



Randolph Pump Station Improvements Project
Solicitation Number: CO-00459
Job No.: 20-8611

ADDENDUM NO. 6
January 18, 2023

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the Respondent Questionnaire.

RESPONSES TO QUESTIONS

- 1. Question: Contract Drawing S-12 Detail 4 which clearly referring to Transformer No.1. For the purpose of this project we're only going to do The Phase 1 or Phase 1 & Phase 2. Please advise.**

Response: Detail 4/S-12 has been updated to remove references to Phase 1 and Phase 2. See Item No. 11 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet S-12. Sheet S-12 contains the structural details for the OSG Building and Electrical Building transformer pads. Sheet EZ-8 contains the standard details for the CPS Energy transformer pad. See Item No. 25 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet EZ-8 and Item No. 1 in the CHANGES TO THE PLANS section of this addendum for the update to the CPS Energy transformer pad location.

- 2. Question: Sheet CP-1 indicates where to install various cathodic protection. Flange insulating kits TS-8, TS-9 and TS-10 are to be installed upstream of the isolation valves which requires the tank be out of service and drained. Spec Section 01 35 00 does not indicate any allowable timeframe to have the tank out of service. Please confirm how much time the tank can be out of service for the flange insulating kit installations.**

Response: Insulating flange kits to be installed downstream of the tank outlet isolation valves and upstream of the tank inlet isolation valve. See Item Nos. 2, 3 and 28 in the CHANGES TO THE PLANS section of this addendum. For updates to allowable shutdowns and critical operations, see Item No. 1 in the CHANGES TO THE SPECIFICATIONS section of this addendum.

- 3. Question: On Sheet CP-1 Cathodic Protection System Overall Site Plan, at existing 16" DI Water Line tee to existing 42" Water Line (TS-2) what is the depth of the tee, is there an existing flange at the tee and are these lines able to be shutdown for installation of the Insulating Flange Kit?**

Response: Depth of tee is approximately 5'. There is an existing flange at the tee that can be used for the tie-in connection. See Item No. 1 in the CHANGES TO THE SPECIFICATIONS section of this addendum for updated Section 01 35 00 that describes allowable shutdowns of the existing wells.

- 4. Question: Sheet S-6 and S-12 show Transformer Pads that depict a Phase 1 and 2 size. The plan view shows a 2" x 8" perimeter curb. Is the curb between Phase 1 and 2 to be removed and patched back? Please advise.**

Response: Phase 1 and Phase 2 references have been removed. See Item No. 8 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet S-6, and Item No. 11 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet S-12.

5. **Question: On Sheet CP-1 Cathodic Protection System Overall Site Plan, at existing 24" CSC Water Line tee to new 16" Drain Line (Wells No. 2 & 3 Blow-off Drain) what is the depth of the tee, is there an existing flange at the tee and is the existing 24" CSC line able to be shutdown for installation of the Insulating Flange Kit?**

Response: Depth of tee is approximately 10'. There is an existing flange at the tee that can be used for the tie-in connection. See Item No. 1 in the CHANGES TO THE SPECIFICATIONS section of this addendum for updated Section 01 35 00 that describes allowable shutdowns of the existing wells.

6. **Question: On Sheet CP-1 Cathodic Protection System Overall Site Plan, at existing 24" CSC Water Line tee to new 16" Drain Line (Well No. 1 Blow-off Drain) what is the depth of the tee, is there an existing flange at the tee and is the existing 24" CSC line able to be shutdown for installation of the Insulating Flange Kit?**

Response: Depth of tee is approximately 6'. There is an existing flange at the tee that can be used for the tie-in connection. See Item No. 1 in the CHANGES TO THE SPECIFICATIONS section of this addendum for updated Section 01 35 00 that describes allowable shutdowns of the existing wells.

7. **Question: Instructions To Respondents 5.g. requires the Respondent to provide a letter from their insurance provider confirming provider's commitment to insure the Contractor for the types of coverage's as outlined in the insurance requirements. Per industry standard, please accept letters issued by Respondent's insurance agent.**

Response: SAWS can accept a letter from a Respondent's insurance broker, but if the Respondent is selected confirmation will be required to verify the Respondent can meet the requirements via receipt of a Certificate of Insurance prior to awarding the contract.

8. **Question: General Conditions, 5.7.1.7 requires the Contractor's Pollution Liability insurance to provide coverage for all subcontractors. This will require the procurement of a project-specific pollution liability policy as Contractor's corporate pollution policy does not provide coverage for unrelated parties. Please consider striking this requirement, as Contractor will be vicariously liable for subcontractors' negligence and procuring a project-specific policy will add additional cost to the bid. ~~"Coverage will include all subcontractors hired by Contractor to perform any work on the Project or under this Contract."~~**

Response: No changes will be made. This will remain a requirement of the Contract.

9. **Question: General Conditions, 9.2.2 states that upon Partial Acceptance, there will be a determination of responsibilities for the Work or portion thereof. As builders' risk insurance ends at the time the Work is put into use, insurance should be removed from this list. Please confirm the same.**

Response: The Builder's Risk policy will need to be endorsed with a "Permission to Occupy Endorsement" so that the policy will not end upon "acceptance" partial or otherwise.

10. **Question: On page 35 of the RFCSP it is stated to, "Separate and identify each evaluation criteria response of this RFCSP by use of a divider sheet with an integral tab for ready reference in the order indicated within the Respondent's Proposal Checklist". On page 36 of the RFCSP, in reference to the Evaluation Criteria Form, it states, "Respondents should provide answers to the questions below in the order and spaces provided to ensure continuity between Respondent's submissions". The order of the Evaluation Criteria Form which includes the safety matrix is not in the same order as the Proposal Checklist. Should respondents provide responses in order of the Proposal Checklist or in order of the Evaluation Criteria Form?**

Response: The Evaluation Criteria forms.

11. **Question: Is it acceptable for respondents to modify the header/footer in the provided Word document to add a company branding? Making it easier for SAWS to identify which proposal is from which company.**

Response: Modification to the provided Word document header/footer is not required as company branding is not necessary.

- 12. Question: Page 36 the RFCSP states, "While there are page limits for this solicitation, there are no character limitations". Please confirm there is no overall combined page limitation respondents must adhere to.**

Response: There are no character limitations. Please follow the pages and spaces allocated in the Word document for the Evaluation Criteria Forms, as well as reference the Supplementary Instructions to Respondents when preparing a proposal for this RFCSP.

- 13. Paragraph 3 on page EV-1 (Evaluation Criteria Form) "Respondents should provide answers to the questions below in the order and spaces provided to ensure continuity between Respondent's submissions." Page EV-16 comparable project information form #1. Within this form, the 3 lines allotted are not sufficient to give SAWS enough information to determine project relevancy. Would it be acceptable to adjust the form spacing to allow more than 3 lines for detailed project description?**

Response: Form spacing is allowed so long as the overall form is kept one page.

- 14. Question: Reference Price Proposal, Page PP-1 and Proposal Certification, Page PC-1, Work shall be completed in full within 900 consecutive calendar days. Is Substantial Completion to complete the Project within 900 calendar days after the start date? Please clarify.**

Response: Correct, final completion is 900 calendar days from the start date noted on the Authorization to Proceed.

- 15. Question: Reference Exhibit C Security Procedures, Contractor shall provide background screening information of their employees and subcontractors to CastleBranch. Is the Contractor to carry cost in the Proposal for the screening by CastleBranch or does SAWS cover the cost of the screening? Please clarify.**

Response: Contractor is to cover the cost of the screening by CastleBranch.

- 16. Question: Special Conditions - SC3. Regarding CPS Energy -- please provide a status of the SAWS/CPS agreement, CPS design, and the estimated date the transformers are to be ready for use on the project. These types of transformers have seen dramatic lead-time increases. This information is critical for respondents to provide an accurate CPM schedule with their RFCSP response.**

Response: Since the lead times change frequently based on latest market conditions, it is recommended that Respondents contact CPS Energy and/or equipment manufacturers directly for the most recent lead times.

- 17. Question: In section 01 11 00, part 1.08- A. State that the contractor may not use existing utilities but in same section 01 11 00, part 1.08, B,6 state the contractor may use permanent power when available. Please clarify is the contractor will be able to use existing utilities during construction.**

Response: The Contractor may use permanent power available at the site to feed trailer, construction equipment, etc., but will be responsible for arranging connections and monthly charges for use of this power with the power utility, per Section 01 11 00 Summary of Work, Paragraph 1.08.B.6.b.

- 18. Question: Refer to specification 01 35 00, the well pumps are not mentioned in the 'Special Procedures' specifications, Should the contractor shut down well pumps during the peak load times? If not, what is the maximum acceptable shut down duration?**

Response: Wells are to be shut down for no more than 24 hours during off-peak months (November through February). See Item No. 1 in the CHANGES TO THE SPECIFICATIONS section of this addendum for updated Section 01 35 00 that describes allowable shutdowns of the existing wells.

- 19. Question: Specification 01 35 53 - 1.03 B. 4., Security Procedures, For Owner's facilities where chemicals are present: Contractor shall provide an armed security guard during all times that the work is being performed on the site by the Contractor or his subcontractors. Please clarify during all times that the work is being performed is regular working hours or does SAWS want 24 hours 7 days a week security guard.**

Response: See response to Question No. 25 in Addendum No. 5.

- 20. Question:** In section 03 30 00 call for concrete pavement, gutter, and sidewalks to be 3000 psi. In section 32 13 13 call for sidewalks, curbs, and driveways to be 3500 psi and pavement to be 4000 psi. Please clarify what concrete mix we are to use for sidewalks, curbs, driveways, and pavement.
Response: Section 03 30 00 does not specify strength. A concrete mix of 3,500 psi to be utilized for sidewalks and curbs. Contractor shall use 4,000 psi for concrete pavements and driveways. See Item No. 3 in CHANGES TO THE SPECIFICATIONS section of this addendum.
- 21. Question:** Spec Section 26 42 00.01-1.06.D Permits and Job Access. This section indicates "The Contractor shall submit an application to the local power company for AC power to the new rectifiers. Contractor shall be responsible for all fees and expenses associated with providing power to the rectifiers." Ductbank C4/E-8 indicates the rectifier is powered by panel LA.
Response: Power will be supplied by the on-site electrical panel. See Item No. 4 in the CHANGES TO THE SPECIFICATIONS section of this addendum.
- 22. Question:** Spec Section 33 11 13.13 calls out the buried pipe that is CL/Poly coated to be by one manufacturer. It also states that steel pipe "specials" can be by another fabricator "under the direction and management of a named manufacturer".
Response: Yes, Section 33 11 13.13 Paragraph 1.01.B states "Manufacture of steel pipe and specials shall be under the direction and management of one steel PIPE MANUFACTURER only. This does not prevent a separate supplier from manufacturing specials or fittings; however, all Work shall be directed by the manufacturer of the water piping." This is required for single source responsibility of piping and specials, as included in Section 33 11 13.14.
- 23. Question:** Reference Spec 40 61 26 Process Control System Training 3.02 Specific Requirements B. Manufacturer Training:
Provide one 40-hour block of time at a standard rate for a Rockwell Automation Field Service Engineer to travel on-site for informal training. The time block will consist of 32 hours of onsite training and 8-hours of travel during normal business hours. SAWS will coordinate with Rockwell Automation, through the Contractor, to identify the appropriate schedule and scope for the on-site training. The on-site training will be tailored to meet SAWS needs and may cover installation, configuration or operation of any software packages associated with this project. Rockwell would deliver the "Manufacturer Training" via a 40 hour block of time. This would be an FSE on site to deliver informal training, per the specification. In other words, Rockwell would not be delivering any standard formal training that would include workstations, labs and manuals. It would simply be a 40 hour CBOT." Please Confirm if that is what you all are wanting per the spec?
Response: The expectation is that all materials, supplies, documentation, etc. associated with the required training is to be provided by Rockwell at no additional cost to SAWS.
- 24. Question:** Section 44 42 56.02-2.02 – Vertical Turbine Pumping Units - Please clarify required voltage for all High Service Pump station motors. Section 2.02 refers to 460V low voltage, but electrical one line drawings EA-4/5 show the High Service motors being medium voltage 4160V.
Response: The high service pump station motors are to use medium voltage 4160V as shown on Drawing EA-4/5. See Item No.8 in the CHANGES TO THE SPECIFICATIONS section of this addendum for revision to Paragraph 2.02.
- 25. Question:** Spec Section 44 42 56.02-3.05.D indicates the Owner will perform a 30-day system operational test of the Vertical Turbine Pumps (VTP). Spec Section 01 75 16-3.04 indicates the Owner will perform a 30-day operational test. Please confirm whether one 30-day test is required under 44 42 56 .02 and an additional 30-day test under 01 75 16.
Response: A 30-day operational test that includes the operation of the vertical turbine pumps will be conducted. All testing requirements specified under Section 44 42 56.02 and 01 75 16 are to be met.

26. Question: Taking a look over the specifications for the Randolph Pump Station Improvements and see that mechanical grooved joints are currently specified up to 6". We would like to request that mechanical grooved joints be approved up to 48". We have plenty of job references in Texas of mechanical grooved joints up to 96" if providing those would help with this request.

Response: This modification cannot be approved at this time without further information, including product information and references. The selected Contractor may submit an RFI during construction to request SAWS consider this modification.

27. Question: For the specials, in some cases pipe that is 24" and smaller may not be available from the pipe manufacture. In that case, would A53 GR B ERW be an acceptable pipe as long as all aspects of the spec is met?

Response: This modification request to Section 33 11 13.14 is not allowed at this time. The requirements specified in Sections 33 11 13.13 and 33 11 13.14 must be met. The selected Contractor may submit an RFI to SAWS during construction to request this modification for consideration.

28. Question: And is the direction and management still required if the shop fabricating the specials is an approved fabricator under the SPFA specification?

Response: Yes, the piping and specials must be directed/managed under a single steel pipe manufacturer as specified in Section 33 11 13.13, Paragraph 1.01.B and Section 33 11 13.14, Paragraph 1.01.B.

29. Question: Please provide a Specification for the Containment Lining System shown on CH-16. Please also confirm any application locations other than the Sodium Hypochlorite containment area.

Response: System No. 3 within the Protective Coatings Paint Schedule in Section 09 96 00.01 is designated for the sodium hypochlorite containment system. Other surfaces that require coating are specified in Section 09 96 00.01, Paragraph 1.01.E.

30. Question: On sheet C-12 in the legend tells to go to sheet C-23 detail 9 for sidewalk detail but detail 9 on sheet C-23 detail for gate valve box. Please provide details of the sidewalk.

Response: Sidewalk detail has been added. Please refer to Detail 11 on revised Sheet C-23, issued under Addendum No. 5.

31. Question: Sheets C-10 through C-13 show to remove and replace the fencing at the same location. The existing fencing is completely overgrown with vegetation from adjacent properties. Sheet C-29 Note 3 directs trimming of overhanging branches, however many of the trees are grown into the fencing and will need to be removed to allow for installation of the new fence and mowstip. Please advise on removal of trees on adjacent property that interfere with new fence construction.

Response: During design, no trees were determined to be in the way of the new fencing. Those trees that the Contractor believes may be in conflict may be discussed at the time of construction. SAWS Standard General Construction Note 19 on Sheet G-3 states that Contractor shall be responsible for trimming overhanging branches as well as excessive amounts of brush or vegetation growing through the fence.

32. Question: Sheet C-19 shows Detail M Precast Culvert Section but does not clearly indicate how the concrete paving roadway is to tie into the precast concrete box culverts. Please provide describe or provide a detail.

Response: Precast concrete box culverts will be direct traffic rated with the top culvert slab being a drivable surface. Include a joint between the concrete pavement and culvert structure as shown on Sheet C-23, Joint Detail 3.

33. Question: For the cast in place headwall/wingwall on the 5-barrel concrete box culverts, can a detail be provided showing reinforcement detail and concrete thicknesses, etc.?

Response: Refer to Detail M on Sheet C-19 for wingwall thickness, which is shown as 6". Refer to the new Sheet C-21A for the TxDOT Standard for Single Box Culverts Precast which shows reinforcement, issued under Addendum No. 5. Note, there are 6 barrels.

- 34. Question: Sheet C-19 shows Detail I for the gabion mat detail and calls out the type of rock to be used Padre Canyon Red however may not a common type of rock for this area. Please clarify where this rock can be sourced or provide an alternate locally available mater.**
Response: Use the Texas Blend River Rock with size ranging from 4" to 8". See Item No. 5 in the CHANGES TO THE PLANS section of this addendum.
- 35. Question: Sheet C-19 shows Detail M Precast Culvert Section. Please provide a precast box culvert spec and clarify the loading requirements.**
Response: Refer to new Sheet C-21A for direct traffic precast culvert detail, issued under Addendum No. 5. Direct traffic precast culverts are to conform to TxDOT Standard Specification Item 462.
- 36. Question: Please clarify if the brine area, trench, and sodium hypochlorite Bldg get epoxy protection coating or concrete sealer.**
Response: As specified in Paragraph 1.01.E.5, concrete surfaces for chemical tank pads, containment structures, chemical buildings, and below-grade chemical boxes will be coated, which includes the brine area, chemical trenches, and the sodium hypochlorite building. These areas are to be coated with System No. 3 specified in the Protective Coatings Paint Schedule in Section 09 96 00.01. The vertical CMU walls of the sodium hypochlorite building are to be coated with System No. 10 specified in the Protective Coatings Paint Schedule in Section 09 96 00.01.
- 37. Question: Please clarify if the HFS tank area, trench, and Fluoride Bldg get epoxy protection coating or concrete sealer.**
Response: As specified in Paragraph 1.01.E.5, concrete surfaces for chemical tank pads, containment structures, chemical buildings, and below-grade chemical boxes will be coated, which includes the tank area, chemical trenches, and the fluoride building foundation. These areas are to be coated with System No. 3 specified in the Protective Coatings Paint Schedule in Section 09 96 00.01.
- 38. Question: Does the Hollow Core that is exposed in the electrical Bldg and at the sodium hypochlorite Bldg get painting.**
Response: No, the hollow core panels are not scheduled to be painted.
- 39. Question: On sheet S-7 call for the stairs and maintenance walkway to be alum and on sheet S-10 note 2 calls for them to be stainless steel. Please clarify what materials the stairs and maintenance walkway should be.**
Response: Sheet S-10 updated to note the stairs and maintenance walkway are to be aluminum. See Item No. 10 in CHANGES TO THE PLANS section of this addendum.
- 40. Question: On sheet S-20 calls for the lintels to be galvanized and on sheet A-9 calls for them to be aluminum. Please clarify what material the lintels need to be.**
Response: Sheet A-9 updated to note lintels should be galvanized steel, as specified in Sheet S-20. See Item No. 13 in CHANGES TO THE PLANS section of this addendum.
- 41. Question: Reference sheet PL-6, the drawing title states the details are for the fluoride building, however there are no plumbing drawings for the building. Please clarify if there is plumbing in the fluoride building or not.**
Response: Plumbing details for the fluoride building, including location of floor drains, vent piping, cleanouts, eyewash stations, hose bibbs, etc. are shown on Sheet PL-6. The fluoride building will be a prefabricated fiberglass building as specified on Sheet CH-10, Sheet CH-11, and Section 13 34 26.
- 42. Question: Reference drawing E-3. Clarify General Notes 8 and 12 concerning existing duct banks to be removed. Are existing duct banks allowed to be abandoned in place per Note 8, or are duct banks required to be removed per Note 12?**
Response: All existing underground ductbanks are to be removed. See Item No. 14 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet E-3.

- 43. Question: Reference drawings E-7 (Duct Bank Section B) and EA-3 (MVSWGR-1 One-Line). Confirm if circuit labelling from TX-UT1 and TX-UT2 to MV-SWGR1. E-7 lists TXUT1-P and TXUT2-P whereas EA-3 lists SWGR-P1 and SWGR-P2 respectively. Also, please confirm if spare conduit size (5") and count (2) to be per Duct Bank Section B (E-7), or EA-3 (2-4" Spares).**
Response: The circuit labelling used in Section B of E-7 should match that of EA-3. The conduit size in Section B of E-7 is correct – 3-5" conduits, including 1-5" spare conduit, for each of the two feeders to MV-SWGR-1. The conduit size on EA-3 is incorrect and should callout 3-5" conduits, and not 2-4" conduits for each of the two feeders to MV-SWGR-1. See Item No. 18 in the CHANGES TO THE PLANS section of this addendum for revision to Sheet E-7.
- 44. Question: Reference drawing E-12 Key Note 4 and E-13 Key Notes 2 and 3. Confirm junction boxes for Security system to be NEMA 4X 316 Stainless Steel, painted white. Stainless steel 316 enclosures are typically unavailable painted.**
Response: Junction boxes for Security system are to be NEMA 4X 316 stainless steel, painted white.
- 45. Question: Clarify scope of supply for power factor correction capacitors shown on One-Lines EA-4 and EA-5. The One-Line indicates PFCC to be sized and provided by motor provider per Key Note 5, however is shown within the medium voltage MCC lineups per One-Lines and Elevation drawings indicating it will be scope of the electrical gear provider.**
Response: Motor provider is to size the required PFCC of each medium voltage motor, and coordinate with the medium voltage MCC provider the installation of each PFCC at the medium voltage MCC lineups, and as required by the Specifications and Drawings. See Item No. 20 and Item No. 21 in the CHANGES TO THE PLANS section of this addendum.
- 46. Question: Confirm MCC-1 is to be a 480V 3 Phase 4 Wire plus ground MCC, per drawing EA-8, not 3 Phase 3 Wire plus ground such as MCC-2.**
Response: MCC-1 is to be 480 V, 3-phase, 3-wire plus ground as MCC-2. See Item No. 22 in the CHANGES TO THE PLANS section of this addendum.
- 47. Question: The Asbestos Inspection Report lists a cementitious pipe that contains asbestos. Can this pipe be abandoned in place?**
Response: The cementitious pipe containing asbestos listed in the Asbestos Inspection Report is an existing electrical ductbank. This pipe is to be removed, along with all the other existing ductbanks to be replaced. Demolition of electrical ductbanks assumed to contain asbestos is shown on the revised Sheet E-3. See Item No. 14 in the CHANGES TO THE PLANS section of this addendum.
- 48. Question: The Asbestos Inspection Report lists a cementitious pipe that contains asbestos. Please provide the location, diameter, and length of this pipe to be removed.**
Response: The approximate quantity of electrical ductbank containing asbestos to be removed is 1,250 LF. Prior to removal of the ductbank, the Contractor shall procure an environmental testing service to confirm the extent of the asbestos-containing ductbanks and the proper disposal of the asbestos. See Item No. 14 in the CHANGES TO THE PLANS section of this addendum for the update to Sheet E-3.
- 49. Question: In the spec section 32 13 13 for concrete paving the psi is called out as 3500 but in the concrete spec section the table has paving, sidewalks etc as 3,000 psi. Please advise.**
Response: See response to Question No. 20 of this addendum.
- 50. Question: Addendum #5, Answer 9 and 10 references Change in Specifications in Addendum #4, but the specific changes addressed are not provided within Addendum #4. Please publish the conformed version of changes in Specifications, for clarity.**
Response: See response to Question 51 of this addendum.

51. Question: In order to bring SAWS the best possible value we request the ability to turn in subcontractor qualifications (org chart names, resumes, projects, etc.) within three business days of submission. This will allow us to get you the best possible pricing on bid day and demonstrate qualifications thereafter.

Response: No changes will be made to the items required by the Proposal Opening deadline. All requested information must be provided by Respondent's by the deadline.

52. Question: Another question for the engineers. We are having no luck finding any suppliers for the A-jacks dissipators shown in Addendum 5. Is there any manufacturer the engineers can provide? Otherwise these will be hard to bid and source for the job.

Response: Contech Engineered Solutions and Shoretec, LLC. are local manufacturers of this product.

CHANGES TO THE SPECIFICATIONS

1. Section 01 35 00 Special Procedures

Delete Section 01 35 00 Special Procedures in its entirety **and replace with** revised Section 01 35 00 Special Procedures included in this addendum.

2. Section 01 12 16 Work Sequence, Paragraph 1.04.B

a. Item No. 7

Delete: "Transformer pad to be constructed in segments. The first segment shall support the two proposed transformers without conflicting with the existing electrical duct bank. The remaining segment of pad will be constructed at a later phase."

Replace with: "Proposed transformer pad to be constructed over existing underground electric lines. Contractor to protect existing lines such that lines can continue to be in service once pad construction is complete. Existing underground electric lines to be in service until proposed facilities are operational."

b. Item No. 11

Delete: "No more than one (1) well can be taken out of service at any given time."

Replace with: "No more than one (1) well can be taken out of service at any given time and each well shall be shut down for no more than 24 hours."

c. Item No. 12

Delete: Item No. 12 in its entirety and

Replace with: "During well shutdowns, install drain lines 'A' and 'B' and accompanying insulating flange kits and connect existing GST level electrode system to new well motor starters. Connect new well flow transmitter and other circuits to new electrical system."

d. Item No. 17

Delete: Item No. 17 in its entirety and

Replace with: "Tie primary disinfection injection point into existing tank inlet piping and install insulating flange kits at tank inlets and outlets. Contractor to coordinate isolating the existing tank with SAWS. Tank to be isolated for no more than 8 hours, overnight."

e. Item No. 37

Delete Item No. 37 in its entirety and

Replace with: "Demolish the existing primary transformers and all associated slab and conduit. Existing underground electric lines under proposed primary transformers to be abandoned in place."

3. Section 03 30 00 Cast-In-Place Concrete, Paragraph 2.09.B

Delete: "3000"

Replace with: "4000"

4. Section 26 42 00.01 Cathodic Protection, Paragraph 1.06.D

a. Delete: “The Contractor shall be responsible for reviewing the rectifier locations to determine if there are any conflicts with obtaining power from the indicated locations.”

