MEDICAL ELEVATED STORAGE TANK (EST) OVERCOAT PROJECT
SAWS Job No. 19-0128
SAWS Solicitation No. B-19-014-JAM

ADDENDUM NO. 2
August 23, 2019

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the bidding documents and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the addendum number and issue date in the space provided in the submitted price proposal.

RESPONSES TO SUBMITTED QUESTIONS

1. No questions were submitted for this project during the required timeframe noted in the Invitation to Respondents.

MODIFICATIONS TO THE SPECIFICATIONS

1. Add "05120 Structural Steel Framing" and remove "05500 Metal Fabrications" from the Project Table of Contents

2. Add Specification 05120 – Structural Steel Framing in its entirety and remove 05500 Metal Fabrications in its entirety.

3. Remove Specification 09871 Exterior Coating System for Steel Storage Tanks in its entirely and replace with revised version included in this Addendum. The allowable products from PPG were updated.

MODIFICATIONS TO THE PLANS

1. Removal all Paul J. Ford Structural Plans in their entirety and replace them with Tetra Tech "S-001 Structural General Notes", "S-101 Tank Roof Plan", "S-501 Structural Typical Details" Plans.

END ADDENDUM 2

This Addendum, is thirteen (21) pages in its entirety.

Attachments: 05120 – Structural Steel Framing (10 pages)
09871 – Exterior Coating System for Steel Storage Tanks (6 pages)
S-001 – Structural General Notes
S-101 – Tank Roof Plan
S-501 – Structural Typical Details

Jaime R. Kypuros Jr, P.E.
Tetra Tech, Inc.

SECTION 05120
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural steel.

1.3 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Indicate locations and dimensions of protected zones.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

C. Mill test reports for structural steel, including chemical and physical properties.

D. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.

E. Survey of existing conditions.

F. Source quality-control reports.

G. Field quality-control and special inspection reports.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

C. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 341 and AISC 341s1.
3. AISC 360.

4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M.

B. Channels, Angles, S-Shapes: ASTM A 36/A 36M.

C. Plate and Bar: ASTM A 36/A 36M.

D. Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.

1. Weight Class: as indicated.
2. Finish: Black except where indicated to be galvanized.

E. Welding Electrodes: Comply with AWS requirements.

F. Guard Posts: Fabricate guard posts from pipe as indicated on plans. Cap posts with 1/4-inch minimum thickness steel base plate. See Standard Detail on Drawings.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip or mechanically deposited zinc coating.
2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating, baked epoxy-coated finish.
3. Location: exterior applications or where supporting members are galvanized.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.
2. Location: Interior applications or where supporting members are painted.

D. Threaded Rods: ASTM A 572/A 572M, Grade 50.

1. Nuts: ASTM A 563 [heavy-] hex carbon steel.
2. Washers: ASTM A 36/A 36M carbon steel.
3. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C, for exterior applications or where columns are galvanized. Use plain for painted columns.

2.3 PRIMER

A. Primer: Comply with Section 09871 "Exterior Coating," Section 09872 "Interior Coating," and Section 09900 "General Specification for Coating Systems."

2.4 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill,or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning."

F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.5 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.6 SHOP PRIMING

A. Shop prime steel surfaces except the following:
1. Surfaces to be field welded.
2. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
3. Galvanized surfaces.
4. Surfaces enclosed in interior construction.

B. Surface Preparation: as indicated by Section 09900 "General Specification for Coating Systems."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness

of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.7 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
2. Galvanize lintels, shelf angles and welded door frames attached to structural-steel frame and located in exterior walls.
3. Galvanize all exterior steel and where indicated on the drawings.

2.8 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Bolted Connections: Inspect and test shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

E. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

C. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

D. Splice members only where indicated.

E. Do not use thermal cutting during erection unless approved by ENGINEER. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Bolted Connections: Inspect and test bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
c. Ultrasonic Inspection: ASTM E 164.

d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Section 09900 "General Specification for Coating Systems."

END OF SECTION 05120

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SECTION 09871

EXTERIOR COATING SYSTEM FOR STEEL STORAGE TANKS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Coating systems for tank exterior surfaces including but not limited to:

1. the reservoir/container;
2. all inlet/outlet and overflow piping;
3. tank riser pipe, all tank support legs and all tank bracing;
4. vents, manholes, ladders, platforms;
5. all metal fabrications including roof equipment rails and support angles; and
6. bolts, threads, nuts, pins, brackets, seams, corners, knife edges, welds, etc.

1.02 RELATED SECTIONS

A. Section 09900 – General Specifications for Coating Systems

1.03 SUBMITTALS

A. Provide the following in conformance with applicable requirements contained in Specification 01300 – Submittals.

1. Coating system to be applied on the tank interior wet surfaces.
2. Applicator Certifications: Submit supervisor and applicator certifications from the coating manufacturer for the coating system that is to be applied.

