SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PUMP STATION IMPROVEMENTS

SAWS Job No. 18-8617
SAWS Solicitation No. CO-00190

ADDENDUM No. 3

August 30, 2018

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bidding documents and as such will be made 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 submitted copies of the proposal.

QUESTIONS AND ANSWERS

1. See Addendum No. 3, Questions and Answers, included with this addendum, which includes responses to questions received by the deadline of 10:00 am CDT on August 23, 2018 and additional questions posed after the deadline.

REVISIONS TO CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

REQUEST FOR COMPETITIVE SEALED PROPOSALS

a) Revise the second sentence of paragraph four (4) of the Request for Competitive Sealed Proposals, page IV-1, as follows:

"Answers to the questions will be posted to the web site by **4:00 PM (CDT)** on **August 31, 2018** as a separate document or included as part of an addendum"

SUPPLEMENTAL CONDITIONS

a) On page SS-6, delete "up to a maximum of $700,000.00" from Article 8.6.4.

b) On page SS-6, ADD the following as Article 8.6.6:

8.6.6 Contractor's maximum liquidated damages will be limited to an amount not to exceed $700,000.00

SPECIAL CONDITIONS

c) SC-1.0 PROJECT COODINATION, add the following:

"SC-1.6 Acquisition of Easements. Possession will be obtained for all easements before Notice to Proceed, which is anticipated in October 2018, with the following exceptions for possession past Notice to Proceed on or before the following dates:

Parcel No. P18-145 - Central Business Park: April 15, 2019
Parcel No. P18-144 - Concourse: April 15, 2019
Parcel No. P18-144T - Concourse: April 15, 2019."

TECHNICAL SPECIFICATIONS

SECTION 01010 – SUMMARY OF WORK

a) On Page 01010-2, delete all of Part 1.03.A.1 and replace with the following:

1. Project Location 1: Construction of a new electrical building, control valve assemblies and piping as detailed in the Contract Drawings and Specifications. Project improvements include but are not limited to: access road improvements; grading; yard piping; flow control valves and electric actuators; flow meters; pressure regulating valve vaults and assemblies, electrical and instrumentation equipment; electrical conduit and wiring (demolition and replacement), concrete foundations; and other site improvements for a complete in-place facility.

SECTION 01015 – USE OF PREMISES

a) On Page 01015-1, delete part 1.05.B and replace with the following:

B. Repair disturbed paved areas per the requirements of Section 02513 – Asphaltic Concrete Paving, the City of San Antonio Standard Specifications for Construction, Item 205 Hot Mix Asphaltic Concrete Pavement and in accordance with any applicable local, state or federal regulations.

SECTION 01025 – MEASUREMENT AND PAYMENT

a) Delete all of Part 1.12, Bid Proposal Items, and replace with the following:

1.12 BID PROPOSAL ITEMS

A. Bidder will complete the Work for the following listed Work items for the prices listed on the Bid Proposal:

Item No. 1: Electrical Building

1. Description

i. New Electrical Building, including but not limited to:

a. CMU block building and concrete foundation;

b. New electrical duct banks and wiring from pumps to building;

c. New power transformers;

d. New medium voltage MCC and switchgear for pump station;

e. New pump and valve control panels, conduit and wiring;

f. Breaker panels.

2. Measurement – Measurement of Item No. 1 will be lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 2: Electrical and Instrumentation

2. Electrical and Instrumentation

a. New electrical duct banks and wiring from pumps to building;

b. New power transformers;

c. New medium voltage MCC and switchgear for pump station;

d. New pump and valve control panels, conduit and wiring;

e. Breaker panels.

f. SCADA Wiring to new building.

g. Communications Antenna Relocation

4. Measurement – Measurement of Item No. 2 will be lump sum.

5. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 3: Sleeve Valve Assembly at Maltsberger Pump Station Site, including but not limited to:

1. Description

a. New 36 x 20 x 36-inch sleeve control valve and actuator;

b. New 36-inch magnetic flow meter;

c. Concrete pad;

d. Piping and valves;

e. Electrical, SCADA and instrumentation;

2. Measurement – Measurement of Item No. 3 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 4: Yard Piping, Grading and Paving, including but not limited to:

1. Description

a. New 36-inch welded steel pressure yard piping, installed;

b. Connection to existing 36-inch PCCP piping;

c. Replacement of two 48-inch butterfly valves;

d. Site improvement work items include:

i. Demolition;

ii. Trench excavation, bedding, pipe installation, and backfill;

iii. Site excavation and fill placement;

iv. Paving new access road and building access lot;

v. Storm water management and erosion control;

vi. Final grading and surface restoration;

vii. All appurtenances and miscellaneous improvements or a complete in-place facility.

2. Measurement – Measurement of Item No. 4 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified

and as indicated on the Contract Drawings and Specifications.

Item No. 5: Sleeve Valve Assembly at Basin Pump Station Site, including but not limited to:

1. Description

    a. New 24 x 10 x 24 sleeve control valve and actuator;

    b. New 24-inch magnetic flow meter;

    c. Piping and valves;

    d. Electrical, SCADA and instrumentation;

2. Measurement – Measurement of Item No. 5 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 6: PRV 2 Station, including but not limited to:

1. Description

    a. New poured-in-place reinforced concrete vault;

    b. Pressure regulating valves and operators;

    c. Piping and valves

    d. Electrical, SCADA and instrumentation;

    e. Site improvement work items include:

        i. Site excavation and fill placement;

        ii. All appurtenances and miscellaneous improvements for a complete in-place facility.

2. Measurement – Measurement of Item No. 6 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 7: PRV 3 Station, including but not limited to:

1. Description
    a. New poured-in-place reinforced concrete vault;
    b. Pressure regulating valves and operators;
    c. Piping and valves
    d. Electrical, SCADA and instrumentation;
    e. Site improvement work items include:
        i. Site excavation and fill placement;
        ii. All appurtenances and miscellaneous improvements for a complete in-place facility.

2. Measurement – Measurement of Item No. 7 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 8: Erosion and Sediment Control, including but not limited to:

1. Description
    a. Preparation and documentation of an approved SWPPP;
    b. Installation and maintenance of sedimentation controls;

2. Measurement – Measurement of Item No. 8 will be by lump sum.

3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the OWNER this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 9: Permitting allowance

1. Description – This item shall be for permitting fees associated with the project scope. This shall include furnishing all materials, and incidentals required to obtain all necessary permits including review fees, in accordance with the Contract Documents, complete in place.

2. Measurement – Measurement for the item “Permitting Allowance” will be “by permit” of the actual fees. This allowance shall cover any approved reimbursement of costs related to obtaining permits required to construct the project. Proof of payment of permits fees will be required, and reimbursements will be made on the basis of actual permit fees required by each respective agency paid. The labor associated with obtaining permits is considered incidental to Item No. 1.

3. Payment of the not to exceed allowance price shall be paid for the work. Payment shall constitute full compensation to the CONTRACTOR for obtaining all necessary permits for the Project. CONTRACTOR shall provide permit receipts to SAWS for reimbursement.

Item No. 10: General allowance

1. Description – This item shall be an allowance for items unforeseen or not specifically characterized in the Contract Documents, encountered during the course of construction.

2. Measurement – Measurement for the item “General Allowance” will be by time and materials. The usage of the allowance shall meet the requirements of the General Conditions for contract changes and shall be only by written authorization of the OWNER.

3. Payment of the not to exceed allowance price shall be paid for the work. Payment shall constitute full compensation to the CONTRACTOR for any unforeseen items or not specifically characterized in the Contract Documents. CONTRACTOR shall provide a detailed breakdown for furnishing all labor, materials and equipment for payment.

Item No. 11: Mobilization and demobilization

1. Description – Work item shall include mobilization and demobilization costs associated with the Central Water Integration Pipeline Project scope. This item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, bond and insure the Work for the project in accordance with the Contract Documents, complete in place.

2. Measurement – Measurement of Item No. 4 will be by lump sum as the work progresses. If the Lump Sum price for Item 4 exceeds the allowable maximum stated for Mobilization and Demobilization, SAWS reserves the right to cap the amount at 5% and adjust the extension of the bid item accordingly.

3. Payment – Partial payments of the lump sum bid for mobilization will be as follows:

    a. When 1% of the adjusted contract amount for construction items (which is defined as the total contract amount less the lump sum proposal for mobilization) is earned, 50% of the mobilization lump sum proposal will be paid. Insurance and Bonds will be paid on the initial request for payment under a sub-heading to mobilization entitled "Insurance and

Bonds". The amount paid for Insurance and Bonds will not exceed 3% of the total contract amount for construction items. Receipts or other proof of payment for the full amount of compensation requested under the sub-heading of "Insurance and Bonds" shall be provided to the OWNER with the request for payment.

b. When 5% of the adjusted contract amount for construction items is earned, 75% of the mobilization lump sum proposal will be paid.

c. Upon completion of all Work under this contract, payment for the remainder of the lump sum proposal for mobilization will be made.

SECTION 01040 – COORDINATION

a) Page 01040-1, delete part 1.01.H.1 and replace with the following:

1. Maltsberger Tank Rehabilitation:

The Maltsberger Ground Storage Tank is being Rehabilitated as part of a different contract. The project will involve complete blast cleaning and repainting of the Tank exterior and interior, including some site civil and electrical improvements. The Tank Rehabilitation contractor will be allowed to have the tank offline from November 1, 2019 through March 15, 2019. Contractor shall coordinate work activities in the general vicinity of the existing tank to avoid impeding the Rehabilitation Contract until following completion of that work.

b) Page 01040-3, Paragraph 1.03.C., delete this paragraph in its entirety.

A. Tank Outlet Connections: Both (two total) existing 48-inch tank outlet butterfly valves will be replaced. In order to maintain partial operation of the pump station, only one valve shall be replaced at a time. The timing of valve replacements shall be coordinated with the Owner and the tank rehabilitation contractor and shall occur no later than February 15, 2019. The tank bypass connection will be connected with a tee and valve on the north tank outlet piping and should be coordinated to occur as part of the shutdown for the 48" valve replacement. The shutdown duration for each valve replacement shall not exceed 24 hours.

and replace with:

A. Tank Outlet Connections: Both (two total) existing 48-inch tank outlet butterfly valves and harnessed mechanical couplings will be replaced. In order to maintain partial operation of the pump station, only one valve shall be replaced at a time. The timing of valve replacements shall be coordinated with the Owner and the tank rehabilitation contractor who will be allowed to have the tank offline from November 1, 2019 to March 15, 2019. The valve replacements shall occur no later than March 15, 2019. The tank bypass connection will be connected with a tee and valve on the north tank outlet piping and should be coordinated to occur as part of the shutdown for the 48" valve replacement.

SECTION 01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

a) On Page 01500-6, delete Paragraph 1.08.A in its entirety

SECTION 02060 – DEMOLITION

a) On Page 02060-2, delete Paragraph 1.05.C in its entirety and replace with the following:

C. Describe demolition removal procedures and schedule. Demolition activities will be limited to work hours described in Article 5.18 of the Supplemental Conditions.

SECTION 02200 – EARTHWORK

a) Page 02200-6, Paragraph 2.01.A., delete the fourth sentence in its entirety:

A. Select fill materials must be submitted to Geotechnical Engineer for testing and evaluation prior to use.

And replace with the following:

A. Select fill materials must be tested by an independent testing laboratory paid for by the Contractor for conformance with the specifications and the test results submitted to the ENGINEER for evaluation prior to use:

SECTION 02513 – ASPHALTIC CONCRETE PAVING

a) On Page 02513-1, add the following to Paragraph 1.01.A:

"Asphaltic Concrete Paving in the City of San Antonio Right of Way shall be done according to the City of San Antonio Standard Specifications for Construction Item 205 Hot Mix Asphaltic Concrete Pavement."

SECTION 03300 – CAST-IN-PLACE CONCRETE

a) Page 03300-1, Paragraph 1.04.A., add the following subparagraph A:

A. The CONTRACTOR shall bear all costs for the testing laboratory for testing of the mixes prior to placement, field work for obtaining samples and testing of concrete placed on the project.

b) Page 03300-23, Paragraph 3.16.D.10, first sentence: Replace the word "Architect" with "Engineer".

c) Page 03300-23, Paragraph 3.16.D.11, first sentence: Replace the word "Architect" with "Engineer".

d) Page 03300-23, Paragraph 3.16.D.12, first sentence: Replace the word "Architect" with "Engineer".

SECTION 08710 – DOOR HARDWARE

a) On Page 08710-8, delete Paragraph 2.05 in its entirety.

SECTION 09900 – PAINTING AND COATING

a) On Page 09900-11, delete Paragraph 2.05.H in its entirety and replace with the following:

H. Class 8 Exposures – Not Used

SECTION 15014 – PRESSURE TESTING OF PIPING

a) Page 15014-1, Paragraph 1.01.A., Delete "plant piping" and replace with "all drains, chemical piping, and non-potable water piping."

b) Page 15014-2, Paragraph 1.03.B.4.b.: Replace the words "Engineer's representative" with "Owner's representative".

c) Page 15014-3, Paragraph 3.01.H., delete this in its entirety:

H. Items that do not require testing include: Piping between wet wells and wet well isolation valves, equipment seal drains, tank overflows to atmospheric vented drains, and tank atmospheric vents.

And replace with:

H. Items that do not require testing include: Piping between wet wells and wet well isolation valves, equipment seal drains, and tank atmospheric vents.

d) Page 15014-4, Paragraph 3.03.B.3, delete this equation:

$$L = \frac{SD(P)1/2}{133,200}$$

And replace with this equation:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

e) Page 15014-4, Paragraph 3.03.C., delete this in its entirety:

C. Pneumatic Test For Pressure Piping:

1. Do not perform on PVC or CPVC pipe.
2. Fluid: Oil-free, dry air.
3. Procedure:
   a. Apply preliminary pneumatic test pressure of 25 psig maximum to piping system prior to final leak testing, to locate visible leaks. Apply soap bubble mixture to joints and connections, examine for leakage.
   b. Correct visible leaks and repeat preliminary test until visible leaks are corrected.

c. Gradually increase pressure in system to half of specified test pressure. Thereafter, increase pressure in steps of approximately one-tenth of specified test pressure until required test pressure is reached.

d. Maintain pneumatic test pressure continuously for minimum of 10 minutes and for such additional time as necessary to conduct soap bubble examination for leakage.

e. Correct visible leakage and retest as specified.

4. Allowable Leakage: piping system, exclusive of possible localized instances at pump or valve packing, shall show no visual evidence of leakage.

5. After testing and final cleaning, purge with nitrogen those lines that will carry flammable gases to assure no explosive mixtures will be present in system during filling process.

SECTION 15055 – STEEL PIPE

a) Page 15055-16, Paragraph 2.02.K., ADD the following:

"7. Provide epoxy lining in accordance with AWWA C210 (Liquid Epoxy Coating Systems of the Interior and Exterior of Steel Water Pipelines). Interior epoxy lining shall be applied and inspected prior to installation of the pipe. Epoxy lining shall be Tnemec 140 Pota Pox. Lining system shall be NSF 61 approved. Total interior lining system shall be a minimum of 14 mils DFT."

b) Page 15055-17, ADD the following paragraphs as Paragraph 2.02.M

M. "Pipe Deflection. The requirements of Section 02200 EARTHWORK govern for the excavation and backfilling of trenches for laying steel pipe, fittings, and specials. Conformance with pipe deflection requirements shall be as set forth below:

1. Average allowable pipe deflection is limited to 2% for polyurethane and tape coated steel pipe. In no case shall a single measurement in any direction exceed 1.5 times the average allowable deflection. These measurements include the allowable tolerance for lining thickness.
2. Deflection measurements shall be made by the CONTRACTOR in the presence of the OWNER's representative. Method for taking measurements shall be agreed to by the OWNER and CONTRACTOR in writing prior to installing the first joint of pipe.
3. Average deflection shall be determined by averaging the pipe's measured vertical deflection as indicated below. Locations where measurements are taken shall be clearly marked on the interior of the pipe.
   a. For pipe joints 36 feet in length or less, measurements shall be taken at two locations, $^1/_4$-distance from each pipe end.
   b. For pipe joints longer than 36 feet, measurements shall be taken at three locations including $^1/_4$-distance from each pipe end and at the pipe midpoint.
4. If the average measured deflection at any joint or any single measurement fails to meet specifications, the entire joint shall be reworked in accordance with the manufacturer's recommendations and as directed by the ENGINEER at no additional cost to the OWNER. This may include uncovering the pipe and re-compaction of the pipe bedding, and repair of coating.
5. Installed pipe joints will also be examined for flat spots and internal lining stress cracks by the OWNER's representative. A flat spot is anything flat enough to cause lining damage. Lining damage shall be repaired in accordance with the

manufacturer's recommendations and as directed by the OWNER at no additional cost to the OWNER. Repair of flat spots may include uncovering the pipe and re-compaction of the pipe bedding, and repair of the coating.

6. Where pipe has been reworked to comply with the deflection requirements, CONTRACTOR shall re-measure for deflection no earlier than seven days after the repaired pipe is backfilled. OWNER's representative will re-inspect for flat spots at this time.
7. No pipe installation shall be accepted until the entire installation is in compliance with the above deflection requirements.
8. All costs associated with measuring for pipe deflection and any repairs or rework associated with meeting these requirements shall be borne by the CONTRACTOR."

SECTION 15056 – STEEL PIPE FABRICATED SPECIALS

a) On Page 15056-4, Paragraph 2.01.A, delete "02571 STEEL PIPE, MORTAR-LINES (AWWA C200 MODIFIED)" and replace with "15055 STEEL PIPE, (AWWA C200 MODIFIED)".
b) On Page 15056-4, Paragraph 2.02.B, delete "02571 STEEL PIPE, MORTAR-LINES (AWWA C200 MODIFIED)" and replace with "15055 STEEL PIPE, (AWWA C200 MODIFIED)".
c) On Page 15056-7, Paragraph 3.01.F, delete "as specified in Section 02571 STEEL PIPE, MORTAR-LINES (AWWA C200 MODIFIED)".

SECTION 15066 – STEEL PIPE FABRICATED SPECIALS

a) Delete specification section 15066 – Steel Pipe Fabricated Specials in its entirety.

SECTION 15067 – STEEL PROCESS PIPE

a) Delete specification section 15067 – Steel Process Pipe in its entirety.

SECTION 15080 – DISINFECTION OF WATER SYSTEMS

a) Page 15080-1, delete Paragraph 1.02.A.6 in its entirety.

b) Page 15080-1, delete Paragraph 1.02.A.7 in its entirety and replace with the following:

7. Repeat disinfection operations for all parts of the program until passing tests are achieved.

c) Page 15080-2, delete Paragraph 1.04.B. in its entirety.

d) Page 15080-6, delete Paragraph 3.05 in its entirety and replace it with the following.

3.05 TESTING

A. OWNER shall collect all samples and perform chlorine and bacteriological testing.

B. After the completion of all hydrostatic testing and completed the tie-ins, the CONTRACTOR will disinfect the pipeline, take water samples and have them analyzed for conformance to bacterial limitations for public drinking water supplies and other requirements of the regulatory agency of jurisdiction for potable water. The CONTRACTOR will monitor the system for two (2) days. CONTRACTOR shall witness testing to assure compliance with these specifications and regulatory requirements.

C. If any samples required above are bacterially positive, disinfecting procedures and bacteriological testing shall be repeated until bacterial limits are met, at no additional cost to the OWNER

SECTION 15093 – CHECK VALVES

e) Insert Specification 15093 – Check Valves attached herein.

SECTION 15101 – AWWA BUTTERFLY VALVE

a) On page 15101-3, Paragraph 1.03.B.3, delete "HP-250" and replace with "XR-70 (24" thru 72")"

SECTION 15120 – PRESSURE REDUCING VALVES

a) On page 15120-3, Paragraph 2.01. A, replace the entire paragraph with the following:

A. Manufacturer: Pressure Reducing Valves shall be as manufactured by Cla-Val, Inc.

b) On page 15120-6, Delete Part 2.02 PRESSURE RELIEF VALVES in its entirety.

c) On page 15120-9, Paragraph 3.01.B, replace with the following:

A. Pressure set points for the pressure reducing valve (PRV):

1. PRV 2 - 16" valve PRV differential pressure from Pressure Zone 994 ft. to Pressure Zone 930 ft*. Maximum velocity 10 feet per second.

2. PRV 3 - 16" valve PRV differential pressure from Pressure Zone 994 ft. to Pressure Zone 930 ft*. Maximum velocity 10 feet per second.

* Contractor to coordinate with owner and engineer during submittal process to confirm pressure differential, PRV valve configuration and valve setpoints for installation.

SECTION 16345 – MEDIUM VOLTAGE METAL CLAD SWITCHGEAR

a) Page 16345-6, Paragraph 2.2.A. Item 1, delete this paragraph in its entirety.

"1. Short-Circuit Current, at Rated Maximum kV 31.5kA"

and replace with:

"1. Short-Circuit Current, at Rated Maximum kV 50kA"

SECTION 16600 – GROUNDING AND BONDING SYSTEM

a) Page 16600-4, Paragraph 2.01, add the following paragraph:

C. Manholes and Handholes

1. General

a) Manholes and handholes shall be of the precast concrete type, designed for a Class H20 load with sizes as shown on the Drawings, and as manufactured by Oldcastle Precast, Mansfield, TX, or approved equal.

2. Construction

a) Concrete for manholes and handholes shall have a 28-day compressive strength of 5000 PSI. Cement shall be Type 1 or III. Reinforcing steel shall be Grade 60 with yield strength of 60,000 P.S. Design loadings shall be H-20-44 w/impact.
b) The top of all manholes shall be field removable and have stainless steel lifting eyes.
c) Duct bank entries into the manhole or handhole shall be centered on the entering wall and shall contain the appropriate number and size of duct terminators to match the corresponding duct bank.
d) Each manhole and handhole shall have a minimum size of 12" x 12" x 2" deep concrete sump in the middle of the floor of the manhole or handhole, or as shown on the Drawings.

3. Manhole Covers

a) Unless otherwise shown on the Drawings, manhole and handhole covers shall be heavy duty 36 in. machined gray iron, and AASHTO M306-04/ ASTM A48 CL35B Min., 40,000-pound proof load value (Class H20 X 2.5) "True Traffic" load covers, complete with frame, and "Electric" or "Communication" raised lettering recessed flush, as required, on the cover. Covers shall be V-1600-5, with drop handles as manufactured by East Jordan Iron Works, Ardmore, OK.
b) All castings shall be made in the USA, cast with the foundry's name, part number, "Made in USA", and production date (example: mm/dd/yy). Castings without proper markings will be rejected. Manufacturer shall certify that all castings conform to the ASTM and AASHTO Designations as specified herein. All casting shall be true to pattern in form and dimension, free from pouring faults, sponginess, cracks, blow holes and other defects in positions affecting strength and value for the service intended. Angles shall be filleted and arises shall be sharp and true.

4. Access Hatch

a) Where access hatches are shown on the Drawings, hatches shall be heavy duty aluminum, for H-20 load rating, sized as shown on the Drawings. Hatches shall be CHS Series as manufactured by East Jordan Iron Works, Ardmore, OK.
b) Material shall be 6061-T6 aluminum for bars, angle and extrusions. ¼" diamond plate shall be 5066 aluminum.
c) Unit shall have a heavy duty pneumatic-spring, for ease of operation when opening cover. Cover shall be counter-balanced so that one person can easily open the hatch door.
d) Frame shall be of extruded aluminum with a continuous 1¼" anchor flange. A dovetail groove shall be extruded into the seat of the frame with a 1/8" silicone gasket.
e) Hinges shall be of heavy-duty design, the material shall be grade 316 stainless steel, with a 3/8" grade 316 stainless steel pin. Hinge shall be bolted to the channel frame and diamond plate with grade 316 stainless steel bolts and nylon lock nuts. Aluminum

shall be supplied with mill finish. Exterior of frame which comes in contact with concrete shall have one coat black primer.

f) Each hatch shall be supplied with a stainless-steel slam lock, with the keyway protected by a threaded aluminum plug. The plug shall be flush with the top of the ¼" diamond plate. The slam lock shall be fastened with grade 316 stainless steel bolts and washers.
g) Each hatch shall be equipped with a stainless-steel lift handle. Lift handles shall be flush with top of ¼" diamond plate.
h) Each hatch shall be supplied with a 1 ½" threaded drain coupler on underside of channel frame for pipe connection.

5. Hardware

a) Cable racks shall be of the heavy duty non-metallic type with arm lengths of 8", 14" and 20", each supporting a load of not less than 250 lbs. at the outer end. Racks shall be molded in one piece of U.L. listed glass reinforced nylon, Catalog CR36N with RA08N, RA14N and RA20N arms as manufactured by Underground Devices Inc. Northbrook, IL. Cable racks shall be secured to the manhole and walls by drilled, Hilti HIT-HY 150 MAX epoxy anchoring system, with Hilti 316 stainless steel bolts. Arms for racks shall be vertically spaced not greater than 24" on centers.
b) Pulling irons shall be of copolymer polypropylene coated ½" dia. cable, with a rated pulling strength of 7500 lbs and a polyethylene pulling iron pocket, all recessed in the manhole wall opposite each duct entry. Pulling irons for handholes shall have the pulling iron located in the floor of the handhole near the center of the handhole opposite the duct entry. Pulling irons shall be as manufactured by M.A. Industries, Inc. Peachtree, GA. or Bowco Industries, Portland OR.
c) Manhole and handhole ladders shall be constructed of fiberglass reinforced plastic, safety yellow, 18" rung width with 12" rung spacings, Safrail as manufactured by Strongwell Corp., Bristol, VA. Furnish a total of two ladders, each of a length 4' greater than the deepest manhole in the underground system.

SECTION 17312 – LEVEL MEASUREMENT

a) Delete Section 17312 – Level Measurement in its entirety.

SECTION 17318 – ANALYTICAL MEASUREMENT

a) Delete Section 17318 – Analytical Measurement in its entirety.

REVISIONS TO DRAWINGS

SHEET G-2300 – COVER

a) Remove Sheet G-2300 in its entirety and replace with the revised version included in this Addendum.

SHEET G-2301 – DRAWING INDEX, LEGEND & ABBREVIATIONS

b) Remove Sheet G-2301 in its entirety and replace with the revised version included in this Addendum.

SHEET G-2302 – MALTSBERGER PS PROCESS FLOW DIAGRAM

c) Remove Sheet G-2302 in its entirety and replace with the revised version included in this Addendum.

SHEET G-2303 – BASIN PS PROCESS FLOW DIAGRAM

d) Remove Sheet G-2303 in its entirety and replace with the revised version included in this Addendum.

SHEET C-2312 – MALTSBERGER PS EROSION CONTROL AND CONST. STAGING PLAN

e) Remove Sheet C-2312 in its entirety and replace with the revised version included in this Addendum.

SHEET C-2317 – MALTSBERGER PS YARD PIPING PLAN

a) Remove Sheet C-2317 in its entirety and replace with the revised version included in this Addendum.

SHEET C-2318 – MALTSBERGER PS YARD PIPING PROFILES

a) Remove Sheet C-2318 in its entirety and replace with the revised version included in this Addendum.

SHEET C-2391 – STANDARD CIVIL DETAILS I

a) Remove Sheet C-2391 in its entirety and replace with the revised version included in this Addendum.

SHEET C-2392 – STANDARD CIVIL DETAILS II

a) Remove Sheet C-2392 in its entirety and replace with the revised version included in this Addendum.

SHEET S-2311 – CONTROL VALVE STATIONS, FOUNDATIONS, PLANS AND SECTIONS

a) Remove Sheet S-2311 in its entirety and replace with the revised version included in this Addendum.

SHEET S-2313 – ELECTRICAL BUILDING SLAB AND ROOF PLAN

a) Remove Sheet S-2313 in its entirety and replace with the revised version included in this Addendum.

SHEET S-2316 – SECTIONS AND DETAILS

a) Remove Sheet S-2316 in its entirety and replace with the revised version included in this Addendum.

SHEET S-2317 – TRANSFORMER PAD AND ANTENNA FOUNDATION

a) Remove Sheet S-2317 in its entirety and replace with the revised version included in this Addendum.

SHEET D-2302 – MALTSBERGER PS PIPING SCHEDULE

a) Remove Sheet D-2302 in its entirety and replace with the revised version included in this Addendum.

SHEET D-2311 – MALTSBERGER PS FLOW CONTROL VALVE ASSEMBLY PLAN

a) Remove Sheet D-2311 in its entirety and replace with the revised version included in this Addendum.

SHEET D-2312 – MALTSBERGER PS FLOW CONTROL VALVE ASSEMBLY SECTIONS

a) Remove Sheet D-2312 in its entirety and replace with the revised version included in this Addendum.

SHEET D-2331 – BASIN PS FLOW CONTROL VALVE ASSEMBLY

a) Remove Sheet D-2331 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2302 – ELECTRICAL GENERAL NOTES

a) Remove Sheet E-2302 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2303 – MALTSBERGER PS ELECTRICAL OVERALL SITE PLAN - DEMOLITION

a) Remove Sheet E-2303 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2304 – MALTSBERGER PS ELECTRICAL OVERALL SITE PLAN

a) Remove Sheet E-2304 in its entirety and replace with the revised version included in this Addendum

SHEET E-2312 – MALTSBERGER PS POWER DISTRIBUTION FUNCTIONAL DIAGRAM

a) Remove Sheet E-2312 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2313 – MALTSBERGER PS NEW MAIN SWITCHGEAR MV-SWGR-1 ONE LINE DIAGRAM

a) Remove Sheet E-2313 in its entirety and replace with the revised version included in this Addendum

SHEET E-2315 – MALTSBERGER PS NEW MV-MCC-A ONE-LINE DIAGRAM

a) Remove Sheet E-2315 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2316 – MALTSBERGER PS NEW MV-MCC-B ONE-LINE DIAGRAM

a) Remove Sheet E-2316 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2320 – MALTSBERGER PS ELECTRICAL ENLARGED POWER PLAN

a) Remove Sheet E-2320 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2321 – MALTSBERGER PS ELECTRICAL BLDG. POWER PLAN

a) Remove Sheet E-2321 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2324 – MALTSBERGER PS ELECTRICAL FLOW CONTROL VALVE POWER PLAN

a) Remove Sheet E-2324 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2336 – MALTSBERGER PS HIGH SERVICE PUMP RISER DIAGRAM

a) Remove Sheet E-2336 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2342 – BASIN PS ELECTRICAL DUCTBANK SECTION - I

Remove Sheet E-2326 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2343 – BASIN PS ELECTRICAL FLOW CONTROL VALVE POWER PLAN

a) Remove Sheet E-2343 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2393 – STANDARD ELECTRICAL DETAILS – MALTSBERGER PS

a) Remove Sheet E-2393 in its entirety and replace with the revised version included in this Addendum.

SHEET E-2394 – STANDARD ELECTRICAL DETAILS – BASIN PS

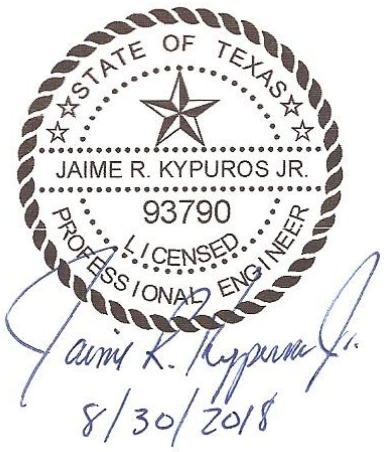
a) Remove Sheet E-2394 in its entirety and replace with the revised version included in this Addendum.

SHEET I-2311 - MALTSBERGER PS PCS NETWORK ARCHITECTURE DIAGRAM I

a) Remove Sheet I-2311 in its entirety and replace with the revised version included in this Addendum.

The remainder of the bid documents remain unchanged.

This addendum is comprised of a total of **62** pages (including attachments).



END OF ADDENDUM No. 3

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
1	The Pipe Materials Schedule on D-2302 references spec 15055 for the PW pipelines. There is no spec 15055 in these documents. There is a spec 15067 that says “Steel Pipe” but it for stainless steel pipe. Please furnish the correct spec as soon as possible.	Refer to addendum No. 2 for specification section 15055 Steel Pipe
2	We only find specification 15067 -Steel Process Pipe (stainless steel) in the specifications. In resent CWIP projects specification 15055 – Steel Pipe and specification 15056 - Steel Fittings have been included in the project specifications. These spec would be used for 36” yard piping.	Refer to addendum No. 2 for specification section 15055 Steel Pipe and section 15056 Steel Pipe Fabricated Specials
3	This email is a request to postpone the above referenced project (job # 18-8617) because of the Terminus Job that is bidding on the same day. After speaking with our electrical subcontractors, suppliers do not release the electrical specifications and pricing until a few hours before bid time. The Terminus project is eight times larger than the Maltsberger project and for an electrical subcontractor who is bidding both projects, this can cause a lot of accuracy problems due to time delays of equipment pricing to the subcontractor. So again, I would respectfully request a two day postponement of the Maltsberger project. Please advise.	This CWIP Maltsberger Pump Station Improvements Project bid date and time will remain on September 7, 2018 at 10:00 AM.
4	It appears that specification section 15067 contains the wrong information. The table of contents and the title at the beginning of the section calls it “15067 Steel Process Pipe.” The footer on each page of this section, however, states “Stainless Steel Pipe and Fittings.” The body of the specification is for stainless steel pipe. The pipe schedule on plan sheet D-2302 calls for “PW” pipe to be C200 steel pipe. Please provide the correct specification section.	Refer to addendum No. 2 for specification section 15055 Steel Pipe and section 15056 Steel Pipe Fabricated Specials. Specification section 15067 Steel Process Pipe has been deleted per addendum No. 3.
5	Do you have a specification for the Ductile Iron Pipe & Fittings?	Ductile Iron Pipe for the PRV sites will be per Standard Specification for Water and Sanitary Sewer Construction, Construction Materials Specification - Pipe Ductile Iron (saws.org), latest version.
6	Ref Plan Page M-2306. The connection to 24” HDPE Pipe. Can you provide a specification/detail for the 24” Transition coupling (HDPE to DI). Can you also verify the existing Pipe OD’s for the 24” HDPE Pipe (DIPS or IPS).	Connection between HDPE and DI should be done according to SAWS specifications, contractor should use HDPE MJ Adaptor with stainless steel stiffener insert. Contractor is responsible to excavate and field verify pipe OD’s, before ordering connections. According to SAWS as-builts, the HDPE supplier was CP CHEN PERFORMANCE PIPE (CHEVRON PHILLIPS CHEMICAL COMPANY LP)
7	Ref Plan Page C-2317. There is a 2” CWS Line on the east side of the Existing Ground Storage Tank. This line has a detail for a tee & ball valve on both connections. They Reference Detail 6/C-2392. This is a detail for a below ground injection point. I’m not quite understanding how we’d have an injection point on both ends? Can you please verify these details. We also need a pipe system for the 2” CWS Pipe.	Piping system is 2" Red Horizon 200 Synthetic tubing as manufactured by Goodyear. Connection will be made in the existing vault to an existing 2" tubing labeled "spare" and extended to a direct buried injector (see detail 6 on sheet C-2392).
8	Ref Plan Page C-2318. Pipe C Drain. This is one the schedule as a 6” PVC SDR26 HW Sewer Pipe. Detail 4/c-2392 shows this piping as ductile iron pipe. Can you verify what pipe material should be used for Line “C”	This line has been removed per addendum 3.
9	Plan sheet E2304, keynotes 4, 5, 6 refer to the installation of a new gate controller, and a new gate. The gate is also indicated on plan sheet C2312, and an installation detail is shown on plan sheet E2392. However, we cannot locate a specification for the gate operator equipment and accessories. Please provide us with one.	Specification Section 02821 Chain Link Fences and Gates was replaced in Addendum 2 with the gate requirements.
10	Please refer to plan sheet E2391, detail 1, “concrete reinforced duct bank section”. This detail does not indicate steel rebar stirrups as being required. However, detail 7 “below grade duct entrance detail” appears to indicate rebar stirrups. Are rebar stirrups required? If so please provide us with the rebar size, spacing, and overlap requirements.	Rebar stirrups will be required. This is reflected in the changes to SHEET E-2391 per Addendum No. 3.

