain-Gage, Radiography and/or AC Spark Testing...Specail Coatings...Tank Pad and Ventilation Design...and/or **anything not** listed within this quotation.

Delivery

8 to 10 Weeks after receipt of approved drawings. Delivery is an **ESTIMATE ONLY**.

General and Specific Notes and Warnings

Unless otherwise noted:

1. Information Received to quote from:

* Heat systems quoted are for ordinary NON-HAZARDOUS areas and are for freeze protection only.
* All Flanged nozzles are ANSI B16.5-Class #150 and rated for 25 psi and have a smooth face. Raised-face flanged nozzles are not available.

* All ladders, platforms and handrails are manufactured in accordance with OSHA standard.
* This tank quotain reflects EFI's interpretation of the specification received at quote time. Best priced material purchases and most economical tank sizes and transportation loads have been quoted.

Pricing

* This quote is an Estimate only and is valid for 30 days.
* Prices may be subject to change upon any deviation from items listed in this quote.
* All prices quoted are in U.S. dollars.
* Resin, steel and freight charges may be subject to change due to escalating prices.

Submittals and O&M's

* Allow 10 to 14 days for submittals.
* Orders that require design calculations or have multiple tank drawings may take up to 3-4 weeks for submittals.
* Approvals will be placed in the manufactruing rotation in the SAME order received in our office.
* At EFI's discretion, drawings marked "approved as noted" may be re-submitted for a final approval of changes PRIOR to placing the order into production.

* Pricing includes EFI's standard Operation and Maintenance Manuals when requested.

Terms

* All orders are subject to a credit check as well as review and negotiation of customer terms and conditions.
* Payment Terms Are:
* 10% w/PO; 25% w/Approved Drawings; the balance due Net 30 Days. These terms may differ with dollar amount of purchase order and credit review.

* No retainages allowed.
* EFI is not authorized to collect sales tax in ANY state except Missouri.
* Tax exemption certificate is required with a purchase order.
* Purchase orders issued with a tex amount to be collected will not be accepted.
* EFI's Terms, Conditions and Warranties are available upon request.

Warranty

* Tank includes a ONE YEAR manufaturer's defect warranty from date of shipment.

NOTE

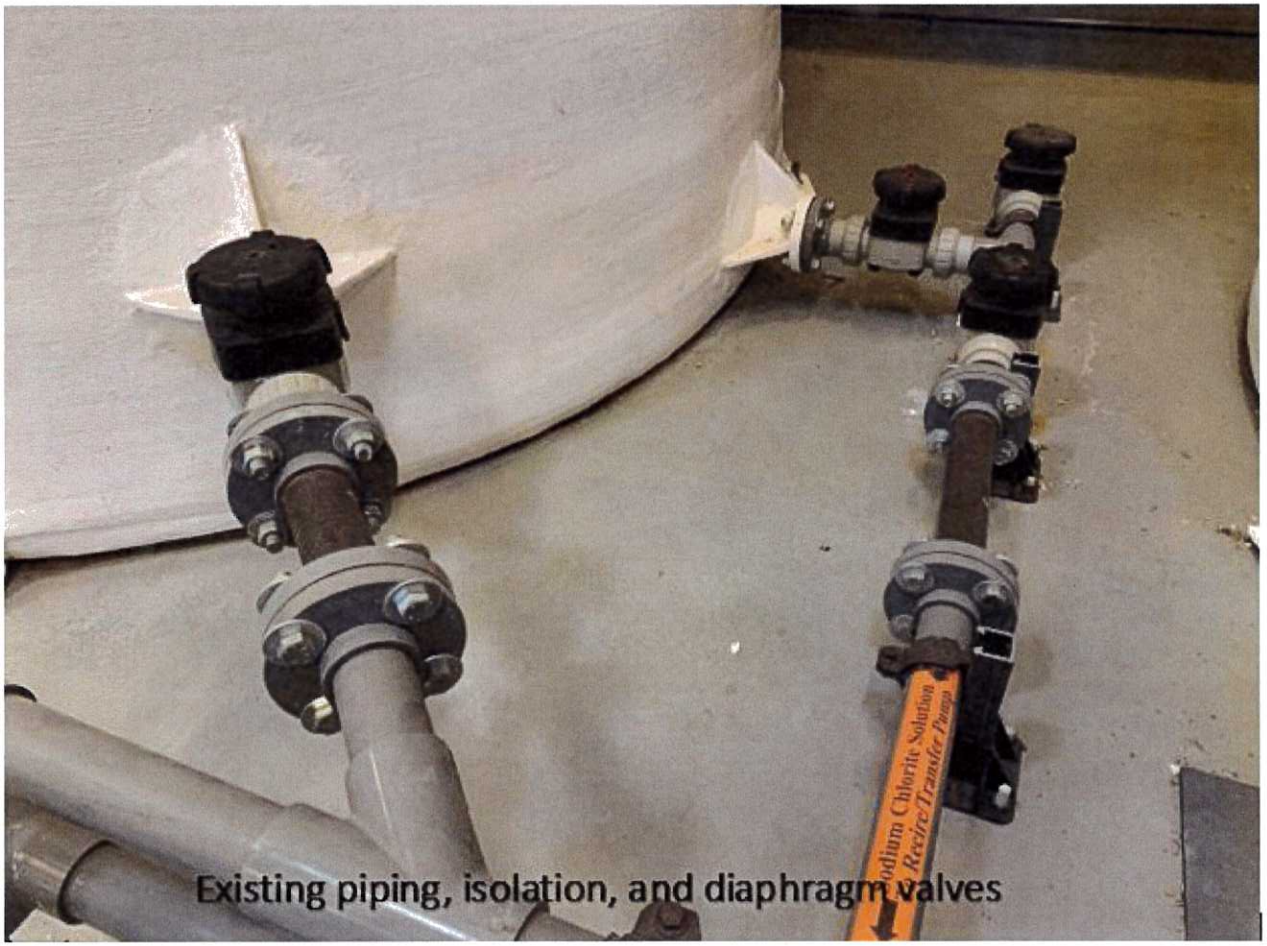
* Freight is always subject to change and/or possible fuel surcharges added on day of shipment.