Replace with: “The Contractor shall be responsible for reviewing the rectifier locations to determine if there are any conflicts with obtaining power from the indicated locations within 30 days of NTP.”

b. Delete Paragraph 1.06.D in its entirety.

5. Section 40 61 00 Process Control Systems General Provisions, Paragraph 1.01

Add the following at the end of Paragraph 1.01, immediately prior to Paragraph 1.02:

“9. Supervisory Control Panel (SCP)

The SCP will be located in the new Electrical Building in the Control Room. As shown in the Drawings and specified herein, provide a new SCP enclosure to house PLC hardware, OIT, Ethernet switch, fiber optic patch panel, cellular modem/router, and miscellaneous equipment. Furnish PLC-RDPMAIN with analog and discrete I/O modules mounted inside the SCP enclosure. Furnish network cabling as shown in the Drawings. The SCP will be powered by an Uninterruptible Power Supply as shown in the electrical plans.

10. Tower Base Network Panel

The Tower Base Network Panel will be located outdoors at the base of the existing radio tower. As shown in the Drawings and specified herein, provide a new enclosure to house a fiber optic patch panel, media converters, power-over-Ethernet injectors, and miscellaneous equipment.

11. Well No. 3 Network Panel

The Well No. 3 Network Panel will be located outdoors at the Well No. 3 equipment rack. As shown in the Drawings and specified herein, provide a new enclosure to house a fiber optic patch panel, media converter and miscellaneous equipment.

12. PLC-RDPCHEM Control Panel

The PLC- RDPCHEM Control Panel will be located in the new Chemical Building Electrical Room. As shown in the Drawings and specified herein, provide a new PLC- RDPCHEM enclosure to house PLC racks, and OIT, Ethernet switch, fiber optic patch panel, and miscellaneous equipment. Furnish PLC- RDPCHEM with analog and discrete I/O modules mounted inside the enclosure. Furnish network cabling as shown in the Drawings. The control panel will be powered by an Uninterruptible Power Supply as shown in the electrical plans.

13. Once all Tower Base Network Panel and all associated cabling is in place, restore, test and make fully operational the broadband radio communications from Randolph Pump Station to the same locations in use at the time project work begins.

14. Furnish, install, test, and make fully operational, all process instruments as shown in the plans and as specified herein.”

6. Section 40 70 02 Process Instrument Schedule

Delete Section 40 70 02 Process Instrument Schedule in its entirety and **replace with** revised Section 40 70 02 Process Instrument Schedule included in this addendum.

7. Section 40 71 00 Flow Instruments

Delete Section 40 71 00 Flow Instruments in its entirety and **replace with** revised Section 40 71 00 Flow Instruments included in this addendum.

8. Section 44 42 56.02 Vertical Turbine Pumping Units, Paragraph 2.02

a. Delete: “2.02 600-Volt and Below Motors

A. General:

1. Refer to Section 26 05 50 “NEMA Frame Induction Motors, 600V and Below” for requirements.”

Replace with: “2.02 Medium Voltage Induction Motors

A. General:

1. Refer to Section 26 05 51 “Large Induction Motors” for requirements.”

b. Add:

“2.03 PRESSURE GAUGES

Pump Manufacturer shall be responsible for furnishing pressure gauges associated with the pumping units as described in the Drawings. Refer to Section 40 73 00 “Pressure Instruments” for requirements.”

9. Section 32 40 20 Concrete Energy Dissipators

Delete Section 32 40 20 Concrete Energy Dissipators in its entirety **and replace with** revised Section 32 40 20 Concrete Energy Dissipators included in this addendum.

CHANGES TO THE PLANS

1. Sheet C-7 Site Plan

Delete Sheet C-7 in its entirety **and replace with** revised Sheet C-7.

2. Sheet C-8 Construction Sequencing Plan I

a. Note by Symbol 7

Delete: “Transformer pad to be constructed in segments. The first segment shall support the two proposed transformers without conflicting with the existing electrical duct bank. The remaining segment of pad will be constructed at a later phase.”

Replace with: “Proposed transformer pad to be constructed over existing underground electric lines. Contractor to protect existing lines such that lines can continue to be in service once pad construction is complete. Existing underground electric lines to be in service until proposed facilities are operational.”

b. Note By Symbol 11

Delete: “No more than one (1) well can be taken out of service at any given time.”

Replace with: “No more than one (1) well can be taken out of service at any given time and each well shall be shut down for no more than 24 hours.”

c. Note By Symbol 12

Delete: Note By Symbol 12 in its entirety.

Replace with: “During well shutdowns, install drain lines ‘A’ and ‘B’ and accompanying insulating flange kits and connect existing GST level electrode system to new well motor starters. Connect new well flow transmitter and other circuits to new electrical system.”

d. Note By Symbol 17

Delete: Note By Symbol 17 in its entirety.

Replace with: “Tie primary disinfection injection point into existing tank inlet piping and install insulating flange kits at tank inlets and outlets. Contractor to coordinate isolating the existing tank with SAWS. Tank to be isolated for no more than 8 hours, overnight.”

e. Note By Symbol 37

Delete Item No. 37 in its entirety and

Replace with: “Demolish the existing primary transformers and all associated slab and conduit. Existing underground electric lines under proposed primary transformers to be abandoned in place.”

3. Sheet C-9 Construction Sequencing Plan II

a. Note by Symbol 7

Delete: “Transformer pad to be constructed in segments. The first segment shall support the two proposed transformers without conflicting with the existing electrical duct bank. The remaining segment of pad will be constructed at a later phase.”

Replace with: “Proposed transformer pad to be constructed over existing underground electric lines. Contractor to protect existing lines such that lines can continue to be in service once pad construction is complete. Existing underground electric lines to be in service until proposed facilities are operational.”

b. Note By Symbol 11

Delete: “No more than one (1) well can be taken out of service at any given time.”

Replace with: “No more than one (1) well can be taken out of service at any given time and each well shall be shut down for no more than 24 hours.”

c. Note By Symbol 12

Delete: Note By Symbol 12 in its entirety.

Replace with: “During well shutdowns, install drain lines ‘A’ and ‘B’ and accompanying insulating flange kits and connect existing GST level electrode system to new well motor starters. Connect new well flow transmitter and other circuits to new electrical system.”

d. Note By Symbol 17

Delete: Note By Symbol 17 in its entirety.

Replace with: “Tie primary disinfection injection point into existing tank inlet piping and install insulating flange kits at tank inlets and outlets. Contractor to coordinate isolating the existing tank with SAWS. Tank to be isolated for no more than 8 hours, overnight.”

e. Note By Symbol 37

Delete Item No. 37 in its entirety and

Replace with: “Demolish the existing primary transformers and all associated slab and conduit. Existing underground electric lines under proposed primary transformers to be abandoned in place.”

4. Sheet C-12 Horizontal Control Plan I, Legend

Delete: “New Reinforced Concrete Pavement”

Replace with: “New Reinforced Concrete Pavement/Driveway”

5. Sheet C-19 Drainage Miscellaneous, Detail I/C-19

Delete: “The type of rock to be used padre canyon red.”

Replace with: “Use Texas blend river rock with size ranging from 4-inches to 8-inches.”

6. Sheet C-21B Drainage Miscellaneous Details III

Delete Sheet C-21B in its entirety **and replace with** revised Sheet C-21B.

7. Sheet C-23 Miscellaneous Roadway Details, Detail 8/C-23, Detail Title

Delete: “Reinforce Concrete Pavement”

Replace with: “Reinforced Concrete Pavement/Driveway”

8. Sheet S-6 Sodium Hypochlorite Generation Building Foundation Plan

Delete Sheet S-6 in its entirety **and replace with** Sheet S-6 included in this addendum.

9. Sheet S-7 Hypochlorite Tanks and Containment Foundation Plan and Sections

Delete Sheet S-7 in its entirety **and replace with** Sheet S-7 included in this addendum.

10. Sheet S-10 Sodium Hypochlorite Generation Building Section II

Delete Sheet S-10 in its entirety **and replace with** revised Sheet S-10 included in this addendum.

11. Sheet S-12 Fluoride Building and Transformer Pad Foundation Plans and Sections

Delete Sheet S-12 in its entirety **and replace with** revised Sheet S-12 included in this addendum.

12. Sheet S-20 Standard Sections and Details - III, Note 2

Delete: “Stair and maintenance access walkway shall be stainless steel.”

Replace with: “Stair and maintenance access walkway shall be aluminum. Refer to Specification 05 51 00 Metal Stairs for details.”

13. Sheet A-9 Sodium Hypochlorite Generation Building Door & Frame Schedules and Details, Section 5 Door Head Detail

Delete: “Aluminum Angle Lintel, Re: Structural”

Replace with: “Galvanized Steel Angle Lintel, Re: Structural”

14. Sheet E-3 Existing Site Layout Demolition and Temporary Relocation

Delete Sheet E-3 in its entirety **and replace with** revised Sheet E-3 included in this addendum.

15. Sheet E-4 Site Layout - Modification

Delete Sheet E-4 in its entirety **and replace with** revised Sheet E-4 included in this addendum.

16. Sheet E-5 Site Lighting Plan

- a. **Delete** electrical manholes EMH-1 and EMH-1A as modified on Sheet E-4 included in this addendum.
- b. **Modify** transformer TX-UT1 and TX-UT2 pad and containment as shown on Sheet E-4 included in this addendum.
- c. **Move** electrical manholes EMH-2 and EMH-5 as modified on Sheet E-4 included in this addendum.

17. Sheet E-6 Site Security Plan

- a. **Delete** electrical manholes EMH-1 and EMH-1A as modified on Sheet E-4 included in this addendum.
- b. **Modify** transformer TX-UT1 and TX-UT2 pad and containment as shown on Sheet E-4 included in this addendum.
- c. **Move** electrical manholes EMH-2 and EMH-5 as modified on Sheet E-4 included in this addendum.

18. Sheet E-7 Duct Bank Sections I

- a. For "Ductbank Section B," "Conduit Tag:"
Delete: "TXUT1-P"
Replace with: "SWGR-P1"
- b. For "Ductbank Section B," "Conduit Tag:"
Delete: "TXUT2-P"
Replace with: "SWGR-P2"

19. Sheet E-19 Enlarged CPS Energy Transformers Yard and Grounding Plan

Delete Sheet E-19 in its entirety **and replace with** revised Sheet E-19 included in this addendum.

20. Sheet EA-4 4160V MVMCC-A One-Line Diagram, Key Notes

Delete: Note "5. Motor Provider Shall Size and Provide PFCC."

Replace with: "Motor Provider Shall Size Each PFCC and Coordinate as Necessary the Installation at the Medium Voltage MCC Lineups with the Medium Voltage MCC Provider."

21. Sheet EA-5 4160V MVMCC-B One-Line Diagram, Key Notes

Delete: Note "5. Motor Provider Shall Size and Provide PFCC."

Replace with: "Motor Provider Shall Size Each PFCC and Coordinate as Necessary the Installation at the Medium Voltage MCC Lineups with the Medium Voltage MCC Provider."

22. Sheet EA-8 480V MCC-1 One-Line, MCC-1 480V One-Line Diagram Detail

Change the rating of both buses from "4W" to "3W."

23. Sheet EA-9 480V MCC-1 One-Line & Elevation, MCC-1 480V One-Line Diagram Detail

Change the rating of the bus from "4W" to "3W."

24. Sheet EF-2 Fluoride System Electrical Riser Diagram

Delete: PLC tag "PLC-TC3CHEM".

Replace With: PCL tag "PLC-RDPCHEM".

25. Sheet EZ-8 Standard Details - VIII

Delete Sheet EZ-8 in its entirety **and replace with** revised Sheet EZ-8 included in this addendum.

26. Drawing I-4 Facility Network Diagram-II

- a. **Delete** CAT6 cable inside PLC-RDPCHEM Control Panel shown between UPS-RDPCHEM and ESW-RDPCHEM.
- b. **Delete** UPS-RDPCHEM device block shown inside PLC-RDPCHEM Control Panel.

27. Sheet I-6 Well Pumps P&ID

Delete Sheet I-6 in its entirety **and replace with** revised Sheet I-6 included in this addendum.

28. Sheet CP-1 Cathodic Protection System Overall Site Plan

Delete Sheet CP-1 in its entirety **and replace with** revised Sheet CP-1.

CHANGES TO RESPONSES IN PREVIOUS ADDENDA

1. Addendum No. 3, Response to Question No. 44

Delete: "Contractor and pump manufacturer are to coordinate pressure gauge responsibility."

Replace with: "Pump manufacturer to furnish pressure gauges."

2. Addendum No. 3, Response to Question No. 45

Delete: "Contractor and equipment manufacturer are to coordinate pressure gauge responsibility."

Replace with: "Equipment manufacturer to furnish pressure gauges."

3. Addendum No. 3, Response to Question No. 46

Delete: "Contractor and equipment manufacturer are to coordinate pressure gauge responsibility."

Replace with: "Equipment manufacturer to furnish pressure gauges."

END OF ADDENDUM

This Addendum is forty-six (46) pages in its entirety.

Attachments:

- 1) Section 01 35 00 Special Procedures
- 2) Section 32 40 20 Concrete Energy Dissipators
- 3) Section 40 70 02 Process Instrument Schedule
- 4) Section 40 71 00 Flow Instruments
- 5) Sheet C-7 Site Plan
- 6) Sheet C-21B Drainage Miscellaneous Details III
- 7) Sheet S-6 Sodium Hypochlorite Generation Building Foundation Plan
- 8) Sheet S-7 Hypochlorite Tanks and Containment Foundation Plan and Sections
- 9) Sheet S-10 Sodium Hypochlorite Generation Building Section II
- 10) Sheet S-11 Sodium Hypochlorite Generation Building Foundation Sections and Details
- 11) Sheet S-12 Fluoride Building and Transformer Pad Foundation Plans and Sections
- 12) Sheet E-3 Existing Site Layout Demolition and Temporary Relocation
- 13) Sheet E-4 Standard Details – VIII
- 14) Sheet E-19 Enlarged CPS Energy Transformers Yard and Grounding Plan
- 15) Sheet EZ-8 Standard Details - VIII
- 16) Sheet I-6 Well Pumps P&ID
- 17) Sheet CP-1 Cathodic Protection System Overall Site Plan



Estella Cota-Trevino

Estella Cota-Trevino, P.E.
Freese and Nichols, Inc.

SECTION 01 35 00

SPECIAL PROCEDURES

1.00 GENERAL

1.01 SHUT DOWNS AND PLANS OF ACTION

- A. Shutdowns must be completed during off-peak times for the San Antonio Water System water demand. Off- peak months are from November through February, and shutdowns can only be performed during this period. Shutdowns shall not be performed between the months of March and October.
- B. Shut downs of operations or equipment must be planned and scheduled.
 - 1. Submit a written plan of action for approval for shutting down essential services. These include:
 - a. Electrical power.
 - b. Control power.
 - c. Process piping.
 - d. Treatment equipment.
 - e. Communications equipment.
 - f. Other designated functions.
 - 2. Describe the following in the plan of action:
 - a. Construction necessary.
 - b. Utilities, piping, or services affected.
 - c. Length of time the service or utility will be disturbed.
 - d. Procedures to be used to carry out the work.
 - e. Plan of Action to handle emergencies.
 - f. Contingency plan that will be used if the original schedule cannot be met.
 - 3. Submit plan four (4) weeks prior to beginning the work.

1.02 CRITICAL OPERATIONS

- A. The Owner has identified critical operations that must not be out of service longer than the designated maximum out of service time and/or must be performed only during the designated times. These have been identified in the table below:

Critical Operation	Maximum Time Out of Operation	Hours Operation Can be Shut Down
1. Shutdown of existing HSP 3-4 Pump	2 months	24 Hours/Day
1. Shutdown of PZ 930 Pump Station	Up to 8 weeks	24 Hours/Day
2. Shutdown of PZ 1060 Pump Station	24 hours	24 Hours/Day
3. Shutdown of Recharge Valve Station	2 weeks	24 Hours/Day
4. Shutdown of Well No. 1 ²	24 hours	24 Hours/Day
5. Shutdown of Well No. 2 ²	24 hours	24 Hours/Day
6. Shutdown of Well No. 3 ²	24 hours	24 Hours/Day
7. Isolate GST	8 hours	10:00 p.m. – 6:00 a.m.
8. Simultaneous Shutdown of PZ 930 and PZ 1060 Pump Stations and Existing GST Out of Service ¹	8 hours	10:00 p.m. – 6:00 a.m.
¹ This task may only be performed on as-needed basis and requires explicit approval from Owner and Engineer prior to commencing work.		
² No more than one well can be taken out of service at any given time.		

B. Submit a written plan of action for approval for critical operations.

1. Describe the following in the plan of action:
 - a. Construction necessary.
 - b. Utilities, piping, or services affected.
 - c. Length of time the service or utility will be disturbed.
 - d. Procedures to be used to carry out the work.
 - e. Plan of action to handle emergencies.
 - f. Contingency plan that will be used if the original schedule cannot be met.
 - g. List of manpower, equipment, and ancillary supplies. Identify backups for key pieces of equipment such as excavators and pumps and key personnel such as welders.
2. Plan must be received by the Owner four (4) weeks to beginning the Work.

- C. Work affecting critical operations is to be performed on a 24-hour a day basis until Owner's normal operations have been restored.
- D. Provide additional manpower and equipment as required to complete the Work affecting critical operations within the allotted time.
- E. Include the cost for the work affecting critical operations in the Contract Price.
- F. Designated Critical Operations are described in more detail as follows:

Critical Operation 1 – Shutdown of existing HSP 3-4 Pump:

Shut down existing HSP 3-4 Pump as needed to construct proposed PZ 1060 Pump Station.

Critical Operation 2 – Shutdown of PZ 930 Pump Station for connection to existing 36" discharge water line:

Install main line tee, reducers, valves and fittings and complete all other work required to complete the connection and return the water main to service.

Critical Operation 3 – Shutdown of PZ 1060 Station for connection to existing 24" PZ 1060 discharge water line:

Install main line tee, reducers, valves and fittings and complete all other work required to complete the connection and return the water main to service.

Critical Operation 4 – Sanitary Sewer Service Lateral 'A' tie-in to existing sanitary sewer line along Weidner Road:

Install main line tee, reducers, valves and fittings and complete all other work required to complete the connection and return the sanitary sewer line to service.

Critical Operation 5 – Water Service Lateral 'A' tie-in to existing 24" PZ 1060 discharge water line located within the Randolph site:

Install main line tee, reducers, valves and fittings and complete all other work required to complete the connection and return the water main to service.

Critical Operation 6 – Isolate Ground Storage Tank:

Install the temporary bypass piping, valves, fittings for the Above-Ground Chemical Injection Point and insulating flange kits near the existing ground storage tank. The tank may be temporarily isolated by closing the tank inlet isolation valve and both outlet isolation valves to perform this work but the tank may not be drained.

END OF SECTION

SECTION 32 40 20

CONCRETE ENERGY DISSIPATOR

PART 1.00 - GENERAL

1.01 SCOPE

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required and perform all operations in connection with the installation of concrete energy dissipating units in accordance with the lines, grades, design and dimensions shown on the Contract Drawings and as specified herein.

1.02 SECTION INCLUDES

- A. Concrete Dissipator Devices

1.03 RELATED SECTIONS

- A. Section 31 05 13 – Soils for Earthwork.
- B. Section 31 11 00 – Site Clearing and Grubbing.
- C. Section 31 23 16 – Excavation.
- D. Section 31 23 23 – Select Fill.

1.04 REFERENCES

- A. American Society for Testing Materials International (ASTM):
 1. ASTM D 6684-04, Standard Specification for Materials and Manufacture of Articulating Concrete Block (ACB) Revetment Systems.
 2. ASTM C 140, Standard Test Methods of Sampling and Testing Concrete Masonry Units.
 3. ASTM C 150, Standard Specification for Portland Cement.
 4. ASTM C 595, Standard Specification for Blended Hydraulic Cements.
 5. ASTM C 207, Standard Specification for Hydrated Lime Types.
 6. ASTM C 618, Standard Specification for Fly Ash and Raw or Calcined Natural Pozzalans for use in Portland Cement Concrete.
 7. ASTM C 33, Standard Specification for Concrete Aggregates.
 8. ASTM A641, Class III soft temper coating.
 9. ASTM D6884-03, Standard Practice for Installation of Articulating Concrete Block (ACB) Revetment Systems.
 10. ASTM D4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
 11. ASTM D4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 12. ASTM D6241, Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.
 13. ASTM D4751, Standard Test Methods for Determining Apparent Opening Size of a Geotextile.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - a. Manufacturer's hydraulic testing documentation and calculations supporting the following requirements for the concrete energy dissipating units:
 - 1. A minimum Dynamic Impact Factor of 1.75.
 - 2. Completed lateral load testing.
 - 3. Minimum FoS of 1.5, utilizing the factor of safety method detailed in section E of the specification.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- D. Shop Drawings for the concrete dissipating units, installation, and safety instructions, and any recommendations, if applicable, that are specifically related to the project.

PART 2.00 - MATERIALS

2.01 GENERAL

- A. The geometry of this concrete energy dissipating unit consists of six arms extending from a central hub. A complete unit is made up of two identical halves, with each half consisting of a central core with three legs radiating outward at equal spacing. On each half, two fillets are located between adjacent arms. These fillets provide additional structural strength and aid in the proper placement of the energy dissipating units.
- B. When the symmetrical halves are interlocked, the resultant unit will have geometry, which exhibits six equally spaced arms, with each arm spaced at 90 degrees from the four adjacent arms. When placed in the most stable configuration, each unit will rest on three of the six arms.
- C. The concrete energy dissipating system shall have the following nominal characteristics:

TABLE 2. STANDARD SIZES OF CONCRETE ENERGY DISSIPATING UNIT

Total Length (in)	Arm Length (in)	Fillet Length (in)	Arm Width (in)	Volume (ft ³)	Weight (lbs)
24	8.30	1.85	4.00	0.59	76-82

2.02 CONCRETE ENERGY DISSIPATING UNITS

- a. The 2 ft. concrete energy dissipating units will be produced on a pre-determined concrete block machine and will conform to ASTM D 6684-04, Standard Specification for Materials and Manufacture of Articulating Concrete Block (ACB) Revetment Systems.
- b. Cementitious Materials - Materials shall conform to the following applicable ASTM specifications:
 - i. Portland Cements - Specification C 150, for Portland Cement.
 - ii. Blended Cements - Specification C 595, for Blended Hydraulic Cements.
 - iii. Hydrated Lime Types - Specification C 207, for Hydrated Lime Types.
 - iv. Pozzolans - Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement Concrete.

- c. Aggregates shall conform to the following ASTM specifications, except that grading requirements shall not necessarily apply:
- d. Normal Weight – Specification C 33 for Concrete Aggregates

B. PHYSICAL REQUIREMENTS

- a. At the time of delivery to the work site, the units shall conform to the physical requirements prescribed in Table 1 below.
- b. Units shall be sampled and tested in accordance with ASTM C 140, Standard Test Methods of Sampling and Testing Concrete Masonry Units.

TABLE 1. PHYSICAL REQUIREMENTS			
Compressive Strength Net Area Min. psi		Water Absorption Max., lb/ft³	
Avg. of 3 units	Individual Unit (min. required)	Avg. of 3 units	Individual Unit
4000	3,500	9.1	11.7

C. VISUAL INSPECTION

- a. All units shall be sound and free of defects that would interfere with either the proper placement of the unit or impair the performance of the system. Surface cracks incidental to the usual methods of manufacture, or surface chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.
- b. Cracks exceeding 0.25 inches in width and/or 1.0 inch in depth shall be deemed grounds for rejection.
- c. Chipping resulting in a weight loss exceeding 10% of the average weight of a concrete unit shall be deemed grounds for rejection.
- d. Concrete energy dissipating unit rejected prior to delivery from the point of manufacture shall be replaced at the manufacturer's expense. Concrete energy dissipating units rejected at the job site shall be repaired with structural grout or replaced at the expense of the contractor.

D. SAMPLING AND TESTING

- a. The purchaser or their authorized representative shall be accorded proper access to facilities to inspect and sample the units at the place of manufacture from lots ready for delivery.
- b. Field installation procedures shall comply with the procedures utilized during the hydraulic testing procedures of the recommended system. All system restraints and ancillary components (such as synthetic drainage mediums) shall be employed as they were during testing. For example, if the hydraulic testing installations utilize a drainage layer then the field installation must utilize a drainage layer; an installation without the drainage layer would not be permitted.
- c. Additional testing, other than that provided by the manufacturer, shall be borne by the purchaser.

2.06 FILTER FABRIC

- A. The geotextile will meet the minimum physical requirements listed in Table No. 3 of these Specifications. Consultation with the manufacturer is recommended as AASHTO- M288 for permanent erosion control is assumed for the design.

TABLE 3: PHYSICAL REQUIREMENTS

Physical Property	Test Procedure	Minimum Value
Grab Tensile Strength	ASTM D4632	205 Lbs.
	(in any principal direction)	
Breaking Elongation	ASTM D4632	50% max.
	(in any principal direction)	
Trapezoidal Tear	ASTM D4533	80 Lbs.
CBR Puncture Strength	ASTM D6241	525 Lbs.

- B. The geotextile must be permitted to function properly by allowing relief of hydrostatic pressure; therefore fine soil particles will not be allowed to clog the filter fabric.
- C. During all periods of shipment and storage, the filter fabric will be protected from direct sunlight, ultraviolet rays and temperatures greater than 140° Fahrenheit. To the extent possible, the fabric will be maintained wrapped in its protective covering. The geotextile will not be exposed to sunlight, ultraviolet rays until the installation process begins.
- D. At the time of installation, the filter fabric will be rejected if it has been removed from its protective cover for over 72 hours or has defects, tears, punctures, flow deterioration, or damage incurred during manufacture, transportation or storage. With the acceptance of the Engineer, placing a filter fabric patch over the damaged area prior to placing the mats will repair a torn or punctured section of fabric. The patch will be large enough to overlap a minimum of three (3) feet in all directions.