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
11	Spec 17550 (security) indicates cameras (2.01), card readers (2.04), intercom pedestals (2.05), IP Intercoms (2.06), fire department emergency lock box (2.07), as being equipment furnished on the project. We cannot find a plan sheet that indicates the location of these components (so we can determine quantities), nor details the conduit and wiring requirements, etc. Please provide us with an engineered plan sheet for the security system that indicates all equipment and wiring requirements for the security system infrastructure.	Updated security network provided. This is reflected in the changes to SHEET I-2311 per Addendum No. 3.
12	I'm not finding the three-page Respondent Questionnaire for Maltsberger in the Bid package or in the original scanned documents, but it's listed on the matrix.	Respondent Questionaire was issued with Addendum No. 2
13	What is the "CMS" pipeline shown on C-2317? What kind of pipe and what are the "2" tee & ball valves" for? Are there below ground injection points (6/C-2392) on both ends?	Chlorine solution injection is needed for shutdown condition with pumps 5, 6 and 7 in operation and 1-4 isolated. Piping system is 2" Red Horizon 200 Synthetic tubing as manufactured by Goodyear. Connection will be made in the existing vault to an existing 2" tubing labeled "spare" and extended to a direct buried injector (see detail 6 on sheet C-2392).
14	The section callouts for duct bank designations on plan sheet E2320 (there are 19 of them) are blank and do not designate the applicable duct bank sections, please provide info.	Refer to updated site plan SHEET E-2320 per Addendum No. 3.
15	The duct banks that leave the vault on plan sheet E2320 and continue to the new electrical building on plan sheet E2321 (there are 13 continuation lines) do not have any conduit ID tag names, or any duct bank section identifiers attached to them, thus we have no idea what these lines represent.	Refer to updated site plan SHEET E-2320 per Addendum No. 3.
16	Plan sheet E2313 (keynote 6) shows existing transformers tagged TX1 and TX2 to feed the new switchgear. Where are these transformers? Do not see either of these transformer locations identified on either plan sheet E2304 (site plan) or E2321 (electrical building). This wiring (duct bank) needs to be shown on one of the site plan sheets to show routing of this conduit run.	Refer to updated site plan SHEET E-2320 per Addendum No. 3.
17	Plan sheet E2320, lower left hand corner of the page, indicates a pad outside the existing vault with two separate pieces of equipment on them (see two rectangles) that are not identified (neither are the duct banks identified that are shown to connect to them) please identify this equipment, and identify duct bank construction requirements.	Refer to updated site plan SHEET E-2320 per Addendum No. 3.
18	Plan sheet E2321, inside the building at the south end, indicates two pieces of equipment (two more rectangles) that are also not identified. Please identify what these items are and any conduit wiring requirements if they exist.	These items have been removed from the plan. This is reflected in the changes to SHEET E-2321 per Addendum No. 3.
19	On plan sheet E2320 there are problems with the keynotes, they are missing important sheet designations see the following for keynotes on this page: a. Keynote 1 the E sheet designation is missing. b. Keynote 3 the E sheet designation is missing. c. Keynote 5 the E sheet designation is missing.	Refer to updated site plan SHEET E-2320 per Addendum No. 3.
20	Can you clarify the type of pipe required for the 6" Pipe C? Pipe Schedule for D (drain) lines says SDR 26 PVC but the detail referenced (4/C-2392) shows ductile iron. You don't have a ductile iron spec which we will need regardless.	This line has been removed per Addendum No. 3.
21	Section 01600, paragraph 1.11 appears to be information for a different project. Please confirm/correct.	This will be corrected in a future addendum.
22	On sheet C-2317 in grid areas C4 and E5 there are callouts for 2" tee and ball valve per detail 6/C-2392. These injection points connect to a line labeled '2" CWS' that runs between the two injection points. First, what diameter pipe are the injection points being installed on? Second, is the 2" CWS pipe a new line that the contractor needs to install? The line isn't called out as existing, but it also isn't drawn with a bold line like the other proposed pipe are.	Chlorine solution injection is needed for shutdown condition with pumps 5, 6 and 7 in operation and 1-4 isolated. Piping system is 2" Red Horizon 200 Synthetic tubing as manufactured by Goodyear. Connection will be made in the existing vault to an existing 2" tubing labeled "spare" and extended to a direct buried injector (see detail 6 on sheet C-2392).

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
23	requesting that SAWS postpone the bid date for the following reasons: 1. This project bid the same day as Solicitation No. CO-00185-JG – CWIP Terminus Treatment Facility. Our venders and subcontractor will have trouble producing accurate submittals and pricing for this project hours before the Terminus Facility bids. The same venders will be bidding both projects and this will leave no time for revision and clarifications. 2. This project was published on 8-10-18, according to SAWS.org. The contract solicitations states that answers to the question will be published on 8-30 @ 10AM. Allowing us 13 days to compile our questions and only 7 days to review and complete our bid, with no option for follow-up questions if answers provided do not satisfy the queries. 3. We request more time be given between pre-proposal/site visit and questions being due. This does not allow us enough time to compare notes taken during the pre-proposal and compare them to the bid documents. 4. After a general review of the bid documentation, there is not enough accurate information to complete a bid (please see requested information below).	Questions received after August 23, 2018 may still be reviewed and considered in subsequent addendums for this project. The bid date and time for the Central Water Integration Pipeline - Terminus Treatment Facility Project have been revised.
24	Sheet E-2303: See Note 9, please provide existing tower type (mono-pole, ladder, etc.) and height.	Details for the existing tower have been added to the plans. This is reflected in the changes to SHEET E-2393 per Addendum No. 3.
25	Sheet E-2304: Tower notes, please provide detail for raceway routing, size, and confirm that new coaxial cable is needed. Sheet I-2311 shows coaxial cable is existing, but the new location will require new cable. Please clarify.	New coaxial cable will be required. This is reflected in the changes to SHEETS E-2393 and I-2311 per Addendum No. 3.
26	Sheet E-2304: Tower notes, please provide detail for raceway routing, size, and confirm that new coaxial cable is needed. Sheet I-2311 shows coaxial cable is existing, but the new location will require new cable. Please clarify.	New coaxial cable will be required. This is reflected in the changes to SHEETS E-2393 and I-2311 per Addendum No. 3.
27	Sheet E-2303: Ductbank from electrical equipment area to well pump 1 is shown to be demolished.	
28	Sheet E-2304 shows ductbank C-B meeting at an existing manhole. Please confirm this manhole is existing and will not be demolished, per sheet E-2303. If so, are we to install ductbank C-D and its contents prior to demolishing the existing ductbank. If so, is the existing manhole sized to handle existing and proposed ductbanks.	The electrical manhole is existing. The manhole is to be re-used for the medium voltage circuits to the Well Pumps and new handhole installed for low voltage circuits. This is reflected in changes to SHEET E-2304 per Addendum No. 2.
29	Sheet E-2304: Ductbanks N-M-Q are shown to be diverted via a manhole that is assumed to be existing. Please confirm this manhole is existing and will be repurposed. If so, are we to install ductbanks N-M-Q and their contents prior to demolishing the existing ductbank. If so, is the existing manhole sized to handle existing and proposed ductbanks.	The electrical manhole will be new. This is reflected in the changes to SHEET E-2304 per Addendum No. 2.
30	Sheet E-2304: See Notes 4 & 5, please clarify what electrical room this is being feed from and its location, so we can quantify and verify the relative.	The access gate will be powered and controlled from the existing electrical room in the OSHG building.
31	Sheet E-2304: Please revise and identify proposed ductbank feeding the flow and flow control valve assembly.	Updated site plan has been provided. This is reflected in the changes to SHEET E-2304 per Addendum No. 2.
32	Sheet E-2305 & E-2306: Please provide cable and conduit schedule referencing the conduit tags shown in each ductbank section. Interconnection and one-line diagrams do not match these schedules.	Ductbank sections have beend updated. This is reflected in the changes to SHEETS E-2305, E-2306 and E-2307 per Addednum No. 2.
33	Sheet E-2320: “DB” I.D. tags referencing E-2306 do not identify the ductbank. Also, “DB” shown from the electrical vault (below) says “SEE SHEET E- FOR CONTINUATION”. Please revise and identify all existing and proposed electrical raceways, contents, and electrical items.	Updated site plan is provided. This is reflected in the changes to SHEET E-2320 per Addendum No. 3.
34	Sheet E-2321: Please revise and identify proposed electrical raceways, contents, and electrical items.	Updated plan is provided. This is reflected in the chages to SHEET E-2321 per Addendum No. 3.
35	Sheet E-2322: Please revise and identify ALL light fixtures.	Light fixture schedule will be provided in a future addendum.

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
36	Sheet E-2324: Please revise and identify equipment shown on the “36” FLOW METER AND FLOW CONTROL VALVE ASSEMBLY” so it coincides with the “FLOW CONTROL RISER DIAGRAM”.	Updated plan and riser diagram is provided. This is reflected in the changes to SHEET E-2324 per Addendum No. 3.
37	Sheet E-2324: Please revise and identify raceways, raceway sizes, and contents shown on the “FLOW CONTROL RISER DIAGRAM”	Updated plan and riser diagram is provided. This is reflected in the changes to SHEET E-2324 per Addendum No. 3.
38	Sheet E-2324: Two disconnects are shown on the “36” FLOW METER AND FLOW CONTROL VALVE ASSEMBLY” but not on the riser diagram. Please revise.	Updated plan and riser diagram is provided. This is reflected in the changes to SHEET E-2324 per Addendum No. 3.
39	Sheet E-2336: Please revise and identify raceways and conductors so they match relatable documents. For example, WT, BE, GND-M-SH do not appear on any schedules found in the bid documents.	Updated riser diagram is provided. GND is an abbreviation listed on SHEET E-2301 for GROUND. The remainder are listed either on one-lines or wiring diagrams. This is reflected in the changes to SHEET E-2326 per Addendum No. 3.
40	Sheet E-2337: Please revise and identify raceways and conductors.	Updated riser diagram is provided. This is reflected in the changes to SHEET E-2327 per Addednum No. 3.
41	Sheet E-2343: “FLOW CONTROL VALVE” illustrates a disconnect between the FIT and FCV control cabinet, there is no disconnect shown on the “FLOW CONTROL RISER DIAGRAM”. Please revise and provide size and rating of this disconnect.	Updated plan and riser diagram is provided. This is reflected in the changes to SHEET E-2343 per Addendum No. 3.
42	Sheet E-2343: “FLOW CONTROL RISER DIAGRAM”, between the MCR and PLC-CHEM is an item with no label. Please identify.	Updated riser diagram is provided. This is reflected in the changes to SHEET E-2343 per Addednum No. 3.
43	Sheet E-2351: Please provide a location for the CPS service pole and feeder from service to the electrical panelboard.	This information will be provided in a future Addendum.
44	Sheet E-2351: Raceway I.D. P007 is not listed on the conduit schedule on Sheet E-2360. Please revise.	This information will be provided in a future Addendum.
45	Sheet E-2352: For panel “A” it says to see sheet E-2805 for panel “A” schedule. There was no sheet E-2805 provided. Please revise.	This information will be provided in a future Addendum.
46	Sheet E-2352: Please identify all raceways with conduit tags so we may reference the conduit schedule accurately.	This information will be provided in a future Addendum.
47	Sheet E-2353: Please identify equipment and instrumentation and provide a revised conduit schedule that accurately shows the “from-to”. Example, conduit “P003” per the conduit schedule goes from “panel A” to “pressure trans panel. “P003” on Sheet E-2353 does not go to a panel, it is shown in the vault.	This information will be provided in a future Addendum.
48	Sheet E-2353: Please provide a conduit schedule showing ALL conduits and their respective source and destination points.	This information will be provided in a future Addendum.
49	Sheet E-2355: For panel “A” it says to see sheet E-2805 for panel “A” schedule. There was no sheet E-2805 provided. Please revise.	This information will be provided in a future Addendum.
50	Sheet E-2355: Please identify all raceways with conduit tags so we may reference the conduit schedule accurately.	This information will be provided in a future Addendum.
51	Sheet E-2356: Please identify equipment and instrumentation and provide a revised conduit schedule that accurately shows the “from-to”. Example, conduit “P003” per the conduit schedule goes from “panel A” to “pressure trans panel. “P003” on Sheet E-2353 does not go to a panel, it is shown in the vault.	This information will be provided in a future Addendum.
52	Sheet E-2356: Please provide a conduit schedule showing ALL conduits and their respective source and destination points.	This information will be provided in a future Addendum.
53	Sheet E-2360: Please revise conduit schedule and pane “A” schedule so they show ALL conduits and circuits. Refer to previous question for examples. We have not notated all discrepancies due to the amount of discrepancies found. Please revise accordingly.	This information will be provided in a future Addendum.
54	Sheet E-2391: Detail 6, shows 4/0 copper and 5/8 grounding rods. Layout drawing show 2/0 copper and ¾ grounding rods. Please clarify what is required	Detail updated to 3/4" diamater and 2/0. This is reflected in the changes to SHEET E-2391 per Addendum No. 3.

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
55	Refer to plan sheet E2304, please provide us with a duct bank section detail (that indicates conduit quantities and tag names) for the run that “Y”s off of duct bank section B and turns toward the flow meter and flow control valve assembly.	Duct bank section information. This is reflected in changes per Addendum No. 2.
56	Refer to plan sheet E2304, please provide us with a duct bank section detail (that indicates conduit quantities and tag names) for the run that exits the existing manhole and terminates at the existing switchrack for well pump 3.	Duct bank section information. This is reflected in changes per Addendum No. 2.
57	Refer to plan sheet E2304, Is the manhole shown at the intersection of duct banks M,N,P,Q an existing component, or is it proposed? If it is proposed, please provide us with a detail (none exists) that provides us with dimensions, and construction specs for this precast enclosure.	The electrical manhole will be new. This is reflected in the changes to SHEET E-2304 per Addendum No. 2.
58	Refer to plan sheet E2304, duct bank section N appears to be routed around the manhole, please confirm duct bank section N terminates at the manhole.	Yes, Duct Bank Section N terminates in the new electrical manhole. This is reflected in the changes to SHEET E-2304 per Addendum No. 2.
59	Refer to plan sheet E2305 and E2306 (duct bank section details) the information provided in all the section details is incomplete in regard to circuitry. At a minimum, revise the conduit tag columns to include specific circuit designations, and the description columns to include specific terminus points (similar to the manner used on the duct bank section details on plan sheet E2342).	Ductbank sections have beend updated. This is reflected in the changes to SHEETS E-2305, E-2306 and E-2307 per Addednum No. 2.
60	Refer to plan sheet E2337, please provide conduit tags, circuit designations, sizing information, etc for the various runs shown on this riser diagram.	Updated riser diagram provided. This is reflected in the changes to SHEET E-2327 per Addednum No. 3.
61	Refer to plan sheet E2342 (section details) and E2343 FCV riser diagram) can you confirm that the wiring shown in the sections on plan sheet E2342 shows existing wiring that is to remain, and that the only proposed wiring to be added to the existing duct banks appears on the FCV riser diagram on sheet E2343.	Updated plan and riser diagrams provided. This is reflected in the changes to SHEET E-2342 and E-2343 per Addednum No. 3.
62	Refer to plan sheets E2351, E2352, 2353 add a general note to refer the Contractor to the conduit schedule on plan sheet E2360.	This information will be provided in a future Addendum.
63	Refer to plan sheet E2351 and E2360, the conduit schedule indicates tag SS1 as the feeder from the utility to the proposed panelboard A. However conduit run tag SS1 does not appear on the PRV-II site plan E2351, and we need to know the location of the utility connection.	This information will be provided in a future Addendum.
64	Refer to the power pedestal elevation details on plan sheets E2352 (PRV-II site) and E2355(PRV-III site), also detail 7 on plan sheet E2395. These panels are a special custom manufactured product that are equipped with internal time clocks, lighting contactors, fluorescent lighting, etc, and are not applicable to the specification section 16470 (panelboards) in the bid spec set. Please provide us with a specification for these custom unmetered pedestal panelboards.	This information will be provided in a future Addendum.
65	• Per section 17318 Analytical Instruments, please confirm if both Rosemount & Hach analytical equipment is desired. Typically, SAWS only utilizes the Rosemount for its analytical equipment.	Analyzer requirements have been removed from this project. Specification Section 17418 has been deleted. This is reflected in the changes to the specifications per Addendum No. 3.
66	I’m calling in reference to Solicitation No. CO-00190-JG, Central Water Integration Pipeline Maltsberger Pump Station Improvements, the Level Instruments are missing from the bid specs for this bid. The plans show a float level switch, and the Table of Contents shows there is supposed to be specs for Level Measurement, but it is missing.	There are no level instruments on this project. That will part of the Maltsberger Tank Rehabilitation Project that will coincide with this project. References to level instruments will be removed per Addendum 3.
67	The pipe schedule on D-2302 references spec section 15055 for the steel pipe, but that’s not in the specifications package.	Refer to addendum No. 2 for specification section 15055 Steel Pipe
68	Also, there is spec section 15067 that says it’s for steel process pipe but it is actually a stainless steel spec.	Refer to addendum No. 2 for specification section 15055 Steel Pipe and section 15056 Steel Pipe Fabricated Specials
69	15066 is for steel pipe fabricated specials. Could we please get the steel process pipe specification included in the next addenda?	Refer to addendum No. 2 for specification section 15055 Steel Pipe and section 15056 Steel Pipe Fabricated Specials

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
70	Is 51% self-performance by the Prime Contractor a requirement of the project documents? If so, can you please identify the section containing this requirement. If not, can you please verify that no requirement exists.	No, this is not a requirement on this project.
71	Will SAWS provide the Qualification documents (SIR) in a word file?	Forms have been posted to the website in Microsoft Word format.
72	Would SAWS consider removing the CPM Schedule from the page count restriction?	Yes, per Addendum No. 3, the Supplementary Instructions to Respondents and the Required Documents Matrix have been updated to exclude the CPM Schedule from the page count.
73	Section 01040 1.03 C Sequencing of work requires the 48" BFU's to be installed prior to February 15, 2019. The fabrication time for the valve will not allow this date to be met. Did SAWS already procure these Valves? Can this date be changed to October 2019 through February 2020?	SAWS did not procure these valves. Per Addendum No. 3, the date has been extended to March 15, 2019. The date cannot be extended through February 2020 because this work is part of the Intermediate Completion Milestone of December 30, 2019.
74	Section 01040 1.03 D Sequencing of work requires the 36" BFU's to be installed prior to February 15, 2019. The fabrication time for the valve will not allow this date to be met. Did SAWS already procure these Valves? Can this date be changed to October 2019 through February 2020?	SAWS did not procure these valves. The date cannot be extended through February 2020 because this work is part of the Intermediate Completion Milestone of December 30, 2019.
75	Are there sequencing requirements for Basin, regarding the valve?	No special sequencing is required. The piping is under construction now and will be in place for connecting the sleeve assembly when this project is awarded.
76	When is the Tank repair contractor going to have the tank off line?	The Maltsberger Ground Storage Tank Rehabilitation contractor will be allowed to have the tank offline from November 1, 2018 through March 15, 2019.
77	Please confirm SAWS will make sure all isolated shutdowns, performed by SAWS, are safe and water tight?	Contractor is responsible for safety. Contractor shall faciliate isolations and shutdowns and coordinate safety measure with SAWS.
78	Per the walkthrough the east end of the Maltsberger Pump Station is to be used for material storage. Has the east end of the site ever flooded? If so, when was the last time? Please advise.	Flood records are unknown. The 100 year flood plain limit line is indicated on sheet C-2315.
79	The new CoSA ordinance mandating paid sick leave takes effect 8/1/19. It is assumed SAWS will not receive a variance even though the contract will be executed prior to the implementation of the ordinance. Please advise.	SAWS requires Contractor's to comply with all municipal, state and federal laws, regulations, rules, and ordinances. SAWS will not receive a variance on the City of San Antonio's paid sick leave ordinance.
80	Refer to Spec 15055 Sections 2.01.B and 3.02.A, will you allow field welding for the Potable Water Lines?	Yes, field welding is allowed.
81	Can you provide a specification for the NSF Epoxy Lining of the Steel Pipe per Spec 15055?	Yes, this is included in Addendum No. 3
82	There are no antenna pole requirements within the provided bid documents; will these be provided in an addendum?	Antenna tower requirments have been included in Addendum No. 3.
83	• Per drawing E-2359, the antenna height shown are 33' tall. Was a path study previously performed by the Engineer? And if so, will the Engineer provide the contractors with this information?	Antenna tower heights are updated on the drawings. This is reflected in the changes per Addendum No. 3.
84	• SAWS has multiple radio frequencies throughout their entire system utilizing both MHz to GHz, what are the frequencies for the radios? Will any radio equipment specifications be provided in an addendum?	Radio information has been provided. This is reflected in the changes to SHEET I-2311 per Addendum No. 3.
85	• Due to the proximity to the San Antonio Airport, are there any FCC and/or FAA regulations and requirements?	This was addressed in Addendum No. 2
86	• Ref Addenda #2 – Steel Pipe & Steel Pipe Fabricated Specials. o Spec 15055 2.01 B. "…All buried potable water mains shall be connected together using mechanical or push-on joints, except as otherwise specified."	No question posed
87	• Ref Addenda #1 – Steel Pipe & Steel Pipe Fabricated Specials. o Spec 15055 3.02 A. "All buried pipe, 30 inches and larger shall be welded steel unless otherwise specifically shown in the drawings…Buried pipe less than 30 inches shall be steel with sleeve type couplings, harnessed when joint restraint is required, or bell and spigot joints with rubber gaskets."	No question posed
88	• Ref Addenda #1 – Steel Pipe & Steel Pipe Fabricated Specials. o Will you allow field welding for the Potable Water lines?	Yes, field welding is allowed

Project: Central Water Integration Pipeline Maltsberger Pump Station Improvements Project		
Question and Answer Form		**Solicitation No.: CO-00190**
		Job No.: 18-8617
Question No.	**Question**	**Answer**
89	• Ref Addenda #1 – Steel Pipe & Steel Pipe Fabricated Specials. o Can you provide a specification for the NSF Epoxy Lining for this steel pipe?	Yes, this is included in Addendum No. 3
90	Please provide a light fixture schedule for the fixtures shown to be installed in the electrical building at the Maltsberger Pump Station	Light fixture schedule will be provided in a future addendum.
91	Sheet M-2302; "This is not a 45 deg bend (1/8)"	This information will be provided in a future Addendum.
92	Sheet M-2302; "This is not a 90 deg bend (1/4)"	This information will be provided in a future Addendum.
93	Sheet M-2304; "Can't put a slip on flange on a gate valve or on DI Pipe".	This information will be provided in a future Addendum.
94	Sheet M-2304; "M-2302 shows these to be MJ. Can't be steel and MJ. Where do you want to change from DI to Steel?"	This information will be provided in a future Addendum.
95	Sheet M-2306; "These are not 1/4 bends. They are abour 30-35 deg. Closest available MJ fitting is 22.5 deg."	This information will be provided in a future Addendum.
96	Sheet M-2306; "These are not 1/4 bends. They are about 60 deg. 60 deg MJ fittings are not available."	This information will be provided in a future Addendum.
97	On Drawing E-21304 Tower Notes 4. states the Contractor is responsible for the programming for the existing PLC, however the spec states the Owner will do all the programming for this project. Please clarify who will do the programming for this existing PLC	This has been revised to have the Owner provide the necessary programming support and/or changes. This is reflected in the changes to SHEET E-2304 per Addendum No. 3.
98	Drawing E-2321 shows a Network Cabinet and Radio Panel. Is it possible to get a detail drawing on what equipment is needed to fabricate these panels for this project	Additional information has been added to address the Network/Security cabinet. This is reflected in the changes to SHEET I-2311 per Addendum No. 3.
99	Please advise on drawing E-2336 that the HSP Instrumentation and Control Panels are existing?	The instrumentation and controls shown at the HSP are existing and are not being replaced in this project.
100	Can we get more detail on drawing E-2337 on what we are to supply for Control Panels and Instrumentation? If we are to supply the flow meter what is the line size.	The instrumentation and controls shown at the Well Pumps are existing and are not being replaced in this project.
101	On drawing E-2343 are we to supply equipment on this drawing? If so can we can more detail on the lines sizes and etc..	Sizes will be provided in a future addendum.
102	Please clarify if all Equipment on drawing I-2311 are existing except for the fiber optic cable run between the existing FOPP and the New SCAD Panel.	Updated drawing is provided. This is reflected in the changes to SHEET I-2311 per Addednum No. 3.

SECTION 15093

CHECK VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Check valves of the water tight, wafer style body, 2 through 48 inches.

   2. Small diameter swing check valves are covered in the Small Diameter Valves and Appurtenance section.

B. Related Requirements:
   1. Section 15090 - Common Requirements for Process Valves: Basic materials and methods related to valves commonly used for process systems.

1.2 REFERENCE STANDARDS

A. American Water Works Association:
   1. AWWA C518 – Dual-Disc Swing-Check Valves for Waterworks Service.

B. ASME International:

   1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.
   3. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

C. ASTM International:

   1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
   3. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

D. Manufacturers Standardization Society of the Valve and Fittings Industry:

   1. MSS SP-70 - Gray Iron Gate Valves, Flanged and Threaded Ends.
   2. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.

1.3 SUBMITTALS

A. As specified in Section 15090 - Common Requirements for Process Valves: Submittal requirements for compliance with this Section.

B. Closure Time Data

1.4 WARRANTY

A. Furnish five-year manufacturer's warranty for check valves.

PART 2 - PRODUCTS

2.1 DOUBLE-DISK CHECK VALVES

A. Approved manufacturers
   1. Crane Duo Check II Style G.
   2. Gulf Wafer Check.
   3. APCO Style 9000.
   4. Or Engineer Approved equal.

B. Description:
   1. Suitable for service working pressures as identified in Section 15055 – Steel Pipe. The valve furnished shall have a cast iron body. The check valve plates will be bronze or ductile iron plates with Buna-N seals and standard trim materials for IBBM construction. The valve body shall be wafer style.

   2. Seating shall be resilient and water tight; the seating element shall be Buna-N molded to the body casting.

   3. The valve body will be short face-to-face, dimension to ANSI standards, flangeless.

   4. The check valve doors shall be spring loaded, NORMALLY closed, by means of one or more heavy duty stainless steel torsion springs, flow from the tank shall cause the doors to open, the torsion spring will shut the doors before reverse flow starts and at a point of zero velocity for non-slam closure. The valve spring shall be a torque spring specifically designed for this style valve.

   5. Valves shall have a pressure rating adequate to meet the working and transient / test pressures of pipeline where the valve is being installed. The valve is to be clamped between two mating flanges, ANSI B16.5 class 150 unless otherwise noted, which are connected by studs and nuts.

   6. Studs and nuts shall be included and shall be ASTM A193 grade B7 with quantity two (2) 2H nuts.

   7. The valve spring shall be a standard torque spring specifically designed for this style valve.

   8. The valve body shall be equipped with a lift hole and eye bolt for lifting and moving the valve.

9. The approved products must be certified by a manufacturers registered engineer that they meet this specification and the referenced ASTM Standards.

PART 3 - EXECUTION

A. As specified in Section 15090 - Common Requirements for Process Valves: Submittal requirements for compliance with this Section.

3.2 INSTALLATION

A. According to AWWA C518, manufacturer's instructions and as specified in Section 15090 - Common Requirements for Process Valves.

3.3 FIELD QUALITY CONTROL

A. Inspection:

1. Inspect for damage to valve lining or coating and for other defects that may be detrimental as determined by Architect/Engineer.
2. Repair damaged valve or provide new, undamaged valve.
3. After installation, inspect for proper supports and interferences.

B. Pressure Testing: As indicated in Section 15055 – Steel Pipe.

END OF SECTION

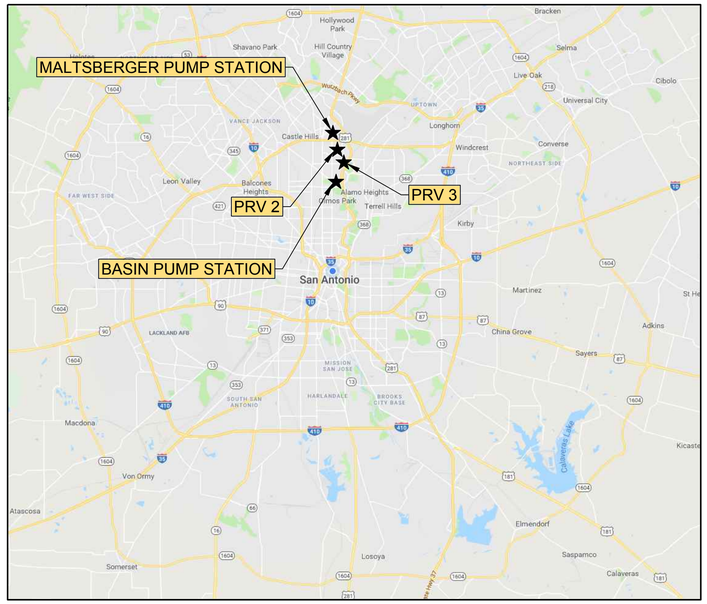
This page intentionally left blank.

CENTRAL WATER INTEGRATION PIPELINE PROJECT
MALTSBERGER PUMP STATION & BASIN IMPROVEMENTS

SAWS JOB NO. 18-8617

BID SET

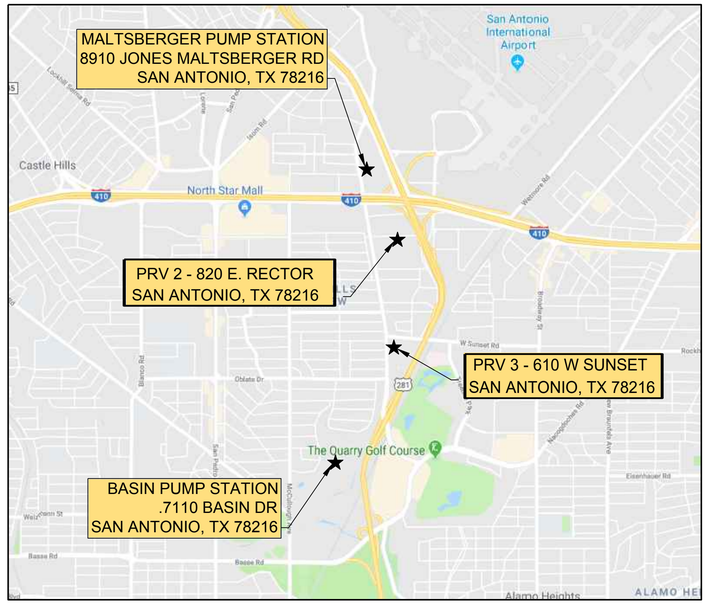
AUGUST 2018



SAN ANTONIO, TX

LOCATION MAP

SCALE: N.T.S.



SAN ANTONIO, TX

VICINITY MAP

SCALE: N.T.S.

