CITY OF FAIRHOPE

INVITATION TO BID

SEALED BIDS will be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope offices, 555 South Section St. Fairhope, Alabama, until 10:30 A.M. Wednesday, March 27, 2024, and then publicly opened thereafter, for furnishing all labor and materials, and performing all work required by the City of Fairhope and described as follows:

Bid Number 24-034
Water Treatment Plant No. 1 Finished Water Pumps and Variable Frequency Drives

The City of Fairhope is requesting responses from qualified suppliers for the acquisition of two (2) new finished water pumps and variable frequency drives (VFDs) at the City's Water Treatment Plant No. 1. The finished water pumps and VFDs quoted in the Invitation to Bid will be installed under a separate contract.

Bid documents will be posted on the City of Fairhope Website: www.FairhopeAL.gov or a copy may be obtained by e-mailing: Purchasing@FairhopeAL.gov. Specifications are on file and may be seen in the Purchasing Department of the City of Fairhope, Alabama, 555 S. Section Street. Prior to opening, Bid packages may be picked up at that location during normal operation, between 7:00 am and 4:00 pm local time.

Questions or comments pertaining to this bid must be presented in writing, sent as e-mail to the attention of the Purchasing Manager, Erin Wolfe, 555 South Section St., Fairhope, AL 36532, e-mail: Purchasing@FairhopeAL.gov, by Wednesday, March 20, 2024, at 11:00 A.M. or will be forever waived.

The City of Fairhope is an Equal Opportunity Employer and requires that all **BIDDERS** comply with the Equal Employment Opportunity laws and the provisions of the CONTRACT Documents in this regard. The **CITY** also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

All bids must be on blank bid forms provided in the Bid Documents. All bids, with their guarantee (when required), must be enclosed in a sealed, opaque envelope, clearly identified on the outside as a "**Sealed Bid" with Item Name, Bid Number, City of Fairhope's Name and Address and CONTRACTOR's Name and Address**. Each bid must be in a separate envelope. Bids made out in pencil will not be accepted. Failure to observe the instructions contained herein will constitute grounds for rejection of your bid. The **City** reserves the right to accept or reject all bids or any portion thereof, and to waive informalities and to furnish any item of material or work to change the amount of the CONTRACT, whichever is in the best interest of the City of Fairhope.

No bids will be considered unless the **CONTRACTOR,** whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this type of work in accordance with all applicable laws of the State of Alabama. Where applicable, this shall include evidence of holding a current license from the State Licensing board for General BIDDERS, Montgomery, Alabama, as required by Chapter 8 of Title 34, of the Code of Alabama, 1975. In addition, the Awarded Vendor, if non-resident of the State, and if a corporation, shall show evidence of having qualified with the Secretary of State to do business in the State of Alabama. **CONTRACTOR** must have a current business license or purchase a business license with the City of Fairhope prior to work performed. No bids shall be withdrawn for the period of thirty (30) days subsequent to the opening of proposals without the consent of the City of Fairhope, Baldwin County, Alabama. Once completed, a tabulation of the responsive and responsible bids will be available for public viewing by visiting the following web address: www.FairhopeAL.gov.

INVITATION TO BID
NO. 24-034

WATER TREATMENT PLANT NO. 1
FINISHED WATER PUMPS
AND VARIABLE FREQUENCY DRIVES

CITY OF FAIRHOPE
SHERRY SULLIVAN, MAYOR

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ITEM I
INVITATION AND INSTRUCTIONS TO BIDDERS

1.00 **BID INVITATION**

Notice is hereby given that the **City of Fairhope ("CITY")** will receive bids on the project described herein. Qualified **BIDDERS** are invited to bid on this CONTRACT.

1.01 **BID NO.:** **24-034**
NAME: **Water Treatment Plant No. 1 Finished Water Pumps and Variable Frequency Drives**

1.02 **SUMMARY**

The City of Fairhope is requesting responses from qualified suppliers for the acquisition of two (2) new finished water pumps and variable frequency drives (VFDs) at the City's Water Treatment Plant No. 1. The finished water pumps and VFDs quoted in the Invitation to Bid will be installed under a separate contract.

1.03 **BID DEADLINE**

Bids will be received until **10:30 A.M. local time, Wednesday, March 27, 2024,** at the City Services and Public Utilities Building, 555 South Section St., Fairhope, Alabama, and publicly opened shortly thereafter.

1.04 **AVAILABILITY OF DOCUMENTS**

Bid Documents may be obtained at the City Services and Public Utilities Building, 555 South Section Street., Fairhope, Alabama. One set of Bid Documents can be obtained free of charge.

1.05 **INQUIRIES**

Questions or comments pertaining to this bid must be presented in writing, sent as e-mail to the attention of the Purchasing Manager, Erin Wolfe, 555 South Section St., Fairhope, AL 36532,
e-mail: Purchasing@FairhopeAL.gov, by Wednesday, March 20, 2024, at 10:00 A.M. or will be forever waived.

1.06 **SITE EXAMINATION**

No pre-bid meeting is scheduled.

The City of Fairhope will not furnish any labor, material, or supplies unless specifically stated in the CONTRACT Documents. **BIDDERS** must be properly licensed to perform the work as outlined in the Scope of Work. Awarded Vendor must have a current business license or purchase a business license with the City of Fairhope prior to bid being awarded.

Except for CONTRACTS funded in whole or in part by funds received from a federal agency, preference shall be given to resident **BIDDERS** on the same basis as the nonresident **BIDDERS** state awards CONTRACT to Alabama **BIDDERS b**idding under similar circumstances. Therefore, non-resident **BIDDERS** shall submit with their bid a written opinion of an attorney at law licensed to practice law in the non-resident **BIDDERS** state of domicile as to preferences granted by that state to entities doing business in that state when letting public contracts.

1.07 **BID SECURITY**

Bids shall be accompanied by a Bid Security equal to 5% (percent) of the bid price, but in no event more than $10,000.00. Bid Security shall be in the form of a Bid Bond or a cashier's check payable to The City of Fairhope. No Bid Security is required on bids less than $10,000.00.

1.08 PERFORMANCE ASSURANCE AND INSURANCE

Not Applicable

1.09 DURATION OF OFFER

Bids may be withdrawn in written or telegraphic request received from **BIDDER** prior to the time fixed for opening. No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the City Council of the City of Fairhope.

1.10 EQUAL OPPORTUNITY

The City of Fairhope is an Equal Opportunity Employer and requires that all **BIDDERS** comply with the Equal Employment Opportunity laws and the provisions of the CONTRACT Documents in this regard. The City of Fairhope also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

1.11 BID SUBMISSION AND PREPARATION

Sealed Bids, signed, executed, and dated, will be received by the City of Fairhope as noted in section 1.03 above. Submit one copy of the executed offer on the Bid Form provided, signed, and with the required Bid Security. **The bid shall be enclosed in a sealed opaque envelope approximately 9x12 inches or larger, clearly identified on the outside** as a **SEALED BID** with **the BID NAME, BID NUMBER, CITY'S NAME AND ADDRESS, CONTRACTOR'S NAME AND ADDRESS.**

Forms furnished, or copies thereof, shall be used, and strict compliance with the requirements of the invitation, these instructions, and the instructions printed on the forms is necessary. Special care should be exercised in the preparation of bids. **BIDDERS** must make their own estimates of the facilities and difficulties attending the performance of the proposed CONTRACT, including local conditions, uncertainty of weather, and all other contingencies. All designations and prices shall be fully and clearly set forth. The proper space in the bid and guaranty forms shall be suitably filled in.

Fill in all blanks on the bid form with non-erasable ink or type. Erasers or other changes must be explained or noted over the signature of the **BIDDER.**

The Bid Form may have a Contingency Allowance listed. Add this amount to the Base Bid to derive the Total Bid. The Contingency Allowance covers unforeseen conditions and shall not be used by the **BIDDER** without the written authorization of the **CITY**. At the conclusion of the project, the unused portion of the Contingency Allowance shall revert to the **CITY**.

Each bid must give the full business address of the **BIDDER** and must be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation followed by the name of the State of Incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person shall also be typed or printed below the signature. A bid by a person who affixes to this signature the word "president," "secretary," "agent," or other designation without disclosing his principal, may be held to be the bid of the individual signing. When requested by the **CITY** satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished.

Each project will be bid separately unless otherwise expressly requested in the CONTRACT document. Combination bids, that is bids on separate projects lumped together as a single bid or on all or none basis, will not be accepted unless the CONTRACT document expressly requests or permits same.

1.12 BID INELIGIBILITY

Bids that contain irregularities of any kind may be declared unacceptable at the discretion of the **CITY**. The **CITY** may waive any irregularities and may reject any or all bids. Bids received after the deadline will be returned to the **BIDDER** unopened.

1.13 **CONTRACT TIME**

The **BIDDER** agrees to delivery of the specified items on or before September 30, 2024.

1.14 **INQUIRIES/ADDENDA**

All Addenda are part of the CONTRACT Documents. Include resultant costs in the Bid. Addenda will be issued by E-MAIL and posted on the City's website: www.FairhopeAL.gov. It is the responsibility of the **BIDDER** to verify that all Addenda have been received.

Questions or comments pertaining to this bid must be presented in writing, sent via email Purchasing@FairhopeAL.gov by Wednesday, March 20, 2024, at 11:00 A.M. or will be forever waived.

1.16 **BID ACCEPTANCE**

Bid with lowest Total Bid amount from a responsive and responsible **BIDDER** may be accepted if within the CONTRACT Budget. In the event that alternates are listed on the Bid Form, the lowest combination of Total Bid and Alternate Bids accepted by the **CITY** shall be the accepted bid. Alternates shall be awarded in the order in which they are listed on the Bid Form.

1.17 **BIDDERS INTERESTED IN MORE THAN ONE BID**

If more than one bid is offered by any one party, by or in a name of his clerk, partner, corporation in which he has a substantial interest, or in which he is an officer, or other person, all such bids may be rejected. A party who has quoted prices on materials to a **BIDDER** is not thereby disqualified from quoting prices to other **BIDDERS** or from submitting a bid directly for the materials or work. The **CITY** reserves the right to determine in its discretion whether the provisions of this clause have been violated by any **BIDDER.**

1.18 **ERRORS IN BIDS**

BIDDERS or their authorized agents are expected to examine the maps, drawings, specifications and all other instructions pertaining to the work, which will be open to their inspection. Failure to do so will be at the **BIDDER'S** own risk. In case of error, in the extension of prices, the unit price will govern.

1.19 **CONTRACT AND BOND**

The **BIDDER** to whom award is made must, when requested, enter into written CONTRACT on the standard form as set out herein, with satisfactory security in the amount required, within the period specified, or, if no period be specified, within 15 days after the required forms are presented to him for signature.

1.21 **COLLUSION**

If there is any reason for believing that collusion exists among the **BIDDERS** any or all bids may be rejected, and those participating in such collusion may be barred from submitting bids on the same or other work with the **CITY**.

1.22 **SUBLETTING OR ASSIGNING OF CONTRACT**

Limitations: The CONTRACTOR shall not sublet, assign, transfer, convey, sell, or otherwise dispose of any portion of the CONTRACT, his right, title or interest therein, or his power to execute such CONTRACT, to any person, firm or corporation without written consent of the **CITY**, and such written consent shall not be construed to relieve the **BIDDER** of any responsibility for the fulfillment of the CONTRACT. Unless otherwise stipulated in the proposal or special provisions, the **BIDDER** shall perform with his own organization, and with the assistance of workmen under his immediate superintendence and reported on his payroll, all CONTRACT work of a value not less than 50 percent of the total CONTRACT amount, except that any items designated in the CONTRACT as "Specialty Items" so performed by SUB-CONTRACT may be deducted from the total CONTRACT amount before computing the amount of work required to be performed by the B**IDDER** with his own organization.

SUB-CONTRACTOR'S Status:

A **SUB-CONTRACTOR** shall be recognized only in the capacity of an employee or agent of the

CONTRACTOR and the **CONTRACTOR** will be responsible to the **CITY** for all of the **SUB-CONTRACTOR's** work, including failures or omissions; and his removal may be required by the Project Manager, as in the case of an employee.

1.23 **PROSECUTION OF WORK**

The **BIDDER** shall prosecute the work continuously and diligently in the order and manner set out in his schedule as approved by the **CITY**. He shall provide sufficient satisfactory materials, labor, and equipment to ensure that the work will be completed in a satisfactory manner within the time specified in the CONTRACT.

Should the **BIDDERS** fail to maintain a satisfactory rate of progress, the **CITY** may require that additional forces and/or equipment be placed on the work to bring the project up to schedule and maintain it at that level.

Should the **BIDDER** fail to furnish sufficient satisfactory equipment and/or labor for maintaining the quality and progress of the work at satisfactory level, the **CITY** may withhold all estimates that may become due until satisfactory quality and progress are maintained; or the CONTRACT may be annulled.

END OF INVITATION AND INSTRUCTIONS TO BIDDERS

ITEM II
SCOPE OF SUPPLY

Bid No. 24-034
Water Treatment Plant No. 1 Finished Water Pumps
And Variable Frequency Drives

The City of Fairhope is requesting responses from qualified suppliers for the acquisition of two (2) new finished water pumps and variable frequency drives (VFDs) at the City's Water Treatment Plant No. 1. The finished water pumps and VFDs quoted in the Invitation to Bid will be installed under a separate contract.

SCOPE OF SUPPLY

The finished water pumps furnished by the Supplier shall include furnishing factory-built, factory-delivered, above-ground (potable) vertical turbine pumps and VFDs as shown on the drawings and as specified herein.

The equipment furnished by the Supplier shall include the following components at a minimum:

1. Two (2) Vertical Turbine Pumps
2. Two (2) Variable Frequency Drives (VFDs)

Additional information is provided in the following attachments, which are included in the Appendices to this document:

- Proposal Form
- Specification 26 29 00 – Manufactured Control Panels
- Specification 26 29 23 – Variable Frequency Drives
- Specification 44 42 56.13 – Water Supply and Treatment Pumps
- Appendix A – Bid Drawings

PROPOSAL

Each prospective Supplierr who wishes to participate shall provide a sealed bid in accordance with the attached Advertisement, Instruction to Bidders, and Proposal Form. The proposal must include the following information at a minimum.

- Complete Proposal Form
- Manufacturer brochures, catalog sheets, performance curves, material and manufacturing information, and any other supporting documentation showing compliance with the included technical specifications.
- Manufacturer's Guarantee: The material shall be guaranteed to be free from defects in construction, materials, and workmanship for a period of 12 months from the date of delivery. Any part or portion of the materials found not to be in accordance with these specifications will be rejected and returned to the Supplier at the Supplier's expense for its immediate replacement. Manufacturer's Warranty shall be fully transferrable to the City.
- Cost to furnish the materials shall include Delivery.
- Detailed scope of supply, including all exclusions and items to be furnished by others. All exclusions and exceptions shall be clearly stated in an itemized format.
- **Estimated schedule based on the Purchase Order issuance date stated below. The schedule shall include time for submittals to be processed and sent in for review, assume a 1-week submittal review time by the City, fabrication, and delivery of the equipment. The City requires the Delivery Date to be no later than September 30, 2024.**
- Dimensional drawings of the equipment. Suppliers shall confirm the pumps and VFDs will fit inside the existing building as shown in the drawings included in Appendix A.
- List of recommended spare/wear parts and annual cost for each.

- Acknowledgement of Addendums (if any).

TENTATIVE SCHEDULE

The Proposal should be based on the following schedule:

- RFP Begins – 3/8/2024
- Proposals Received by the City – 3/27/2024
- Anticipated Award – 4/8/2024
- Anticipated Purchase Order Issued – 4/12/2024
- Delivery to Jobsite On or Before – 9/30/2024

The products included in this RFP will be incorporated into a municipal construction contract for potable water distribution system improvements. The City is a Sales Tax-exempt entity. The Supplier shall ensure no sales tax is included in the submitted unit prices.

PROPOSAL EVALUATION

The City intends to award a purchase order for this work, subject to conditions described in this RFP, to the low, responsive, responsible Supplier with reservation of the right to reject any and all proposals. The City reserves the right to waive technicalities and informalities in this Request for Proposals and any proposal submitted. The City shall have the right to accept the proposal that the City, in its sole discretion, determines to be the most advantageous to the City, taking into consideration costs, equipment delivery time, and personnel preference.

SELECTION AND AWARD

The City recognizes individual systems/proposals may differ in equipment supplied and/or configuration; consequently, the City reserves the right to reject all Proposals or any Proposal that in the City's sole judgment, does not conform to the intent and requirements of the Request for Proposals and system requirements; and the right to delay, cancel, or postpone the proposal selection. The City also reserves the right to accept the proposal that, in its sole judgment, is best suited to its needs and to waive any informality or technicality it deems in its best interest. Krebs and the City's personnel will review each proposal and will respond with questions/requests for additional information if necessary. Once all questions and requests for additional information have been addressed, all proposals will be considered final and the evaluation of proposals will be completed. Proposals will be evaluated as described above. Upon completion of the proposal evaluation, the City will issue a Purchase Order to the successful Supplier.

JRA PROJECT NO. 223217
Fairhope WTP 1 Finished Water Pump RFP
CLIENT JOB NO. 23040
BASED ON CLIENT TEMPLATE: "Krebs Engineering - Div26.dot"
PRINTED ON: October 30, 2023

ELECTRICAL SPECIFICATION INDEX:

SECTION NO..... SECTION DESCRIPTION
26 29 00..... MANUFACTURED CONTROL PANELS
26 29 23..... VARIABLE FREQUENCY DRIVES

SECTION 26 29 00 - MANUFACTURED CONTROL PANELS

PART 1 - GENERAL

1.1. SCOPE

A. This section describes control stations, PLC panels, motor control panels, manufactured control panels, and other similar panels specified herein. Specifications herein are intended as an extension of requirements in other Divisions of these specifications where reference is made to Electrical Specifications.

1.2. DEFINITIONS

A. “Control Stations”: Enclosures (with all required accessories) containing only door-mounted pushbuttons, indicator lights and/or selector switches (no electronic components or starter/controller equipment).

B. “Control Panels”: Enclosures (with all required accessories) containing equipment/devices other than door-mounted pushbuttons, indicator lights and/or selector switches (such as electronic components, starter/controller equipment, etc.).

1.3. SUBMITTALS

A. Provide the following for each control panel:
   1. A job-specific, custom wiring diagram
      a. The wiring diagram shall clearly show all components (whether the components are mounted internal or external to the control panel enclosure).
      b. All wires and terminal blocks shall be clearly labeled.
      c. Diagram shall be in accordance with NEMA/ICS standards.
   2. Size, type and rating of all system components.
   3. Unit frontal elevation and dimension drawings.
   4. Internal component layout diagrams.
   5. Manufacturer’s product data sheets for all components.

B. A Bill of Materials shall be included with catalog information on all components.

C. Information shall be included on any proprietary logic component sufficient to demonstrate its ability to perform the required functions.

D. The following calculations shall be submitted:
   1. Thermal calculations showing amount of air conditioning or ventilation and heating required for each control panel, per ambient requirements listed below and operating temperature limitations of all equipment/devices within each control panel. Where possible, forced air ventilation shall be utilized rather than air conditioning. Panel shall be oversized, interior equipment/devices shall be derated, and solar shielding shall be provided as required to allow the use of forced air ventilation as the cooling method. Air conditioning, ventilation, and/or heating equipment shall each have ratings/capacities at least 20% larger than required by calculations below unless noted otherwise:

a. Thermal calculations used for sizing cooling/ventilation systems for each control panel located in exterior or non-conditioned spaces shall assume:
   1) Ambient exterior air temperature ranges of -5 degrees F to 105 degrees F.
   2) Full solar contact where applicable (not applicable where enclosures are fully protected from solar contact using solar shields separated from panel enclosure with standoffs or similar).
   3) No wind.
   4) Heat loss from interior equipment (electronics, etc.) per equipment supplier's information.

b. Thermal calculations used for sizing heating systems for each control panel shall assume:
   1) Ambient exterior air temperature ranges of -5 degrees F to 105 degrees F.
   2) No heat loss by interior components of control panel.
   3) No solar gain on exterior of control panel.
   4) Doubling of heating wattage required to account for wind where control panels are located outdoors.
   5) Minimum temperature difference (due to heating) of 10 degrees F to prevent condensation, regardless of equipment temperature limitations.

2. Load calculations showing the sizing of all power supplies provided (with spare capacity as specified). Power supplies shall each have ratings/capacities at least 20% larger than required by load calculations unless noted otherwise.
3. Load calculations showing the sizing and anticipated runtime of all Uninterruptible Power Supply systems provided (with spare capacity as specified).

PART 2 - PRODUCTS

2.1. GENERAL

A. Control panels shall be Underwriters' Laboratories labeled by the panel manufacturer. Control panel manufacturers not capable of applying the U.L. label to their products are unacceptable.

B. All human interface equipment/devices (indicator lights, selector switches, pushbuttons, time switches, displays, keypads, and other similar items used for control, adjustments or monitoring) shall be mounted on the non-energized side of enclosure door(s) in such a way as to be accessible without exposing the user to energized parts.

2.2. RATINGS

A. All Control Panels shall have short circuit current ratings at least equal to the lesser of the following, unless noted otherwise on plans:
   1. The short circuit current rating of the electrical distribution equipment that feeds the Control Panel.
   2. 150% of the available fault current at the Control Panel as determined by a Short Circuit Current study prepared by a licensed professional electrical engineer.

B. All equipment/devices installed within control panels shall be rated to operate in

ambient temperatures of 50 degrees C (122 degrees F) or higher.

2.3. ENCLOSURES

A. All enclosures (with any required accessories or auxiliary items) shall fit within the space shown on the Plans. Any costs associated with furnishing equipment which exceeds the available space shall be borne by the Contractor.

B. Enclosures (with any required accessories or auxiliary items) shall be suitable for the environment where installed.

C. Enclosure materials shall be as follows unless noted otherwise:
   1. Control Panels:
      a. Where located in extremely corrosive areas (chlorine rooms, fluoride rooms, etc.): NEMA 4X of non-metallic construction (with non-metallic hardware) compatible with the associated chemical(s).
      b. Where located in other wet, process or outdoor areas: NEMA 4X of type 304 stainless steel construction (with stainless steel hardware).
      c. Where located in dry, non-process, indoor areas (such as electrical rooms): NEMA 12.

D. Control Panel Enclosure Construction:
   1. Metallic control panel enclosures, where specified, shall be fabricated using a minimum of 14 gauge steel for wall or frame mounted enclosures and a minimum of 12 gauge for freestanding enclosures. Continuously weld all exterior seams and grind smooth. Reinforce sheet steel with steel angles where necessary support equipment and ensure rigidity and preclude resonant vibrations.
   2. Use pan-type construction for doors.
   3. Door widths shall not exceed 36-inches.
   4. Mount doors with full length, heavy duty piano hinge with hinge pins.
   5. Provide gasket completely around each door opening.
   6. Mount and secure all internal components to removable back plate assembly.
   7. For NEMA 1 or 12 enclosures, provide handle-operated key-lockable three point stainless steel latching system for each door.
   8. For NEMA 4X enclosures, provide provisions for padlocking all doors and provide clamps on three (3) sides of each door.

E. Control panel enclosures (and associated backpanels and other similar accessories) shall be manufactured by Hoffman Engineering Co., or Saginaw Control & Engineering.

2.4. CONTROL PANEL ACCESSORIES:

A. Cooling systems shall be provided if so required by the application to maintain temperatures within the acceptable ranges of the interior equipment. In no case (regardless of temperature ratings of internal equipment) shall maximum temperatures within control panels be allowed to exceed 50 degrees C (122 degrees F). Thermostats shall be provided to control cooling without need of manual operation. Thermostat setpoints shall be as per recommendations of the equipment suppliers. See above for thermal calculation requirements. Cooling units shall be as manufactured by Hoffman Engineering Co., Rittal or approved equal and shall be thermostatically controlled.

B. Space heaters shall be provided for condensation and temperature control. Thermostats AND hygrostats (or combination hygrotherm controllers) shall be provided to control heating requirements (based on temperature and relative humidity within enclosure) without need of manual operation. Setpoints shall be as per recommendations of the equipment suppliers. See above for thermal calculation requirements. Space heaters and associated control devices shall be as manufactured by Hoffman Engineering Co., Rittal, Stego or approved equal.

C. Provide a clear polycarbonate gasketted hinged door or window to encompass all indicators, controllers, recorders, etc. mounted on NEMA 4 and 4X enclosures.

D. Provide interior mounting panels and shelves constructed of minimum 12 gauge steel with white enamel finish. Provide metal print pocket with white enamel finish on inside of door.

E. Control panels containing VFDs or Reduced Voltage Soft Starters shall include a door mounted digital keypad for adjusting the starter parameters and viewing process values and viewing the motor and starter statuses without opening the enclosure deadfront door.

2.5. CONTROL COMPONENTS

A. General:
1. All pushbuttons, pilot lights, selector switches and other control devices shall be separate, standard size (full 30mm) and shape, heavy duty oil-tight units.
   a. Devices in extremely corrosive areas (chlorine rooms, fluoride rooms, etc.) shall be of non-metallic construction.
   b. Devices in other areas shall be of chrome-plated construction.
2. All components and devices so that connection can be easily made and so there is ample room for servicing each item.
3. Door-mounted indicators, recorders, totalizers and controllers shall be located between 48” and 72” above finished floor level.
4. Door-mounted indicator lights, selector switches and pushbuttons shall be located between 36” and 80” above finished floor level.
5. All devices and components shall be adequately supported to prevent movement. Mounting strips shall be used to mount relays, timers and other devices suitable for this type of mounting.

B. Pilot Lights:
1. All pilot lights to be cluster LED type & push to test.

C. Pushbuttons:
1. All STOP operators within control stations located at equipment shall be provided with lockout provisions and a minimum of two (2) sets of contact blocks.
2. Emergency shutoff pushbutton devices shall be as follows unless noted otherwise:
   a. 2 ¼” diameter, mushroom-style, maintained contact push buttons
   b. With a minimum of one (1) normally open dry contact and three normally closed dry contacts.
   c. Connections made such that pushing “in” the button will shutoff the associated equipment.

d. Provided with a red engraved nameplate with ½" lettering to read "Emergency Shutoff".

D. Relays:
1. Control relays shall have the following characteristics, unless noted otherwise:
   a. General purpose, plug-in type.
   b. Minimum mechanical life of 10 million operations.
   c. Coil voltage as indicated or required by application.
   d. Single-break contacts rated 12 amperes, resistive at 240 volts.
   e. Contacts as shown on wiring diagrams plus a minimum of one (1) spare N.O. contact and one (1) spare N.C. contact. At a minimum, each individual relay shall have 3PDT contacts. Where required, multiple control relays shall be provided (to provide the required quantities of contacts) for each "relay" function shown on plans/diagrams.
   f. Furnished with RC transient suppressor to suppress coil-generated transients to 200% of peak voltage.
   g. LED on/off indicator light and manual operator.
   h. Industry standard wiring and pin terminal arrangements.
   i. Equal to Square D 8501KP series with matching plug-in socket.
2. Interposing/isolation relays used to isolate discrete output field wiring (and where required for voltage translation for other discrete signals) to/from PLC inputs/outputs shall be terminal-block style. Terminal-block style relays shall have the following characteristics, unless noted otherwise:
   a. Minimum mechanical life of 10 million operations.
   b. Single-break contacts rated 6 amperes, resistive at 120 volts.
   c. One (1) N.O. contact per relay.
   d. Furnished with integral transient protection.
   e. LED on/off indicator light.
   f. DIN-rail mounted.
   g. Equal to Square D type Zelio RSL.
3. Timer relays shall be electronic, adjustable plug-in devices meeting the following characteristics, unless noted otherwise:
   a. General purpose, plug-in type.
   b. Minimum mechanical life of 10 million operations.
   c. Single-break contacts rated 10 amperes, resistive at 240 volts.
   d. Contacts as shown on wiring diagrams plus a minimum of one (1) spare N.O. contact and one (1) spare N.C. contact. At a minimum, each relay shall have DPDT contacts (2 N.O. & 2N.C.). Where required, multiple timer or control relays shall be provided (to provide the required quantities of contacts) for each "relay" function shown on plans/diagrams.
   e. Rotary-thumbwheel adjustments for time value, timing range and function.
   f. Time value adjustments from .05 seconds to 999 hours
   g. Selectable Timing Functions, including the following:
      1) On Delay
      2) Interval
      3) Off Delay
      4) One Shot
      5) Repeat Cycle-Off
      6) Repeat Cycle-On
      7) On/Off Delay
      8) One Shot Falling Edge
      9) Watchdog

10) Trigger On Delay

h. Accuracy shall be ± 2% and repeatability shall be ± 0.1%.
i. Furnished with integral transient protection.
j. LED indicator light(s) for “timing” and “on/off status”
k. Held in place with hold-down spring
l. Equal to Square D type JCK with matching plug-in socket.

2.6. DC POWER SUPPLIES

A. DC Power supplies shall be provided where specified elsewhere, or as required by design of system. Power supplies shall be industrial type, AC-to-DC switching, output voltage as required, 120vac input, size as required for the initial application plus 50% spare capacity.

B. Redundant power supplies with diode isolation shall be provided so that the loss of one power supply does not affect system operation. The back-up supply systems shall be designed so that either the primary or the back-up supply can be removed, repaired, and returned to service without disrupting the system operation.

C. Power supply output shall be protected by secondary overcurrent protection device(s).

D. The power distribution from multiloop supplies shall be selectively fused so that a fault in one instrument loop will be isolated from the other loops being fed from the same supply.

E. Each power supply shall meet the following requirements.
1. Regulation, line: 0.4% for input from 105 to 132vac.
2. Regulation, load: 0.8%
3. Ripple/Noise: 15mV RMS / 200 mV peak to peak
4. Operating temperature range: 0 deg C - 60 deg C
5. Overvoltage protection
6. Overload Protection
7. Output shall remain within regulation limits for a least 16ms after loss of AC power at full load.
8. Output status indicator.
9. UL listing

F. Power supplies shall be manufactured by Puls, Sola, Phoenix Contact or equal.

2.7. DISCONNECTS

A. A main disconnect switch or circuit breaker shall be supplied integral to all control panels. The main disconnect or circuit breaker shall be accessible/operable without exposing the operator to energized sections of the control panel(s), and shall be lockable in the open/off position.

B. Individual circuit breakers shall be provided integral to the manufactured control panel for each separate power circuit originating within the control panel.

C. Where the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated (or can be adjusted to is 1200A or higher,

breakers shall be electronic trip and shall be provided with arc energy-reducing maintenance switching (with local status indicator) to reduce arc flash energy per NEC 240.87 requirements.

D. Manufacturers:
   1. Square 'D', G.E. or Cutler Hammer.

2.8. COMBINATION STARTERS

A. All combination starters shall utilize a unit disconnect. Magnetic starters shall be furnished in all combination starter units unless specifically shown otherwise. All starters shall utilize full NEMA/EEMAC rated contactors (size 1 minimum).

B. Starters shall be provided with a three-pole, external (door mounted) manual reset, solid state overload relay. Solid state overload relay shall have switch-selectable trip class and shall provide protection from:
   1. Overload.
   2. Phase Unbalance.
   3. Phase Loss.
   4. Ground Fault (Class II detection).

C. Unless specifically shown otherwise, each combination starter or each group of starters shall be furnished with a control circuit transformer including two primary protection fuses and one secondary fuse (in the non-ground secondary conductor). The transformer shall be sized to accommodate the contactor(s) and all connected control circuit loads (including motor space heaters and other similar loads where specified). The transformer rating shall be fully visible from the front when the unit door is opened. Unless otherwise indicated, control voltage shall be 120V AC. Control power shall be provided by individual unit control power transformers.

D. When a unit control circuit transformer is not provided, the disconnect shall include an electrical interlock for disconnection of externally powered control circuits.

E. Auxiliary control circuit interlocks shall be provided where indicated. Auxiliary interlocks shall be field convertible to normally open or normally closed operation.

F. NEMA/EEMAC Size 1-4 starters shall be mounted directly adjacent to the wireway so that power wiring (motor leads) shall connect directly to the starter terminals without the use of interposing terminals. Larger starters shall be arranged so that power wiring may exit through the bottom of the starter cubical without entering the vertical wireway.

G. Each starter shall be equipped with a minimum of the following control devices:
   1. Door-mounted reset button.
   2. Two (2) field-reversible (N.O./N.C.) auxiliary contacts
   3. For reversing and two-speed starters: Four (4) field-reversible (N.O./N.C.) auxiliary contacts
   4. Additional control devices as indicated on plans.

H. Control Wiring Terminal Blocks
   1. Terminal blocks shall generally be:
      a. Feed-thru, screw-in type

b. DIN rail mounted
c. Furnished with the stationary portion of the block secured to the unit bottom plate
d. Furnished with unit-mounted control terminal blocks for each field wire.
e. Rated for the voltage and current of the proposed application per UL/NEC standards.
f. Sized (by supplier) for the associated wire gauges/types/quantities.
g. Phoenix Contact UT-4 series, Weidmuller WDU-4 series (or equivalent) unless required otherwise by application.

I. Nameplates
1. Each unit shall be properly labeled with an engraved phenolic nameplate with a white background and black letters.
2. Each pilot device shall be properly labeled with a legend plate or an engraved phenolic nameplate.

J. Manufacturers:
1. Square 'D', G.E. or Cutler Hammer.

2.9. WIRING

A. Refer to Section 26 05 19 for all wiring types/applications.

B. All wiring shall be identified on each end with hot stamped, shrink tube type, or self-laminating vinyl permanent wire markers to correspond with numbering shown on wiring diagrams.

C. All connections shall be made on terminals with no splices.

D. All wiring runs shall be along horizontal or vertical routes to present a neat appearance. Angled runs will not be acceptable. Group or bundle parallel runs of wire in plastic wire duct where practical.

E. All wiring runs shall be securely fastened to the panel or wire duct by means of plastic wire ties. Adequately support and restrain all wire runs to prevent sagging or movement.

F. AC power wiring and instrumentation/analog wiring shall be run separate.

G. Color code all internal wiring (not field wiring) as follows:
1. Line and load circuits: Black (B)
2. AC control wiring: Red (R)
3. Externally-Powered control wiring: Yellow (Y)
4. Neutral wiring: White (W)
5. Low voltage DC(+)pos: Blue (BL)
6. Low voltage DC(-)neg: Blue/White Tracer (BL/W)
7. Grounding: Green (G)

H. Terminal strips shall be provided for all input and output wiring. No more than two (2) wires shall be connected to one (1) terminal block.

2.10. ELECTRICAL SURGE AND TRANSIENT PROTECTION

A. General
   1. Function: Protect the system against damage due to electrical surges.

B. Application: As a minimum, provide surge and transient protection (with proper grounding) at the following locations as described below:
   1. Power Input High Frequency Noise Filtering:
      a. 120VAC Control panels with integral UPSs, PLCs, or other electronic/microprocessor equipment that is susceptible to failure or improper operation due to high frequency/harmonic input transients shall be provided with series-connected high-frequency noise filters on the line input (downstream of any panel main disconnects/breakers). Filters shall be as manufactured by Edco/Emerson/Islatrol or equal (exact type(s) as required by application).
   2. Power Input Surge Protection:
      a. Provide surge protection device at any connection of 120VAC power to panels containing programmable logic controllers, remote I/O equipment, UPS's, transmitters, radios, VFDs, Reduced Voltage Soft Starters or other electronic equipment. Device shall:
         1) Be mounted internal to the associated panel, with dedicated overcurrent protection.
         2) Be of two-part (base and SPD), DIN-rail mountable construction.
         3) Have 15kA total nominal discharge current per line (based on 8/20µs waveform).
         4) Have maximum continuous operating voltage (MCOV) rating as required by the associated circuit voltage.
         5) Visually indicate operational status.
         6) Be Dehn DEHNguard series or equal by MTL Technologies, or may be combined with the High Freqency Noise Filtering device required above.
      b. Provide surge protection device at any connection of multi-pole AC power to panels containing programmable logic controllers, remote I/O equipment, UPS's, transmitters, radios, VFDs, Reduced Voltage Soft Starters or other electronic equipment. Device shall:
         1) Be mounted internal to the associated panel, with dedicated overcurrent protection.
         2) Provide protection for all phases.
         3) Have 40kA (per phase) peak surge current rating.
         4) Have maximum continuous operating voltage (MCOV) rating as required by the associated circuit voltage.
         5) Visually indicate operational status.
         6) Be Square D SDSA or HWA series or equal.
   3. Analog I/O Panel Terminations Surge Protection:
      a. Provide surge protection device at the PLC (or similar) panel connection of each analog I/O signal. Device shall:
         1) Be mounted internal to the associated panel.
         2) Be of two-part (base and SPD), DIN-rail mountable construction.
         3) Have 10kA total nominal discharge current per line (based on 8/20µs waveform).
         4) Have maximum continuous operating voltage (MCOV) rating as required by the associated signal.
         5) Be Dehn Blitzductor XT series or equal by MTL Technologies.
   4. Discrete I/O Panel Terminations Surge Protection:

a. Provide isolation relay at the PLC (or similar) panel connection of each discrete output signal (within the associated panel). See above for isolation relay requirements.