PART 2 PRODUCTS

2.01 COATING SCHEDULE

A. Acceptable coating manufacturers and specifications for the exterior surfaces of steel water storage tanks, exterior piping and valves and exposed exterior concrete surfaces follow; however, the CONTRACTOR is advised that all Manufacturers presented below must submit and certify that the coatings furnished are in compliance with these Specifications and the Manufacturer's recommendations.

B. Tank Exterior: Coating System to be of the same Manufacturer of all other coating products used on this project and shall be as follows:

Coating System	Coat	Product	DFT (Minimum)	Color
Carboline	Epoxy Mastic Spot Coat	Carbomastic 15	5-6 mils	Mill White
	Sealer Coat	Rustbond	1-2 mils	Beige
	Finish Coat (Overcoat)	Carboxane 2000	5 mils min	Mill White
	Min DFT for System		11 mils	
Sherwin Williams	Epoxy Mastic Spot Coat	Epoxy Mastic Aluminum II	5-6 mils	Mill White
	Sealer Coat	Macropoxy 920 PrePrime Rust Penetrating Epoxy	1-2 mils	Beige
	Finish Coat (Overcoat)	Sher-Loxane 800	5 mils min	Mill White
	Min DFT for System		11 mils	
PPG	Epoxy Mastic Spot Coat	~~Amercoat 278~~ ***Amercoat 2/400***	5-6 mils	Mill White
	Sealer Coat	Amerlock Sealer	1-2 mils	Beige
	Finish Coat (Overcoat)	~~Carboxane 2000~~ ***PSX 700***	5 mils min	Mill White
	Min DFT for System		10 mils	

1

Thinners: Only thinners recommended and furnished by the chosen coating Manufacturer shall be used to thin the paint products.

C. Exterior Equipment Railing and Angle Irons: Coating System to be of the same Manufacturer of all other coating products used on this project and shall be as follows:

Coating System	Coat	Product	DFT (Minimum)	Color
Carboline	1st Coat	Carboguard 60	5-6 mils	Mill White
	2nd Coat	Carboguard 60	5-6 mils	Beige
	Min DFT for System		10 mils	
Sherwin Williams	1st Coat	Macropoxy 646	5-6 mils	Mill White
	2nd Coat	Macropoxy 646	5-6 mils	Beige
	Min DFT for System		10 mils	
PPG	1st Coat	~~Amercoat 278~~ ***Amercoat 2/400***	5-6 mils	Mill White
	2nd Coat	~~Amercoat 278~~ ***Amercoat 2/400***	5-6 mils	Beige
	Min DFT for System		10 mils	

1

D. Tank Exterior Disinfection Solution: A solution of 5.25% Sodium Hypochlorite, Biodegradable Soap and Water resulting in a solution of 200 ppm Sodium Hypochlorite.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

A. Rough Areas:

1. Burrs, sharp edges, corners, weld spatter, or rough welds which would cause difficulty in achieving a defect free coating shall be ground smooth to accept the coatings.

2. Sharp edges and corners shall be ground round to accept coatings

B. Surface Preparation:

1. Prior to installation, all steel equipment railing, and anchor irons shall be abrasive blasted to an SSPC-SP6 Commercial Blast Cleaning Condition so as create an anchor profile of a minimum of 1.5 mils.

2. All areas on the Tank Exterior that have rusting, peeling paint, lichen growth, areas where coating destructive testing was performed AND all areas where the equipment railing, and the angle irons have been welded on the Tank Exterior shall be cleaned to an SSPC-SP11 Power Tool Cleaning Condition. The existing anchor profile at the power tool cleaned surfaces is to be maintained and shall not be less than 1 mil. The outlying areas of coating where power tool cleaning was performed will need to be back to tightly adhered coating and feathered back so that a smooth transition in applied coating can be achieved.

3. Mold and lichen growth has been observed on the Tank Exterior. After welding on the tank roof and column leg, and power tool cleaning and epoxy mastic application has been completed, the tank should be sprayed with a Sodium Hypochlorite and Soap Solution as Specified in Part 2.01.D. The solution should be allowed to have a 20 to 30-minute contact time after which it should be pressure washed with clean water with pressures between 3,500 to 5,000 psi to remove all existing mold, lichen, dirt and any lose coating that may exist.

4. Additional Surface Preparation as Specified 09900 – General Specifications for Coating Systems may be required.

C. Surface Contamination:

1. Remove all dust, moisture, mud, oil, grease, or other foreign material which would cause coating adhesion problems.

2. If tests by the Field Inspector find questionable amounts of contamination on the steel substrates or painted substrates to be top-coated clean to remove contaminates.

3. If questions or disagreements arise regarding the suitability of the substrate to receive a coating, secure the services of a representative of the coating manufacturer to examine the substrates in question and determine the suitability of the substrates to receive the coating. The manufacturer's written determination will be considered by the Owner/Engineer for making the final decision.

3.02 APPLICATION

A. Equipment Railing and Angle Irons:

1. After surface preparation of the equipment railing and the angle irons has been completed as Specified in Part 3.01.B.1, they shall be coated with two coats of an epoxy coating as Specified in Part 2.01.C.