Process Engineer
Tetra Tech, Inc.
TBPE Reg. No. F-3924

Contact: Jaime Kypuros
700 N. Saint Mary's St., Ste. 300
San Antonio, Texas 78205
210.299.7916 phone
210.226.8497 fax

Structural Engineer
Structural Engineering Associates, Inc.
TBPE Reg. No. F-199

Contact: Eric Jahelka
3838 N.W. Loop 410
San Antonio, Texas 78229
210.735.9202 phone
210.735.2074 fax

Civil Engineer
Bain Medina Bain, Inc.
TBPE Reg. No. F-1712

Contact: Carl Bain
7073 San Pedro Ave
San Antonio, Texas 78216
210.494.7223 phone
210.490.5120 fax

HVAC Plumbing Engineer
Tetra Tech, Inc.
TBPE Reg. No. F-3924

Contact: Michael Sutherland
700 N. Saint Mary's St., Ste. 300
San Antonio, Texas 78025
210.299.7916 phone
210.226.8497 fax

Architect
Lopez Salas Architects, Inc

Contact: Robert Lopez
237 W. Travis St, Suite 201
San Antonio, 78205
210.734.4448 phone

Electrical Engineer
Tetra Tech, Inc.
TBPE Reg. No. F-3924

Contact: Tim Gobrogge
700 N. Saint Mary's St., Ste. 300
San Antonio, Texas 78025
210.299.7916 phone
210.226.8497 fax

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED
PROFESSIONAL ENGINEER
8/27/2018

ETRA TECH
Texas Registration No. F-3924

700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

www.tetratech.com

SHEET LIST TABLE

SHEET NO.	SHEET TITLE
GENERAL	
1	G-2300 COVER
2	G-2301 DRAWING INDEX, LEGEND & ABBREVIATIONS
3	G-2302 MALTSBERGER PS PROCESS FLOW DIAGRAM
4	G-2303 BASIN PS PROCESS FLOW DIAGRAM
CIVIL	
5	C-2301 CIVIL GENERAL NOTES, LEGEND AND ABBREVIATIONS
6	C-2311 MALTSBERGER PS EXISTING CONDITION
7	C-2312 MALTSBERGER PS EROSION CONTROL AND CONST. STAGING PLAN
8	C-2313 MALTSBERGER PS EROSION CONTROL DETAILS
9	C-2314 MALTSBERGER PS DEMOLITION PLAN
10	C-2315 MALTSBERGER PS HORIZONTAL CONTROL PLAN
11	C-2316 MALTSBERGER PS GRADING PLAN
12	C-2317 MALTSBERGER PS YARD PIPING PLAN
13	C-2318 MALTSBERGER PS YARD PIPING PROFILES
14	C-2331 BASIN PS YARD PIPING PLAN
15	C-2391 STANDARD CIVIL DETAILS I
16	C-2392 STANDARD CIVIL DETAILS II
17	C-2393 STANDARD CIVIL DETAILS III
LANDSCAPE	
18	TP-2301 TREE PRESERVATION PLANS
19	TP-2302 TREE PRESERVATION PLANS
20	TP-2303 TREE PRESERVATION PLANS
21	TP-2304 TREE PRESERVATION PLANS
22	TP-2305 TREE PRESERVATION PLANS
ARCHITECTURAL	
23	A-2200 ARCHITECTURAL LIFE SAFETY AND CODE REVIEW
24	A-2201 FLOOR PLANS, RCP, ROOF PLAN & DETAILS
25	A-2202 ELEVATIONS & SECTIONS
26	A-2203 WALL SECTIONS AND DETAILS
27	A-2204 DOOR SCHEDULE AND PARTITION TYPES
STRUCTURAL	
28	S-2301 STRUCTURAL GENERAL NOTES
29	S-2302 STRUCTURAL GENERAL NOTES
30	S-2311 CONTROL VALVE STATIONS FOUNDATION PLANS AND SECTIONS
31	S-2312 ELECTRICAL BUILDING FOUNDATION PLAN
32	S-2313 ELECTRICAL BUILDING SLAB AND ROOF PLAN
33	S-2314 ELECTRICAL BUILDING SECTIONS
34	S-2315 PRV VAULT PLAN AND SECTIONS
35	S-2316 SECTIONS AND DETAILS
36	S-2317 TRANSFORMER PAD AND ANTENNA FOUNDATION
37	S-2391 STRUCTURAL DETAILS
PROCESS	
38	D-2301 PROCESS LEGEND & ABBREVIATIONS
39	D-2302 MALTSBERGER PS PIPING SCHEDULE
40	D-2311 MALTSBERGER PS FLOW CONTROL VALVE ASSEMBLY PLAN
41	D-2312 MALTSBERGER PS FLOW CONTROL VALVE ASSEMBLY SECTIONS
42	D-2313 MALTSBERGER PS FLOW CONTROL VALVE ASSEMBLY PERSPECTIVE
43	D-2330 BASIN PS EXISTING FLOW CONTROL VALVE ASSEMBLY
44	D-2331 BASIN PS FLOW CONTROL VALVE ASSEMBLY
45	D-2391 STANDARD PROCESS DETAILS I
46	D-2392 STANDARD PROCESS DETAILS II
47	D-2393 STANDARD PROCESS DETAILS III
MECHANICAL	
48	M-2301 GENERAL NOTES
49	M-2302 INTERCONNECTION PLAN & PROFILE PRV2
50	M-2303 VAULT PLAN GRADING PRV-2
51	M-2304 PRESSURE REDUCING VALVE ASSEMBLY PLAN PRV-2
52	M-2305 PRESSURE REDUCING VALVE ASSEMBLY PLAN PRV-2
53	M-2306 INTERCONNECTION PLAN & PROFILE PRV3
54	M-2307 INTERCONNECTION PLAN & PROFILE PRV3
55	M-2308 VAULT PLAN GRADING PRV-3
56	M-2309 PRESSURE REDUCING VALVE ASSEMBLY PLAN PRV-3
57	M-2310 PRESSURE REDUCING VALVE ASSEMBLY PLAN PRV-3
58	M-2311 CIVIL DETAILS
HVAC	
59	H-2301 HVAC SYMBOLS AND ABBREVIATIONS
60	H-2321 HVAC PLAN AND SECTION
61	H-2391 HVAC SCHEDULES
62	H-2392 HVAC DETAILS
TRAFFIC CONTROL	
63	T-2301 TRAFFIC CONTROL PLAN
64	T-2302 DETOUR 1
65	T-2303 TRAFFIC CONTROL PLAN
66	T-2305 BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS BC (1) - 14
67	T-2306 BARRICADE AND CONSTRUCTION PROJECT LIMIT BC (2) - 14
68	T-2307 BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT BC (3) - 14
69	T-2308 BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES BC (4) - 14
70	T-2309 BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT BC (5) - 14
71	T-2310 BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) BC (6) - 14
72	T-2311 BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR BC (7) - 14
73	T-2312 BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES BC (8) - 14
74	T-2313 BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES BC (9) - 14
75	T-2314 BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES BC (10) - 14
76	T-2315 BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS BC (11) - 14

SHEET LIST TABLE

SHEET NO.	SHEET TITLE
77	T-2316 BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS BC (12) - 14
78	T-2306 TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS TCP (2-4) - 18
ELECTRICAL	
79	E-2301 ELECTRICAL LEGEND & SYMBOLS
80	E-2302 ELECTRICAL GENERAL NOTES
81	E-2303 MALTSBERGER PS ELECTRICAL OVERALL SITE PLAN-DEMOLITION
82	E-2304 MALTSBERGER PS ELECTRICAL SITE PLAN - 1
83	E-2305 MALTSBERGER PS ELECTRICAL DUCTBANK SECTION - I
84	E-2306 MALTSBERGER PS ELECTRICAL DUCTBANK SECTION - II
85	E-2311 MALTSBERGER PS EXISTING POWER DIST. FUNC. DIA. - DEMOLITION
86	E-2312 MALTSBERGER PS POWER DISTRIBUTION FUNCTIONAL DIAGRAM
87	E-2313 MALTSBERGER PS NEW MAIN SWITCHGEAR MV-SWGR-1 ONE-LINE DIA.
88	E-2314 MALTSBERGER PS NEW MV-SWGR-1 CONTROL SCHEMATICS
89	E-2315 MALTSBERGER PS NEW MV-MCC-A ONE-LINE DIAGRAM
90	E-2316 MALTSBERGER PS NEW MV-MCC-B ONE-LINE DIAGRAM
91	E-2317 MALTSBERGER PS NEW MEDIUM VOLTAGE MCC ELEVATIONS
92	E-2320 MALTSBERGER PS ELECTRICAL ENLARGED POWER PLAN
93	E-2321 MALTSBERGER PS ELECTRICAL BLDG. POWER PLAN
94	E-2322 MALTSBERGER PS ELECTRICAL BLDG. LIGHTING PLAN
95	E-2323 MALTSBERGER PS ELECTRICAL BLDG. GROUNDING PLAN
96	E-2324 MALTSBERGER PS ELEC. FLOW CONTROL VALVE POWER PLAN
97	E-2331 MALTSBERGER PS HIGH SERVICE PUMP CONTROL SCHEMATICS
98	E-2332 MALTSBERGER PS WELL PUMP CONTROL SCHEMATICS
99	E-2333 MALTSBERGER PS VALVE CONTROL SCHEMATICS
100	E-2334 MALTSBERGER PS FLOW CONTROL VALVE CONTROL SCHEMATICS
101	E-2335 MALTSBERGER PS MODULATING FCV CONTROL SCHEMATICS
102	E-2336 MALTSBERGER PS HIGH SERVICE PUMP RISER DIAGRAM
103	E-2337 MALTSBERGER PS WELL PUMPS RISER DIAGRAM
104	E-2338 MALTSBERGER PS PANEL SCHEDULE
105	E-2341 BASIN PS ELECTRICAL SITE PLAN - I
106	E-2342 BASIN PS ELECTRICAL DUCTBANK SECTION - I
107	E-2343 BASIN PS ELECTRICAL FLOW CONTROL VALVE POWER PLAN
108	E-2351 PRV II ELECTRICAL SITE PLAN
109	E-2352 PRV II ON LINE DIAGRAM
110	E-2353 PRV II ELECTRICAL VAULT POWER PLAN
111	E-2354 PRV III ELECTRICAL SITE PLAN
112	E-2355 PRV III ONE LINE DIAGRAM
113	E-2356 PRV III ELECTRICAL VAULT POWER PLAN
114	E-2357 PRV CONTROL PANEL SCHEMATIC
115	E-2358 PRV CONTROL PANEL SCHEMATIC AND DETAILS
116	E-2359 PRV ANTENNA MAST AND LIGHTING DETAILS
117	E-2360 PRV PANEL SCHEDULE
118	E-2391 STANDARD ELECTRICAL DETAILS
119	E-2392 STANDARD ELECTRICAL DETAILS
120	E-2395 STANDARD ELECTRICAL DETAILS
INSTRUMENTATION	
121	I-2301 INSTRUMENTATION LEGEND & ABBREVIATIONS
122	I-2311 MALTSBERGER PS PCS NETWORK ARCHITECTURE DIAGRAM I
123	I-2312 MALTSBERGER PS INSTR. GROUND STORAGE TANK P&ID
124	I-2331 PRV II P&ID
125	I-2332 PRV III P&ID
126	I-2341 MALTSBERGER PS CONTROL PANEL SHEET I
127	I-2342 MALTSBERGER PS CONTROL PANEL SHEET II
128	I-2343 MALTSBERGER PS CONTROL PANEL SHEET III
129	I-2344 MALTSBERGER PS CONTROL PANEL SHEET IV
130	I-2345 MALTSBERGER PS CONTROL PANEL SHEET V
131	I-2346 MALTSBERGER PS CONTROL PANEL SHEET VI
132	I-2347 MALTSBERGER PS CONTROL PANEL SHEET VII
133	I-2348 MALTSBERGER PS CONTROL PANEL SHEET VIII
134	I-2349 MALTSBERGER PS CONTROL PANEL SHEET IX

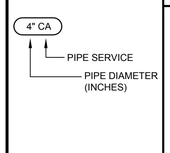
VALVES (MISC)

- BALL VALVE (BV)
- COMBINATION AIR VALVE (CAV)
- FM — FLOW METER
- AIR VENT VALVE (AV)
- BACK PRESSURE REGULATOR VALVE (BPR)
- PRESSURE CONTROL VALVE (PCV)
- S — SOLENOID CONTROL VALVE (SV)
- FLUSH VALVE (FV)
- MO — MOTORIZED BUTTERFLY VALVE
- MO — MOTORIZED BALL VALVE
- SLEEVE VALVE
- BUTTERFLY VALVE (BFV)
- CHECK VALVE (CV)
- GATE VALVE (GV)

LIST OF STANDARD ABBREVIATIONS

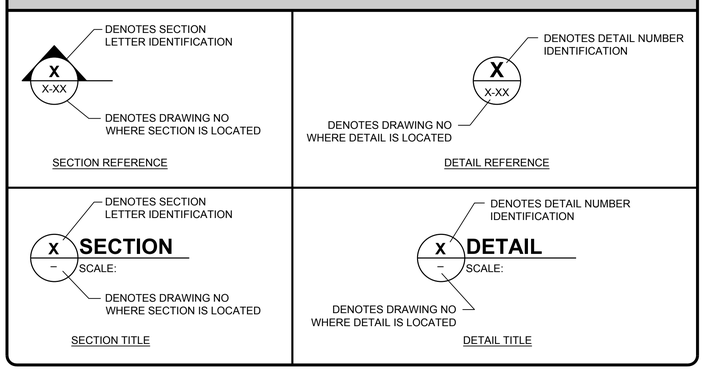
A		ENGR	ENGINEER	RPM	REVOLUTIONS PER MINUTE
AARV	AUTOMATIC AIR RELEASE VALVE	EPDM	ETHYLENE PROPYLENE DIENE MONOMER	RR	RAILROAD
AAV	AUTOMATIC AIR VENT	EQUIP	EQUIPMENT	RT	RIGHT
AB	ANCHOR BOLT	ESTM	EASEMENT	R/W	RIGHT-OF-WAY
ABS	ACRYLONITRILE BUTADIENE STYRENE	EST	ESTIMATE(D)		
ABV	ABOVE	EW	EACH WAY	**S**	
AC	ALTERNATING CURRENT	EXC	EXCAVATE	S	SOUTH
ACP	ASBESTOS CEMENT PIPE	EXP	EXPANSION	SA	SAMPLE LINE
AFF	ABOVE FINISHED FLOOR	EXST/EX	EXISTING	SAN	SANITARY
AFG	ABOVE FINISHED GRADE	EXT	EXTERIOR	SCHED	SCHEDULE
AFS	ABOVE FINISHED SLAB	EXTN	EXTENSION	SD	STORM DRAIN
AHD	AHEAD			SE	SOUTHEAST
AL	ALUMINUM	**F**		SECT	SECTION
ALT	ALTERNATE	FAB	FABRICATE(D)	SF	SQUARE FOOT OR FEET
AMP	AMPERE	FCA	FLANGED COUPLING ADAPTER	SHT	SHEET(ED)(ING)
AMT	AMOUNT	FCV	FLOW-CONTROL VALVE	SIG	SIGNAL
APRX	APPROXIMATE(LY)	FD	FLOOR DRAIN	SIM	SIMILAR
ARCH	ARCHITECT(URAL)	FDN	FOUNDATION	SL	SLUDGE
ASSY	ASSEMBLY	FE	FILTER(ED) EFFLUENT	SLV	SLEEVE
AVE	AVENUE	FFE	FINISH FLOOR ELEVATION	SM	SHEET METAL
A/C	AIR CONDITIONING	FHY	FIRE HYDRANT	SOLN	SOLUTION
		FIG	FIGURE	SP	SOIL PIPE, SPACE(ING)
B		FIN	FINISH(ED)	SPEC	SPECIFICATION
BCV	BALL CHECK VALVE	FIN FLR	FINISH FLOOR	SPRT	SUPPORT
BF	BLIND FLANGE	FIN GR	FINISH GRADE	SQ	SQUARE
BFV	BUTTERFLY VALVE	FCV	FLOW-CONTROL VALVE	SS	SANITARY SEWER
BITUM	BITUMINOUS OR BITUMASTIC	FD	FLOOR DRAIN	SST	STAINLESS STEEL
BL	BASELINE	FDN	FOUNDATION	ST	STREET
BLDG	BUILDING	FE	FILTER(ED) EFFLUENT	STA	STATION
BLK	BLOCK	FFE	FINISH FLOOR ELEVATION	STD	STANDARD
BM	BENCH MARK	FHY	FIRE HYDRANT	STL	STEEL
BOT	BOTTOM	FIG	FIGURE	STR	STRAIGHT
BP	BASE PLATE	FIN	FINISH(ED)	STRUCT	STRUCTURAL
BRG	BEARING	FIN FLR	FINISH FLOOR	SURF	SURFACE
BV	BALL VALVE	FIN GR	FINISH GRADE	SV	SOLENOID VALVE
BW	BOTH WAYS	FL	FLUORIDE/FLOW LINE	SVCE	SERVICE
		FLG	FLANGE(D)	SVW	SERVICE WATER
C		FM	FORCE MAIN	SW	SOUTHWEST
CAP	CAPACITY	FPM	FEET PER MINUTE	SWD	SIDEWATER DEPTH
CFM	CUBIC FEET PER MINUTE	FPS	FEET PER SECOND	SYM	SYMBOL
CFS	CUBIC FEET PER SECOND	FRP	FIBERGLASS REINFORCED PLASTIC	SYMM	SYMMETRICAL
CV	CHECK VALVE	FT	FOOT OR FEET	SW	SIDEWALK
CI	CAST IRON	FUT	FUTURE		
CIP	CAST IRON PIPE	FW	FINISHED WATER	**T**	
CJ	CONSTRUCTION JOINT	F/F	FACE TO FACE	TAN	TANGENT
CL	CENTER LINE			TBM	TEMPORARY BENCH MARK
CLF	CHAIN LINK FENCE	**G**		TB-xx	TEST BORING-xx (e.g. TB-1)
CLR	CLEAR OR CLEARANCE	GA	GAUGE	TC	TOP OF CURB
CLVT	CULVERT	GAL	GALLON(S)	TD	TRENCH DRAIN
CMP	CORRUGATED METAL PIPE	GALV	GALVANIZED	TDH	TOTAL DYNAMIC HEAD
CMU	CONCRETE MASONRY UNIT	GIP	GALVANIZED IRON PIPE	TEL	TELEPHONE
CND	CONDUIT	GJ	GROOVE JOINT	THD	THREAD(ED)
CNR	CORNER	GND	GROUND	THK	THICK(NESS)
CO	CLEAN OUT	GPD	GALLONS PER DAY	TOS	TOP OF SLAB
CO2	CARBON DIOXIDE	GPH	GALLONS PER HOUR	TOT	TOTAL
COL	COLUMN	GPM	GALLONS PER MINUTE	TP	TELEPHONE POLE
COM	COMMON	GPS	GALLONS PER SECOND	TS	THICKENED SLUDGE
CONC	CONCRETE	GR	GRADE	TV	TELEVISION
CONN	CONNECTION	GRTG	GRATING	TYP	TYPICAL
CONSTR	CONSTRUCT(ION)	GSP	GALVANIZED STEEL PIPE	T&B	TOP AND BOTTOM
CONT	CONTINUOUS	GST	GROUND STORAGE TANK		
CONTR	CONTRACT(OR)	GV	GATE VALVE	**U**	
COORD	COORDINATE			UDR	UNDERDRAIN
CO	COMPANY	**H**		UG	UNDERGROUND
CP	CONCRETE PIPE	HB	HOSE BIBB	ULT	ULTIMATE
CPA	CONCRETE PIPE ARCH	HDPE	HIGH-DENSITY POLYETHYLENE	UN	UNION
CPLG	COUPLING	HGT	HEIGHT	UON	UNLESS OTHERWISE NOTED
CPVC	CHLORINATED POLYVINYL CHLORIDE	HNDRL	HAND RAIL	UGE	UNDERGROUND ELECTRIC
CWS	CHLORINE SOLUTION LINE (1)	HOA	HAND-OFF-AUTO	UTIL	UTILITY
CY	CUBIC YARD	HORIZ	HORIZONTAL		
CYL	CYLINDER	HP	HORSEPOWER	**V**	
C&G	CURB AND GUTTER	HR	HOUR	V	VOLT(S)
C/C	CENTER TO CENTER	HVAC	HEATING, VENTILATION, AND AIR CONDITIONING	VAC	VACUUM
		HWL	HIGH WATER LEVEL	VAR	VARIES
D		HWY	HIGHWAY	VEL	VELOCITY
DAT	DATUM	HZ	HERTZ	VERT	VERTICAL
DBL	DOUBLE			VFD	VARIABLE FREQUENCY DRIVE
DC	DIRECT CURRENT	**I**		VOL	VOLUME
DEMO	DEMOLITION	ID	INSIDE DIAMETER		
DEPT	DEPARTMENT	IE	INVERT ELEVATION	**W**	
DESC	DESCRIPTION	IN	INCH(ES)	W	WATT, WEST
DET	DETAIL	INF	INFLUENT	WAS	WASTE ACTIVATED SLUDGE
DI	DUCTILE IRON	INT	INTERSECTION	WCO	WALL CLEAN OUT
DIA	DIAMETER	INTR	INTERIOR	WF	WIDE FLANGE
DIFF	DIFFUSER	INV	INVERT	WL	WATER LINE
DIM	DIMENSION	IP	IRON PIPE	WLD	WELDED
DIP	DUCTILE IRON PIPE	IPS	INTERNATIONAL PIPE STANDARD	WM	WATER MAIN
DIR	DIRECTION	IW	IRRIGATION WATER	WP	WATER PROOF(ING), WORKING POINT
DN	DOWN			WPR	WORKING PRESSURE
DR	DRAIN	**J**		WS	WATER SURFACE
DV	DIAPHRAGM VALVE	JB	JUNCTION BOX	WSP	WELDED STEEL PIPE
DW	DRIVEWAY	JT	JOINT	WT	WEIGHT
DWG	DRAWING			WTP	WATER TREATMENT PLANT
DWV	DRAIN, WASTE, AND VENT	**K**		WW	WASH WATER
		K	KIP (1,000 LB)	WWF	WELDED WIRE FABRIC
E		KPL	KICK PLATE	WWM	WELDED WIRE MESH
E	EAST	KV	KILOVOLT	WWTP	WASTEWATER TREATMENT PLANT
EA	EACH	KVA	KILOVOLT-AMPERE	W/	WITH
ECC	ECCENTRIC	KW	KILOWATT	W/O	WITHOUT
EF	EACH FACE	KWH	KILOWATT-HOUR		
EFF	EFFLUENT			**X**	
E/L	EASEMENT LINE	**L**		XFER	TRANSFER
EL	ELEVATION	L	LEFT		
ELAST	ELASTOMERIC	LAB	LABORATORY	**Y**	
ELEC	ELECTRICAL	LAM	LAMINATE OR LAMINATION	YD	YARD(S)
EMER	EMERGENCY	LATL	LATERAL	YH	YARD HYDRANT
		LAV	LAVATORY	YR	YEAR(S) YR
		LEN	LENGTH		
		LB	POUND(S)		
		LF	LINEAR FEET		
		LP	LIGHT POLE		
		LS	LIME SLURRY		
		LSS	LIME STABILIZED SLUDGE		
		LVR	LOUVER		
		LWL	LOW WATER LEVEL		
		M			
		M	METER		
		MAINT	MAINTAIN OR MAINTENANCE		
		MAN	MANUAL(LY)		
		MAS	MASONRY		
		MATL	MATERIAL		
		MAX	MAXIMUM		
		MC	MEMBRANE CONTACTOR		
		MCC	MOTOR CONTROL CENTER		
		ME	MITERED END		
		MECH	MECHANICAL		
		MFR	MANUFACTURE(R)		
		MG	MILLION GALLONS		
		MGD	MILLION GALLONS PER DAY		
		MH	MANHOLE		
		MI	MILE(S)		
		MIN	MINIMUM, MINUTE(S)		
		MISC	MISCELLANEOUS		
		MJ	MECHANICAL JOINT		
		ML	MIXED LIQUOR		
		MO	MASONRY OPENING		
		MON	MONUMENT		
		MPH	MILES PER HOUR		
		MPT	MALE PIPE THREAD		
		MS	MOTOR STARTER		
		MSP	MOTOR STARTER PANEL		
		MTD	MOUNTED		
		MV	MOTORIZED VALVE		
		MW	MANWAY		
		MWL	MEAN WATER LEVEL		
		N			
		N	NORTH		
		NaOCl	SODIUM HYPOCHLORITE		
		NC	NORMALLY CLOSED		
		NE	NORTHEAST		
		NIC	NOT IN CONTRACT		
		NO	NUMBER, NORMALLY OPEN		
		NOM	NOMINAL		
		NPF	NATIONAL PIPE THREAD		
		NPT	NATIONAL PIPE TAPER (THREAD)		
		NPW	NON-POTABLE WATER		
		NRS	NON-RISING SYSTEM		
		NTS	NOT TO SCALE		
		NW	NORTHWEST		
		N/A	NOT APPLICABLE		
		O			
		O2	OXYGEN		
		OC	ON CENTER		
		OD	OUTSIDE DIAMETER		
		OF	OUTSIDE FACE		
		OH	OVER HEAD		
		OHW	OVER HEAD WIRE		
		OPP	OPPOSITE		
		OPT	OPTIONAL		
		O&M	OPERATION AND MAINTENANCE		
		P			
		PA	PROCESS AIR		
		PE	PLAIN END		
		PG	PRESSURE GAGE		
		PI	POINT OF INTERSECTION		
		PL	PLATE		
		PL	PROPERTY LINE		
		PNV	PINCH VALVE		
		POJ	PUSH-ON JOINT		
		POL	POLYMER		
		PP	POWER POLE		
		PPD	POUNDS PER DAY		
		PPM	PARTS PER MILLION		
		PREFAB	PREFABRICATED		
		PRESS	PRESSURE		
		PRV	PRESSURE REDUCING VALVE		
		PRW	PROCESS WATER		
		PSF	POUNDS PER SQUARE FOOT		
		PSI	POUNDS PER SQUARE INCH		
		PSIA	POUNDS PER SQUARE INCH ABSOLUTE		
		PSIG	POUNDS PER SQUARE INCH GAGE		
		PV	PLUG VALVE		
		PVC	POLYVINYL CHLORIDE		
		PVMT	PAVEMENT		
		PW	POTABLE WATER		
		PWR	POWER		
		Q			
		Q	FLOW		
		QTY	QUANTITY		
		R			
		RAD	RADIUS		
		RC	REINFORCED CONCRETE		
		RCB	REINFORCED CONCRETE BOX		
		RCP	REINFORCED CONCRETE PIPE		
		RD	ROAD		
		RDCR	REDUCER		
		REBAR	REINFORCING STEEL		
		REF	REFERENCE		
		REINF	REINFORCE(D)(ING)(MENT)		
		REM	REMOVE(ABLE)		
		REQ'D	REQUIRED		
		RJ	RESTRAINED JOINT		
		RM	ROOM		
		RPBP	REDUCED PRESSURE BACKFLOW PREVENTER		

PIPING TAGS

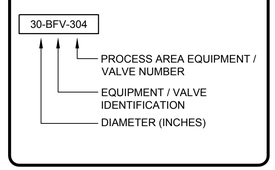


SERVICE	ABBREVIATION
CHLORINE	CL
COMPRESSED AIR	CA
DRAIN	DR
SAMPLE	SA
STORM DRAIN	SD
POTABLE WATER	PW

REFERENCE SYMBOLS



VALVE / EQUIPMENT TAGS



TETRA TECH
Texas Registration No. F-3924
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497
www.tetratech.com

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DA

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

DRAWING INDEX, LEGEND & ABBREVIATIONS

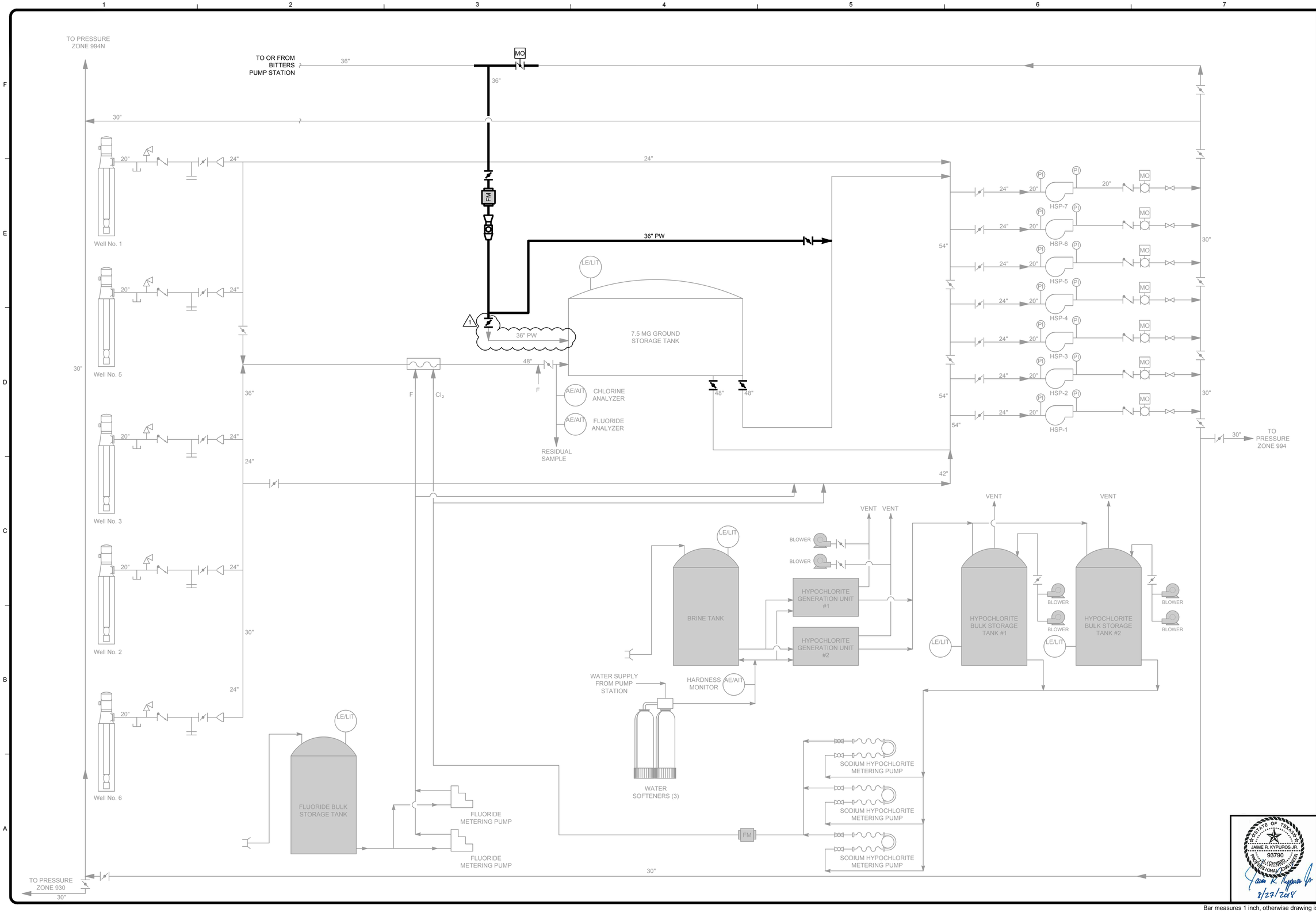
STATE OF TEXAS
JAIME R. KYLROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

G-2301

Bar measures 1 inch, otherwise drawing is not to scale

8/27/2018 11:02:35 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPG - DRAWING INDEX, LEGEND & ABBBREVIATIONS II.DWG - ANDERSON, DEBORAH



TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DA

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS PROCESS FLOW DIAGRAM

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

G-2302

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

Bar measures 1 inch, otherwise drawing is not to scale

8/27/2018 11:03:22 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\G - MALTSBERGER PS PROCESS FLOW DIAGRAM.DWG - ANDERSON, DEBORAH

Well No. 1
Well No. 2
Well No. 7
Well No. 3
Well No. 5
Well No. 6
20"
FM
24"
42"
48"
36"
Cl_2
LE/LIT
EXISTING GROUND STORAGE TANK
54"
24" PW
HSP-5
HSP-4
HSP-3
HSP-2
HSP-1
HSP-6
PI
MO
30"
20"
16"
12"
TO PRESSURE ZONE 994
FROM MALTSBERGER PUMP STATION
FLUORIDE INJECTION
CHLORINE SOLUTION INJECTION
FLUORIDE ANALYZER
CHLORINE ANALYZER
AE/AIT
BASIN PS FLOW CONTROL VALVE ASSEMBLY
RESIDUAL SAMPLE
VENT
BLOWER
BRINE TANK
HYPOCHLORITE GENERATION UNIT #1
HYPOCHLORITE GENERATION UNIT #2
HYPOCHLORITE BULK STORAGE TANK #1
HYPOCHLORITE BULK STORAGE TANK #2
BUTTERFLY VALVE (TYP)
WATER SUPPLY FROM PUMP STATION
HARDNESS MONITOR
WATER SOFTENERS (3)
FLUORIDE BULK STORAGE TANK
FLEXIBLE CONNECTION (TYP)
FLUORIDE METERING PUMP
SODIUM HYPOCHLORITE METERING PUMP
M

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DA

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

BASIN PS PROCESS FLOW DIAGRAM

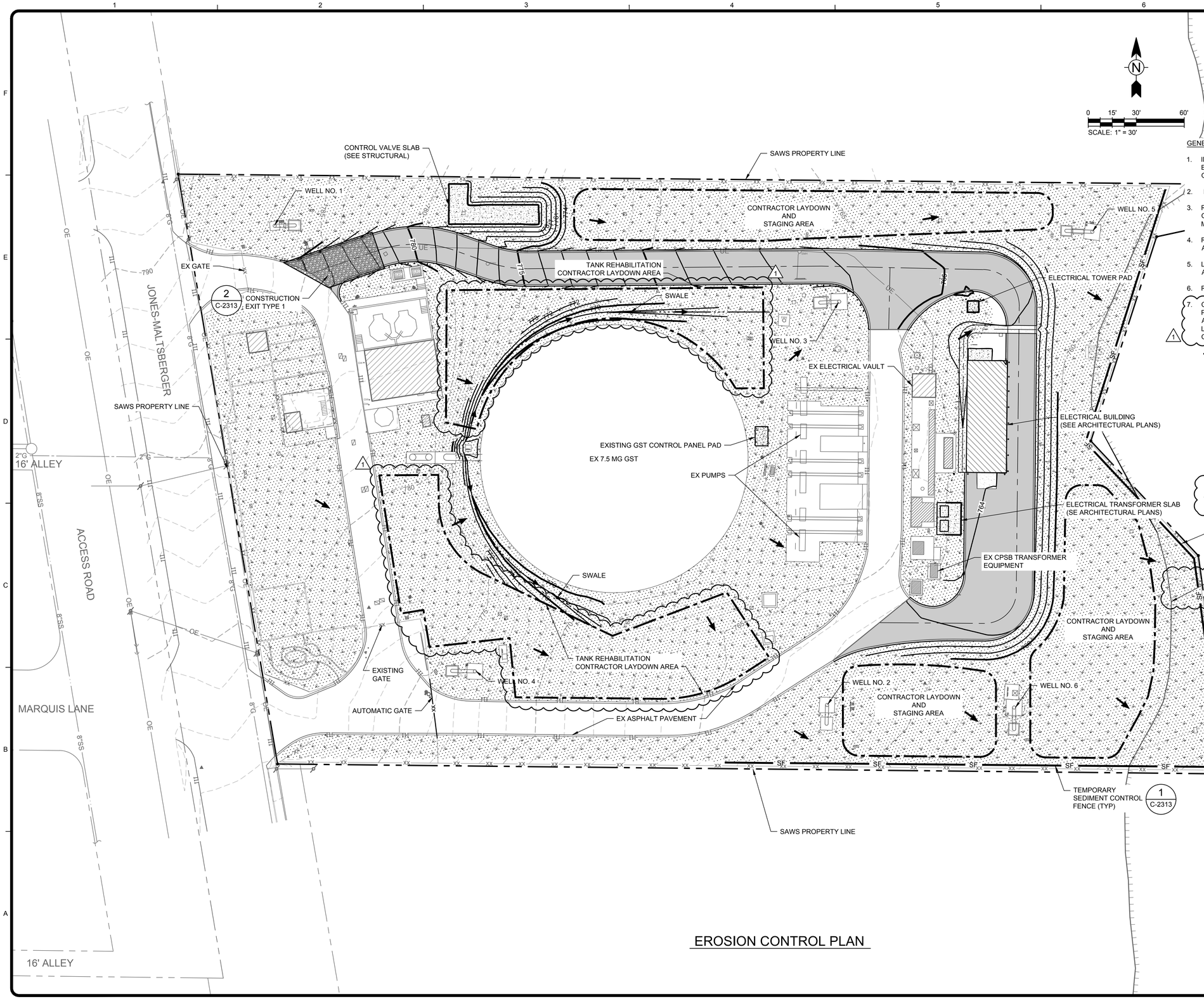
STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

G-2303

Bar measures 1 inch, otherwise drawing is not to scale

8/27/2018 11:04:11 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\G - BASIN PS PROCESS FLOW DIAGRAM.DWG - ANDERSON, DEBORAH



GENERAL NOTES:

1. IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED FOR EROSION AND SEDIMENT CONTROL WHETHER SHOWN ON THE PLANS OR NOT.
2. PROVIDE A CLEARLY MARKED CONCRETE WASH OUT AREA.
3. RE-VEGETATE ALL DISTURBED AREAS IN A TIMELY MANNER UPON COMPLETION OF WORK IN EACH AREA. SEE LANDSCAPING PLANS FOR MORE DETAILS.
4. RESTORATION OF THE SITE SHALL OCCUR PRIOR TO FINAL COMPLETION AND SHALL BE IN ACCORDANCE THE WITH PROJECT SPECIFICATIONS.
5. LOCATION OF CONTRACTOR'S CONSTRUCTION STAGING AREA SHALL BE APPROVED BY SAWS INSPECTOR.
6. REVEGETATE ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY.
7. CONTRACTOR SHALL TAKE ALL THE NECESSARY PRECAUTIONS TO PROTECT THEIR STORED MATERIALS AND EQUIPMENT IN THE LAYDOWN AREA AGAINST ANY POTENTIAL FLOOD DAMAGE. SAWS SHALL NOT BE LIABLE FOR ANY FLOOD DAMAGE THAT MIGHT OCCUR DUE TO THE CONTRACTOR'S USE OF THE PROPOSED LAYDOWN AREA.