PART 3.00 - FOUNDATION, GEOTEXTILE AND CONCRETE DISSIPATION PREPARATION & PLACEMENT

3.01 FOUNDATION PREPARATION

- A. **General.** All subgrade preparation shall be performed in accordance with *ASTMD6884-03, Standard Practice for Installation of Articulating Concrete Block (ACB) Revetment Systems*.
- B. Areas on which filter fabric and the Concrete dissipation Units are to be placed will be constructed to the lines and grades shown on the Contract Drawings and to the tolerances specified in the Contract Documents.
- C. **Grading.** The slope will be graded to a smooth plane surface to ensure that intimate contact is achieved between the slope face and the geotextile (filter fabric). All slope deformities, roots, grade stakes, and stones which project normal to the local slope face must be re-graded or removed. Where such areas are evident, they will be brought to grade by placing compacted homogeneous material.
- D. **Inspection.** Immediately prior to placing the filter fabric and remaining subgrade components, the prepared subgrade will be inspected by the Engineer as well as the owner's representative. No fabric, subgrade section or Concrete dissipation Unit will be placed thereon until that area has been

approved by each of these parties. “Rules of thumb” may be established during the initial inspection of each product type with regard to foundation preparation to facilitate efficiency in future project preparation areas.

3.02 PLACEMENT OF GEOTEXTILE FILTER FABRIC

- A. **General.** All placement and preparation shall be performed in accordance with *ASTM D6884-03, Standard Practice for Installation of Articulating Concrete Block (ACB) Revetment Systems*. Filter Fabric, or filtration geotextile, as specified elsewhere, will be placed within the limits shown on the Contract Drawings.
- B. **Placement.** The filtration geotextile will be placed directly on the prepared area, in intimate contact with the subgrade, and free of folds or wrinkles. The geotextile will not be walked on or disturbed when the result is a loss of intimate contact between the geotextile and the subgrade. The geotextile filter fabric will be placed so that the upstream strip of fabric overlaps the downstream strip. The longitudinal and transverse joints will be overlapped at least two (2) feet. The geotextile will extend at least one (1) foot beyond the top and bottom revetment termination points.

3.03 PLACEMENT OF CONCRETE DISSIPATION SYSTEM

- A. The proposed Concrete dissipation units, as specified in Part 2A of these specifications, will be constructed within the specified lines and grades shown on the Contract Drawings.
- B. **Placement (No. 57 Stone) – 24” Concrete dissipation**
To mitigate subgrade inconsistencies, a minimum thickness of 4” of No. 57 stone is required prior to installing the 24” units. The stone and desired thickness will be placed directly on the specified geotextile as directed and accepted by the Engineer of Record or representative.
- C. **Bedding – 24” Concrete dissipation**
A bedding layer of clean stone is to be placed in conjunction with the subgrade section for backfilling purposes to achieve necessary bearing and/or setback tolerances. The bedding layer size (D₅₀) is 2-3”.
- D. **Placement – 24” Concrete dissipation**
Placed individually, Concrete dissipation will be placed with uniform spacing. For a specified area receiving the 24” units, standard spacing between unit center in both the x and y dimension is 12”, which represents a 0.5 packing ratio. Tighter placement tolerances are possible, such as a 0.4 packing ratio, but may become difficult to achieve while placing successive rows in a matrix. Standard installation includes placing the units in a consistent repeatable fashion to aid in efficiency. Recommended in-place orientation of the unit(s) emphasizes pointing exposed projecting unit arm (vertical or horizontal) downstream whenever practical during construction. Subsequent cabling of outer units is common, depending on the system embedment for the project.
- E. Bedding stone material can be utilized for bridging interior subgrade voids and establishing consistent bedding layer for additional lifts of unit(s) if applicable, whether hand placed or bundled. If applicable, vertical fluctuations occurring from unit to unit or bundle to bundle will be compensated for by utilizing bedding.
- F. **Consultation.** The manufacturer of the concrete dissipation units will provide design and construction advice during the design to the extent possible and initial installation phases of the project as necessary, by the discretion of the Engineer.

- END OF SECTION-

SECTION 40 70 02

PROCESS INSTRUMENT SCHEDULE

1.00 GENERAL

1.01 SCOPE OF WORK

A. This Section includes a schedule of the Process Instruments provided by the PCSI.

1.02 RELATED WORK

- A. Wherever references are made to Related Work in other Specification Sections of the Specifications, the Contractor is to provide such information or work as may be required in those references and include such information or work as may be specified.
- B. All Instrumentation work related to Process and Mechanical Divisions equipment that is shown on the Instrumentation Drawings shall be provided under Division 40 Process Control System Sections unless otherwise explicitly shown.
- C. All instrumentation Equipment and work provided under any Division of the Specifications shall fully comply with the requirements of Division 40 Instrumentations Sections.
- D. No references are made to any other section which may contain work related to any other section. The Contract Documents shall be taken as a whole with every section related to every other section as required to meet the requirements specified. The organization of the Contract Documents into specification divisions and sections is for organization of the documents themselves and does not relate to the division of suppliers or labor which the Contractor may choose to employ in the execution of the Contract. Where references are made to other Sections and other Divisions of the Specifications, the Contractor shall provide such information or additional work as may be required in those references and include such information or work as may be specified.
- E. Other Divisions
 - 1. The Contractor shall be responsible for examining all Sections of the Specifications and Drawings and shall determine the power and wiring requirements and shall provide appurtenances, as required to provide a fully functioning process control system. If the equipment requires added options, due to different equipment being supplied, the Contractor shall furnish the additional appurtenances and/or wiring, with no change in the Contract Price, and with no increase in Contract Time.

1.03 SUBMITTALS

A. Refer to Section 40 61 13 and the related work sections for submittal requirements.

1.04 SYSTEM DESCRIPTION

A. The Process Instrument Schedule provides a summary of the major process instrumentation requirements as utilized within the control loops represented in the Contract Documents. Additional instruments shall be provided as required to fully implement the functionality as described in these specifications and as recommended by the process and mechanical equipment division suppliers.

- B. The Process Instrument Schedule is not intended to be an all-inclusive listing of all elements and appurtenances required to execute the control loop functions; rather, it is intended to supplement and complement the drawings and other specification sections. The Process Instrument Schedule shall not be considered equal to a bill of materials.
- C. Provide instrumentation hardware and software as necessary to perform control functions specified herein and as shown on drawings.

1.05 PROCESS INSTRUMENT SCHEDULE

- A. The Process Instrument Schedule follows in Table 40 70 02.

TABLE 40 70 02 PCSI-FURNISHED PROCESS INSTRUMENT SCHEDULE

ITEM NO.	P&ID	TAG	DESCRIPTION	TYPE	RANGE OR SET POINT	COMMENTS
1	I-6	FE/FIT-101	Well No. 1 Flow	Existing 24" Electromagnetic Flow Tube (to remain)/Indicating Transmitter (Converted/Upgraded)	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
2	I-6	FE/FIT-102	Well No. 2 Flow	Existing 24" Electromagnetic Flow Tube (to remain)/Indicating Transmitter (Converted/Upgraded)	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
3	I-6	FE/FIT-103	Well No. 3 Flow	Existing 24" Electromagnetic Flow Tube (to remain)/Indicating Transmitter (Converted/Upgraded)	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
4	I-7	AE/AIT-201	Chlorine Residual	Chlorine Sensor/Indicating Transmitter	0 - 10 mg/L as Cl ₂	
5	I-7	AE/AIT-202	Fluoride Residual	Fluoride Sensor/Indicating Transmitter	0 - 10 mg/L as Fluoride	
6	I-7	LSH-200	GST Level High Reset	Probe Level Switch		Coordinate during construction.
7	I-7	LSHH-200	GST Level High	Probe Level Switch		Coordinate during construction.
8	I-7	LSL-200	GST Level Low Reset	Probe Level Switch		Coordinate during construction.
9	I-7	LSLL-200	GST Level Low	Probe Level Switch		Coordinate during construction.
10	I-7	PE/LIT-201	GST Level No. 1	Pressure Element/Level Indicating Transmitter	0 - 40 FT	
11	I-7	PE/LIT-202	GST Level No. 2	Pressure Element/Level Indicating Transmitter	0 - 40 FT	
12	I-8	FE/FIT-301	PZ 930 HSP 1-4 Flow	24" Electromagnetic Flow Tube/Indicating Transmitter	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
13	I-8	FE/FIT-302	PZ 930 HSP 2-4 Flow	24" Electromagnetic Flow Tube/Indicating Transmitter	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.

ITEM NO.	P&ID	TAG	DESCRIPTION	TYPE	RANGE OR SET POINT	COMMENTS
14	I-8	FE/FIT-303	PZ 930 HSP 3-4 Flow	24" Electromagnetic Flow Tube/Indicating Transmitter	0 - 15 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
15	I-8	PE/PIT-300	Pump Station PZ 930 Discharge Pressure	Pressure Indicating Transmitter	0 - 100 PSI	
16	I-9	FE/FIT-401	PZ 1060 HSP No. 3-6 Flow	16" Electromagnetic Flow Tube/Indicating Transmitter	0 - 8 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
17	I-9	FE/FIT-402	PZ 1060 HSP No. 2-6 Flow	16" Electromagnetic Flow Tube/Indicating Transmitter	0 - 8 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
18	I-9	FE/FIT-403	PZ 1060 HSP No. 1-6 Flow	16" Electromagnetic Flow Tube/Indicating Transmitter	0 - 8 MGD	Furnish with EtherNet/IP communications interface and Heartbeat Technology.
19	I-9	PE/PIT-400	Pump Station PZ 1060 Discharge Pressure	Pressure Indicating Transmitter	0 - 150 PSI	
20	I-11	DPIT-500	Supply Water Filters Differential Pressure	Differential Pressure Indicating Transmitter	0 - 100 PSI	
21	I-11	DPIT-505	Brine Filters Differential Pressure	Differential Pressure Indicating Transmitter	0 - 100 PSI	Include diaphragm seal as shown in Drawings. All instrument materials must be compatible with process fluid.
22	I-11	DPIT-510	OSHG No. 1 Softened Water Filter Differential Pressure	Differential Pressure Indicating Transmitter	0 - 100 PSI	
23	I-11	DPIT-520	OSHG No. 2 Softened Water Filter Differential Pressure	Differential Pressure Indicating Transmitter	0 - 100 PSI	
24	I-11	FE/FIT-500	Potable Water Flow	1" Electromagnetic Flow Tube/Indicating Transmitter	0 - 50 gpm	
25	I-11	FE/FIT-505	Softened Water Flow	1" Electromagnetic Flow Tube/Indicating Transmitter	0 - 15 gpm	
26	I-11	PI-510A	OSHG No. 1 Softened Water Filter Inlet Pressure	Pressure Indicator	0 - 100 PSI	
27	I-11	PI-510B	OSHG No. 1 Softened Water Filter Outlet Pressure	Pressure Indicator	0 - 100 PSI	

ITEM NO.	P&ID	TAG	DESCRIPTION	TYPE	RANGE OR SET POINT	COMMENTS
28	I-11	PI-520A	OSHG No. 2 Softened Water Filter Inlet Pressure	Pressure Indicator	0 - 100 PSI	
29	I-11	PI-520B	OSHG No. 2 Softened Water Filter Outlet Pressure	Pressure Indicator	0 - 100 PSI	
30	I-12	PI-510	Brine Pump No. 1 Discharge Pressure	Pressure Indicator	0 - 100 PSI	Include diaphragm seal as shown in Drawings. All instrument materials must be compatible with process fluid.
31	I-12	PI-520	Brine Pump No. 2 Discharge Pressure	Pressure Indicator	0 - 100 PSI	Include diaphragm seal as shown in Drawings. All instrument materials must be compatible with process fluid.
32	I-13	FE/FIT-580	Sodium Hypochlorite Primary Flow	2" Electromagnetic Flow Tube/Indicating Transmitter	0 - 20 gpm	All instrument materials must be compatible with process fluid.
33	I-13	FE/FIT-585	Sodium Hypochlorite Secondary Flow	2" Electromagnetic Flow Tube/Indicating Transmitter	0 - 20 gpm	All instrument materials must be compatible with process fluid.
34	I-13	LSH-530	Sodium Hypochlorite Storage Area Flood	Float Level Switch	Install 1 inch above floor	
35	I-14	LE/LIT-600	Fluoride Bulk Storage Tank Level	Ultrasonic Level Element/Indicating Transmitter	0 - 15 ft	Furnish sensor of material compatible with fluid being measured. Remotely mount transmitter at fill station panel. Include sunshield and transmitter display shield.
36	I-16	TE/TIT-700	Elec. Building Elec. Room Temperature	Temperature Indicating Transmitter	20-120°F	
37	I-16	TE/TIT-705	Elec. Building Control Room Temperature	Temperature Indicating Transmitter	20-120°F	
38	I-16	TE/TIT-710	Chem. Building Elec. Room Temperature	Temperature Indicating Transmitter	20-120°F	

2.00 PRODUCTS (NOT USED)

3.00 EXECUTION (NOT USED)

END OF SECTION

SECTION 40 71 00
FLOW INSTRUMENTS

1.00 GENERAL

1.01 SCOPE OF WORK

- A. Furnish, install and test all flow measurement, flow control devices and appurtenances, as shown on the Drawings, specified in the Related Work Sections and Divisions, and as specified herein.
- B. Flow equipment, specified in other Divisions, shall be manufactured in accordance with this Section and submitted as a part of the equipment specified in other Divisions.

1.02 RELATED WORK

- A. No references are made to any other section which may contain work related to any other section. The Contract Documents shall be taken as a whole with every section related to every other section as required to meet the requirements specified. The organization of the Contract Documents into specification divisions and sections is for organization of the documents themselves and does not relate to the division of suppliers or labor which the Contractor may choose to employ in the execution of the Contract. Where references are made to other Sections and other Divisions of the Specifications, the Contractor shall provide such information or additional work as may be required in those references and include such information or work as may be specified.

1.03 SUBMITTALS

- A. Submit catalog data for all items supplied from this specification Section as applicable. Submittal shall include catalog data, functions, ratings, inputs, outputs, displays, etc., sufficient to confirm that the meter or relay provides every specified requirement. Any options or exceptions shall be clearly indicated.
- B. Submittals for equipment specified herein, for other Sections or Divisions, shall be made as a part of equipment submittals furnished under other Sections or Divisions.
- C. Installation experience documentation shall be submitted for approval with the Section Equipment Submittal
- D. Operation and Maintenance Manuals.
 - 1. Operation and Maintenance manuals shall be constructed in accordance with Division 1 and shall include the following information:
 - a. Manufacturer's contact address and telephone number for parts and service.
 - b. Instruction books and/or leaflets

- c. Recommended renewal parts list
- d. Record Documents for the information required by the Submittals above.

1.04 REFERENCE CODES AND STANDARDS

- A. The equipment in this specification shall be designed and manufactured according to latest revision of the following standards (unless otherwise noted):
 - 1. ISO 2975/VII liquids and BS 5857-2.4 for gases. Transit Time Meters
 - 2. ISO 9555-1 and ISO 9555-2. Liquid flow in open channels. Radiotracer dilution method of calibration for open channel flow measurements.
 - 3. American Society of Mechanical Engineers (ASME). 1971. Fluid meters: Their theory and application.
 - 4. International Organization of Standards (ISO 5167-1). 1991. Measurement of fluid flow by means of pressure differential devices Venturi Tube w/ liquid
 - 5. ASME PTC 19.2 Pressure Measurement
 - 6. ANSI B88.1 Pressure Transducers Calibration
 - 7. ISA S37.6 Strain Gage Transducers Potentiometric
 - 8. Calibration AVS 6.2, 6.4, 6.5 Hazardous Areas
 - 9. IEC 79-10 Intrinsically Safe Circuits
 - 10. ANSI 913 Electrical Instruments in Hazardous Atmospheres
- B. All meters, relays and associated equipment shall comply with the requirements of the National Electric Code and Underwriters Laboratories (UL) where applicable.
- C. Each specified device shall also conform to the standards and codes listed in the individual device paragraphs.

1.05 QUALITY ASSURANCE

- A. The manufacturer of this equipment shall have produced similar instrumentation equipment for a minimum period of five years. When requested by the Owner/Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- B. Equipment submitted shall fit within the space or location shown on the Drawings. Equipment which does not fit within the space or location is not acceptable.
- C. For the equipment specified herein, the manufacturer shall be ISO 9001 2000 certified.

1.06 WARRANTY

- A. The Manufacturer shall warrant the equipment to be free from defects in material and workmanship as per the requirements of the General Conditions from date of acceptance of the equipment containing the items specified in this Section. Within such period of warranty, the Manufacturer shall promptly furnish all material and labor necessary to return the equipment to new operating condition. Any warranty work requiring shipping or transporting of the equipment shall be performed by the Contractor at no expense to the Owner.

2.00 PRODUCTS

2.01 ELECTROMAGNETIC FLOW METER

- A. Subject to compliance with the Contract Documents, the following Manufacturers are acceptable:
 - 1. Endress+Hauser
 - a. Well Flow Meters only: existing flow tube assemblies are to remain. flow transmitters/electronics are to be replaced using manufacturer's documented process for upgrading from existing Proline Promag 53 series instruments to Proline Promag 400 series instruments.
- B. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety.
- C. General
 - 1. Provide sufficient lengths of Manufacturer's specialty cables for installation of power and signal conductors for each instrument.
- D. Type
 - 1. Microprocessor based intelligent type.
- E. Function/Performance:
 - 1. Output: 4-20 mA DC. Output shall be linear for pressure applications.
 - 2. Accuracy: 0.5 percent of span (linear output).
 - 3. Stability: Combined temperature effects shall be less than 0.2 percent of maximum span per 50 degrees F temperature change. Effect on accuracy, due to static pressure changes, shall be negligible.
 - 4. RFI Protection: 0.1 percent error between 27 and 500 MHZ at 30 v/m field intensity.
 - 5. Drift: 0.10 percent per six months for 4-20 mA output.

6. Temperature rating: Suitable for process liquid temperature up to 70 degrees C and an ambient of 65 degrees C.
7. Pressure rating: 240 PSI if 150 lb flanges are used; 700 PSI if 300 lb flanges are used.
8. Meter shall be capable of running empty indefinitely without damage to any component.

F. Physical:

1. Metering Tube

- a. Carbon steel with 304 Stainless interiors unless otherwise indicated.
- b. Electrical Classification: Rating shall be FM approved for the location shown on the Drawings
- c. Tube Flanges: Match piping AWWA rating of the pipe. Minimum AWWA 150# Flange.
- d. Tube Liner: Polyurethane or EDPM unless noted otherwise.
- e. Tube Electrodes: ANSI 316 stainless steel or Hastelloy C, bullet nosed or elliptical self-cleaning type unless otherwise noted.
- f. Tube Housing: Meters in below grade, vaults, basements, etc., shall be designed for accidental submergence in 30 feet of water for 24 hours. Meters above grade shall be of splash proof/drip proof design unless otherwise noted.
- g. Painting: All external surfaces shall be painted with a chemical and corrosion resistant epoxy finish.

2. Transmitter

- a. Furnish with EtherNet/IP communications interface and Heartbeat Technology.
- b. Transmitter Enclosure: NEMA 4X.
- c. Electrical Classification: Rating shall be FM approved for the location shown on the Drawings

G. Power Requirements

1. As shown on the Drawings.

H. Options/Accessories

1. Factory calibration: Each meter shall be factory calibrated, with a copy of the Report delivered with the device and in the O&M manual.
2. Grounding: Meter shall be grounded with rings. All materials shall be suitable and not effected buy for the liquid being measured Provide 316 Stainless Steel ground rings

unless otherwise recommended in writing from the meter manufacture, electrical bonding wires/straps, and gaskets, etc.

3. Electrode cleaning: Where listed on the instrument device schedules, or shown on the Drawings, provide an electrode cleaning system. The cleaning system electronics shall be housed in a NEMA 4X wall mounted panel. Provide all necessary cables and connectors. The system shall be powered through the special cables to the magnetic flow meter.
4. Provide a hand-held programmer for each transmitter, where full setup is not available from the instrument transmitter display directly.

1.01 SPARE INSTRUMENTS AND RELATED COMPONENTS

- A. Contractor shall furnish a minimum of one or 10 percent of each installed instrument, whichever is greater.
- B. All spare equipment shall be packed in a manner suitable for long-term storage and shall be adequately protected against corrosion, humidity and temperature. Individually mark and vacuum seal all spare parts. Provide other spare parts as indicated on the individual device specifications.

3.00 EXECUTION

2.01 INSTALLER'S QUALIFICATIONS

- A. Installer shall be specialized in installing this type of equipment with minimum 5 years documented experience

2.02 EXAMINATION

- A. Examine installation area to assure there is enough clearance to install the equipment.
- B. Verify that the equipment is ready to install.
- C. Verify field measurements are as instructed by the manufacturer.

2.03 INSTALLATION

- A. The Contractor shall install all equipment per the manufacturer's recommendations and Contract Drawings.
- B. All process connections shall be 316 stainless steel tubing, 3/8" minimum, unless otherwise shown on the Drawings. Fittings shall be of the compression type, 316 stainless steel.
- C. All conduit entries into the instruments shall use hubs of watertight, threaded aluminum, insulated throat, stainless steel grounding screw, as manufactured by T&B H150GRA Series, or equal.

- D. Install stainless steel instrument labels with instrument ID, secured with safety wire.
- E. All non-loop powered instrument transmitters shall have an approved disconnecting means for power mounted within reach of the transmitter.

2.04 RACEWAY SEALING

- A. Where raceways enter terminal boxes, junction boxes, or instrumentation equipment, all entrances shall be sealed with 3M 1000NS Watertight Sealant or approved equal.

2.05 FIELD QUALITY CONTROL

- A. Inspect installed equipment for anchoring, alignment, grounding and physical damage.
- B. Check tightness of all accessible electrical connections. Minimum acceptable values shall be specified in the manufacturer's instructions.

2.06 FIELD ADJUSTING

- A. Adjust all equipment for proper range and field conditions, as described in the manufacturer's instructions.
- B. Any field adjustments, required for proper system operation, shall be included in the Final O&M.

2.07 CLEANING

- A. Remove all rubbish and debris from inside and around the equipment. Remove dirt, dust, or concrete spatter from the interior and exterior of the equipment using brushes, vacuum cleaner, or clean, lint free rags. Do not use compressed air.

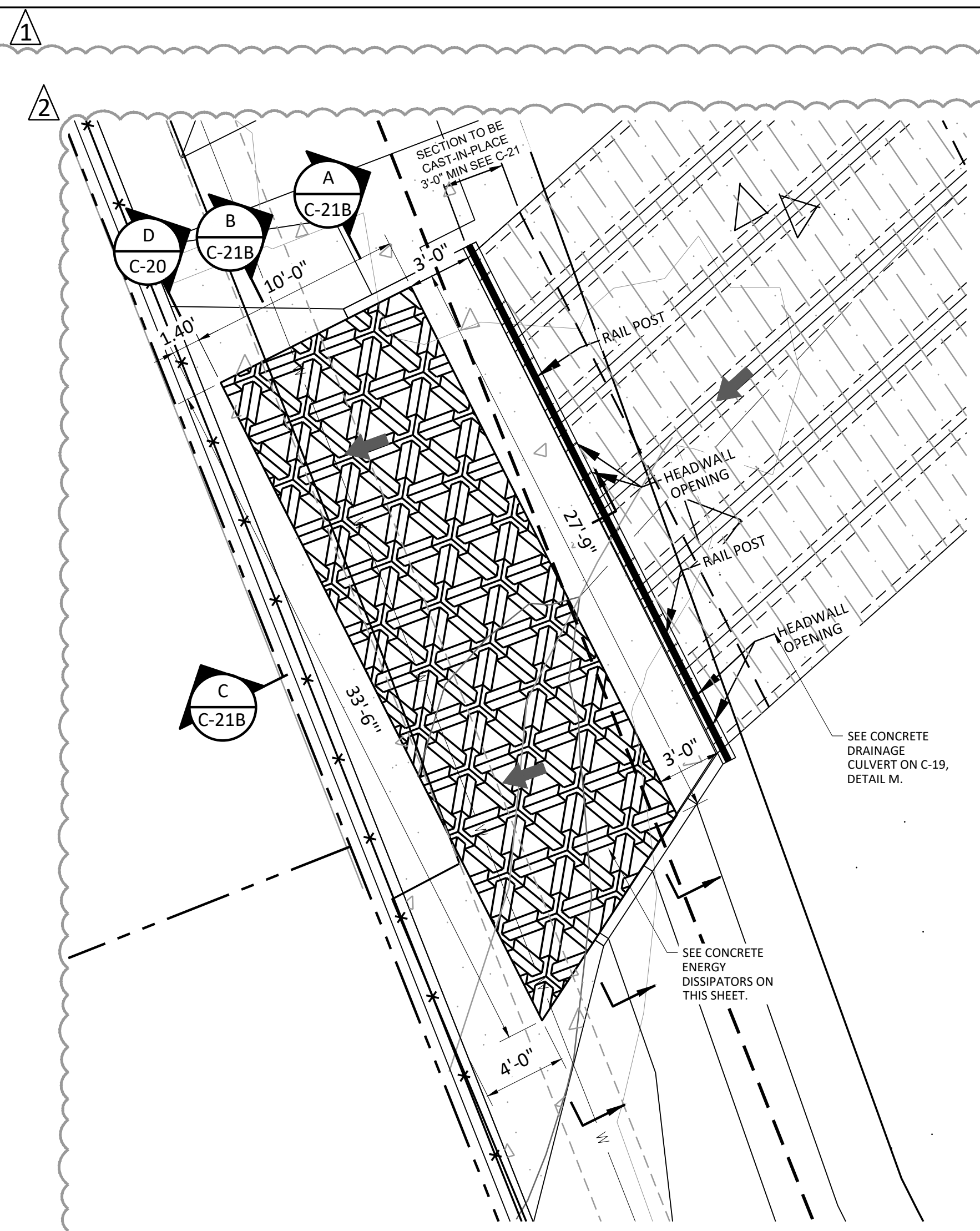
2.08 EQUIPMENT PROTECTION AND RESTORATION

- A. Touch-up and restore damaged surfaces to factory finish, as approved by the manufacturer. If the damaged surface cannot be returned to factory specification, the surface shall be replaced.