2. The coating on the railing posts shall be held back 2 inches from the bottom of the posts to allow welding on the posts to the steel reinforcing pads on the tank roof. The coating shall also be held back from the edges leg of the angle irons that will be welded to the tank.

B. Power tool cleaned surfaces:

1. After surface preparation for the Tank Exterior has been completed as Specified in Part 3.01.A.1 and 3.01.B.3, and before the end of each day's work is finished, an epoxy mastic coat as Specified in Part 2.01.B shall be applied to the cleaned areas.

C. Sealer Coat:

1. After the Tank Exterior has been cleaned and pressure washed as Specified in Part 3.01.A.3, and the Tank is dry and clean, and spot priming has been completed as Specified in Part 2.01.B and 3.01.B.3, all the surfaces of the tank exterior including all welded equipment railings and angle irons as well as the Tank support legs shall be coated with a Penetrating Sealer as Specified in Part 2.01.B.

D. Finish Coat:

1. After Sealer Coat has been applied and dried, all surfaces of the tank exterior including all welded equipment railings and angle irons as well as the Tank support legs shall be coated with the finish coat as Specified Part 2.01.B.

2. Any drips, runs, sags, micro bubbling, etc. from application of the Finish Coat shall be repaired per the Coating Manufacturer's recommendations to ensure a smooth finished surface. The Contractor shall also be responsible for removal of any debris or insects that may become stuck in the coating. Areas where debris and/or insects are removed from the finish coating shall be recoated.

3. The finish coating shall be form one batch number for the entire application. If more than one batch number is used the entire tank shall be recoated with one batch number.

4. Areas inside of the handrail boundary to be textured for slip resistance utilizing a sand aggregate. See contractor drawings for location.

E. Coating Systems Labeling:

1. Following the application of the final coat of the exterior finish color, label the tank to indicate the coating system used on the interior and exterior of the tank.

2. Use a ½-inch tall lettering stencil with black paint and apply to the back side of the ladder vandal deterrent or other location as directed by the Owner.

3. Include for each coat:

(i) The generic name of the coating.

(ii) The manufacturer product designation.

(iii) The average dry film thickness.

(iv) The manufacturer's color designation.

END OF SECTION

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STRUCTURAL GENERAL NOTES

A. THESE GENERAL NOTES PRESENT AND/OR SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWING READER'S CONVENIENCE. SEE ALSO INDIVIDUAL DRAWING NOTES AND PROJECT SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.

B. ALL REFERENCES TO REFERENCE STANDARDS HEREIN ARE TO MOST RECENT ISSUE IN EFFECT AS OF THE DATE OF THESE DOCUMENTS, UNLESS NOTED OTHERWISE IN PROJECT SPECIFICATIONS OR ON THE DRAWING

C. ALL EXISTING DIMENSIONS SHOWN WITH THE ± SYMBOL ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.

D. DIMENSIONS MARKED WITH A "X" SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER

E. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED IN PROJECT SPECIFICATIONS.