1 — SF — SILT FENCE
FLOW DIRECTION
VEGETATION
NEW ROAD
CONTRACTOR LAYDOWN AND STAGING AREA 1
APPROXIMATE 100 YEAR FLOOD PLAIN LIMITS

EROSION CONTROL PLAN

Bar measures 1 inch, otherwise drawing is not to scale

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

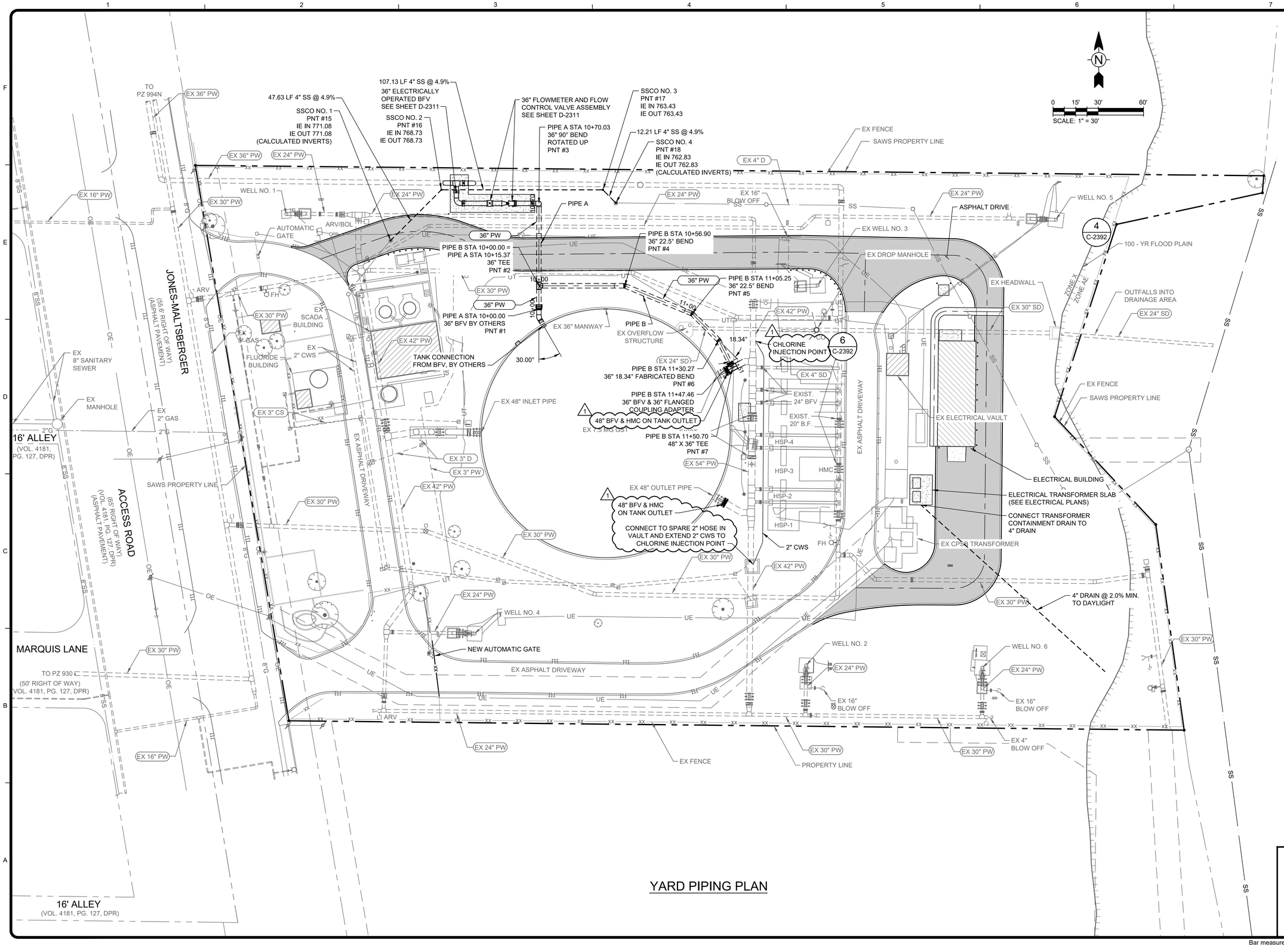
SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
MALTSBERGER PS
EROSION CONTROL AND
CONST. STAGING AREA

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

C-2312

8/28/2018 10:32:11 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\C - MALTSBERGER PS EROSSION CONTROL PLAN.DWG - GARZA, NOEL



YARD PIPING PLAN

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

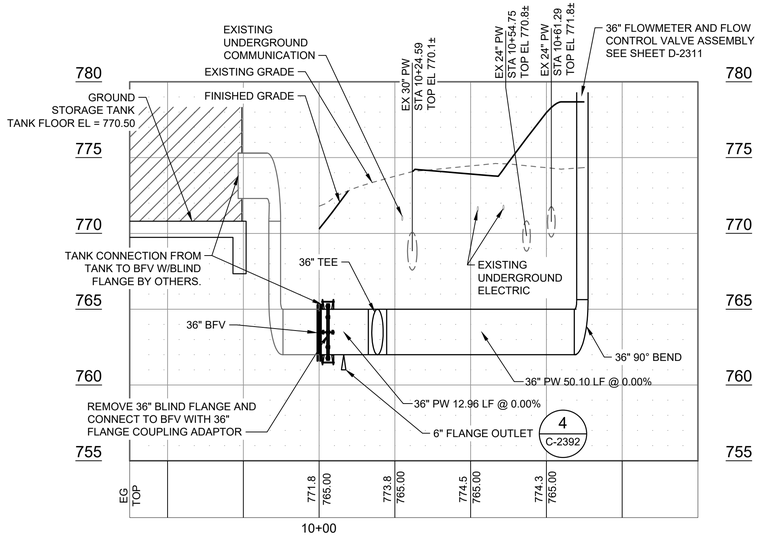
MALTSBERGER PS YARD PIPING PLAN

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

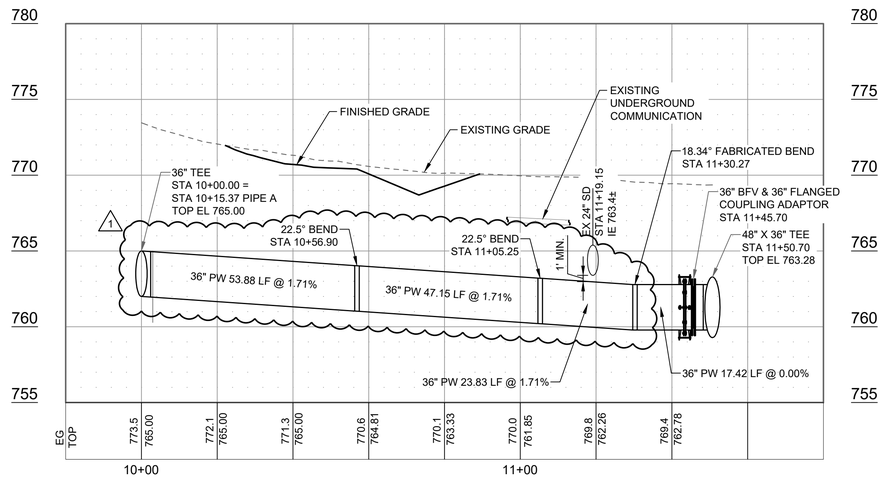
C-2317

Bar measures 1 inch, otherwise drawing is not to scale



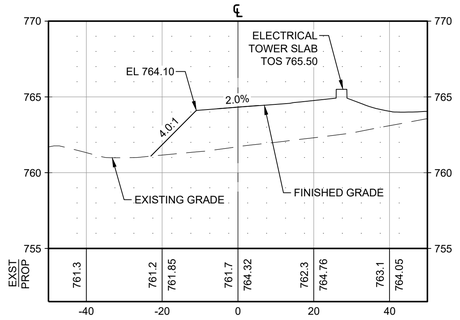
PIPE A PROFILE

HORZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



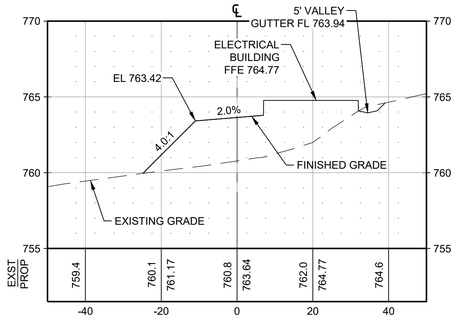
PIPE B PROFILE

HORZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



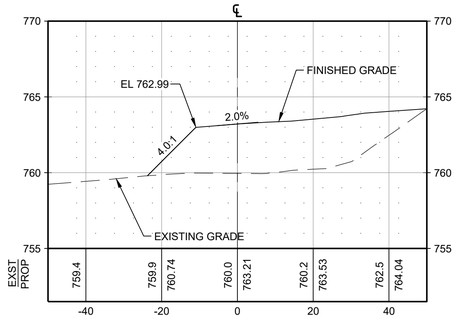
STA 14+45.00 CROSS SECTION

HORZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



STA 15+25.00 CROSS SECTION

HORZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



STA 16+55.00 CROSS SECTION

HORZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS YARD PIPING PROFILES

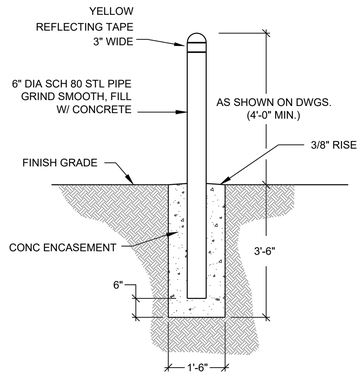
STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

C-2318

Bar measures 1 inch, otherwise drawing is not to scale

PIPE BOLLARD

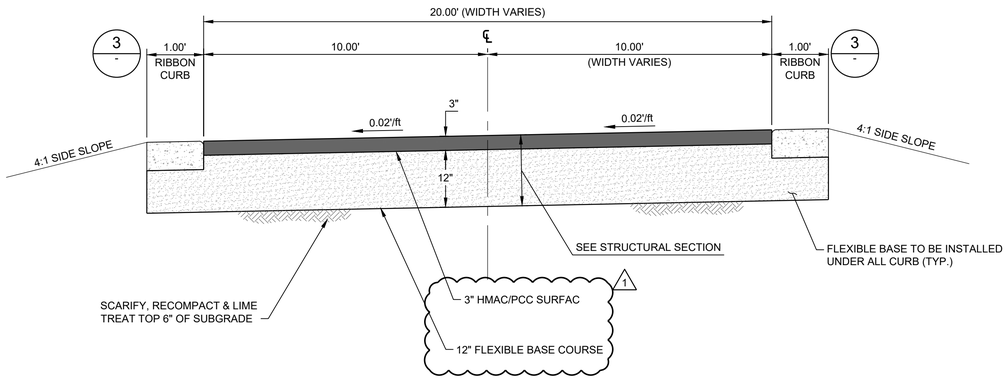


NOTE:

1. PROVIDE 6' PLASTIC COVER IN SAFETY YELLOW FOR EACH BOLLARD.
2. COAT EXTERIOR OF STEEL PIPE PER PROJECT SPECIFICATIONS. COLOR: SAFETY YELLOW

1 - DETAIL
SCALE: NTS

ASPHALT DRIVE



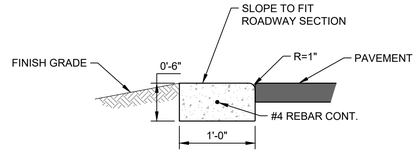
2 - DETAIL
SCALE: NTS

1

NOTE:

1. GEOTECHNICAL REPORT PREPARED BY ARIAS GEOPROFESSIONALS (ARIAS PROJECT NO. 2017-722), DATED JANUARY 19, 2018.

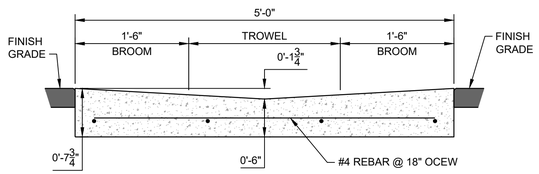
1' RIBBON CURB



NOTE:
CONTRACTOR SHOULD USE CAUTION WHEN MOVING EQUIPMENT AROUND THIS CURB.

3 - DETAIL
SCALE: NTS

5' CONCRETE VALLEY GUTTER



4 - DETAIL
SCALE: NTS

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
STANDARD CIVIL DETAIL I

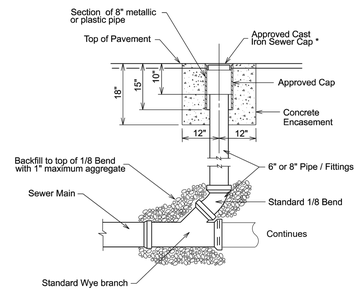
STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED
PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

C-2391

Bar measures 1 inch, otherwise drawing is not to scale

CLEANOUT - GRAVITY



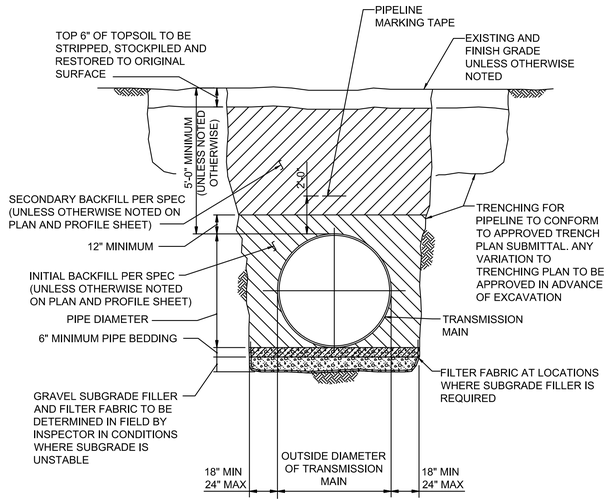
* Approved Gate Cap (Heavy Duty)

1 – DETAIL
NOT TO SCALE

Note: Depending upon the type of service that an 8 inch lateral (on a dead end main) is providing, A standard manhole in liev of is cleanout may be required. Consult with the SAWS Inspector.

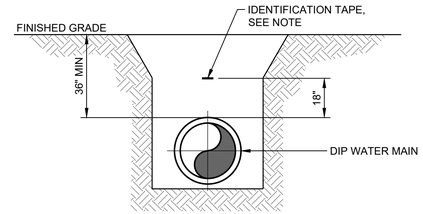
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL 6" OR 8" CLEANOUT DETAIL (ON DEAD-END MAIN)	MARCH 2008	APRIL 2014
		DD-854-02	SHEET 1 OF 2

PIPE TRENCH

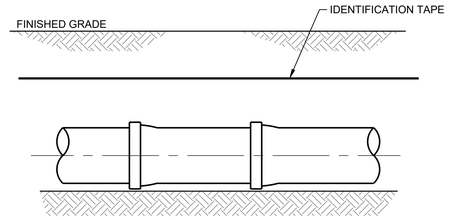


2 – DETAIL
SCALE: NTS

LOCATING TAPE



SECTION



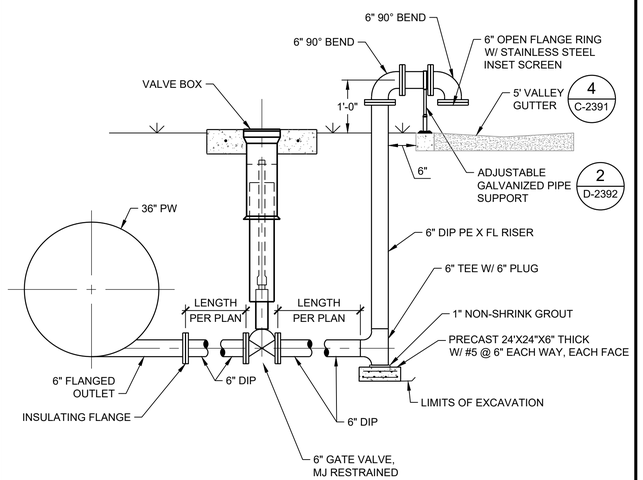
PROFILE

NOTE:

1. DETECTABLE IDENTIFICATION TAPE SHALL BE INSTALLED DIRECTLY OVER CENTERLINE OF THE PIPE AT 18-INCHES ABOVE THE PIPE.

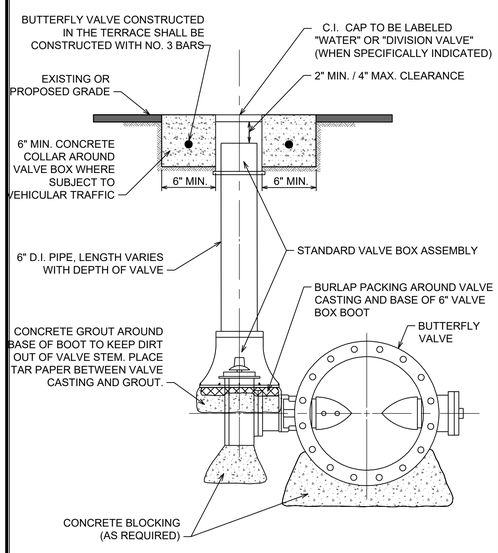
3 – DETAIL
SCALE: NTS

6" BLOW OFF DETAIL



4 – DETAIL
SCALE: NTS

BURIED VALVE - BUTTERFLY OR PLUG

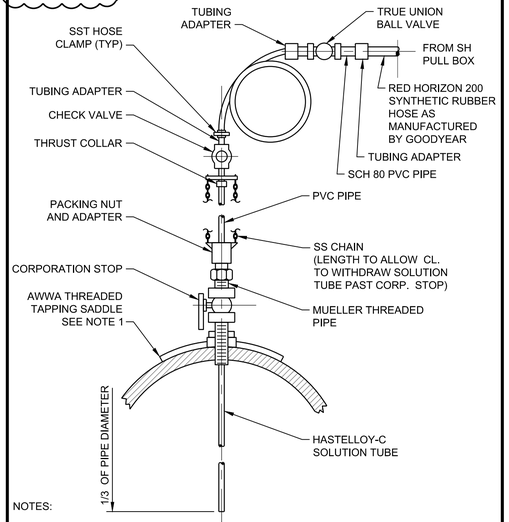


NOTE: ALL CONCRETE TO BE 3,000 PSI.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
DD-830-01

5 – DETAIL
SCALE: NTS

CHLORINE INJECTION POINT



NOTES:

1. IF MAINLINE PIPE MATERIALS IS STEEL USE THREADED WELDOLET COUPLING INSTEAD OF TAPPING
2. LOOP TUBING WITH A MINIMUM 2-FOOT DIAMETER LOOP WITHOUT KINKS.
3. PIPING, TUBING, VALVES, AND SOLUTION TUBE SHALL MATCH YARD PIPING SIZE.
4. CORPORATION STOP SHALL BE SIZED AS NECESSARY TO ALLOW SOLUTION TUBE PENETRATION.
5. INSULATE ALL EXTERIOR EXPOSED SHIPPING.

6 – DETAIL
SCALE: NTS

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
STANDARD CIVIL DETAIL II

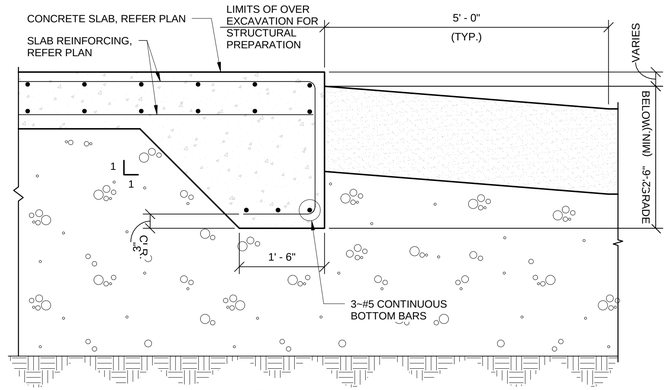
STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

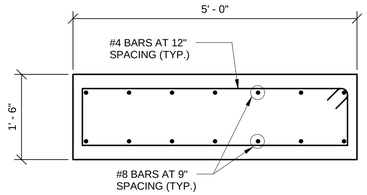
C-2392

Bar measures 1 inch, otherwise drawing is not to scale

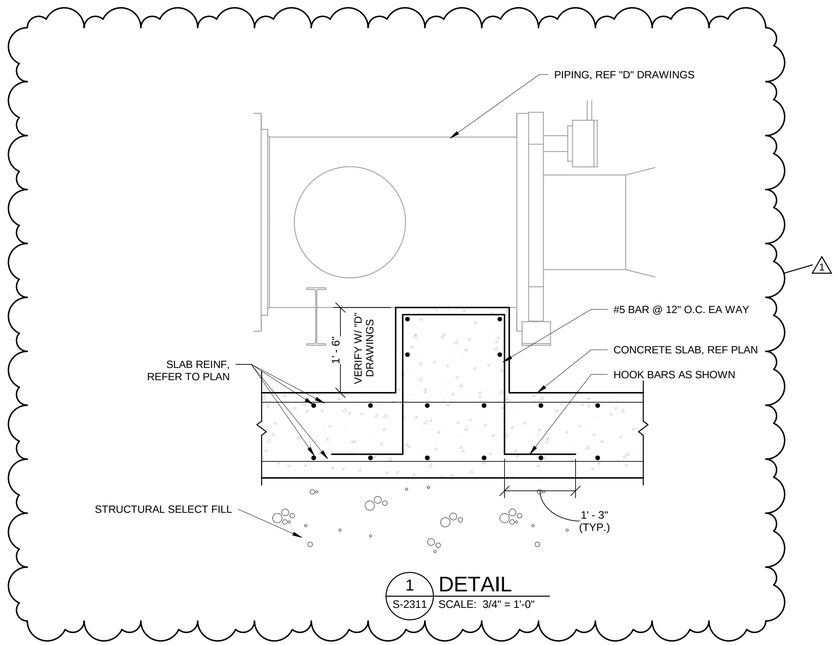
2018-08-27 11:05:53 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\C - STANDARD CIVIL DETAILS II.DWG - PRINGLE, ROBBIE



2 S-2311 DETAIL
SCALE: 3/4" = 1'-0"



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



1 S-2311 DETAIL
SCALE: 3/4" = 1'-0"

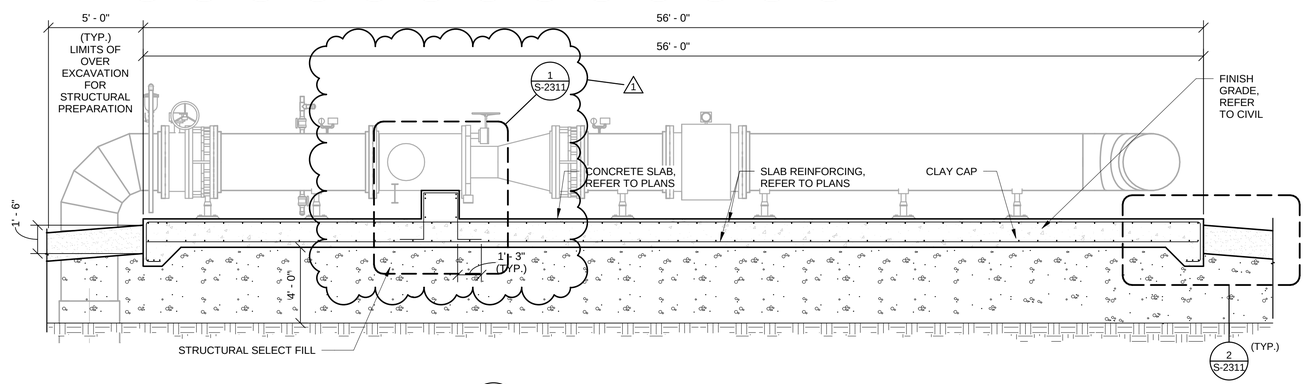
FOUNDATION NOTES:

1. REFER TO GENERAL STRUCTURAL NOTES SHEETS FOR INFORMATION NOT GIVEN.
2. REFER TO "D" DRAWINGS FOR EQUIPMENT AND PIPES LAYOUT AND SIZING.
3. COORDINATE OPENINGS, CONDUITS, RAILINGS, ETC. WITH ALL DISCIPLINES.
4. REFERENCE TYPICAL DETAIL SHEETS FOR ADDED REINFORCING AROUND OPENINGS. ETC.

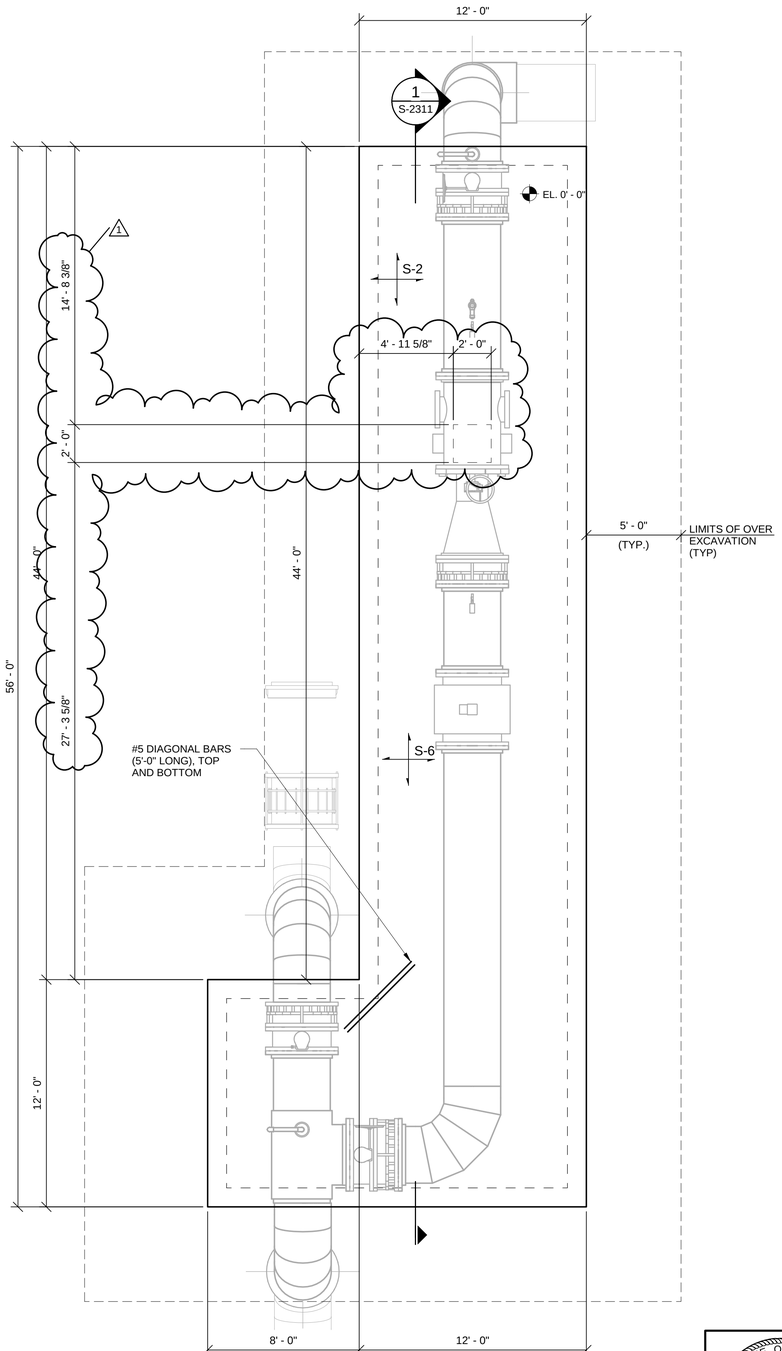
FOUNDATION LEGEND:

S-6 — 18" CONCRETE SLAB REINFORCING WITH #6 BARS AT 9" O.C. EACH WAY, TOP AND BOTTOM. PROVIDE STANDARD 90 DEGREE BEND AT DISCONTINUOUS ENDS TOP AND BOTTOM.

EL. 0'-0" — INDICATES TOP OF SLAB DATUM ELEVATION, 0'-0" = (XXX.XX') ELEVATION. VERIFY WITH CIVIL



B S-2311 SECTION
SCALE: 1/4" = 1'-0"



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

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

STRUCTURAL ENGINEERING ASSOCIATES INC.
CONSULTING ENGINEERS
TBPE FIRM REG. NO. F-199
SAN ANTONIO, TX. 78229
(210) 735-9202 WWW.SEATX.COM

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	8/28/18	PER ADDENDUM #3	

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
CONTROL VALVE STATIONS
FOUNDATION PLANS AND SECTIONS

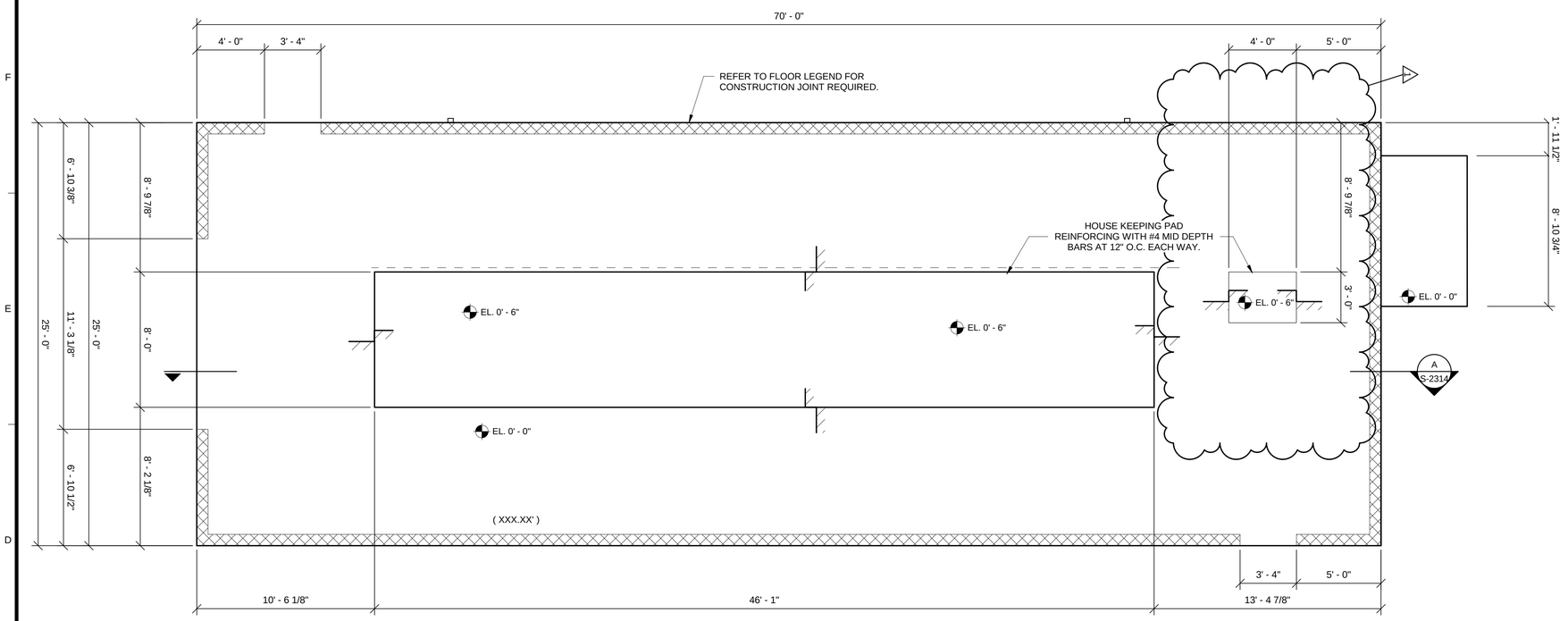
STATE OF TEXAS
SAMIN DEHKHARGHANIAN
129494
LICENSED
PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	SD
DRWN:	AGS
CHKD:	EHJ

S-2311

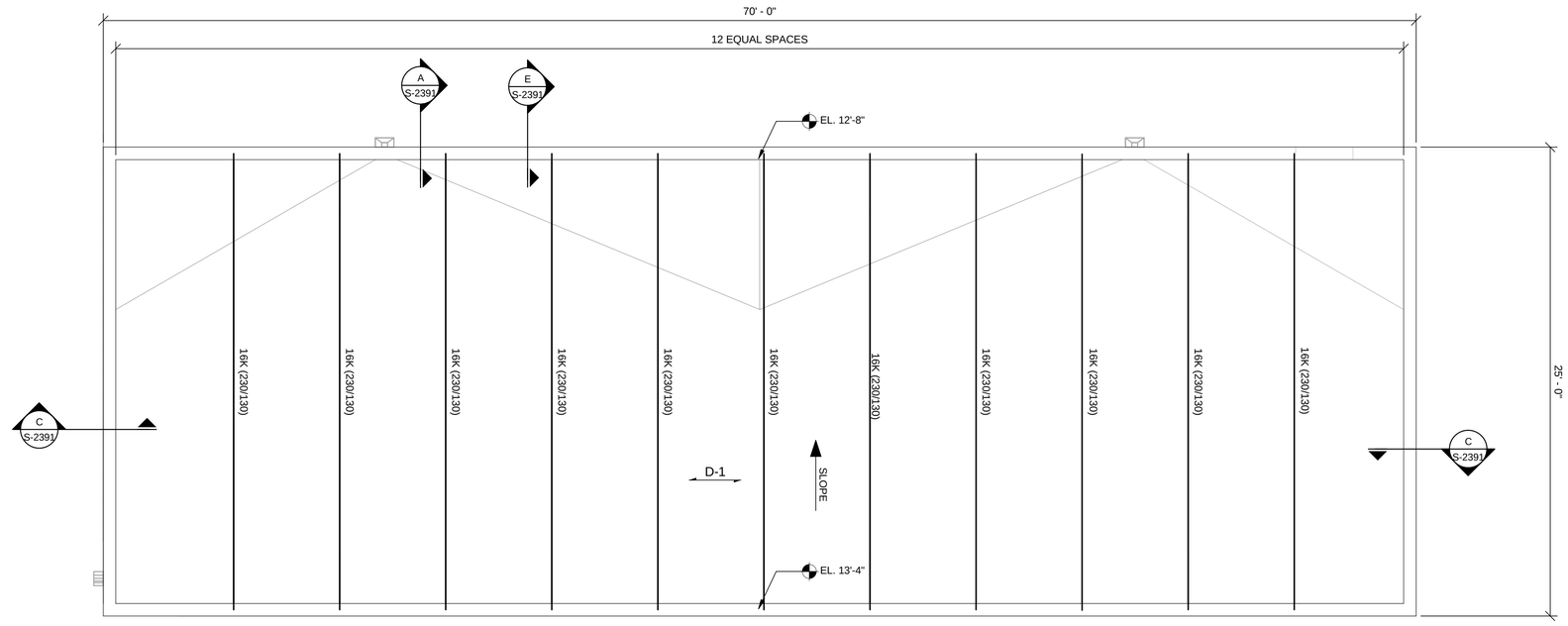
BIM 360://200-09308-18001 CWIPP//09308-02-02-MALT-S-2017.rvt
8/28/2018 4:28:01 PM

Bar measures 1 inch, otherwise drawing is not to scale



SLAB LAYOUT PLAN

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



ROOF PLAN

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

ROOF NOTES:

1. REFER TO GENERAL STRUCTURAL NOTES SHEETS FOR INFORMATION NOT GIVEN.
2. REFER TO "D" DRAWINGS FOR EQUIPMENT AND PIPES LAYOUT AND SIZING.
3. COORDINATE OPENINGS, CONDUITS, RAILINGS, ETC. WITH ALL DISCIPLINES.
4. REFERENCE TYPICAL DETAIL SHEETS FOR ADDED REINFORCING AROUND OPENINGS. ETC.