6. Project Site Photos

Pad location for new tank

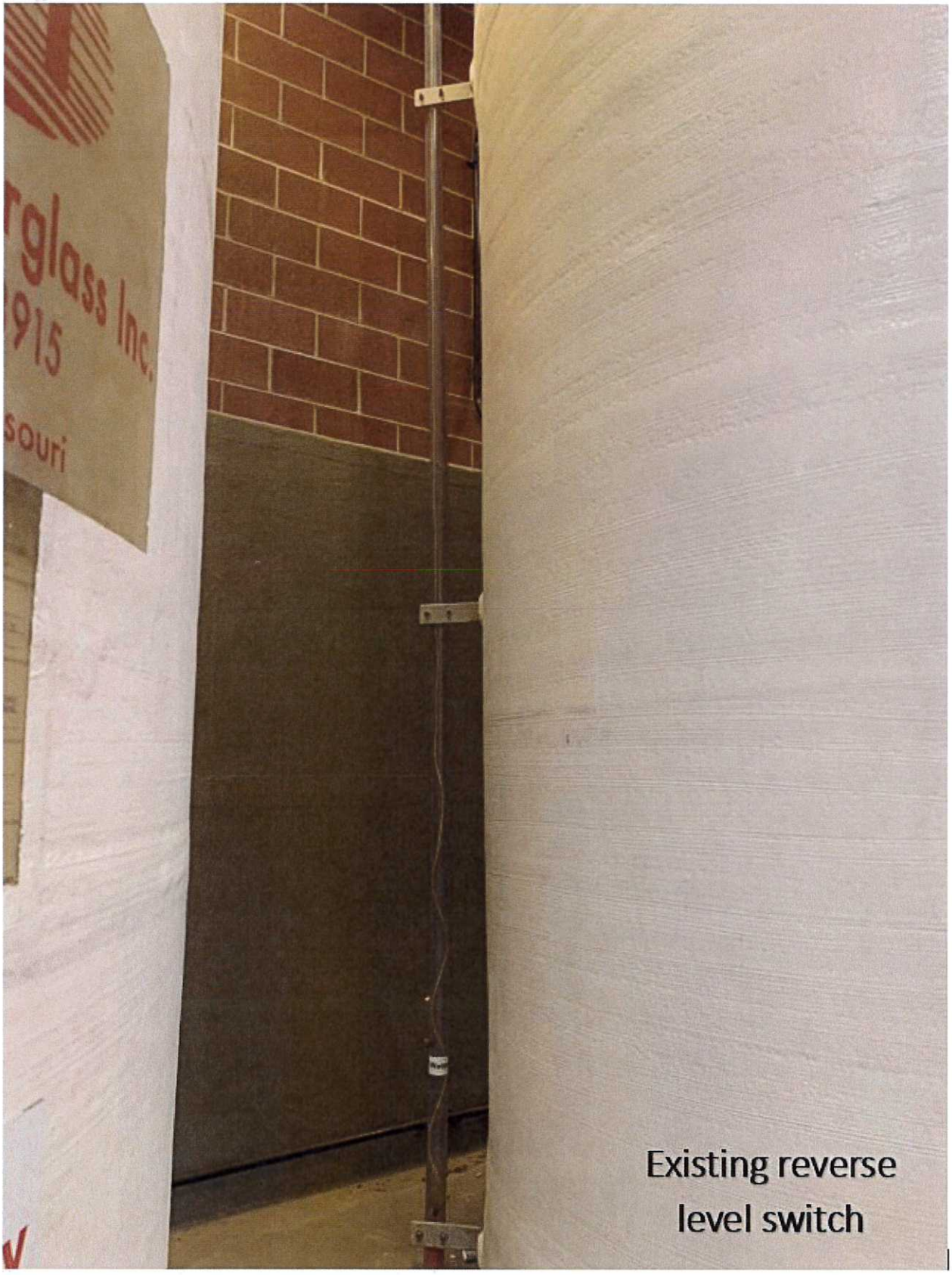
Existing 10 ft wide x 12 ft tall exterior access door