F. ELEVATIONS ARE REFERRENCED TO ELEVATED TANK FOUNDATION TOP OF CONCRETE = 0' - 0", UNLESS NOTED OTHERWISE.

G. ABBREVIATIONS

A.B.	ANCHOR BOLT	EXP	EXPANSION	PRCST	PRECAST
ADD'L	ADDITIONAL	FLG.	FLANGE	PREFAB	PREFABRICATED
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	FLR	FLOOR	PSF	POUNDS PER SQUARE FOOT
		FND.	FOUNDATION	PSI	POUNDS PER SQUARE INCH
ALT.	ALTERNATE	FRMG	FRAMING	QTY	QUANTITY
ALUM.	ALUMINUM	FT	FOOT	R	RISER
APPROX.	APPROXIMATE	H.R.	HAND RAIL	RAD.	RADIUS
ARCH.	ARCHITECT(URAL)	HK	HOOK	RD	ROOF DRAIN
B.M.	BEAM	HORIZ	HORIZONTAL	REF	REFERENCE
B.O.	BOTTOM OF	HT	HEIGHT	REINF.	REINFORCEMENT
B.O.S.	BOTTOM OF STEEL	HVAC	HEATING VENTILATION AND AIR CONDITIONING	REQ	REQUIRE
BLDG.	BUILDING			REQ'D	REQUIRED
BOT.	BOTTOM	I.D.	INSIDE DIAMETER	REV	REVISION
BRG.	BEARING	I.F.	INSIDE FACE	RO	ROUGH OPENING
C/C	CENTER TO CENTER	I.J.	ISOLATION JOINT	SCHED	SCHEDULE
CCJ	CRACK CONTROL JOINT	IN.	INCH	SF	SQUARE FOOT
CFS	COLD FORMED STEEL	INSUL	INSULATION	SHT.	SHEET
CJ	CONSTRUCTION JOINT	L	ANGLE	SIM.	SIMILAR
CL	CENTER LINE	L.P.	LOW POINT	SPA.	SPACE
CLR	CLEAR	LBS	POUNDS	SPEC	SPECIFICATIONS
CMU	CONCRETE MASONRY UNIT	LF	LINEAR FOOT (FEET)	SQ	SQUARE
COL	COLUMN	MATL	MATERIAL	SS	STAINLESS STEEL
CONC	CONCRETE	MAX.	MAXIMUM	STAG.	STAGGER
CONST	CONSTRUCTION	MECH	MECHANICAL	STD	STANDARD
CONT	CONTINUOUS	MFR	MANUFACTURER	SYM	SYMMETRICAL
CTR	CENTER	MID	MIDDLE / MIDPOINT	T	TREAD
DBA	DEFORMED BAR ANCHOR	MIN	MINIMUM, MINUTE	T.O.C.	TOP OF CONCRETE
DIA	DIAMETER	MISC.	MISCELLANEOUS	T/	TOP OF
DIM	DIMENSION	MTL	METAL	THK	THCKNESS
DIST	DISTANCE	N	NEW	TOF	TOP OF FOOTING
DN	DOWN	N.S.	NEAR SIDE	TOS	TOP OF SLAB
DTL.	DETAIL	N.T.S.	NOT TO SCALE	TRANSV.	TRANSVERE
DWG(S)	DRAWING(S)	NA	NOT APPLICABLE	TYP	TYPICAL
DWL	DOWEL	NOM	NOMINAL	UNO	UNLESS NOTED OTHERWISE
EA	EACH	O.C.	ON CENTER	V.I.F.	VERIFY IN FIELD
EF	EACH FACE	O.D.	OUTSIDE DIAMETER	VERT	VERTICAL
EJ	EXPANSION JOINT	OPH	OPPOSITE HAND	W.P.	WORK POINT
EL / ELEV.	ELEVATION	OPNG	OPENING	W/	WITH
ELEC	ELECTRIC(AL)	OPP	OPPOSITE	W/O	WITHOUT
EQ	EQUAL	ORIG	ORIGINAL	WS	WATER STOP.
EQUIP	EQUIPMENT	PL	PLATE	WWF	WELDED WIRE FABRIC
EW	EACH WAY	PLF	POUNDS PER LINEAR FOOT		

DESIGN CRITERIA

A. REFERENCES:

1. ICC INTERNATIONAL BUILDING CODE, 2015 EDITION
   RISK CATEGORY III IN ACCORDANCE WITH TABLE 1604.5
2. ASCE/SEI 7-10 - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
3. AWWA D-100-11

B. DEAD LOADS:

ROOF DEAD LOAD	= (SELF WEIGHT)

C. LIVE LOADS (U.N.O.):

ROOF	= 20 PSF (OR 300 LB POINT LOAD)

D. ROOF SNOW LOAD:

GROUND SNOW LOAD, Pg	= 5 PSF
UNIFORM ROOF DESIGN SNOW LOAD, Pf	= 5 PSF
SNOW EXPOSURE FACTOR, Ce	= 1.0
SNOW LOAD IMPORTANCE FACTOR, I	= 1.1
THERMAL FACTOR, Ct	= 1.1

E. WIND LOAD [PER AWWA D-100-11, 3.1.4]:

BASIC WIND SPEED, V	= 120 MPH
WIND EXPOSURE CATEGORY	= C
DIRECTIONALITY FACTOR, Kd	= 0.85
TOPOGRAPHY	= 1.0
FORCE COEFFICIENT, Cf	= 0.6
VELOCITY COEFFICIENT, Kz	= 1.38
IMPORTANCE FACTOR, I	= 1.15
WIND PRESSURE (APPLIED TO VERT. PROJ. PLANE)	= 43 PSF

F. SEISMIC DESIGN DATA:

SEISMIC IMPORTANCE FACTOR, I	= 1.25
SS	= 0.05
S1	= 0.023
SDS	= 0.053
SD1	= 0.037
SITE CLASS	= 'D'
SEISMIC DESIGN CATEGORY	= 'A'

SEISMIC LOAD EXEMPTION - PER AWWA D-100-11, STRUCTURES LOCATED WHERE S1 ≤ 0.04g & Ss ≤ 0.15g DO NOT REQUIRE DESIGN FOR SEISMIC LOADS.