5. Low Voltage Power Supply Load Side Surge Protection:
   a. Provide surge protection device at the PLC (or similar) panel on the load side of each low voltage power supply that has low voltage connections extending external to the panel. Device shall:
      1) Be mounted internal to the associated panel.
      2) Be of two-part (base and SPD), DIN-rail mountable construction.
      3) Have 10kA total nominal discharge current per line (based on 8/20µs waveform).
      4) Have maximum continuous operating voltage (MCOV) rating as required by the associated utilization voltage.
      5) Be as manufactured by Dehn, MTL Technologies, or Phoenix Contact.
6. Network Panel Terminations Surge Protection:
   a. Provide surge protection device at the PLC (or similar) panel connection of each network cable. Device shall:
      1) Be mounted internal to the associated panel.
      2) Be of DIN-rail mountable construction.
      3) Have 1kA total nominal discharge current per line (based on 8/20µs waveform).
      4) Be designed specifically for the associated network connection type (Ethernet, RS485, RS232, etc.).
      5) Be MTL Zonebarrier series or equal.

C. Installation and grounding of suppressor: As directed by manufacturer. Provide coordination and inspection of grounding.

PART 3 - EXECUTION

3.1. INSTALLATION

A. Provide enclosure mounting supports as required for floor, frame or wall mounting. All supports in exterior, wet or process areas shall be stainless steel unless noted otherwise. All floor-mounted panels or other similar distribution equipment shall be mounted on 6” concrete housekeeping pads unless specifically shown otherwise.

B. All enclosures used outside shall be solid bottom unless otherwise specified. All cable and piping openings shall be sealed watertight. Cable and piping shall enter the enclosure as shown on drawings or specified herein.

C. All equipment and components shall be solidly grounded to the control panel. One grounded terminal unit shall be provided in each control panel for connection to plant ground system. Grounding digital and analog components shall be performed in accordance with the instrument supplier’s installation recommendations. Signal ground shall be solidly connected to the ground system so as to prevent ground loops

3.2. PAINTING

A. For enclosures other than NEMA 4X stainless steel or fiberglass:
   1. Completely clean all surfaces so that they are free of corrosive residue. Then, phosphatize all surfaces for corrosion protection.

2. Prime with two (2) coats and finish with one coat of factory finish textured polyurethane. Paint shall be Sherwin-Williams Polane “T’ or approved equal.
3. Color to be selected during shop drawing review phase.

3.3. IDENTIFICATION & DOCUMENTATION

A. Refer to specification section 26 05 53 for additional requirements.

B. Control panel power supply source, type, voltage, number or circuit ratings shall be identified inside control panels and on drawings.

C. All interior devices and components shall be identified with thermal transfer labels with black letters on white background. Labels shall be placed on the subpanel and not the component. Marking system shall be a Brother “PTouch II” or equal. Lettering shall be 1/4" high.

D. All front panel mounted devices such as push buttons shall be identified by the use of engraved bakelite nameplates or legend plates. Nameplates shall be 1/8” thick, white with black core.

E. Where a panel includes a PLC or other network-connected device that is intended to be connected to another system (such as a plant SCADA system) via a network connection, the panel supplier shall provide an Interface Control Document (ICD) to the other system supplier (such as the SCADA Integrator). This document shall itemize the following for each networked parameter that is capable of being monitored or controlled by the other system:
1. Parameter Name/Function (ex: Pump No. 1 On/Off Status)
2. Parameter Type (discrete or analog, input or output)
3. Parameter register ID/location

F. Where a panel includes a touchscreen or other programmable HMI display and is to be monitored by another system (such as a plant SCADA system), the panel supplier shall provide copies of the HMI display code and screenshots of all proposed HMI screens to the other system supplier (such as the SCADA Integrator) for their use in duplicating the associated HMI.

G. A job-specific, custom wiring diagram for each control panel (not including control stations without relays) shall be provided to the contractor prior to installation for making the appropriate electrical connections. The wiring diagram shall clearly show all control components connected to the panel (whether the components are mounted internal or external to the enclosure). All wires and terminal blocks shall be clearly labeled. A laminated copy of the final wiring diagram for each unit shall be installed inside the door of the associated panel, and submitted to the owner with the as-built documentation.

3.4. OWNER TRAINING

A. Fully train the owner in the proper operation of all control panels/equipment, describing and demonstrating full operation, including function of each door-mounted device.

3.5. SPARE EQUIPMENT

A. Provide the following spare equipment:
   1. Fuses: 10% (minimum of 3) of each size and type utilized, mounted within a pocket within the associated control panel.
   2. Where control panel contains programmable controller (or similar equipment): Flash drive containing copies of all final programs utilized within the control panel, with provisions/cable assemblies as required to connect the flash drive provided to the controller to download the programs. Flash drive shall be attached to retractable cord (long enough to reach the associated port) attached to the inside of the panel door.

END OF SECTION 26 29 00

SECTION 26 29 23 - VARIABLE FREQUENCY DRIVES

PART 1 - GENERAL

1.1. SCOPE OF WORK

A. This section provides specification requirements for adjustable frequency drives, variable speed drives or herein identified as VFD's.

B. The manufacturer shall furnish, field test, adjust and certify all installed VFD's for satisfactory operation.

C. Any exceptions or deviations to this specification shall be indicated in writing and submitted to the engineer for approval a minimum of ten (10) days prior to bid.

1.2. REFERENCES

A. ANSI®/NFPA® 70 - National Electrical Code® (NEC®)

B. CSA® C22.2 No. 14-M91 - Industrial Control Equipment

C. IEC 61000 - Electromagnetic Compatibility

D. NEMA 250 Enclosures for Electrical Equipment

E. NEMA ICS7 - Industrial Control and Systems Adjustable Speed Drives

F. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection Installation and Operation of Adjustable Speed Drives

G. UL® 50 – Enclosures for Electrical Equipment

H. UL 98 – Disconnect Switches

I. UL 507 – Electric Fans

J. UL 508 – Industrial Control Equipment

K. UL 508C – Power Conversion Equipment

L. UL 991 – Safety Tests for Safety Related Controls employing Solid State Devices

M. OSHA® 1910.95 – VFD Controller Acoustical Noise

1.3. QUALITY ASSURANCE

A. The manufacturer of the VFD shall be a certified ISO 9001 facility.

B. The VFD and all associated optional equipment shall be UL Listed according to UL508C Power Conversion Equipment. A UL label shall be attached inside each enclosure as verification.

C. The VFD shall be designed constructed and tested in accordance with UL, CSA, NEMA and NEC standards.

D. Quality Assurance documentation shall be furnished to verify successful completion upon written request of the engineer.

1.4. SUBMITTALS

A. Submittals shall be furnished in accordance with Specification Section 26 05 00.

B. Provide the following for each VFD:
1. A job-specific, custom wiring diagram
   a. The wiring diagram shall clearly show all control components connected to the starter (whether the components are mounted internal or external to the VFD enclosure).
   b. All wires and terminal blocks shall be clearly labeled.
   c. Diagram shall be in accordance with NEMA/ICS standards.
2. Size, type and rating of all system components.
3. Enclosure frontal elevation and dimension drawings.
4. Internal component layout diagrams.
5. Available conduit entry and exit locations.
6. Manufacturer’s product data sheets for all components.

C. Standard catalog sheets showing voltage, horsepower, maximum current ratings and recommended replacement parts with part numbers shall be furnished for each different horsepower rated VFD shall be provided.

1.5. WARRANTY

A. An 18-month parts warranty shall be provided on materials and workmanship from the date of owner acceptance/substantial completion after completion of startup.

PART 2 - PRODUCT

2.1. MANUFACTURERS

A. The VFD equipment shall be:
1. Square 'D', ABB or Cutler Hammer.
2. Or pre-approved equal meeting the detailed requirements of this specification. Note that all “named” Manufacturers are obligated to meet the detailed requirements of this specification. Any proposed exceptions shall be clearly stated at bid time, citing the reason for noncompliance, and the cost for providing a conforming product. Failure to provide a detailed list of proposed exceptions may cause a bid to be deemed non-responsive. The Engineer will be the sole determiner of the acceptability of a proposed exception.

B. Alternate control techniques other than pulse width modulated (PWM) are not acceptable.

2.2. GENERAL DESCRIPTION

A. The VFD shall convert the input AC mains power to an adjustable frequency and

voltage as defined below and indicated on the drawings or motor control schedules.

1. Each VFD shall be a Low Harmonic Active-Front-End drive design equal to Square D Altivar ATV680, with the following characteristics:
    a. The VFD shall be a 3-level Active Front End (AFE) AC drive that is designed to comply with standard IEEE 519-2014 when installed in a system that is already in compliance with the standard. A 3-level design shall be used to provide a low harmonic current load to the power system and to avoid introducing additional common mode noise to the motor. Passive harmonic filters shall be acceptable for motors less then 150hp in size provided the TDD is shown to be less than limits established by IEE 519-2014. The 2-level type design shall not be acceptable due to the additional common mode noise output from the VFD to the motor. Input THDi of less than 5% at 80% load.
    b. “Stop and Go” function to de-energize active front end while not in use to reduce energy consumption and to provide isolation in standby mode
    c. Embedded power measurement and energy dashboard
    d. Performance Drift Monitoring
    e. The power section shall be insensitive to phase rotation of the AC line.

B. The output power section shall convert fixed DC voltage to adjustable frequency AC voltage. This section shall use insulated gate bipolar transistors (IGBT) or intelligent power modules (IPM) as required by the current rating of the motor.

2.3. CONSTRUCTION

A. Each VFD shall be an engineered drive system, complete with enclosure, door-mounted 30mm devices, integral MCP/disconnect, thermal controls, etc. Refer to Specification Section 26 29 00 (Manufactured Control Panels) as applicable for additional requirements (for enclosure, component types, etc.).

B. The VFD shall be provided complete with a main circuit breaker disconnect means for Type 1 short circuit overcurrent protection as follows:
    1. Short circuit withstand rating shall be equal to or greater 65kAIC.
    2. Sized by manufacturer per NEC requirements for corresponding motor load.

C. A mechanical interlock shall prevent an operator from opening the VFD door when the disconnect is in the on position. Another mechanical interlock shall prevent an operator from placing the disconnect in the on position while the VFD door is open. It shall be possible for authorized personnel to defeat these interlocks.

D. Provisions shall be provided for locking all disconnects in the off position with up to three padlocks.

E. Provisions shall be made for accepting a padlock to lock the enclosure door.

F. A seismic qualification label shall be provided for all wall and floor mount units to comply with the latest IBC and NFPA 5000 guidelines.

2.4. AUXILIARY DEVICES

A. Each VFD shall be provided with the following door-mounted devices (refer to Specification Section 26 29 00, Manufactured Control Panels, for general device type

requirements):

1. Green “ON” indicator light
2. Red “OFF” indicator light
3. Elapsed Time Meter
4. Amber “MOTOR OVERTEMP ALARM” indicator light
5. Amber “WETWELL LOW LEVEL ALARM” indicator light
6. Black momentary-contact START pushbutton (interconnected to control VFD if HOA switch is in HAND position).
7. Red momentary-contact STOP pushbutton (interconnected to control VFD if HOA switch is in HAND position).
8. Hand/Off/Auto selector switch with one (1) XOO and three (3) OOX contact blocks.
9. Alarm Reset black momentary-contact pushbutton(s) as required.
10. Speed Control Potentiometer (interconnected to control VFD if HOA switch is in HAND position).
11. 120VAC CPT (with primary and secondary fusing sized per NEC) rated for no less than 500VA.
12. Control relaying and 120VAC power sourcing to the motor 120VAC anti-condensation heater(s) (power to this remote heater should be ON whenever motor/drive is OFF).
13. Control relaying to monitor the motor overtemperature n.c. alarm thermostat(s) (opens during alarm condition), with time delay relaying and with latching relaying to shut off motor (until associated reset pushbutton is pressed).
14. Control relaying to monitor a remote Low Wetwell Level Alarm n.o. dry contact (closes during alarm condition), with time delay relaying and with latching relaying to shut off motor (until associated reset pushbutton is pressed).
15. Provisions for the following SCADA I/O:
    a. On/Off Control (remote, maintained-contact dry contact to be interrogated by this VFD)
    b. Running Status (local dry contact)
    c. HOA Not In Auto Status (one of the three local OOX dry contacts referenced above on the HOA switch)
    d. VFD Alarm Status (local dry contact)
    e. Motor Overtemperature Alarm Status (local dry contact).
    f. 4-20mA Speed Control signal from SCADA
    g. 4-20mA Speed Status signal to SCADA
    h. 4-20mA Average 3-phase Current signal to SCADA

2.5. MOTOR DATA

A. Each VFD shall be sized to operate the AC motors defined to match load schedules and other specification documents as follows:
   1. Motor Horsepower and voltage rating(s) – See pump specifications. Note that the VFD shall be derated (oversized) by one standard motor HP rating beyond the motor nameplate (for example, a 200HP VFD shall be provided for a 150HP motor).

B. The VFD manufacturer shall be responsible for verifying each exact motor amperage, horsepower, voltage, RPM and service factor with motor equipment supplier prior to submitting shop drawings.

2.6. APPLICATION DATA

A. The VFD shall be sized to operate either a Variable Torque or Constant Torque load (unless specifically stated otherwise on drawings). The exact load type shall be as determined by the motor supplier and shall be coordinated by the VFD supplier prior to submitting shop drawings.

B. The speed range shall be from a minimum speed of 0.1Hertz to a maximum speed of 60 Hertz.

2.7. ENVIRONMENTAL RATINGS

A. The VFD shall meet IEC 60664-1 and NEMA ICS-1 Annex A standards.

B. The VFD itself shall be designed to operate without derating in an ambient temperature from 0 to + 40 degrees C (+32 to 104 degrees F). Where temperatures exceed these limitations, the VFD manufacturer shall properly derate the unit as required and shall clearly submit this derating calculation with the submittal package. See Specification Section 26 24 19 (Motor Control Centers) or Specification Section 26 29 00 (Manufactured Control Panels) as applicable for additional requirements (for thermal controls required within VFD outer enclosures).

C. The storage temperature range shall be -25 to +65 degrees C (-13 to +149 degrees F).

D. The maximum relative humidity shall be 95 percent at 40 degrees C non-condensing or dripping water conforming to IEC 60068-2-3.

E. The VFD shall be rated to operate at altitudes less than or equal to 3,300 feet (1000 meters) without derating. For altitudes above 3,300 feet, de-rating factors shall apply by the manufacturer.

F. The VFD shall conform to IEC 600721-3-3-3M3 amplitude for Operational Vibration Specifications.

2.8. ELECTRICAL RATINGS

A. The VFD shall be designed to operate from the rated input voltage plus or minus 10 percent.

B. The VFD shall operate from an input voltage frequency range of 57 to 63 Hertz.

C. The displacement power factor shall not be less than 0.95 lagging under any speed or load condition.

D. The efficiency of the VFD at 100 percent speed and load shall not be less than 96 percent.

E. The rated VFD overcurrent capacity shall be 150 percent of the constant torque rating (or 110 percent of the variable torque rating where applicable) for one minute.

F. The output carrier frequency of the VFD shall be randomly modulated depending on Drive rating for low noise operation. No VFD with an operable carrier frequency above 10 kHz shall be allowed.

G. The output frequency shall be from 0.1 to 200 Hertz.

H. The VFD shall be able to develop rated motor torque at 0.5 Hertz (60 Hertz base) in a sensorless flux vector (SVC) mode using a standard induction motor without an encoder feedback signal.

2.9. PROTECTION

A. Upon power-up shall automatically test for valid operation of memory, option module, loss of analog reference input, loss of communication, dynamic brake failure, DC to DC power supply, control power and the pre-charge circuit.

B. Protection against short circuits, between output phases and ground; and the logic and analog outputs.

C. Minimum AC undervoltage power loss ride-through of 200 milliseconds. The VFD shall have the user-defined option of frequency fold-back to allow motor torque production to continue to increase the duration of the powerloss ride-through.

D. Selectable ride through function that shall allow the logic to maintain control for a minimum of one second without faulting.

E. For a fault condition other than a ground fault, short circuit or internal fault, an auto restart function shall provide programmable restart attempts. The programmable time delay before restart attempts shall be unlimited.

F. Deceleration mode programmable for normal and fault conditions. The stop modes shall include free-wheel stop, fast stop and DC injection braking.

G. Upon loss of the analog process follower reference signal, shall fault and/or operate at a user-defined speed set between software programmed low-speed and high-speed settings.

H. Solid state I^2t protection that is UL Listed and meets UL 508C as a Class 10 overload protection and meets IEC 60947. The minimum adjustment range shall be from 20 to 150 percent of the nominal output current rating of the VFD.

I. Thermal switch with a user selectable pre-alarm that shall provide a minimum of 60 seconds delay before overtemperature fault.

J. Use bonded fin heatsink construction for maximum heat transfer.

K. Fold-back function that shall automatically anticipate a controller overload condition and fold back the frequency to avoid a fault condition.

L. The output frequency shall be software enabled to fold back when the motor is overloaded.

M. There shall be three skip frequency ranges with hysteresis adjustment that can each be programmed independently, back to back or overlapping.

2.10. ADJUSTMENTS AND CONFIGURATIONS

A. The VFD shall self-configure to the main operating supply voltage and frequency. No operator adjustments shall be required.

B. Upon power-up, automatically send a signal to the connected motor. The stator resistance data shall be measured at rated current. The VFD shall automatically optimize the operating characteristics according to the stored data.

C. The VFD shall be factory pre-set to operate most common applications.

D. A choice of four types of acceleration and deceleration ramps shall be available in the VFD software; linear, S curve, U curve and custom.

E. The acceleration and deceleration ramp times shall be adjustable from 0.01 to 3,200 seconds.

F. The volts per frequency ratios shall be user selectable to meet variable torque loads, normal and high-torque machine applications.

G. The exact acceleration ramp time/type, current limitation, overload protection type and motor current shall be set in the field by the startup technician prior to equipment startup as recommended/approved by the motor supplier.

H. The memory shall retain and record run status and fault type of the past eight faults.

I. Slip compensation shall be adjustable from 0 to 150%.

J. The software shall have an “Energy Saving” function that shall reduce the voltage to the motor when selected for variable torque loads. A constant volts/Hertz ratio shall be maintained during acceleration. The output voltage shall then automatically adjust to meet the torque requirement of the load.

K. The VFD shall offer programmable DC injection braking that shall brake the AC motor by injecting DC current and creating a stationary magnetic pole in the stator. The level of current shall be adjustable between 10 and 110 percent of rated current and available from 0.1 to 30 seconds continuously. For continuous operation after 30 seconds, the current shall be automatically reduced to 50 percent of the nameplate current of the motor.

L. Sequencing logic shall coordinate the engage and release thresholds and time delays for the sequencing of the VFD output, mechanical actuation and DC injection braking in order to accomplish smooth starting and stopping of a mechanical process.

2.11. GRAPHIC TERMINAL DISPLAY INTERFACE

A. The graphic display terminal shall provide 8 lines of 240 by 160 pixels in plain English to control, adjust and configure the VFD. All electrical values, bar charts, configuration parameters, I/O assignments, application and activity function access, faults, local control, adjustment storage, self-test and diagnostics. There shall be a standard selection of six additional languages built-in to the operating software as standard.

B. The VFD model number, torque type, software revision number, horsepower, output

current, motor frequency and motor voltage shall all be listed on the drive identification display as viewed on the graphic display terminal.

C. As a minimum the selectable outputs shall consist of speed reference, output frequency, output current, motor torque, output power, output voltage, line voltage, DC voltage, motor thermal state, drive thermal state, elapsed time, motor speed, machine speed reference and machine speed.

D. The graphic display terminal shall consist of programmable function keys. The functions shall allow both operating commands and programming options to be preset by the operator. A hardware selector switch shall allow the graphic display terminal to be locked out from unauthorized personnel.

E. The graphic display terminal shall offer a simply smart to advanced user menu consisting of parameter setting, I/O map, fault history, and drive configuration. A software lock shall limit access to the main menu.

F. The navigation wheel shall provide the ability to scroll through menus and screens, select or activate functions or increase the value of a selected parameter.

G. An escape key shall allow a parameter to return the existing value if adjustment is not required and the value is displayed. The escape function shall also return to a previous menu display.

H. A RUN key and a STOP key shall command a normal starting and stopping as programmed when the VFD is in keypad control mode. The STOP key shall be active in all control modes.

I. A user interface shall be available that is a WINDOWS® based personal computer, serial communication link or detachable graphic terminal display.

J. The keypad and all door mounted controls shall be Type 12 rated.

2.12. CONTROL

A. External pilot devices shall be able to be connected to a terminal strip for starting/stopping the VFD, speed control and displaying operating status. All control inputs and outputs shall be software assignable.

B. 2-wire or 3-wire control strategy shall be defined within the software. 2-wire control allows automatic restart of the VFD without operator intervention after a fault or loss of power. 3-wire control requires operator intervention to restart the VFD after a fault or loss of power.

C. The internal power supply shall incorporate an automatic current fold-back that protects the internal power supply if incorrectly connected or shorted. The transistor logic outputs shall be current limited and shall not be damaged if shorted or excess current is pulled. See below for external power supply requirements.

D. All logic connections shall be furnished on pull apart terminal strips.

E. There shall be (2) two software assignable analog inputs with interference filtering.

The analog inputs shall be software selectable and consisting of user defined configurations: 4-20 mA or 0-10 V.

F. There shall be five software assignable logic inputs that shall be selected and assigned in the software. The selection of assignments shall consist of forward, reverse, jog, plus/minus speed (2 inputs required), setpoint memory, preset speeds (up to 8 inputs), auto/manual control, controlled stop, terminal or keypad control, output contactor when applicable (2 inputs required), motor switching, and fault reset.

G. There shall be a minimum of two (2) software assignable analog outputs with interference filtering (see plans for additional requirements). The analog outputs can be selected and assigned in the software. The analog output assignments shall be proportional to the following motor characteristics: frequency, current, power torque, voltage and thermal state. The output signal shall be user defined configurations: 4-20 mA or 0-10 V.

H. A minimum of two voltage-free Form C relay output contacts shall be provided. One of the contacts shall indicate VFD fault status. The other contact shall be user assignable. Refer to plans for additional requirements.

I. There shall be a hardware input/output extension module available that also provides interlocking and sequencing capabilities. The module shall be fully isolated and housed in a finger-safe enclosure with pull apart terminal strips. The module shall add logic inputs, analog inputs, relay outputs, and analog outputs as required by wiring diagrams shown on plans. All of the I/O shall be user assignable in the software as previously defined.

J. The VFD shall have a control power source from the 120V CPT. When an input isolation contactor is provided, the 120V CPT shall be powered from upstream of the input isolation contactor such that control power to the VFD is maintained when the input isolation contactor is opened.

K. The peripheral VFD control circuitry shall be operated at 120 Vac 60 Hz from a control power transformer included within the enclosure.

L. Operator devices shall be door mounted, functions/types as shown on drawings.

M. All operator devices shall be remote-mounted using supplied 120 Vac control logic. Clearly labeled terminals shall be provided for field installation.

N. All wiring shall be clearly identified on each end to match the wiring diagram(s) provided with the VFD.

O. Refer to Specification Section 26 29 00 (Manufactured Control Panels) as applicable for all operator device and control component requirements (for pushbuttons, indicator lights, selector switches, relays, control wiring, etc).

2.13. COMMUNICATIONS

A. The VFD shall be able to be connected to communication network type(s) as indicated on plans or required by the SCADA Integrator (exact network/protocol type(s) required shall be as directed by the facility SCADA Integrator). Where no

specific network connections are specified on plans or required by the SCADA Integrator, the VFD shall be provided with Ethernet TCP/IP communication capability.

B. The communication shall be able to provide access to the control, to the adjustment and to the supervision of the VFD.

C. No additional compensation will be granted to provide gateways, network components, etc. to properly communicate with the facility SCADA system. Equipment supplier is responsible for verifying all network connection requirements with the SCADA Integrator prior to bid.

2.14. INPUT SURGE PROTECTION

A. Each drive shall be provided with a 3-phase, line-side surge protection device rated 80kA (per phase) or greater. The lead length between the surge protection device and the drive terminals shall be 12” or less. The surge protection device shall be designed / located / isolated such as to prevent / limit potential physical damage to other components within the enclosure if the surge protection device fails.

PART 3 - EXECUTION

3.1. TESTING

A. All incoming material shall be inspected and/or tested for conformance to quality assurance specifications.

B. All subassemblies shall be inspected and/or tested for conformance to quality assurance specifications.

C. Each completed unit shall be functionally tested prior to shipment to assure conformance to the specifications.

3.2. DELIVERY, STORAGE AND HANDLING

A. Handling and shipment of the equipment shall be in such a manner to prevent internal component damage, breakage, and denting and scoring of the enclosure finish.

B. Equipment shall be stored indoors in a clean, dry environment as directed by the equipment supplier. Energize anti-condensation space heaters if so required.
1. Verify that the location is ready to receive work and the dimensions are as indicated.
2. Do not install VFD equipment until the building environment can be maintained within the service conditions required by the manufacturer.

3.3. INSTALLATION

A. Installation shall comply with manufacturer's instructions, drawings and recommendations.

B. A job-specific, custom wiring diagram for each VFD unit shall be provided to the contractor prior to installation for making the appropriate electrical connections. The wiring diagram shall clearly show all control components connected to the VFD

(whether the components are mounted internal or external to the VFD enclosure). All wires and terminal blocks shall be clearly labeled. A laminated copy of the final wiring diagram for each unit shall be installed inside the door of the associated unit.

C. Operations and Maintenance Manuals shall be provided to the owner for all VFD components, control wiring, etc.

D. Operations and Maintenance Manuals shall include hardcopy printouts of all device settings and programming.

E. For safety, reliability, and continuity of warranty, any modifications, alterations, etc. required to conform to the requirements of this specification shall be performed by the VFD manufacturer only. Distributor modifications, third party packaging, etc. of a manufacturer's standard product are specifically disallowed.

3.4. START-UP AND TRAINING

A. The services of a qualified manufacturer's service representative shall be provided to install, test, and start up all VFD's furnished under this specification. The schedule of the startup(s) shall be determined by the contractor.

B. Services shall include a minimum of eight (8) hours of field/classroom training for owner's personnel on routine operation and maintenance of the specified units.

3.5. SPARE PARTS

A. The following spare parts shall be provided at no extra cost to the Owner:
1. One of each type and size of control fuse.
2. Three of each type and size of power fuse.

END OF SECTION 26 29 23

SECTION 44 42 56.13 - WATER SUPPLY AND TREATMENT PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following water supply and treatment pumps for use in water and treatment plants and systems:

1. High Service Pumps (Vertical Turbine)

1.3 SUBMITTALS

A. **Certification from Contractor and Manufacturer/Suppliers:** During the bid period and again prior to submitting/ordering and installing materials, products and equipment, the Contractor and all manufacturers and suppliers shall thoroughly review the materials, products and equipment being supplied and shall familiarize themselves with the existing and proposed/new facilities, as well as connections to existing facilities/utilities. This shall include field verification of the location, nature, size/dimensions, current and intended future use, etc. Prior to ordering and installation, the Contractor shall coordinate with all manufacturers and suppliers to provide all needed information including field dimensions, photographs, information on related materials and equipment, etc.). The Contractor and all manufacturers and suppliers shall include written confirmation (with the submittal) of the following:

1. The materials, products, and equipment being supplied are of the correct size, materials and type.
2. The materials, products and equipment being supplied do not conflict with existing or proposed/new facilities.
3. The products/equipment being supplied are intended for use in this application.
4. All manufacturer(s) and supplier(s) shall provide (either with submittals or separately) written concurrence/acknowledgement of their review/coordination and concurrence with the items above.
5. Shop drawings and product data submitted for review by the Engineer shall bear the Contractor's certification that he has reviewed, checked, and approved the submittals, that they comply with the requirements of the project and with the provisions of the Contract Documents, and that he has verified all sizes, dimensions, locations, field measurements, construction criteria, materials, catalog numbers, and similar data. Field dimensions, sizes and other pertinent information shall be clearly shown on the shop drawings/submittals. The Contractor shall also certify that the work represented by the shop drawings is recommended by the Contractor and that the Contractor's warranty and guaranty will fully apply.

B. Product Data:

1. Make, model, weight, and horsepower of each equipment assembly.
2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
3. Performance data curves showing head, capacity, horsepower demand, and pump efficiency over the entire operating range of the pump, from shutoff to maximum capacity. Indicate separately the head, capacity, horsepower demand, overall efficiency, and minimum submergence required at the guarantee point.
4. Complete motor nameplate data, as defined by NEMA.
5. Factory finish system.
6. Special shipping, handling, protection, and storage instructions.
7. Manufacturer's printed installation instructions.
8. Suggested spare parts list.
9. List of any special tools, materials, or supplies required for maintenance of pump.
10. Operation and Maintenance Manual

C. Shop Drawings:

1. Detailed mechanical and electrical drawings showing the equipment size, dimensions, and locations of connections and weights of associated equipment.
2. Power and control wiring diagrams.

D. Quality Control Submittals:

1. A factory certified performance test per Hydraulic Institute test standard, ANSI/HI 14.6 Acceptance Grade 1U shall be conducted prior to shipment. Test shall conform to the standards of The Hydraulic Institute and consist of operating the pump over a range of head and capacity conditions so as to establish its performance curve. Copies of the test results shall be submitted to the Owner.
2. Performance tests shall be performed using the bowl assembly only. Job motors, column pipe, and discharge head are not required as part of the test.
3. Manufacturer shall submit documentation identifying the complete pump assembly as meeting the requirements of NSF 372/61 Annex G.
4. Pump shall be a full speed pump verification for flow, head, and efficiency performed in certified lab. The manufacturer shall supply certified pump curves based on this testing. The Owner and Engineer may choose to witness this testing. Travel and lodging will be paid directly by the Owner. Scaled test and affinity law confirmation of pump conditions are not acceptable.

1.4 DELIVERY, STORAGE AND HANDLING

A. Retain shipping flange protective covers and protective coatings during storage.

B. Protect bearings and couplings against damage.

1.5 WARRANTY

A. Warranty Period: One year from the date of Substantial Completion of the WTP No. 1 Improvements Project.

PART 2 - PRODUCT

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. High Service Pumps (Vertical Turbine)

A. Peerless
B. Goulds
C. Flowserve

2.2 PUMPS GENERAL

A. Pumps should be well designed and of rugged construction and especially adapted to secure maximum economy in both power and maintenance under continuous operation and under the service conditions specified.

B. No consideration will be given to equipment which has not demonstrated its reliability and efficiency through results obtained from operation of similar units of approximately the same capacity and type under similar conditions.

C. The general design shall be such that the components can be easily disassembled; that replacement parts are of standard design and readily available; and that all components and parts are suitable for the service required.

D. Coordinate pump requirements with drive manufacturer

E. The total dynamic heads, given on the attached data sheets, have included approximate losses in the pumps. Exact allowances for such losses shall be made by the pump manufacturer; amounts of such losses shall be stated so the adjustments can be made, if required. The statements of losses in the pump shall be in the form of a written report and such report shall be furnished to the Engineer.

F. The manufacturer shall make a thorough analysis of the proposed pump installations with respect to physical locations of pumps, configurations of suction and discharge piping, elevations of piping, pump mounting and any other features or factors that might directly or indirectly affect the operation and/or performance of the pumps proposed to be furnished by the particular manufacturer.

G. The analysis of operating conditions shall be in the form of a written report and such report shall be furnished to the Engineer as part of the pump submittal.

H. The materials for construction shall be generally as hereinafter specified. It is recognized that the standard metallurgy of a particular pump manufacturer may vary from that specified, but the quality of materials shall, however, equal or exceed that specified; and the assembly of materials shall result in a product equal to or exceeding all the requirements of these Specifications.

I. Pump base drains shall be copper water tube of size not less than 1", and shall be run through floor slab into adjacent floor drain lines. Tees shall be used at changes in direction in order to facilitate cleanout. Pump shall be equipped with throttle bushing and bleed-off stuffing box where applicable.

J. The manufacturer shall determine the maximum down thrust for the particular pump offered and shall provide thrust bearing capacity for handling the maximum down thrust with ample safety factor.

1. Safety factor shall be based upon the ratio of anticipated thrust to standard thrust and average life expectancy of five years operation at twenty-four (24) hours per day.
2. The manufacturer shall also determine for the particular pump offered the magnitude of the initial pr momentary up thrust, and shall provide protection to counteract the net positive up thrust.
3. If continuous up thrust protection should be necessary, protection shall be provided by duplex bearings in the thrust location.

K. Pump Mounting: Pumps shall be mounted on reinforced concrete pads doweled into the floor. Contractor shall confirm size requirements for pad with manufacturer and in no case shall there be less than 2-inches clearance/coverage between edge of anchor bolts and edge of pad. Mounting pads shall be of such heights as will set the centerlines of the pumps discharge ports at the necessary elevations.

2.3 VERTICAL TURBINE PUMPS (Open Lineshaft)

A. The Contractor shall furnish and install, ready for operation the following pumps in the locations specified:

High Service Pumps - Pump Room									
				Operating Point No. 1			**Operating Point No. 2**		
Pump No.	**RPM**	**HP**	**Stages**	**Flow (gpm)**	**TDH (ft.)**	**% Effncy.**	**Flow (gpm)**	**TDH (ft.)**	**% Effncy.**
1	1770	150	2	2,778	160	79	3,056	155	78
2	1770	150	2	2,778	160	79	3,056	155	78

B. Discharge Heads:

1. The pump head shall be fabricated of ASTM A6-58T carbon steel and shall include at a minimum four gusset plates.
2. Discharge nozzle shall provide smooth flow transition from the head cavity and shall incorporate vertical vane for minimizing turbulence.
3. Discharge outlet shall be flanged and drilled ANSI B16.5 Class 150 and shall be tapped ¼" NPT for connection of a pressure gauge to be supplied by Contractor.
4. The head shaft shall be 416 Stainless Steel and shall be turned and ground. The head shaft or top shaft shall not exceed 10 feet in length. The pump manufacturer shall include a method of adjusting the impellers at the top of the head shaft.
5. The stuffing box shall be cast iron and designed for a minimum of 5 rings of packing. It shall have a pressure relief connection. An extra-long bearing constructed of C89835 bronze shall be located below the packing in the stuffing box. A rubber slinger ring shall be secured to the shaft above the packing gland. Packing lubrication leakage through the stuffing box shall be drained back to the sump. The packing gland shall be of a two-piece design and constructed of 316SS secured in place with SS studs and brass nuts.
6. The head shall be bolted to a steel base plate anchored to the concrete foundation pad.
7. Bolts and anchor bolts shall be stainless steel.

B. Column Pipe:

1. The column pipe shall be furnished in sections not exceeding a nominal length of 10' and shall be connected by threaded-sleeve couplings .
2. Top (discharge head) and bottom column (Pump Bowl) sections shall not exceed 5' in length.
3. Column shall be ASSTM A53 grade B steel pipe, the weight shall be not less than schedule 30. Pipe shall be threaded 8 TPI RH with 3/16" tpaer per foot thread. Ends shall be faced paralled to butt against the centering spiders for form accurate alignment.
4. The inside diameter of the pipe shall be such that the head losses shall not be more than 5 feet per 100 feet of pipe based on the rated flow of the pump.

D. Line Shafting and Line Shaft Bearings:

1. The line Lineshaft shall be ASTM A582, type 416 stainless steel ground and polished with surface finish better than 40 RMS.
2. Ends of shafting shall be machined square to axis of shaft for butt fit, threaded, and coupled with 18-8 stainless steel couplings designed with a safety factor of 1.5 times the shaft safety factor.
3. Lineshaft shall be furnished in interchangeable sections not over 10 feet in length.
4. Line shaft bearing spacing shall not exceed 10 feet.
5. Line shaft bearing shall be held securely in place utilizing bearing retainer constructed of 304 SST ASTM# A744M. Retainer shall fit securely in threaded sleeve coupling, the face of the retainer shall be machined parallel at outer ring to maintain column alignment, mating and sealing of column sections
6. Line shaft bearing below pumping level shall be Dog-bone style rubber EPDM ASTM # D3568

7. Line Shaft bearing above pumping level shall be constructed of Vesconite and capable of running dry for up to 60 seconds without damage to the bearing. Bearing should be glued and staked in SS bearing retainer.

F. Pump Bowls:

1. Fine grain gray iron (ANSI/ASTM A48) not less than Class 30. Suction and intermediate bowls shall be fitted with replaceable stainless steel wear rings ANSI/ASTM A276a Type 416 or bronze wear rings ANSI/ASTM B505 Copper Alloy No. 836, or of molded neoprene reinforced by embedded steel core.
2. If wear rings are not used, the bowls shall be cast from gray iron ANSI/ASTM A48 Class 40 or Meehanite, and the manufacturer shall show that he has provided extra thickness of metal in the necks of the bowls and in the skirts of the impellers so that necks can be bored and skirts turned down when running clearances must be adjusted.
3. Bowls shall be fitted with bronze bushings ANSI/ASTM B505 Copper Alloy No. 836, or ANSI/ASTM B584 Copper Alloy No. 836, for support and guidance of shafting.
4. Intermediate bowls shall be interchangeable. Suction bowl shall be fitted with 316 stainless steel strainer.
5. The suction bowl bearing shall be bronze and shall be permanently lubricated with provision for recirculation of lubricant from reservoir in the suction case hub. The bearing housing shall have sufficient opening at the bottom for easy removal of the bearing.
6. Sand collar of rubber or bronze ANSI/ASTM B505 Copper Alloy No. 836 shall be provided for protecting the suction bowl bearing from abrasives in the liquid being pumped.