FLOOR LEGEND:

- EL. 0'-0" — INDICATES TOP OF SLAB DATUM ELEVATION, 0'-0" = (XXX.XX') ELEVATION, VERIFY WITH CIVIL
- INDICATES 8" CMU WALL WITH #5 BAR AT 24" O.C. VERTICAL AND 9 GA WIRE LADDER AT 16" O.C. HORIZONTAL. PROVIDE CONTROL JOINTS IN MASONRY WALLS AT A MAX. OF 50' SPACING.
- INDICATES STEP IN TOP OF SLAB ELEVATION

ROOF LEGEND:

- D-1 — INDICATES 1 1/2" 20 GAUGE, TYPE B METAL DECK SPAN DIRECTION
- EL. XX'-X" — INDICATES ELEVATION AT THAT LOCATION, REFER TO ARCHITECTURAL DRAWINGS
- SLOPE — INDICATES SLOPE, COORDINATE WITH OTHER DISIPLINE DRAWING
- 16K (275/150) — INDICATES JOISTS TYPE; INDICATES UNIFORM SERVICE LIVE LOAD; INDICATES UNIFORM SERVICE TOTAL LOAD

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

STRUCTURAL ENGINEERING ASSOCIATES INC.
CONSULTING ENGINEERS
TBPE FIRM REG. NO. F-199
SAN ANTONIO, TX. 78229
(210) 735-9202 WWW.SEATX.COM

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	8/28/18	PER ADDENDUM #3	

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

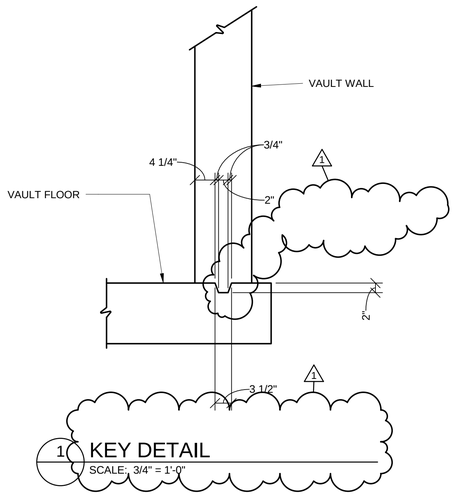
ELECTRICAL BUILDING SLAB AND ROOF PLAN

STATE OF TEXAS
SAMIN DEHKHARGHANIAN
129494
LICENSED PROFESSIONAL ENGINEER
8/28/2018

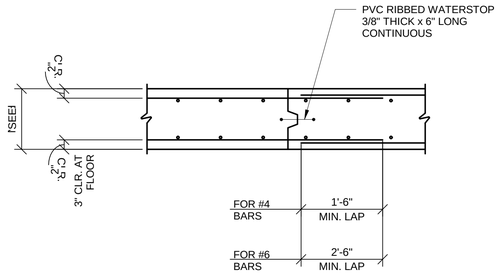
PROJ:	200-09308-18001
DESN:	SD
DRWN:	AGS
CHKD:	EHJ

S-2313

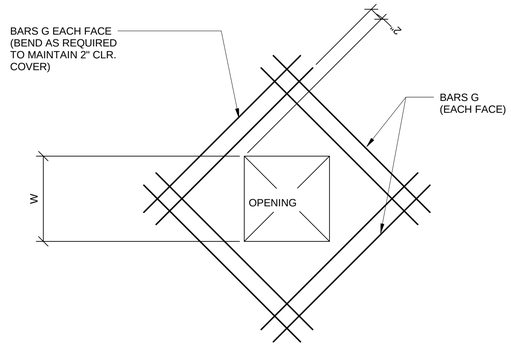
Bar measures 1 inch, otherwise drawing is not to scale



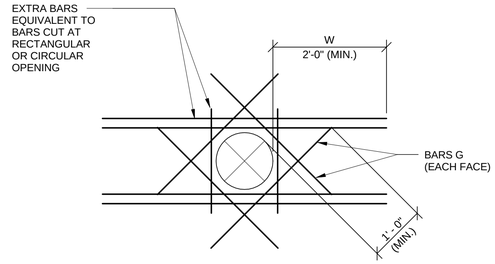
1 KEY DETAIL
SCALE: 3/4" = 1'-0"



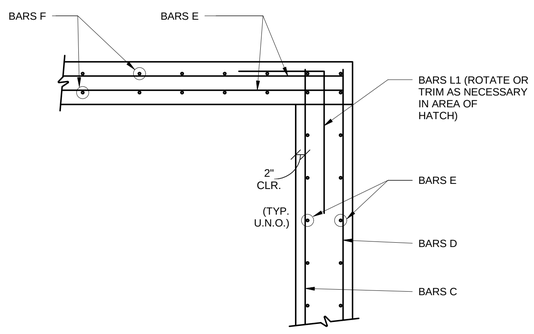
2 TYPICAL CONSTRUCTION JOINT
SCALE: 3/4" = 1'-0"

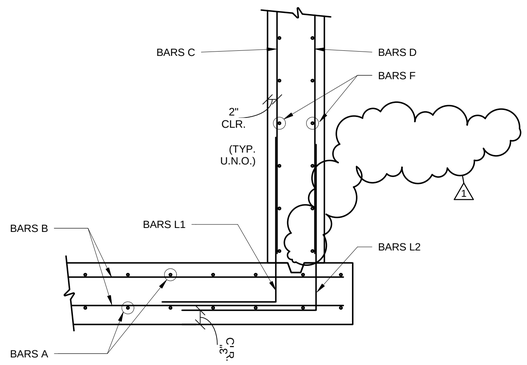


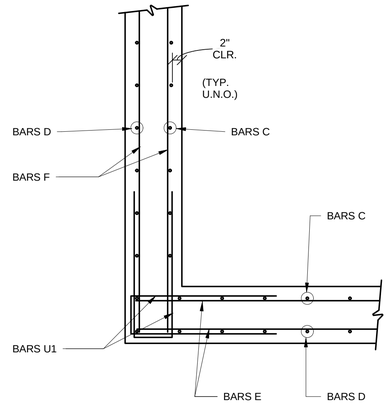
3 FLOOR SLUMP OPENING
SCALE: 3/4" = 1'-0"

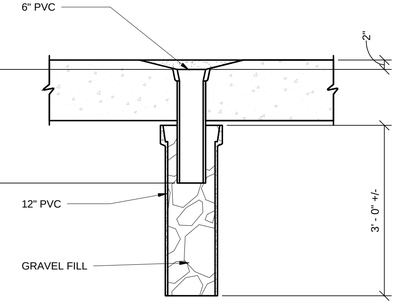


4 CIRCULAR OPENINGS
SCALE: 3/4" = 1'-0"







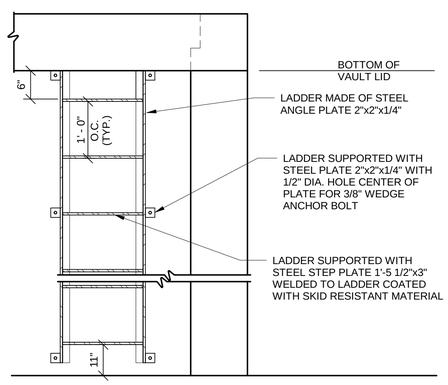


5 ROOF SLAB DETAIL
SCALE: 3/4" = 1'-0"

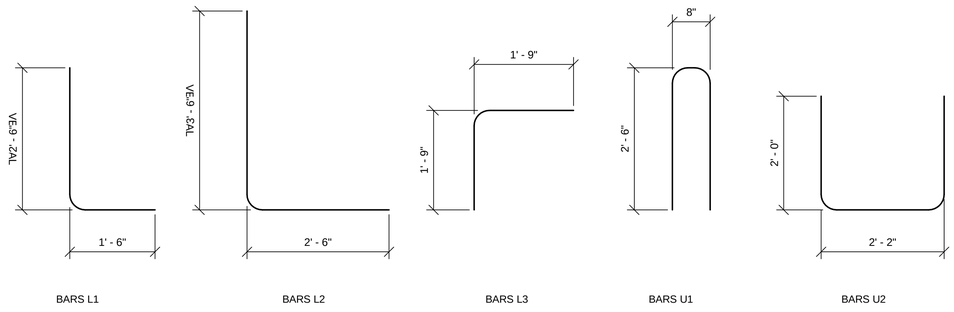
6 FOOTING SLAB SECTION
SCALE: 3/4" = 1'-0"

7 WALL DETAIL
SCALE: 3/4" = 1'-0"

8 DRAIN DETAIL
S-2315 SCALE: 3/4" = 1'-0"



9 LADDER DETAIL
S-2315 SCALE: 3/4" = 1'-0"



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

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

STRUCTURAL ENGINEERING ASSOCIATES INC.
CONSULTING ENGINEERS
TBPE FIRM REG. NO. F-199
SAN ANTONIO, TX. 78229
(210) 735-9202 WWW.SEATX.COM

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION
1	8/29/18	PER ADDENDUM #3

BY

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

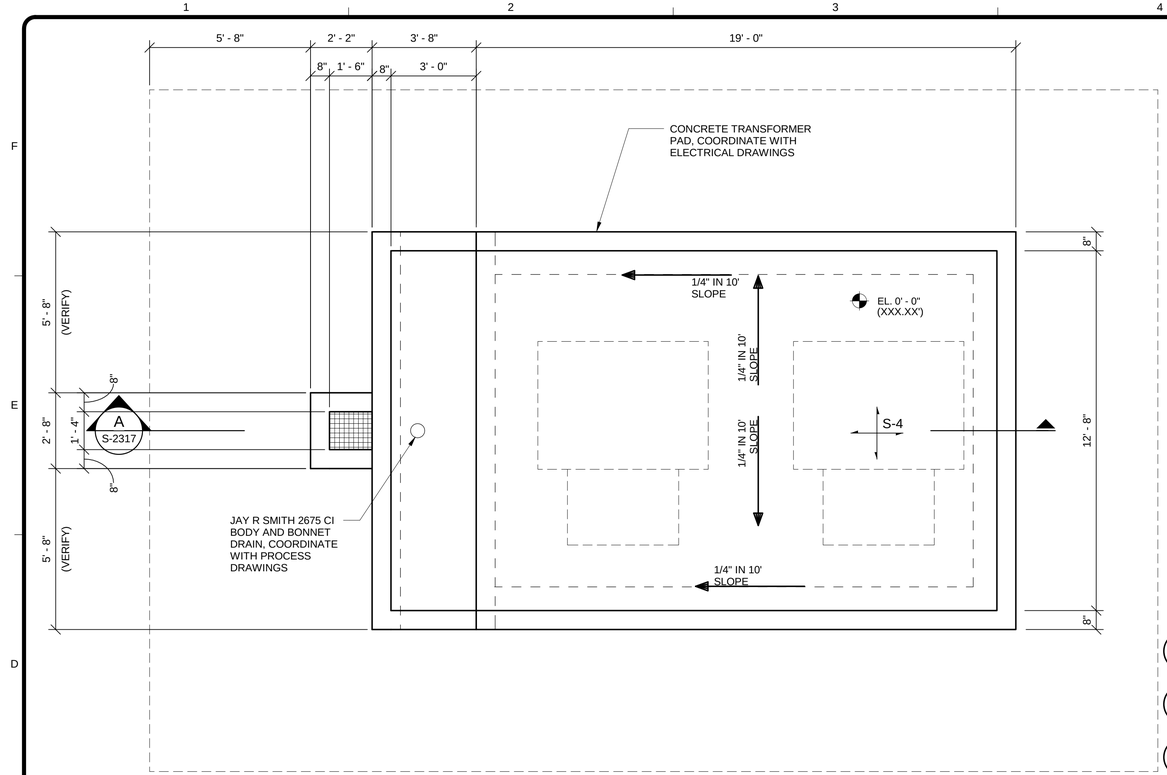
SECTIONS AND DETAILS

STATE OF TEXAS
SAMIN DEHKHARGHANIAN
129494
LICENSED
PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	SD
DRWN:	AGS
CHKD:	EHJ

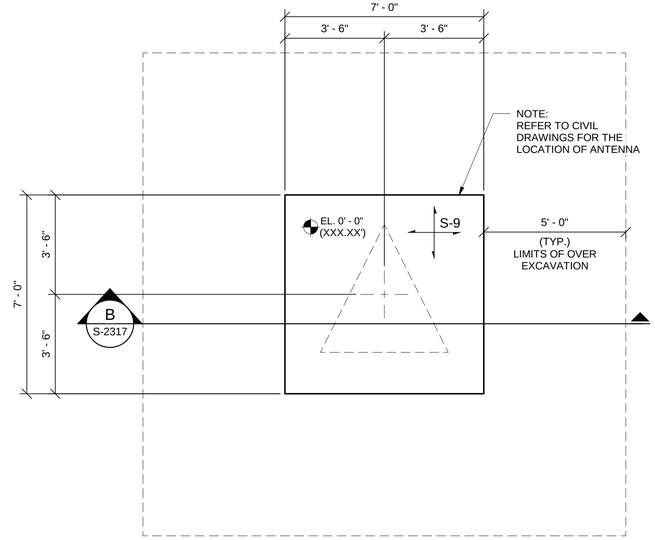
S-2316

Bar measures 1 inch, otherwise drawing is not to scale



TRANSFORMER PAD FOUNDATION PLAN

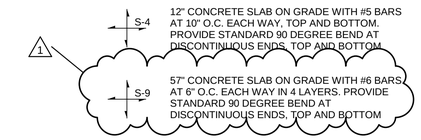
SCALE: 3/8" = 1'-0"



FOUNDATION NOTES:

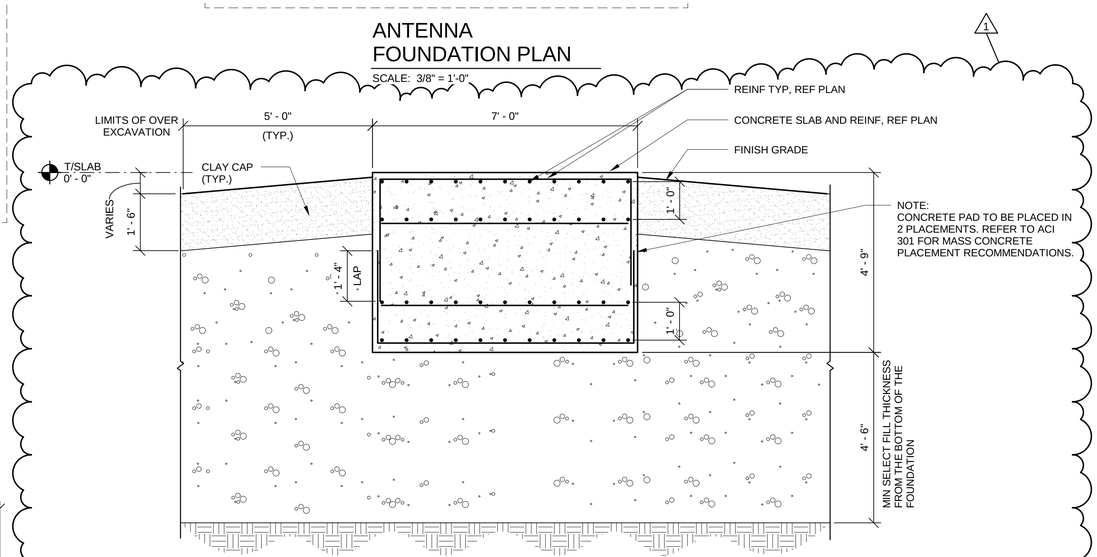
1. REFER TO GENERAL STRUCTURAL NOTES SHEETS FOR INFORMATION NOT GIVEN.
2. REFER TO "D" DRAWINGS FOR EQUIPMENT AND PIPES LAYOUT AND SIZING.
3. COORDINATE OPENINGS, CONDUITS, RAILINGS, ETC. WITH ALL DISCIPLINES.
4. REFERENCE TYPICAL DETAIL SHEETS FOR ADDED REINFORCING AROUND OPENINGS. ETC.
5. REFERENCE SECTIONS FOR WALL REINFORCING.

FOUNDATION LEGEND:



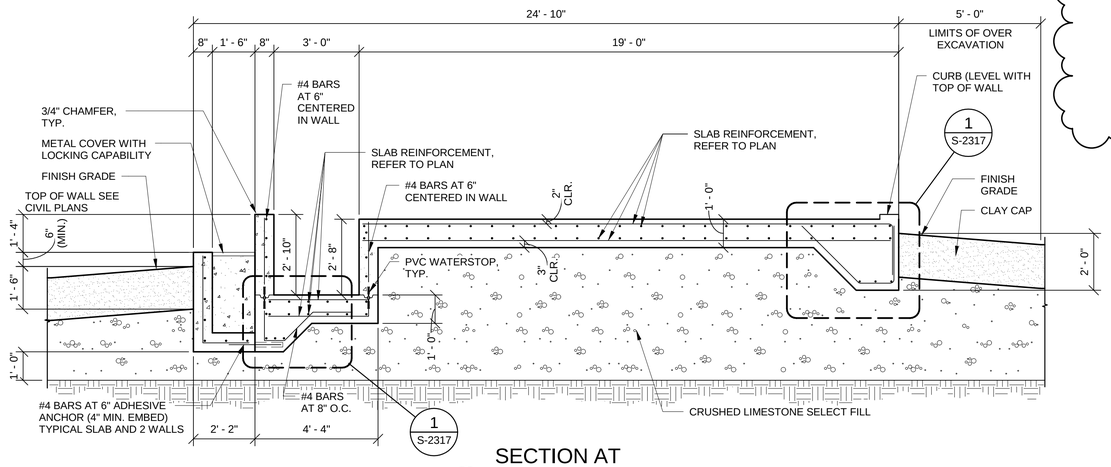
ANTENNA FOUNDATION PLAN

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



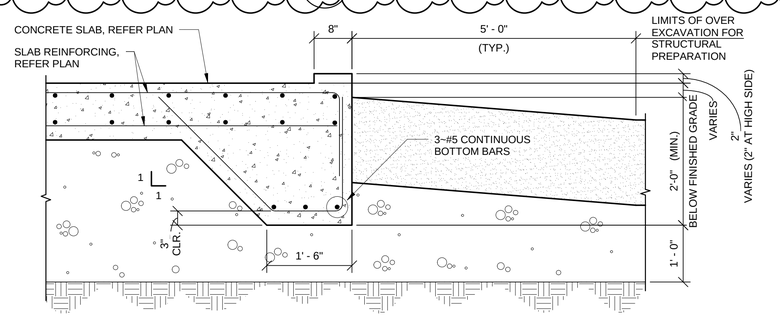
B SECTION

S-2317 SCALE: 1/2" = 1'-0"



A SECTION AT TRANSFORMER PAD

A S-2317 SCALE: 3/8" = 1'-0"



1 EDGE DETAIL

1 S-2317 SCALE: 3/4" = 1'-0"

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St. Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

STRUCTURAL ENGINEERING ASSOCIATES INC.
CONSULTING ENGINEERS
TBPE FIRM REG. NO. F-199
SAN ANTONIO, TX. 78229
(210) 735-9202 WWW.SEATX.COM

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	8/28/18	PER ADDENDUM #3	

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

TRANFORMER PAD AND ANTENA FOUNDATION

STATE OF TEXAS
SAMIN DEHKHARGHANIAN
129494
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	SAM
DRWN:	EHJ
CHKD:	EHJ

S-2317

Bar measures 1 inch, otherwise drawing is not to scale

PIPING MATERIALS SCHEDULE								
ABBREVIATION	**DESCRIPTION**	**BURIED**	**BURIED COLOR**	**EXPOSED**	**EXPOSED COLOR**	**MAX. WORKING PRESSURE**	**TEST PRESSURE**	**SPECIFICATIONS**
DR,D	DRAIN	<4": PVC SCH 40; >= 4" PVC SEWER PIPE, SDR 26 W/ PVC FITTINGS	GREEN PIGMENTED PVC	PVC SCH 80, SOLVENT WELD	DK. GRAY (34GR)	25	NA	15063
OF	OVERFLOW	NA	NA	PVC SCH 80, SOLVENT WELD	MD. GRAY (33GR)	25	50	15063
SMPL	SAMPLE	PVC SCH 80, SOLVENT WELD	MATCH SERVICE	PVC SCH 80, SOLVENT WELD OR 316 SST AS NOTED ON DWGS	MATCH SERVICE	150	225	15067, 15063
PW	POTABLE WATER	AWWA C200 STEEL, WELD	NA	AWWA C200 STEEL, WELD	BLUE (11SF "SAFETY BLUE")	150	225	15055

VALVE SCHEDULE									
AREA ID	**VALVE ID**	**LOCATION**	**SERVICES**	**DIA**	**TYPE**	**ABOVEGROUND/BURIED**	**END CONNECTIONS**	**OPERATOR**	**SPECIFICATION**
BOOSTER PUMP STATION									
100	36-BFV-101	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	36	BUTTERFLY VALVE	EXPOSED	FLANGED	MOTOR ACTUATED	15101
100	36-BFV-102	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	36	BUTTERFLY VALVE	EXPOSED	FLANGED	HANDWHEEL	15101
100	36-BFV-103	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	36	BUTTERFLY VALVE	EXPOSED	FLANGED	HANDWHEEL	15101
100	2-ARV-101	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	2"	COMBINATION AIR VALVE	EXPOSED	THREADED	N/A	15108
100	2-ARV-102	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	2"	COMBINATION AIR VALVE	EXPOSED	THREADED	N/A	15108
100	20-FCV-101	CONTROL VALVE ASSEMBLY - MALTSBERGER	POTABLE WATER	36x20x36	SLEEVE VALVE	EXPOSED	FLANGED	MOTOR ACTUATED	15114
100	10-FCV-102	CONTROL VALVE ASSEMBLY - BASIN	POTABLE WATER	24x10x24	SLEEVE VALVE	EXPOSED	FLANGED	MOTOR ACTUATED	15114
100	2-ARV-103	CONTROL VALVE ASSEMBLY - BASIN	POTABLE WATER	2"	COMBINATION AIR VALVE	EXPOSED	THREADED	N/A	15108
YARD PIPING									
100	36-BFV-102	GROUND STORAGE TANK BYPASS	POTABLE WATER	36"	BUTTERFLY VALVE	BURIED	FLANGED	2" SQUARE NUT	15101
100	48-BFV-101	GROUND STORAGE TANK	POTABLE WATER	48"	BUTTERFLY VALVE	BURIED	FLANGED	2" SQUARE NUT	15101
100	48-BFV-102	GROUND STORAGE TANK	POTABLE WATER	48"	BUTTERFLY VALVE	BURIED	FLANGED	2" SQUARE NUT	15101

NOTE:

1. VALVES FOR PRV 2 AND PRV 3 ARE NOT INCLUDED IN THIS SCHEDULE. REFER TO MECHANICAL SHEETS.

EQUIPMENT IDENTIFICATION	
ABBREVIATION	DESCRIPTION
ASTR	AUTOMATIC STRAINER
BWR	BLOWER
CAL	CALIBRATION COLUMN
CENT	CENTRIFUGE
CF	CARTRIDGE FILTER
CMP	CHEMICAL METERING PUMP
CP	CONTROL PANEL
DD	DESICCANT DRYER
EES	EMERGENCY EYEWASH / SHOWER
IMHTR	IMMERSION HEATER
IQ	INJECTION QUILL
M	MECHANICAL EQUIPMENT
MP	METERING PUMP
MXR	MIXER
MOV	MOTOR OPERATED VALVE

1

EQUIPMENT IDENTIFICATION	
ABBREVIATION	DESCRIPTION
PMP	PUMP
PD	PULSATION DAMPENER
SAT	SATURATOR
SG	SLIDE / SLUICE GATE
SM	STATIC MIXER
STR	STRAINER
TK	TANK
WG	WEIR GATE
WS	WATER SOFTENER

PIPE MATERIAL CODES	
ABBREVIATION	DESCRIPTION
C2O	SCHEDULE 40 CARPENTER 20 ALLOY PIPE
CPVC	SCHEDULE 80 CPVC PIPE
CU	COPPER TUBING
CS	CARBON STEEL
DI	DUCTILE IRON PIPE
EPDM	EPDM TUBING
FRP	150 PSI PRESSURE CLASS FIBERGLASS REINFORCED PLASTIC PIPE
HDPE	150 PSI PRESSURE CLASS HIGH-DENSITY POLYETHYLENE PIPE
PE	POLYETHYLENE TUBING
PFA	PERFLUOROALKOXY
PTFE(T)	150 PSI PRESSURE RATED TEFLON TUBING
PP	150 PSI PRESSURE CLASS POLYPROPYLENE PIPE
PVC	POLYVINYL CHLORIDE PRESSURE PIPE
PVC-D	PVC GRAVITY SEWER PIPE
PVDF	230 PSI PRESSURE CLASS POLYVINYLIDENE FLUORIDE PIPE
SST	TYPE 316/316L STAINLESS STEEL PIPE
STL	FABRICATED STEEL PIPE
STL-EL	FABRICATED STEEL, EPOXY LINED PIPE

NOTES:

1. ALL PIPELINES TO BE AS LISTED IN THE PIPE MATERIAL SCHEDULE UNLESS NOTED OTHERWISE IN THE DRAWINGS.
2. ALL POTABLE WATER PIPE INSTALLED AT THE MALTSBERGER PS SITE WILL BE COLOR CODED USING BLUE AS COLOR FOR POTABLE WATER. ALL RECLAIMED WATER PIPE INSTALLED AT THE TERMINUS SITE SHALL BE MARKED OR COLOR CODED USING PANTONE PURPLE 522C AS COLOR FOR RECLAIMED WATER. WASTEWATER FORCE MAINS ARE TO BE GREEN PIGMENTED PVC.
3. ALL EXPOSED PROCESS PIPING IS TO BE PAINTED PER THE PAINTING SPECS, EXCEPT STAINLESS STEEL, FRP AND COPPER PIPE.
4. WORKING PRESSURE RATING OF FITTINGS TO MEET OR EXCEED THE RATING OF THE PIPE.
5. PIPING MATERIALS TO BE AS LISTED IN THE PIPING SCHEDULE UNLESS OTHERWISE SHOWN IN THE DRAWINGS.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DA

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS PIPING SCHEDULE

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

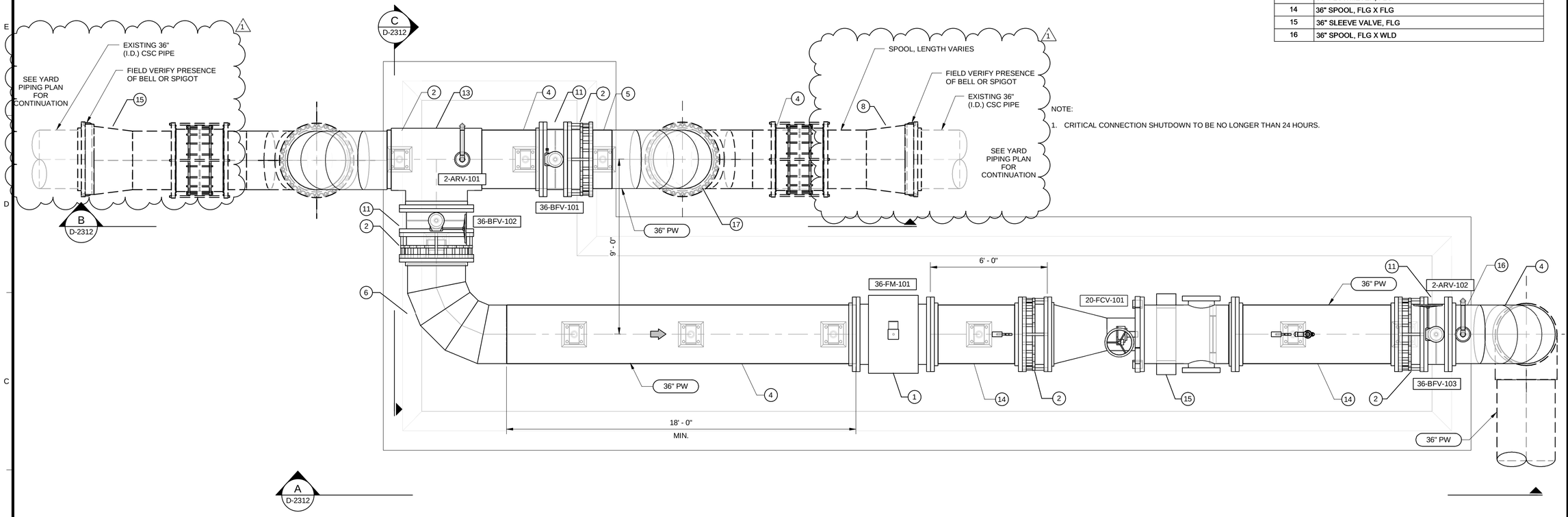
PROJ:	200-09308-18001
DESN:	JK
DRWN:	LM
CHKD:	DB

D-2302

Bar measures 1 inch, otherwise drawing is not to scale

8/27/2018 11:08:39 AM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\D - PIPING MATERIALS SCHEDULE.DWG - ANDERSON, DEBORAH

FITTING LIST	
TAG	DESCRIPTION
1	42" X 36" FABRICATED REDUCER
2	36" SPOOL, WLD
3	36" TEE, WLD
4	36" SPOOL, WLD X FLG
5	36" SPOOL, PE X WLD
6	36" MOTOR OPERATED BUTTERFLY VAVE, FLG
7	36" FLANGED COUPLING ADAPTER
8	41" X 36" FABRICATED REDUCER, FLG X CSC
9	36" 90° BEND, WLD
10	36" FABRICATED 90° BEND, WLD
11	36" BUTTERFLY VALVE, FLG
12	36" FABRICATED 90° BEND, FLG X WLD
13	36" FLOWMETER, FLG
14	36" SPOOL, FLG X FLG
15	36" SLEEVE VALVE, FLG
16	36" SPOOL, FLG X WLD



NOTE:

1. CRITICAL CONNECTION SHUTDOWN TO BE NO LONGER THAN 24 HOURS.

24" FLOWMETER AND FLOW CONTROL VALVE ASSEMBLY PLAN

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

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DJB

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
PROJECT PUMP STATION IMPROVEMENTS

MALTSBERGER PS
FLOW CONTROL VALVE
ASSEMBLY PLAN

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED PROFESSIONAL ENGINEER
8/27/2018

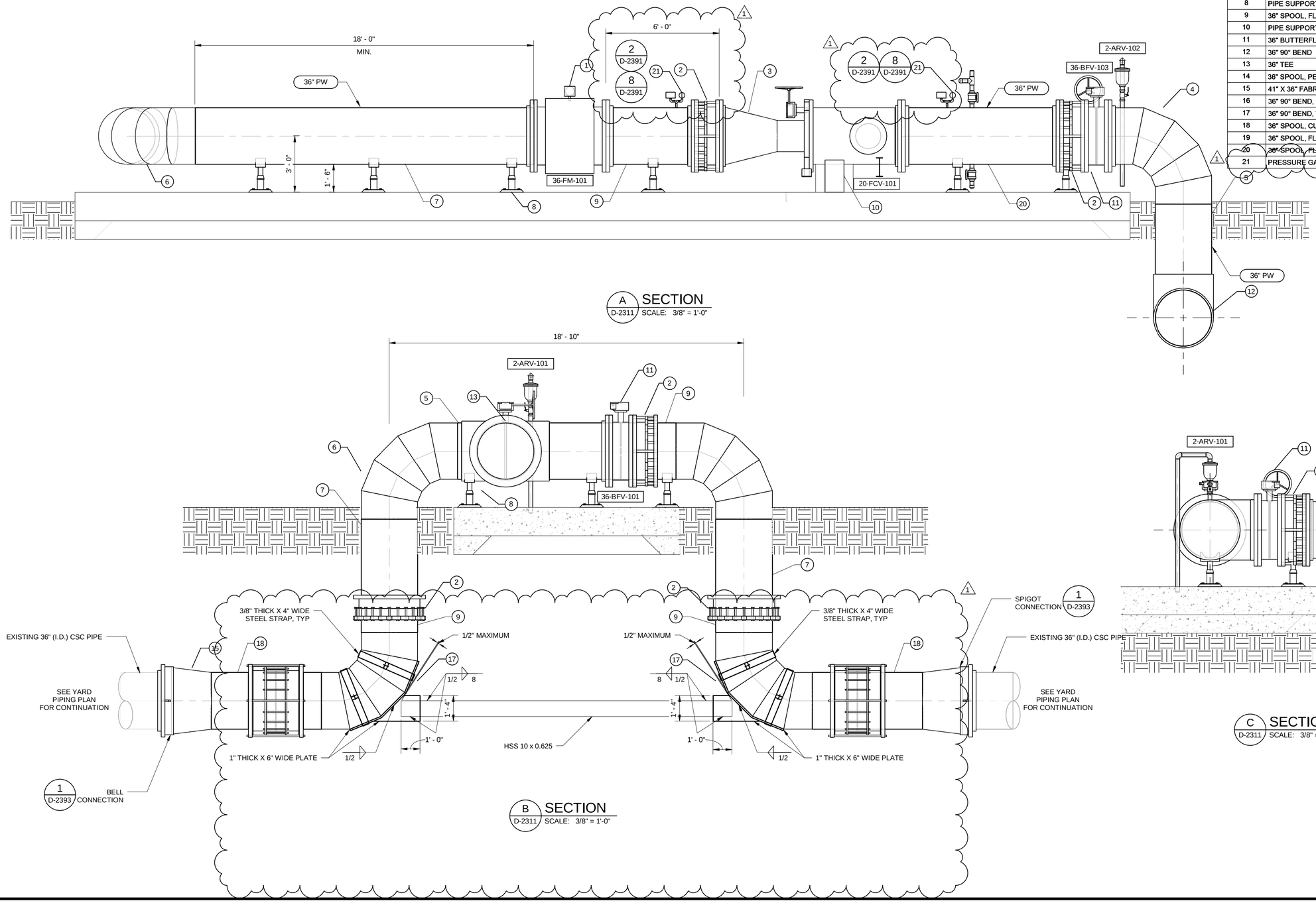
PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