G. ICE LOAD DATA:

ICE THICKNESS	= 0.5 IN
ICE WIND SPEED	= 30 MPH

STRUCTURAL STEEL

A. REFERENCES:
1. AISC STEEL CONSTRUCTION MANUAL, 14TH EDITION
2. AWS D1.1 STRUCTURAL WELDING CODE - STEEL

B. MATERIALS:

1. GRADE STEEL

   CHANNELS, ANGLES, AND PLATES.....ASTM A36
   STRUCTURAL PIPE.....ASTM A53, GRADE B, Fy=35 KSI

2. EXISTING GRADE STEEL:
   TANK PLATES.....A7-61T, Fy=33KSI (ASSUMED)

3. STRUCTURAL BOLTS: ASTM A325-N
4. WELDS: E70XX ELECTRODES

C. CONNECTIONS
1. THE ASSEMBLY SURFACE, INCLUDING THOSE ADJACENT TO THE WASHER, SHALL BE FREE OF MILL SCALE, OIL, PAINT OR OTHER COATINGS.
2. ALL HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT SPECIFICATION IN THE AISC MANUAL. FULL TENSIONING SHALL BE BY THE TURN OF NUT METHOD, BY A DIRECT TENSION INDICATOR, OR BY PROPERLY CALIBRATED WRENCHES. PROVIDE HARDENED WASHERS UNDER THE NUT OR BOLT HEAD, WHICHEVER IS THE ELEMENT TURNED IN TIGHTENING.
3. WELDING - PERFORM ALL WELDING IN ACCORDANCE WITH AWS D1.1 CODE, LATEST EDITION, WELDS SHALL BE MADE ONLY BY OPERATORS CERTIFIED BY AWS IN PERFORMING THE TYPE OF WORK INDICATED.

D. TOLERANCES: AISC CODE OF STANDARD PRACTICE (LATEST EDITION)

E. SHOP DRAWINGS
1. SUBMIT ERECTION AND FABRICATION SHOP DRAWINGS. SEE SPECS.
2. SUBMIT ERECTION PROCEDURES AND TEMPORARY BRACING PLAN FOR ENGINEER REVIEW.

F. PAINTING: AFTER MATERIAL HAS BEEN PROPERLY CLEANED AND TREATED, APPLY SHOP PRIME COAT TO ALL SURFACES, EXCEPT THOSE INTENDED TO RECEIVE FIELD WELDING, SLIP CRITICAL BOLTS, OR CEMENTITIOUS FIREPROOFING.

SPECIAL INSPECTION REQUIREMENTS

SPECIAL INSPECTIONS REQUIRED FOR THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH THE 2015INTERNATIONAL BUILDING CODE. SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN APPROVED INSPECTION AGENCY U.N.O, EMPLOYED BY THE OWNER.

THE SPECIAL INSPECTOR SHALL BE CERTIFIED BY THE INTERNATIONAL CODE COUNCIL (I.C.C.) TO PERFORM INSPECTION FOR THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK.

THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL AND/OR THE ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE STRUCTURAL ENGINEER AND TO THE BUILDING OFFICIAL.

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 THE APPLICABLE WORKMANSHIP PROVISIONS OF THIS CODE.

IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE AT LEAST 48 HOURS ADVANCE NOTICE TO THE OWNER/OWNER'S REPRESENTATIVE WHEN HIS WORK IS READY FOR ANY REQUIRED SPECIAL INSPECTIONS.

SHOP INSPECTION OF STEEL CONSTRUCTION IS NOT REQUIRED WHEN THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED SPECIAL INSPECTION AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

CONTRACTOR RESPONSIBILITY

OWNER OR OWNER'S REPRESENTATIVE SHALL BE SYNONYMOUS WITH 'BUILDING OFFICIAL' IN THE FOREGOING IF THE PROJECT IS NOT UNDER THE JURISDICTION OF A BUILDING DEPARTMENT.

SPECIAL INSPECTION SHALL BE PROVIDED FOR THE FOLLOWING TYPES OF WORK PERFORMED IN THE FIELD, OR NOT PERFORMED IN AN APPROVED FABRICATION SHOP AS DEFINED ABOVE, UNLESS NOTED AS "N/A".

SPECIAL INSPECTION REQUIREMENTS FOR STEEL CONSTRUCTION (STRUCTURAL STEEL):

R - INSPECT THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS

C - INSPECT THESE ITEMS ON A CONTINUOUS BASIS

	C	R	N/A
1. INSPECTION TASKS PRIOR TO WELDING:			
A. WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE.	X	-	-
B. MANUFACTURERS CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.	X	-	-
C. MATERIAL IDENTIFICATION (TYPE/GRADE).	-	X	-
D. WELDER IDENTIFICATION SYSTEM.	-	X	-
E. FIT-UP OF GROOVE WELDS (INCLUDING GEOMETRY). - JOINT PREPARATION. - DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL). - CLEANLINESS (CONDITION OF STEEL SURFACES). - TACKING (TACK WELD QUALITY AND LOCATION). - BACKING TYPE AND FIT (IF APPLICABLE).	-	X	-
F. CONFIGURATION AND FINISH OF ACCESS HOLES.	-	X	-
G. FIT-UP OF FILLET WELDS. - DIMENSIONS (ALIGNMENT, GAPS AT ROOT). - CLEANLINESS (CONDITION OF STEEL SURFACES). - TACKING (TACK WELD QUALITY AND LOCATION)	-	X	-
2. INSPECTION TASKS DURING WELDING			
A. USE OF QUALIFIED WELDERS	-	X	-
B. CONTROL AND HANDLING OF WELDING CONSUMABLES - PACKAGING - EXPOSURE CONTROL	-	X	-
C. NO WELDING OVER CRACKED TACK WELDS	-	X	-
D. ENVIRONMENTAL CONDITIONS - WIND SPEED WITHIN LIMITS - PRECIPITATION AND TEMPERATURE	-	X	-
E. WPS FOLLOWED - SETTINGS ON WELDING EQUIPMENT - TRAVEL SPEED - SELECTED WELDING MATERIALS - SHIELDING GAS TYPE/FLOW RATE - PREHEAT APPLIED - INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.) - PROPER POSITION (F, V, H, OH)	-	X	-
F. WELDING TECHNIQUES - INTERPASS AND FINAL CLEANING - EACH PASS WITHIN PROFILE LIMITATIONS - EACH PASS MEETS QUALITY REQUIREMENTS	-	X	-
3. INSPECTION TASKS AFTER WELDING			
A. WELDS CLEANED	-	X	-
B. SIZE, LENGTH AND LOCATION OF WELDS	X	-	-
C. WELDS MEET VISUAL ACCEPTANCE CRITERIA - CRACK PROHIBITION - WELD/BASE-METAL FUSION - CRATER CROSS SECTION - WELD PROFILES - WELD SIZE - UNDERCUT - POROSITY	X	-	-
D. ARC STRIKES	X	-	-
E. K-AREA - WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD	X	-	-
F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	-	-
G. REPAIR ACTIVITIES	X	-	-
H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	X	-	-