G. Impellers:

1. Bronze, enclosed type, accurately cast, machined, filed and polished. Impellers shall be statically and dynamically balanced.
2. Bronze castings shall conform to the requirements of ANSI/ASTM B584 Copper Alloy No. 836.
3. The impeller shall be securely fastened to the bowl shaft with stainless steel collets, ANSI/ASTM A582 Type 303 or Type 416.
4. Impeller shafting shall be stainless steel ANSI/ASTM A582 Type 416, and shall be ground and polished with surface finish better than 40 RMS.
5. Impellers shall be fit with replaceable bronze C952 wear rings.

H. Split Rings and Keys, Bolts and Nuts shall be stainless steel ANSI/ASTM A 582 Type 303 or Type 416, or ANSI/ASTM A276 Type 303 or Type 416.

I. Pressure Gauge

1. Provide a discharge pressure gauge with each High Service Pump and Backwash Pump.
2. Pressure gauges shall have a 4” face.
3. Pressure gauges shall be turret style. Case material shall be stainless steel with clear acrylic faces.

4. The gauge shall be bottom connected and accept a 1/4" NPT female thread. Combination pressure gauge range and scale graduations shall be in PSI and feet of water.
5. The gauge shall be complete with both isolating and vent valves, and shall be so arranged as to easily vent air and facilitate gauge removal.
6. Pressure gauge range shall be from 0-250 psi.
7. Pressure gauges shall be NSF-61 certified.

J. Drive Motor:

1. Shall be weather-protected (Type WPI) machines, vertical hollow shaft, heavy duty squirrel cage induction type.
2. All motors shall be inverter-duty rated per NEMA MG 1-2011, Part 31,
3. Temperature rise at maximum load shall not be greater than Class F Limits
4. Insulation shall not be less than Class F with copper magnet wire (Class H minimum).
5. The motor shall be equipped with copper or copper alloy rotor bars and end rings.
6. The motors shall be guaranteed to continuously carry 115% of rated load without development of injurious heating, and shall be capable of operation on 480 V, 3 Ø, 60 Hz.
7. Thrust bearing shall be designed to carry the weight of all rotating parts plus the maximum hydraulic thrust load which may occur.
8. Motor efficiency shall conform to “NEMA Premium” values for horsepower, speed, and enclosure, and motors shall be equipped with anti-backspin couplings.
9. The design and manufacture of the motors shall be in compliance with the General Specifications of the IEEE and with NEMA Standards.
10. Motors for each pump shall be provided with integral 120VAC condensation heaters to prevent corrosion and normally-closed 120VAC thermostats (in each winding) to indicate motor overtemperature/shutdown conditions to the starter.
11. Provide oversized tap box(es) as required for the specified motor circuit/conduit sizes. Provide separate tap boxes for main 480V power and for auxiliary devices (120V heaters and t-stats).
12. Acceptable manufacturers:

    A. G.E.
    B. U.S. Motors
    C. Westinghouse

K. Pump Vibration:

1. The completed installation of pump and driver shall be smooth-running and vibration free.
2. Vibration testing shall be in accordance with HI 2009 standards and measured at the pump/motor interface.
3. The pump manufacturer shall coordinate the vibration testing for attendance by the Engineer and shall provide the Engineer with a complete written summary of the test procedures and results.
4. The Owner will engage a 3rd party firm to perform on-site vibration testing after the pumps are installed. The costs associated with the initial/1st vibration test (on each pump) will be paid by the Owner. The costs associated with any subsequent

retesting, if required, will be paid by the Contractor.

2.3 Pump Variable Frequency Drives (VFDs):

A. Each pump shall be provided a separately-enclosed VFD per Specification Section 26 29 00 requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's printed instructions.

B. Level base by means of steel wedges. Wedge taper not greater than 1/4 inch per foot. Wedging should be done so that there is no deformation of base plate and base plate assembly should be level upon completion of anchor bolt tightening.

C. Adjust pump assemblies so that the driving units are properly aligned, plumb, and level with the driven units and all connected shafts and couplings.

D. Upon completion of leveling of base plate and setting of pump and appurtenances, fill void with grout as specified in these Specifications. After the grout has set, remove steel wedges and fill wedge void with grout.

E. Suction and discharge piping shall be connected without placing any strain on the pump flanges.

3.2 FIELD FINISHING

A. Provide sufficient paint to touch up pump as necessary after installation. Paint according to requirements in Section 9 "Painting".

3.3 START-UP ASSISTANCE AND TRAINING

A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:

1. Factory authorized service representatives of the pump manufacturer shall perform all necessary on-site assistance for installation supervision.
2. Once the pumps have been installed correctly and are operating as intended, the service representatives shall perform eight (8) hours of on-site start-up assistance and operator training.
3. Startup shall be scheduled at a time when the pump manufacturer representative and the variable frequency drive manufacturer's representative can both be available to participate in startup.
4. Train Owner's maintenance personnel on procedures and schedules related to troubleshooting, servicing, and preventive maintenance.
5. Schedule training with Owner with at least seven days' advance notice.

END OF SECTION 44 42 56.13

ITEM III
BID RESPONSE FORM

Date: ____ / _____ / _____

Bid No: 24-034 Water Treatment Plant No. 1 Finished Water Pumps and Variable Frequency Drives

Bids Due: Wednesday, March 27, 2024, 10:30 A.M.

ITEM NO.	DESCRIPTION OF ITEM	TOTAL LUMP SUM COST	PROJECTED DELIVERY DATE
1.	Furnish Finished Water Pumps, VFDs, and required appurtenances as specified. Lump Sum Cost	**$**	
	Total Bid Amount		**$**

The award of the Contract will be based on the total/sum of the base bid price and the allowance items. The Owner will receive bids and all pricing will be read aloud, but the project will bot be awarded until the bids are evaluated, If an award is made, the project will be awarded to the responsive bidder with the lowest final bid amount.

The Bidder understands that the Owner reserves the right, in the Owner's discretion, to reject any or all bids, to waive any informality in any bid, and to accept any bid considered to be advantageous to the Owner.

The undersigned Bidder states that he/she fully understands the meaning of "low, responsive, responsible Bidder", as defined in these Documents, and that these criteria will be applied in the evaluation of this Bid.

The undersigned, as Bidder, hereby declares that the name (or names) of the only person (or persons) interested in this Proposal, as principal (or principals), is (or are) as herein below set out and that no person other than that (or those) herein below stated has any interest in this Proposal, or in the Contract to be entered into; that this Proposal is made without connection with any other person, firm or corporation making a proposal; and that it is in all respect fair and in good faith , without collusion or fraud.

Receipt of the following Addenda to these documents is hereby acknowledged by the undersigned (CONTRACTOR to complete below):

ADDENDUM NO.	DATE ISSUED	ADDENDUM NO.	DATE ISSUED
_____	_____	_____	_____
_____	_____	_____	_____

Each bid must give the full business address of the CONTRACTOR and must be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation followed by the name of the State of Incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person shall also be typed or printed below the signature. A bid by a person who affixes to this signature the word "president," "secretary," "agent," or other designation without disclosing his principal, may be held to be the bid of the individual signing. When requested by the City of Fairhope, Baldwin County, Alabama, satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished.

The undersigned agrees to furnish the goods/services as requested by you for the City of Fairhope, Baldwin County, Alabama in your invitation to bid, and certifies that they will meet or exceed the specifications called for. The undersigned has read all information pertaining to this bid and has resolved all questions. It is also understood and agreed that all prices quoted are F.O.B. described in the bid documents and specifications. The undersigned also affirms he/she has not been in any CONTRACT or collusion among BIDDERS or prospective BIDDERS in restraint of freedom of competition, by CONTRACT to bid at a fixed price or to refrain from bidding or otherwise.

Witness our hands and seals this _____ day of _____, 2024.

If Individual or Partnership

_____ _____
(Name of Individual or Partnership) (Name of Partner Print)

_____ _____
(Name of Representative Authorized to sign Bids and CONTRACTs for the firm Print) (Name of Partner Print)

Address_____

_____

_____

Phone Number ( )_____Fax Number ( )_____

E-mail address _____Alabama Contractor's License No. _____

Foreign Entity ID (if outside of Alabama)_____

If Corporation or LLC

Company_____

State of Incorporation _____

Company Representative_____
(Representative Authorized to sign Bids and CONTRACTs for the firm Print)

Company Representative_____
(Representative Authorized to sign Bids and CONTRACTs for the firm Signature)

Address_____

_____

_____

Phone Number ( )_____ Fax Number(___)_____

E-mail address _____AL CONTRACTOR's License No. _____

Foreign Vendor Id_____

BID PROPOSAL NOTARIZATION:

STATE OF _____}

COUNTY OF _____}

I, the undersigned authority in and for said State and County, hereby certify that_____, as respectively, of _____, whose name is signed to the foregoing document and who is known to me, acknowledged before me on this day, that, being informed of the contents of the document they executed the same voluntarily on the day the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 2024.

NOTARY PUBLIC _____

MY COMMISSION EXPIRES____/___/_____

ITEM IV
CONTRACTOR INFORMATION

This Section must be printed, completed, and turned in with your bid response to

Business Organization

Name of CONTRACTOR (exactly as it appears on W-9):

_____
Doing-Business-As Name of CONTRACTOR:

_____
Principal Office Address:

_____

_____

_____

LOCAL Telephone Number: _____ Toll- Free_____

LOCAL Fax Number: _____

Email address: _____
Website: _____

Form of Business Entity [check one ("X"]
Corporation ____
Partnership ____
Individual ____
Joint Venture ____
Other (describe): _____

Corporation Statement
If a corporation, answer the following:
Date of incorporation: _____
Location of incorporation: _____
The corporation is held: Publicly ___
Privately ___

Partnership Statement
If a partnership, answer the following:
Date of organization: _____
Location of organization: _____
The partnership is: General ___
Limited ___

Joint Venture Statement
If a Joint Venture, answer the following:
Date of organization: _____
Location of organization: _____
JV CONTRACT recorded? Yes ___ No ___

Contact: _____Email_____

Phone_____Fax_____

END OF CONTRACTOR INFORMATION

ITEM VI

City of Fairhope
CONTRACT

This **CONTRACT** is made this _____ day of _____, 202__, by and between the City of Fairhope (hereinafter referred to as the "**OWNER**") and _____ (hereinafter referred to as the "**CONTRACTOR**"), for

Bid Number/Name

The **OWNER** and the **CONTRACTOR** agree as set forth below:

1. The CONTRACT consists of all the items contained within this CONTRACT, The Proposal Package, Proposal, Scope of Work and Specifications, drawings (if applicable), Addenda, Amendments, and City of Fairhope Standard Terms and Conditions, which are attached hereto and made a part hereof, as if fully contained herein; for the performance of all work and the furnishing of all labor and materials required for completion of the WORK.

2. The CONTRACTOR shall perform all the WORK described herein.

3. The **WORK** to be performed under this **CONTRACT** shall be commenced upon execution of this **CONTRACT** within number (DAYS) days of the date specified in the *Notice to Proceed* (NTP) to be issued to the **CONTRACTOR** by the **OWNER,** or its authorized representative. The work shall be completed, subject to authorized adjustments, within (DAYS) consecutive calendar days from and after the commencement date stipulated in said *Notice to Proceed.* Liquidated damages for non-completion of the work within this time limit will be assessed at the rate of (DOLLARS) per working day.

4. The **OWNER** shall pay the **CONTRACTOR** in current funds for the performance of the **WORK**, the **CONTRACT SUM** of _____DOLLARS ($). This represents a LUMP SUM payment for performance of the **WORK**, which payment shall be issued after the Contract is fully performed and the **OWNER** has inspected the **WORK**.

5. **General Conditions**
   a. **Indemnity:** The CONTRACTOR hereby agrees to indemnify and save harmless the OWNER, its officers, agent, and employees, from and against any and all liabilities, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including reasonable attorneys' fees for trial and on appeal, of any kind and nature, arising or growing out of, or in any way connected with the performance of this CONTRACT, to the extent caused by a negligent act or omission of the CONTRACTOR, their agents, servants, employees, SUB-CONTRACTORS, or others associated with the CONTRACTOR. The CONTRACTOR shall be responsible for damage to any elevator equipment excluded from this agreement, or damage or injury caused by any equipment excluded from this agreement, to the extent that the damage or injury is caused by a negligent act or omission of the CONTRACTOR.

   b. **Notification and Accident Reports:** In the event of accidents of any kind, the **CONTRACTOR** shall notify the **OWNER** immediately and furnish, without delay, copies of all such accident reports to the **OWNER.** If in the performance of their Work, the **CONTRACTOR** fails to immediately report an accident to the **OWNER**, of which the **CONTRACTOR** has knowledge of and which results in a fine

levied against the **OWNER** then the **CONTRACTOR** shall be responsible for all fines levied against the **OWNER**.

6. **Termination of Agreement**
    a. Termination for Default: Performance of Work under this Agreement may be terminated by the OWNER, in whole or in part, in writing, whenever the OWNER determines that the CONTRACTOR has failed to meet the requirements of this Agreement.
        i. The Owner has a right to terminate for default if the contractor fails to make delivery of material or does not perform the work, or if the Contractor fails to perform the Work within the time specified in the Agreement, or if the Contractor fails to perform any other provision of the Agreement.

        ii. Failure on the part of the Contractor to deliver or perform the Work within the time specified, or within a reasonable time as determined by the Owner, or failure on the part of the Contractor to make replacements of rejected articles, or Work when so requested, immediately or as directed by the Owner, shall constitute authority for the Owner to purchase in the open market, articles or Work of comparable grade to replace the articles or Work rejected, not delivered or completed. On all such purchases, the Contractor shall reimburse the Owner within a reasonable time specified by the Owner for any expense incurred in excess of Agreement prices.

        iii. Such purchases shall be deducted from the Agreement sum. If public necessity demands it, the Owner reserves the right to utilize services or use and/or consume articles delivered, which are standard in quality, subject to an adjustment of price to be determined by the Owner.

    b. Termination for Convenience: The OWNER has the absolute right to terminate the Agreement upon "Award of Contract" another CONTRACTOR, to perform work referenced herein. In such event, payment of the monthly contract fee shall cease on the date of cancellation of the CONTRACT by the OWNER.

7. **Warranty**
    a. The CONTRACTOR warrants that the Work including equipment and materials provided shall conform to the professional standards of care and practice in effect at the time the Work is performed, be of the highest quality, and be free from all faults, defects, or errors. If the CONTRACTOR is notified in writing of a fault, deficiency or error in the Work, the CONTRACTOR shall at the OWNER's option, either re-perform such portions of the Work to correct such fault, defect, or error, at no additional cost to the OWNER, or refund to the OWNER the charge paid by the OWNER, which is attributable to such portions of the faulty, defective or erroneous Work, including costs for re-performance or Work provided by other CONTRACTORS. All equipment and materials provided by the CONTRACTOR shall be merchantable and for the purpose intended and meet all industry quality standards.

8. **Time of Completion**
The OWNER and CONTRACTOR understand and agree that time is of the essence in the performance of this Agreement. The CONTRACTOR or OWNER, respectively, shall not be liable for any loss or damage, resulting from any delay or failure to perform its contractual obligations within the time specified, due to acts of God, actions or regulations by any governmental entity or representative, strikes, fire, water damage, loss of power, loss of funding or any other causes, contingencies, or circumstances not subject to the OWNER or CONTRACTOR'S control, respectively, whether of a similar or dissimilar nature, which prevent or hinder the performance of the OWNER'S or CONTRACTOR'S contractual obligations, respectively. Any such causes of delay, even though existing on the date of the CONTRACT, or on the day

of the start of Work, shall extend the time of the OWNER'S or CONTRACTOR'S performance respectively, by the length of the delays occasioned thereby, including delays reasonably incident to the resumption of normal Work schedules.

However, under such circumstances as described herein, the OWNER may, at their discretion, cancel this CONTRACT for their own convenience.

9. **Insurance Requirements**
   See **ATTACHMENT B**

10. **Acceptance of Work**
    The OWNER will be deemed to have accepted the Work after the OWNER agrees the Work is completed. In the event Work furnished under the CONTRACT is found to be defective or does not conform to the intent of the CONTRACT, the CONTRACTOR shall, within ten (10) days from receipt of notice from the OWNER, correct the deficiencies. Failure on the part of the CONTRACTOR to properly correct the deficiencies within the time period allowed will constitute the OWNER'S right to cancel the CONTRACT immediately, upon written notice to the CONTRACTOR.

11. **Correction of Work**
    The CONTRACTOR shall promptly correct all Work rejected by the OWNER as faulty, defective or failing to conform to the CONTRACT, whether observed before or after completion of the Work. The CONTRACTOR shall bear all costs of correcting such rejected Work.

12. **Right to Audit**
    The CONTRACTOR shall maintain documentation of all work performed. The CONTRACTOR shall make any and all documentation available to the OWNER at all reasonable times, for inspections and audit by the OWNER, during the entire term of the CONTRACT, and for a period of three (3) years after the expiration of this CONTRACT.

13. **CONTRACT Rights and Remedies**
    The CONTRACTOR shall maintain documentation of all work performed. The CONTRACTOR shall make any and all documentation available to the OWNER at all reasonable times, for inspections and audit by the OWNER, during the entire term of the CONTRACT, and for a period of three (3) years after the expiration of this CONTRACT.

14. **Time is of the Essence**
    The Owner and CONTRACTOR agree that time is of the essence in the performance of Work called for under this CONTRACT. The CONTRACTOR agrees that all work will be accomplished regularly, diligently and uninterrupted at such a rate of progress as will ensure full completion thereof within reasonable time periods.

15. **Safety Measures**
    The CONTRACTOR shall take all necessary precautions for the safety of the OWNER'S and CONTRACTOR'S employees at the Work site, and shall erect and properly maintain at all times, all necessary safeguards for the protection of the workmen and the public. The CONTRACTOR shall post signs warning against hazards in and around the Work site.

16. **Extra Work and Associated Costs**
    a. Changes in the Work: The OWNER, without invalidating the CONTRACT, may order changes in the Work within the general scope of this CONTRACT, consisting of additions, deletions, or other revision, the CONTRACT price and time for execution of the Work being adjusted accordingly.

    b. All such changes in the Work shall be authorized by a written Amendment to the CONTRACT or a separate Change Order and shall be executed under the applicable conditions of the CONTRACT.

17. **Familiarity with the Work**
    The CONTRACTOR, by executing this CONTRACT, acknowledges full understanding of the extent and character of the Work required and the conditions surrounding the performance thereof. The OWNER will not be responsible for any alleged misunderstanding of conditions surrounding the performance thereof. It is understood that execution of the CONTRACT by the CONTRACTOR serves as his stated commitment to fulfill all requirements and conditions referred to in this CONTRACT.

18. **Scope of Work**
    See **ATTACHMENT B**

19. **Contractor Liability**
    Nothing in this CONTRACT shall be construed to mean that the CONTRACTOR assumes any liability for damages or otherwise, on account of accidents to persons or property, except those resulting from negligence on the part of the CONTRACTOR or its agents, servants, employees, and subcontractors.

20. **Miscellaneous Provisions**
    a. The CONTRACTOR shall not employ SUB-CONTRACTORS without the express written permission of the OWNER.

    b. The CONTRACTOR shall not assign the CONTRACT or sublet it as a whole without the express written permission of the OWNER. The OWNER may assign the CONTRACT, or sublet it as a whole, without the consent of the CONTRACTOR.

    c. No waiver, alteration, consent, or modification of any of the provisions of the CONTRACT shall be binding unless in writing and signed by the OWNER and CONTRACTOR.

    d. The CONTRACTOR is to procure all permits, licenses, and certificates, or any approvals of plans or specifications as may be required by Federal, State, Local Laws, ordinances, rules, and regulations, for the proper execution and completion of Work covered under this CONTRACT.

    e. The CONTRACTOR shall at all times keep the Work area free from accumulation of waste materials or rubbish caused by his operations, and promptly remove any such materials to an area designated by the OWNER or remove to a waste site as directed by the OWNER. If the CONTRACTOR fails to clean up the Work site, the OWNER will complete the task and charge the CONTRACTOR for such services.

    f. This CONTRACT is considered a non-exclusive Agreement between the parties.

    g. This CONTRACT is deemed to be under and shall be governed by and construed according to the laws of the State of Alabama.

    h. Any litigation arising out of the CONTRACT shall be heard in the Courts of Baldwin County, Alabama.

i. This CONTRACT contains all terms and conditions agreed upon by the OWNER and CONTRACTOR. No other agreement, oral or otherwise, regarding the subject matter of this CONTRACT shall be deemed to exist or to bind either party hereto.

j. This CONTRACT shall not be construed against the party or parties preparing it. It shall be construed as if all the parties and each of them jointly prepared this CONTRACT, and any uncertainty or ambiguity shall not be interpreted against one or more parties.

Section 41-16-5, Code of Alabama 1975, requires that public contracts over $15,000 include the following language:

By signing this Contract, _____ represents and agrees
COMPANY NAME
that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade

IN WITNESS WHEREFORE, the parties hereto have executed this **CONTRACT** as of the day and year first above written.

THE CITY OF FAIRHOPE, ALABAMA

_____ ATTEST: _____
Sherry Sullivan, Mayor **Lisa A. Hanks, MMC, City Clerk**

NOTARY FOR OWNER (CITY OF FAIRHOPE)

STATE OF ALABAMA _____ }
COUNTY OF BALDWIN _____}

I, the undersigned authority in and for said State and County, hereby certify that SHERRY SULLIVAN, Mayor of the City of Fairhope whose name is signed to the foregoing document and who is known to me, acknowledged before me on this day, that, being informed of the contents of the document she executed the same voluntarily on the date the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 202__.

NOTARY PUBLIC _____

MY COMMISSION EXPIRES _____

IF INDIVIDUAL OR PARTNERSHIP

Individual or Partnership

Print Name of Partner

Print Name of Representative Authorized to Sign Contracts for the firm

Print Name of Partner

Signature of Representative Authorized to Sign Contracts for the firm

Print Name of Partner

Address

Address

City, State, Zip Code

Phone Number

Fax Number

Primary E-mail Address

AL General Contractor License No. (Attach Copy)

AL General Contractor License Major Categories

AL General Contractor Specialties

AL Foreign Corporation Entity ID (Required of Out of State Vendors)

IF CORPORATION OR LLC

Company

State of Incorporation

Company Representative

Print Name of Representative Authorized to Sign Contracts for the firm

Signature of Representative Authorized to Sign Contracts for the firm

Address

Address

City, State, Zip Code

Phone Number

Fax Number

Primary E-mail Address

AL General Contractor License No. (Attach Copy)

AL General Contractor License Major Categories

AL General Contractor Specialties

AL Foreign Corporation Entity ID (Required of Out of State Vendors)

NOTARY FOR INDIVIDUAL, PARTNERSHIP, CORPORATION, OR LLC

STATE OF _____ }
COUNTY OF _____}

I, the undersigned authority in and for said State and County, hereby certify that _____As
Name

_____ respectively of _____
Title Company Name

Whose name is signed in the foregoing document and who is known to me, acknowledged before me on this day, being informed of the contents of the document they executed the same voluntarily on the day the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 202__.

NOTARY PUBLIC_____

MY COMMISSION EXPIRES _____

ITEM VII
CITY OF FAIRHOPE
STANDARD TERMS AND CONDITIONS

1. ACCEPTANCE OF AGREEMENT

This Agreement contains all terms and conditions agreed upon by the Owner and Winning bidder. No other agreement, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind either party hereto. The Winning Bidder shall not employ Subcontractors without the express written permission of the Owner. No waiver, alteration, consent or modification of any of the provisions of the Agreement shall be binding unless in writing and signed by the Owner and Contractor. This Agreement shall not be construed against the party or parties preparing it. It shall be construed as if all the parties and each of them jointly prepared this Agreement, and any uncertainty or ambiguity shall not be interpreted against one or more parties.

2. ACCEPTANCE OF WORK

The City of Fairhope will be deemed to have accepted the Work after the City of Fairhope agrees the Work is completed by signature on delivery or service tickets. In the event Work furnished under the Contract / Agreement / Purchase Order is found to be defective or does not conform to the intent of the Contract / Agreement / Purchase Order, the awarded vendor shall, after receipt of notice from the City of Fairhope, correct the deficiencies. Failure on the part of the awarded vendor to properly correct the deficiencies within the time period allowed will constitute the City of Fairhope's right to cancel the Contract / Agreement / Purchase Order immediately, upon written notice to the awarded vendor.

3. ADDENDA

All Addenda are part of the Contract Documents. Include resultant costs in the Bid. Addenda will be issued by email to all Bidders on record and posted to the City of Fairhope website www.FairhopeAL.gov. It is the responsibility of the bidder to verify that all addenda have been received, and to include all signed addenda in the bid submission

4. ADDITIONAL ORDERS

Unless it is specifically stated to the contrary in the bid response, the City of Fairhope reserves the option to place additional orders against a contract awarded as a result of this solicitation at the same terms and conditions; to extend the renewal date until a new bid is in place, if it is mutually agreeable.

5. APPLICABLE LAW

This Agreement is deemed to be under and shall be governed by and construed according to the laws of the State of Alabama. Any litigation arising out of the Agreement shall be heard in the Courts of Baldwin County, Alabama.

6. ASSIGNMENT

The awarded vendor shall not assign the Contract / Agreement /Purchase Order or sublet it as a whole without the express written permission of the City of Fairhope. The awarded vendor shall not assign any payment due them hereunder, without
the express written permission of City of Fairhope. The City of Fairhope may assign the Contract / Agreement / Purchase Order, or sublet it as a whole, without the consent of the awarded vendor.

7. ASSURANCE OF NON-CONVICTION OF BRIBERY

The bidder hereby declares and affirms that, to its best knowledge, none of its officers, directors, or partners and none of its employees directly involved in obtaining contracts has been convicted of bribery, attempted bribery, or conspiracy to bribe under the laws of any state or Federal government.

8. AWARD CONSIDERATION

The following factors will be considered in determining the lowest **responsible** bidder: Overall quality, Conformity with specifications both general and specific, Purposes for which materials or services are required, Delivery dates and time required for delivery, Unit acquisition cost, financial ability to meet the contract, previous performance, facilities and equipment, availability of repair parts, experience, delivery promise, terms of payments, compatibility as required, other costs, and other objective and accountable factors which are reasonable.

9. AWARD OR REJECTION OF BIDS

The Bid will be awarded to the lowest responsible bidder complying with conditions of the invitation for bids, provided his bid is reasonable and it is in the interest of the City of Fairhope to accept it. The bidder to whom the award is made will be notified at the earliest possible date. The City of Fairhope, however, reserves the right to reject any and all bids and to waiver any informality in bids received whenever such rejection or waiver is in the interest to the City of Fairhope.

10. BACK ORDERS

If it is necessary to back order any items, the vendor must notify the Purchasing Department and advice as to the expected shipping or delivery date. If this date is not acceptable, the City of Fairhope may seek remedies for default.

11. BID AND PERFORMANCE SECURITY

If bid security is required, a bid bond or cashier's check in the amount indicated on the bid cover must accompany the bid and be made payable to The City of Fairhope of Baldwin County, AL. Corporate or certified checks are not acceptable. Bonds must be in a form satisfactory to the City and underwritten by a company licensed to issue bonds in the State of Alabama. If bid security fails to accompany the bid, it shall be deemed unresponsive, unless the Purchasing Manager deems the failure to be non-substantial. All checks will be returned to the bidders after the contract has been approved. If a performance bond is required, the successful bidder will be notified after the awarding of the contract.

12. BRAND NAMES

Reference to brand names and numbers is descriptive, but not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality thereby indicated will be considered, providing the bid clearly describes the article offered and indicates how it differs from the referenced brands. Descriptive literature or manufacturers specifications plus any supplemental information necessary for comparison purposes should be submitted with the bid or the bid on that item may be rejected. Reference to literature submitted with a previous bid or on file with the Division of Purchasing will not satisfy this requirement. The burden is on the bidder to demonstrate that the item bid is equivalent to the item specified in the ITB. Bids without sufficient documentation to fully support equality, may be considered non-responsive. Reference by the City of Fairhope in the ITB to available existing specifications shall be sufficient to make the terms of such specifications binding on the bidder. Unless the bidder specifies otherwise in its bid, it is understood the bidder is offering a referenced brand item as specified in the ITB or is bidding as specified when no brand is referenced. Failure to examine drawings, specifications and instructions will be at the bidder's risk.

13. BUSINESS LICENSE

The vendor selected to enter into a Contract / Agreement with the City of Fairhope must be licensed to do business in the City of Fairhope prior to commencement of any work under the contract. Delivery of goods or services to the City of Fairhope by Purchase Order have detailed and varied Business License requirements. In all instances that require a business license. Awarded vendor will provide proof of possessing a current City of Fairhope Business License. Prospective bidders will not be required to possess a City of Fairhope Business License prior to award.

14. CANCELLATION OF / CONTRACT / AGREEMENT / PURCHASE ORDER / LEASE

A purchase order can be canceled in whole or in part when awarded vendor fails to deliver or perform as specified. Cancellation of a purchase order can only be made by a written purchase order change (POC) from the City of Fairhope. A term contract, lease or agreement can be canceled by the City of Fairhope, for justifiable cause, or convenience, by written notice.

15. CERTIFICATION PURSUANT TO ACT NO. 2006-557

Alabama law (section 41-4-116, code of Alabama 1975) provides that every bid submitted and contract executed shall contain a certification that the vendor, contractor, and all of its affiliates that make sales for delivery into Alabama or leases for use in Alabama are registered, collecting, and remitting Alabama state and local sales, use, and/or lease tax on all taxable sales and leases into Alabama. By submitting this bid, the bidder is hereby certifying that they are in full compliance with act no. 2006-557, they are not barred from bidding or entering into a contract pursuant to 41-4-116, and acknowledges that the awarding authority may declare the contract void if the certification is false. All corporations must register to do business in Alabama with the Office of the Secretary of State. Their address is:

Office of the Secretary of State
P.O. Box 5616
Montgomery, AL 36103
(334) 242-5324
Fax: (334) 240-3138
http://www.sos.state.al.us/index.aspx

The Foreign Corporation form is online at http://www.sos.state.al.us/downloads/dl1.cfm.

16. COST OF REMEDYING DEFECTS

All defects, indirect and consequential costs of correcting, removing, or replacing any or all of the defective materials or equipment will be charged against the awarded vendor.

17. DELIVERY OF BID

Bids must be received in the Purchasing Office by the date and time specified on the bid cover. All bids will be accepted until the time and date stated on the bid cover. No bids will be accepted that extend past the time and date on the bid cover. The time of receipt shall be determined by the time clock stamp in the Purchasing Department. Bids submitted by U.S. Mail must be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope offices, 555 South Section St., Fairhope, Al., unless otherwise specified.

18. DELIVERY

The number of calendar days required for delivery after receipt of a purchase order shall be stated in the RFQ / ITB / RFP and /or Purchase Orders. When no time is stated in the document, the time shall be fourteen (14) calendar days after receipt of order. If a shipment is not made within the time period specified, the Purchase Order may be canceled.

19. ENVIRONMENTAL REQUIREMENTS

All products will be clearly labeled for their intended use. Each delivery of product or materials will include a Material Safety Data Sheet (MSDS) for all materials that require an MSDS. All manufacturers/distributors of hazardous substances, including any of the items listed on this bid/quote/ contract and subsequent award must include completed material safety data sheet (MSDS) for each hazardous material. Additionally, each container of hazardous materials must be appropriately labeled with:

a) The identity of the hazardous material,

b) Appropriate hazard warnings, and manufacturer, importer, or other responsible party.

20. EQUIPMENT DEMONSTRATION

The City of Fairhope may require equipment/ product materials or service techniques to be demonstrated at a time, date, and location to be specified by the City of Fairhope.

21. EQUIPMENT ELECTRICAL CERTIFICATION

All electrical equipment purchased shall conform to, and be identified in, the applicable standard(s), or otherwise be certified as applicable, as of the bid opening date and time, by Underwriters Laboratories, Inc., or other recognized laboratory facility. Bidder must provide satisfactory documentation with returned bid that all such equipment meets the applicable product standard or has otherwise been certified as outlined above. Unless indicated in the bid document, the above certification shall apply to the equipment itself, not the individual components of that equipment.

22. ERRORS IN BID

Bidders are assumed to be informed regarding conditions, requirements, and specifications prior to submitting bids. Failure to do so will be at the bidder's risk. Bids already submitted may be withdrawn without penalty prior to bid opening. Errors discovered after the bid opening may not be corrected.

23. FORCE MAJEURE

Neither the City nor the awarded vendor shall be deemed in breach of any contract / Purchase Order or Agreement which may result from this proposal submission if it is prevented from performing any of the obligations hereunder by reason of Acts of God, acts of the public enemy, acts of superior governmental authority, strikes or labor disputes, floods, riots, rebellion, sabotage, or any similar other unforeseeable causes beyond its control and not due to its fault or negligence. Each party shall notify the other immediately in writing of the cause of such after the beginning period thereof. The awarded vendor may request cancellation and the City of Fairhope may grant the request if performance is prevented by any of the above referenced causes, or other unavoidable circumstances not attributable to the fault or negligence of the vendor. The burden of proof for such relief rests with the vendor. All correspondence pertaining to cancellation of a purchase order or term contract must be addressed to the City of Fairhope Purchasing Manager.

24. HAZARDOUS AND TOXIC SUBSTANCES

Bidder must comply with all applicable Federal, State, County and City laws, ordinances and regulations relating to hazardous and toxic substances, including such laws, ordinances and regulations pertaining to information hazardous and toxic substances, and as amended from time to time. Bidder shall provide the City of Fairhope with a "Material Safety Data Sheet" for all goods that carry one.

25. INDEMNITY

Indemnity: The awarded vendor hereby agrees to indemnify and save harmless the City of Fairhope, its officers, agent, and employees, from and against any and all liabilities, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including reasonable attorney fees for trial and on appeal, of any kind and nature, arising or growing out of, or in any way connected with the performance of this Contract / Agreement / Purchase Order, to the extent caused by a negligent act or omission of the awarded vendor, their agents, servants, employees, Subcontractors, or others associated with the awarded vendor. The awarded vendor shall be responsible for damage to any equipment excluded from this agreement, or damage or injury caused by any equipment excluded from this agreement, only to the extent that the damage or injury is caused by a negligent act or omission of the awarded vendor or caused by failure of the awarded vendor's supplied product to perform as specified.

26. INSPECTION

All materials, workmanship, equipment, and supplies are subject to inspection and test at any source or time. Final inspection, acceptance or rejection will be made at delivery destination. Goods that do not meet specifications will be rejected unless substitutions have been approved by the City of Fairhope. Failure to inspect or to reject upon receipt, however, does not relieve the awarded vendor of liability. When subsequent tests, after receipt, are conducted and when such tests reveal a failure to meet specifications, the City of Fairhope will reject the goods and the awarded vendor shall immediately supply goods meeting specifications or the City of Fairhope may seek damages including but not limited to the testing expense, regardless of whether a part of or all of the goods have been consumed through the testing process. Rejected goods shall be removed by the awarded vendor promptly after rejection, at his expense. If not removed in fourteen (14) calendar days, they may be disposed of at the discretion of the City of Fairhope. Disposal costs will be the awarded vendor's responsibility.

27. INSPECTION OF PREMISES

At reasonable times, the City may inspect those areas of the awarded vendor's place of business that are related to the performance of a Contract / Agreement / Purchase Order. If the City makes such an inspection, the awarded vendor must provide reasonable assistance. The City of Fairhope reserves the right on demand and without notice all the vendor's files associated with a subsequent Contract / Agreement / Purchase Order where payments are based on the awarded vendor's record of time, salaries, materials, or actual expenses. This same clause will apply to any subcontractors assigned to the Contract / Agreement / Purchase Order.

28. INSURANCE

If a Contract / Agreement / Purchase Order results from this RFQ /ITB /RFP, or other form of solicitation, the awarded vendor shall maintain such insurance as will indemnify and hold harmless the City of Fairhope from Workmen's Compensation and Public Liability claims from property damage and personal injury, including death, which may arise from the awarded vendor's operations under this Contract / Agreement / Purchase Order, or by anyone directly or indirectly employed by him/her.

29. INVITATION TO BID

Any provisions made in the RFQ / ITB / RFP, or other form of solicitation, supersedes any provisions outlined here in the General Terms and Conditions.

30. INVOICING, DELIVERY, PACKAGING

Invoices shall be prepared only after ordered materials have been delivered. All invoices must show the purchase order number. Unless otherwise specified in writing, vendors shall not ship any material without an authorized Purchase Order from the City of Fairhope Purchasing Department. All packages delivered must show the purchase order number. The awarded vendor will be required to furnish all materials, equipment and/or service called for at the bid price quoted. In the event the awarded vendor fails to deliver within a reasonable period of time, as determined by the City of Fairhope, the right is reserved to cancel the award and subsequent purchase order and purchase from the next lowest responsible bidder the items needed. The original awarded vendor will be back charged the difference between the original contract price and the price the City of Fairhope has to pay as a result of the failure to perform by the original awarded vendor. All bids will remain firm for acceptance for 60 days from the date of bid opening. Prices shall be net F.O.B., Prepaid and Allow, City of Fairhope chosen site, Baldwin County, Al. The title and risk of loss of the goods will not pass to the City of Fairhope until receipt and acceptance takes place at the F.O.B. point.

31. LABELING

Individual shipping cartons shall be labeled with the name "City of Fairhope", Purchase Order Number, and where applicable, Contract Number, date of manufacture, batch number, storage requirements, conditions, and recommended shelf life. Bidders are encouraged to offer product packaging with recycled content.