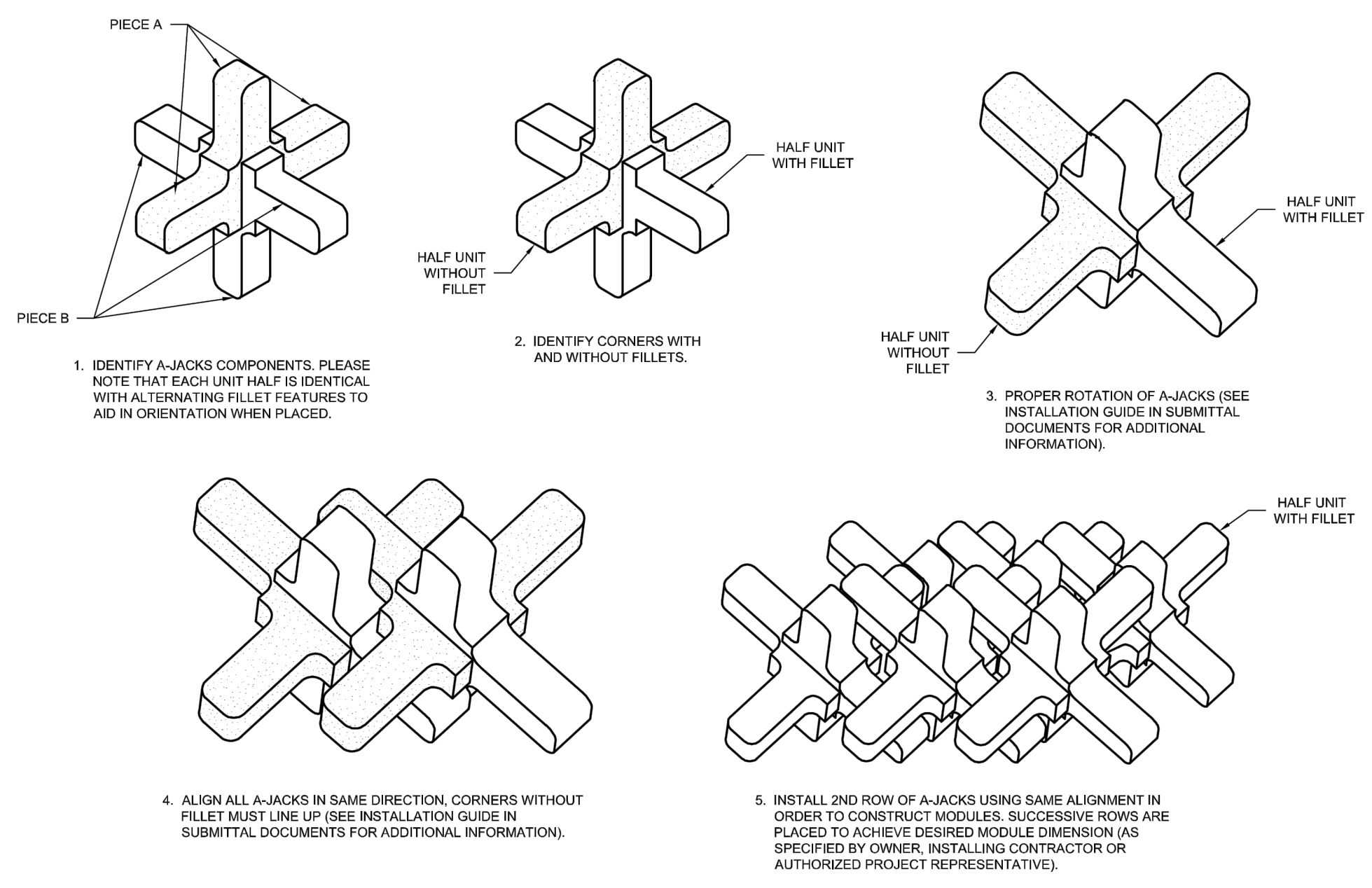
2.09 MANUFACTURER'S CERTIFICATION

- A. A qualified factory-trained and certified representative shall certify in writing that the equipment has been installed, adjusted, including all settings as defined in the Contract Documents.
- B. The Contractor shall provide three copies of the representative's certification.

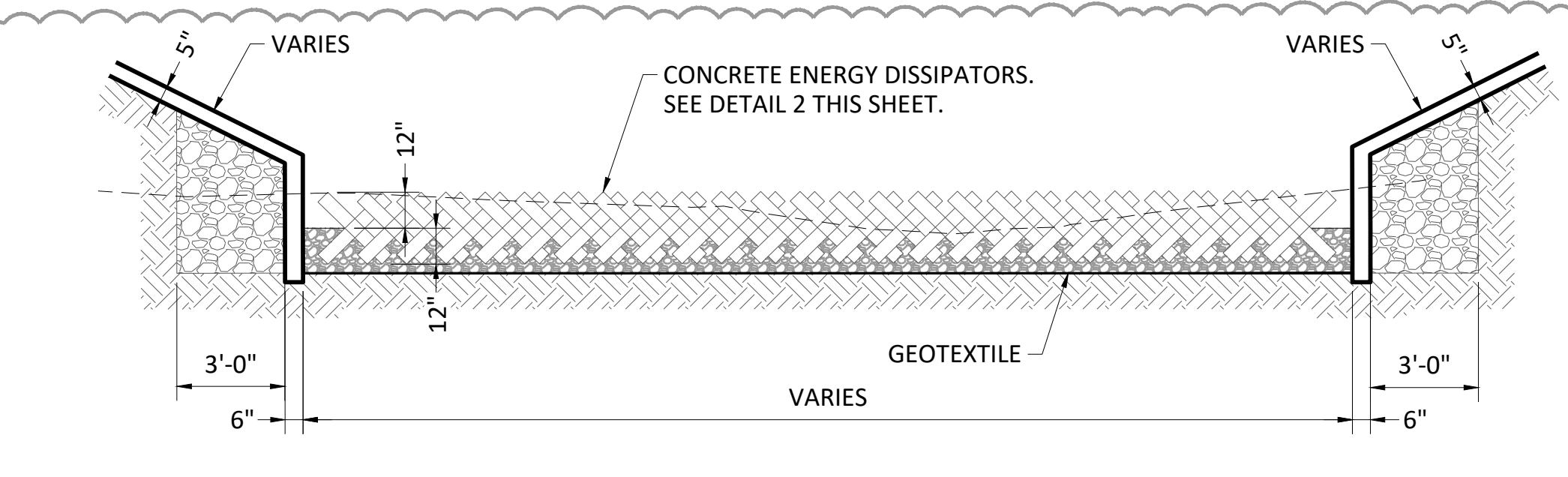
END OF SECTION



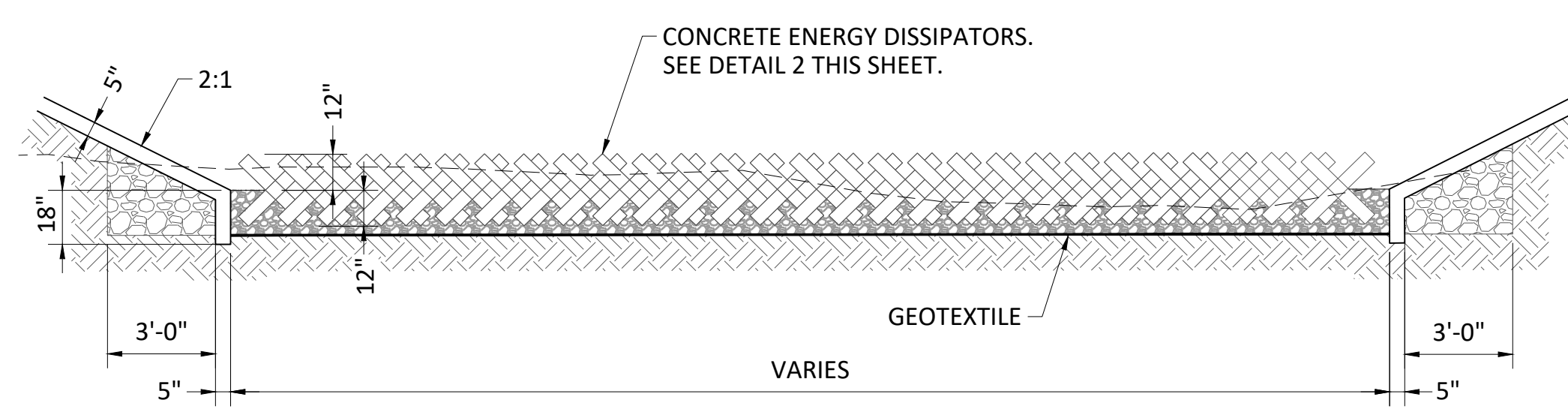
1 CONCRETE ENERGY DISSIPATORS PLAN VIEW
C-21B 1"=5'



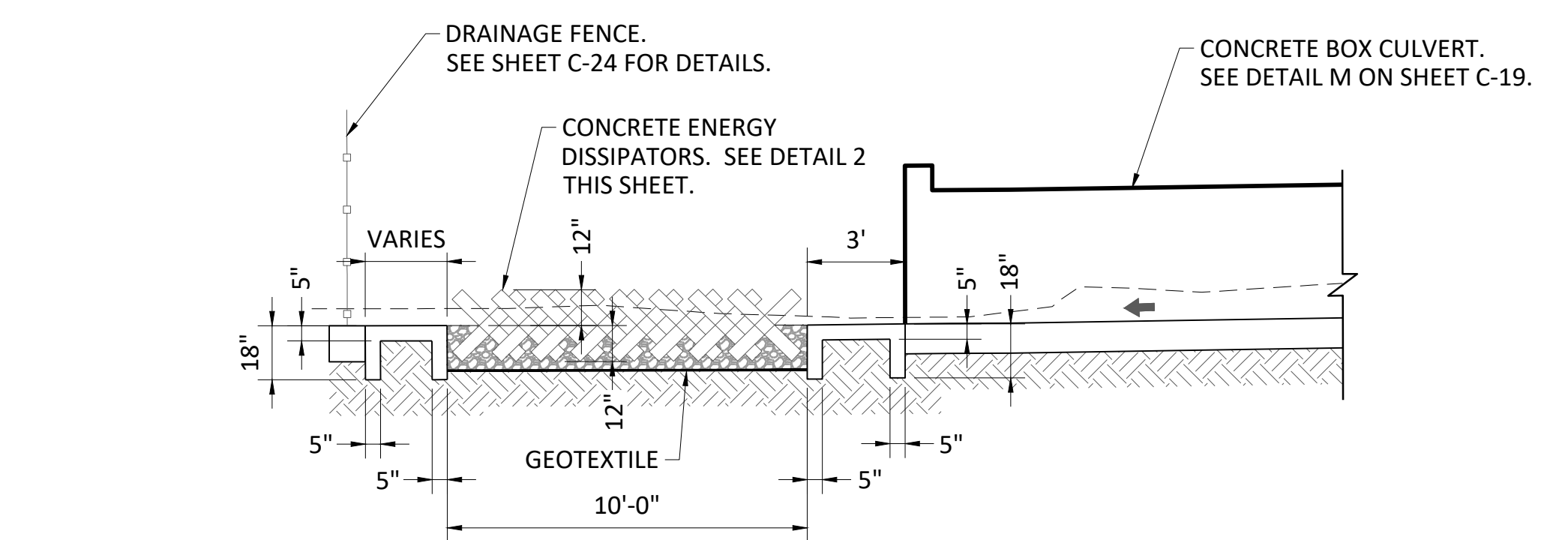
2 CONCRETE ENERGY DISSIPATORS DETAIL
C-21B N.T.S.



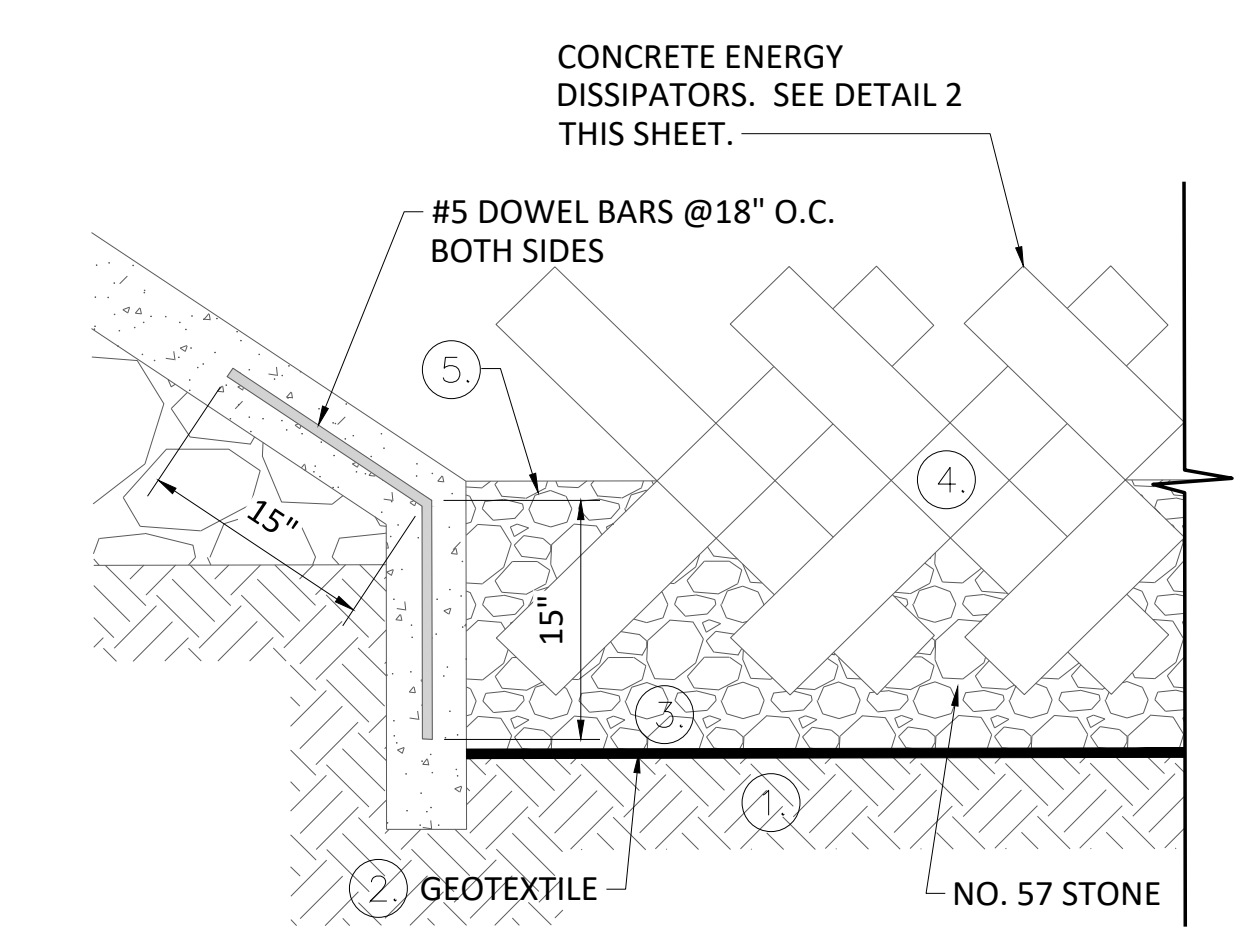
A SECTION A
C-21B 1"=4'



B SECTION B
C-21B 1"=4'



C SECTION C
C-21B 1"=4'



3 REINFORCED CONCRETE TURNDOWN
C-21B 1"=2'

CONCRETE ENERGY DISSIPATOR GENERAL NOTES:

1. SUBGRADE PREPARATION.
2. PLACE GEOTEXTILE
3. 4" ROCK BEDDING.
4. PLACE ENERGY DISSIPATOR STRUCTURES.
5. FILL DRAINAGE LAYER. REFER TO SPECIFICATION 32 40 20.

STATE OF TEXAS
MARCOS MEDINA, P.E. (No. 93830)
ON NOVEMBER 30, 2022
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT

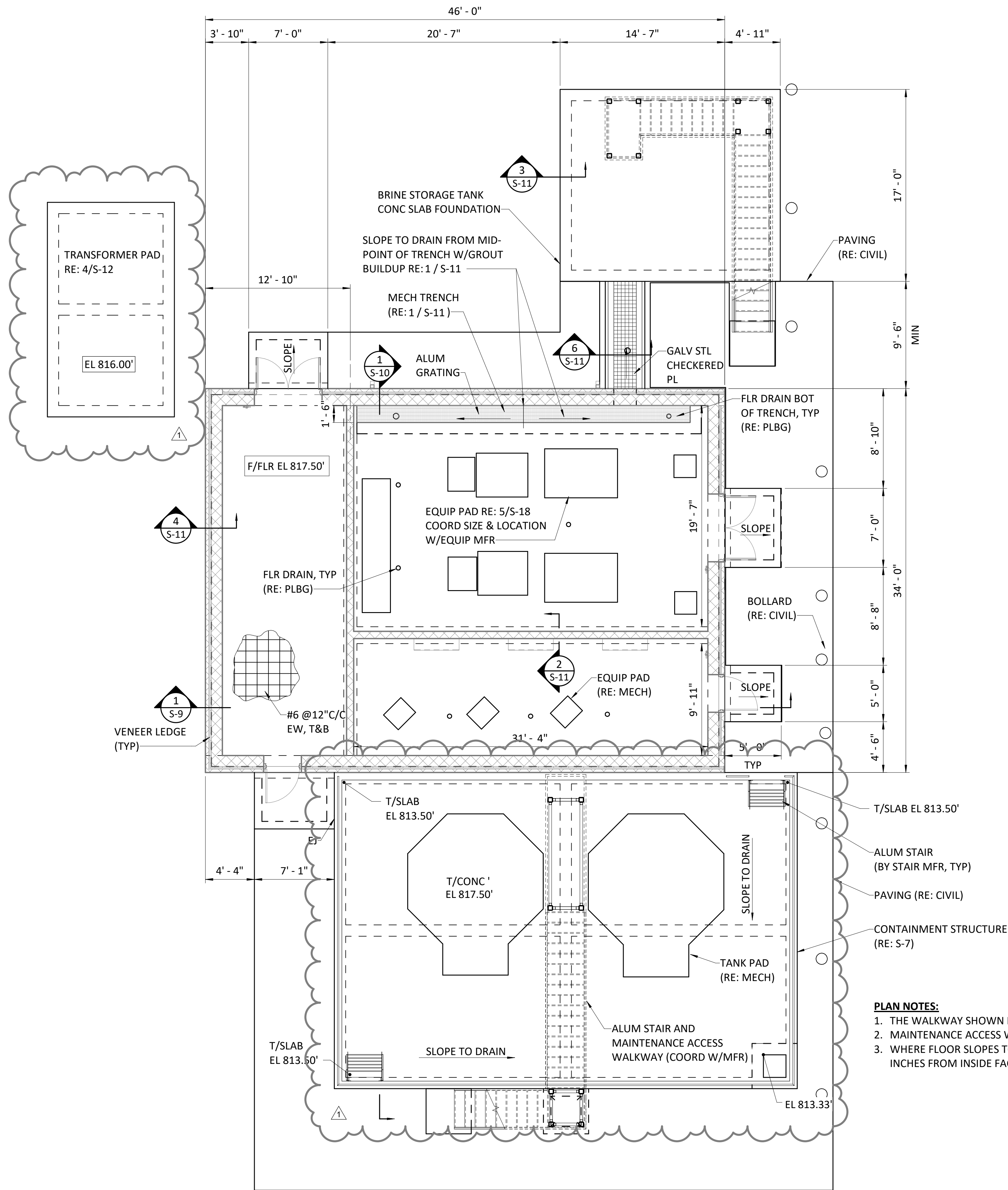
FREESSE & NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freesse.com

PLANNING/CONSTRUCTION/PROJECT MANAGEMENT
MCI Moreno Cardenas Inc.
2508 E. Missouri Ave. #500, San Antonio, TX 78202 (710) 582-9697
From Board of Professional Engineers Registration No. F-268052

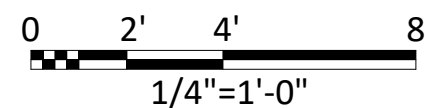
SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
DRAINAGE MISCELLANEOUS DETAILS III

NO.	ISSUE	DATE	BY	EG	EG	DESIGNED	JH/C/C	DRAWN	E.G./A.M.	REVISIONS	CHECKED	M.M.	FILE NAME
1	ADDENDUM NO. 5	01/13/2023	EG	EG									C-18 - Drainage Details.dwg
2	ADDENDUM NO. 6	07/16/2023	EG	EG									C-18 - Drainage Details.dwg

SHEET C-21B
SEQ.



- PLAN NOTES:**
1. THE WALKWAY SHOWN IS FOR REPRESENTATION PURPOSES ONLY.
 2. MAINTENANCE ACCESS WALKWAY SHALL BE ALUMINUM.
 3. WHERE FLOOR SLOPES TO DRAIN, START SLOPE APPROXIMATELY 2-INCHES FROM INSIDE FACE OF CMU WALL.



1 FOUNDATION PLAN
S-7 3/16" = 1'-0"

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

FREES & NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, TX 78216
Phone - (210) 298-3800
Web - www.freese.com

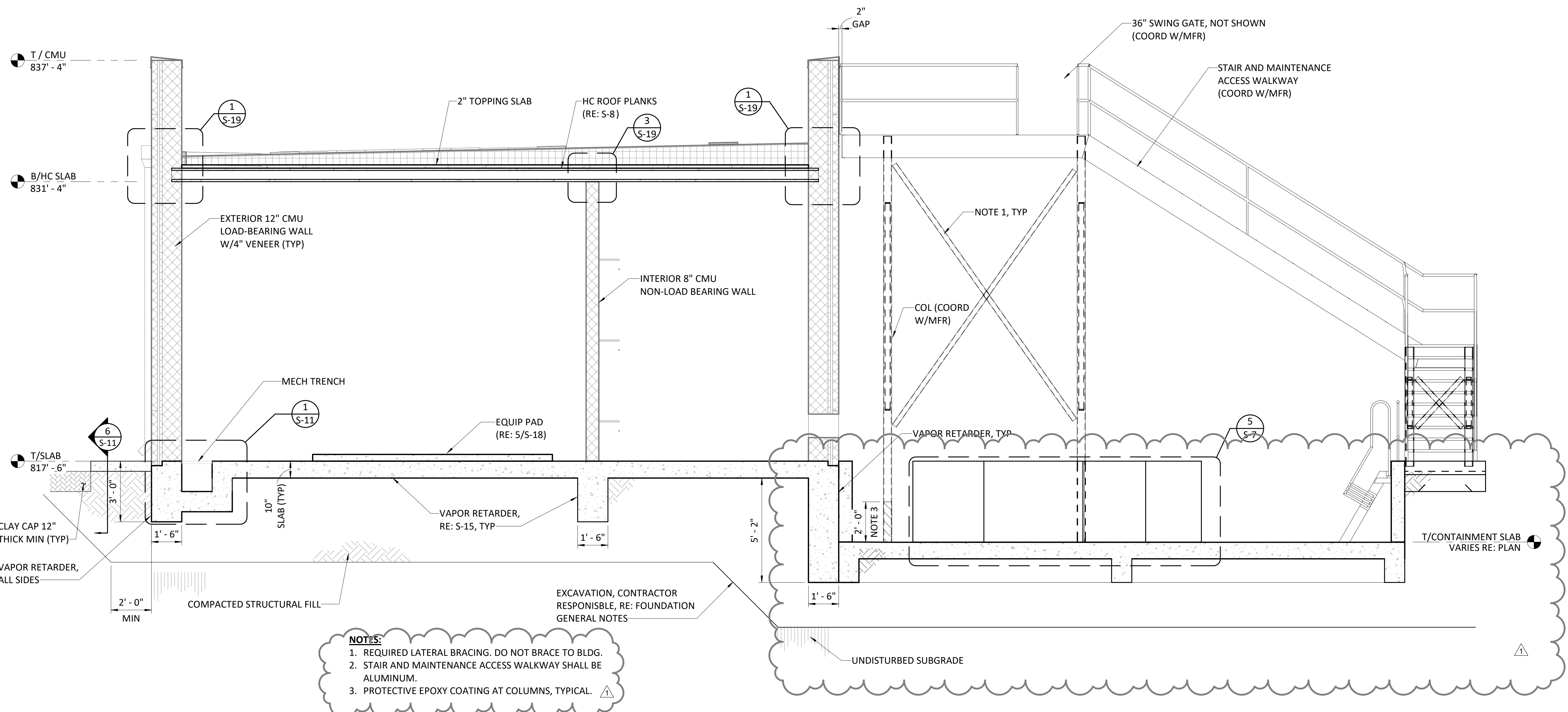
SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
STRUCTURAL
SODIUM HYPOCHLORITE GENERATION BUILDING
FOUNDATION PLAN

FRN OR NO.	DATE	DESIGNED	DRAWN	REVISION	CHECKED	FILE NAME
SWB20457	11/30/22	ALR	JLM		PAB	ST-SWB20457-OSG-R21.rvt
1	1/16/2023					

NO. 1
ISSUE NO. 6
BY
DATE
FILE NAME
ST-SWB20457-OSG-R21.rvt

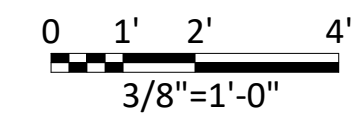
VERIFY SCALE 1
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET S-6
SEQ.