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STATE OF TEXAS
PHILLIP A. FLEMING
131982
LICENSED
PROFESSIONAL ENGINEER
8-23-19

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	8/23/19	ADDENDUM 2	PAF

SAN ANTONIO WATER SYSTEM
MEDICAL ELEVATED STORAGE TANK
OVERCOAT PROJECT
STRUCTURAL GENERAL NOTES

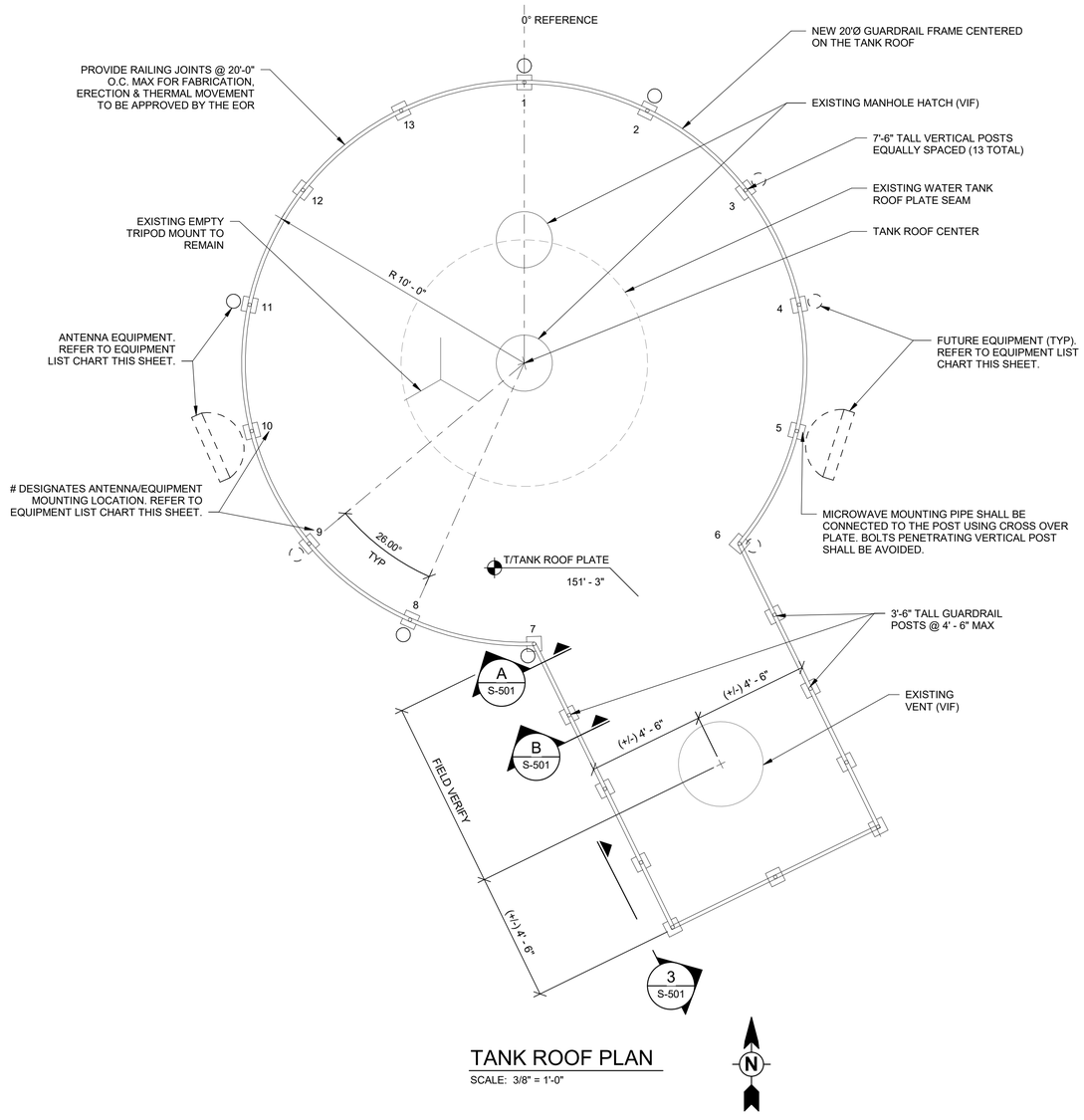
PROJ: 200-09308-19001-01
DESN: PAF
DRWN: SPS
CHKD: JLB