32. LOSS OR DAMAGE IN TRANSIT

Delivery by a vendor to a common carrier does not constitute delivery to the City of Fairhope. Any claim for loss or damage incurred during delivery shall be between the vendor and the carrier. The City of Fairhope accepts title only after satisfactory receipt at the delivery point. The City of Fairhope shall note all visible damages on the freight bill and may refuse the damaged goods. The vendor shall make immediate replacement of the damaged merchandise or be subject to damages for breach of contract. If damage is to a small portion of a total shipment and the City of Fairhope will not be inconvenienced because of the shortage, the vendor may be permitted by the Purchasing Manager to deduct the amount of damage or loss from its invoice, in lieu of replacement. Risk of loss during delivery is borne by the vendor until the goods have been accepted by the City of Fairhope, unless otherwise specified in the RFQ / ITB / RFP or other form of solicitation.

33. MANDATORY SITE VISIT

If the RFQ / ITB /RFP or other form of solicitation requires a mandatory site visit, bidders must inspect the site where installation or service is to take place to obtain a full understanding of scope of work outlined therein. Date of site visit will be determined by the City of Fairhope.

34 MONITORING OF SERVICES

Performance of services will be monitored by the requisitioning department and/or the Purchasing Department, and evaluation reports may be filed with the Purchasing Department. Performance not meeting specifications will result in cancellation of Contract / Agreement / Purchase Order and may result in vendor being removed from the vendor list.

35. NONCONFORMING MERCHANDISE

When merchandise received from the lowest responsible bidder is not in accordance with the purchase order, it will be returned to the bidder, at bidder's expense.

36. NON-DESCRIMINATION

The City of Fairhope is an Equal Opportunity Employer and requires that all contractors comply with the Equal Employment Opportunity laws and the provisions of the Contract / Agreement / Purchase Order documents in this regard. The City also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

37. NON-EXCLUSIVE

Unless otherwise specified, this Contract / Agreement / Purchase Order is considered a non-exclusive Contract /Agreement / Purchase Order between the parties.

38. NOTIFICATION AND ACCIDENT REPORTS

In the event of accidents of any kind, in the performance of a Contract / Agreement / Purchase Order, the awarded vendor shall notify the City of Fairhope immediately and furnish, without delay, copies of all such accident reports to the City of Fairhope. If in the performance of their Work, the awarded vendor fails to immediately report an accident to the City of Fairhope, of which the awarded vendor has knowledge of and which results in a fine levied against the City of Fairhope then the awarded vendor shall be responsible for all fines levied against the City of Fairhope.

39. PACKAGING

All goods must be packaged in new packing containers. Packing that meets the requirements of common carriers is acceptable, unless otherwise required. A packing slip or invoice must accompany all shipments and must reference the purchase order number. Unless otherwise specified, goods are to be packaged in cartons meeting federal specifications and shipped on non-returnable pallets.

40. PATENTS

Awarded Vendor guarantees that the sale and / or use of goods will not infringe upon any U.S. or foreign patent. Awarded vendor will at his / her own expense, indemnify, protect and save harmless the City of Fairhope, on any patent claims arising from the purchase of goods or services.

41. PAYMENT

Invoices -- Upon completion of service and delivery of materials specified in the applicable Contract / Agreement / Purchase Order, awarded vendor will submit an invoice and signed delivery ticket to:

City of Fairhope
Accounts Payable Department
P.O. Box 429
Fairhope, Al. 36533

All invoices must reference appropriate Purchase Order Numbers Payment of Invoice: All invoices received by the City of Fairhope are payable within thirty (30) days from the date of receipt by the City of Fairhope, provided they are approved by the City of Fairhope.

42. PAYMENT WITHHELD

Payment may be withheld until all items have been delivered and all requirements of the Contract / Agreement / Purchase Order have been fulfilled

43. PRODUCT TESTING

Vendor shall incur all cost involved in obtaining an Independent Laboratory Test if the City deems necessary during the term of the Contract / Agreement / Purchase Order. The City of Fairhope reserves the right to request a demonstration of any and all items bid before making the award.

44. PERMITS LICENSES AND CERTIFICATES

The awarded vendor is to procure all permits, licenses, and certificates, or any approvals of plans or specifications as may be required by Federal, State, Local Laws, ordinances, rules, and regulations, for the proper execution and completion of Work covered under the Contract / Agreement / Purchase Order.

45. PREPARATION OF BID

All bids / proposals shall be typewritten or in ink on the form(s) prepared by the City of Fairhope. Bids / proposals prepared in pencil will not be accepted. All bids / proposals must be signed by officials of the corporation or company duly authorized to sign bids / proposals. Any bid / proposal submitted without being signed will automatically be rejected. All corrections or erasures shall be initialed and dated by the person authorized to sign quotations /bids / proposals. If there are discrepancies between unit prices quoted and extensions, the unit price will prevail.

46. QUESTIONS / CONTACT

Commencing with the issuance of the RFQ / ITB / RFP, or other form of solicitation, no vendor or anyone acting on a vendor's behalf, shall make direct or indirect contact with City personnel or undertake any activities or take any action to otherwise promote its quotation / bid / proposal to the City or its personnel. All communications shall be made to the contact identified in the quotation / bid / proposal documents. Violation of this requirement may, at the City's sole and absolute discretion, be grounds for disqualifying a vendor from further consideration.

47. RECEIPT BY CITY OF FAIRHOPE

If not otherwise stated in the order, the City of Fairhope will be said to have received goods when they have been delivered, unloaded, and placed on the agency's dock or if there is no dock, inside an accessible building, and signed for by an authorized City employee. Shipments will be checked against the receiving copy of the Purchase Order. If the purchase order requires grading certificates, USDA Stamps, or any proof of quality, such proof must accompany the shipment.

48. REJECTION OF BIDS

The City of Fairhope reserves the right to accept or reject any or all bids in whole or in part for any reason, to waive technicalities or informalities, or to advertise for new proposals, if, in the judgment of the awarding authority, the best interest of the City of Fairhope will be promoted thereby. Bidders may be disqualified and rejection of proposals may be recommended for any of (but not limited to) the following causes: Failure to use the bid forms furnished by the City of Fairhope, Lack of signature by an authorized representative on the bid form, Failure to properly complete the bid form and vendor compliance, Evidence of collusion among bidders, Unauthorized alteration of the bid form.

49. RIGHT TO AUDIT

The awarded vendor shall maintain documentation of all work performed. The awarded vendor shall make any and all documentation available to the City of Fairhope at all reasonable times, for inspections and audit by the City of Fairhope for a period of Three (3) years after expiration of the Contract / Agreement / Purchase Order.

50. SAMPLES

Bidders will not be required to furnish samples at the time of bid opening, unless specifically called for. The City of Fairhope reserves the right to request samples after bid opening to assist in the evaluation of proposals submitted.

51. SAFETY MEASURES

The awarded vendor shall take all necessary precautions for the safety of the City of Fairhope's and awarded vendor's employees at the Work site, and shall erect and properly maintain at all times, all necessary safeguards for the protection of the workmen and the public. The awarded vendor shall post signs warning against hazards in and around the Work site.

52. SET-UP AND INSTALLATION

Unless otherwise specified, bid / quotation to include cost of all uncrating, disposal of shipping materials, set-up, testing and initial instruction to agency personnel.

53. SPILL CLEAN UP

The awarded vendor shall be responsible for spillage caused by their negligence, which occurs during transit or unloading operations. The awarded vendor shall immediately report and clean up any spillage. Upon failure to do so, the awarded vendor shall remain responsible for all actual related costs.

54. SUBSTITUTIONS

Substitutions on a purchase order shall require the approval of the Originating Buyer. The City of Fairhope reserves the right to reject at destination and hold at the vendor's risk and expense any goods supplied by the vendor which do not conform to the specification or description embodied in the order or are inferior in any respect to the good specified. Any good bought by sample which is inferior in quality to the sample submitted by vendor will be rejected. Any goods delivered that do not meet specifications may be returned to the vendor at its expense. When a good is returned, the vendor must make immediate replacement with acceptable merchandise, or the City of Fairhope may seek remedies for default.

55. TABULATION

Bid results are posted on The City of Fairhope's web site: www.FairhopeAL.gov. The awarded vendor will be sent a written notification.

56. TAXES

Prices quoted shall be delivered prices, exclusive of all federal or state excise, sales, and manufacturer's taxes. The City will assume no transportation or handling charges other than specified in the RFQ, ITB, RFP or other form of solicitation. The City is tax exempt by law – Code of Alabama 1975.

57. TERMINATION FOR CONVENIENCE

Any Contract / Agreement / Purchase Order may be terminated for convenience by the City of Fairhope, in whole or in part, by written notification to the awarded vendor.

58. TERMINATION FOR DEFAULT

Performance of Work under the Contract / Agreement / Purchase Order Agreement may be terminated by the City of Fairhope, in whole or in part, in writing, whenever the City of Fairhope determines that the awarded vendor has failed to meet the requirements of the Contract / Agreement / Purchase Order.

59. TERMINATION FOR NON-APPROPRIATION

Termination for Non-appropriation – The continuation of any financial obligation beyond the current fiscal year is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by the local source, State Legislature and/or federal sources. The City of Fairhope may terminate any financial obligation, and awarded vendor waives any and all claim(s) for damages, effective immediately upon receipt of written notice (or any date specified therein) if for any reason the City of Fairhope's funding from local, State and/or federal sources is not appropriated, withdrawn or limited.

60. TIME IS OF THE ESSENCE

The City of Fairhope and awarded vendor agree that time is of the essence in the performance of work called for under this Contract / Agreement / Purchase Order. The awarded vendor agrees that all work will be accomplished regularly, diligently, and uninterrupted at such a rate of progress as will ensure full completion thereof within reasonable time periods.

61. TITLE

All titles, fees, as well as other charges, are to be paid by awarded vendor. Awarded vendor is to furnish prepaid certificate of title in the name of the City of Fairhope, Title shall change upon acceptance of delivery at the City of Fairhope approved delivery location.

62. VENDOR LIST

A vendor may be removed from the City of Fairhope's Bidders List if a vendor fails to respond to three (3) consecutive ITB's. A properly submitted "No Bid" is considered as a response and the vendor will receive credit for the response.

63. WARRANTY

The awarded vendor expressly warrants that all articles, materials, and work offered shall conform to each and every specification, drawing, sample, or other description which is furnished to or adopted by the City of Fairhope, and that it will be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defects. The awarded vendor further warrants all items for a period of one year, unless otherwise stated, from the date of acceptance of the items delivered and installed or work completed. All repairs, replacements, or adjustments during the warranty period will be at the awarded vendor's sole expense. Awarded vendor will provide written warranty for all parts and labor for a period of (1) one year commencing from date of written acceptance of delivery by City of Fairhope. Awarded vendor will provide written copies of all other applicable warranties, such as, Manufacturer's warranty. Those warranties, if any, will be in addition to the awarded vendor's warranty, and the terms of which will not be altered by the awarded vendor's warranty.

64. IMMIGRATION LAW

The Contractor agrees that it shall comply with all of the requirements of the **Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No 2011-535**, Alabama Code (1975) Section 31-13-1, et. Seq., (also known as the Alabama Immigration Act) see Section 31-13-9, and the provisions of said Act, including all penalties for violation thereof, are incorporated herein.

ITEM VIII

ALABAMA IMMIGRATION ACT CONTRACT REQUIREMENTS

1.0 Background

The **Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No 2011-535**, **as amended by Act No 2012-491, *Code of Alabama* (1975) Section 31-13-1** through **Section 31-13-30** (also known as and hereinafter referred to as "the Alabama Immigration Act") is applicable to CONTRACTs with the City of Fairhope, Alabama. All business entities entering into CONTRACTs with the City of Fairhope, Alabama will comply with the Alabama Immigration Act.

2.0 Definitions

ALIEN. Any person who is not a citizen or national of the United States, as described in 8 U.S.C. § 1101, et seq., and any amendments thereto.

BUSINESS ENTITY. Any person or group of persons employing one or more persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood, whether for profit or not for profit. Business entity shall include but not be limited to the following:

a. Self-employed individuals, business entities filling articles of incorporation, partnerships, limited partnerships, limited liability companies, foreign corporations, foreign limited partnerships, foreign liability companies authorized to transact business in this state, business trusts, and any business entity that registers with the Secretary of State.
b. Any business entity that possesses a business license, permit, certificate, approval, registration, charter, or similar form of authorization issued by the state, any business entity that is exempt by law from obtaining such a business license, an any business entity that is operating unlawfully without a business license.

CONTRACTOR. A person, employer, or business entity that enters into a CONTRACT to perform any service or work or to provide a certain product in exchange for valuable consideration. This definition shall include, but not be limited to, a general CONTRACTOR, SUB-CONTRACTOR, independent CONTRACTOR, CONTRACT employee, project manager, or a recruiting or staffing entity.

EMPLOYEE. Any person directed, allowed, or permitted to perform labor or service of any kind by an employer. The employees of an independent CONTRACTOR working for a business entity shall not be regarded as the employees of the business entity, for the purposes of this chapter. This term does not include any inmate in the legal custody of the state, a county, or a municipality.

EMPLOYER. Any person, firm, corporation, partnership, joint stock association, agent, manager, representative, foreman, or other person having control or custody of any employment, place of employment, or of any employee, including any person or entity employing any person for hire within the State of Alabama, including a public employer. This term shall not include the occupant of a household contracting with another person to perform casual domestic labor within the household.

E-VERIFY. The electronic verification of federal employment authorization program of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, P.L. 104-208, Division c, Section 403 (a); 8 U.S.C. §1324(a) and operated by the United States Department of Homeland Security, or its successor program.

STATE-FUNDED ENTITY. Any governmental entity of the state or a political subdivision thereof or any other entity that receives any monies from the state or a political subdivision thereof; provided, however, an entity that merely provides a service or a product to any governmental entity of the state or a political subdivision thereof, and receives compensation for the same, shall not be considered a state-funded entity.

SUB-CONTRACTOR. A person, business entity, or employer who is awarded a portion of an existing CONTRACT by a CONTRACTOR, regardless of its tier.

UNAUTHORIZED ALIEN. An alien who is not authorized to work in the United States as defined in 8 U.S.C. § 1324a (h) (3) .

3.0 Mandatory Clause

All CONTRACTS or CONTRACTS to which the state, a political subdivision, or state-funded entity are a party shall include the following clause:

> ***"By signing this CONTRACT, the CONTRACTING parties affirm, for the duration of the CONTRACT, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the state of Alabama. Furthermore, a CONTRACTING party found to be in violation of this provision shall be deemed in breach of the CONTRACT and shall be responsible for all damages resulting therefrom."***

For purposes of this section, "CONTRACT" shall mean a CONTRACT awarded by the state, any political subdivision thereof, or any state-funded entity that was competitively bid or would, if entered into by the state or an agency thereof, be required to be submitted to the CONTRACT Review Permanent Legislative Oversight Committee.

4.0 CONTRACTs Involving Business Entity, or Employer

As a condition for the award of any CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity to a business entity or employer that employs one or more employees, the business entity or employer shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

As a condition for the award of any CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity to a business entity or employer that employs one or more employees within the state of Alabama, **the business entity or employer shall provide documentation establishing that the business entity or employer is enrolled in the E-Verify program.** During the performance of the CONTRACT, the business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations.

5.0 CONTRACTS Involving Subcontracting

Any SUB-CONTRACTOR on a project paid for by CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama and shall also enroll in the E-Verify program prior to performing any work on the project. Furthermore, during the performance of the CONTRACT, the SUB-CONTRACTOR shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. This subsection shall only apply to SUB-BIDDERS performing work on a project subject to the provisions of this section and not to collateral persons or business entities hired by the SUB -CONTRACTOR.

6.0 Proof of E-Verify documentation will be in the form of a copy of the signed Memorandum Of Understanding (MOU) generated upon completion of the E-Verify program.

END OF ALABAMA IMMIGRATION ACT CONTRACT REQUIREMENTS

ITEM IX

INVITATION SUMMARY

Bid Number 24-034
Water Treatment Plant No. 1 Finished Water Pumps
And Variable Frequency Drives

Bid Name:	Bid 24-034 Water Treatment Plant No. 1 Finished Water Pumps and Variable Frequency Drives
Issue Date:	March 8, 2024
Certificate of Insurance Requirements:	See Standard Terms and Conditions and Insurance and Instructions to Vendors
Deadline for Questions Date:	Wednesday, March 20, 2024, 11:00 A.M.
Bid Due Date:	Wednesday, March 27, 2024, 10:30 A.M.
City Internet Site:	www.FairhopeAL.gov
SEALED Bid Response Copies to submit:	One (1) Paper Original
Purchasing Department Contact for questions:	Purchasing@FairhopeAL.gov (251) 928-8003

END OF INVITATION SUMMARY

ITEM X
BID BOND INFORMATION

Bids shall be accompanied by a Bid Security equal to 5% (percent) of the bid price, but in no event more than $10,000.00. Bid Security shall be in the form of a Bid Bond or a cashier's check payable to The City of Fairhope. All bonds and/or cashier's check will be made payable to the City of Fairhope for an amount not less than five (5) percent of the City's or its engineers or architects estimated cost of the Project or of the total bid in the proposal, but in no event more than $10,000.00.

Return of Bid Bonds: All bid bonds, except those of the three lowest bona fide bidders, will be returned immediately after bids have been checked, tabulated and the relation of the bids established. The bid bonds of the three lowest bidders may be retained and if so, will be returned as soon as the contract bonds and the contract documents of the successful bidder have been approved and properly executed.

In the event it is necessary to defer a contract award for longer than fifteen (15) days, after opening of bids, then all bid bonds, except that of the potential successful bidders will be returned.

Award of the contract will be made within the time specified after the opening of bids. In the event no award is made within such time, all bids may be rejected, and all bonds returned.

Provided; however, the potentially successful bidder may enter into a written agreement with the City for an extension of time for consideration of its bid, in which case, the bidder's bond shall remain in full force and effect, or the City may permit said bidder to substitute a satisfactory surety for the cashier's check if submitted as a guaranty to the bid bond.

Forfeiture of Bid Bonds: Should the successful bidder or bidders to whom a contract is awarded fail to execute a contract(s) and furnish acceptable contract securities and evidence of insurance, as required, within thirty (30) days after the prescribed forms have been presented to him/her, the City may retain from the proposal guaranty, if it is a cashier's check or recovered from the principal or the sureties, if the guaranty is a bid bond, the difference between the amount of the contract as awarded, and the amount of the proposals of the new lowest bidder. If no other bids are received, the full amount of the proposal guaranty may be so retained and recovered as liquidated damages for such default. Any sum so retained or recovered shall be the property of the awarding authority.

END OF BID BOND INFORMATION

ITEM X

BID BOND

The PRINCIPAL (Bidder's name and address)

The OWNER
City of Fairhope
P.O. Drawer 429
Fairhope, Al 36533

The PROJECT for which the Principal's Bid is submitted: (Project name as it appears in the Bid Documents)

PROJECT NO.
PROJECT NAME:

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Principal and Surety, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the OWNER in the PENAL SUM of five percent (5%) of the amount of the Principal's bid, but in no event more than TEN THOUSAND DOLLARS ($10,000.00).

THE CONDITION OF THIS OBIGATION is that the Principal has submitted to the OWNER the attached bid, which is incorporated herein by reference, for the Project identified above.

NOW, THEREFORE, if, within the terms of the Bid Document, the OWNER accepts the Principal's bid and the Principal thereafter either:

(a) executes and delivers a Construction Contract with the required Performance and Payment Bonds (each in the for contained in the Bid Documents and properly completed in accordance with the bid) and delivers evidence of insurance as prescribed in the Bid Documents, or fails to execute and deliver such Construction Contract with such Bonds and evidence of insurance, but pays the OWNER the difference, not to exceed the Penal Sum of this Bond, between the amount of the Principal's Bid and the larger amount for which the OWNER may award a Construction Contract for the same Work to another Bidder, then, this obligation shall be null and void, otherwise it shall remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligation of the Surety under this Bond shall not in any manner be impaired or affected by any extension of the time within which the OWNER may accept the Principal's bid, and the Surety does hereby waive notice of any such extension.

SIGNED AND SEALED this _____ day of _____, 202____.

_____
(Principal (Company)

ATTEST
_____ By_____

_____
Print Name and Title

SURETY
ATTEST

_____
Surety Company

_____ By_____

_____
Print Name and Title

CORPORATION

_____
Name of Corporation, Partnership, or Joint Venture

Business Mailing Address: _____
_____

email_____ phone_____

BY: _____ _____

(Signature of Officer Authorized to sign Bids and Contracts for the Firm) (Position or Title)

_____ _____

(General Contractor's License Number) Foreign Corporation Entity Id (Required of out-of-state-vendors)

Attest:

_____ _____

(Secretary) (Name of State under the laws of which incorporated)

_____ BY: _____

(Name of Surety) (Attorney in Fact)

CITY OF FAIRHOPE

WTP No. 1 IMPROVEMENTS
PHASE 1

FAIRHOPE, ALABAMA

PROJECT NO. 23040.3

KREBS ENGINEERING

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

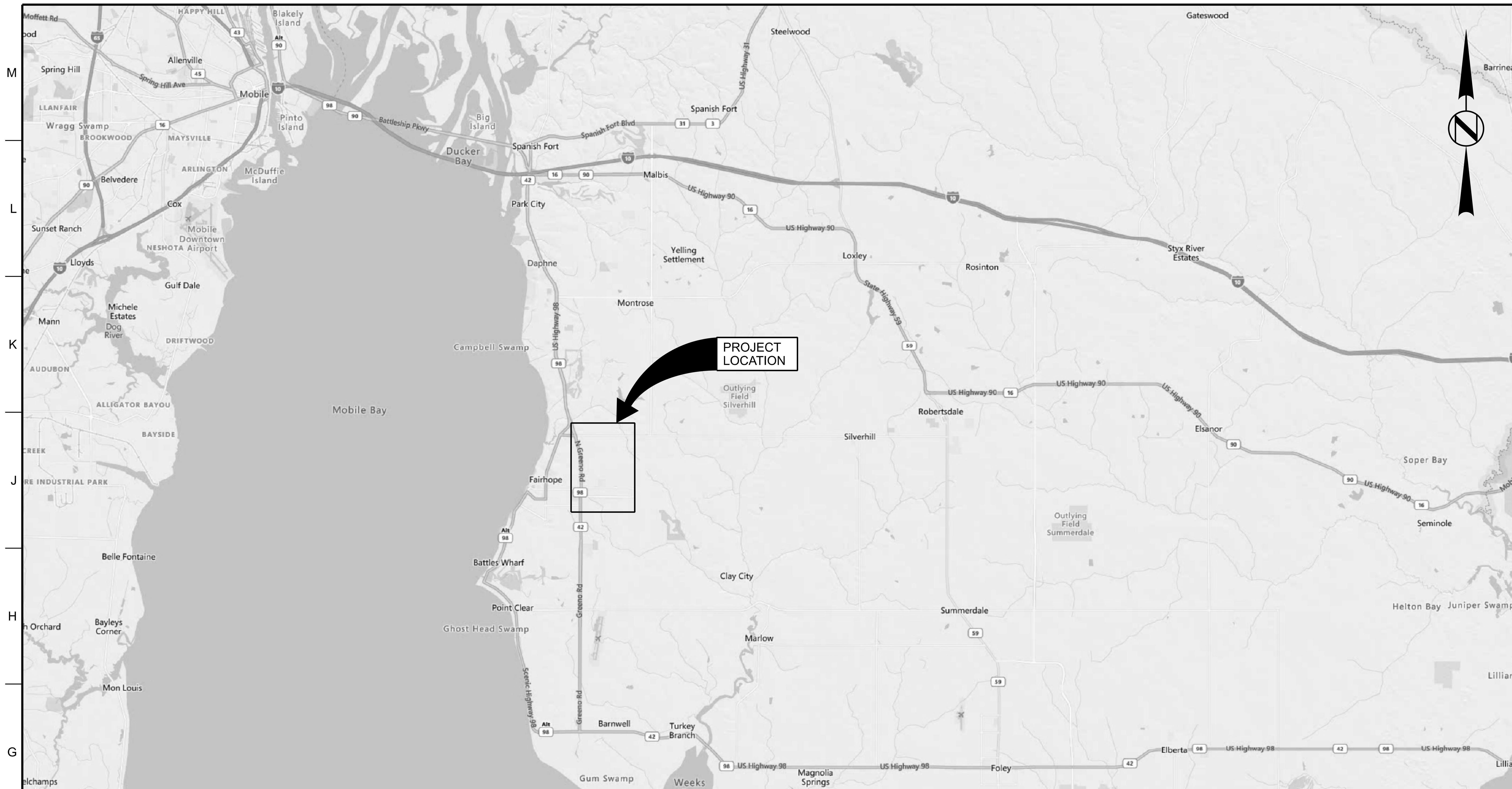
Designed	Project No.
ADM	23040.3
Drawn CLM	
Checked CLL	

Revisions

No.	Date	Description

Sheet Title: COVER SHEET

Issue Date: DEC., 2023 | Sheet No.: G0-01
Sequence: 1 of 37

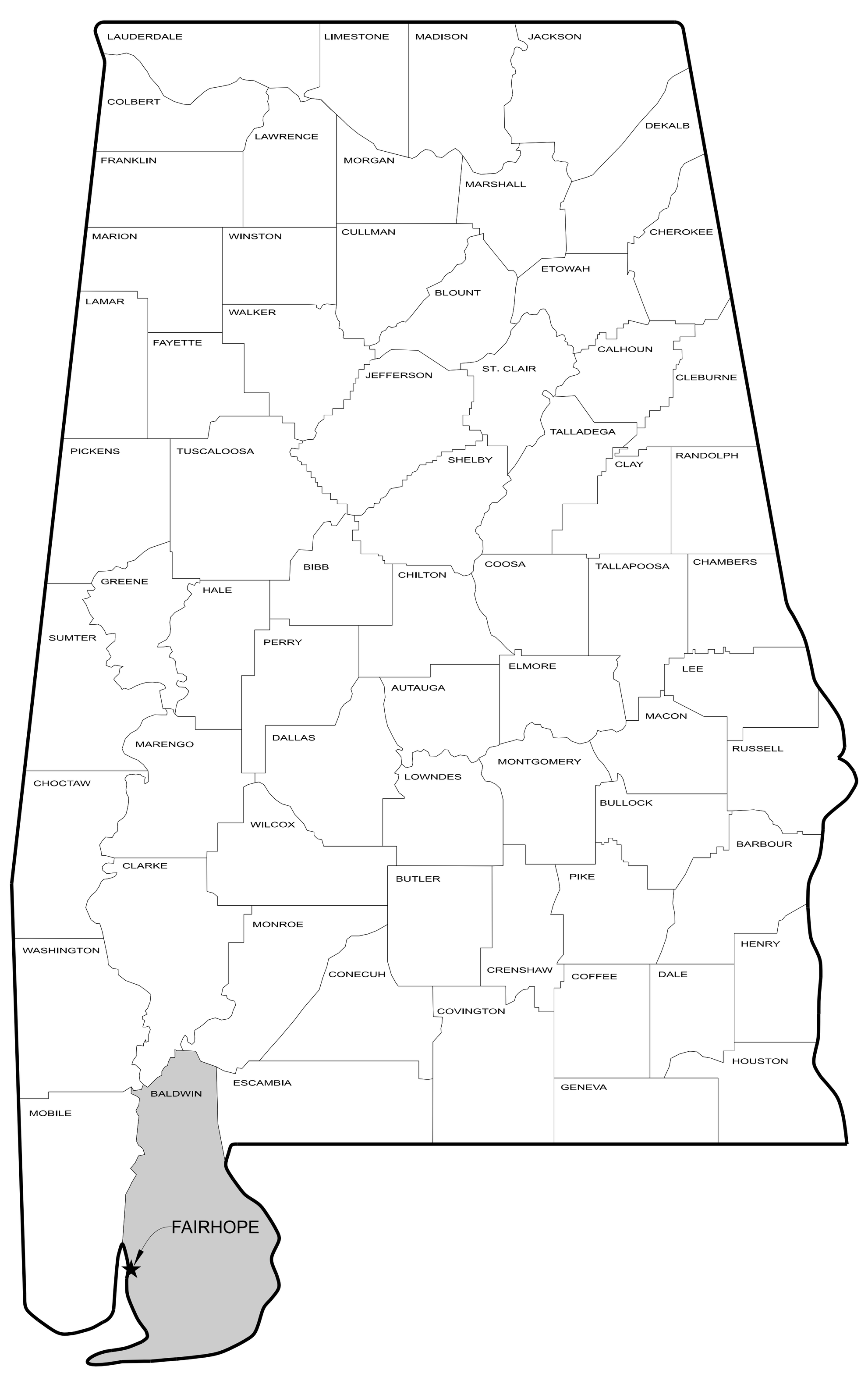


G1 VICINITY MAP NO SCALE

SHEET INDEX

SEQ. NO.	SHEET NO.	SHEET TITLE
1	G0-01	COVER SHEET
2	G0-02	LOCATION MAP & SHEET INDEX
3	G0-03	STANDARD SYMBOLS & ABBREVIATIONS
4	S0-01	GENERAL STRUCTURAL NOTES & DETAILS
5	C1-01	EXISTING SITE / YARD PIPING DEMOLITION PLAN
6	C3-01	SITE / YARD PIPING PLAN
7	C3-02	YARD PIPING PROFILES
8	C3-03	FINISHED WATER FLOW METER VAULT PLANS & SECTIONS
9	C5-01	EX. TREATMENT BUILDING DEMOLITION PLAN
10	C5-02	EX. TREATMENT BUILDING DEMOLITION SECTIONS
11	C5-03	EX. TREATMENT BUILDING MODIFICATIONS PLAN
12	C5-04	EX. TREATMENT BUILDING MODIFICATIONS SECTIONS
13	S5-01	EX. TREATMENT BUILING LOWER STRUCTURAL PLAN
14	S5-02	EX. TREATMENT BUILING STRUCTURAL SECTIONS
15	S5-03	EX. TREATMENT BUILING STRUCTURAL SECTIONS
16	M5-01	EX. TREATMENT BUILDING MECHANICAL PLAN
17	DT-01	MISCELLANEOUS DETAILS
18	DT-02	MISCELLANEOUS DETAILS
19	E0-01	ELECTRICAL LEGEND AND NOTES
20	E0-02	SINGLE LINE DIAGRAM
21	E0-11	ELECTRICAL SCHEDULES
22	E0-12	ELECTRICAL SCHEDULES
23	E0-13	CONTROL AND INSTRUMENTATION SCHEDULES
24	E0-21	ELEMENTARY DIAGRAMS
25	E0-22	ELEMENTARY DIAGRAMS
26	E1-01	SITE ELECTRICAL DEMOLITION PLAN
27	E3-01	SITE ELECTRICAL PLAN
28	E3-02	SITE SUPPLEMENTAL GROUNDING PLAN
29	E3-03	FINISHED WATER FLOW METER VAULT ELECTRICAL PLAN
30	E5-01	TREATMENT BUILDING ELECTRCIAL DEMOLITION PLAN
31	E5-02	TREATMENT BUILDING MODIFICATIONS ELECTRICAL PLAN
32	E5-03	TREATMENT BUILDING HVAC ELECTRICAL PLAN
33	DTE-01	ELECTRICAL DETAILS
34	DTE-02	ELECTRICAL DETAILS
35	DTE-03	ELECTRICAL DETAILS
36	DTE-04	ELECTRICAL DETAILS
37	DTE-05	ELECTRICAL DETAILS

G11 SHEET INDEX



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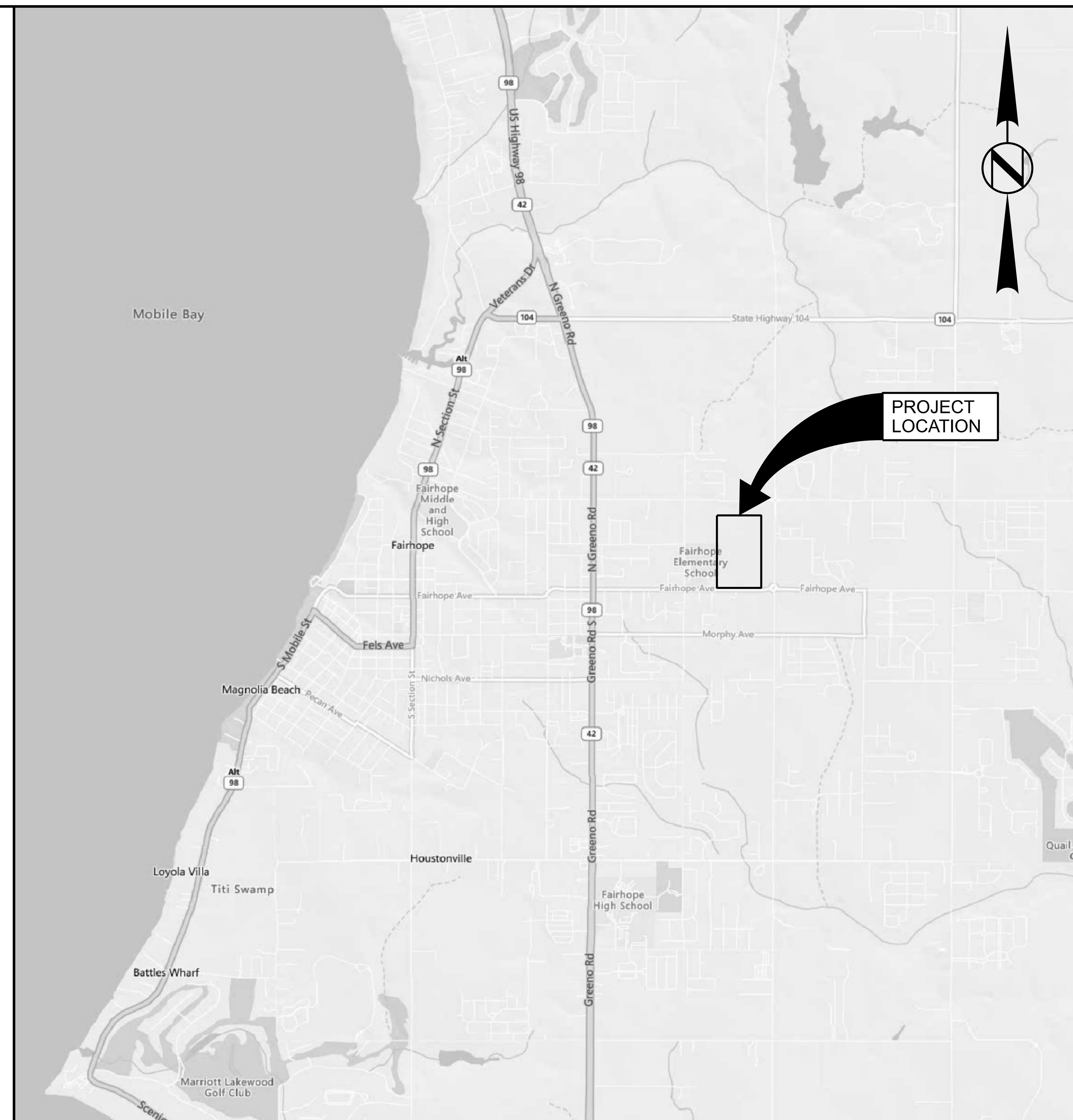
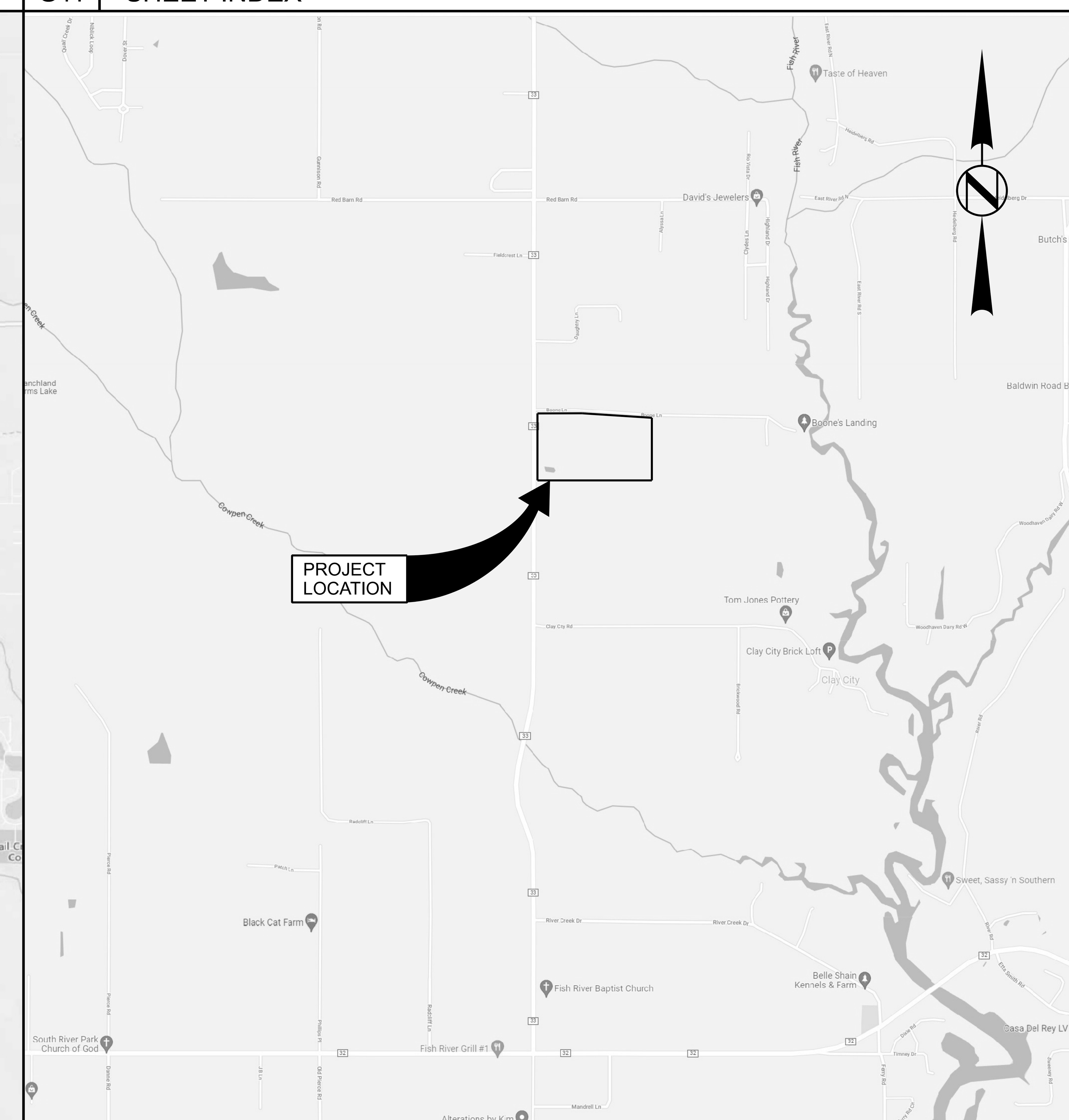