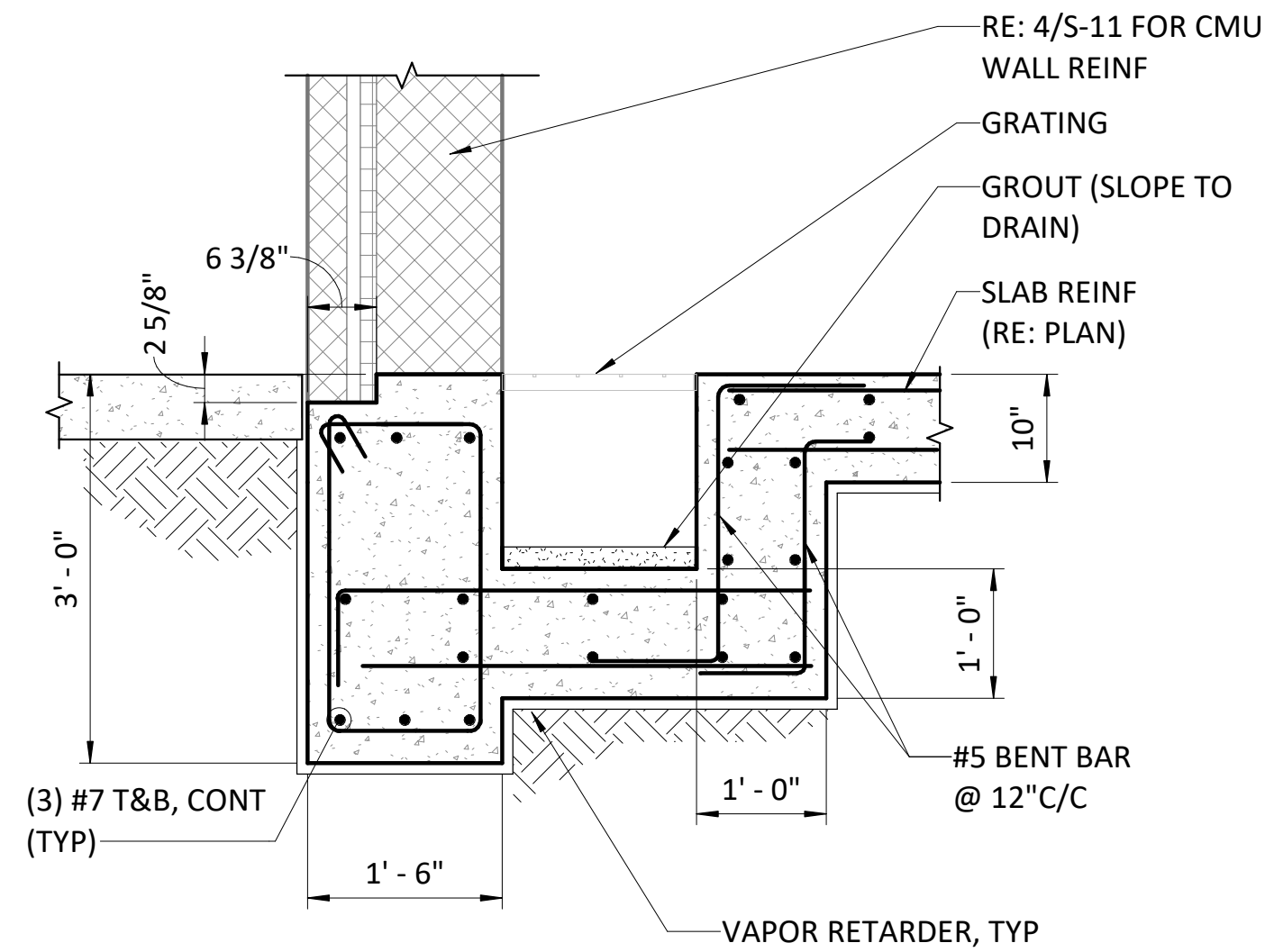
- NOTES:**
1. REQUIRED LATERAL BRACING. DO NOT BRACE TO BLDG.
 2. STAIR AND MAINTENANCE ACCESS WALKWAY SHALL BE ALUMINUM.
 3. PROTECTIVE EPOXY COATING AT COLUMNS, TYPICAL.

SECTION
 1
 S-6 3/8" = 1'-0"

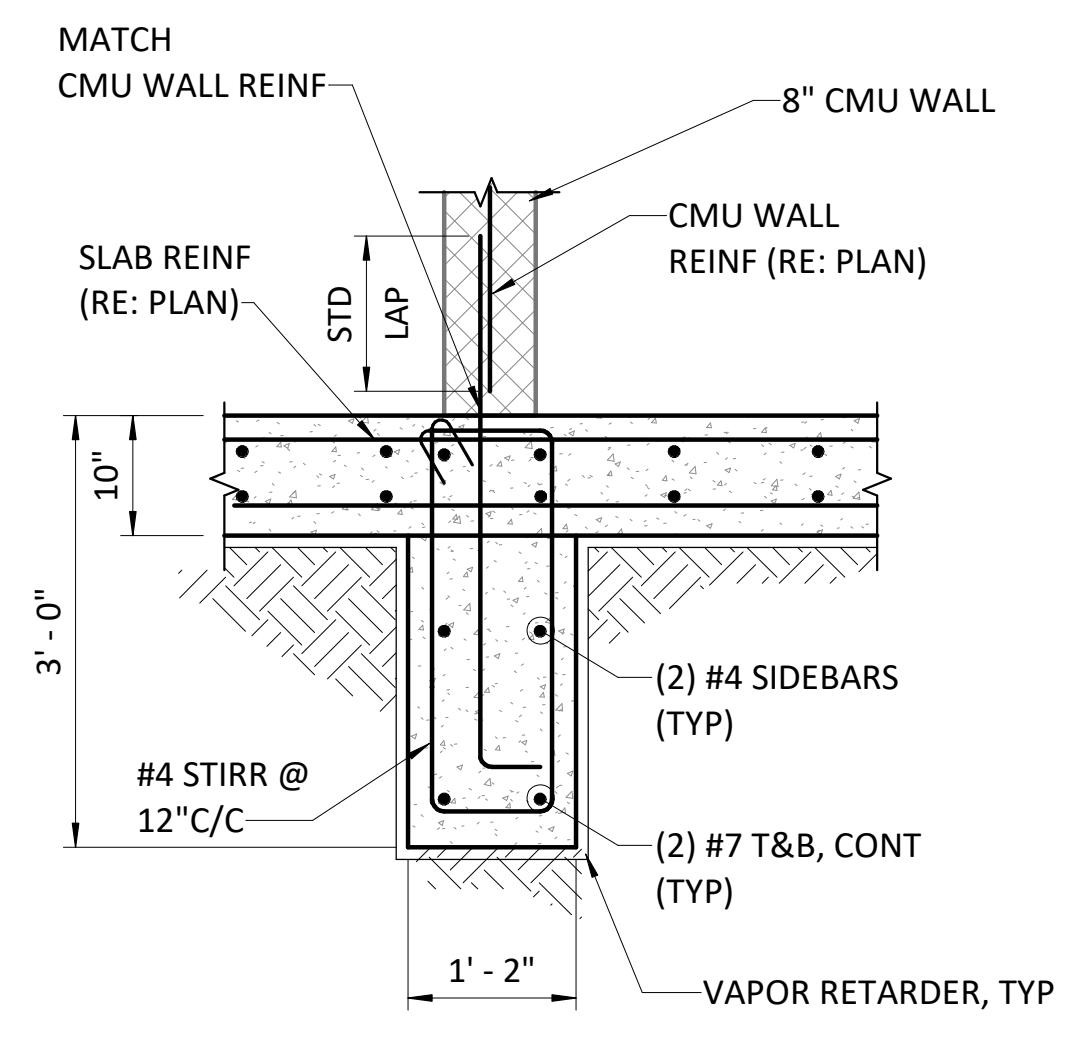


SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
 STRUCTURAL
SODIUM HYPOCHLORITE GENERATION BUILDING
BUILDING SECTION II

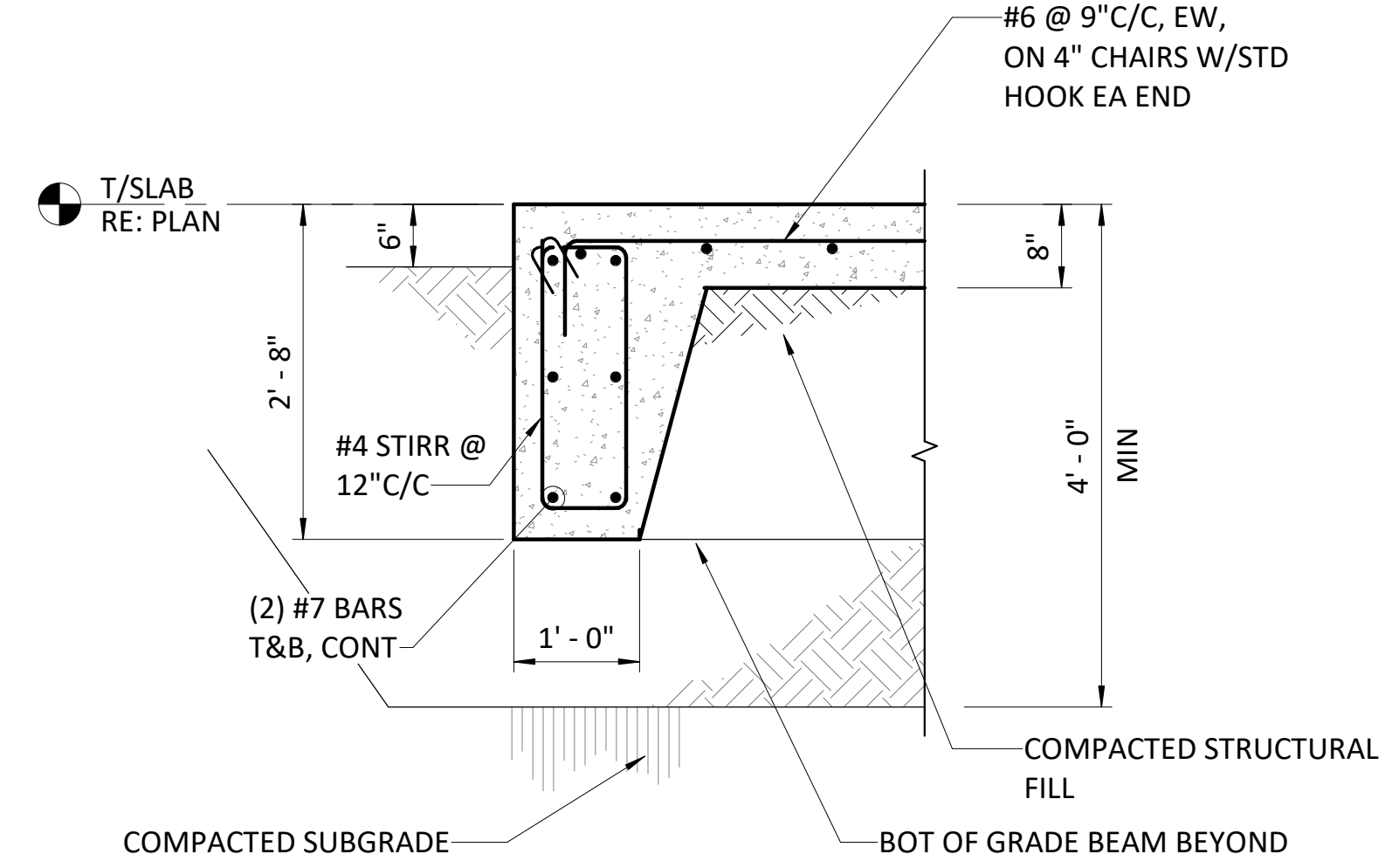
F&N JOB NO.	SWBZ0457
DATE	11/30/22
DESIGNED	ALR
DRAWN	JLM
REUSED	
CHECKED	PAB
DATE	1/16/2023
BY	
ISSUE	
ADDENDUM NO. 6	
VERIFY SCALE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
NO.	1
FILE NAME	ST-SWBZ0457-05G-R21.rvt



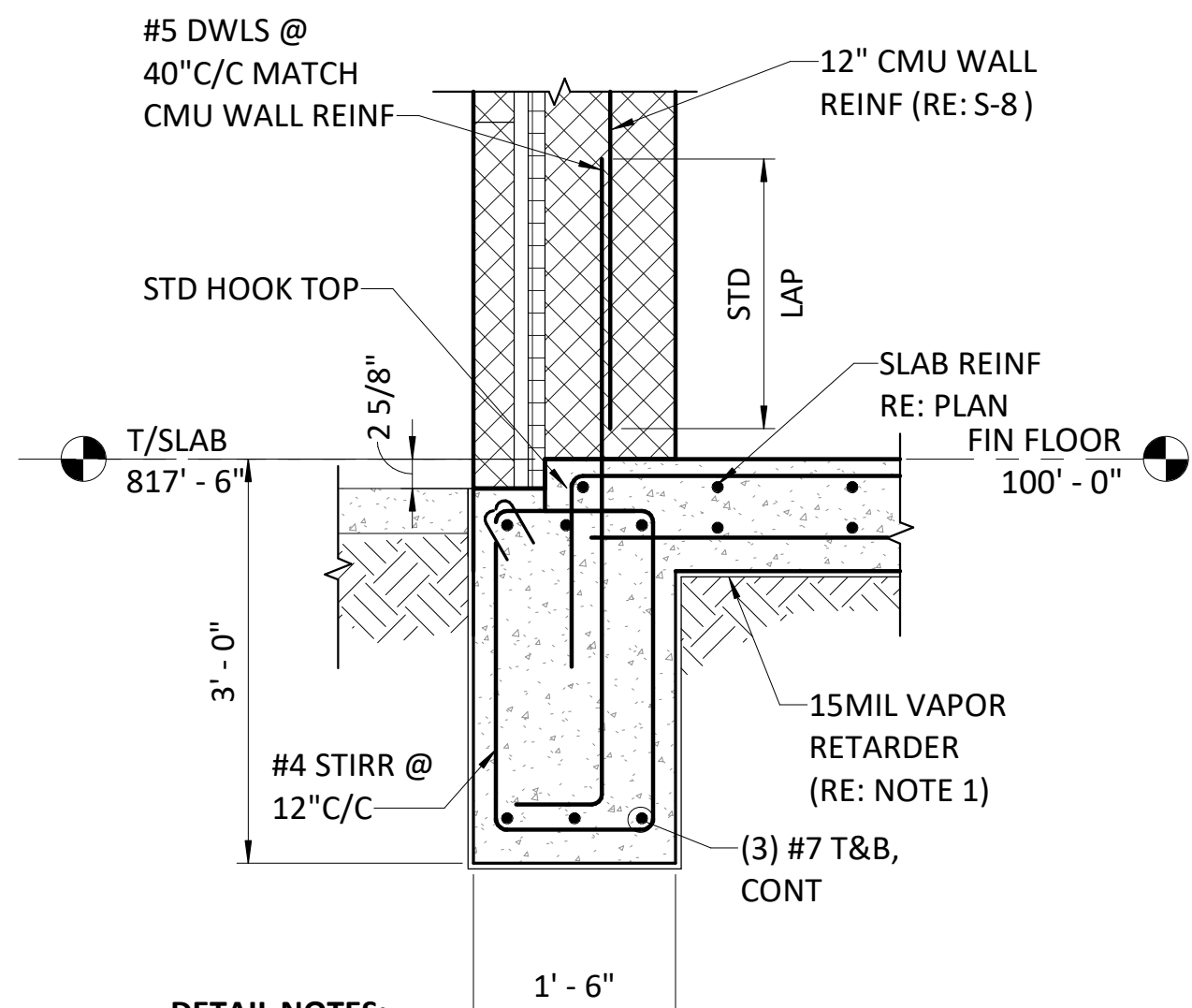
1 EXTERIOR GRADE BEAM @ TRENCH
3/4" = 1'-0"



2 INTERIOR GRADE BEAM DETAIL
3/4" = 1'-0"

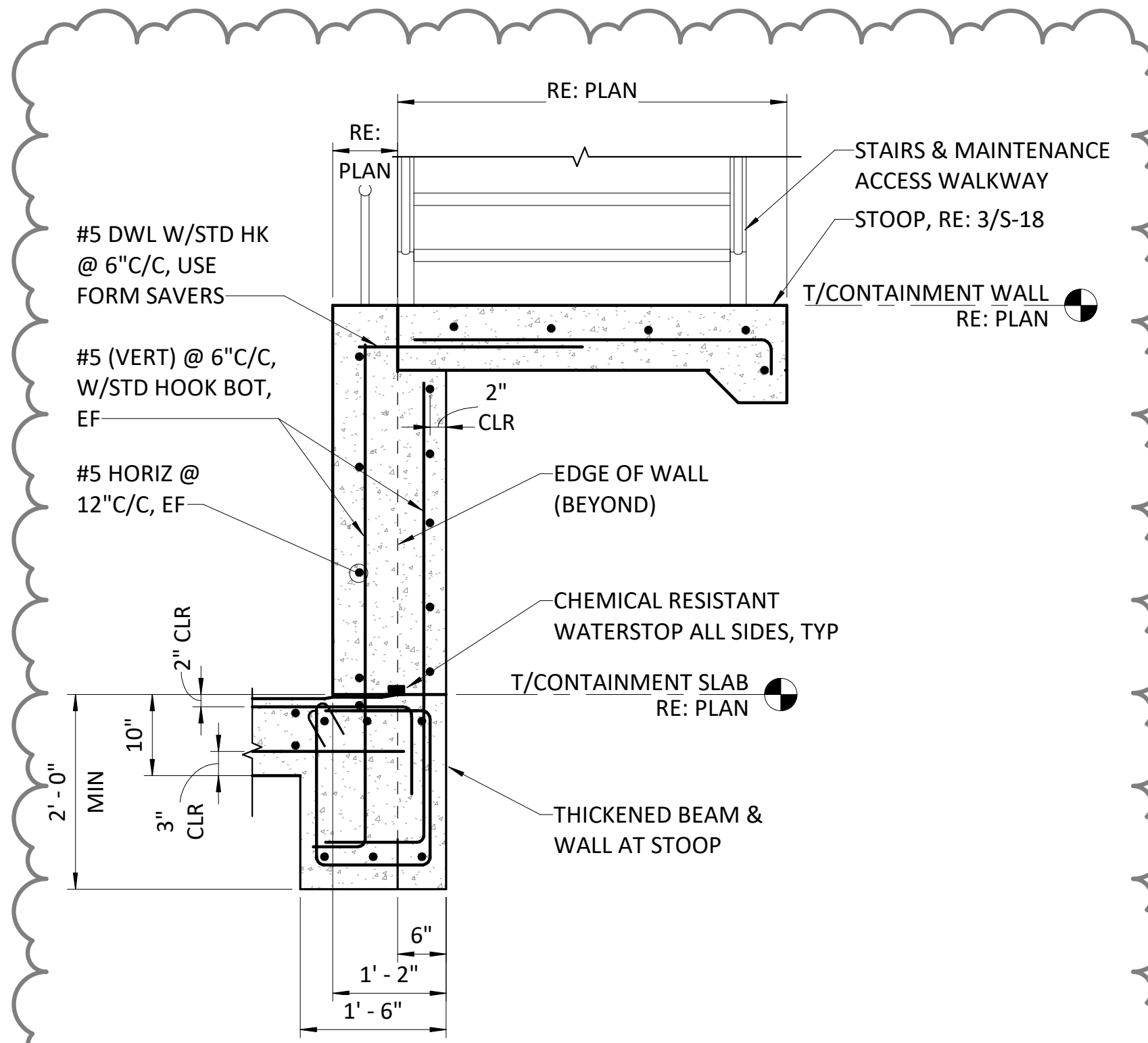


3 BRINE STORAGE TANK SLAB ON GRADE DETAIL
3/4" = 1'-0"



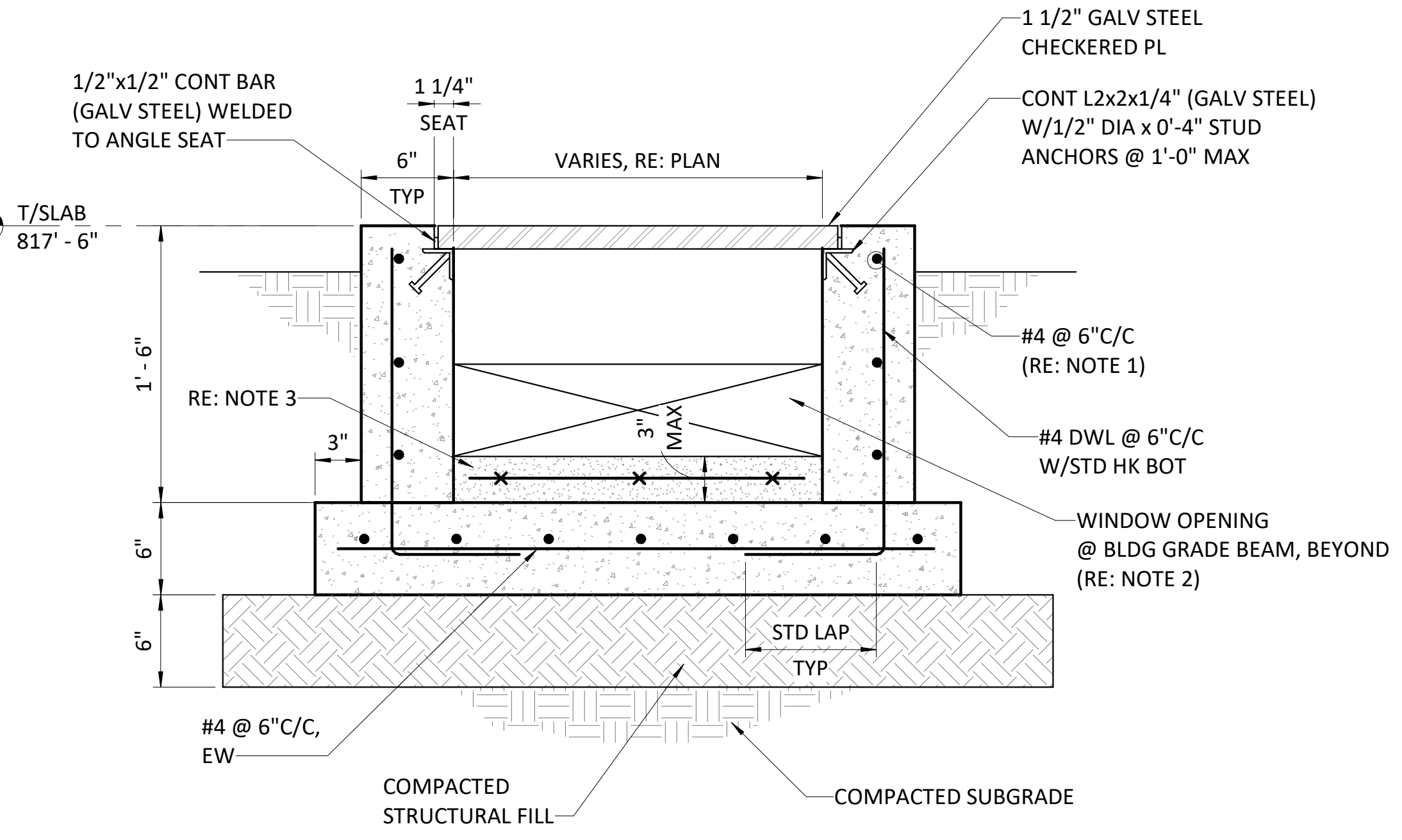
DETAIL NOTES:
1. BOND VAPOR RETARDER TO CONCRETE WITH COLD APPLIED ASPHALT DAMPROOFING. BED END OF VAPOR RETARDER IN 6" OF MASTIC AND THEN COAT JOINT.