D-2311

Bar measures 1 inch, otherwise drawing is not to scale

8/27/2018 2:07:48 PM BIM 360://200-09308-18001 CWIPP/09308-02-02-MALT-D-2017.rvt

FITTING LIST	
TAG	DESCRIPTION
1	36" FLOWMETER
2	36" FLANGED COUPLING ADAPTER
3	36" SLEEVE VALVE, FLG
4	36" FABRICATED STEEL 90° BEND, WLD X FLG
5	36" SPOOL, WLD
6	36" 90° BEND, WLD
7	36" SPOOL, WLD X FLG
8	PIPE SUPPORT
9	36" SPOOL, FLG X PE
10	PIPE SUPPORT, CONCRETE SADDLE
11	36" BUTTERFLY VALVE, FLG
12	36" 90° BEND
13	36" TEE
14	36" SPOOL, PE X WLD
15	41" X 36" FABRICATED REDUCER, CSC X FLG
16	36" 90° BEND, FLG X WLD
17	36" 90° BEND, WLD
18	36" SPOOL, CUT TO FIT, WLD X FLG
19	36" SPOOL, FLG X WLD
20	36" SPOOL, FLG X FLG
21	PRESSURE GAUGE AND SENSOR TRANSMITTER



A SECTION
D-2311 SCALE: 3/8" = 1'-0"

B SECTION
D-2311 SCALE: 3/8" = 1'-0"

C SECTION
D-2311 SCALE: 3/8" = 1'-0"

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
PROJECT PUMP STATION IMPROVEMENTS

MALTSBERGER PS
FLOW CONTROL VALVE ASSEMBLY SECTIONS

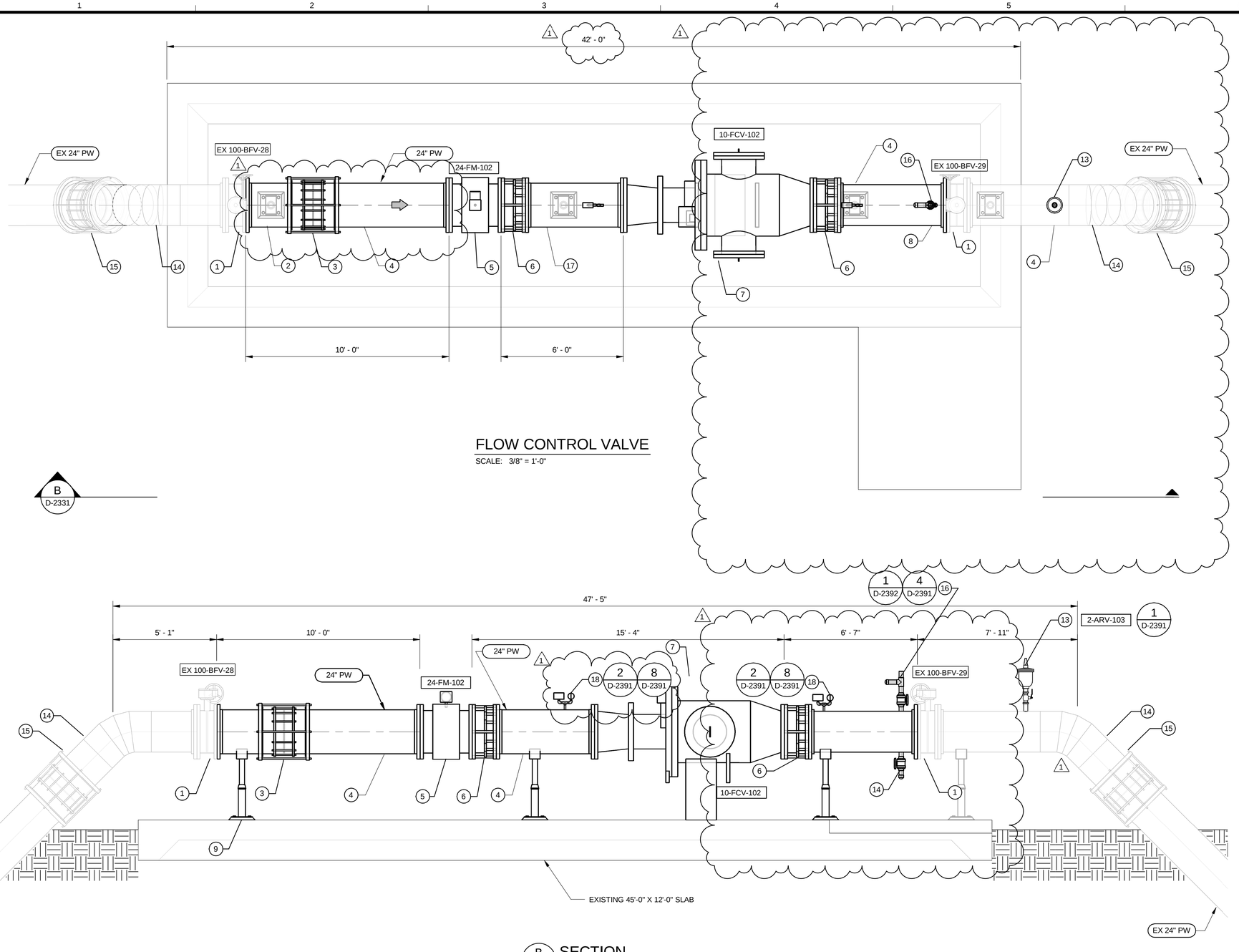
MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DJB

STATE OF TEXAS
JAIME R. KYPUROS JR.
93790
LICENSED
PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	Designer
DRWN:	Author
CHKD:	Checker

D-2312

Bar measures 1 inch, otherwise drawing is not to scale



FLOW CONTROL VALVE

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

B / D-2331

B SECTION

D-2331 SCALE: 3/8" = 1'-0"

FITTING LIST	
TAG	DESCRIPTION
1	EX 24" BUTTERFLY VALVE, FLG
2	EX 24" SPOOL
3	EX 24" HARNESSED MECHANICAL COUPLING
4	24" SPOOL, PE X FLG
5	24" FLOW METER, FLG
6	24" FLANGED COUPLING ADAPTER
7	24" SLEEVE VALVE, FLG
8	24" SPOOL, PE
9	EX PIPE SUPPORT
10	EX PIPE SUPPORT, CONCRETE SADDLE
11	12" SAMPLE TAP
12	1/2" RESIDUALS SAMPLE LINE
13	2" COMBINATION AIR VALVE
14	EX 36" FABRICATED STEEL 90° BEND
15	EX 24" MECHANICAL COUPLING ADAPTER W/THRUST HARNESS
16	DRAIN & SAMPLE TAP
17	24" SPOOL FLG X FLG
18	PRESSURE GAUGE AND SENSOR TRANSMITTER

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08-28-18	PER ADDENDUM #3	DA

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
PROJECT PUMP STATION IMPROVEMENTS

BASIN PS
FLOW CONTROL VALVE ASSEMBLY

STATE OF TEXAS
JAIME R. KYPUROS JR.
95790
LICENSED
PROFESSIONAL ENGINEER
8/27/2018

PROJ:	200-09308-18001
DESN:	JK
DRWN:	DA
CHKD:	DB

D-2331

Bar measures 1 inch, otherwise drawing is not to scale

GENERAL CONSTRUCTION NOTES:

1. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
2. ITEMS SHOWN OR NOTED TO BE DEMOLISHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED FROM SITE BY CONTRACTOR UNLESS NOTED TO BE TURNED OVER TO OWNER.
3. FOR ITEMS INDICATED AS "FIELD LOCATE", THE CONTRACTOR SHALL FIELD VERIFY FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
4. INSTALL A SINGLE CONDUCTOR INSULATED (XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE, WHICHEVER IS LARGER. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND.
5. CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE INTENDED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS FOR CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
6. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS. SEE SPECIFICATION ON RACEWAYS FO
7. ALL EQUIPMENT WIRING, RACEWAYS, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (IE. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS. REFER TO EACH SPECIFICATION SECTION FOR SPECIFIC REQUIREMENTS.
8. ETHERNET AND FIBER OPTIC TERMINATIONS (SC STYLE) SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF CABLE MANUFACTURER, (NOT THE INSTALLING CONTRACTOR). THE CABLES SHALL BE TESTED. NO SPLICING SHALL BE PERMITTED OF FIBER OPTIC CABLES, BETWEEN PANELS. FIBERS SHALL BE TERMINATED AT PATCH PANELS, INCLUDING SPARES.
9. REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULL BOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
10. CONDUITS/RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL CHANNEL STRUT. MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE. ALL CHANNEL STRUT, CHANNEL STRUT SUPPORT MATERIAL, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS AND MISC. MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
11. PANELS SHALL BE MOUNTED OFF WALLS WITH CHANNEL STRUT, CONDUITS SHALL BE MOUNTED ON CHANNEL STRUT INCLUDING SINGLE RUNS.
12. CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANEL.
13. REPAIR SIDEWALKS AND ROADWAYS DUE TO SITE WORK ADDITIONS, THE EXTENT OF THE REPAIR REQUIRED SHALL BE FIELD VERIFIED PRIOR TO BIDS IN CONJUNCTION WITH THE WORK SHOWN IN THE CONTRACT DOCUMENTS. PRIOR TO TRENCHING, FIELD LOCATE EXISTING GAS LINES, TELEPHONE LINES, SPRINKLER LINES, ETC. COORDINATE WITH OWNER
14. CABLES (INCLUDING FIBER, ETHERNET, CONTROL WIRE, ETC.) WHERE PASSING THROUGH A PULL BOX SHALL BE LABELED AND COMPLETELY IDENTIFIED WITH IDENTIFICATION NUMBERS AND ORIGINATION/DESTINATION. THIS ALSO INCLUDES CABLE BUNDLES ENTERING CONTROL PANELS, PULL BOXES, ETC.
15. PULL CORDS SHALL BE INSTALLED IN CONDUITS CONTAINING NETWORK CABLES, AND FIBER OPTIC CABLES.
16. FIELD VERIFY PROPOSED CONDUIT ROUTING SHOWN ON THE CONTRACT DRAWINGS.
17. CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF CONDUIT AND WIRING/CABLING AS SHOWN. FIELD VERIFY EXACT EXTENT OF WORK REQUIRED.
18. FURNISH PULL BOXES FOR FIBER OPTIC CABLE. COORDINATE EXACT BENDING RADIUS WITH MANUFACTURER.
19. NEW CONDUITS INSTALLED THIS CONTRACT WITH FIBER OPTIC CABLES SHALL BE LABELED WITH PHENOLIC TAGS (AT BEGINNING, AND AT END) TO INDICATE THE NUMBER OF STRANDS, ORIGINATION AND DESTINATION. TAGS TO BE COLOR CODED ORANGE FOR MULTIMODE, AND YELLOW FOR SINGLE MODE.
20. ALL UNDERGROUND SINGLE CONDUITS, AND DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE RIGID PVC CONDUIT, ENCASED IN REINFORCED RED CONCRETE, AND THE CONCRETE DYED RED BEFORE PLACEMENT., AS SPECIFIED. MINIMUM SIZE SHALL BE 2 INCH. THE CONTRACTOR SHALL FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND CONDUIT AND DUCTBANKS AND SHALL COORDINATE THE ROUTING OF NEW CONDUIT AND DUCTBANKS TO AVOID INTERFERENCE WITH EXISTING CONDUIT AND DUCBANKS AND OTHER UNDERGROUND UTILITIES.
21. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RIGID STEEL LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED. SEE THE SPECIFICATIONS FOR MORE REQUIREMENTS.
22. PRIOR TO EXCAVATION, FIELD LOCATE EXISTING UTILITIES. COORDINATE WITH OWNER.
23. THE FOLLOWING EXAMPLE COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:

(F) FIELD MOUNTED, NOT AT STARTER OR OTHER CONTROL PANELS
(S) STARTER PANEL MOUNTED
(MCP) AT MAIN CONTROL PANEL
(1) AT CONTROL PANEL NO.1
(2) AT CONTROL PANEL NO.2
(TCP) AT TEMPERATURE CONTROL PANEL

24. RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL FASTENERS SUPPORTS, AND THREADED ROD, ETC. (CHANNEL STRUT TO ALSO BE STAINLESS STEEL). MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE. TYPICAL FOR NEMA 12, 4, AND 7 AREAS.
25. WIRING FOR STARTERS SHALL BE IN ACCORDANCE WITH NEMA CLASS II B STANDARDS. SUBMIT ENGINEERED SHOP DRAWINGS FOR STARTERS SHOWN TO BE WIRED.
26. WIRE NUMBERS (1, 3, 5, ETC.) SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX SHALL BE THE MANUFACTURER'S WIRE NUMBERING SYSTEM. WIRE MARKERS SHALL BE USED AT EACH WIRE TERMINATION POINT.
27. CONTROL WIRES SHALL BE TAGGED WITH THE PLC I/O ADDRESS.
28. IN AREAS WHERE EQUIPMENT AND CONDUIT IS REMOVED, REPAIR WALL AND FLOOR SURFACES AS REQUIRED TO MATCH SURROUNDING AREA. WHERE DEVICES ARE REMOVED FROM CONCEALED BOXES, FURNISH AND INSTALL A BLANK COVER ON THE BOX.
29. FIBER OPTIC CABLE SHALL BE AS CALLED OUT ON SYSTEM CONFIGURATION. ALL DIELECTRIC, SUITABLE FOR INSTALLATION UNDERGROUND IN WET CONDUIT.
30. ALL CONDUIT WITHIN BUILDING TO BE SURFACE MOUNTED. NO CONDUIT SHALL BE INSTALLED, EMBEDDED IN THE CONCRETE FLOORS, WALLS, OR CEILINGS

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL COORDINATE THE DEMOLITION OF THE ELECTRICAL CONDUIT, WIRE, EQUIPMENT AND DEVICES WITH THE GENERAL DEMOLITION AND SCHEDULE. THE DRAWINGS ARE INTENDED TO CONVEY THE GENERAL NATURE AND SCOPE OF THE DEMOLITION WORK. EVERY ITEM TO BE DEMOLISHED MAY NOT BE SHOWN. FIELD VERIFY WITH OWNER PRIOR TO BID, AND INCLUDE ALL DEMOLITION WORK IN THE CONTRACT PRICE.
2. PROVIDE TEMPORARY WIRE AND CONDUIT FOR THE EQUIPMENT WHICH MAY BE AFFECTED BY THE DEMOLITION BUT MUST REMAIN IN SERVICE.
3. RELOCATE AND RECONNECT POWER AND CONTROL RACEWAYS AND CONDUCTORS TO EQUIPMENT AFFECTED BY DEMOLITION WORK.
4. ALL CONDUCTORS BEING DEMOLISHED SHALL BE DISCONNECTED AND REMOVED FROM THE LOAD TO THE SOURCE. SURFACE MOUNTED CONDUITS AND MOUNTING HARDWARE SHALL BE REMOVED. UNDERGROUND CONDUITS WHICH ARE NOT BEING REMOVED OR OTHERWISE NOT BEING MADE UNUSABLE SHALL BE CAPPED AND TAGGED AS SPARE, WITH INFORMATION CLEARLY INDICATING THE LOCATION OF THE OTHER END.
5. ALL SURFACES WHERE DEMOLISHED EQUIPMENT OR CONDUIT IS REMOVED SHALL BE CLEANED, PATCHED AND PAINTED TO MATCH THE SURROUNDING SURFACE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO CHECK THE FUNCTION OF EACH CONDUCTOR BEFORE REMOVING OR DISCONNECTING.
7. IF A CONDUCTOR WHICH HAS TO STAY IN SERVICE (NOT BEING DEMOLISHED) IS INSTALLED IN A COMMON CONDUIT WITH CONDUCTORS WHICH ARE BEING DEMOLISHED, THE CONTRACTOR SHALL REMOVE ALL CONDUCTORS FROM THE CONDUIT, PROVIDE NEW CONDUCTORS WHICH ARE REPLACEMENTS FOR THE CONDUCTORS THAT ARE TO REMAIN IN SERVICE AND RE-INSTALL THE NEW CONDUCTORS. AFTER THE CONDUCTORS ARE PULLED, MEGGER OR HIPOT TEST EACH CONDUCTOR. CONNECT BOTH ENDS OF THE NEW CONDUCTORS AND TEST THE SYSTEM FOR PROPER FUNCTION. DO NOT RE-PULL USED CONDUCTORS.
8. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER/ENGINEER TO FLAG EXISTING UNDERGROUND CONDUITS BEFORE DIGGING.
9. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. THE CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH THE OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS.
10. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATIONS TO THE EXISTING ELECTRICAL EQUIPMENT UNTIL THE FOLLOWING HAS BEEN DONE:
    a. THE OWNER/CONTRACTOR SHALL WITNESS AND RECORD THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.
    b. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.
    c. A WRITTEN AND PHOTOGRAPHIC RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION ON A FORM.
    d. A FORM SHALL BE GENERATED BY THE CONTRACTOR TO RECORD THE OBSERVATIONS. BOTH PARTIES SHALL SIGN ON THE FORM.
    e. THE CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH AND INSTALL MATERIAL OR EQUIPMENT DAMAGED DURING THE COURSE OF HIS WORK.
    f. AFTER THE CHANGES ARE MADE, THE EQUIPMENT SHALL BE INSPECTED AND RE-TESTED TO DEMONSTRATE THAT IT FUNCTIONS CORRECTLY.
    g. NO PORTION OF EXISTING CONDUCTORS SHALL BE SPLICED TO NEW CONDUCTORS FOR RE-USE WITHOUT SPECIFIC APPROVAL FROM THE OWNER/ENGINEER ON A CASE-BY-CASE BASIS.
11. DUCTBANKS DESIGNATED FOR DEMOLISH SHALL BE ABANDONED IN PLACE. CONTRACTOR SHALL REMOVE PORTIONS OF DUCTBANKS AS REQUIRED TO ALLOW INSTALLATION OF NEW DUCTBANKS. CONTRACTOR SHALL REMOVE EXISTING CONCRETE FROM DUCTBANK TO EXPOSE CONDUITS 6" MINIMUM AND CAP. (1)

PROPOSED SEQUENCE OF CONSTRUCTION:

11. THE CONTRACTOR SHALL PROVIDE A DETAILED PROJECT SCHEDULE AS REQUIRED IN THE SPECIFICATIONS.
12. ALL TEMPORARY SHUTDOWNS REQUIRED FOR EQUIPMENT DISCONNECTION AND CONNECTION SHALL BE IN ACCORDANCE WITH SPECIFICATION 01040 COORDINATION. ALL OPERATION OF EXISTING BREAKER AND MOTOR CONTROLS SHALL BE PERFORMED BY SAWS MAINTENANCE AND/OR OPERATIONS GROUP.
13. THE CONTRACTOR SHALL INCLUDE BUT NOT LIMIT TO THE FOLLOWING MAJOR COMPONENTS IN THE PROPOSED SCHEDULE AND SHALL BE DETAILED:
    A. INSTALL NEW DUCT BANKS BETWEEN ELECTRICAL BUILDING AND EXISTING ELECTRICAL VAULT AS SHOWN ON THE DRAWINGS.
    B. INSTALL NEW DUCTBANKS FROM EXISTING ELECTRICAL VAULT TO MOTOR AND VALVE CONTROL STATIONS. INSTALL NEW POWER AND CONTROL CONDUCTORS FROM NEW MVMCCS TO MOTOR AND VALVE CONTROL STATIONS.
    C. SET IN PLACE NEW SUPERVISORY CONTROL PANEL (SCP), NEW MEDIUM VOLTAGE SWITCHGEAR AND MOTOR CONTROL CENTERS (MVMCC) IN ELECTRICAL BUILDING. ESTABLISH AND COMMISSION NETWORK COMMUNICATION. (1)
    D. COORDINATE WITH SAWS OPERATIONS AND MAINTENANCE GROUP TO TEMPORARILY STOP PUMPS OR DISCONNECT TRANSFORMER LOADS ON EXISTING MVMCC-A BUS. OPEN THE MAIN BREAKER BUS A AND CLOSE THE TIE BREAKER. VERIFY PROPER OPERATION OF THE WELL AND HIGH SERVICE PUMPS CONNECTED TO BUS A PRIOR TO CONTINUING WITH SEQUENCE.
    E. COORDINATE WITH CPS ENERGY TO DE-ENERGIZE CIRCUIT FOR MEDIUM VOLTAGE SWITCHGEAR BUS A AND TO DISCONNECT AND REMOVE THE EXISTING CONDUCTORS FROM UTILITY TRANSFORMER.
    F. INSTALL NEW CONDUCTORS FROM UTILITY TRANSFORMER TO NEW MEDIUM VOLTAGE SWITCHGEAR BUS A MAIN BREAKER MB-1. PERFORM ALL FIELD TESTS AS REQUIRED IN SPECIFICATIONS PRIOR TO ENERGIZING.
    G. COORDINATE WITH CPS ENERGY TO TERMINATE NEW CONDUCTORS AT THE SECONDARY OF THE EXISTING UTILITY TRANSFORMER. UPON COMPLETION OF TERMINATION, COORDINATE WITH CPS ENERGY TO RE-ENERGIZE CIRCUIT.
    H. DISCONNECT AND REMOVE MOTOR POWER AND CONTROL CONDUCTORS FROM EXISTING MVMCC-A TO HIGH SERVICE PUMPS AND WELL PUMPS AND THEIR ASSOCIATED APPURTENANCES. NO MORE THAN ONE (1) WELL PUMP AND ONE (1) HIGH SERVICE PUMP CAN BE OUT OF SERVICE AT ONE TIME WITHOUT OUT PRIOR CONFIRMATION FROM OWNER.
    I. COORDINATE WITH SAWS OPERATION AND MAINTENANCE TO PERFORM FIELD TESTING AS REQUIRED IN THE SPECIFICATIONS FOR EACH PUMP CONNECTED TO NEW MVMCC. TESTS SHALL BE SATISFACTORILY COMPLETED PRIOR TO STARTING THE MOTOR.
    J. AFTER ALL PUMPS (HSP-1, HSP-2, HSP-5, WP-2, WP-4 AND WP-6) HAVE BEEN MOVED TO THE NEW MVMCC, OPEN THE EXISTING TIE BREAKER TO ISOLATE THE EXISTING MOTOR CONTROL CENTER BUS A.
    K. THE NEW MEDIUM VOLTAGE SWITCHGEAR TIE BREAK SHALL BE CLOSED AT THIS TIME.
    L. DISCONNECT AND REMOVE MOTOR POWER AND CONTROL CONDUCTORS FROM EXISTING MVMCC-B TO HIGH SERVICE PUMPS AND WELL PUMPS AND THEIR ASSOCIATED APPURTENANCES. NO MORE THAN ONE (1) WELL PUMP AND ONE (1) HIGH SERVICE PUMP CAN BE OUT OF SERVICE AT ONE TIME WITHOUT OUT PRIOR CONFIRMATION FROM OWNER.
    M. COORDINATE WITH SAWS OPERATION AND MAINTENANCE TO PERFORM FIELD TESTING AS REQUIRED IN THE SPECIFICATIONS FOR EACH PUMP CONNECTED TO NEW MVMCC. TESTS SHALL BE SATISFACTORILY COMPLETED PRIOR TO STARTING THE MOTOR.
    N. NO MORE THAN ONE (1) WELL PUMP AND ONE (1) HIGH SERVICE PUMP CAN BE TRANSFERRED PRIOR TO ENERGIZING BUS B.
    O. COORDINATE WITH SAWS OPERATIONS AND MAINTENANCE GROUP TO TEMPORARILY STOP PUMPS OR DISCONNECT TRANSFORMER LOADS ON EXISTING MVMCC-B BUS. OPEN THE MAIN BREAKER BUS B.
    P. COORDINATE WITH CPS ENERGY TO DE-ENERGIZE CIRCUIT FOR MEDIUM VOLTAGE SWITCHGEAR BUS B AND TO DISCONNECT AND REMOVE THE EXISTING CONDUCTORS FROM UTILITY TRANSFORMER.
    Q. INSTALL NEW CONDUCTORS FROM UTILITY TRANSFORMER TO NEW MEDIUM VOLTAGE SWITCHGEAR BUS A MAIN BREAKER MB-2. PERFORM ALL FIELD TESTS AS REQUIRED IN SPECIFICATIONS PRIOR TO ENERGIZING.
    R. OPEN TIE BREAKER AND CLOSE MAIN BREAKER MB-2.
    S. DISCONNECT AND REMOVE REMAINING MOTOR POWER AND CONTROL CONDUCTORS FROM EXISTING MVMCC-B TO HIGH SERVICE PUMPS AND WELL PUMPS AND THEIR ASSOCIATED APPURTENANCES. NO MORE THAN ONE (1) WELL PUMP AND ONE (1) HIGH SERVICE PUMP CAN BE OUT OF SERVICE AT ONE TIME WITHOUT OUT PRIOR CONFIRMATION FROM OWNER.
    T. COORDINATE WITH SAWS OPERATION AND MAINTENANCE TO PERFORM FIELD TESTING AS REQUIRED IN THE SPECIFICATIONS FOR EACH PUMP CONNECTED TO NEW MVMCC. TESTS SHALL BE SATISFACTORILY COMPLETED PRIOR TO STARTING THE LIKE MOTOR.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM NO. 3	EDJ

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS ELECTRICAL GENERAL NOTES

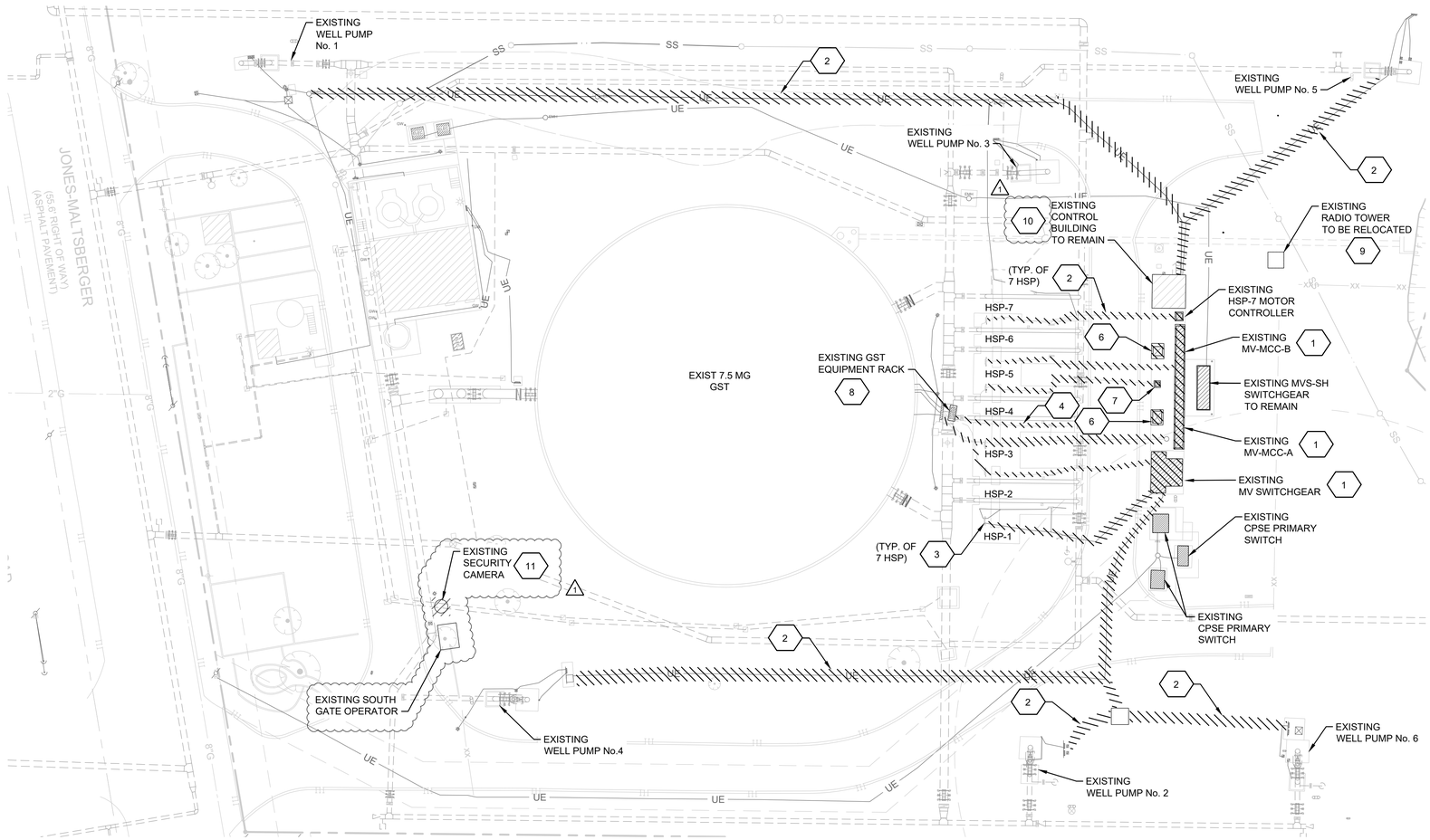
STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2302

Bar measures 1 inch, otherwise drawing is not to scale

8/29/2018 5:42:15 PM - \\TTS063FS1\PROJECTS\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPE - 2302 ELECTRICAL GENERAL NOTES.DWG - GOBROGGE, TIM



1 OVERALL SITE PLAN - DEMOLITION
SCALE: 1"=30'

0 15' 30' 60'
SCALE: 1"=30'

GENERAL NOTES:

1. ALL EQUIPMENT/UTILITIES ON THIS SHEET ARE EXISTING.
2. REFER TO SHEET E-2302 FOR ADDITIONAL INFORMATION.

NOTES:

1. EXISTING MEDIUM VOLTAGE SWITCHGEAR AND MOTOR CONTROL CENTERS TO BE DEMOLISHED. REFER TO DEMOLITION AND PROPOSED SEQUENCE OF CONSTRUCTION NOTES ON SHEET E-2302 FOR ADDITIONAL INFORMATION.
2. EXISTING DUCTBANKS TO BE DEMOLISHED. REFER TO SHEET E-2302 FOR ADDITIONAL INFORMATION.
3. EXISTING HIGH SERVICE PUMP CONTROL RACKS TO REMAIN.
4. EXISTING HIGH SERVICE PUMP DISCHARGE VALVE CONTROL RACKS TO REMAIN.
5. WELL PUMP CONTROL RACKS TO REMAIN.
6. EXISTING 75kVA TRANSFORMER TO BE DEMOLISHED.
7. EXISTING MAGNETIC COUPLER TO BE DEMOLISHED.
8. EXISTING GST EQUIPMENT RACK INSTALLED UNDER GST TANK REHAB PROJECT TO REMAIN IN SERVICE DURING CONSTRUCTION.
9. EXISTING RADIO TOWER TO BE RELOCATED AS SHOWN ON E-2304.
10. EXISTING SUPERVISORY CONTROL PANEL (SCP) LOCATED IN CONTROL BUILDING SHALL BE REPLACED WITH NEW IN ELECTRICAL BUILDING. SEE SHEET E-2321.
11. CONTRACTOR SHALL REMOVE EXISTING SECURITY CAMERA AT THE EXISTING SOUTH GATE ACCESS. CONTRACTOR SHALL RELOCATE AS SHOWN ON SHEET E-2304.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM NO. 3	EDJ

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS ELECTRICAL OVERALL SITE PLAN-DEMOLITION

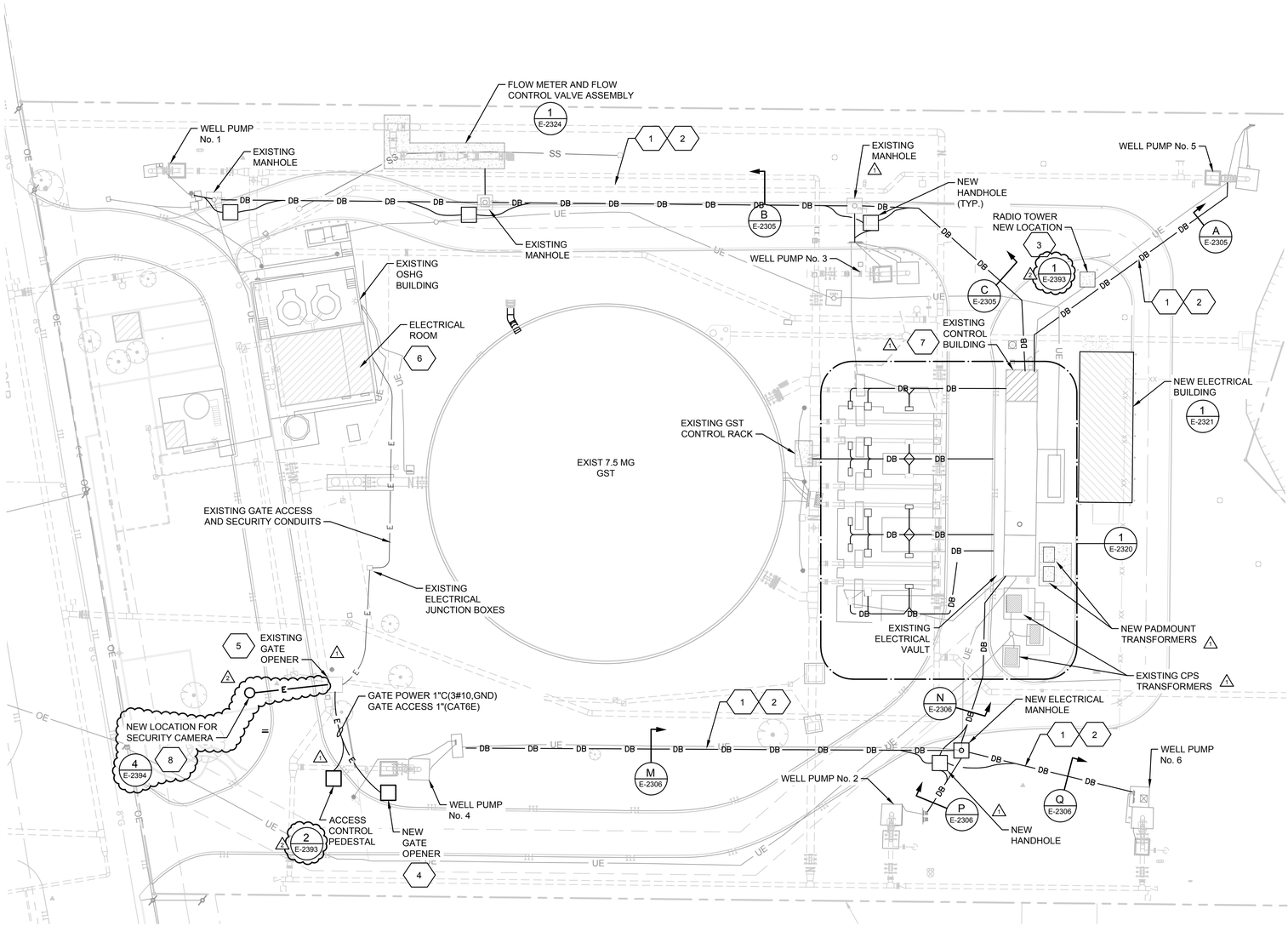
STATE OF TEXAS
TIMOTHY D. GOBBOGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2303

Bar measures 1 inch, otherwise drawing is not to scale

8/28/2018 4:14:54 PM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPE - 2303 MALTSBERGER PS ELECTRICAL OVERALL SITE PLAN-DEMOLITION.DWG - JOHNSON, EDWARD



1 SITE PLAN - 1
SCALE: 1"=30'

N

0 15' 30' 60'
SCALE: 1" = 30'_XREF

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UNDERGROUND DUCTBANKS AND UTILITIES.
2. NEW DUCTBANKS WITH 5KV CONDUCTORS SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 7.5" (EDGE OF CONCRETE TO EDGE OF CONCRETE).
3. REFER TO TOWER NOTES ON THIS SHEET.
4. CONTRACTOR SHALL INSTALL NEW GATE CONTROLLER AND ACCESSORIES. NEW CONTROLLER SHALL BE CONNECTED TO EXISTING GATE CONTROLLER.
5. CONTRACTOR SHALL VERIFY EXISTING CONDUIT AND WIRES FROM EXISTING GATE CONTROLLER NETWORK IN ELECTRICAL ROOM. CONTRACTOR SHALL INSTALL NEW POWER AND COMMUNICATIONS AS SHOWN.
6. CONTRACTOR SHALL CONNECT NEW GATE TO THE EXISTING ACCESS CONTROLLER. PROVIDE SERVICES AS REQUIRED TO HAVE GATE OPERATE TO MATCH EXISTING.
7. REFER TO SHEET I-2311 FOR SUPERVISORY CONTROL PANEL △1 REPLACEMENT REQUIREMENTS.
8. CONTRACTOR SHALL RELOCATE EXISTING SECURITY CAMERA INCLUDING FOUNDATION AND POLE. FURNISH AND INSTALL NEW 1"C UNDER ROAD TO NEW LOCATION FROM EXISTING. PROVIDE UNDERGROUND JUNCTION BOX AT EXISTING LOCATION. FURNISH AND INSTALL NEW CAT-6 CABLE AS SHOWN ON I-2311.