A6 PROJECT LOCATION MAP NO SCALE



A11 EXISTING AERATOR LOCATION MAP (WTP No. 3) NO SCALE

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	Project No.
ADM	23040.3
Drawn	
CLM	
Checked	
CLL	

Revisions

No.	Date	Description

Sheet Title
LOCATION MAP & SHEET INDEX

Issue Date	Sheet No.
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D1 ABBREVIATIONS

Abbreviation	Meaning
@	AT
&	AND
#	NUMBER
AC.	ACRE
ACQ'D	ACQUIRED
ADJ	ADJUSTABLE
ALDOT	ALABAMA DEPARTMENT OF TRANSPORTATION
ALT	ALTERNATE
ALUM.	ALUMINUM
APPROX.	APPROXIMATE
ARV	AIR RELEASE VALVE
ASPH.	ASPHALT
ASSY	ASSEMBLY
AVE	AVENUE
AVG	AVERAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BFV	BUTTERFLY VALVE
BLDG.	BUILDING
BLK	BLOCK
BM	BENCH MARK
BOC	BACK OF CURB
BOT.	BOTTOM
BRKT.	BRACKET
BR. RES.	BRICK RESIDENCE
B.S.	BOTH SIDES
CB	CATCH BASIN
C.C.	CARRYING CAPACITY
C & G	CURB AND GUTTER
C.I.	CAST IRON
C.I.P.	CAST IRON PIPE
CIR	CIRCLE
℄	CENTER LINE
CONC.	CONCRETE
CONN.	CONNECTION
CONT.	CONTINUOUS
COR.	CORNER
CU. FT.	CUBIC FEET
CU. YD.	CUBIC YARD
CV	CHECK VALVE
CLR	CLEAR/CLEARANCE
C.M.P.	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CTSK.	COUNTERSINK
CTV	CABLE TELEVISION
D.A.	DRAINAGE AREA
DBL	DOUBLE
D.F.	DESIGN FLOW
D.I.	DUCTILE IRON
D.I.P.	DUCTILE IRON PIPE
DIA.	DIAMETER
DIAG.	DIAGRAM
DIST.	DISTANCE
DET.	DETAIL
DN	DOWN
E	EAST
EA.	EACH
E.F.	EACH FACE
EFF. WTR.	EFFLUENT WATER
EL.	ELEVATION
EOP	EDGE OF PAVEMENT
EQ	EQUAL
ESMT.	EASEMENT
E.W.	EACH WAY
EX.	EXISTING
EXP.	EXPANSION
EXT.	EXTRUDED
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
F.F.	FINISH FLOOR
FH	FIRE HYDRANT
FIG	FIGURE
FIN.	FINISH/FINISHED
FIN. GR.	FINISH GRADE
F.L.	FLOW LINE
FLG	FLANGED
FM	FORCE MAIN
FR. RES.	FRAME RESIDENCE
FT.	FOOT/FEET
G	GAS
GA.	GAUGE
GALV	GALVANIZED
GDOT	GEORGIA DEPARTMENT OF TRANSPORTATION
GM	GAS METER
GPM	GALLONS PER MINUTE
GR.	GRADE
GRND	GROUND
GRTG	GRATING
GRVL	GRAVEL
GTV	GATE VALVE
GV	GAS VALVE
HB	HOSE BIBB
HDCP	HANDICAPPED
HDPE	HIGH DENSITY POLYETHYLENE
HDWL	HEADWALL
HORIZ.	HORIZONTAL
HP	HORSE POWER/HIGH PRESSURE
HT.	HEIGHT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
H.W.	HIGH WATER
H.W.L.	HIGH WATER LEVEL
HWSEL.	HIGH WATER SURFACE ELEVATION
HWY	HIGHWAY
HYD	HYDRAULIC
I.D.	INSIDE DIAMETER
I.F.	INSIDE FACE
IN.	INCH
INF.	INFLUENT
INV.	INVERT
IPF	IRON PEN FOUND
JB	JUNCTION BOX
JCT	JUNCTION
JST	JOIST
JT	JOINT
LAT.	LATITUDE
LB.	POUND
LBL	LABEL
L.F.	LINEAR FEET
LIN	LINEAL, LINEAR
LONG.	LONGITUDE
LP	LOW POINT/LONG PATTERN
LT	LEFT
LVR	LOUVER
MAX.	MAXIMUM
MB	MAIL BOX
MCC	MOTOR CONTROL CENTER
MFG	MANUFACTURER/MANUFACTURING
MGD	MILLION GALLONS PER DAY
M.H.	MANHOLE
MI.	MILE/MILES
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MJ	MECHANICAL JOINT
MT.	MOUNT
MTL	METAL
MTR	MOTOR
N	NORTH
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
NWSEL.	NORMAL WATER SURFACE ELEVATION
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
OVFL	OVERFLOW
P	POWER
P.C.	POINT OF CURVE
PE	PLAIN END
PEJ	PIPE EXPANSION JOINT
PH.	PHASE
P.I.	POINT OF INTERSECTION
PKWY	PARKWAY
ℙ	PROPERTY LINE
PLBG	PLUMBING
P-O	PUSH ON
PP	POWER POLE
PRESS	PRESSURE
PRKG	PARKING
PROJ	PROJECT
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
P.T.	POINT OF TANGENT
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PVMT	PAVEMENT
QTR	QUARTER
QTY	QUANTITY
R.	RANGE
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RED.	REDUCER
REF	REFERENCE
REG	REGULAR
REINF	REINFORCING
REM	REMOVE
REQ'D	REQUIRED
RES.	RESIDENCE
RET	RETAINER/RETAINING
REV	REVISE/REVISION
RJ	RESTRAINED JOINT
ROW	RIGHT-OF-WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RT	RIGHT
S	SOUTH
SAN.	SANITARY
SCH	SCHEDULE
SD	STORM DRAIN
SEC.	SECTION
SHLDR.	SHOULDER
SHT	SHEET
SIM	SIMILAR
SL	SURVEY LINE
SLV	SLEEVE
SPECS	SPECIFICATIONS
SQ.	SQUARE
SQ. FT.	SQUARE FEET
SQ. YD.	SQUARE YARD
SS	SANITARY SEWER
ST	STREET
STA.	STATION
STD.	STANDARD
ST. STL.	STAINLESS STEEL
STM.	STORM
STM. SEW.	STORM SEWER
STR	STRAIGHT
STRUC	STRUCTURAL
SW	SIDE WALK
SWD	SIDE WATER DEPTH
SYS	SYSTEM
T	TELEPHONE
T.	TOWNSHIP
T&B	TOP AND BOTTOM
TAN.	TANGENT
TAN. TO C.	TANGENT TO CURVE
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
THK.	THICK/THICKNESS
THRU	THROUGH
TOC	TOP OF CURB
TOW	TOP OF WALL
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UP	UNDERGROUND POWER
UT	UNDERGROUND TELEPHONE
UTIL	UTILITY
UV	ULTRAVIOLET
V	VALVE
V.C.P.	VITRIFIED CLAY PIPE
VERT.	VERTICAL
V.F.	VERTICAL FEET
VFD	VARIABLE FREQUENCY DRIVE
V.G.	VALLEY GUTTER
V.P.C.	VERTICAL POINT OF CURVE
V.P.I.	VERTICAL POINT OF INTERSECTION
V.P.T.	VERTICAL POINT OF TANGENT
W	WATER
W	WEST
W/	WITH
W/O	WITHOUT
WM	WATER METER
WS	WATERSTOP
WSEL.	WATER SURFACE ELEVATION
WT.	WEIGHT
WTM	WATER TRANSMISSION MAIN
WV	WATER VALVE
W.W.	WING WALL
WWF	WELDED WIRE FABRIC
YD.	YARD
YR.	YEAR

D7 EXISTING UTILITIES

- STORM DRAIN MANHOLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- SANITARY SEWER (GRAVITY)
- SANITARY SEWER (FORCEMAIN)
- WATER LINE (SIZE NOTED)
- NON-CONNECTING PIPING
- WATER METER (SIZE NOTED IF LARGER THAN 3/4")
- WATER VALVE
- FIRE HYDRANT
- AIR RELEASE VALVE
- GAS LINE (SIZE NOTED)
- GAS METER
- GAS LAMP
- GAS VALVE
- GAS REGULATOR
- UTILITY LINE MARKER
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- POWER/TELEPHONE LINE
- HIGH VOLTAGE TRANSMISSION TOWER/POLE
- UTILITY POLE
- LIGHT POLE
- GUY WIRE
- POWER MANHOLE
- OVERHEAD TELEPHONE LINE
- UNDERGROUND TELEPHONE LINE
- FIBER OPTIC CABLE (UNDERGROUND)
- CABLE TV (UNDERGROUND)
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- JUNCTION BOX (LETTER DENOTES UTILITY) { P - POWER, T - TELEPHONE, C - CABLE TV, F - FIBER OPTIC

G10 PROPOSED UTILITIES

- MANHOLE
- CLEANOUT
- UTILITY LINE (SIZE AND TYPE NOTED)
- ENCASED PIPE (I.D. OF CASING & CARRIER NOTED)
- NON-CONNECTING PIPING
- WATER METER (SIZE NOTED IF LARGER THAN 3/4")
- VALVE (TYPE NOTED)
- FIRE HYDRANT
- AIR RELEASE VALVE
- TAPPING SLEEVE AND VALVE
- TAPPING SADDLE AND VALVE
- SLEEVE
- CONCRETE BRACE
- PLUG W/CONCRETE CROSS ANCHOR
- GAS METER
- GAS LAMP
- GAS REGULATOR

A1 GENERAL SYMBOLS

- SECTION MARKER (SECTION NUMBER A1 / SHEET NUMBER C0-0)
- DETAIL MARKER (DETAIL NUMBER A1 / SHEET NUMBER C0-0)
- BUILDING SECTION (A1 / C0-0)
- WALL SECTION (A1 — SECTION/DETAIL APPEARS ON SAME SHEET)
- B-1 SOIL TEST BORING
- DEMOLITION AND DISPOSAL

A4 SURVEYING SYMBOLS

- SECTION LINE
- 1/4 SECTION LINE
- 1/4-1/4 SECTION LINE
- SECTION CORNER OR 1/4 SECTION CORNER (TYPE AND DESCRIPTION NOTED)
- CITY OR TOWN LIMITS
- PROPERTY LINE
- IRON PIN FOUND (SIZE AND TYPE NOTED)
- IRON PIN SET (SIZE AND TYPE NOTED)
- SURVEY LINE AND POINT OF INTERSECTION
- BENCHMARK
- MONUMENT (SIZE AND TYPE NOTED)
- RIGHT-OF-WAY LINE
- PERMANENT EASEMENT BOUNDARY
- LAND HOOK

A10 TOPOGRAPHY & INFRASTRUCTURE SYMBOLS

- TREE
- SHRUB
- HEDGEROW
- TREE LINE/WOODED AREA
- ROCK OUTCROPPING
- SLOPE
- FLOWER BED, GARDEN, ROCK GARDEN (NOTED)
- RIVER/STREAM (ARROW INDICATES FLOW)
- INTERMITTENT DITCH OR STREAM
- LAKE OR POND
- SWAMP OR MARSH
- EXISTING GROUND CONTOUR (500 / 499)
- FINISH GROUND CONTOUR (500 / 499)
- RAILROAD
- FENCE (TYPE NOTED)
- MAILBOX
- TRAFFIC/STREET SIGN
- OUTDOOR ADVERTISING SIGN (BILLBOARD)
- EXISTING BUILDING/STRUCTURE
- EXISTING STORM DRAIN W/HEADWALL (SIZE AND TYPE NOTED)
- NEW STORM DRAIN W/HEADWALL (SIZE AND TYPE NOTED)
- EXISTING BRIDGE OR CULVERT
- EXISTING ASPHALT ROAD OR DRIVE
- NEW ASPHALT ROAD OR DRIVE
- EXISTING ASPHALT ROAD WITH CURB AND GUTTER (DRAINAGE INLET SHOWN)
- NEW ASPHALT ROAD WITH CURB AND GUTTER (DRAINAGE INLET SHOWN)
- EXISTING CONCRETE ROAD OR DRIVE
- NEW CONCRETE ROAD OR DRIVE
- EXISTING UNPAVED ROAD OR DRIVE
- NEW UNPAVED ROAD OR DRIVE

KREBS ENGINEERING

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 31899 — AUSTIN D. MAYNARD — 12/8/23

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

No.	Date	Description

Sheet Title: STANDARD SYMBOLS & ABBREVIATIONS

Issue Date: DEC., 2023 — Sheet No.: G0-03 — Sequence 3 of 37

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ABBREVIATIONS:

AND	&	KIP	K
NUMBER	NO. / #		
PLUS OR MINUS	+/-	LONG	LG
ABOVE FINISHED FLOOR	AFF	MAXIMUM	MAX
ABOVE FINISHED GRADE	AFG	MOMENT CONNECTION	MC
APPROXIMATE	APPROX	MECHANICAL	MECH
ARCHITECTURAL	ARCH	MANUFACTURE(R)	MFR
		MINIMUM	MIN
BELOW FINISHED FLOOR	BFF	MISCELLANEOUS	MISC
BELOW FINISHED GRADE	BFG	METAL	MTL
BUILDING	BLDG		
BEAM	BM	NEAR SIDE	NS
BOTTOM OF STEEL	BOS	NOT TO SCALE	NTS
BASE PLATE	BP		
BEARING	BRG	ON CENTER	OC
BOTH SIDES	BS	OUTSIDE DIAMETER	OD
		OPENING	OPNG
CAST IN PLACE	CIP	OPPOSITE HAND	OPP HD
CANTILEVER	CANT		
CONTROL JOINT	CJ	PRE-ENGINEERED METAL BUILDING	PEMB
COMPLETE JOINT PENETRATION	CJP	PARTIAL JOINT PENETRATION	PJP
CENTERLINE	CL	PERPENDICULAR	PERP
CLEAR	CLR	PLATE	PL
COLUMN	COL	PLUMBING	PLMB
CONCRETE	CONC	PROJECTION	PROJ
CONTINUOUS	CONT	POUNDS PER SQUARE FOOT	PSF
		POUNDS PER SQUARE INCH	PSI
DOUBLE	DBL		
DIAMETER	Ø / DIA	RADIUS	R
DIMENSION	DIM	REFERENCE	REF
DRAWING	DWG	REINFORCING	REINF
DOWEL	DWL	REQUIRED	REQ'D
		ROUGH OPENING	R.O.
EACH	EA		
EACH FACE	EF	SCHEDULE	SCHED
EXPANSION JOINT	EJ	SECTION	SECT
EMBEDMENT	EMBD	SIMILAR	SIM
ELEVATION	ELEV	SLAB ON GRADE	SOG
EDGE OF SLAB	EOS	SEISMIC LOAD RESISTING SYSTEM	SLRS
EQUAL	EQ	SPECIFICATIONS	SPECS
EACH SIDE	ES	SQUARE	SQ
EACH WAY	EW	STAGGER	STAG
EXTERIOR	EXT	STANDARD	STD
		STIFFENER	STIFF
FOUNDATION	FNDT	STIRRUP	STIR
FACE OF CONCRETE	F.O.C	STEEL	STL
FACE OF MASONRY	F.O.M.	STRUCTURAL	STR
FACE OF STUD	F.O.S.	SYMMETRICAL	SYM
FAR SIDE	FS		
FINISH	FIN	TOP	T
FINISH FLOOR	FF	TOP AND BOTTOM	T&B
FINISH GRADE	FG	THICK	THK
FLANGE	FLG	TOP OF CONCRETE	TOC
FLOOR	FLR	TOP OF DECK	TOD
FOOTING	FTG	TOP OF FOOTING	TOF
FIELD VERIFY	FV	TOP OF PARAPET	TOP
		TOP OF STEEL	TOS
GAGE, GAUGE	GA	TOP OF WALL	TOW
GALVANIZED	GALV	TYPICAL	TYP
GENERAL NOTES	GN		
GRADE	GR	UNLESS NOTED OTHERWISE	UNO
HOOK	HK	VERTICAL	VERT
INSIDE DIAMETER	ID	WITH	w/
INTERIOR	INT	WELDED WIRE REINFORCEMENT	WWR
		WEIGHT	WGT
JOINT	JT		

GENERAL NOTES:

1. GENERAL:

1.1. GENERAL BUILDING CODE: INTERNATIONAL BUILDING CODE, 2021 EDITION.

1.2. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS ARE PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL OBTAIN ALL CONTRACT DOCUMENTS AND NOTIFY THE STRUCTURAL ENGINEER OF ANY DISCREPANCIES OR OMISSIONS.

1.3. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS AND STAMP ALL SHOP DRAWINGS WITH HIS SUBMITTAL REVIEW STAMP PRIOR TO SUBMITTING THEM FOR FINAL REVIEW. SHOP DRAWINGS NOT BEARING THE CONTRACTOR'S SUBMITTAL REVIEW STAMP WILL BE RETURNED WITHOUT ACTION.

1.4. ALL SHOP DRAWINGS RELATED TO THE ITEMS SPECIFIED IN THE STRUCTURAL CONTRACT DOCUMENTS SHALL BEAR THE ENGINEER'S SUBMITTAL REVIEW STAMP PRIOR TO PROCEEDING. SHOP DRAWINGS WILL BE RETURNED TO THE ENGINEER AFTER THE SUBMITTAL REVIEW IS COMPLETE.

1.5. THE STRUCTURAL DESIGN IS BASED ON THE FOLLOWING EXISTING DRAWINGS THAT WERE PROVIDED TO OUR OFFICE FOR REFERENCE. THE GENERAL CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND CONTACT THE STRUCTURAL ENGINEER'S OFFICE IF ANY DISCREPANCIES ARE NOTED BETWEEN THE EXISTING DRAWINGS AND THE AS-BUILT CONDITIONS.

DRAWING NUMBER 0986-037 (SHEETS 4 & 5) BY MOORE ENGINEERING COMPANY

1.6. DO NOT SCALE THESE DRAWINGS. WHERE DIMENSIONAL INFORMATION IS REQUIRED, OR DISCREPANCIES ARE NOTED, CONTACT THE ENGINEER.

1.7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IF ANY DISCREPANCIES ARE NOTED.

1.8. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS, METHODS, AND SEQUENCE OF CONSTRUCTION.

1.9. THE STRUCTURE IS DESIGNED BASED ON THE COMPLETED CONDITION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY BRACING TO MAINTAIN STABILITY DURING CONSTRUCTION PRIOR TO THE COMPLETION OF THE STRUCTURE.

1.10. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION MATERIALS ARE SPREAD OUT ON FRAMED FLOORS SUCH THAT THE DESIGN LOADS LISTED BELOW ARE NOT EXCEEDED

1.11. DESIGN LOADS:

A. DEAD LOADS:

SEE DRAWINGS FOR THE CONSTRUCTION MATERIALS USED IN THE PROJECT. ANY CHANGES IN CONSTRUCTION MATERIALS FROM THOSE SHOWN ON THE DRAWINGS SHALL BE REPORTED TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF THE CAPACITY OF THE STRUCTURE.

B. LIVE LOADS (PSF):

FLOOR ---------- 125

2. STRUCTURAL STEEL:

2.1. STRUCTURAL STEEL DESIGN CODE: AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC STEEL CONSTRUCTION MANUAL (EDITION REFERENCED IN THE APPLICABLE BUILDING CODE EDITION LISTED ABOVE).

2.2. ALL STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

WIDE FLANGE SHAPES ----------	ASTM A992, GR 50
HSS AND TS ----------	ASTM A500, GR C
PLATES, ANGLES, AND CHANNELS ----------	ASTM A36
ANCHOR RODS ----------	ASTM F1554 GR 36

2.3. ALL DETAILING, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, UNLESS NOTED OTHERWISE.

2.4. UNLESS NOTED OTHERWISE, ALL CONNECTIONS SHALL BE MADE BY WELDING OR HIGH STRENGTH BOLTING WITH ¾" DIAMETER A325 BOLTS, MINIMUM. ALL BOLTS SHALL BE INSTALLED AS "SNUG-TIGHTENED JOINTS" AS SPECIFIED IN THE AISC STEEL CONTRUCTION MANUAL.

2.5. WELDS SHALL BE MADE WITH E-70XX ELECTRODES. THE MINIMUM SIZE FILLET WELD SHALL BE 3/16".

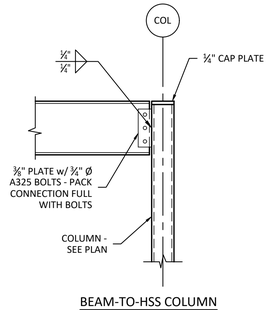
2.6. UNLESS OTHERWISE SHOWN, ALL BEAM CONNECTIONS SHALL BE SIMPLE SHEAR CONNECTIONS AS DEFINED IN PART 10 OF THE AISC STEEL CONSTRUCTION MANUAL, AND SHALL BE DESIGNED AS BEARING TYPE WITH THREADS IN THE SHEAR PLANE.

2.7. STEEL BEAM SHEAR CONNECTIONS SHALL BE PROVIDED AS NOTED IN THE TYPICAL DETAILS. THE STEEL FABRICATOR MAY PROVIDE ALTERNATIVE SHEAR CONNECTIONS; HOWEVER, IT IS THE RESPONSIBILITY OF THE STEEL FABRICATOR TO PROVIDE DESIGN CALCULATIONS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED FOR ALL ALTERNATIVE CONNECTIONS. CONNECTION CALCULATIONS (IF REQUIRED) SHALL BE SUBMITTED AS PART OF THE STRUCTURAL STEEL SUBMITTAL. STRUCTURAL STEEL SHOP DRAWINGS SUBMITTED WITHOUT SEALED CONNECTION CALCULATIONS WILL BE CONSIDERED INCOMPLETE AND RETURNED.

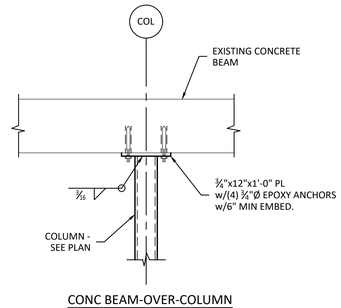
2.8. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.

2.9. ALL COLUMN ANCHOR ROD HOLES TO BE OVERSIZED AS REQUIRED. THE MAXIMUM HOLE SIZE FOR ANCHOR RODS IN BASE PLATES SHALL CONFORM TO THE REQUIREMENTS LISTED IN TABLE 14-2 OF THE AISC STEEL CONSTRUCTION MANUAL. PLATE WASHERS ARE REQUIRED WITH ALL OVERSIZED HOLES.

2.10. ALL EPOXY SHALL CONFORM TO THE REQUIREMENTS OF HILTI HY 200 OR APPROVED EQUIVALENT.



BEAM-TO-HSS COLUMN



CONC BEAM-OVER-COLUMN

STEEL CONNECTION DETAILS

TYPICAL

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KREBS ENGINEERING

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 27512 SCOTT J. DOLLAR
12/08/23

MK STRUCTURAL ENGINEERING
1490 NORTHBANK PARKWAY - SUITE 272 - TUSCALOOSA - AL - 35406
WWW.MAKEGR.COM - (205) 469-7912
MAK Project - 23.024

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

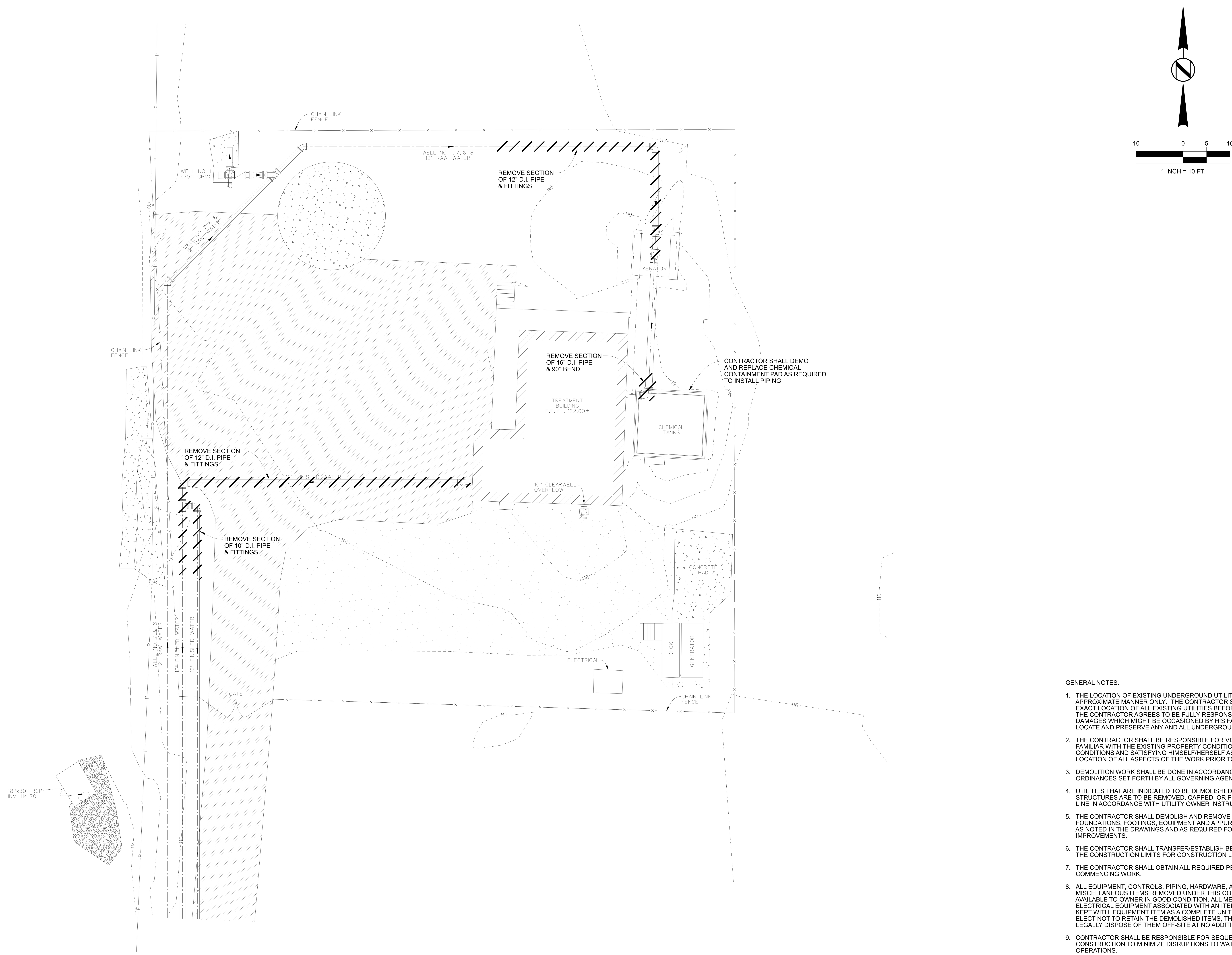
Designed: SJD	Project No.: 23040.3
Drawn: MAK	
Checked: SJD	

Revisions

No.	Date	Description

Sheet Title: GENERAL STRUCTURAL NOTES & DETAILS

Issue Date: DEC., 2023	Sheet No.: S0-01
Sequence: 4 of 37	



GENERAL NOTES:

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE, BECOMING FAMILIAR WITH THE EXISTING PROPERTY CONDITIONS AND ADJACENT SITE CONDITIONS AND SATISFYING HIMSELF/HERSELF AS TO THE NATURE AND LOCATION OF ALL ASPECTS OF THE WORK PRIOR TO BIDDING.
3. DEMOLITION WORK SHALL BE DONE IN ACCORDANCE WITH ALL CODES AND ORDINANCES SET FORTH BY ALL GOVERNING AGENCIES.
4. UTILITIES THAT ARE INDICATED TO BE DEMOLISHED OR SERVE DEMOLISHED STRUCTURES ARE TO BE REMOVED, CAPPED, OR PLUGGED AT PROPERTY LINE IN ACCORDANCE WITH UTILITY OWNER INSTRUCTIONS.
5. THE CONTRACTOR SHALL DEMOLISH AND REMOVE THE EXISTING BUILDINGS, FOUNDATIONS, FOOTINGS, EQUIPMENT AND APPURTENANCES AS NOTED IN THE DRAWINGS AND AS REQUIRED FOR CONSTRUCTION OF THE IMPROVEMENTS.
6. THE CONTRACTOR SHALL TRANSFER/ESTABLISH BENCHMARKS OUTSIDE OF THE CONSTRUCTION LIMITS FOR CONSTRUCTION LAYOUT AND ENGINEERING.
7. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO COMMENCING WORK.
8. ALL EQUIPMENT, CONTROLS, PIPING, HARDWARE, APPURTENANCES, AND MISCELLANEOUS ITEMS REMOVED UNDER THIS CONTRACT SHALL BE MADE AVAILABLE TO OWNER IN GOOD CONDITION. ALL MECHANICAL, CONTROL, AND ELECTRICAL EQUIPMENT ASSOCIATED WITH AN ITEM OR EQUIPMENT SHALL BE KEPT WITH EQUIPMENT ITEM AS A COMPLETE UNIT. SHOULD THE OWNER ELECT NOT TO RETAIN THE DEMOLISHED ITEMS, THE CONTRACTOR SHALL LEGALLY DISPOSE OF THEM OFF-SITE AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR SEQUENCING DEMOLITION CONSTRUCTION TO MINIMIZE DISRUPTIONS TO WATER TREATMENT PLANT OPERATIONS.
10. CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES AS NEEDED TO COMPLETE THE WORK.
11. DEMOLITION PLANS ARE INTENDED TO SHOW ONLY MAJOR DEMOLITION ITEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND/OR RE-ROUTING OF FACILITIES REQUIRED TO COMPLETE THE WORK.
12. SEE INDIVIDUAL STRUCTURE SHEETS FOR ADDITIONAL DETAILS.

A1 PLAN 1" = 10'

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

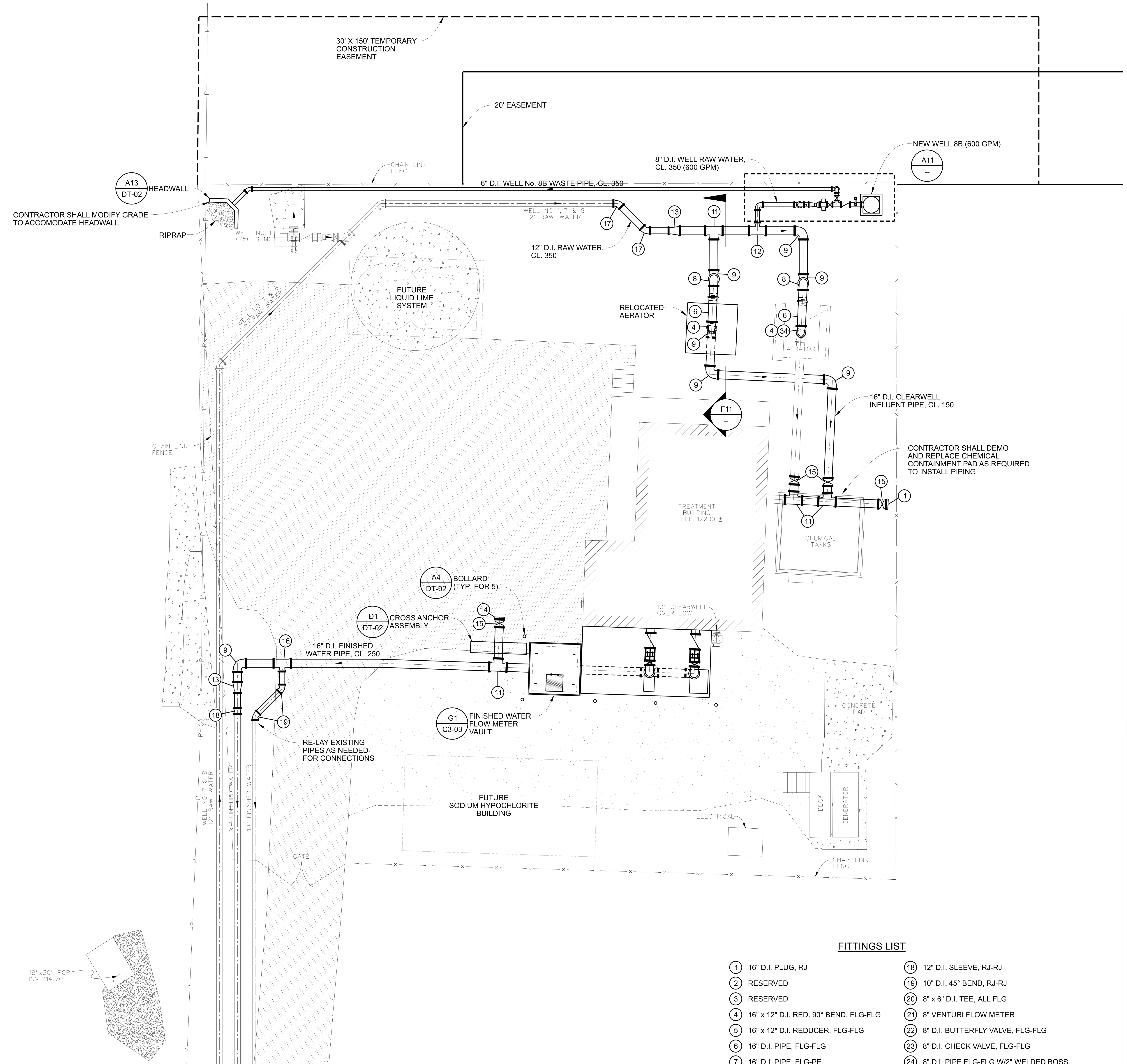
Designed	ADM	Project No.	23040.3
Drawn	CLM		
Checked	CLL		