S-001

Bar measures 1 inch, otherwise drawing is not to scale

PLAN NOTES:

1. REFER TO S-001 FOR GENERAL NOTES AND DESIGN CRITERIA.
2. CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS BEFORE FABRICATION AND CONSTRUCTION.
3. ALL EQUIPMENT SHALL BE CONNECTED TO THE FRAME POSTS DIRECTLY. THE RAILING SHALL NOT BE USED FOR EQUIPMENT ATTACHMENT PURPOSES.
4. PLACEMENT OF NEW MOUNTING FRAME SHALL BE FIELD VERIFIED FOR INTERFERENCES WITH EXISTING WATER TANK COMPONENTS.



TANK ROOF PLAN

SCALE: 3/8" = 1'-0"

EQUIPMENT LIST

POSITION	ELEVATION OF EQUIPMENT MOUNT ATTACHMENT CENTERLINE (RE: A / S-501) *	ELEVATION OF EQUIPMENT RAD CENTER	QTY	EQUIPMENT
1	153'	160'	1	RFS BMR10-O-B1 (FUTURE)
		163'-6"	1	RFS BMR12-O-B1
2	155'	155'	1	DBSPECTRA DS7TMA17C
3	153'	160'	1	RFS BMR10-O-B1 (FUTURE)
4	153'	163'-6"	1	RFS BMR12-O-B1 (FUTURE)
5	155'	160'	1	RFS SB4-W100CC (FUTURE)
6	153'	160'	1	RFS BMR10-O-B1 (FUTURE)
7	153'	160'	1	RFS BMR10-O-B1
8	153'	163'-6"	1	RFS BMR12-O-B1
9	153'	160'	1	RFS BMR10-O-B1 (FUTURE)
10	155'	155'	1	RFS SB4-W100CC (FUTURE)
11	153'	160'	1	RFS BMR10-O-B1
12	-	-	-	EMPTY
13	-	-	-	EMPTY

*A (+/-) 6" MOUNTING ELEVATION TOLERANCE IS PROVIDED FOR INSTALLATION.

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SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
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SAN ANTONIO WATER SYSTEM
MEDICAL ELEVATED STORAGE TANK OVERCOAT PROJECT
TANK ROOF PLAN

PROJ:	200-09308-19001-01
DESN:	PAF
DRWN:	SPS
CHKD:	JLB

S-101

Bar measures 1 inch, otherwise drawing is not to scale

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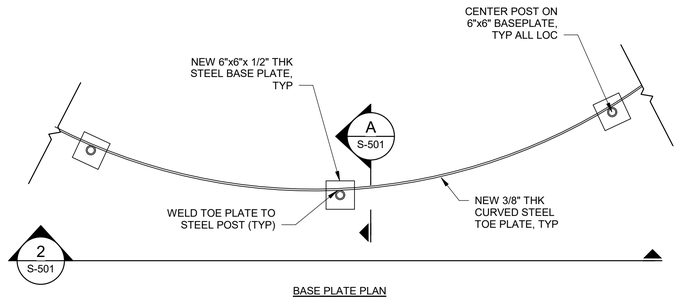
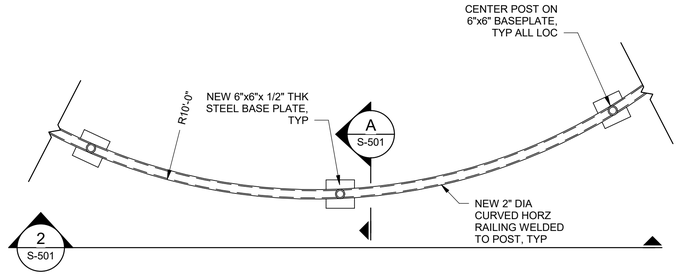