△2

TOWER NOTES:

1. CONTRACTOR SHALL TEMPORARILY MOVE EXISTING ANTENNA (2 TOTAL) FROM EXISTING TOWER.
2. BROAD BAND ANTENNA SHALL BE MOUNTED TO GST HANDRAIL. THIS TEMPORARY ANTENNA SHALL BE OPERATIONAL PRIOR TO REMOVING EXISTING ANTENNA.
3. WELL PUMP FLOW METER WIRELESS NETWORK ANTENNA FOR FLOW METERS SHALL BE MOUNTED TO EXISTING CONTROL BUILDING. THIS TEMPORARY ANTENNA SHALL BE OPERATIONAL PRIOR TO REMOVING EXISTING ANTENNA.
4. PLC PROGRAMMING TO BE PERFORMED BY OWNER. CONTRACTOR TO COORDINATE TIMING OF WORK IN ADVANCE TO FACILITATE REQUIRED PROGRAMMING ACTIVITIES. CONTRACTOR TO ASSIST DURING LOOP CHECKOUT AND I/O VERIFICATION.

△2

5. EXISTING TOWER AND ATTACHED ENCLOSURES SHALL BE REMOVED FROM THE EXISTING FOUNDATION. CONTRACTOR SHALL DISASSEMBLE TOWER AND STORE FOR FUTURE INSTALLATION.
6. CONTRACTOR SHALL REMOVE EXISTING FOUNDATION GROUNDING RING AND CONDUITS FOR EXISTING TOWER. CONDUITS SHALL BE REMOVED BACK TO SOURCE IN CONTROL BUILDING. CONTRACTOR SHALL REPAIR EMPTY OPENINGS IN CONTROL BUILDING WALL.
7. AFTER FINAL GRADING IS COMPLETED FOR NEW ELECTRICAL BUILDING, PROVIDE NEW TOWER FOUNDATION AS SHOWN ON STRUCTURAL DRAWINGS.
8. THE EXISTING SHALL BE ASSEMBLED AND MOUNTED TO THE NEW FOUNDATION.
9. ANTENNA AND CABLES SHALL BE INSTALLED TO MATCH EXISTING CONFIGURATION.
10. NEW ANTENNAE SHALL BE OPERATIONAL PRIOR TO REMOVING TEMPORARY ANTENNAE.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

BY	MARK	DATE	DESCRIPTION
TG	1	08/21/18	PER ADDENDUM NO. 2
EDJ	2	08/28/18	PER ADDENDUM NO. 3

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS ELECTRICAL SITE PLAN - 1

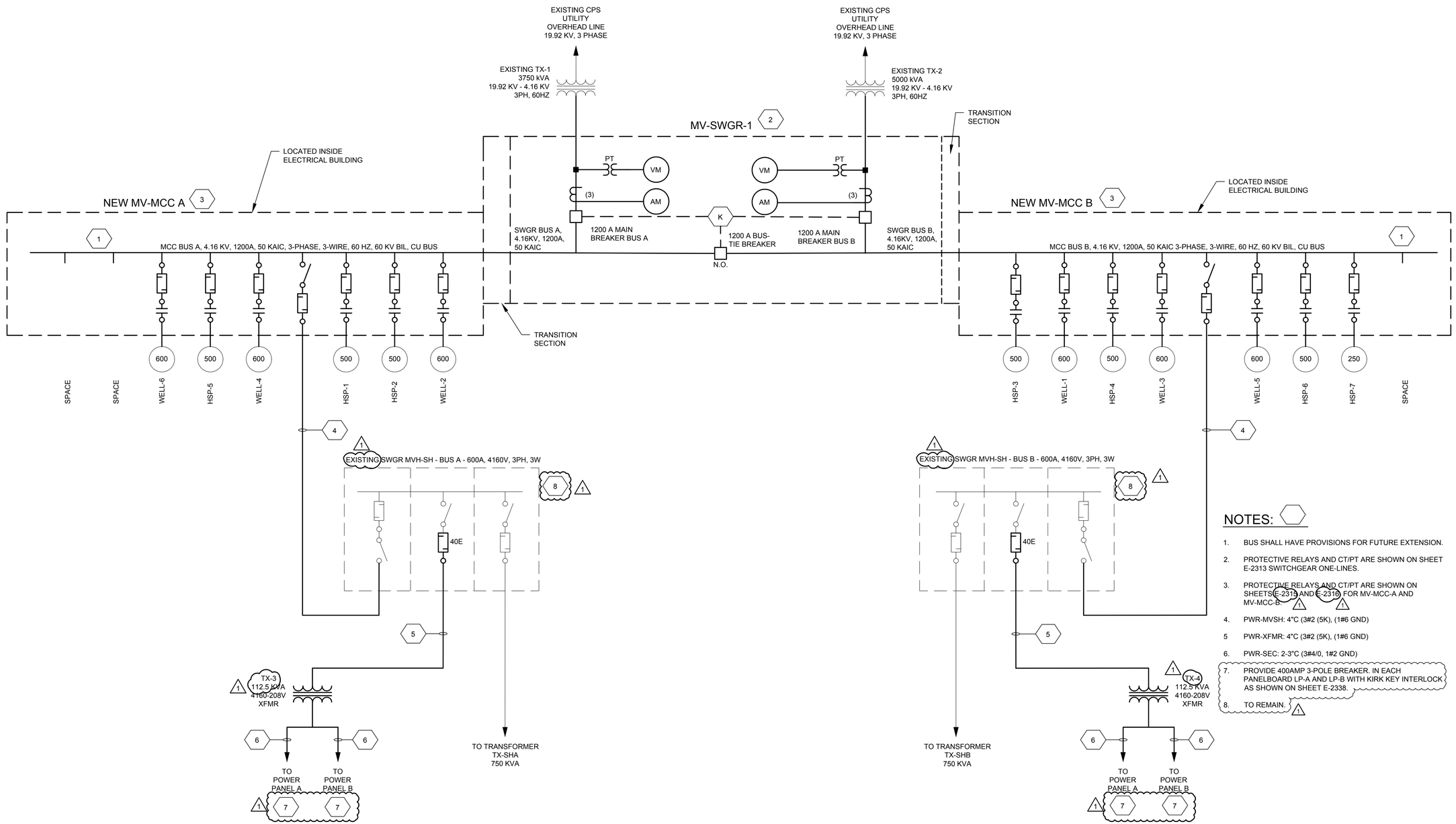
STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2304

Bar measures 1 inch, otherwise drawing is not to scale

8/29/2018 5:52:51 PM - \\TTS963FS1\PROJECTS\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS ELECTRICAL SITE PLAN - I.DWG - GOBROGGE, TIM



NOTES:

1. BUS SHALL HAVE PROVISIONS FOR FUTURE EXTENSION.
2. PROTECTIVE RELAYS AND CT/PT ARE SHOWN ON SHEET E-2313 SWITCHGEAR ONE-LINES.
3. PROTECTIVE RELAYS AND CT/PT ARE SHOWN ON SHEETS E-2315 AND E-2316 FOR MV-MCC-A AND MV-MCC-B.
4. PWR-MVSH: 4"C (3#2 (5K), (1#6 GND)
5. PWR-XFMR: 4"C (3#2 (5K), (1#6 GND)
6. PWR-SEC: 2-3"C (3#4/0, 1#2 GND)
7. PROVIDE 400AMP 3-POLE BREAKER. IN EACH PANELBOARD LP-A AND LP-B WITH KIRK KEY INTERLOCK AS SHOWN ON SHEET E-2338.
8. TO REMAIN.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM NO. 3	EDJ

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

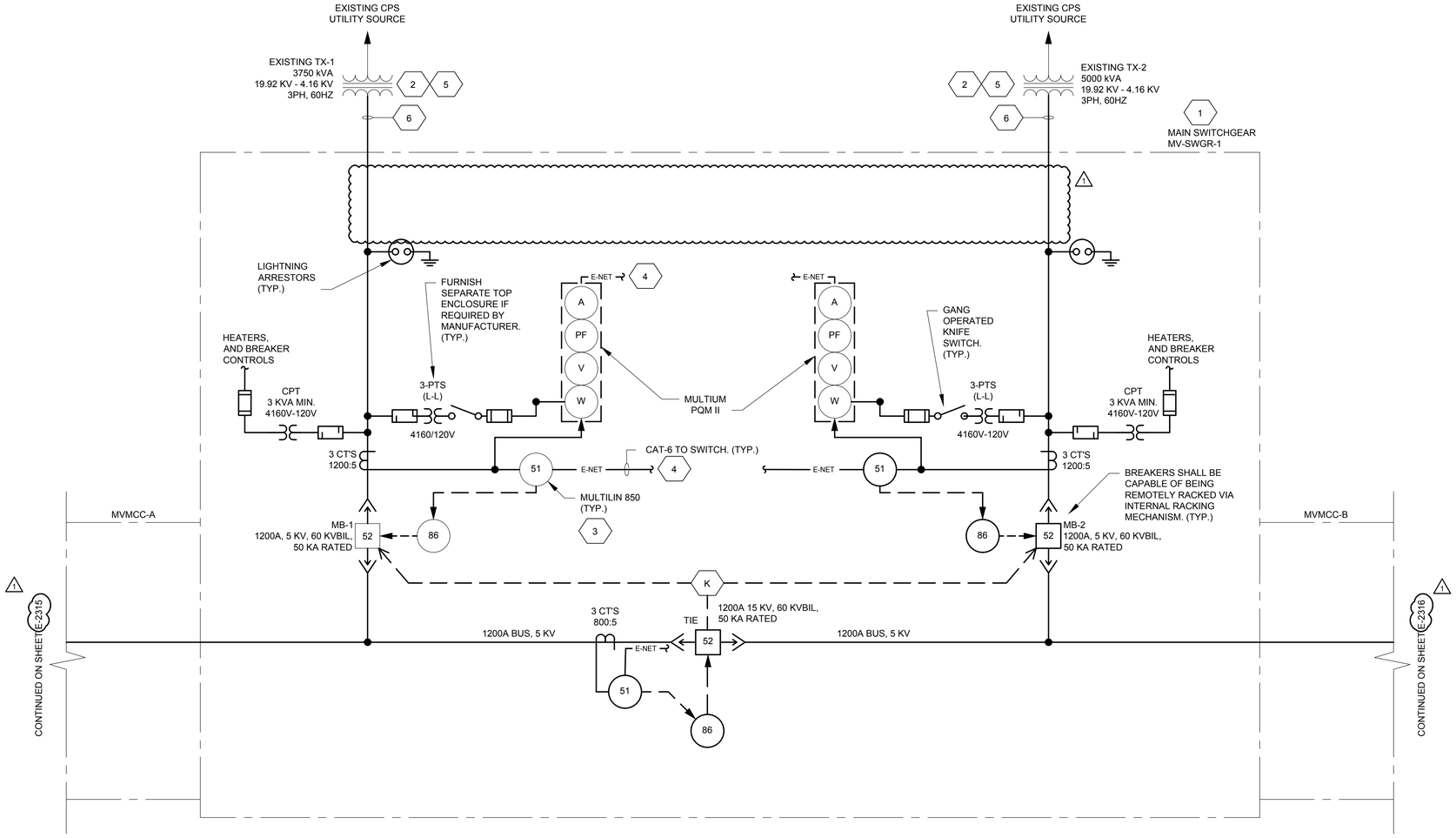
MALTSBERGER PS POWER DISTRIBUTION FUNCTIONAL DIAGRAM

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2312

Bar measures 1 inch, otherwise drawing is not to scale



MAIN SWITCHGEAR ONE-LINE DIAGRAM

NOTES:

1. THE CONTRACTOR SHALL SET THE RELAYS BASED ON POWER SYSTEM STUDIES.
2. CPS PAD MOUNTED TRANSFORMER.
3. SWITCHGEAR MANUFACTURER SHALL SUPPLY MEDIA CONVERTERS AS REQUIRED.
4. SWITCHGEAR MANUFACTURER SHALL FURNISH AND INSTALL NETWORK SWITCH.
5. CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH CPS.
6. PWR-UTILIFY: 3-4"C(500 KCMIL (5KV), 1-3/0 GND).

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM NO. 3	EDJ

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
MALTSBERGER PS NEW
MAIN SWITCHGEAR
MV-SWGR-1 ONE-LINE DIA.

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED
PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2313

Bar measures 1 inch, otherwise drawing is not to scale

8/29/2018 6:12:09 PM - \\TTS063FS1\PROJECTS\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPE - 2313 MALTSBERGER PS NEW MAIN SWITCHGEAR MV-SWGR-1 ONE-LINE DIAGRAM.DWG - GOBROGGE, TIM

NEW MVMCC-A

MCC BUS A, 4.16KV, 1200A, 50 KAIC

PT(3) — TO MOTOR CONTROLLERS (1)

ISO. SWITCH (TYP.)

6R FUSE

5R FUSE

200A

86

PFCC

PT(3)

CTS(3) 150:5

MPR MULTILIN 869

46 48 50 51 51N AM AS OL

E-NET

4#14 → TO SCP (2)

25E

CONTINUED ON SHEET E-2313 (1)

1"C (CAT 6) → TO NETWORK PANEL (3)

3 - 1/C #2 EPR 5KV
1 - 1/C #6 GND

WELL-6 — 600

HSP-5 — 500

WELL-4 — 600

HSP-1 — 500

HSP-2 — 500

WELL-2 — 600

TO SWITCHGEAR MVH-SH - BUS A

NOTES:

1. SWITCHGEAR MANUFACTURER SHALL FURNISH AND INSTALL NETWORK SWITCH.
2. CONTRACTOR MAN COMBINE ALARM CIRCUITS INTO ONE CONDUIT.
3. CONTRACTOR SHALL ROUTE CONDUIT TO NETWORK PANEL AND CONNECT TO NEW NETWORK SWITCH.

NEW MVMCC-A ONE-LINE DIAGRAM

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
3/28/2018

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS
NEW MV-MCC-A
ONE-LINE DIAGRAM

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2315

Bar measures 1 inch, otherwise drawing is not to scale

2018-08-28 03:11:53 PM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPVE - 2315 MALTSBERGER PS NEW MV-MCC-A ONE-LINE DIAGRAM.DWG - PRINGLE, ROBBIE

NEW MVMCC-B

PT(3) — TO MOTOR CONTROLLERS (1)

MCC BUS B, 4.16KV, 1200A, 50 KAIC

CONTINUED ON SHEET E-2313 (1)

	HSP-3	WELL-1	HSP-4	WELL-3	WELL-5	HSP-6	HSP-7
ISO. SWITCH (TYP.)	✓	✓	✓	✓	✓	✓	✓
FUSE	5R	6R	5R	5R	5R	5R	5R (1)
							25E (1)
200A	✓	✓	✓	✓	✓	✓	✓
86	✓	✓	✓	✓	✓	✓	✓
PFCC	✓	✓	✓	✓	✓	✓	✓
E-NET (1)	✓		✓	✓	✓		✓
38	✓	✓	✓	✓	✓	✓	✓
46	✓	✓	✓	✓	✓	✓	✓
47	✓	✓	✓	✓	✓	✓	✓
48	✓	✓	✓	✓	✓	✓	✓
49	✓	✓	✓	✓	✓	✓	✓
51	✓	✓	✓	✓	✓	✓	✓
AM	✓	✓	✓	✓	✓	✓	✓
AS	✓	✓	✓	✓	✓	✓	✓
OL	✓	✓	✓	✓	✓	✓	✓
PT(3)	✓	✓	✓	✓	✓	✓	✓
MPR MULTILIN 869	✓	✓	✓	✓	✓	✓	✓
CTS(3) 150:5	✓	✓	✓	✓	✓	✓	✓
E-NET (1)	✓	✓	✓	✓	✓	✓	✓
4#14 TO SCP (2)	✓	✓	✓	✓	✓	✓	✓
3 - 1/C #2 EPR 5KV 1 - 1/C #6 GND	✓	✓	✓	✓	✓	✓	✓
500 / 600	500	600	500	500	500	500	500

1"C (CAT 6) (1) — TO SWITCHGEAR MVH-SH - BUS B; TO NETWORK PANEL (3)

NOTES:

1. SWITCHGEAR MANUFACTURER SHALL FURNISH AND INSTALL NETWORK SWITCH.
2. CONTRACTOR MAN COMBINE ALARM CIRCUITS INTO ONE CONDUIT.
3. CONTRACTOR SHALL ROUTE CONDUIT TO NETWORK PANEL AND CONNECT TO NEW NETWORK SWITCH.

NEW MVMCC-B ONE-LINE DIAGRAM

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

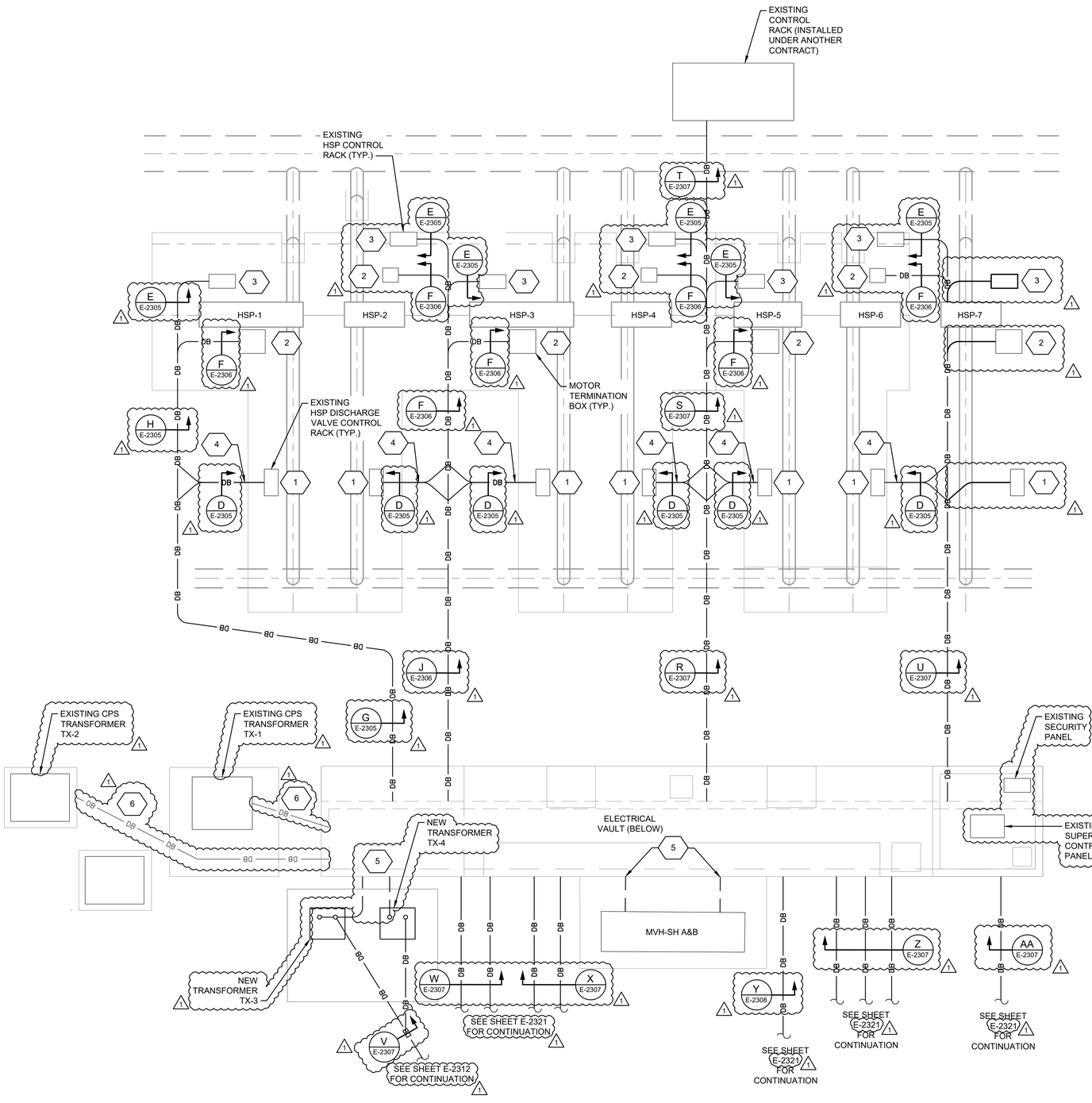
MALTSBERGER PS NEW MV-MCC-B ONE-LINE DIAGRAM

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2316

Bar measures 1 inch, otherwise drawing is not to scale



1 ENLARGED POWER PLAN
SCALE: 1/8" = 1'-0"

NOTES:

1. CONTRACTOR SHALL ROUTE NEW DUCTBANK TO THE EXISTING HSP DISCHARGE VALVE CONTROL RACK. CONDUIT SIZE AND WIRE FILL SHALL BE AS SHOWN ON E-2336 HSP RISER DIAGRAM.
2. CONTRACTOR SHALL ROUTE NEW DUCTBANK TO MOTOR TERMINATION BOX. FURNISH AND INSTALL NEW CONDUIT INTO BOX FOR NEW MOTOR FEEDER.
3. CONTRACTOR SHALL ROUTE NEW DUCTBANK TO HSP CONTROL RACK. CONDUIT SIZE AND WIRE FILL SHALL BE AS SHOWN ON E-2336 HSP RISER DIAGRAM.
4. NEW DUCTBANK SHALL BE ROUTED TO EXISTING DEVICES LOCATION AFTER EXISTING DUCTBANKS ARE REMOVED.
5. CONTRACTOR SHALL REUSE CONDUIT TO FUSED SWITCH FOR TRANSFORMERS TX-3 AND TX-4. INSTALL NEW CONDUIT TO TRANSFORMER. INSTALL NEW CONDUCTORS AS SHOWN ON E-2312.
6. CONTRACTOR SHALL USE EXISTING CONDUIT FROM CPS TRANSFORMERS. FURNISH AND INSTALL NEW CONDUCTORS AS SHOWN ON E-2312.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION
1	08/28/18	PER ADDENDUM NO. 3

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSGERGER PS ELECTRICAL ENLARGED POWER PLAN

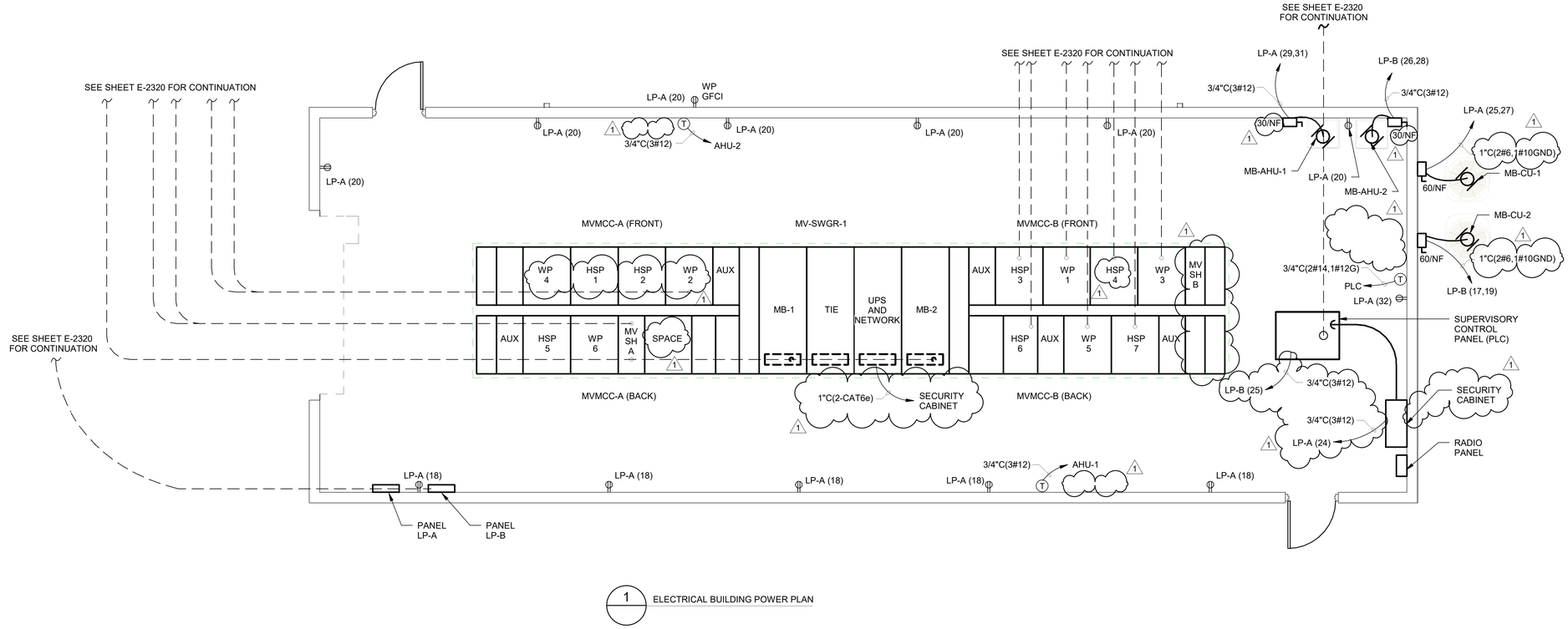
STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2320

Bar measures 1 inch, otherwise drawing is not to scale

8/28/2018 4:18:34 PM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPE - 2320 MALTSGERGER PS ELECTRICAL ENLARGED POWER PLAN.DWG - JOHNSON, EDWARD



1 ELECTRICAL BUILDING POWER PLAN

N

0 2' 4' 8'

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

TETRA TECH
TBPE REG NO. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM No. 3	EDJ

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
PROJECT PUMP STATION IMPROVEMENTS

MALTSBERGER PS ELECTRICAL BLDG. POWER PLAN

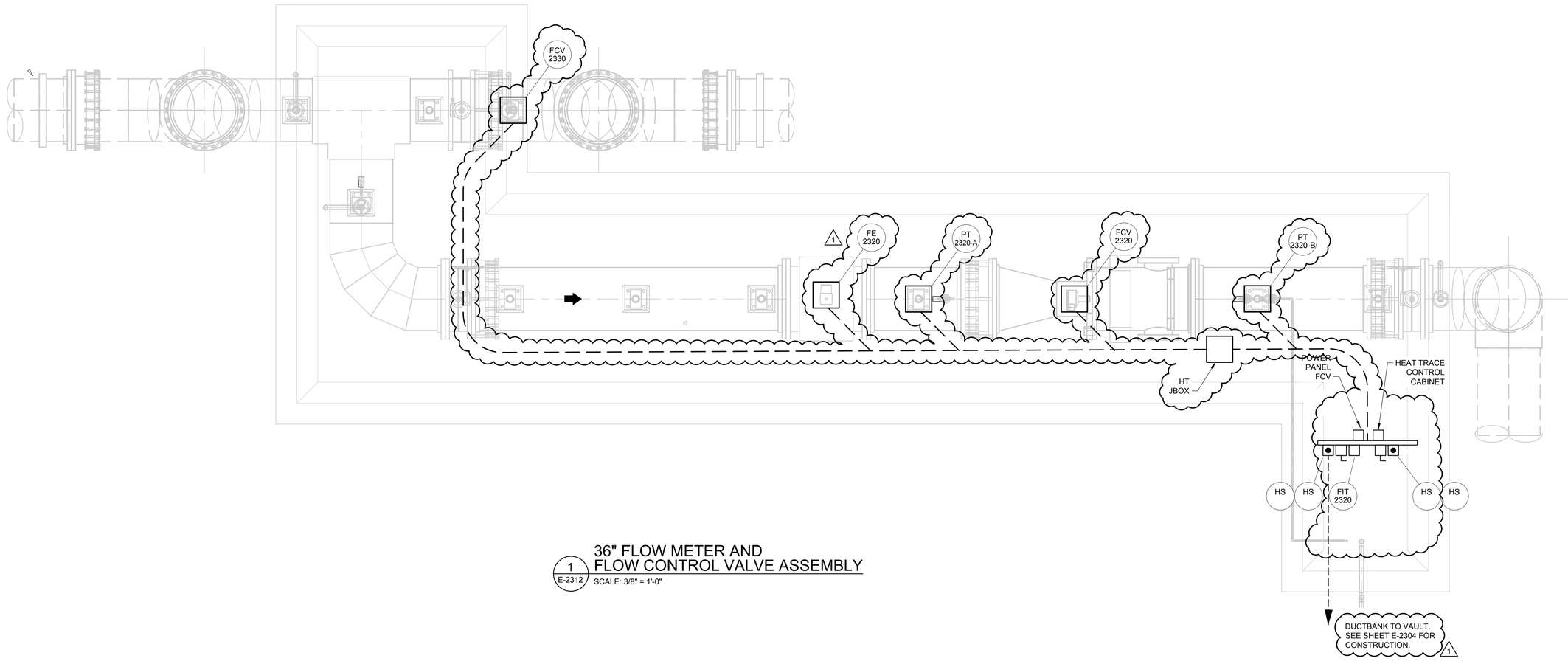
STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN	TDG
DRWN	EDJ
CHKD	-

E-2321

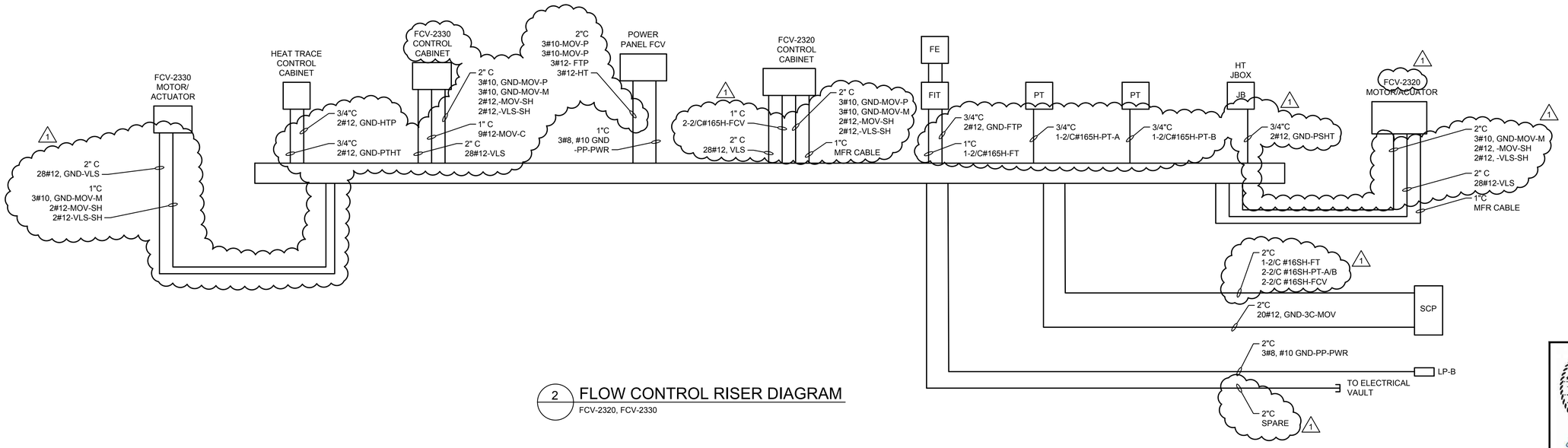
8/30/2018 10:28:29 AM A360://200-09308-18001 CWIPP/09308-02-02-MALT-E-2017.rvt

Bar measures 1 inch, otherwise drawing is not to scale



1 E-2312 36" FLOW METER AND FLOW CONTROL VALVE ASSEMBLY

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



2 FLOW CONTROL RISER DIAGRAM

FCV-2320, FCV-2330

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	NRG

SAN ANTONIO WATER SYSTEM

CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS ELEC. FLOW CONTROL VALVE POWER PLAN