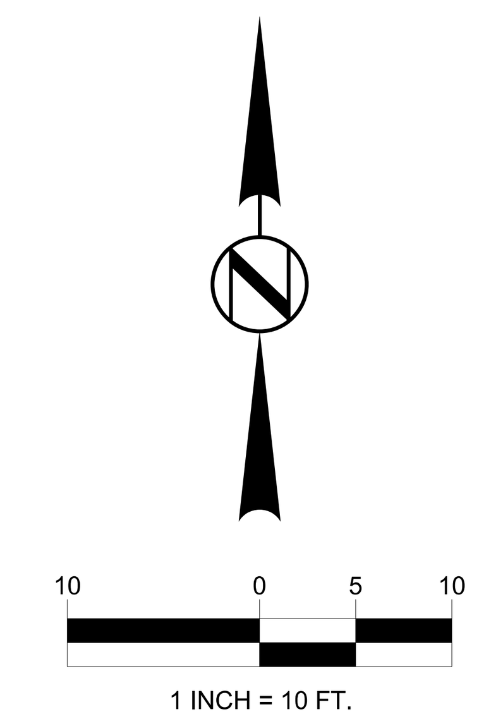
Revisions

No.	Date	Description

Sheet Title: EXISTING SITE / YARD PIPING DEMOLITION PLAN

Issue Date: DEC., 2023
Sequence: 5 of 37
Sheet No.: C1-01

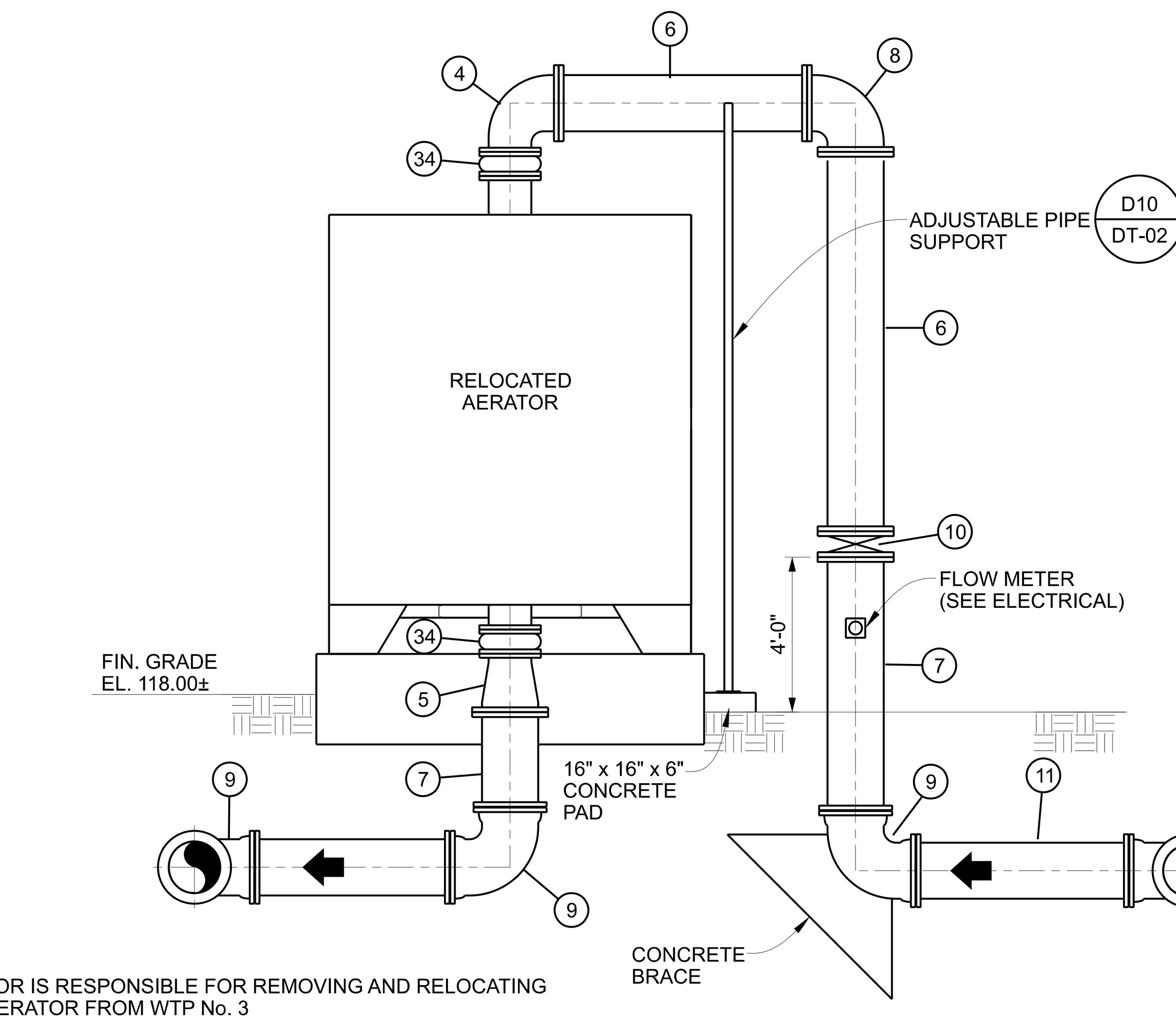




FITTINGS LIST

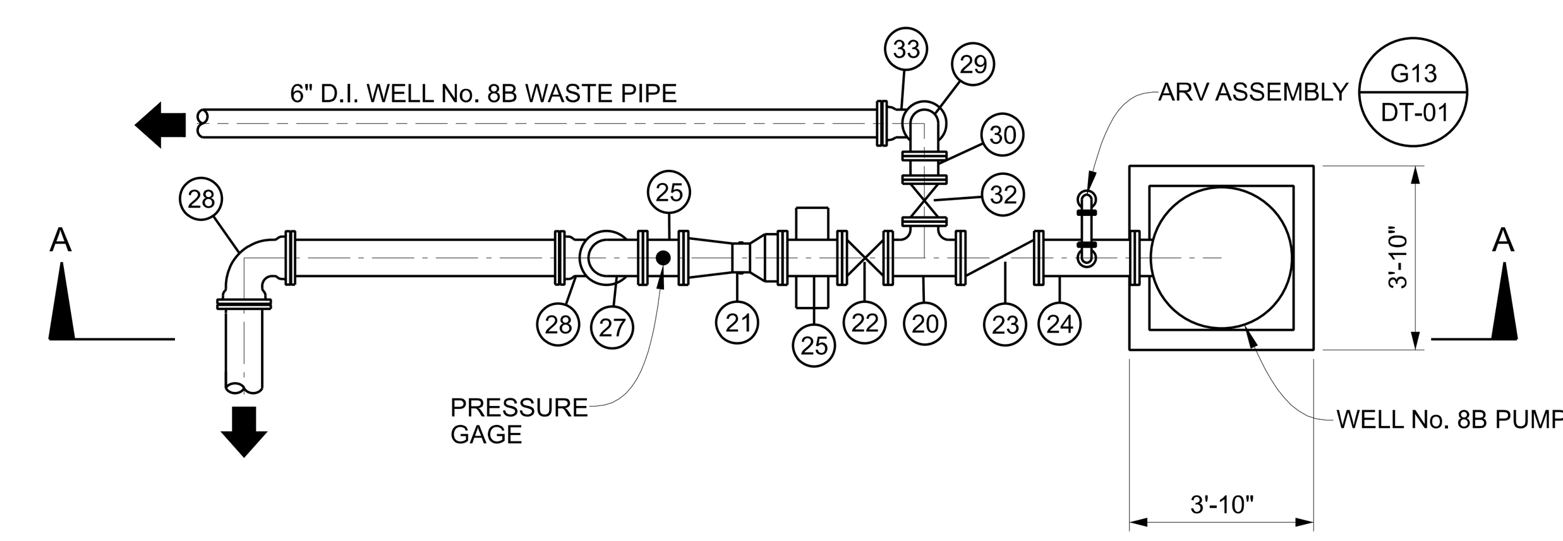
1. 16" D.I. PLUG, RJ
2. RESERVED
3. RESERVED
4. 16" x 12" D.I. RED. 90° BEND, FLG-FLG
5. 16" x 12" D.I. REDUCER, FLG-FLG
6. 16" D.I. PIPE, FLG-FLG
7. 16" D.I. PIPE, FLG-PE
8. 16" D.I. 90° BEND, FLG-FLG
9. 16" D.I. 90° BEND, RJ-RJ
10. 16" BUTTERFLY VALVE, FLG-FLG
11. 16" x 16" D.I. TEE, ALL RJ
12. 16" x 8" D.I. TEE, ALL RJ
13. 16" x 12" D.I. REDUCER, RJ-RJ
14. 16" D.I. PLUG, RJ
15. 16" D.I. BUTTERFLY VALVE, RJ-RJ
16. 16" x 10" D.I. TEE, ALL RJ
17. 12" D.I. 45° BEND, RJ-RJ
18. 12" D.I. SLEEVE, RJ-RJ
19. 10" D.I. 45° BEND, RJ-RJ
20. 8" x 6" D.I. TEE, ALL FLG
21. 8" VENTURI FLOW METER
22. 8" D.I. BUTTERFLY VALVE, FLG-FLG
23. 8" D.I. CHECK VALVE, FLG-FLG
24. 8" D.I. PIPE FLG-FLG W/2" WELDED BOSS
25. 8" D.I. PIPE, FLG-FLG
26. 8" D.I. PIPE, FLG-PE
27. 8" D.I. 90° BEND, FLG-FLG
28. 8" D.I. 90° BEND, RJ-RJ
29. 6" D.I. 90° BEND, FLG-FLG
30. 6" D.I. PIPE, FLG-FLG
31. 6" D.I. PIPE, FLG-PE
32. 6" D.I. GATE VALVE, FLG-FLG
33. 6" D.I. 90° BEND, RJ-RJ
34. 12" FLEXIBLE COUPLING

A1 PLAN 1" = 10'

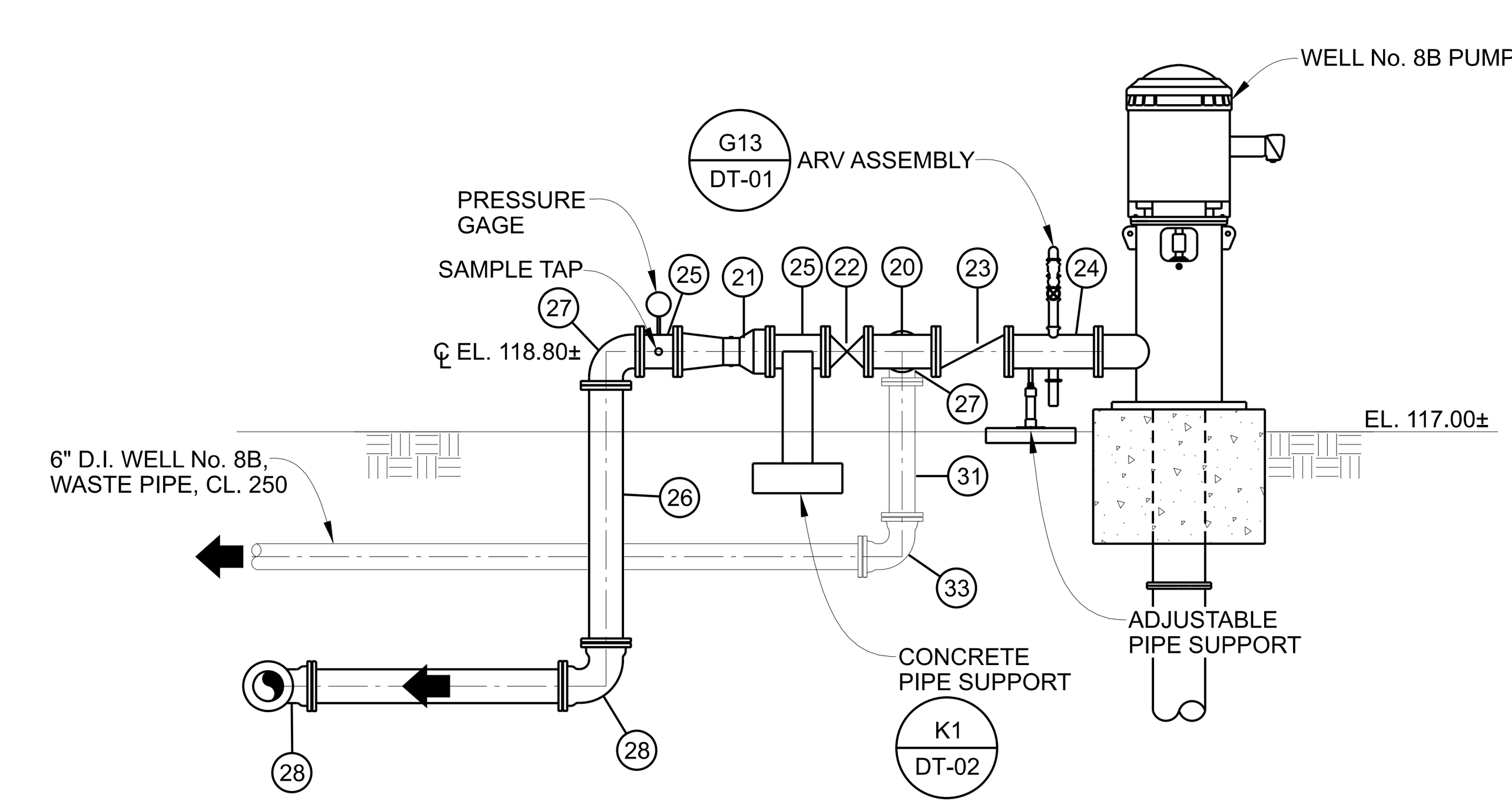


NOTE: CONTRACTOR IS RESPONSIBLE FOR REMOVING AND RELOCATING EXISTING AERATOR FROM WTP No. 3

F11 SECTION 1/4" = 1'-0"



PLAN



SECTION A-A

A11 WELL 8B (600 GPM) 1/4" = 1'-0"

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

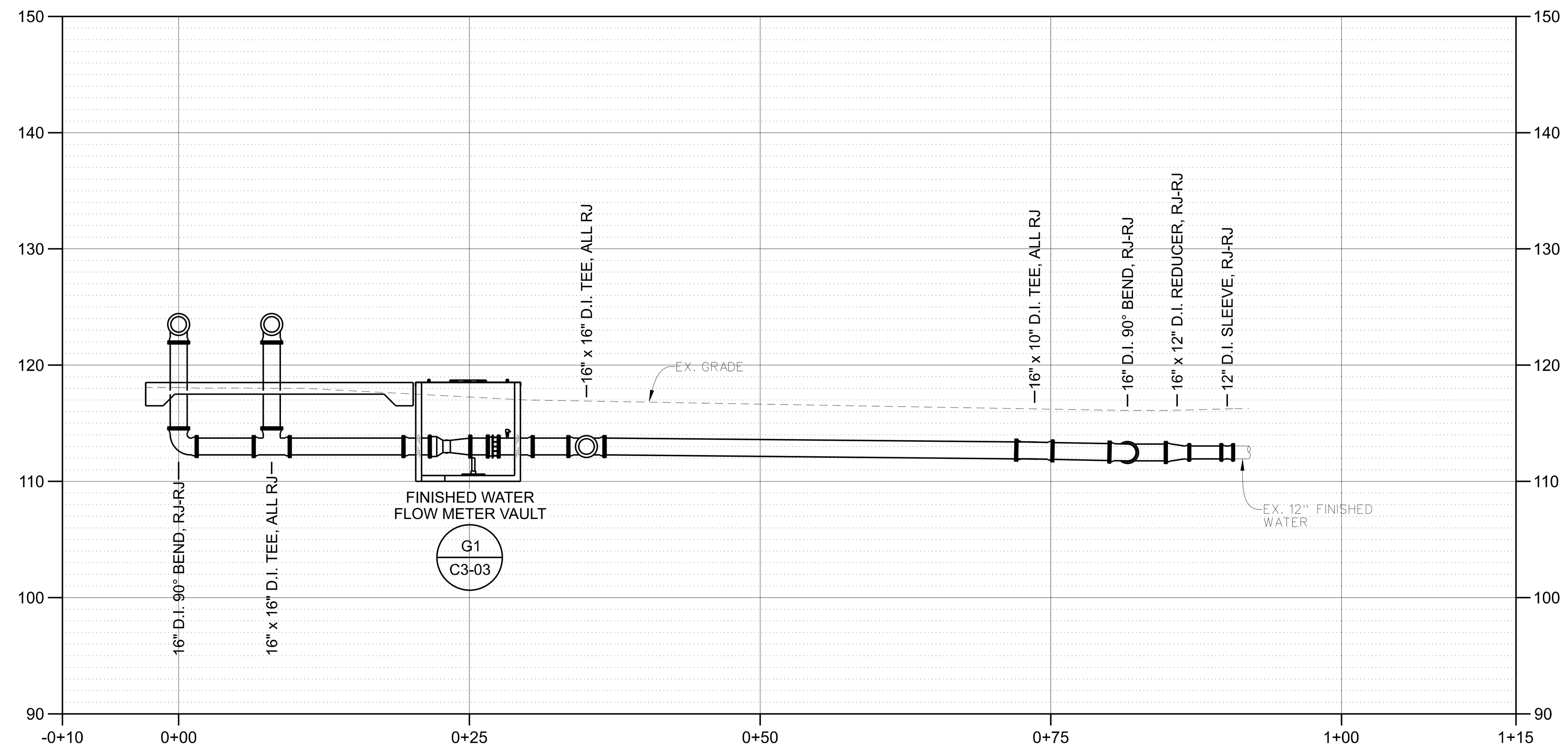
Designed: ADM	Project No.: 23040.3
Drawn: CLM	
Checked: CLL	

Revisions

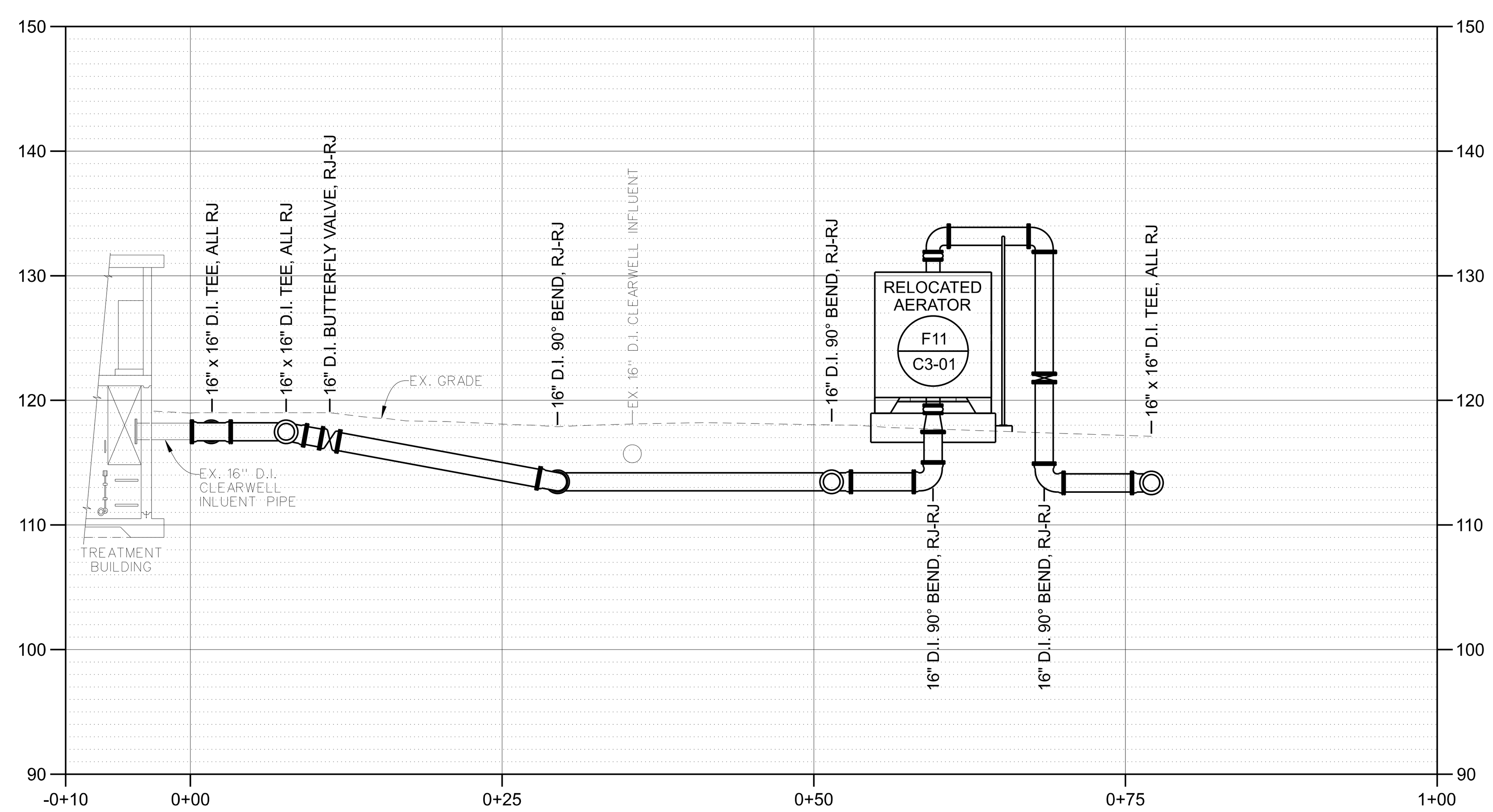
No.	Date	Description

Sheet Title: SITE / YARD PIPING PLAN

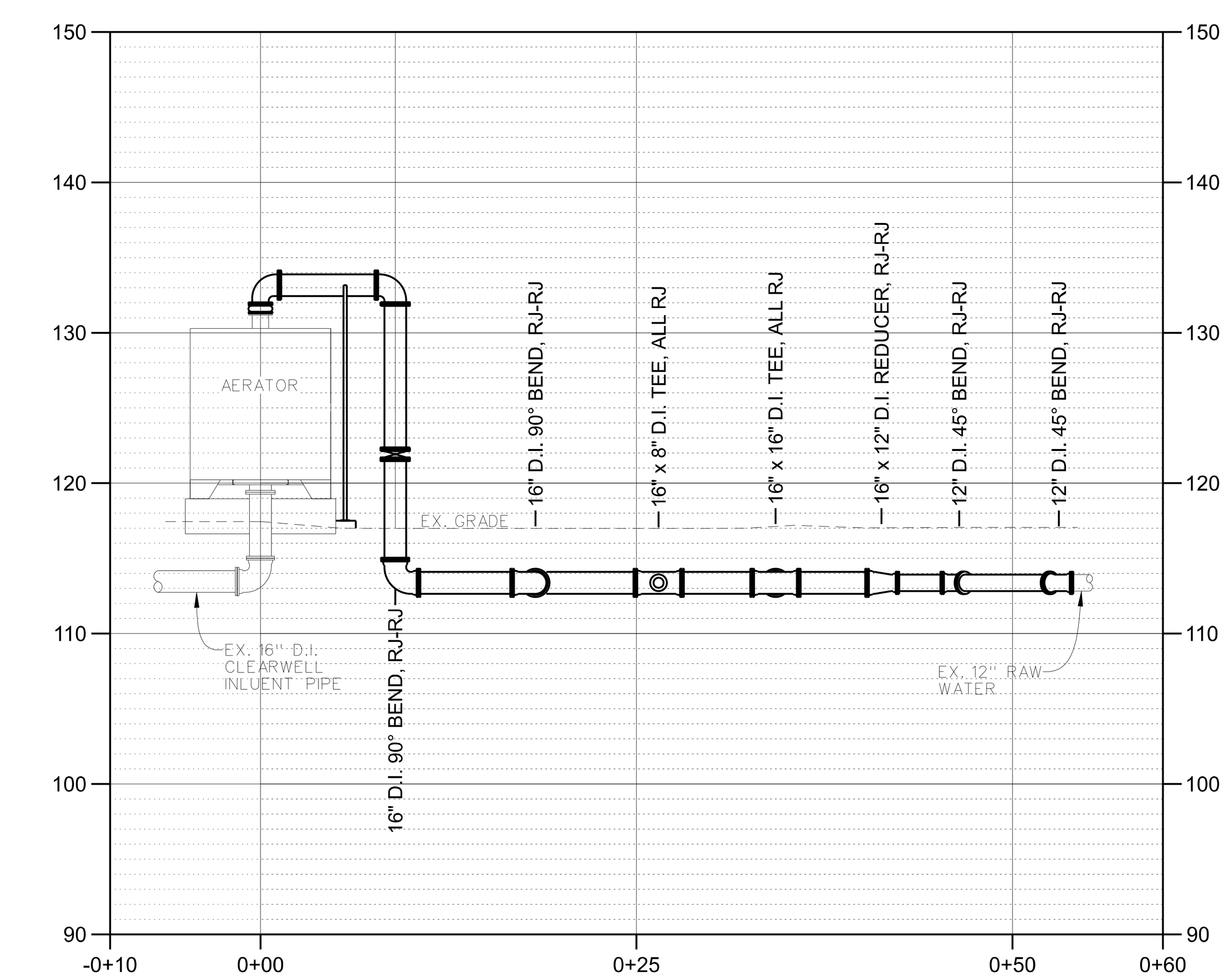
Issue Date: DEC., 2023
Sequence: 6 of 37
Sheet No.: C3-01



G1 FINISHED WATER LINE PROFILE 1" = 10'



A1 CLEARWELL INFLUENT LINE PROFILE 1" = 10'



A10 RAW WATER LINE PROFILE 1" = 10'

KREBS ENGINEERING

ALABAMA LICENSED No. 51689 PROFESSIONAL ENGINEER AUSTIN D. MAYNARD 12/8/23

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

No.	Date	Description

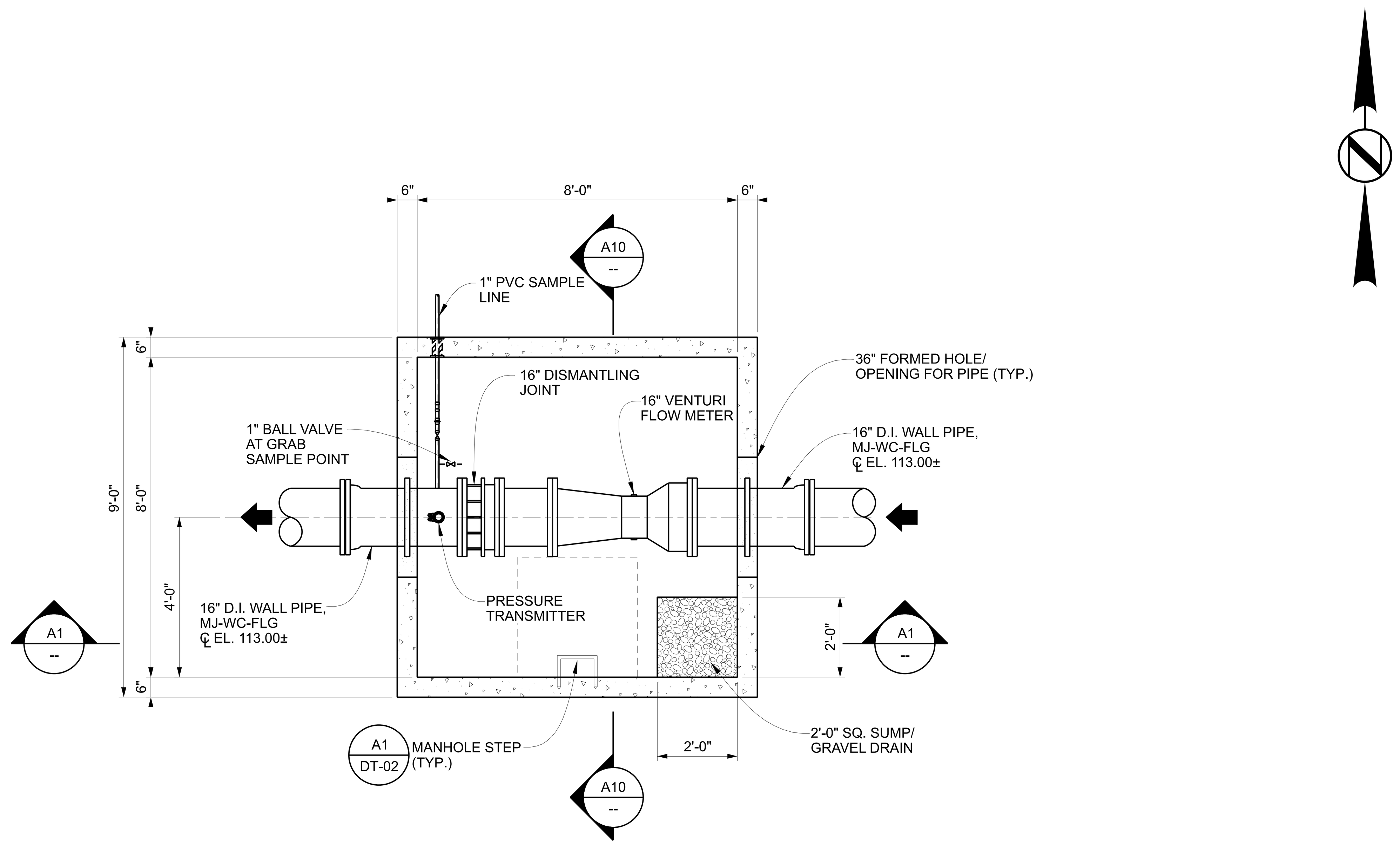
Sheet Title
YARD PIPING PROFILES

Issue Date DEC., 2023
Sequence 7 of 37
Sheet No. C3-02

KREBS ENGINEERING

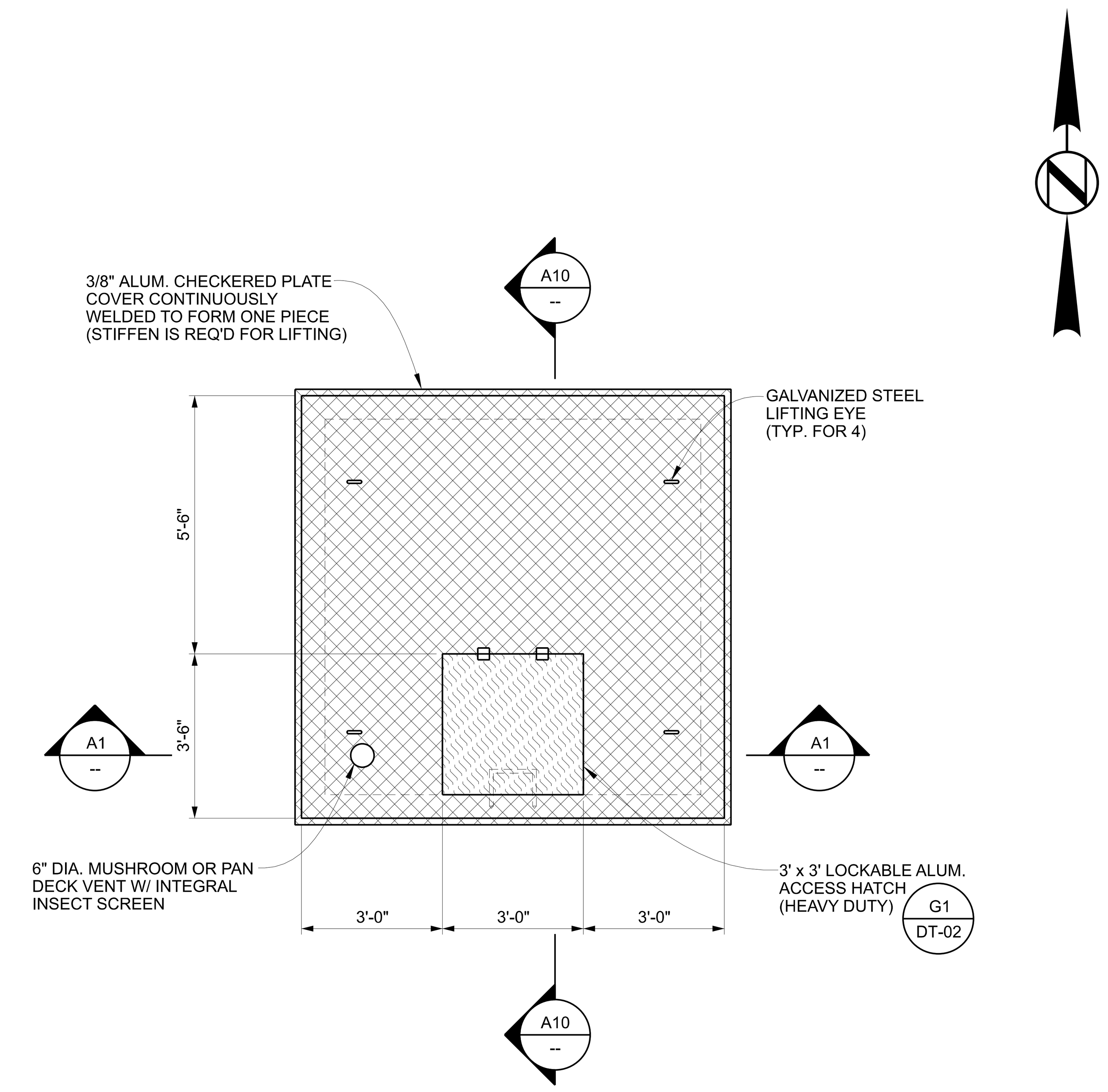
BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

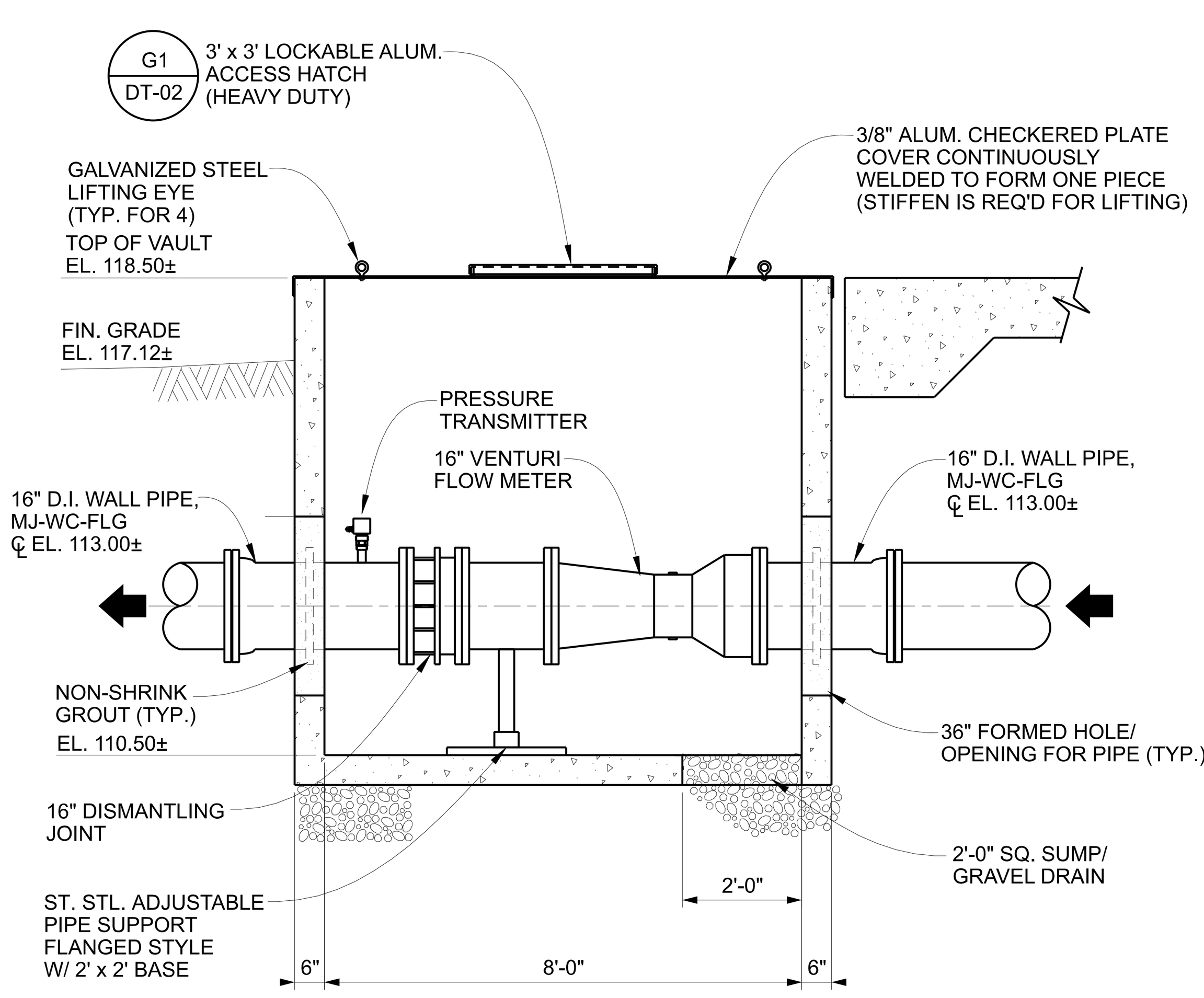


NOTES: CONNECTIONS TO VENTURI FLOW METER PRESSURE PORTS SHALL BE MADE WITH DIELECTRIC COUPLINGS. PROVIDE VALVES AND MEANS FOR BLEEDING AIR AT DP TRANSMITTER. CONTRACTOR CAN FORM WALL PIPES IN PLACE IF DESIRED.