BASE PLATE PLAN

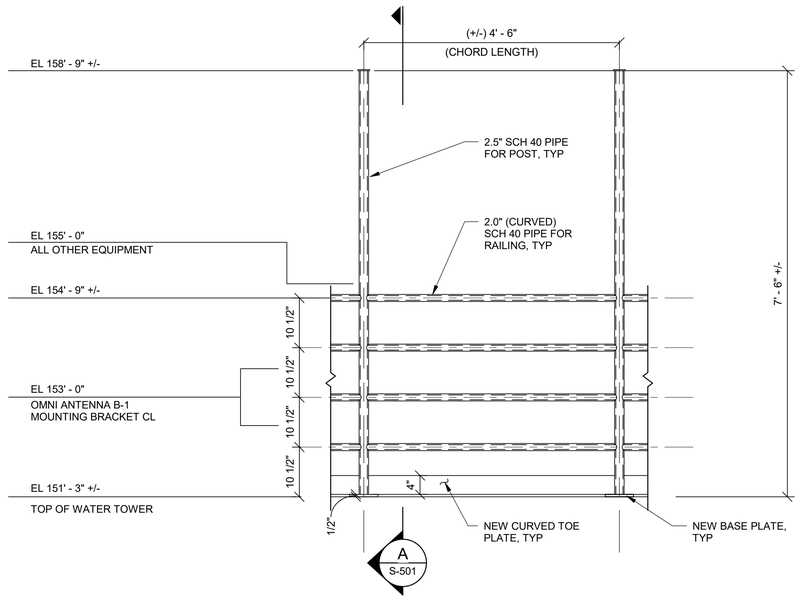


RAILING PLAN

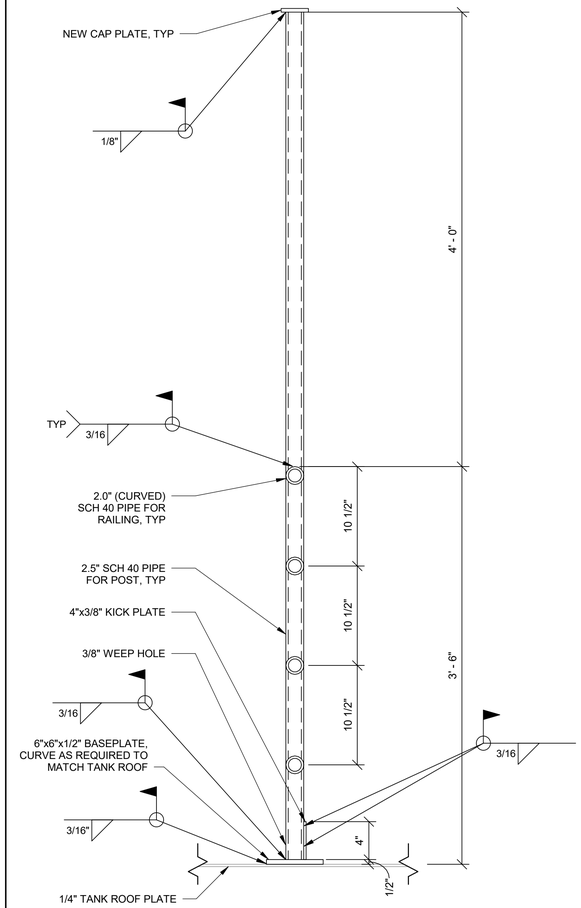
NOTES:

1. REFER TO S-001 FOR GENERAL NOTES AND DESIGN CRITERIA.
2. CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS BEFORE FABRICATION AND CONSTRUCTION.

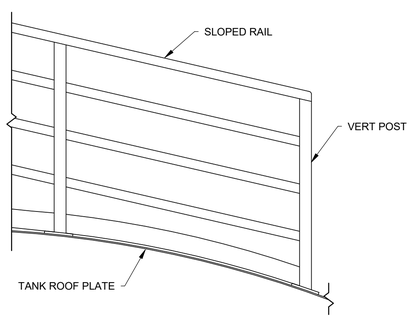
1 S-501 **TYPICAL FRAME DETAIL 1**
SCALE: 3/4" = 1'-0"



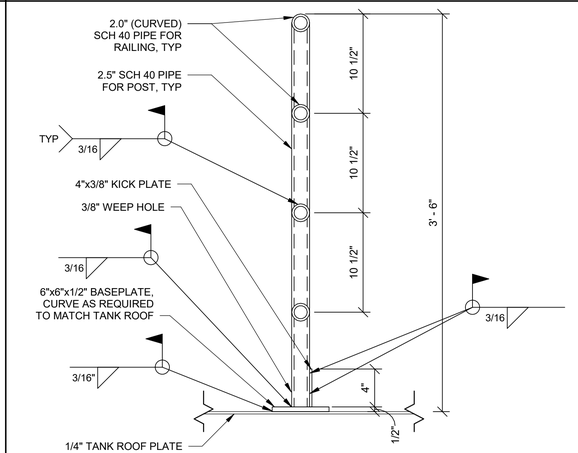
2 S-501 **TYPICAL FRAME DETAIL 2**
SCALE: 3/4" = 1'-0"



A S-101 **TYP 7.5FT TALL POST DETAIL**
SCALE: 1 1/2" = 1'-0"



3 S-101 **RAIL DETAIL**
SCALE: 3/4" = 1'-0"



B S-101 **TYP 3.5FT TALL POST DETAIL**
SCALE: 1 1/2" = 1'-0"

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SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
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SAN ANTONIO WATER SYSTEM
MEDICAL ELEVATED STORAGE TANK
OVERCOAT PROJECT
STRUCTURAL TYPICAL DETAILS

PROJ:	200-09308-19001-01
DESN:	PAF
DRWN:	SPS
CHKD:	JLB

S-501

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