Existing Sodium Chlorite Tank

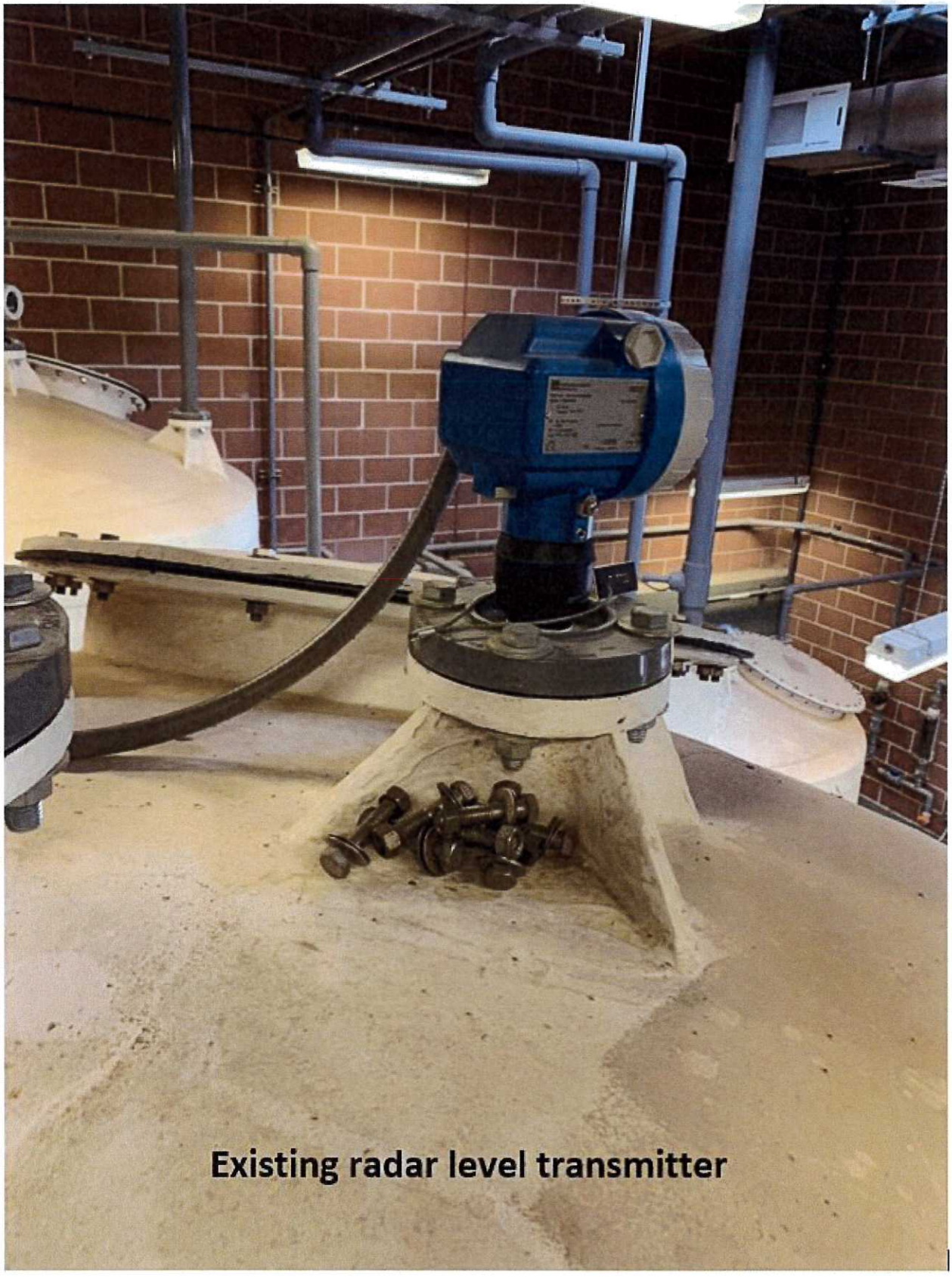


Existing piping, isolation, and diaphragm valves

Existing tank vent piping



Existing reverse level switch



Existing radar level transmitter