4 EXTERIOR GRADE BEAM
3/4" = 1'-0"



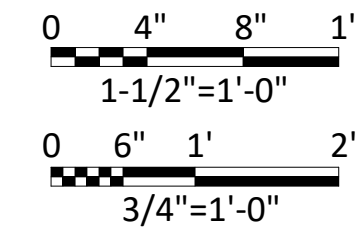
DETAIL NOTES:
1. SEE 2 / S-7 FOR ADDITIONAL INFORMATION NOT SHOWN

5 CONTAINMENT STOOP SECTION
3/4" = 1'-0"

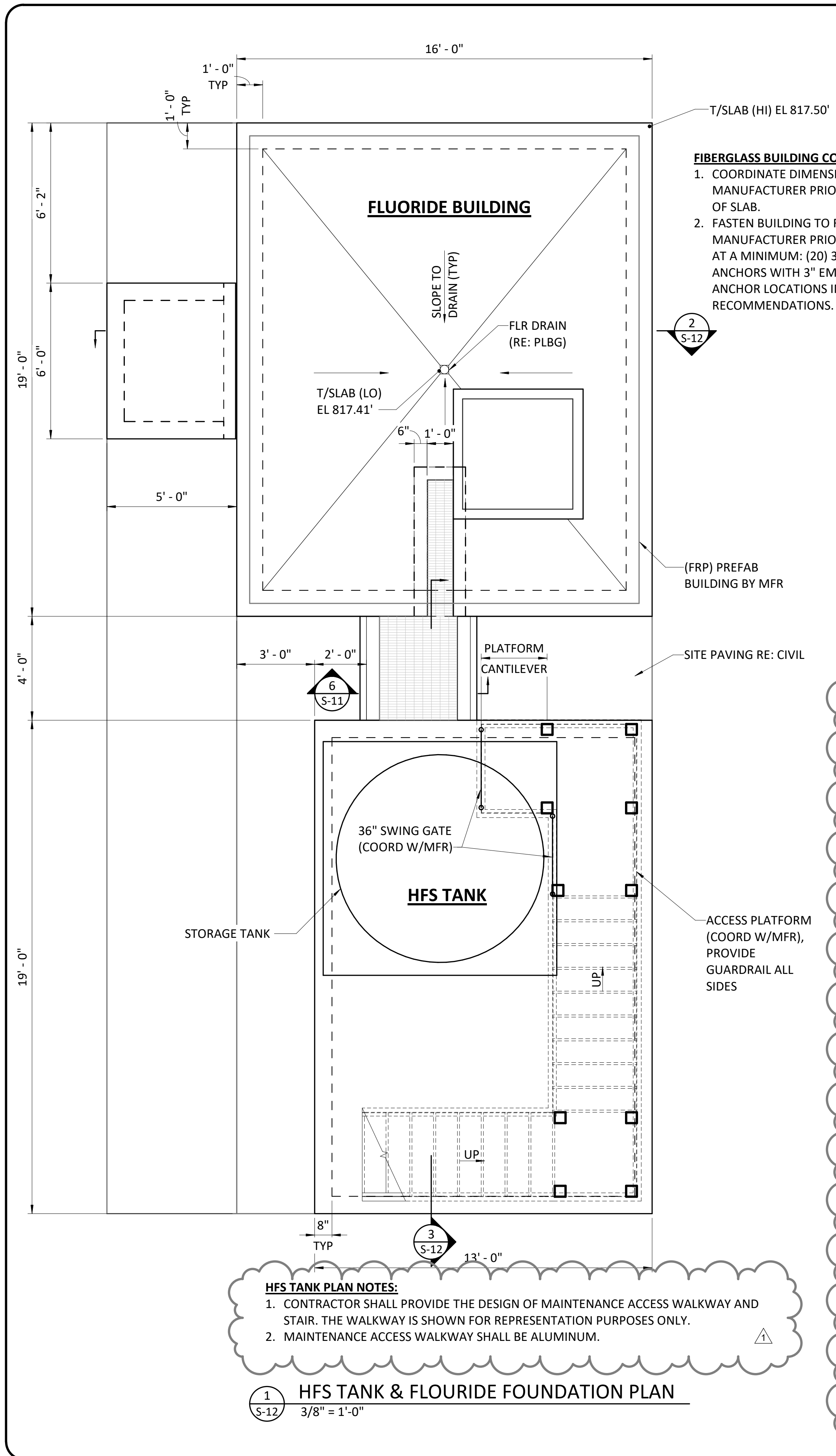


DETAIL NOTES:
1. PROVIDE HORIZONTAL #4 x 2'-0" DWLS @ 6" C/C POST-INSTALLED INTO ADJACENT CONCRETE STRUCTURE GRADE BEAM WITH HILTI RE-500 V3 ADHESIVE W/6" MIN EMBED.
2. AFTER PIPE INSTALLATION FILL WINDOW OPENING WITH POLYURETHANE FOAM SEALANT.
3. GROUT TOPPING SLOPED TO DRAIN AWAY FROM BLDG, W/6"x6" - W4xW4 WWR, 1" CLR COVER TOP.

6 EXTERIOR MECH TRENCH
1 1/2" = 1'-0"



F&N JOB NO.	SWBZ0457
DATE	11/30/22
DESIGNED	ALR
DRAWN	JLM
1/16/2023	REUSED
BY	FILE NAME
ISSUE	1
NO.	1
ADDENDUM NO. 6	1
VERIFY SCALE	1
FILE NAME	ST-SWBZ0457-05G-R21.rvt



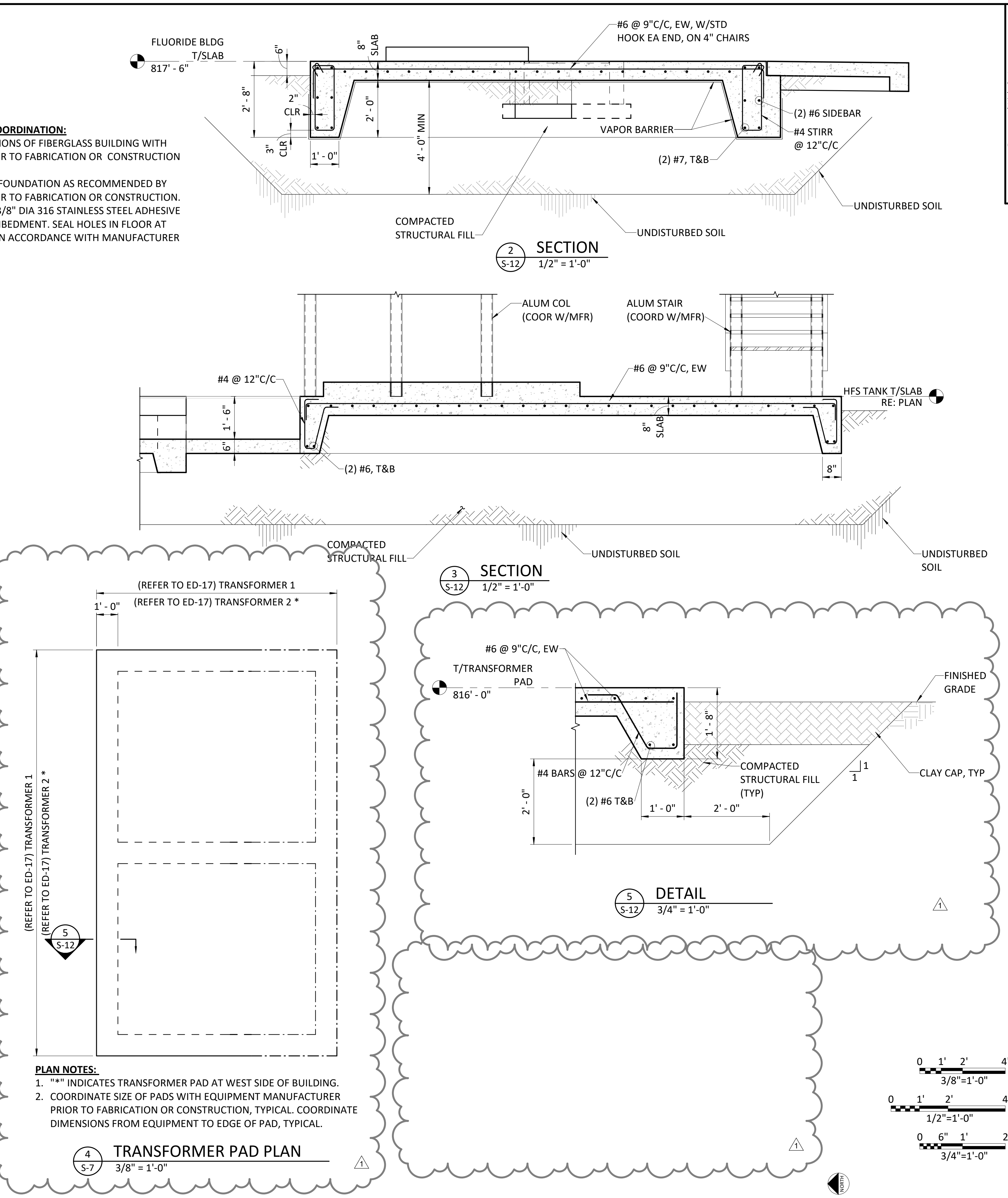
FIBERGLASS BUILDING COORDINATION:

1. COORDINATE DIMENSIONS OF FIBERGLASS BUILDING WITH MANUFACTURER PRIOR TO FABRICATION OR CONSTRUCTION OF SLAB.
2. FASTEN BUILDING TO FOUNDATION AS RECOMMENDED BY MANUFACTURER PRIOR TO FABRICATION OR CONSTRUCTION. AT A MINIMUM: (20) 3/8" DIA 316 STAINLESS STEEL ADHESIVE ANCHORS WITH 3" EMBEDMENT. SEAL HOLES IN FLOOR AT ANCHOR LOCATIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

HFS TANK PLAN NOTES:

1. CONTRACTOR SHALL PROVIDE THE DESIGN OF MAINTENANCE ACCESS WALKWAY AND STAIR. THE WALKWAY IS SHOWN FOR REPRESENTATION PURPOSES ONLY.
2. MAINTENANCE ACCESS WALKWAY SHALL BE ALUMINUM.

1
S-12
HFS TANK & FLOURIDE FOUNDATION PLAN
3/8" = 1'-0"

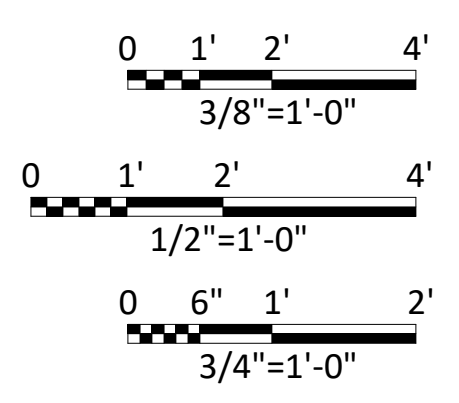


PLAN NOTES:

1. *** INDICATES TRANSFORMER PAD AT WEST SIDE OF BUILDING.
2. COORDINATE SIZE OF PADS WITH EQUIPMENT MANUFACTURER PRIOR TO FABRICATION OR CONSTRUCTION, TYPICAL. COORDINATE DIMENSIONS FROM EQUIPMENT TO EDGE OF PAD, TYPICAL.

4
S-7
TRANSFORMER PAD PLAN
3/8" = 1'-0"

5
S-12
DETAIL
3/4" = 1'-0"



FRN OR NO.	DATE	DESIGNED	DRAWN	REVISION	CHECKED	PAB
SWB20457	11/30/22	ALR	JLM			
1	1/16/2023					

NO. 1
ISSUE NO. 6
FILE NAME: ST-SWB20457-OSG-R21.rvt
VERIFY SCALE: 1
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET
SEQ. S-12

GENERAL NOTES:

1. THE CONTRACTOR SHALL DEMOLISH ALL WIRE AND CONDUITS ASSOCIATED WITH EQUIPMENT AND INSTRUMENT, WHICH IS BEING DEMOLISHED AS PART OF THIS PROJECT.
2. FOR BUILDING DEMOLITION REFER TO MECHANICAL, CIVIL AND STRUCTURE DRAWINGS.
3. NOT ALL CONDUITS ARE SHOWN ON DEMOLITION PLANS.
4. THE CONTRACTOR SHALL REMOVE THE WIRE AND CONDUITS FOR THE DEMOLISHED BUILDING WHETHER SHOWN ON THE DRAWING OR NOT.
5. NOT ALL EXISTING UNDERGROUND DUCTBANK ARE SHOWN, REFER TO CIVIL AND MECHANICAL DRAWINGS FOR MORE DETAILED UNDERGROUND UTILITIES. COORDINATE IN FIELD FOR EXACT LOCATION.
6. ALL DEMOLITION WORK SHALL BE COORDINATED WITH SEQUENCE OF CONSTRUCTION.

7. SOME EXISTING UNDERGROUND CONDUIT AND WIRE MAY REQUIRE TEMPORARY RELOCATION TO FACILITATE CONSTRUCTION SEQUENCING. CONTRACTOR TO COORDINATE WITH SEQUENCE OF CONSTRUCTION.
8. THE CONTRACTOR SHALL DEMOLISH AND REMOVE ALL EXISTING UNDERGROUND DUCTBANKS.
9. REFER TO MECHANICAL/ CIVIL/STRUCTURE DRAWINGS FOR DEMOLITION OF STRUCTURES, BUILDINGS, VAULTS. DEMOLISH ASSOCIATED ELECTRICAL AND COORDINATED WITH SEQUENCE OF CONSTRUCTION.
10. DEMOLISH THE EXISTING ELECTRICAL MANHOLES LIKE THE UNDERGROUND VAULT DEMOLITION.
11. REFER TO SHEET E-10 AND E-11 FOR DEMOLITION PHOTOGRAPHS.

NOTES BY SYMBOL "⬡"

1. DEMOLISH ALL EXISTING LIGHT POLES AND ASSOCIATED WIRE AND CONDUITS AND ASSOCIATED STRUCTURE FOUNDATION.
2. DEMOLISH ALL WALL MOUNTED LIGHT FIXTURES ON BUILDING AND STRUCTURES.
3. DEMOLISH EXISTING MEDIUM VOLTAGE SWITCHGEAR, MEDIUM VOLTAGE MOTOR CENTER AND ALL ASSOCIATED WIRE AND CONDUIT TO THE END POINT OF CONNECTION.
4. THE CPS ENERGY TRANSFORMER WILL BE REMOVED BY THE CPS ENERGY. CONTRACTOR SHALL DEMOLISH THE EQUIPMENT PAD AND ALL ASSOCIATED WIRE AND CONDUIT.
5. DEMOLISH ALL WIRE AND CONDUITS TO AND FROM THE HIGH SERVICE PUMP, VALVES, AND INSTRUMENTS TO THE MVMCC AND ASSOCIATED INSTRUMENT CONTROL PANEL.
6. DEMOLISH ALL WIRE AND CONDUITS ASSOCIATED WITH THE WELL PUMPS, DEMOLISH EQUIPMENT PADS, AND REMOVE EXISTING DUCTBANK TO THE PUMPS. POWER AND CONTROLS SHALL BE RECONNECTED TO THE WELL PUMPS.
7. DEMOLISH ALL EXISTING UNDERGROUND FIBER TO AND FROM VARIOUS STRUCTURES.
8. DEMOLISH THE EXISTING GATE ACCESS SYSTEM AND ALL ASSOCIATED WIRE AND CONDUIT. NEW ACCESS CONTROL AND EQUIPMENT WILL BE INSTALLED IN ITS PLACE.
9. DEMOLISH THE EXISTING ELECTRICAL ASSOCIATED WITH THE RECHARGE STATION. POWER AND CONTROLS WILL BE RECONNECTED TO THE EQUIPMENT AT RECHARGE STATION.
10. DEMOLISH ALL EXISTING INSTRUMENTS AND ASSOCIATED WIRE AND CONDUIT FOR THE EXISTING GROUND STORAGE TANK. NEW INSTRUMENTS AND EQUIPMENT WILL BE INSTALLED IN ITS PLACE.

11. BASED ON THE PROJECT ASBESTOS REPORT, APPROXIMATELY 1,250 LF OF ELECTRICAL DUCTBANK TO BE REMOVED IS ASSUMED TO CONTAIN ASBESTOS. PRIOR TO THE REMOVAL OF THE DUCTBANK, CONTRACTOR SHALL PROCURE AN ENVIRONMENTAL TESTING SERVICE TO CONFIRM EXTENT OF ASBESTOS-CONTAINING ELECTRICAL DUCTBANKS AND PROPER DISPOSAL OF ASBESTOS.

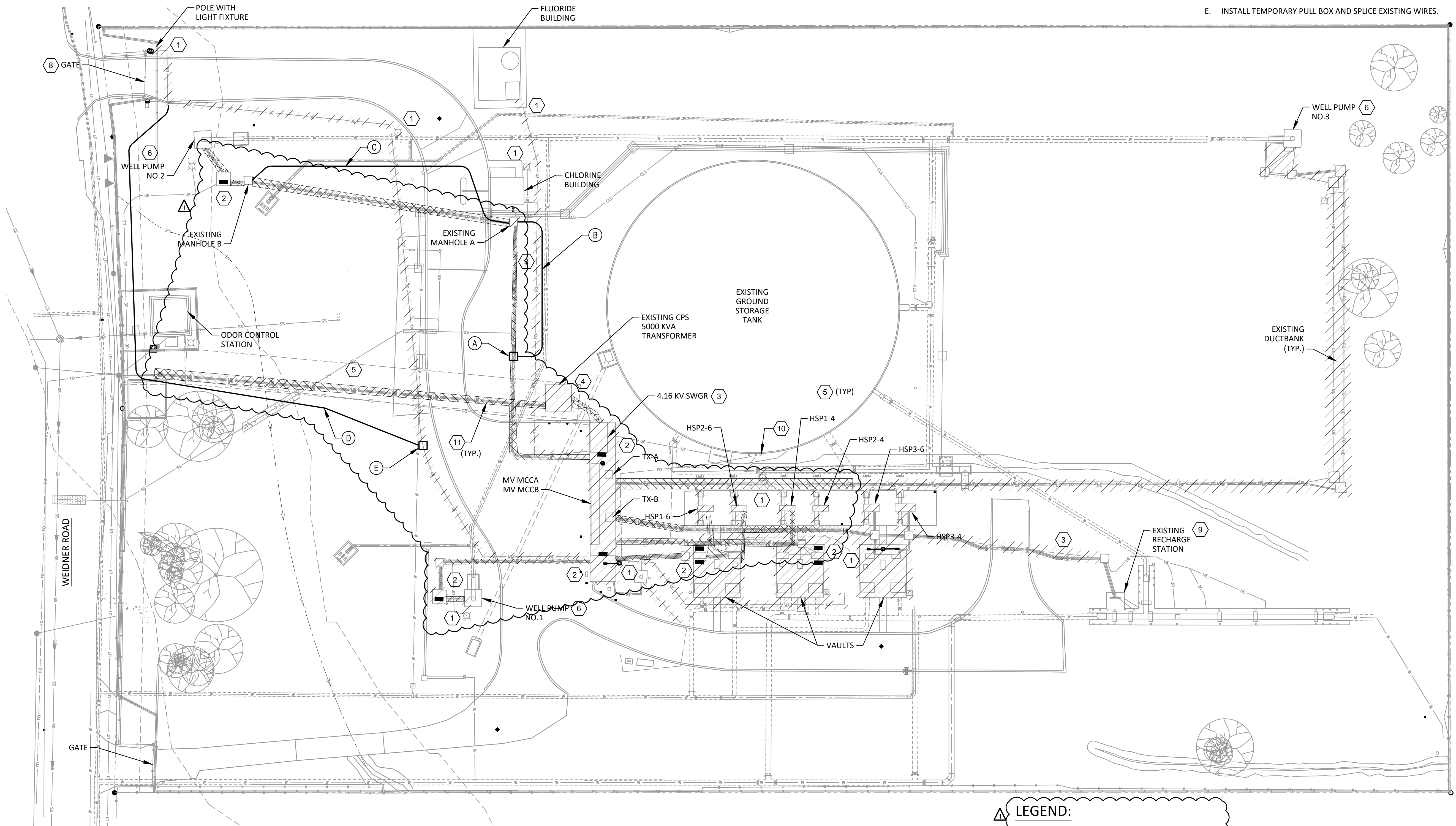
TEMPORARY RELOCATION: FOR WELL PUMP NO.1

- A. INTERCEPT THE UNDERGROUND CONDUIT AND WIRE IN A TEMPORARY HANDHOLE.
- B. INSTALL TEMPORARY CONDUIT AND WIRE BETWEEN NEW HANDHOLE AND EXISTING MANHOLE.
- C. EXTEND WIRE AND CONDUIT TO EXISTING MANHOLE B. SPLICE WIRE IN MANHOLE OR EXTEND TO END DEVICES.
- D. INTERCEPT EAST GATE POWER AND CONTROL AND INSTALL NEW CONDUIT AND WIRE. FIELD ROUTE CONDUIT.
- E. INSTALL TEMPORARY PULL BOX AND SPLICE EXISTING WIRES.

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Freeze and Nichols, Inc.
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FREESE & NICHOLS
 ENGINEERS
 453740
 PROFESSIONAL SEAL
 MOTT L. ASGARWAL
 11/30/22



SITE PLAN - DEMOLITION
 1"=30'
 15 0 10 30
 SCALE: 1" = 30'

LEGEND:

- EXISTING STRUCTURE/ITEM TO BE DEMOLISHED AND REMOVED
- EXISTING ELECTRICAL DUCTBANK TO BE DEMOLISHED AND REMOVED AND ASSUMED TO CONTAIN ASBESTOS

SAN ANTONIO WATER SYSTEM

RANDOLPH PUMP STATION IMPROVEMENTS

ELECTRICAL

EXISTING SITE LAYOUT DEMOLITION AND TEMPORARY RELOCATION

9601 McAllister Freeway, Suite 1008
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NO.	ISSUE	BY	DATE	FRN JOB NO.	SWB20457
1	ADDITION NO. 6	AS	01-17-2023	DATE	11-30-2022
0	VERIFY SCALE			DESIGNED	MA
				DRAWN	EM
				REVISION	CHECKED
				FILE NAME	VKG
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SHEET **E-3**

SEQ.

GENERAL NOTES:

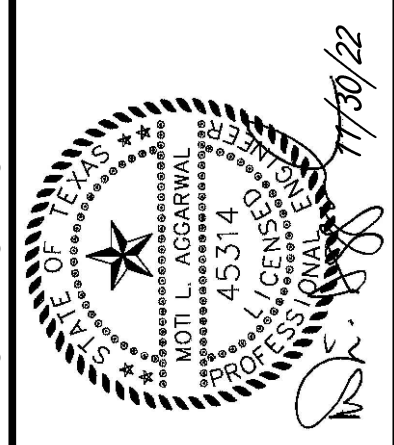
1. ALL EMH SHALL BE MINIMUM 6'X6' XH AND SHALL BE LABELED AS ELECTRICAL.
2. ALL EHH SHALL BE A MINIMUM OF 4'X4'XH AND SHALL BE LABELED AS CONTROLS
3. ALL CHH SHALL BE A MINIMUM OF 4'X4'XH AND SHALL BE LABELED AS COMMUNICATIONS
4. THE DUCTBANK ROUTING AND MANHOLE/HANDHOLE LOCATION AS SHOWN IS APPROXIMATE, CONTRACTOR SHALL ADJUST THE EXACT LOCATION TO AVOID ANY CONFLICTS OR FACILITATE CONSTRUCTION WITH OWNERS' APPROVAL AND NO ADDITIONAL COST.
5. ALL ELECTRICAL WORK SHALL BE DONE AS PER THE CONSTRUCTION OF SEQUENCE.
6. REFER TO MECHANICAL/CIVIL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT AND STRUCTURES.
7. ALL MEDIUM VOLTAGE EMH SHALL BE 7'X7'XD.
8. ALL EHH SHALL BE 6'X6'XD.
9. ALL CHH AND FHH SHALL BE 4'X4'XD.

NOTES BY SYMBOL "⬡"

1. REFER TO RISER DIAGRAM ON SHEET EB-8.
2. INSTALL RECEPTACLE NEXT TO THE HANDHOLES. WEATHERPROOF WITH IN USE COVER.
3. POWER COMPANY TRANSFORMERS. REFER TO SHEET E-19 AND E-28 FOR DETAIL.
4. EXISTING ANTENNA TOWER.
5. CAMERA AND POLE. REFER TO SHEET E-11.
6. COORDINATE LOCATION OF POWER POLE WITH CPS. FIELD ROUTE CONDUIT.
7. REFER TO SECTION ON SHEET E-15.
8. PROVIDE NEMA 4X, 316 SS, 30A, 2P DISCONNECT NEXT TO THE CATHODIC PROTECTION PANEL.