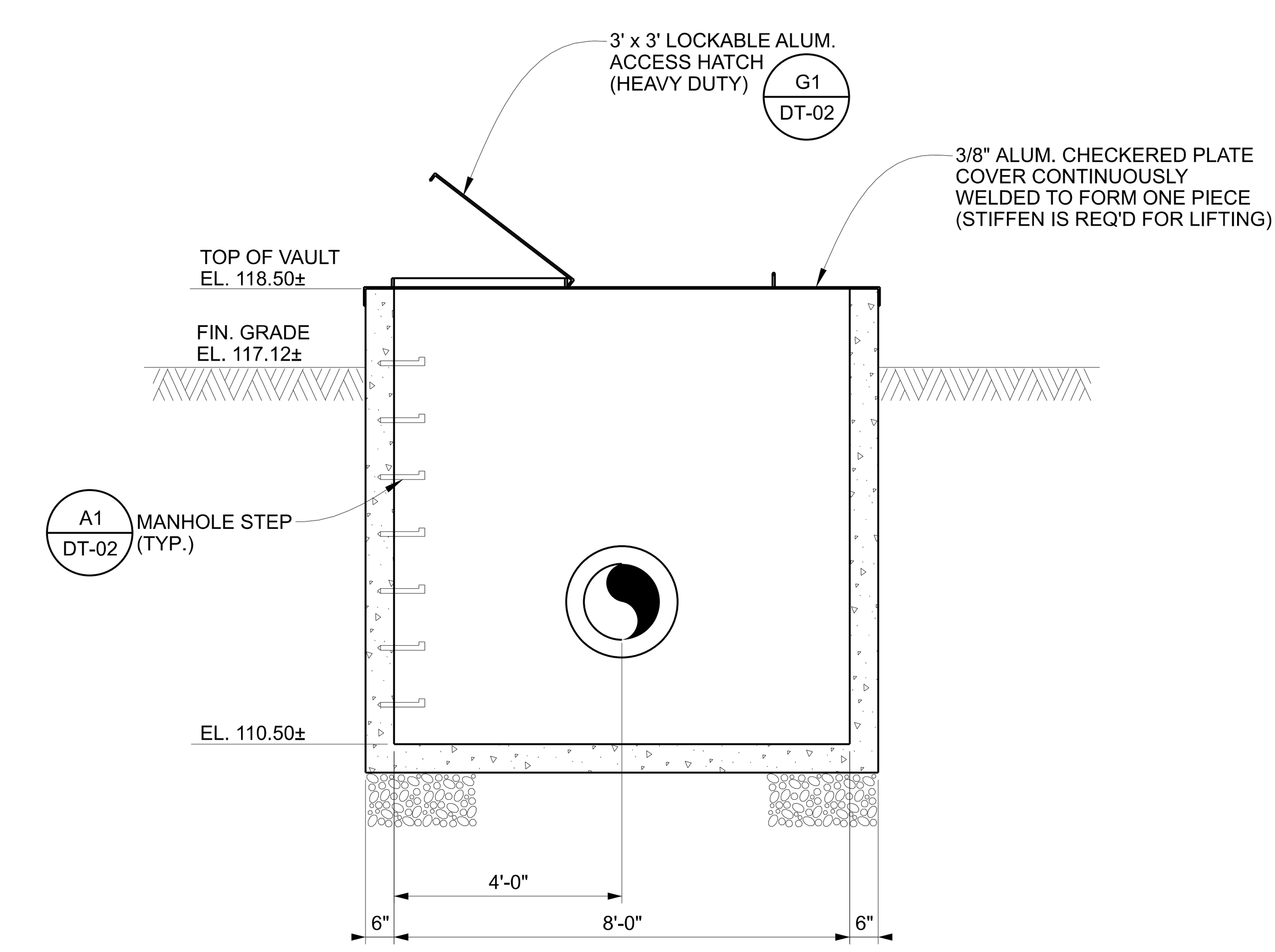
G1 SECTIONAL PLAN 3/8" =1'-0"



G10 TOP PLAN 3/8" =1'-0"



A1 SECTION 3/8" =1'-0"



A10 SECTION 3/8" =1'-0"

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

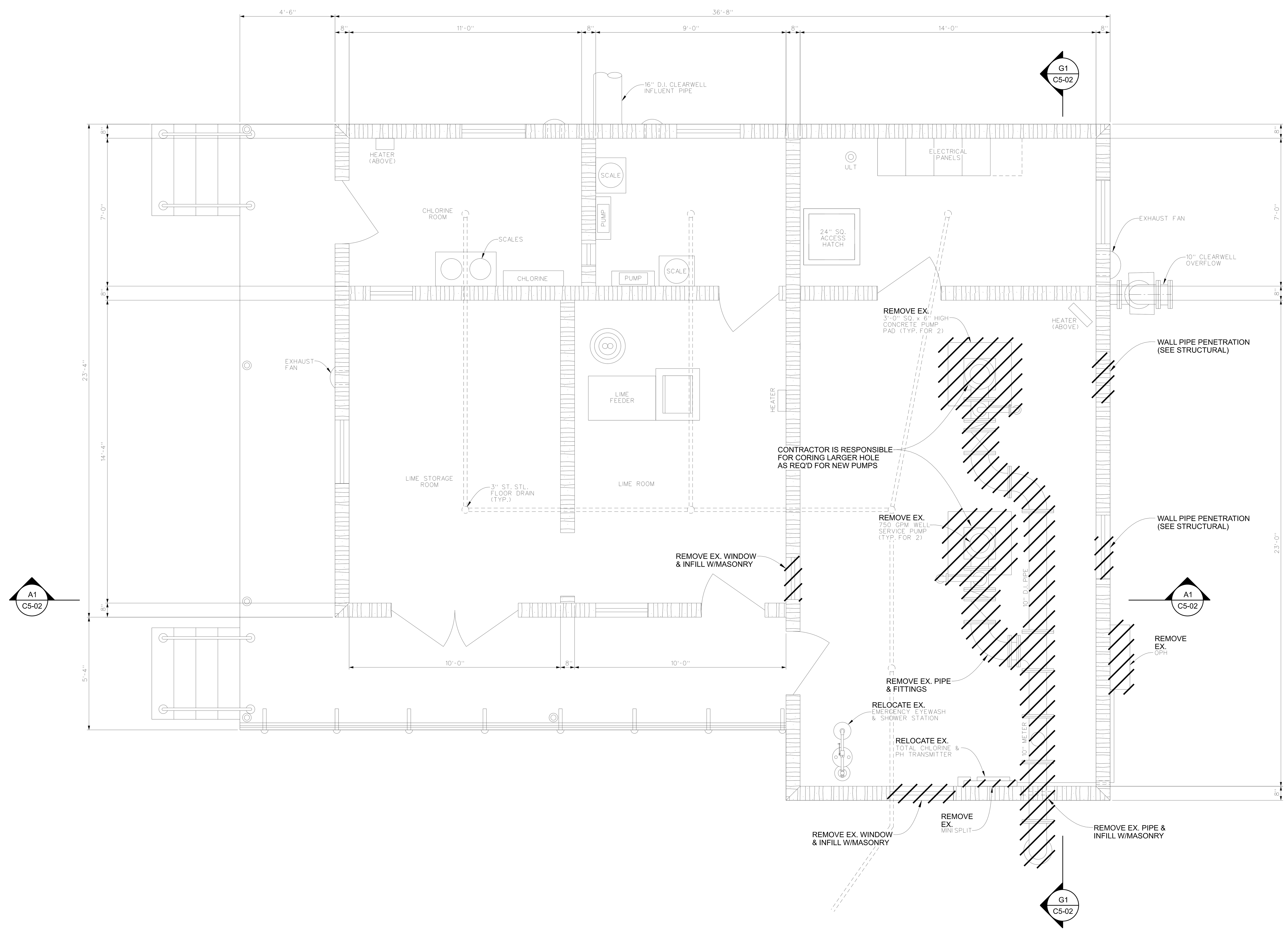
No.	Date	Description

Sheet Title

FINISHED WATER FLOW METER VAULT PLANS & SECTIONS

Issue Date DEC., 2023 | Sheet No. C3-03

Sequence 8 of 37



GENERAL NOTES:

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE, BECOMING FAMILIAR WITH THE EXISTING PROPERTY CONDITIONS AND ADJACENT SITE CONDITIONS AND SATISFYING HIMSELF/HERSELF AS TO THE NATURE AND LOCATION OF ALL ASPECTS OF THE WORK PRIOR TO BIDDING.
3. DEMOLITION WORK SHALL BE DONE IN ACCORDANCE WITH ALL CODES AND ORDINANCES SET FORTH BY ALL GOVERNING AGENCIES.
4. UTILITIES THAT ARE INDICATED TO BE DEMOLISHED OR SERVE DEMOLISHED STRUCTURES ARE TO BE REMOVED, CAPPED, OR PLUGGED AT PROPERTY LINE IN ACCORDANCE WITH UTILITY OWNER INSTRUCTIONS.
5. THE CONTRACTOR SHALL DEMOLISH AND REMOVE THE EXISTING BUILDINGS, FOUNDATIONS, FOOTINGS, EQUIPMENT AND APPURTENANCES AS NOTED IN THE DRAWINGS AND AS REQUIRED FOR CONSTRUCTION OF THE IMPROVEMENTS.
6. THE CONTRACTOR SHALL TRANSFER/ESTABLISH BENCHMARKS OUTSIDE OF THE CONSTRUCTION LIMITS FOR CONSTRUCTION LAYOUT AND ENGINEERING.
7. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO COMMENCING WORK.
8. ALL EQUIPMENT, CONTROLS, PIPING, HARDWARE, APPURTENANCES, AND MISCELLANEOUS ITEMS REMOVED UNDER THIS CONTRACT SHALL BE MADE AVAILABLE TO OWNER IN GOOD CONDITION. ALL MECHANICAL, CONTROL, AND ELECTRICAL EQUIPMENT ASSOCIATED WITH AN ITEM OR EQUIPMENT SHALL BE KEPT WITH EQUIPMENT ITEM AS A COMPLETE UNIT. SHOULD THE OWNER ELECT NOT TO RETAIN THE DEMOLISHED ITEMS, THE CONTRACTOR SHALL LEGALLY DISPOSE OF THEM OFF-SITE AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR SEQUENCING DEMOLITION CONSTRUCTION TO MINIMIZE DISRUPTIONS TO WATER TREATMENT PLANT OPERATIONS. EXISTING PUMPS SHALL REMIAN IN SERVICE AS LONG AS POSSIBLE TO REDUCE WTP SHUTDOWN TIME.
10. CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES AS NEEDED TO COMPLETE THE WORK.
11. DEMOLITION PLANS ARE INTENDED TO SHOW ONLY MAJOR DEMOLITION ITEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND/OR RE-ROUTING OF FACILITIES REQUIRED TO COMPLETE THE WORK.
12. SEE INDIVIDUAL STRUCTURE SHEETS FOR ADDITIONAL DETAILS.

A1 PLAN 3/8" = 1'-0"

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

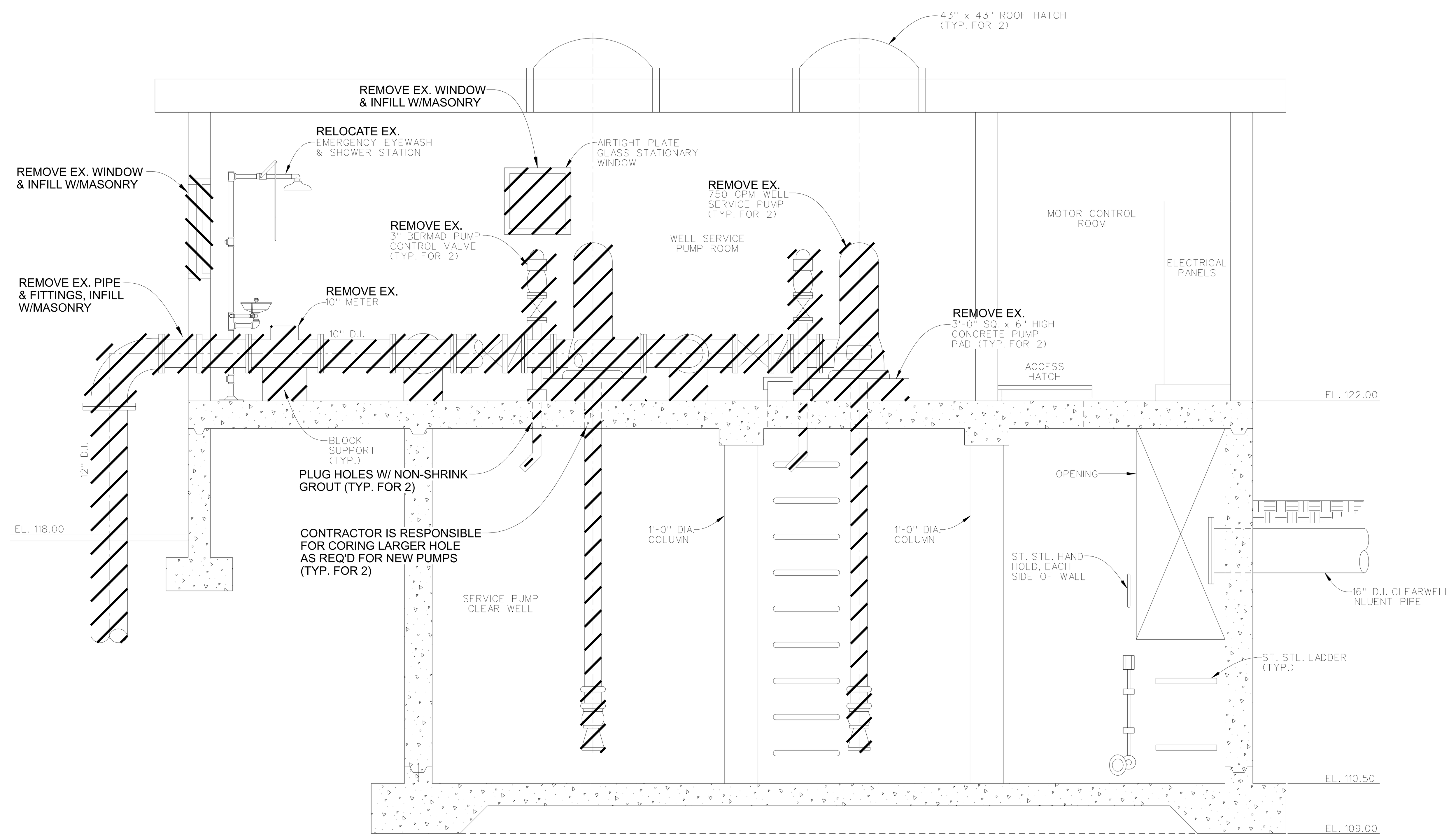
Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

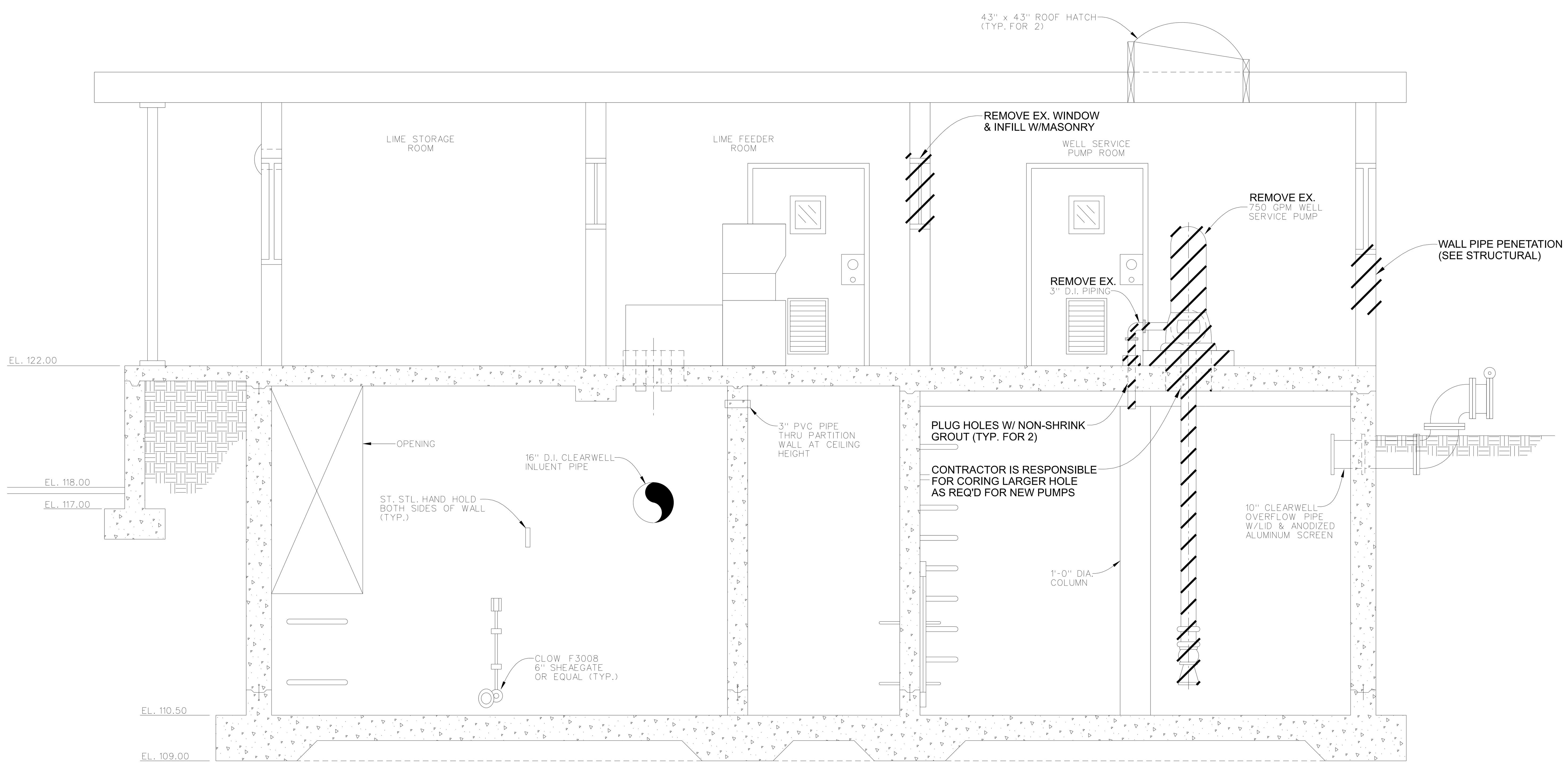
No.	Date	Description

Sheet Title: EX. TREATMENT BUILDING DEMOLITION PLAN

Issue Date: DEC., 2023
Sequence: 9 of 37
Sheet No.: C5-01



G1 SECTION 3/8" = 1'-0"



A1 SECTION 3/8" = 1'-0"

GENERAL NOTES:

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12. SEE INDIVIDUAL STRUCTURE SHEETS FOR ADDITIONAL DETAILS.

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

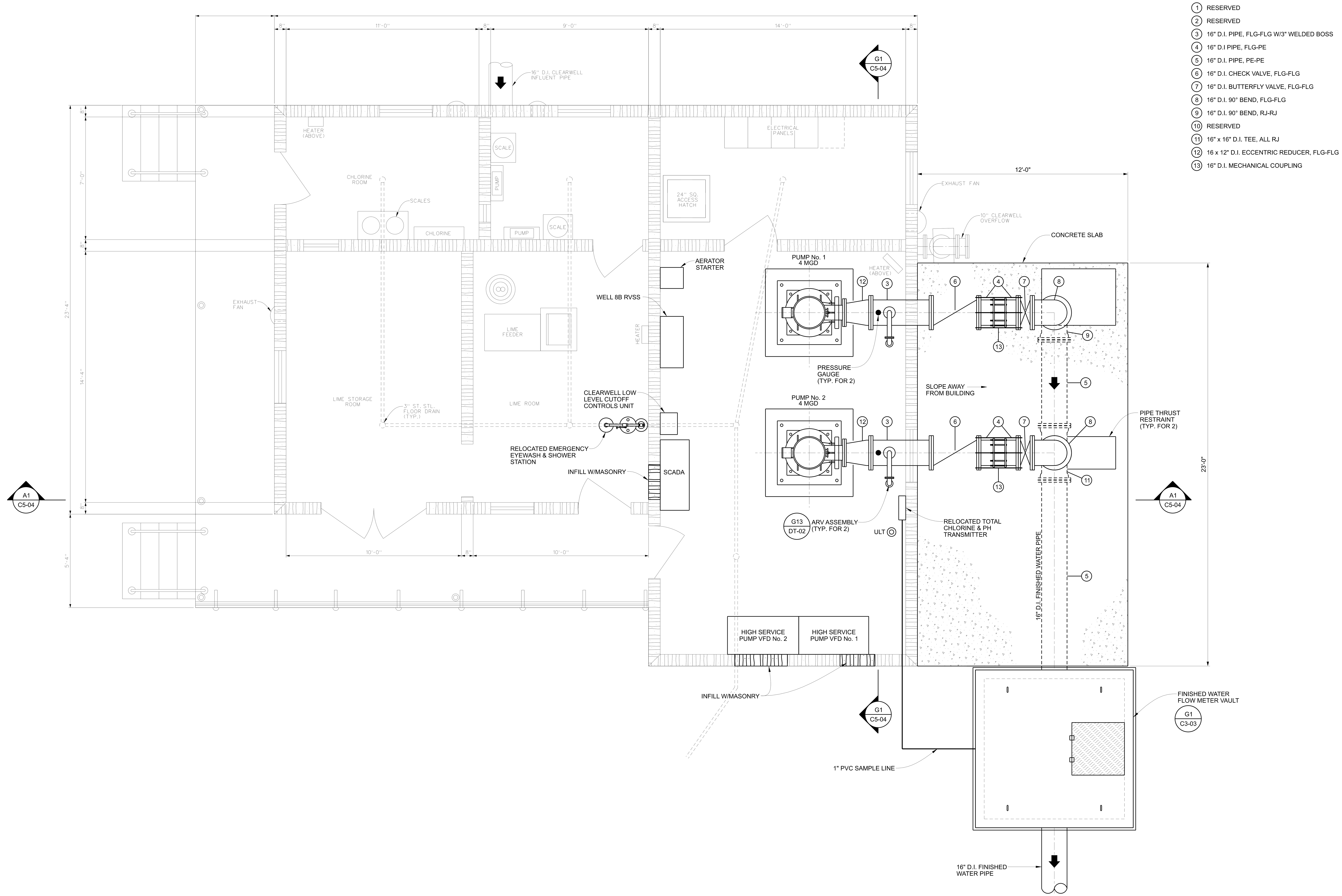
Designed	Project No.
ADM	23040.3
Drawn	
CLM	
Checked	
CLL	

Revisions

No.	Date	Description

Sheet Title
EX. TREATMENT BUILDING DEMOLITION SECTIONS

Issue Date: DEC., 2023
Sequence: 10 of 37
Sheet No.: C5-02



A1 PLAN 3/8" = 1'-0"

FITTINGS LIST

1. RESERVED
2. RESERVED
3. 16" D.I. PIPE, FLG-FLG W/3" WELDED BOSS
4. 16" D.I PIPE, FLG-PE
5. 16" D.I. PIPE, PE-PE
6. 16" D.I. CHECK VALVE, FLG-FLG
7. 16" D.I. BUTTERFLY VALVE, FLG-FLG
8. 16" D.I. 90° BEND, FLG-FLG
9. 16" D.I. 90° BEND, RJ-RJ
10. RESERVED
11. 16" x 16" D.I. TEE, ALL RJ
12. 16 x 12" D.I. ECCENTRIC REDUCER, FLG-FLG
13. 16" D.I. MECHANICAL COUPLING

KREBS ENGINEERING

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 37480 AUSTIN D. MAYNARD 12/8/23

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

No.	Date	Description

Sheet Title: EX. TREATMENT BUILDING MODIFICATIONS PLAN

Issue Date: DEC., 2023
Sequence: 11 of 37
Sheet No.: C5-03

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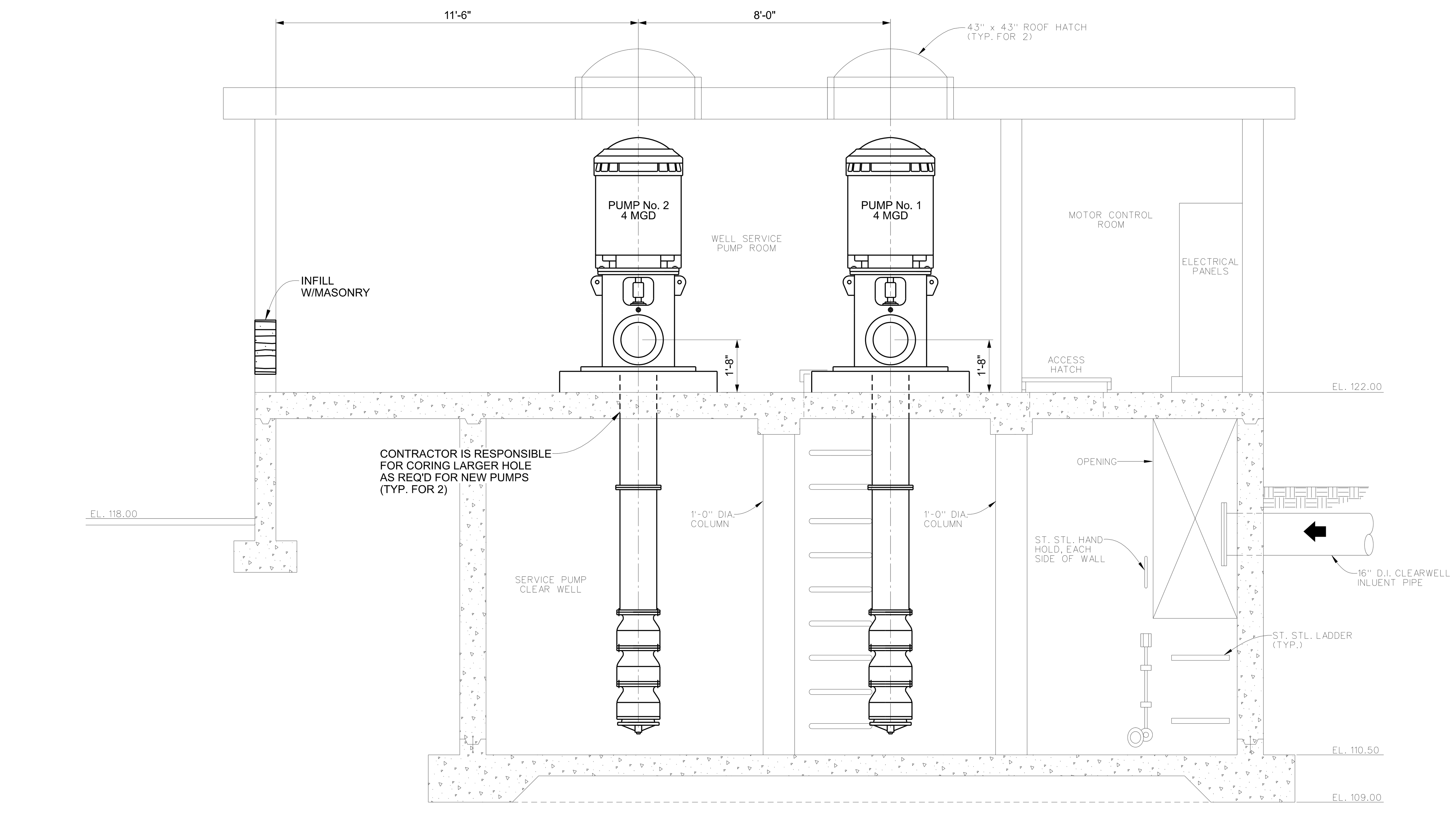
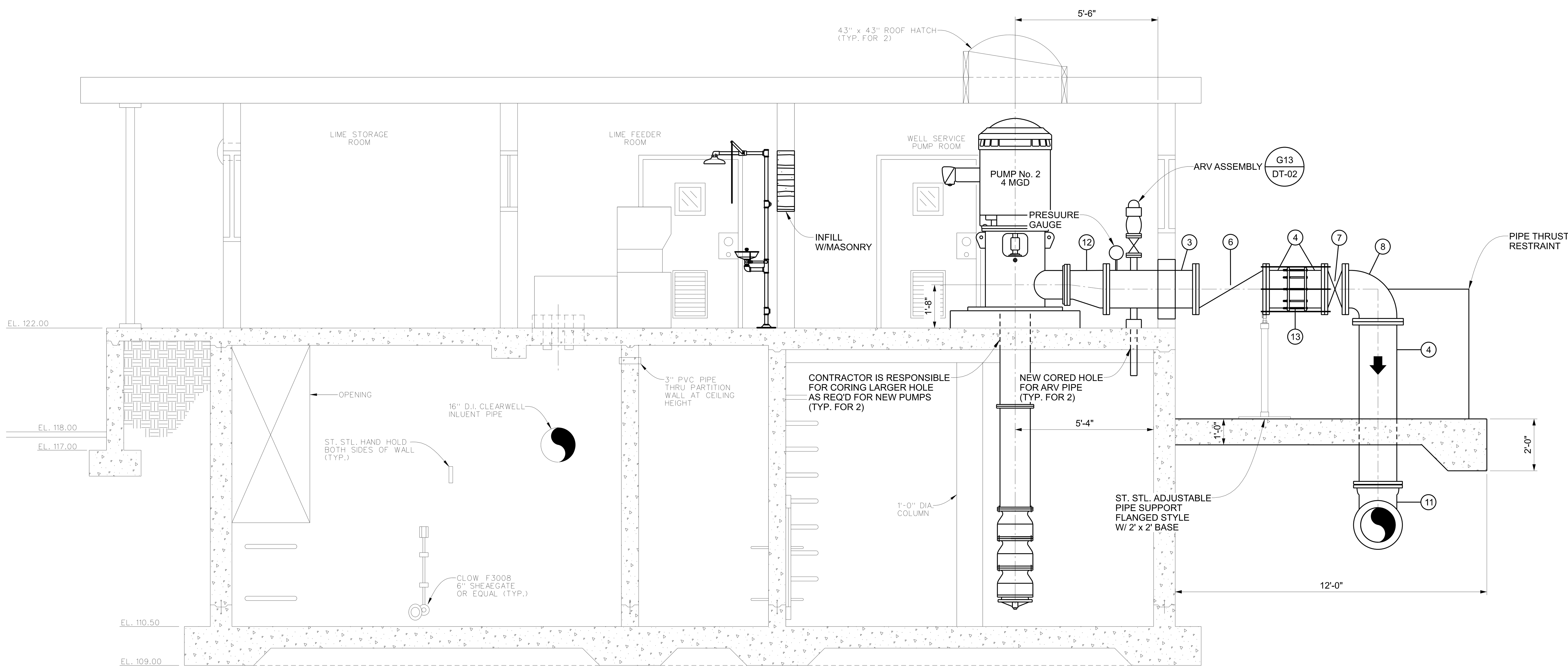


G1 SECTION 3/8" = 1'-0"



A1 SECTION 3/8" = 1'-0"

FITTINGS LIST

1. RESERVED
2. RESERVED
3. 16" D.I. PIPE, FLG-FLG W/3" WELDED BOSS
4. 16" D.I PIPE, FLG-PE
5. 16" D.I. PIPE, PE-PE
6. 16" D.I. CHECK VALVE, FLG-FLG
7. 16" D.I. BUTTERFLY VALVE, FLG-FLG
8. 16" D.I. 90° BEND, FLG-FLG
9. 16" D.I. 90° BEND, RJ-RJ
10. RESERVED
11. 16" x 16" D.I. TEE, ALL RJ
12. 16 x 12" D.I. ECCENTRIC REDUCER, FLG-FLG
13. 16" D.I. MECHANICAL COUPLING

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

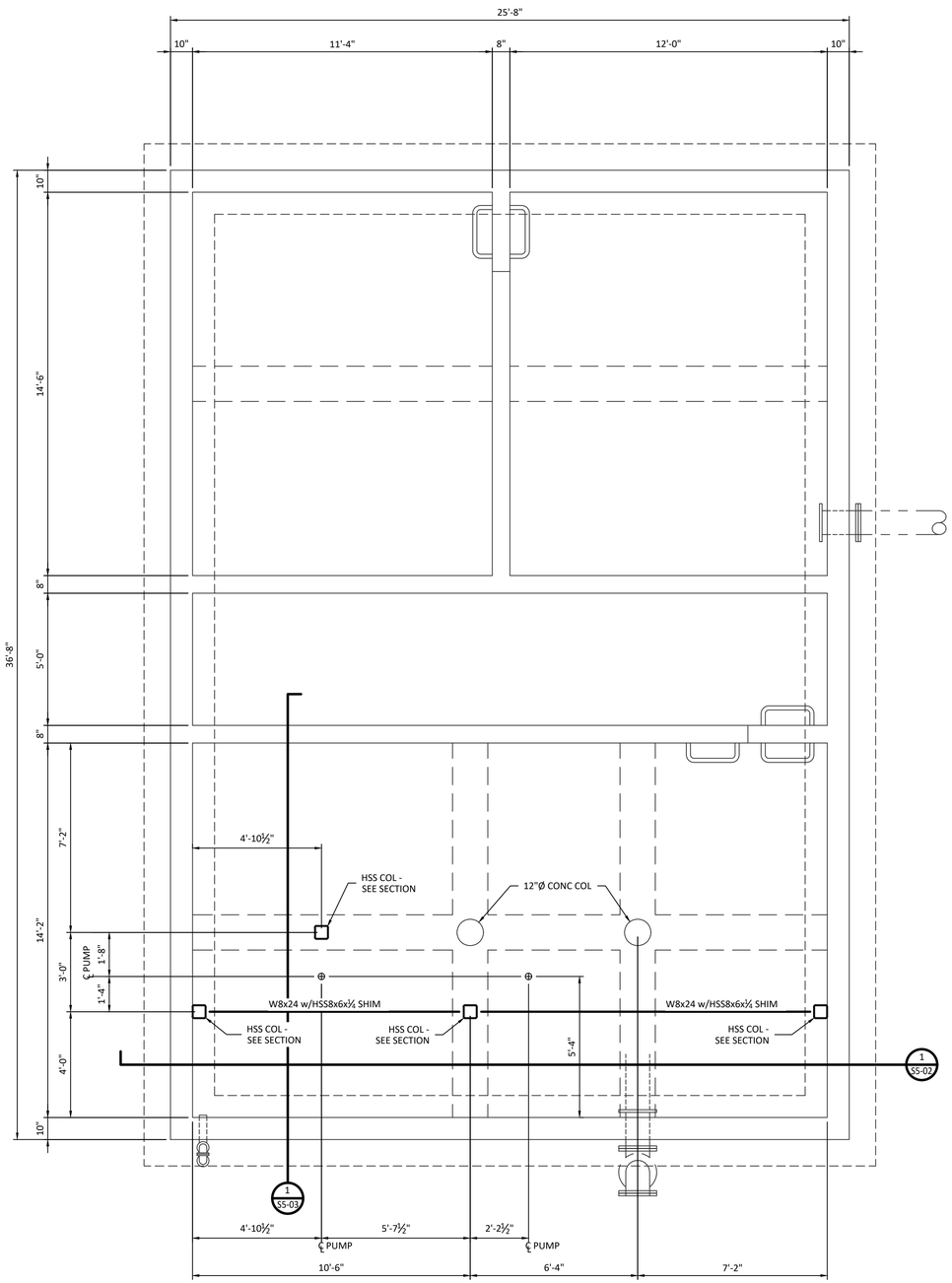
Designed: ADM	Project No. 23040.3
Drawn: CLM	
Checked: CLL	

Revisions

No.	Date	Description

Sheet Title: EX. TREATMENT BUILDING MODIFICATIONS SECTIONS

Issue Date: DEC., 2023
Sequence: 12 of 37
Sheet No.: C5-04



EX. TREATMENT BUILDING LOWER STRUCTURAL PLAN

3/8" = 1'-0"

NOTES:

1. FOR LOCATION AND ORIENTATION OF PLAN SEE CIVIL DWGS.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING DIMENSIONS, ELEVATIONS, AND FRAMING CONDITIONS PRIOR TO FABRICATION AND CONSTRUCTION. NOTIFY THE ENGINEER IF ANY DISCREPANCIES ARE NOTED.