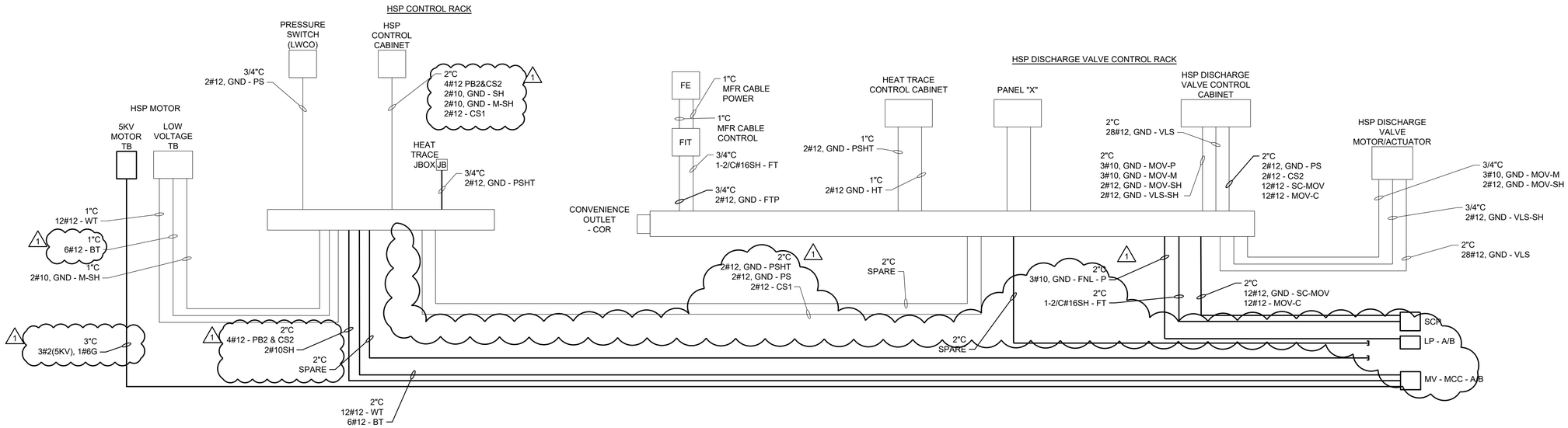
STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2324

Bar measures 1 inch, otherwise drawing is not to scale

8/29/2018 6:13:56 PM - \\TTS063FS1\PROJECTS\09308\200-09308-18001-CVCAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\E - 2324 MALTSBERGER PS ELECTRICAL FLOW CONTROL VALVE POWER PLAN.DWG - GOBROGGE, TIM



1 - HIGH SERVICE PUMP RISER DIAGRAM

NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL NEW CONDUIT AS SHOWN FROM NEW ELECTRICAL BUILDING TO EXISTING FIELD DEVICES.
2. CONTRACTOR SHALL FURNISH AND INSTALL NEW CONDUCTORS AND CABLES AS SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING FIRST TERMINATION AT FIELD DEVICE TO DETERMINE UNITS OF REPLACEMENT. NO SPLICES SHALL BE ALLOWED. (1)
3. NEW CONDUITS TO BE ROUTED TO EXISTING ELECTRICAL VAULT AND THEN TO EQUIPMENT IN NEW ELECTRICAL BUILDING.
4. SPARE CONDUITS SHALL BE ROUTED FROM FIELD CONTROL RACKS TO EXISTING ELECTRICAL VAULT.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION
1	08/28/18	PER ADDENDUM #3

BY: RWP

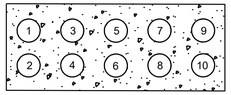
SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
MALTSBERGER PS
HIGH SERVICE PUMP
RISER DIAGRAM

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

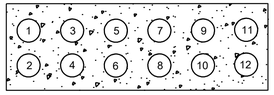
E-2336

Bar measures 1 inch, otherwise drawing is not to scale



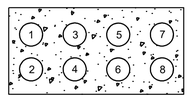
A E-2341 DUCTBANK SECTION

TABLE FOR SECTION A			
CONDUIT NO.	CONDUIT TAG	CONDUIT SIZE	DESCRIPTION
1	FOC-4 & FOC-5	2"	CAMERA 4 & 5 (1)
2	LA-74	2"	CAMERA 4 & 5 POWER
3	SPARE	2"	-
4	FCV-P	2"	FCV (480V)
5	FT, PT, FCV	2"	ANALOG FCV AND METER
6	VLSX (1)	2"	DIGITAL FCV, METER (1)
7	FCV-P. FT-P, HT	2"	FCV AND METER(120V)
8	SPARE (1)	2"	- (1)
9	SPARE	2"	-
10	SPARE	2"	-



C E-2341 DUCTBANK SECTION

TABLE FOR SECTION C			
CONDUIT NO.	CONDUIT TAG	CONDUIT SIZE	DESCRIPTION
1	FOC-4 & FOC-5	2"	CAMERA 4 & 5 (1)
2	LA-74, LA-53	2"	CAMERA 4 & 5, 6 & 7 AND POWER LEAK DETECTION HEATER
3	FOC-7 & FOC-8	2"	CAMERA 4 & 5 POWER
4	LDP-4	2"	LEAK DETECTION PANEL
5	PLCH-215, PLCH-216 & PLCH-217	2"	FLUORIDE/CHLORINE ANALYZER TO PLC
6	LA-77, 79, 81 LU1-21	2"	AIT-31, AIT-320 (120V), HEATER, HEAT TRACE, A/C
7	FCV-P	2"	FCV (480V)
8	FT, PT, FCV	2"	ANALOG FCV AND METER
9	VLSX (1)	2"	DIGITAL FCV, METER (1)
10	FCV-P. FT-P, HT	2"	FCV AND METER(120V)
11	SPARE (1)	2"	- (1)
12	SPARE	2"	-



B E-2341 DUCTBANK SECTION

TABLE FOR SECTION B			
CONDUIT NO.	CONDUIT TAG	CONDUIT SIZE	DESCRIPTION
1	FCV-P	2"	FCV (480V)
2	FT, PT, FCV	2"	ANALOG FCV AND METER
3	VLSX (1)	2"	DIGITAL FCV, METER (1)
4	FCV-P. FT-P, HT	2"	FCV AND METER(120V)
5	SPARE (1)	2"	- (1)
6	SPARE	2"	-
7	SPARE	2"	-
8	SPARE	2"	-

(1)

NOTES:

1. DUCTBANKS TO BE INSTALLED UNDER BASIN PUMP STATION IMPROVEMENTS PHASE II PROJECT. CONTRACTOR SHALL FURNISH AND INSTALL NEW CONDUCTORS.
2. REFER TO SHEET E-2343 FOR ADDITIONAL INFORMATION.

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

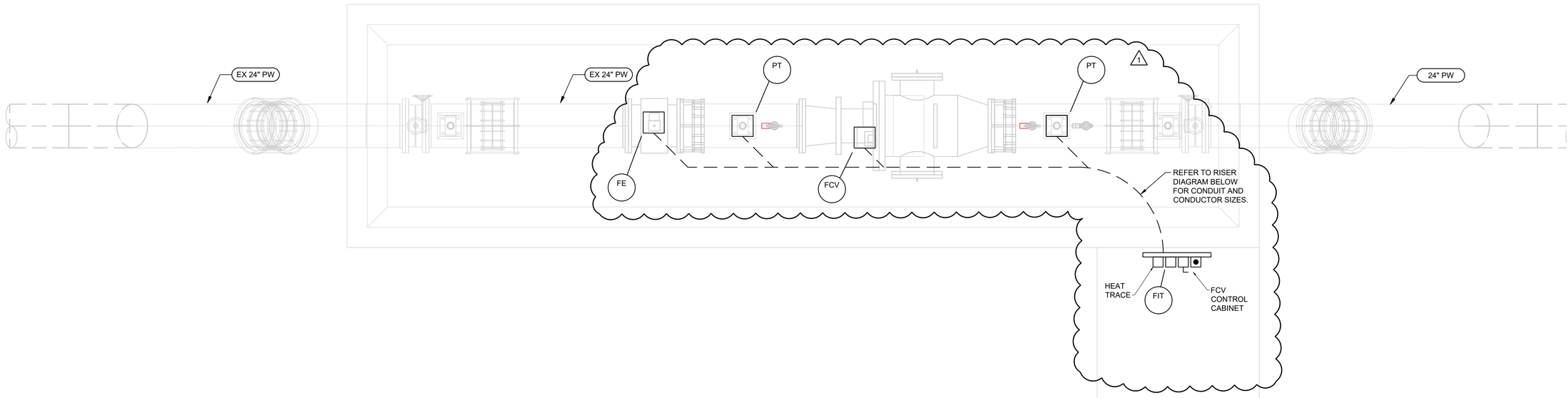
BASIN PS DUCTBANK SECTIONS - I

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

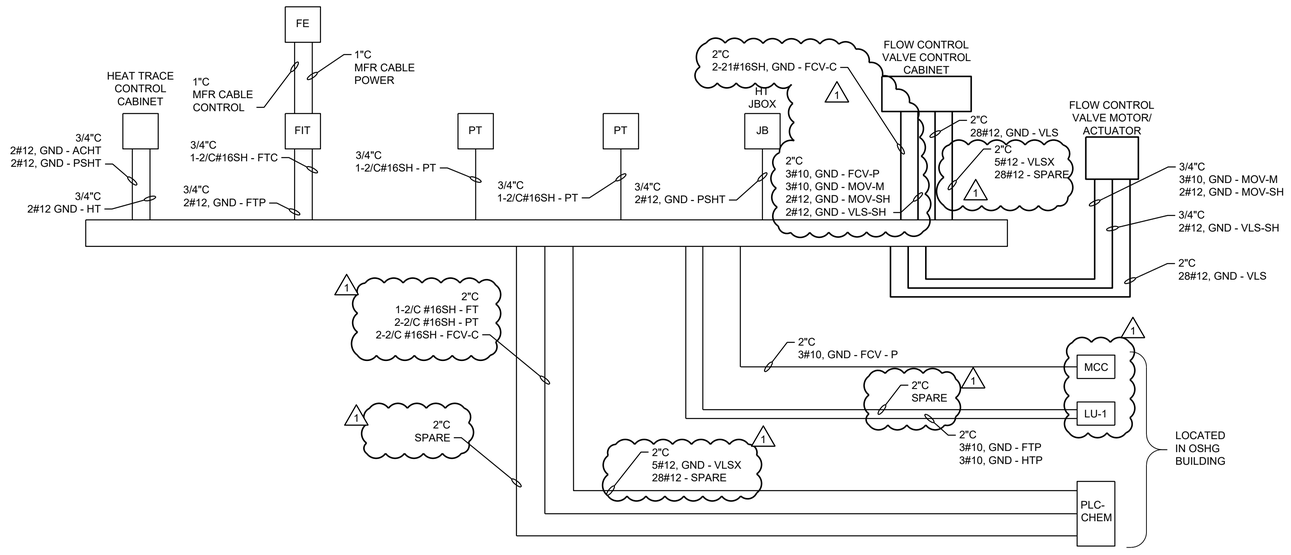
PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EJ
CHKD:	-

E-2342

Bar measures 1 inch, otherwise drawing is not to scale



1 FLOW CONTROL VALVE
E-2341 SCALE: 3/8" = 1'-0"



2 FLOW CONTROL RISER DIAGRAM
SCALE: NTS

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
BASIN PS ELECTRICAL
FLOW CONTROL VALVE
POWER PLAN

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

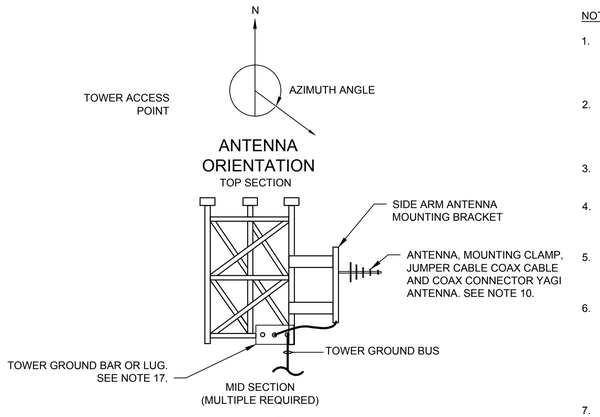
PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

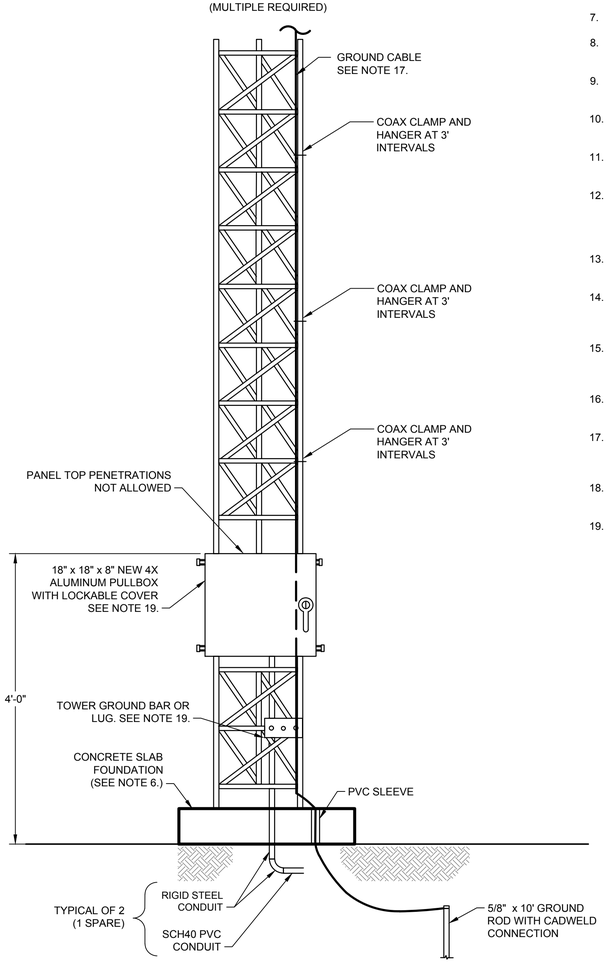
E-2343

Bar measures 1 inch, otherwise drawing is not to scale

2018-08-28 04:17:10 PM - O:\PROJECTS\SAN ANTONIO\09308\200-09308-18001-C\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMP\E - 2343 BASIN PS ELECTRICAL FLOW CONTROL VALVE POWER PLAN.DWG - PRINGLE, ROBBIE

LATTICE TYPE ANTENNA MAST DETAIL



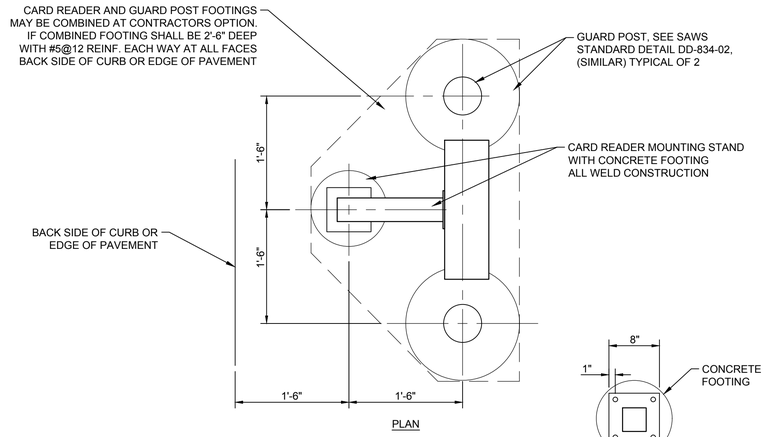


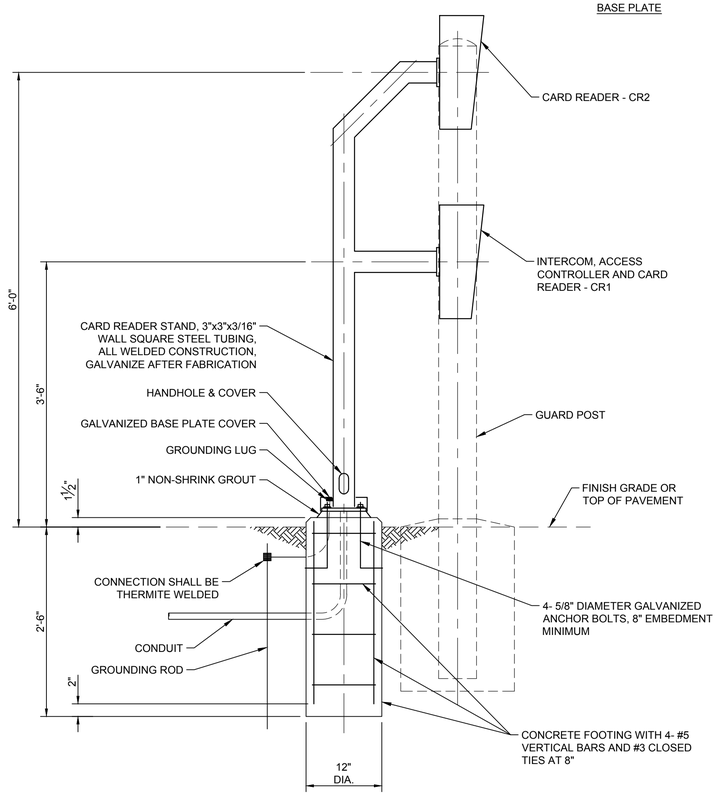
NOTES:

1. CONTRACTOR SHALL RELOCATE EXISTING TOWER AS SHOWN ON SHEET E-2304. CONTRACTOR SHALL FURNISH AND INSTALL NEW ANCHOR BASE TO MATCH EXISTING TO ATTACH TOWER TO NEW CONCRETE PAD.
2. CONTRACTOR SHALL RECORD EXISTING MAST HEIGHT, ANTENNA(E) HEIGHTS AND AZIMUTH. CONTRACTOR SHALL INSTALL MAST IN NEW LOCATION AT A MINIMUM HEIGHT TO MATCH EXISTING AND RE-ALIGN ANTENNA FOR ACCESS POINT AT NORTH RIDGE.
3. CONTRACTOR SHALL PROVIDE ALL NECESSARY ACCESSORIES NEEDED TO MOUNT ANTENNA(E).
4. CONTRACTOR TO USE CABLE CLAMPS AND HANGERS BY ANDREW OF EQUAL SUITABLE FOR HANGING CAT5e OR HELIAX CABLE. HOSE CLAMPS AND WIRE TIES ARE NOT ALLOWED.
5. FOR ALL REQUIRED MATERIAL SPECIFICATIONS, EQUIPMENT INSTALLATION, NOTES AND TOLERANCES SEE MANUFACTURER DRAWINGS.
6. DESIGN OF MAST AND FOUNDATION TO BE PROVIDED BY CONTRACTOR. FOUNDATION AND MAST STRUCTURE SHALL BE DESIGNED BY A P.E. REGISTERED BY THE STATE OF TEXAS. CONTRACTOR SHALL PROVIDE SUBMITTAL FOR ANTENNA FOUNDATION FOR ENGINEER REVIEW. FOUNDATION AND MAST SHALL BE DESIGNED TO SUPPORT ALL SPECIFIED EQUIPMENT AS ARRANGED FOR THE PROVIDED AZIMUTHS.
7. MAST MUST CONFORM TO LATEST CITY OF SAN ANTONIO GUIDELINES.
8. AZIMUTHS IN ARE BASED ON THE CLOCKWISE ANGLE FROM TRUE NORTH AS SHOWN ABOVE.
9. ALL LATTICE MATERIALS WILL BE HOT-DIPPED GALVANIZED AS OUTLINED IN ASTM A-123.
10. YAGI ANTENNA IS SHOWN AS AN EXAMPLE ONLY AS APPLICABLE FOR MOST SITES EQUIPPED WITH NARROWBAND RADIOS.
11. TELECOMMUNICATIONS BONDING AND GROUNDING OF TOWER MUST COMPLY WITH ANSI/TIA/EIA-607-B AND TIA/EIA-222 LATEST EDITION.
12. CONTRACTOR TO SUPPLY ALL NECESSARY SAFETY CLIMBING EQUIPMENT THAT COMPLIES TO OSHA AND ANSI STANDARDS THAT INCLUDE BUT NOT LIMITED TO STEP BOLTS, CABLE SYSTEM, ARRESTORS & CARABINER CABLE GUIDES.
13. CONTRACTOR SHALL SUPPLY ALL ASSOCIATED EQUIPMENT FOR TOWERS PER SPECIFICATION 17515.
14. MAST AND FOUNDATION SHALL BE ENGINEERED TO WITHSTAND 110 MPH, 3 SECOND GUST. LATTICE TYPE MAST SHALL BE ENGINEERED FOR MAXIMUM 80' HEIGHT WITH ANTENNA MOUNTED AT TOP OF MAST.
15. REFER TO SAWS LATEST DESIGN GUIDELINES AS REQUIRED BY SAWS, FOR TOWER GROUNDING DETAIL, COMPLY WITH TOWER GROUNDING REQUIREMENTS PER TOWER MANUFACTURER.
16. CONTRACTOR TO FOLLOW SAWS GUIDELINES AND MANUFACTURERS GUIDELINES GROUND RADIOS.
17. ALL EQUIPMENT NOT SHOWN FOR CLARITY. CONTRACTOR SHALL INSTALL ALL EQUIPMENT PER RADIO MANUFACTURER INSTALLATION MANUAL.
18. TOWER GROUND BAR OR LUG. MADE OF SOLID COPPER. DO NOT DRILL TOWER STRUCTURE.
19. CAT5E CABLE SHALL BE ROUTED THROUGH PULLBOX AND UP TOWER USING CABLE CLAMPS. CABLE SHALL NOT BE ROUTED THROUGH TOP OF PULLBOX. TOP PENETRATIONS WILL NOT BE ACCEPTED BY THE INSPECTORS.

1 DETAIL
SCALE: NTS

GATE CARD READER





SIDE VIEW

2 DETAIL
SCALE: NTS

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

75% SUBMITTAL

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
STANDARD ELECTRICAL DETAILS - MALTSBERGER PS

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

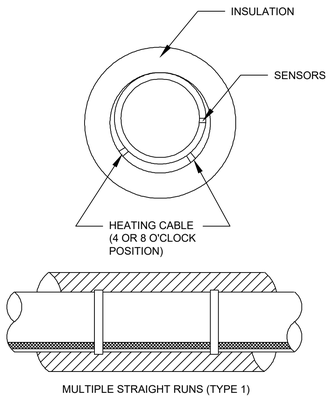
PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2393

Bar measures 1 inch, otherwise drawing is not to scale

8/29/2018 6:38:22 PM - \\TTSI063FS1\PROJECTS\09308\200-09308-18001-CI\CAD\SHEETFILES\MALTSBERGER PS & BASIN IMPIE - 2393 STANDARD ELECTRICAL DETAILS - MALTSBERGER PS.DWG - GOBROGGE, TIM

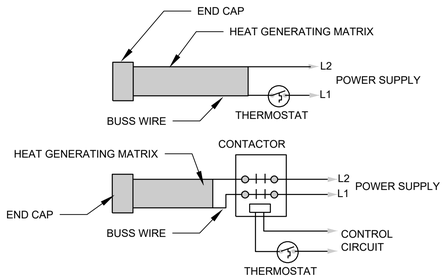
HEATER CABLE WRAP



STRAIGHT TRACING NOTES:
1. WHEN STRAIGHT TRACING IS USED, INSTALL THE HEATER CABLE ON THE LOWER QUADRANT OF THE PIPE. THIS HELPS PREVENT PHYSICAL DAMAGE TO THE HEATER CABLE FROM FALLING OBJECTS AND BEING WALKED ON.
2. ALTERNATIVE LOCATION IS THE 2 AND 10 O'CLOCK POSITION
3. SECURE PIPE AT 12" INTERVALS WITH FIBERGLASS TAPE.

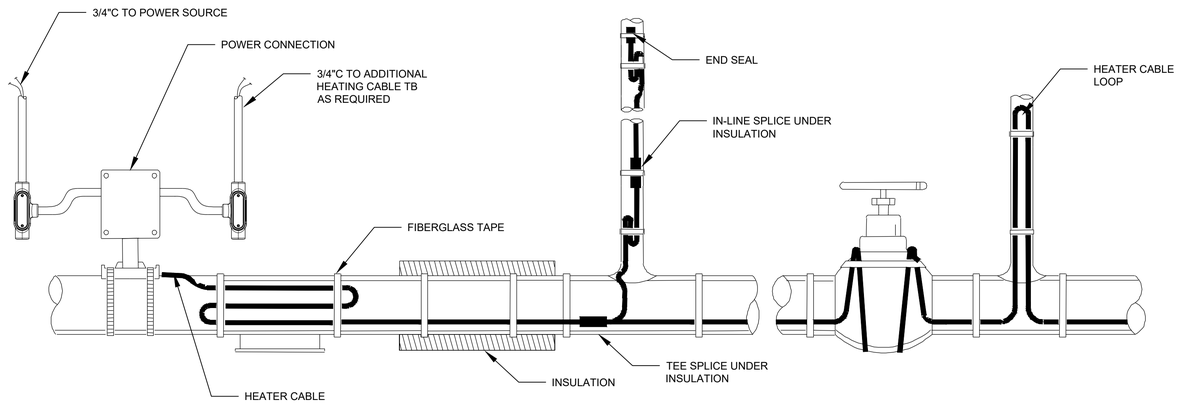
1 DETAIL
SCALE: NTS

TYPICAL HEATER CIRCUIT WIRING DIAGRAM



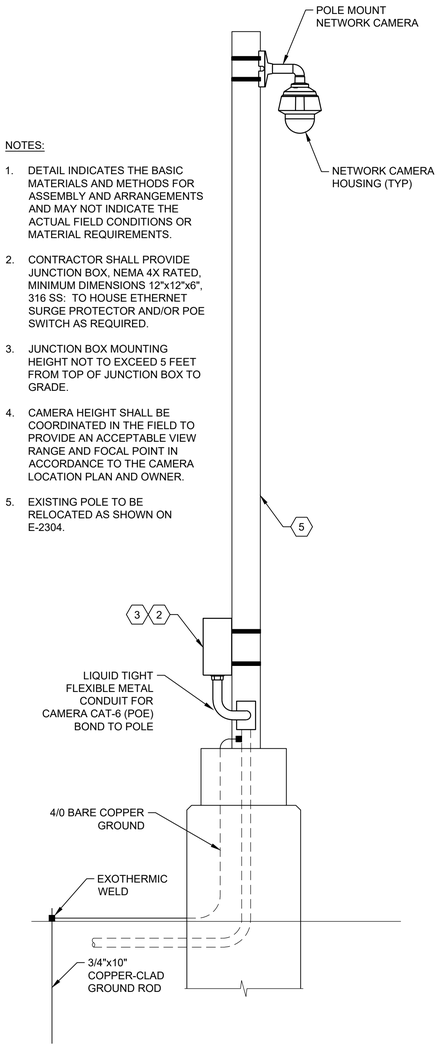
2 DETAIL
SCALE: NTS

TYPICAL INSTALLATION OVERVIEW



3 DETAIL
SCALE: NTS

OUTDOOR POLE MOUNT IP NETWORK CAMERA ON POLE



NOTES:
1. DETAIL INDICATES THE BASIC MATERIALS AND METHODS FOR ASSEMBLY AND ARRANGEMENTS AND MAY NOT INDICATE THE ACTUAL FIELD CONDITIONS OR MATERIAL REQUIREMENTS.
2. CONTRACTOR SHALL PROVIDE JUNCTION BOX, NEMA 4X RATED, MINIMUM DIMENSIONS 12"x12"x6", 316 SS: TO HOUSE ETHERNET SURGE PROTECTOR AND/OR POE SWITCH AS REQUIRED.
3. JUNCTION BOX MOUNTING HEIGHT NOT TO EXCEED 5 FEET FROM TOP OF JUNCTION BOX TO GRADE.
4. CAMERA HEIGHT SHALL BE COORDINATED IN THE FIELD TO PROVIDE AN ACCEPTABLE VIEW RANGE AND FOCAL POINT IN ACCORDANCE TO THE CAMERA LOCATION PLAN AND OWNER.
5. EXISTING POLE TO BE RELOCATED AS SHOWN ON E-2304.

4 DETAIL
SCALE: NTS

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

75% SUBMITTAL

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM #3	RWP

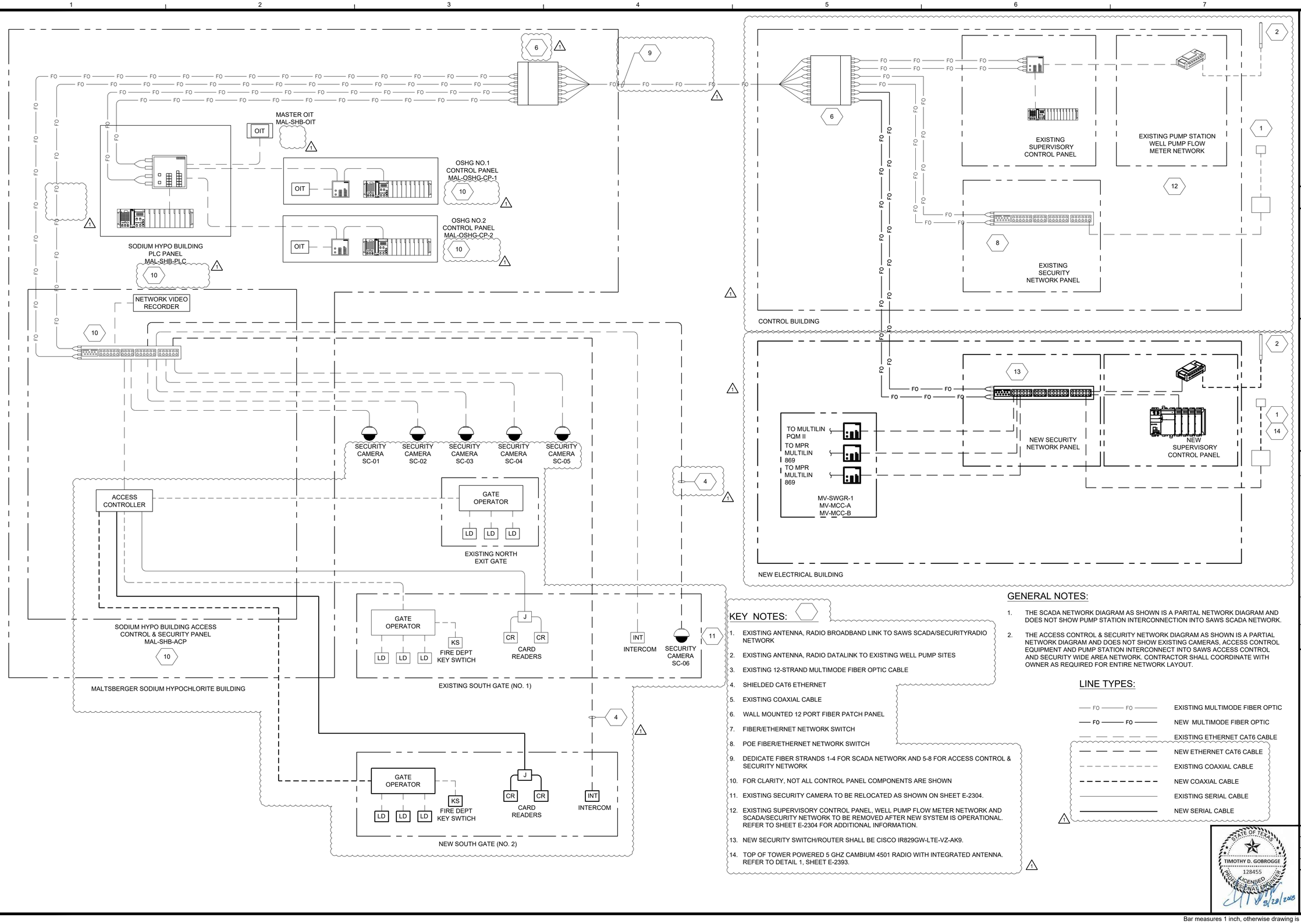
SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS
STANDARD ELECTRICAL DETAILS - BASIN PS

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/28/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

E-2394

Bar measures 1 inch, otherwise drawing is not to scale



KEY NOTES:

1. EXISTING ANTENNA, RADIO BROADBAND LINK TO SAWS SCADA/SECURITYRADIO NETWORK
2. EXISTING ANTENNA, RADIO DATALINK TO EXISTING WELL PUMP SITES
3. EXISTING 12-STRAND MULTIMODE FIBER OPTIC CABLE
4. SHIELDED CAT6 ETHERNET
5. EXISTING COAXIAL CABLE
6. WALL MOUNTED 12 PORT FIBER PATCH PANEL
7. FIBER/ETHERNET NETWORK SWITCH
8. POE FIBER/ETHERNET NETWORK SWITCH
9. DEDICATE FIBER STRANDS 1-4 FOR SCADA NETWORK AND 5-8 FOR ACCESS CONTROL & SECURITY NETWORK
10. FOR CLARITY, NOT ALL CONTROL PANEL COMPONENTS ARE SHOWN
11. EXISTING SECURITY CAMERA TO BE RELOCATED AS SHOWN ON SHEET E-2304.
12. EXISTING SUPERVISORY CONTROL PANEL, WELL PUMP FLOW METER NETWORK AND SCADA/SECURITY NETWORK TO BE REMOVED AFTER NEW SYSTEM IS OPERATIONAL. REFER TO SHEET E-2304 FOR ADDITIONAL INFORMATION.
13. NEW SECURITY SWITCH/ROUTER SHALL BE CISCO IR829GW-LTE-VZ-AK9.
14. TOP OF TOWER POWERED 5 GHZ CAMBIUM 4501 RADIO WITH INTEGRATED ANTENNA. REFER TO DETAIL 1, SHEET E-2393.

GENERAL NOTES:

1. THE SCADA NETWORK DIAGRAM AS SHOWN IS A PARITAL NETWORK DIAGRAM AND DOES NOT SHOW PUMP STATION INTERCONNECTION INTO SAWS SCADA NETWORK.
2. THE ACCESS CONTROL & SECURITY NETWORK DIAGRAM AS SHOWN IS A PARTIAL NETWORK DIAGRAM AND DOES NOT SHOW EXISTING CAMERAS, ACCESS CONTROL EQUIPMENT AND PUMP STATION INTERCONNECT INTO SAWS ACCESS CONTROL AND SECURITY WIDE AREA NETWORK. CONTRACTOR SHALL COORDINATE WITH OWNER AS REQUIRED FOR ENTIRE NETWORK LAYOUT.

LINE TYPES:

- EXISTING MULTIMODE FIBER OPTIC
- NEW MULTIMODE FIBER OPTIC
- EXISTING ETHERNET CAT6 CABLE
- NEW ETHERNET CAT6 CABLE
- EXISTING COAXIAL CABLE
- NEW COAXIAL CABLE
- EXISTING SERIAL CABLE
- NEW SERIAL CABLE

TETRA TECH
Texas Registration No. F-3924
www.tetratech.com
700 N. St Mary's, Suite 300
San Antonio, TX 78205
Ph (210) 299-7900 Fax (210) 226-8497

BID SET

SAN ANTONIO WATER SYSTEM

MARK	DATE	DESCRIPTION	BY
1	08/28/18	PER ADDENDUM NO. 3	TG

SAN ANTONIO WATER SYSTEM
CENTRAL WATER INTEGRATION PIPELINE
MALTSBERGER PS IMPROVEMENTS

MALTSBERGER PS PCS NETWORK ARCHITECTURE DIAGRAM I

STATE OF TEXAS
TIMOTHY D. GOBROGGE
128455
LICENSED PROFESSIONAL ENGINEER
8/29/2018

PROJ:	200-09308-18001
DESN:	TDG
DRWN:	EDJ
CHKD:	-

I-2311

Bar measures 1 inch, otherwise drawing is not to scale