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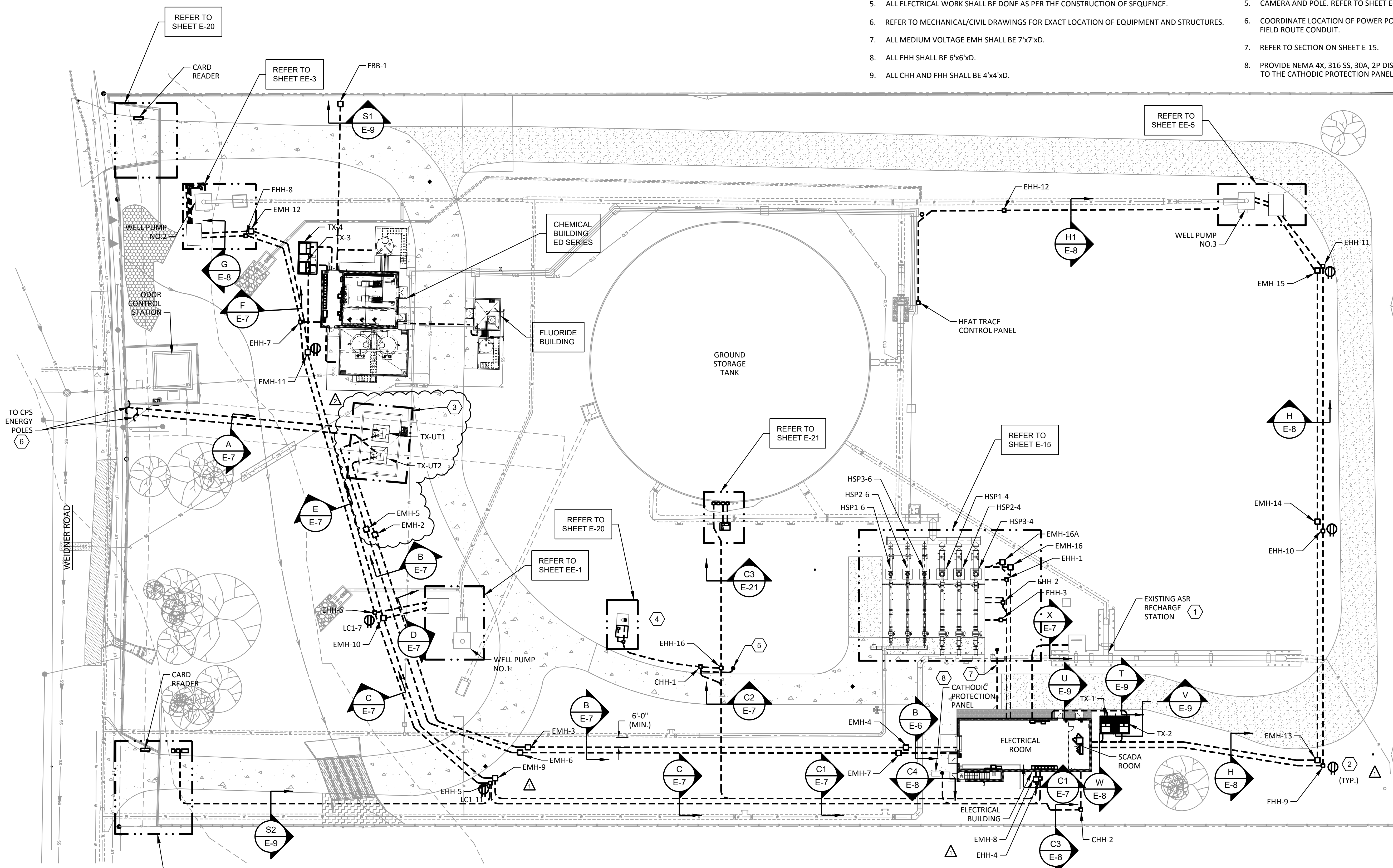


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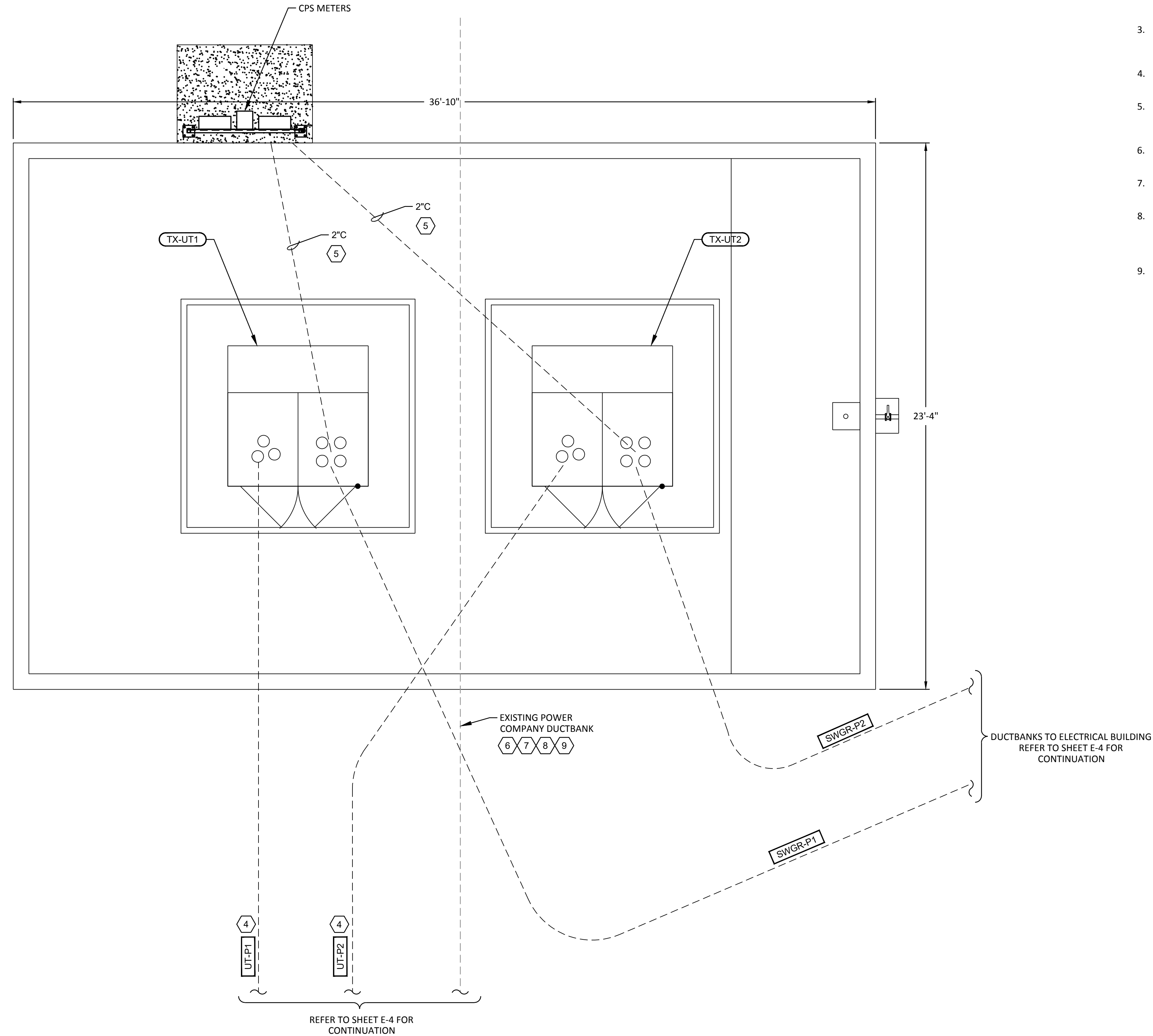
SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
ELECTRICAL
SITE LAYOUT - MODIFICATION

NO.	ISSUE	BY	DATE	FRN JOB NO.	SWB20457
1	ADDENDUM NO. 6	AS	01-18-2023	DATE	11-30-2022
2	ADDENDUM NO. 5	MA	01-05-2023	DESIGNED	MA
0	VERIFY SCALE	MA	01-05-2023	DRAWN	EM
				REVISD	VKG
				CHECKED	
				FILE NAME	1976_E-04.dwg

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



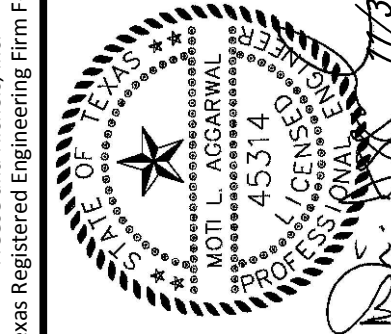
NOTES BY SYMBOL "⬡"

1. ALL WORK SHALL BE COORDINATED WITH THE POWER COMPANY.
2. THE PAD SHALL BE PROVIDED IN ACCORDANCE WITH POWER COMPANY STANDARDS. REFER TO SHEET EZ-8 FOR DETAILS.
3. THE CONTRACTOR SHALL OBTAIN EXACT PAD DIMENSIONS AND DETAILS FROM THE POWER COMPANY.
4. THE PRIMARY CONDUCTOR SHALL BE FURNISHED AND INSTALLED BY THE POWER COMPANY.
5. PROVIDE 1-2" CONDUIT FROM EACH TRANSFORMER TO CPS ENERGY METERING GEAR. CPS ENERGY SHALL PROVIDE CONDUCTORS.
6. THE EXISTING UNDERGROUND DUCTBANK IS SHOWN IN APPROXIMATE LOCATION.
7. THE CONTRACTOR SHALL HYDROVAC THE DUCTBANK TO DETERMINE EXACT LOCATION.
8. THE CONTRACTOR SHALL PROTECT THE EXISTING DUCTBANK WHICH SHALL BE ABANDONED WITH THE DEMOLITION OF EXISTING POWER COMPANY TRANSFORMER.
9. THE PAD LOCATION SHALL BE ADJUSTED TO PROTECT THE EXISTING DUCTBANK. REFER TO SHEET E-4 FOR APPROXIMATE LOCATION SO AS TO HAVE PROPER CLEARANCES FROM PIPE IN THE AREA.

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144



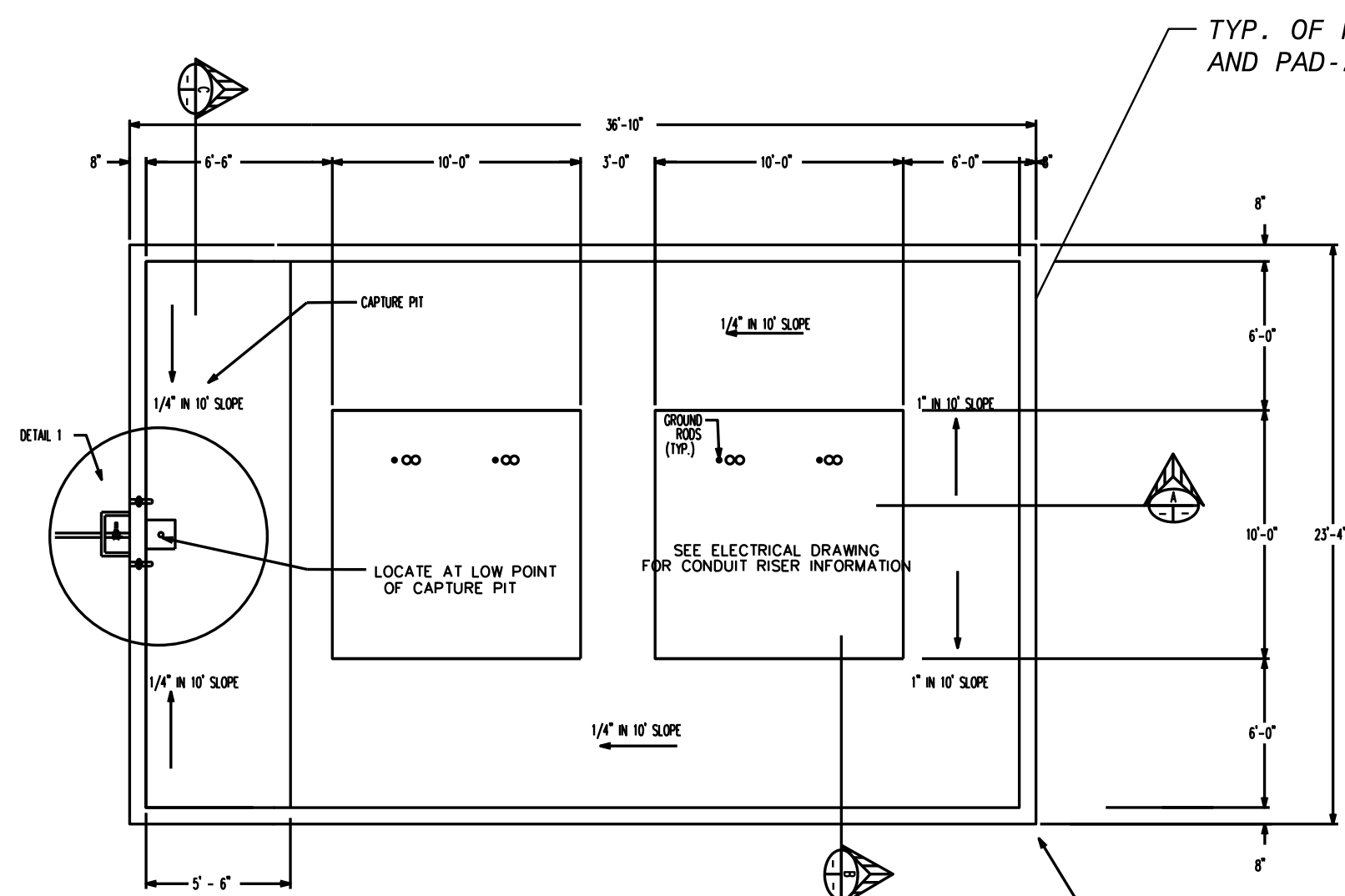
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SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
ELECTRICAL
ENLARGED CPS ENERGY TRANSFORMERS YARD AND GROUNDING PLAN

NO.	ISSUE	BY	DATE	FRN/JOB NO.
1	ADDITIONAL NO. 6	MG	01-18-2023	SWB20457
0	VERIFY SCALE			DATE 11-30-2022
				DESIGNED MA
				DRAWN
				REVISIONS
				CHECKED VKG
				FILE NAME
				1976_E-19.dwg

SHEET **E-19**
SEQ.

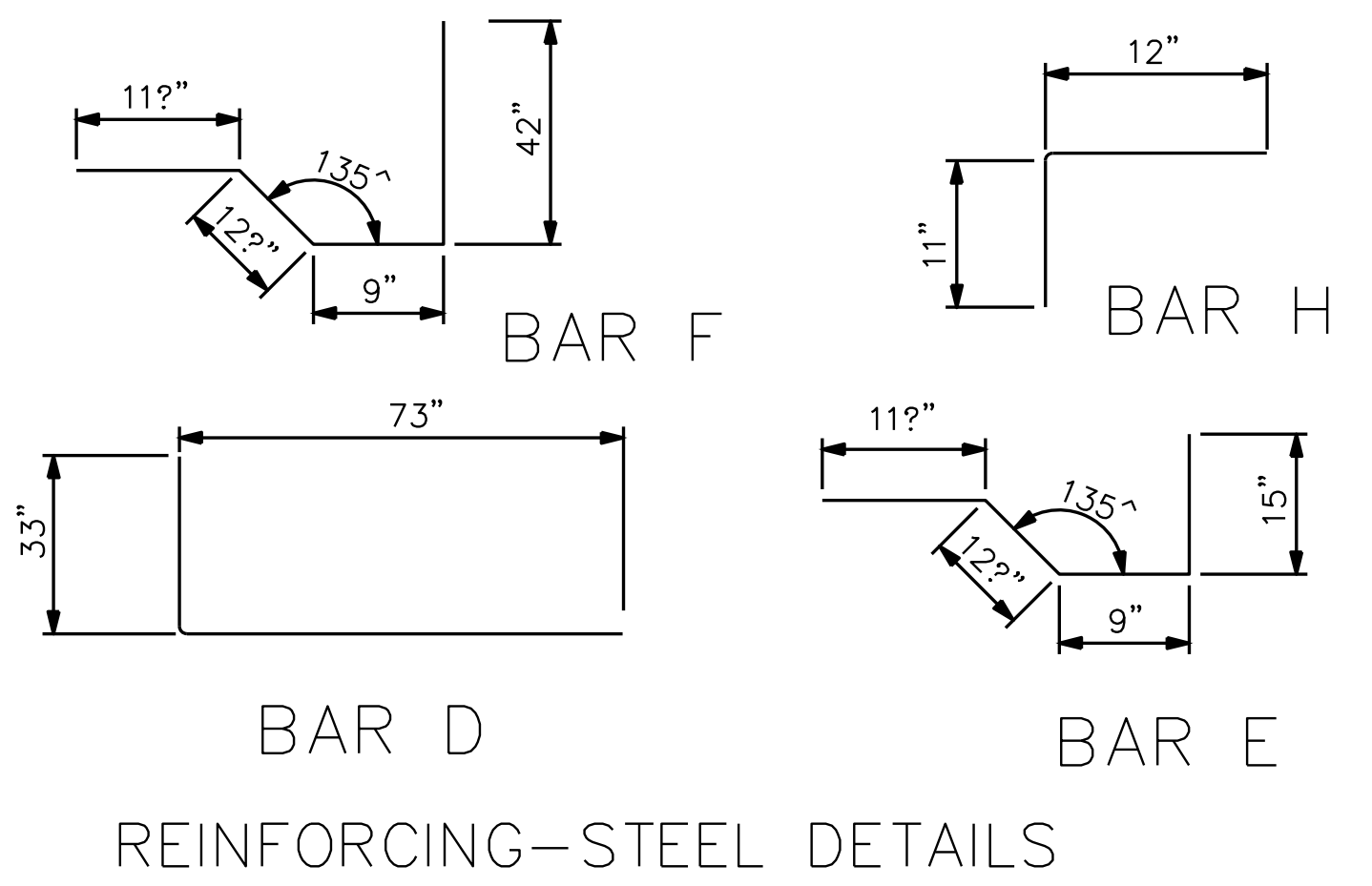
PIT CAPACITY	MAXIMUM OIL CONTAINMENT	
	GALLONS	CUBIC FEET
1,812		242



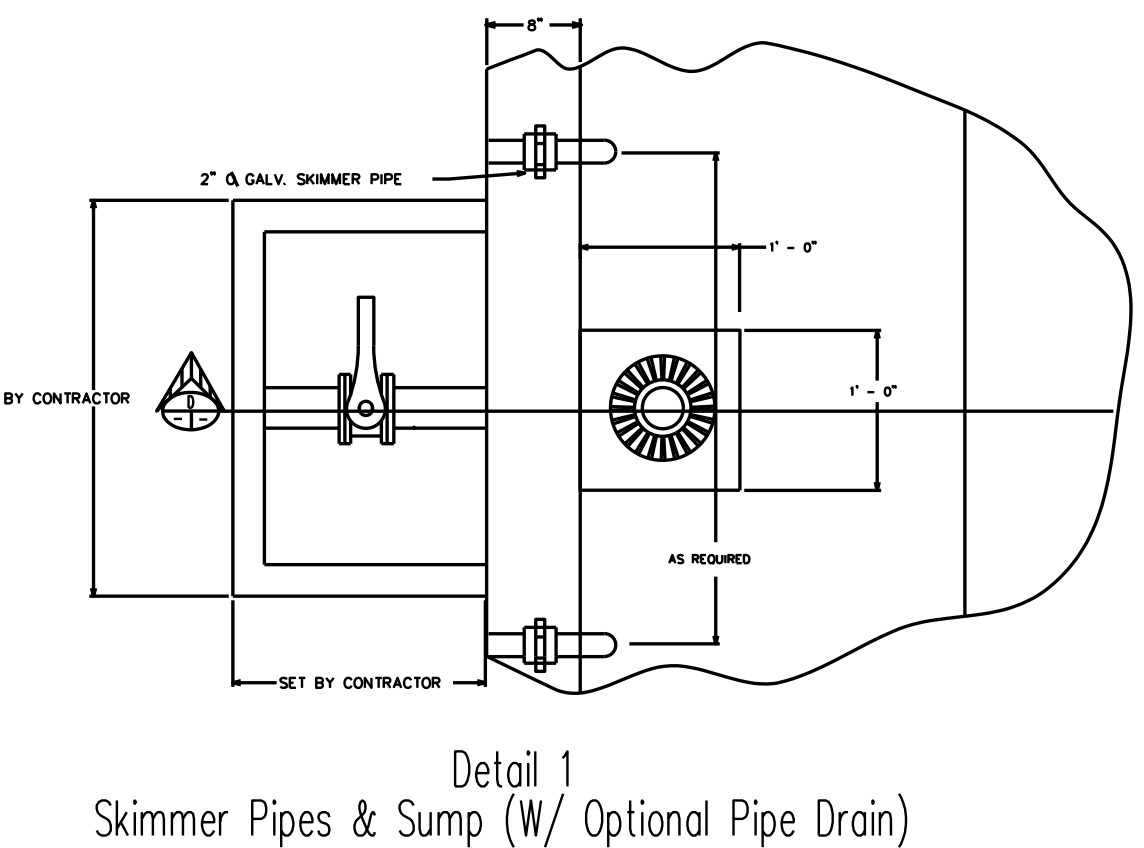
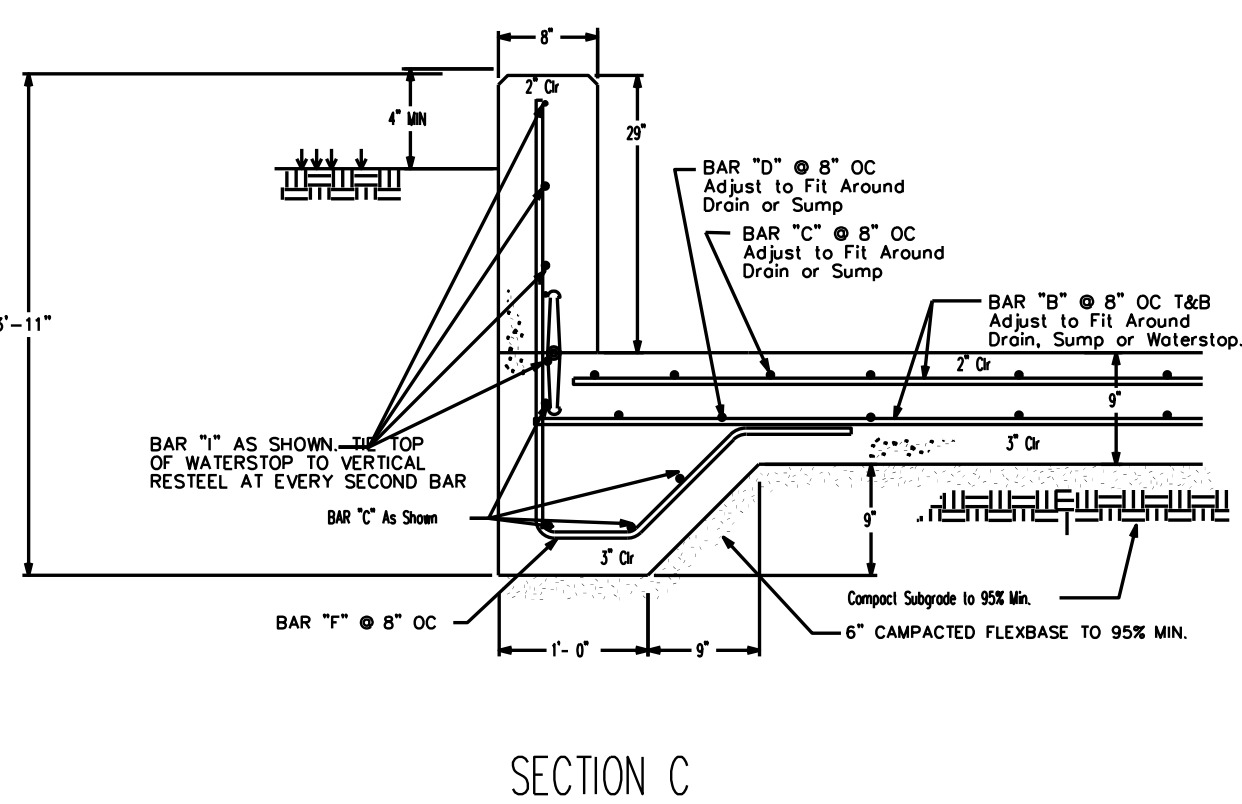
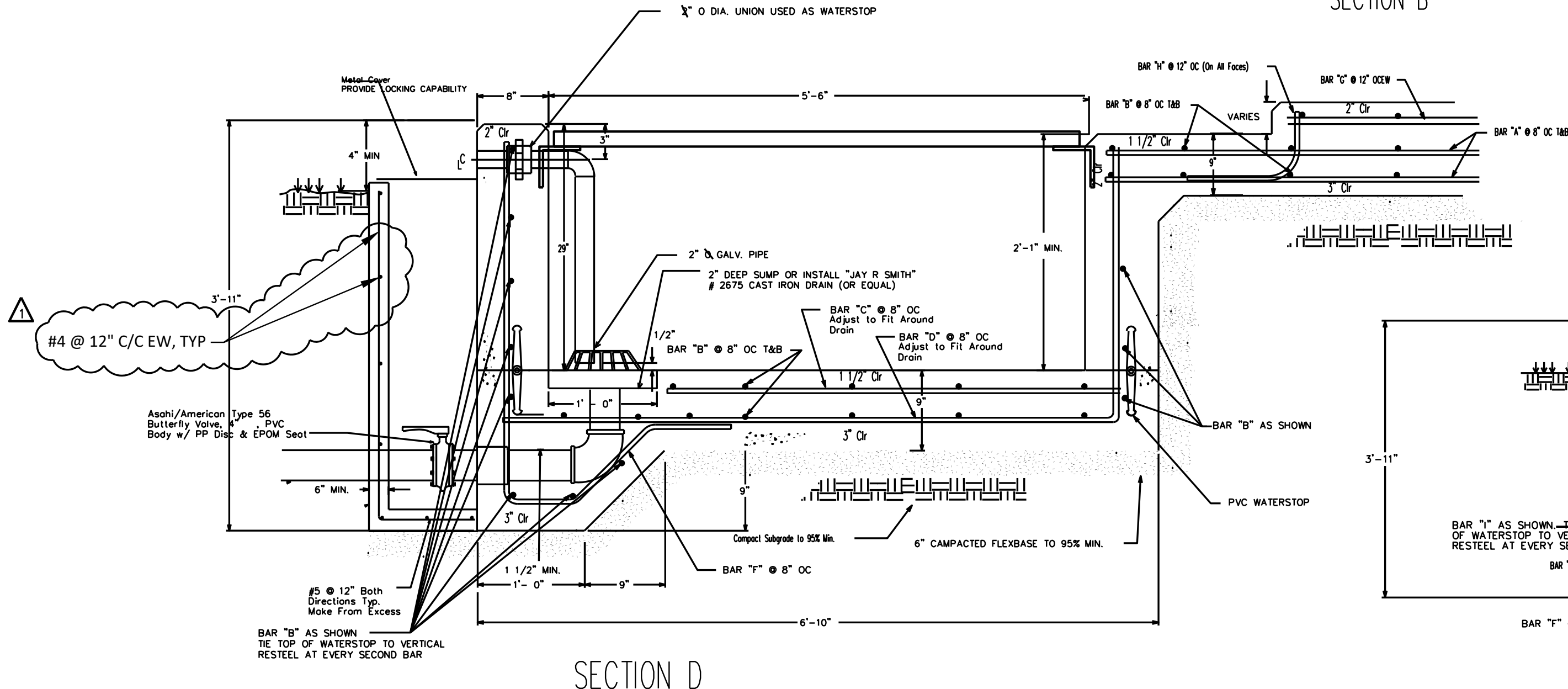
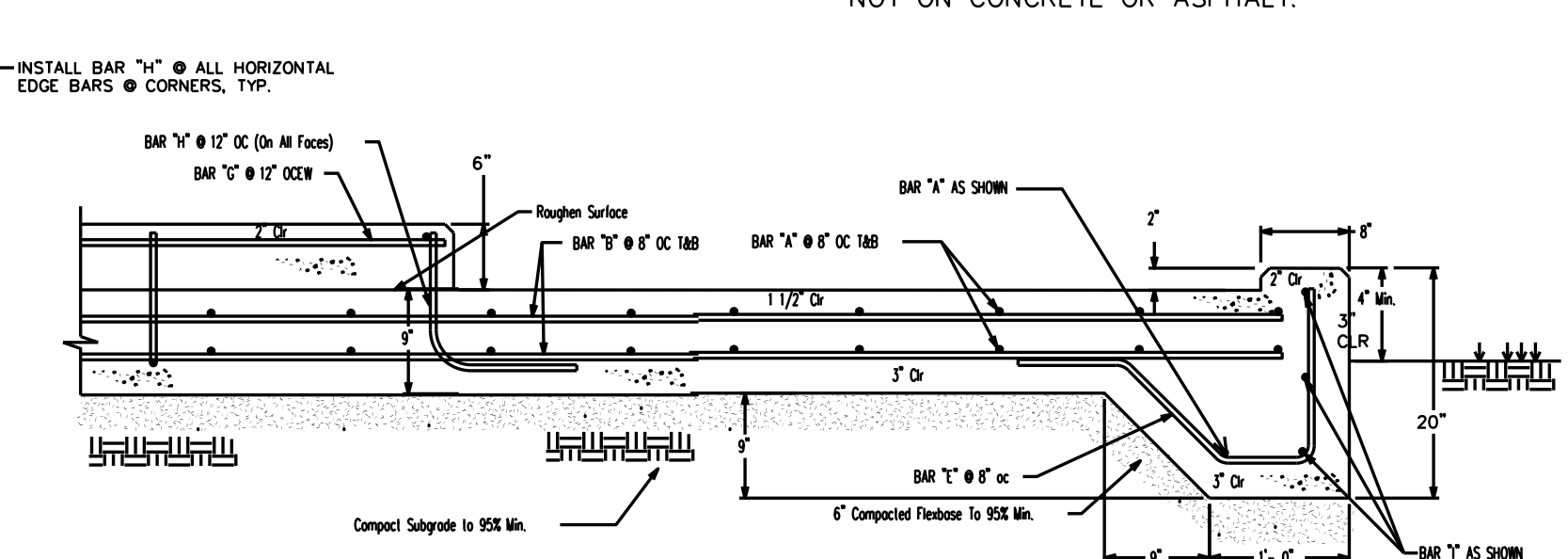
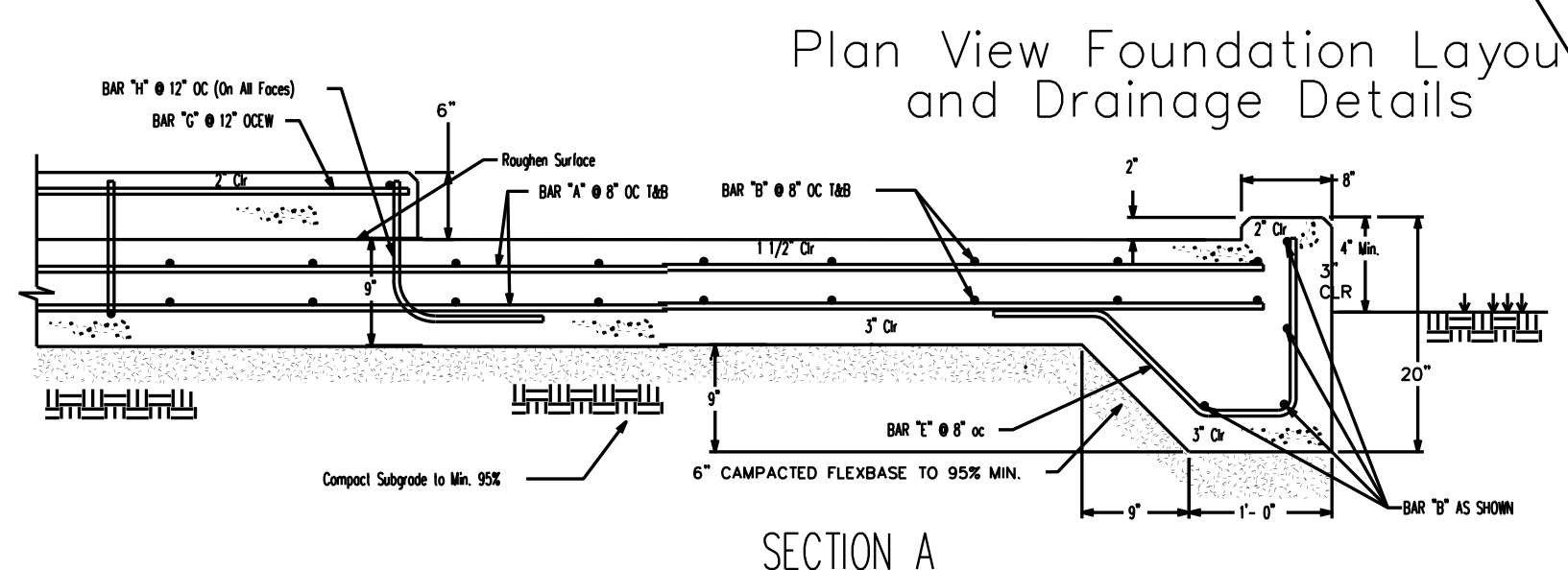
GENERAL NOTES

- 1) ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
- 2) ALL SPLICES TO BE CLASS B (UN).
- 3) ALL REINFORCING TO HAVE 1 1/2" COVER MIN. (UN).
- 4) ALL CONCRETE TO BE 4,000 PSI AT 28 DAYS.
- 5) ALL HOOKS TO BE STANDARD.
- 6) All elevations given assume top of transformer.
- 7) WATERSTOP SHALL BE CONTINUOUS PVC RIBBED 9" WIDE BY 3/8" THK. SECTIONS SHALL BE JOINED TOGETHER WITH THE USE OF A SPLICING IRON.
- 8) 4" DIAMETER GALVANIZED STEEL SCHED. 40 STEEL DRAIN PIPE SHALL BE INSTALLED IF A SUITABLE DRAINAGE POINT IS ACCESSIBLE. CONTRACTOR SHALL SIZE VALVE BOX TO ALLOW ACCESS AND MAINTENANCE PER SITE CONDITIONS. SMITH #2675 CAST IRON DRAIN OR EQUAL TO BE INSTALLED IN CAPTURE PIT.
- 9) CONTRACTOR IS RESPONSIBLE FOR THE PROPER "FIT-UP" OF ALL MATERIALS. INCLUDING BUT NOT LIMITED TO GRATING, GRATING SUPPORTS, REINFORCING STEEL, PVC DISCHARGE PIPING, ELECTRICAL CONDUITS, ETC.
- 10) PROVIDE CONCRETE SPLASH BLOCK AT ALL DISCHARGE POINTS NOT ON CONCRETE OR ASPHALT.

REINFORCING STEEL SCHEDULE							
BAR	QTY	SIZE	SHAPE	SPACING	LENGTH	EST WT (lbs)	REMARKS
A	63	#5	STRAIGHT	8"	30'-3"	1988	
B	124	#5	STRAIGHT	8"	22'-10"	2953	
C	40	#5	STRAIGHT	8"	5'-10"	243	
D	40	#5	STRAIGHT	8"	8'-10"	368	
E	135	#5		8"	4'-0"	563	
F	50	#5		8"	6'-3"	325	
G	46	#5	STRAIGHT	12"	9'-8"	464	
H	100	#5		12"	1'-11"	200	ALSO USE IN PIT CORNERS AT HOR. BARS
I	10	#5	STRAIGHT	8"	36'-4"	379	
						TOTAL EST. WT. = 7,483 LBS.	



GENERAL REINFORCING STEEL NOTES :
 ALL REINFORCING STEEL SHALL CONFORM TO CPS SPECIFICATION NO. 291-032
 ALL STRAIGHT AND BENT BARS SHALL BE FABRICATED FROM DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
 ALL LIKE PIECES MUST BE BUNDLED AND IDENTIFIED WITH PERMANENT TAGS. THE IDENTIFYING LETTERS AND NUMBERS SHALL BE APPLIED TO THE TAG WITH AN INDELEBIL BLACK MARKER AND SHALL BE A MINIMUM OF 1 1/2" HIGH.
 ALL SPECIFICATIONS REFERENCED SHALL BE THE LATEST REVISION AS OF THE DATE OF MANUFACTURE.



CPS ENERGY TRANSFORMERS PLANS AND DETAILS PROVIDED BY CPS ENERGY. THIS DRAWING IS ISSUED FOR REFERENCE ONLY. SEE STRUCTURAL DRAWINGS FOR EXACT DESIGN AND DETAILS.

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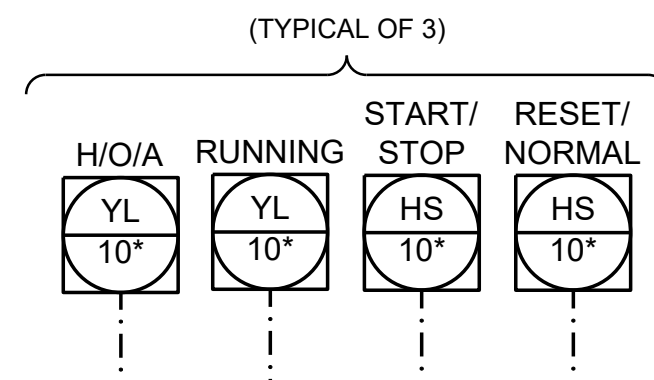
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SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
 ELECTRICAL
 STANDARD DETAILS - VIII

NO.	ISSUE	BY	DATE	DESCRIPTION
1	ADDITIONAL NO. 6	MG	01-17-2023	REVISION
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				FILE NAME
				1976_EZ-08.dwg

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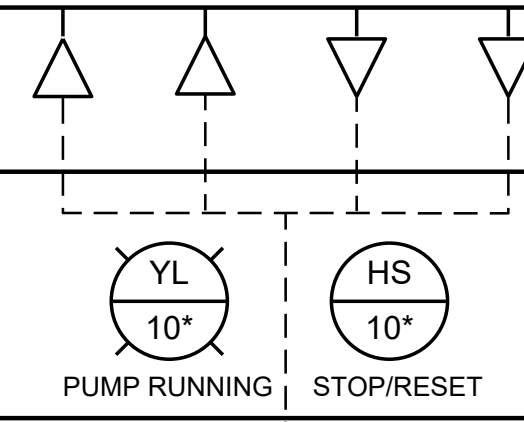
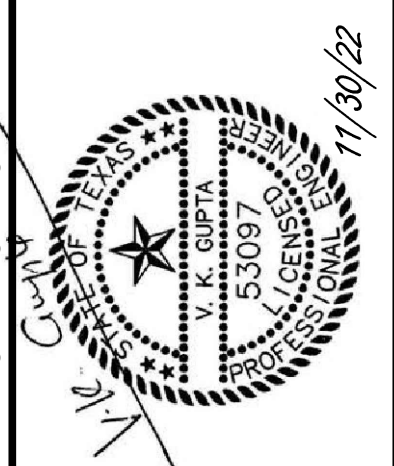


HMI

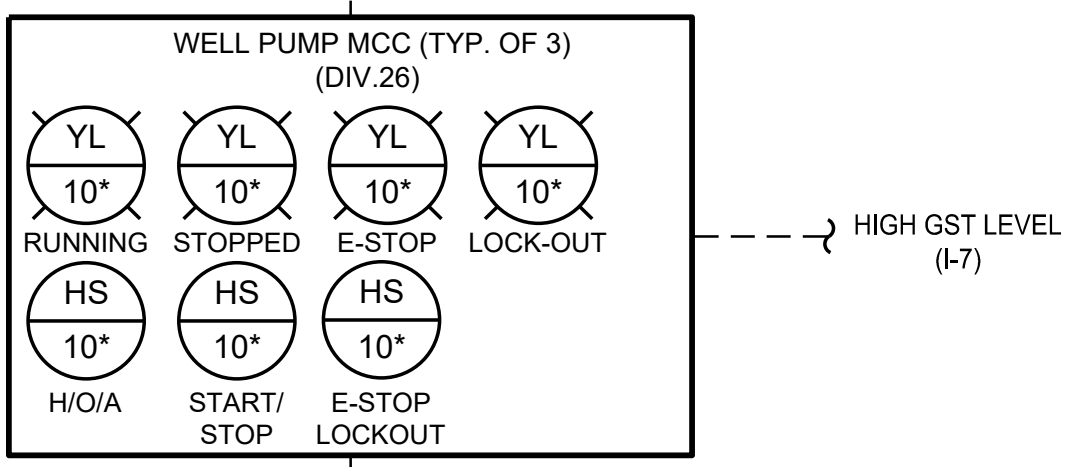
WIRELESS COMMUNICATIONS

PLC-RDPMAIN

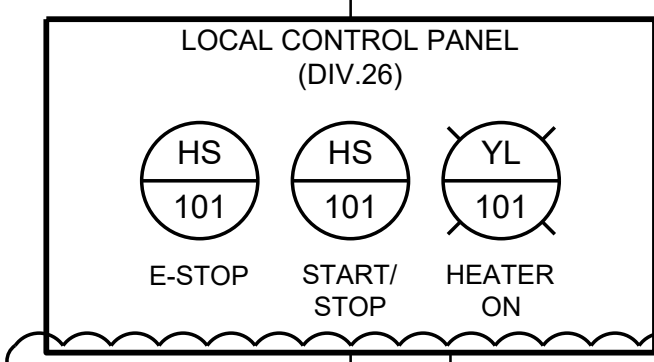
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Registration No. F-2593



SCP

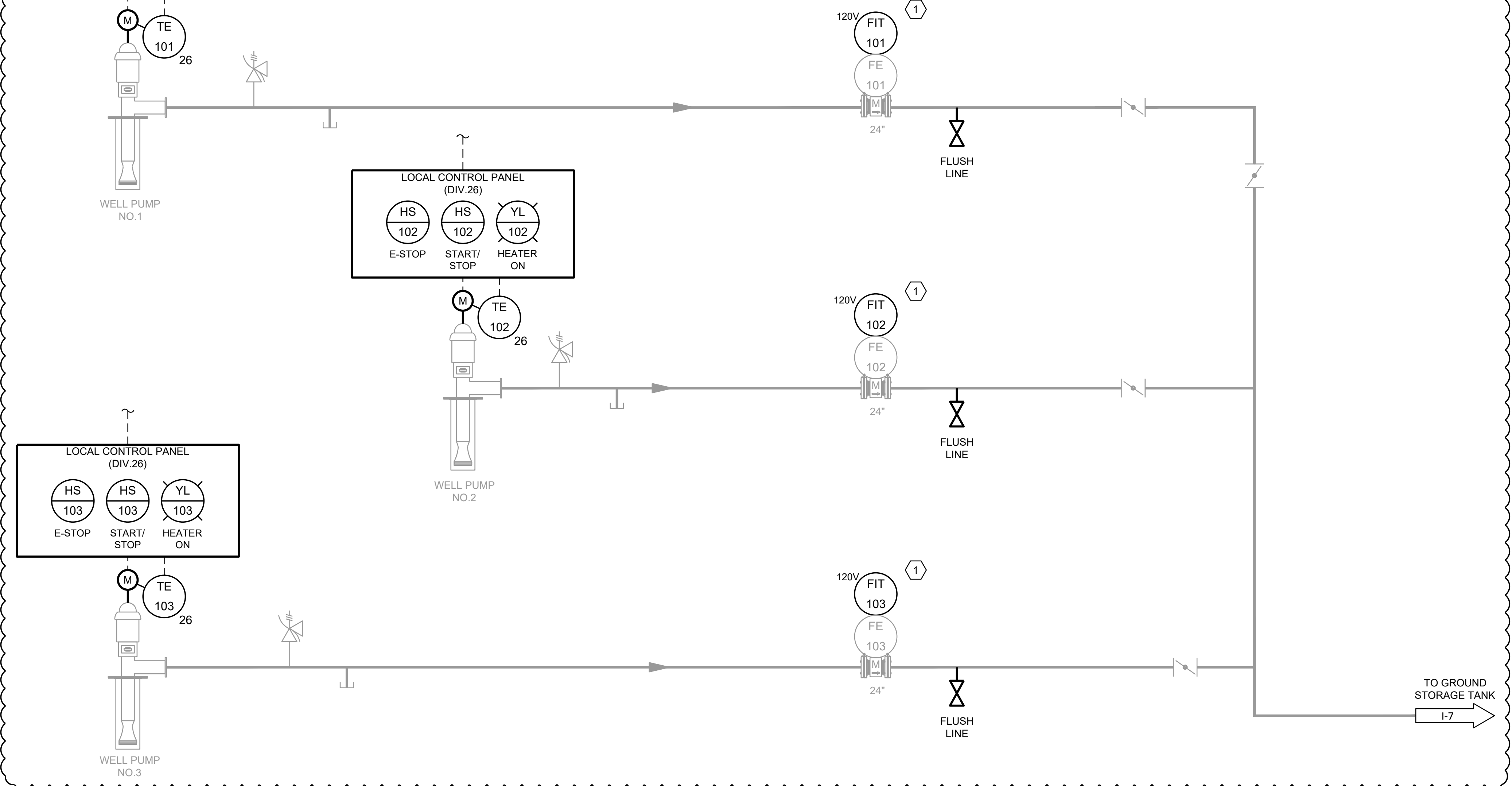


ELECTRICAL BUILDING
ELECTRICAL ROOM



NOTES BY SYMBOL "⬡"

- FOR WELL FLOW METERS, EXISTING FLOW TUBE ASSEMBLIES ARE TO REMAIN. FLOW TRANSMITTERS/ELECTRONICS ARE TO BE REPLACED USING MANUFACTURER'S DOCUMENTED PROCESS FOR UPGRADING FROM EXISTING PROLINE PROMAG 53 SERIES INSTRUMENTS TO PROLINE PROMAG 400 SERIES INSTRUMENTS. FOR ADDITIONAL TRANSMITTER/ELECTRONICS REQUIREMENTS, REFER TO SPECIFICATION SECTION 40 71 00, FLOW INSTRUMENTS.
- FLOW TRANSMITTER IS TO BE EQUIPPED WITH ETHERNET/IP DATA COMMUNICATIONS OPTION. DATA COLLECTED, STORED AND DISPLAYED FOR EACH METER INCLUDES:
- FLOW RATE
 - TOTAL FLOW
 - LOSS OF COMMUNICATION



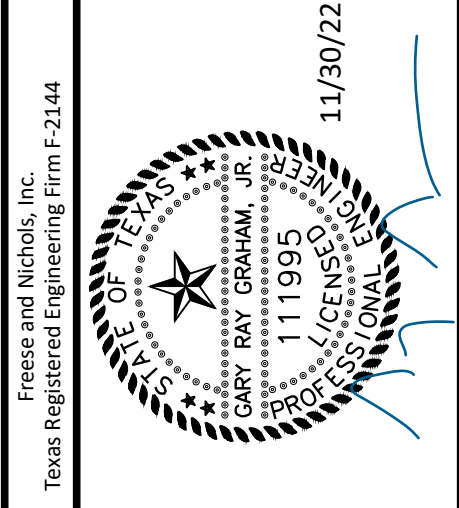
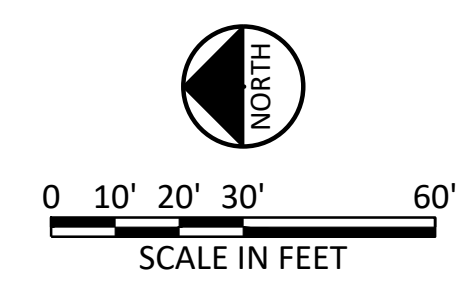
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SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
INSTRUMENTATION
WELL PUMPS P&ID

NO.	ISSUE	BY	DATE	FRN JOB NO.	DATE	DESIGNED	DRAWN	REVISION	CHECKED	FILE NAME
1	ADDITION NO.6	CEM	01-18-2023	SWB20457	11-30-2022	WON	MG		V. K. G	1976_I-6.dwg
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SHEET **I-6**
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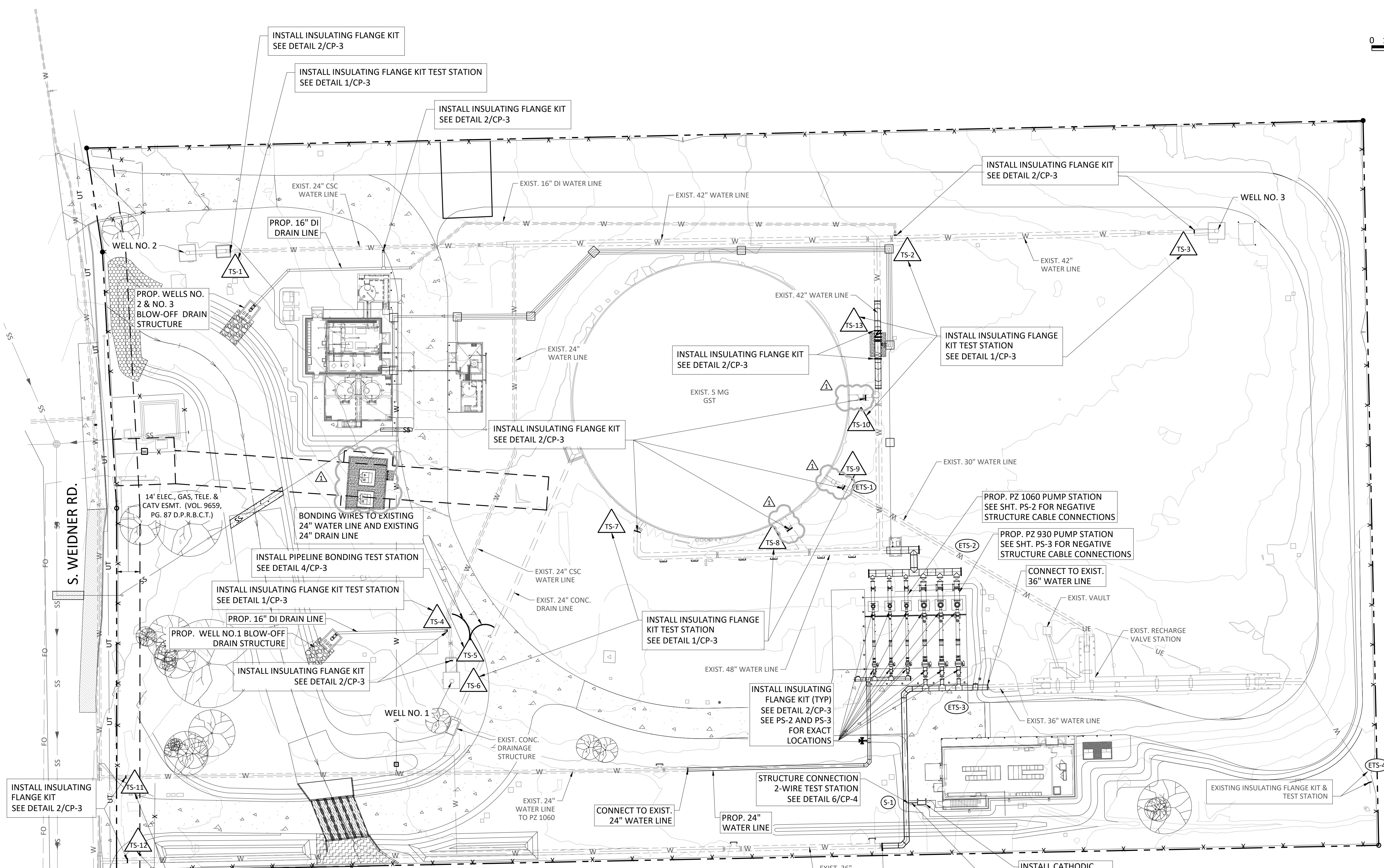


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SAN ANTONIO WATER SYSTEM
RANDOLPH PUMP STATION IMPROVEMENTS
CATHODIC PROTECTION
**CATHODIC PROTECTION SYSTEM
OVERALL SITE PLAN**

NO.	ISSUE	BY	DATE	APPENDIX NO. 6	VERIFY SCALE
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FILE NAME					WTU-CP-PL01.dwg
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DESIGNED					RD
DRAWN					DDH
DATE					8/31/2022
JOB NO.					SWB20457
SHEET					
CP-1					
SEQ.					



NOTES:

- CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING ELECTRICAL CONTINUITY OF ALL EXISTING AND NEW METALLIC PIPING.
- PIPING FOUND NOT TO BE CONTINUOUS IS TO BE EXCAVATED AT EACH JOINT AND BONDED IN ACCORDANCE WITH DETAIL 5/CP-4.
- ELECTRICAL CONTINUITY WILL BE ACCEPTED WHEN ALL NEW AND EXISTING METALLIC PIPING IS SHOWN TO BE ELECTRICALLY CONTINUOUS AND ISOLATED AT LOCATIONS WHERE INSULATION FLANGE KITS ARE INSTALLED.
- DUCTILE IRON SEGMENT WILL NOT BE ELECTRICALLY CONTINUOUS WITH THE STEEL LINES.
- THE ORIGINAL CATHODIC PROTECTION SYSTEM FOR THE PUMPS STATION HAD 12 TEST STATIONS ASSOCIATED WITH A SACRIFICIAL CATHODIC PROTECTION SYSTEM. OF THESE, ONLY 4 WILL REMAIN AFTER THE CONSTRUCTION. THESE ARE NOTED AS ETS 1, ETS 2, ETS 3 AND ETS 4. THE CONTRACTOR IS TO DISCONNECT THE ANODES FROM TEST STATIONS ETS 1, ETS 2 AND ETS 3 AND RECORD THE TEST STATIONS ON THE NEW AS BUILTS. THESE TEST STATIONS WILL BE USED FOR FUTURE SURVEYS.
- BOND LOCATIONS FOR EXISTING PIPING WILL NEED TO BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION.

LIST OF EXISTING PIPING:

- 48" CONCRETE STEEL CYLINDER (CSC)
- 42" CSC
- 36" CSC
- 36" CARBON STEEL (CS)
- 30" CS
- 24" CSC
- 24" CONC. DRAIN LINE
- 16" DUCTILE IRON

LIST OF NEW PIPING:

- 48" STEEL
- 42" STEEL
- 36" STEEL
- 24" STEEL