KREBS ENGINEERING

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 27512 SCOTT J. DOLLAR
12/08/23

MK STRUCTURAL ENGINEERING
1490 NORTHBANK PARKWAY - SUITE 272 - TUSCALOOSA - AL - 35406
WWW.MAKEGR.COM - (205) 469-7912
MAK Project - 23.024

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed SJD	Project No. 23040.3
Drawn MAK	
Checked SJD	

Revisions

No.	Date	Description

Sheet Title: EX. TREATMENT BUILDING LOWER STRUCTURAL PLAN

Issue Date	Sheet No.
DEC., 2023	S5-01
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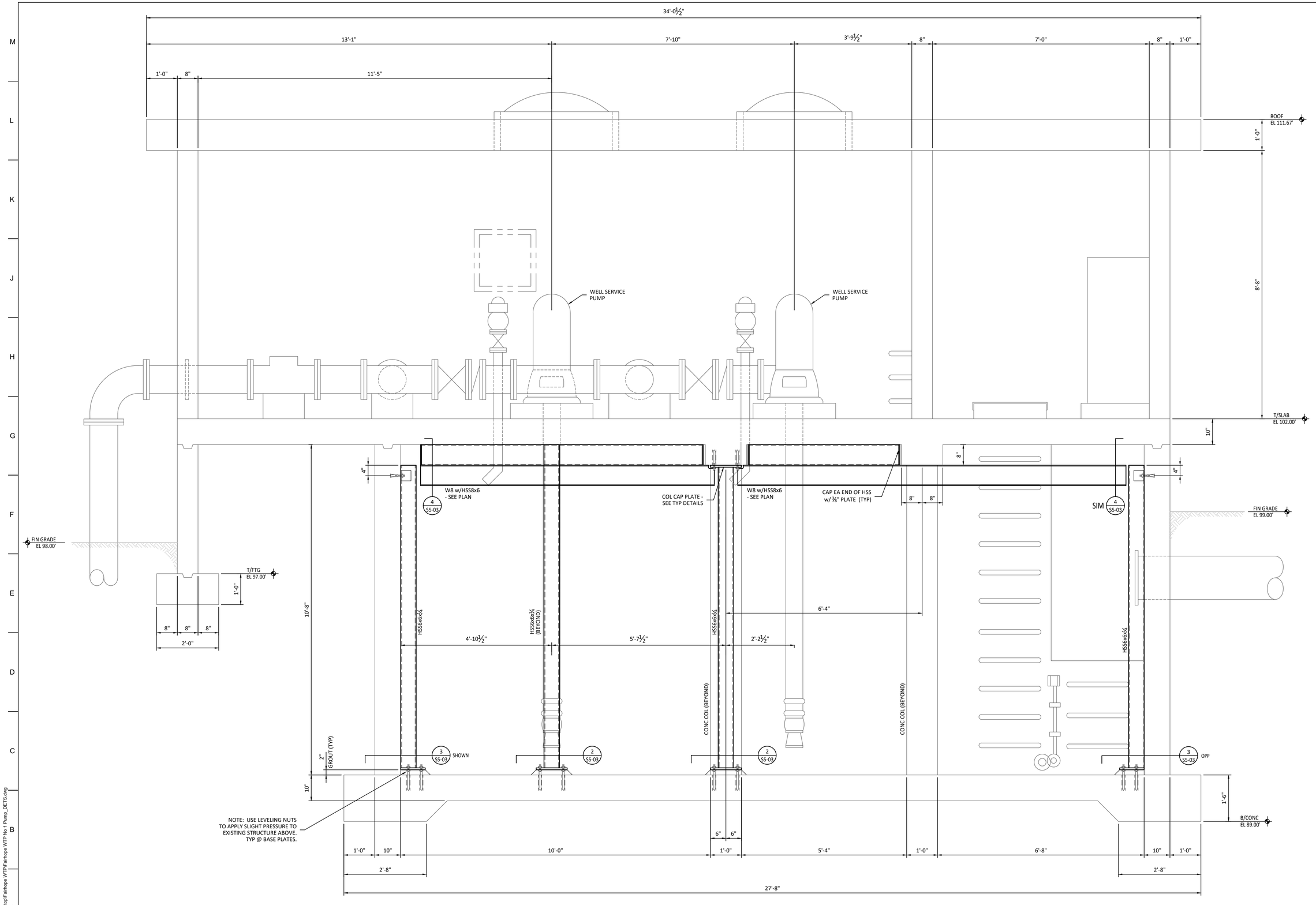

1 SECTION
S5-02 3/4"=1'-0"

KREBS ENGINEERING

ALABAMA LICENSED PROFESSIONAL ENGINEER SCOTT J. DOLLAR No. 27512
Scott J. Dollar
12/08/23

MK STRUCTURAL ENGINEERING
1490 NORTHBANK PARKWAY - SUITE 272 - TUSCALOOSA - AL - 35406
WWW.MAKEGR.COM - (205) 469-7912
MAK Project - 23.024

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed: SJD	Project No.: 23040.3
Drawn: MAK	
Checked: SJD	

Revisions

No.	Date	Description

Sheet Title
EX. TREATMENT BUILDING STRUCTURAL SECTIONS

Issue Date: DEC., 2023
Sheet No.: S5-02
Sequence: 14 of 37

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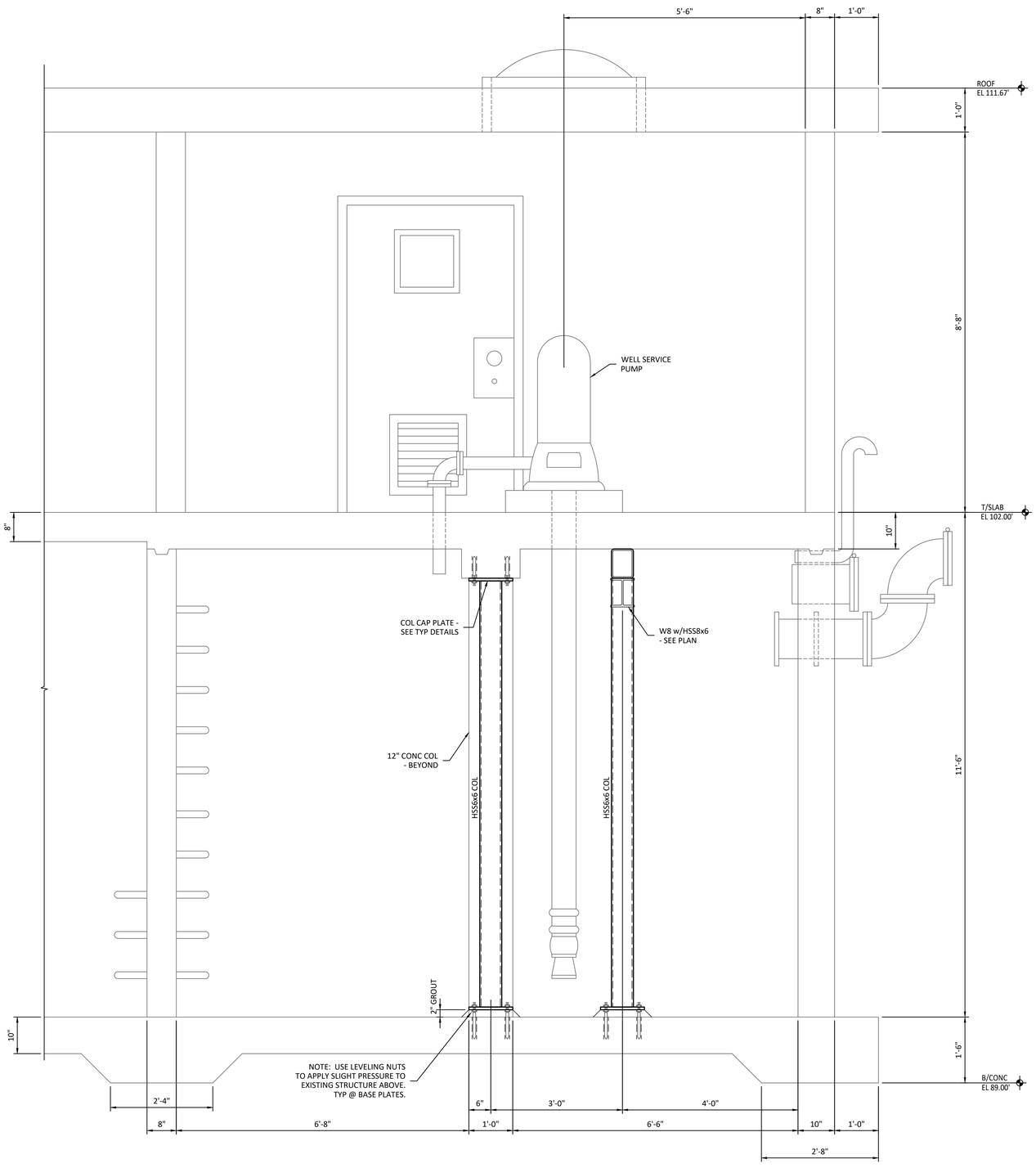
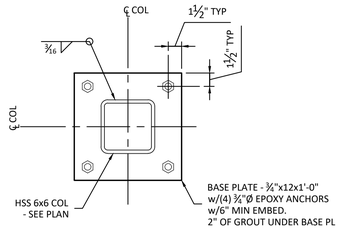
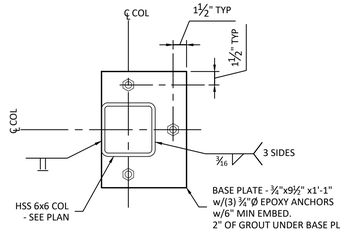


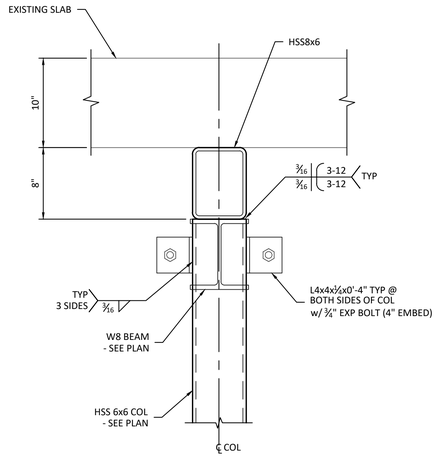
1 SECTION
S5-03 3/4"=1'-0"



2 SECTION
S5-03 1 1/2"=1'-0"



3 SECTION
S5-03 1 1/2"=1'-0"



4 SECTION
S5-03 1 1/2"=1'-0"

KREBS ENGINEERING

ALABAMA LICENSED No. 27512 PROFESSIONAL ENGINEER SCOTT J. DOLLAR
12/08/23

MK STRUCTURAL ENGINEERING
1490 NORTHBANK PARKWAY - SUITE 272 - TUSCALOOSA - AL - 35406
WWW.MAKEGR.COM - (205) 469-7912
MAK Project - 23.024

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed SJD	Project No. 23040.3
Drawn MAK	
Checked SJD	

Revisions

No.	Date	Description

Sheet Title
EX. TREATMENT BUILDING STRUCTURAL SECTIONS

Issue Date	Sheet No.
DEC., 2023	S5-03
Sequence 15 of 37	

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DUCTLESS INDOOR UNIT SCHEDULE

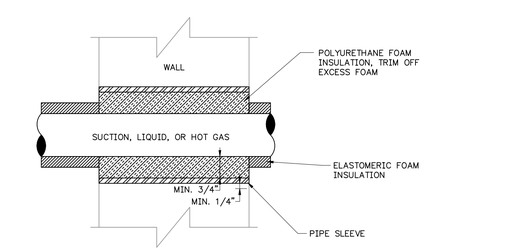
EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	SERVICE	CFM	OA CFM	COOLING CAPACITY (MBH)	HEATING CAPACITY AT 47°F (MBH)	MOUNTING	ELECTRICAL					WEIGHT (LBS)	REMARKS
								DISCONNECT	MOTOR STARTER	MCA	MOCP	VOLTS/PH./HZ.		
IHP-1	TRANE TPKA0A0361KA70A	PUMP ROOM	920	--	36	38	WALL	BY DIV. 26	INTEGRAL	1	--	208/1/60	50	1), 2), 3)
IHP-2	TRANE TPKA0A0361KA70A	PUMP ROOM	920	--	36	38	WALL	BY DIV. 26	INTEGRAL	1	--	208/1/60	50	1), 2), 3)

REMARKS:
1) POWER FOR THIS UNIT IS PROVIDED FROM OUTDOOR UNIT
2) PROVIDE WITH WIRED THERMOSTAT
3) PROVDIE WITH INTEGRAL CONDENSATE PUMP

DUCTLESS OUTDOOR UNIT SCHEDULE

EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	SERVICE	NOMINAL COOLING CAPACITY (TONS)	NOMINAL HEATING CAPACITY (BTUH)	ELECTRICAL				VIBRATION ISOLATION			SEER	HSPF	WEIGHT (LBS)	REMARKS
					DISCONNECT	MCA	MOCP	VOLTS/PH./HZ.	TYPE	DEFL. (IN.)	BASE				
OHP-1	TRANE TRUZA0361KA70	IHP-1	3	38	BY DIV. 26	25	31	208/1/60	--	--	--	19.4	8.4	215	1), 2), 3), 4)
OHP-2	TRANE TRUZA0361KA70	IHP-2	3	38	BY DIV. 26	25	31	208/1/60	--	--	--	19.4	8.4	215	1), 2), 3), 4)

REMARKS:
1) POWER FOR INDOOR UNIT IS PROVIDED FROM THIS UNIT
2) COORDINATE EXACT LOCATION WITH ALL OTHER TRADES
3) PROVIDE WIND BAFFLES FOR LOW AMBIENT OPERATION
4) PROVIDE WITH WALL MOUNTING BRACKET



1 M101 EQUIPMENT NAMEPLATE DETAIL
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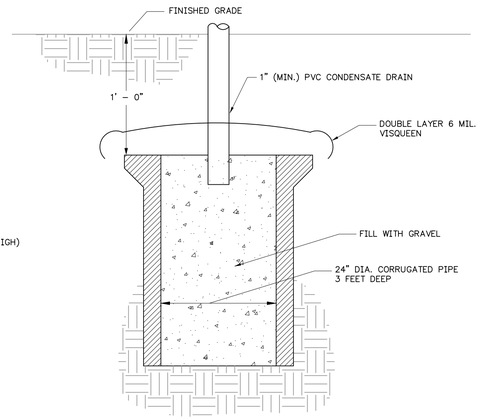

2 M101 CONDENSATE DISPOSAL WELL DETAIL
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3 M101 WALL PENETRATION DETAIL
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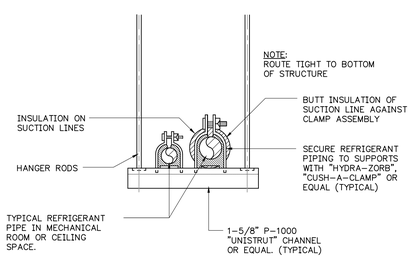

4 M101 REFRIGERANT PIPING SUPPORT DETAIL
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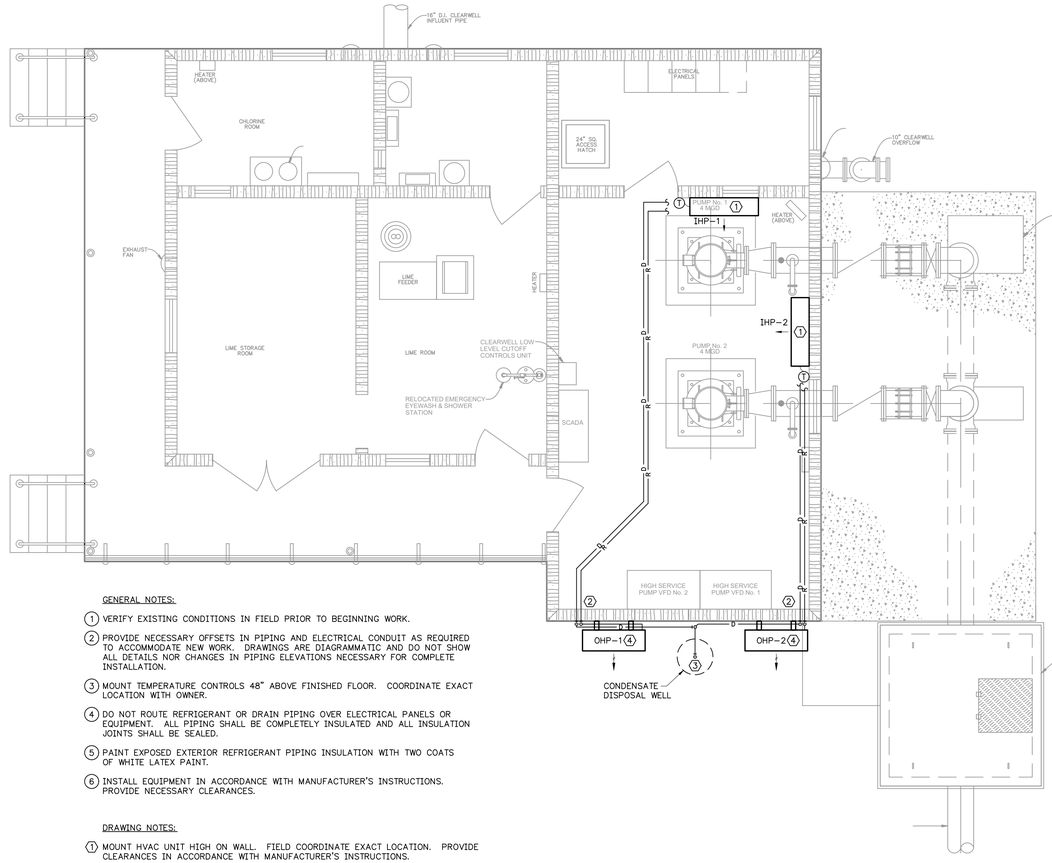

GENERAL NOTES:

1. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO BEGINNING WORK.
2. PROVIDE NECESSARY OFFSETS IN PIPING AND ELECTRICAL CONDUIT AS REQUIRED TO ACCOMMODATE NEW WORK. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS NOR CHANGES IN PIPING ELEVATIONS NECESSARY FOR COMPLETE INSTALLATION.
3. MOUNT TEMPERATURE CONTROLS 48" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH OWNER.
4. DO NOT ROUTE REFRIGERANT OR DRAIN PIPING OVER ELECTRICAL PANELS OR EQUIPMENT. ALL PIPING SHALL BE COMPLETELY INSULATED AND ALL INSULATION JOINTS SHALL BE SEALED.
5. PAINT EXPOSED EXTERIOR REFRIGERANT PIPING INSULATION WITH TWO COATS OF WHITE LATEX PAINT.
6. INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PROVIDE NECESSARY CLEARANCES.

DRAWING NOTES:

1. MOUNT HVAC UNIT HIGH ON WALL. FIELD COORDINATE EXACT LOCATION. PROVIDE CLEARANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. ROUTE CONDENSATE AND REFRIGERANT PIPING THROUGH EXTERIOR WALL. TERMINATE REFRIGERANT PIPING TO OUTDOOR UNITS. SEAL PIPING PENETRATIONS THROUGH WALL WEATHERTIGHT.
3. TERMINATE CONDENSATE DRAIN PIPING TO DISPOSAL WELL. REFER TO DETAIL.
4. MOUNT OUTDOOR UNIT ON WALL USING MANUFACTURER'S SUPPORT BRACKET. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

A8 MECHANICAL PLAN 1/4" = 1'-0"

KREBS ENGINEERING

ALABAMA REGISTERED PROFESSIONAL ENGINEER No. 24075 JAMES M HOGLAND
12/8/23

Pinnacle ENGINEERING, INC
Engineering & Design Consultants
2111 Parkway Office Circle, Suite 125
Birmingham, AL 35244
(205) 733-6912 FAX: (205) 733-6913
Job No.: 23289 File: 23289M01

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	Project No.
JMH	23040.3
Drawn: JMH	
Checked: JMH	

Revisions

No.	Date	Description

Sheet Title: EX. TREATMENT BUILDING MECHANICAL PLAN

Issue Date	Sheet No.
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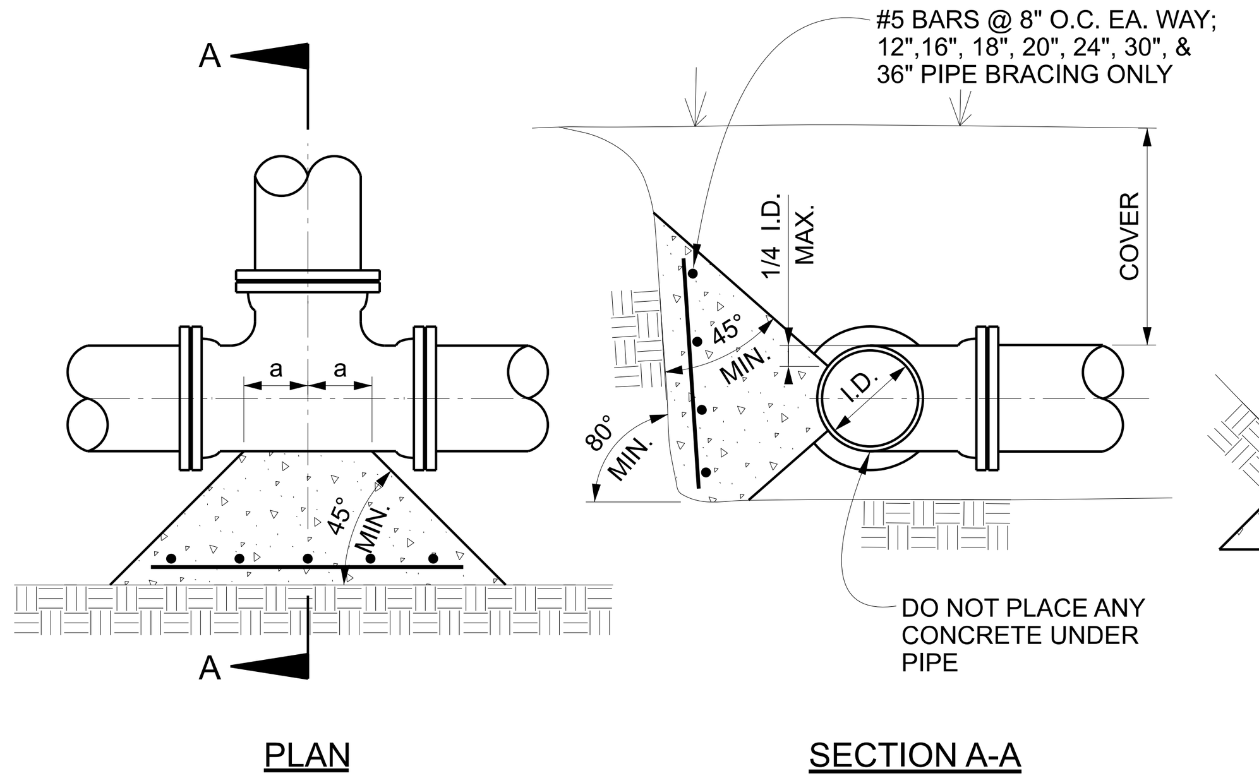
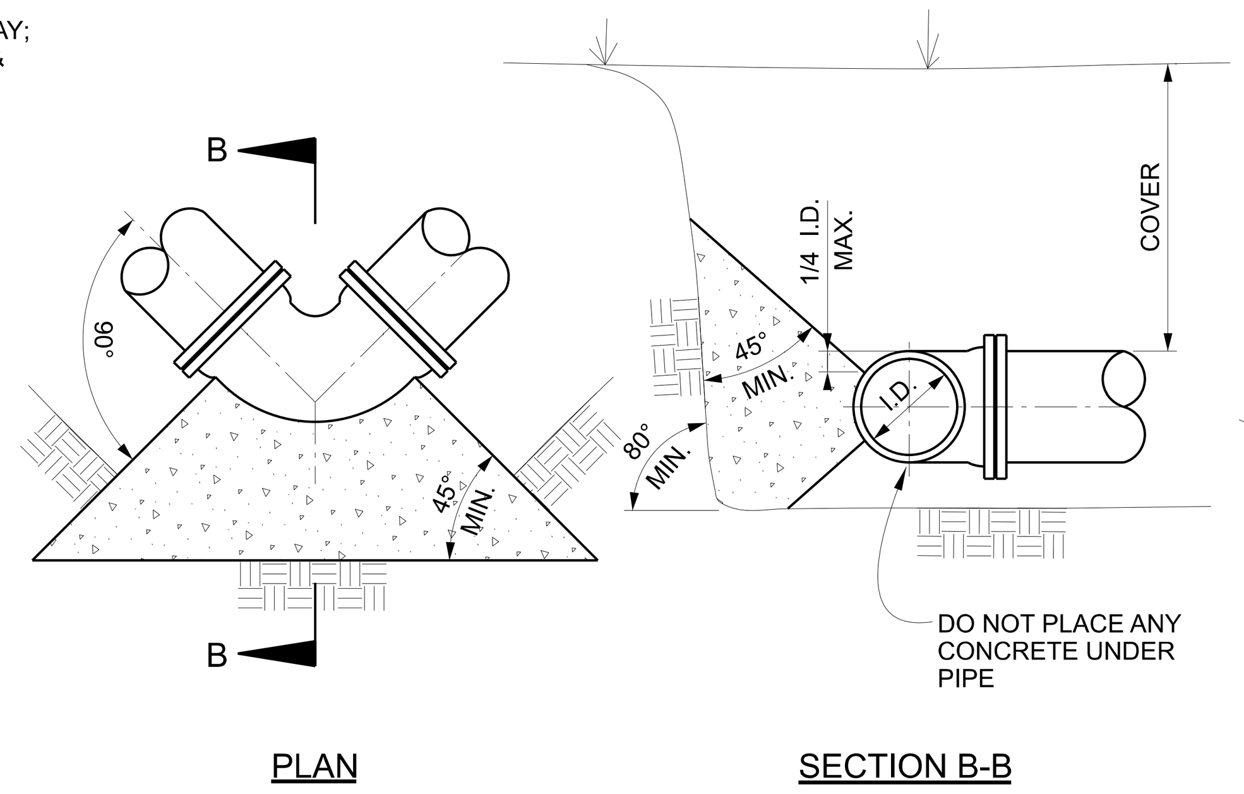


NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR TEES

PIPE DIA.	a	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	2
6"	6"	3'-0"	2	3
8"	7"	3'-0"	4	6
10"	9"	3'-0"	5	8
12"	10"	5'-0"	7	12
14"	1'-0"	5'-0"	10	16
16"	1'-1"	5'-0"	13	21
18"	1'-2"	5'-0"	16	26
20"	1'-4"	5'-0"	19	32
24"	1'-8"	5'-0"	28	46
30"	1'-11"	5'-0"	43	71
36"	2'-2"	5'-0"	62	102
42"	2'-4"	5'-0"	84	139
48"	2'-7"	5'-0"	109	181

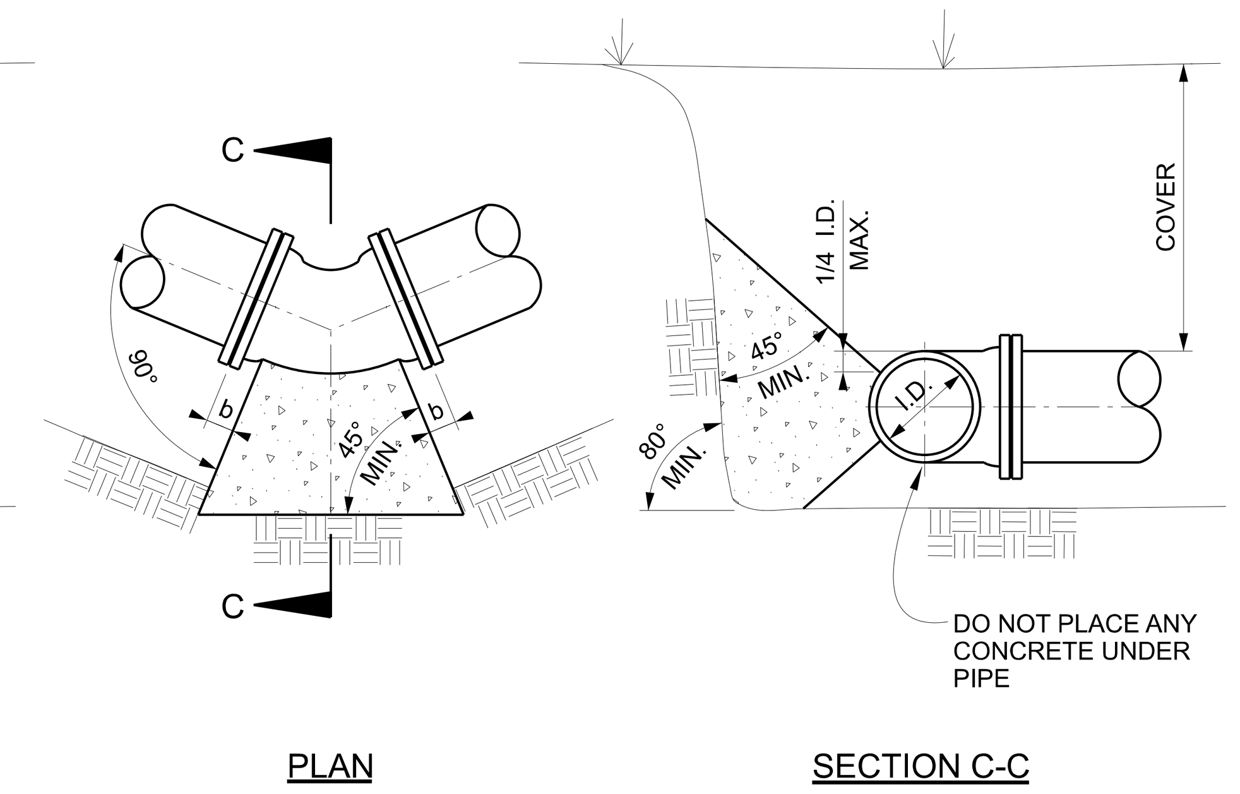


NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 90° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	2	2
6"	5"	3'-0"	3	4
8"	5"	3'-0"	5	8
10"	5"	3'-0"	7	12
12"	6"	5'-0"	10	16
14"	6"	5'-0"	14	22
16"	6"	5'-0"	18	29
18"	6"	5'-0"	22	36
20"	6"	5'-0"	27	45
24"	7"	5'-0"	39	64
30"	8"	5'-0"	60	100
36"	8"	5'-0"	87	144
42"	9"	5'-0"	118	196
48"	9"	5'-0"	154	256

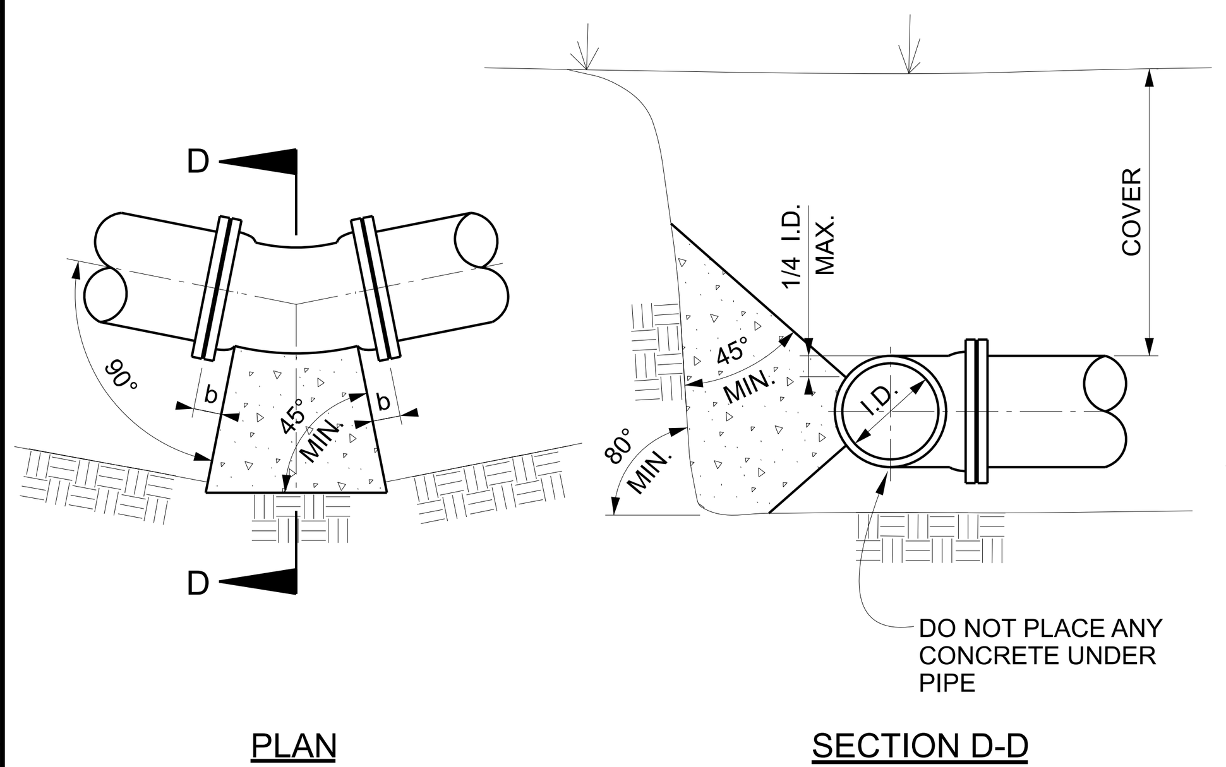


NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 45° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	2	3
8"	5"	3'-0"	3	4
10"	5"	3'-0"	4	7
12"	6"	5'-0"	6	9
14"	6"	5'-0"	8	12
16"	6"	5'-0"	10	16
18"	6"	5'-0"	12	20
20"	6"	5'-0"	15	25
24"	7"	5'-0"	21	35
30"	8"	5'-0"	33	55
36"	8"	5'-0"	47	78
42"	9"	5'-0"	64	107
48"	9"	5'-0"	84	139

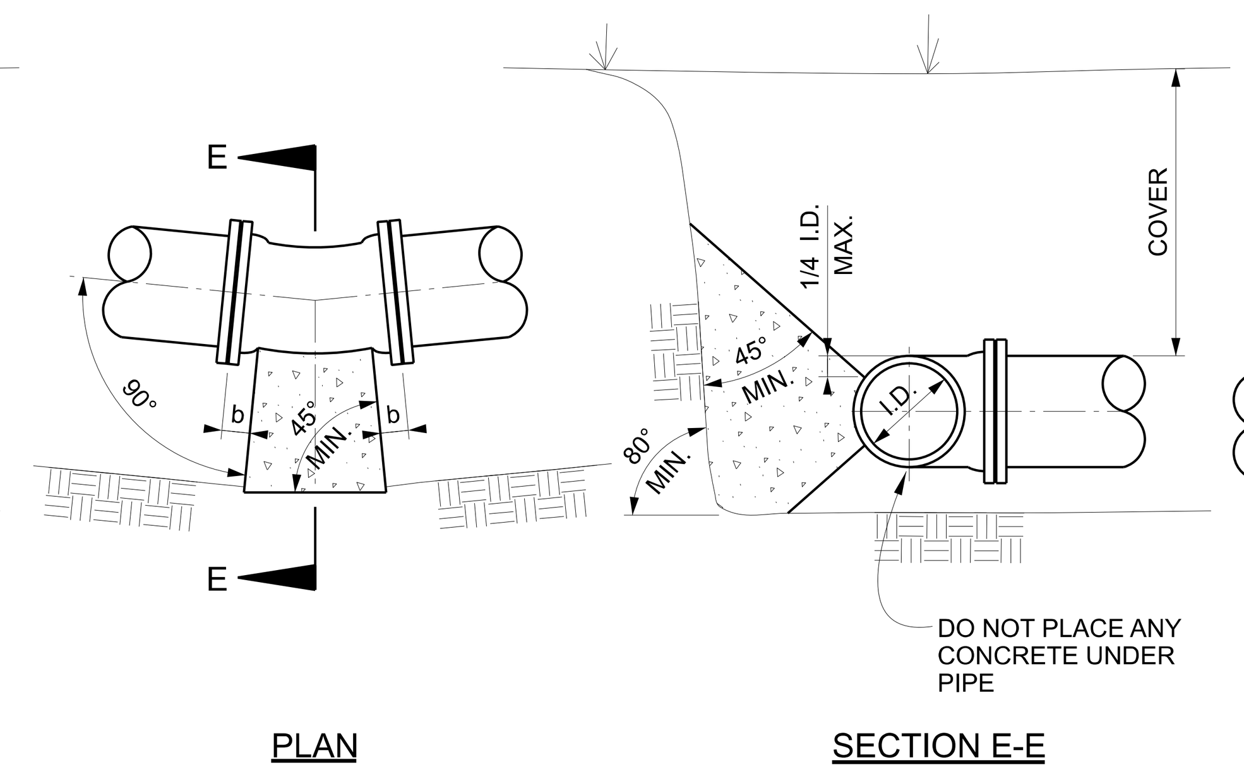


NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 22½° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	1	2
8"	5"	3'-0"	2	2
10"	5"	3'-0"	2	4
12"	6"	5'-0"	3	5
14"	6"	5'-0"	4	7
16"	6"	5'-0"	5	8
18"	6"	5'-0"	6	10
20"	6"	5'-0"	8	13
24"	7"	5'-0"	11	18
30"	8"	5'-0"	17	28
36"	8"	5'-0"	24	40
42"	9"	5'-0"	33	55
48"	9"	5'-0"	43	71

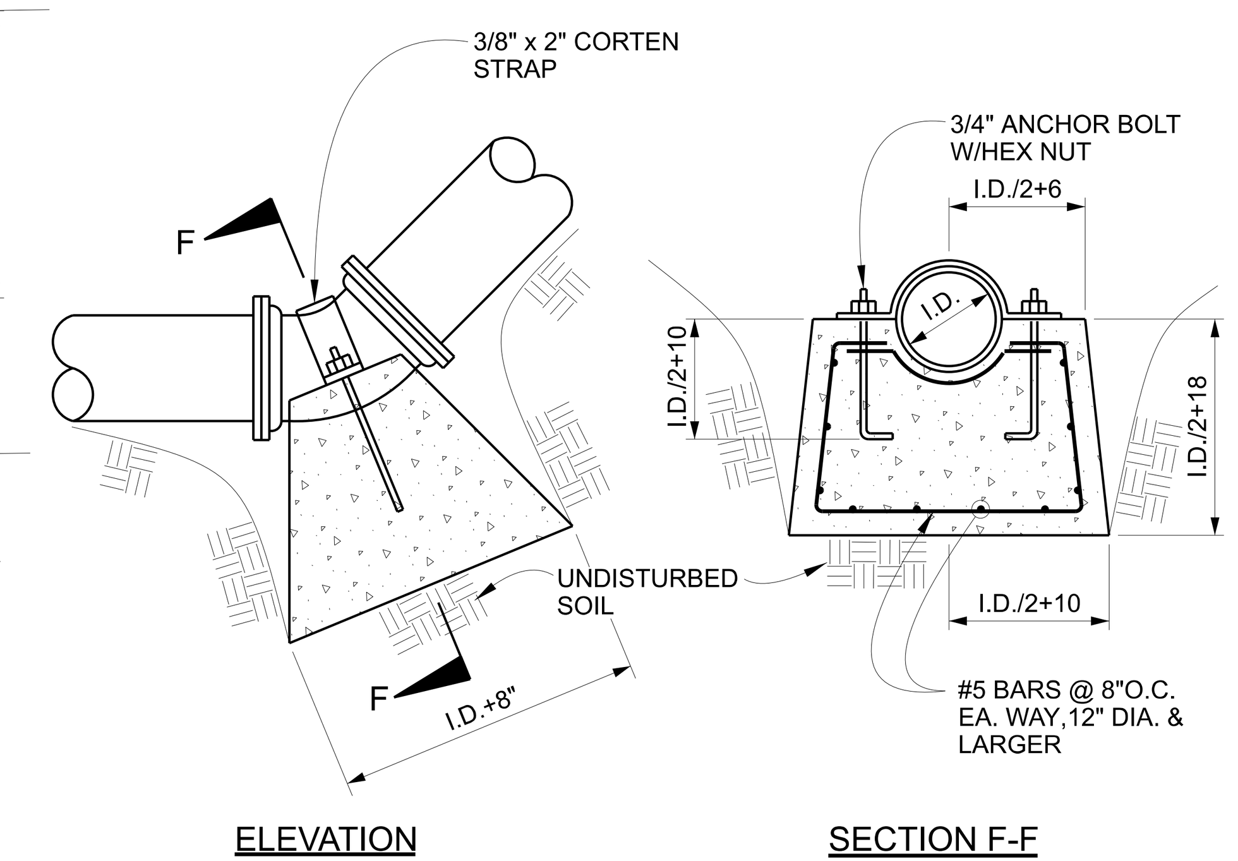


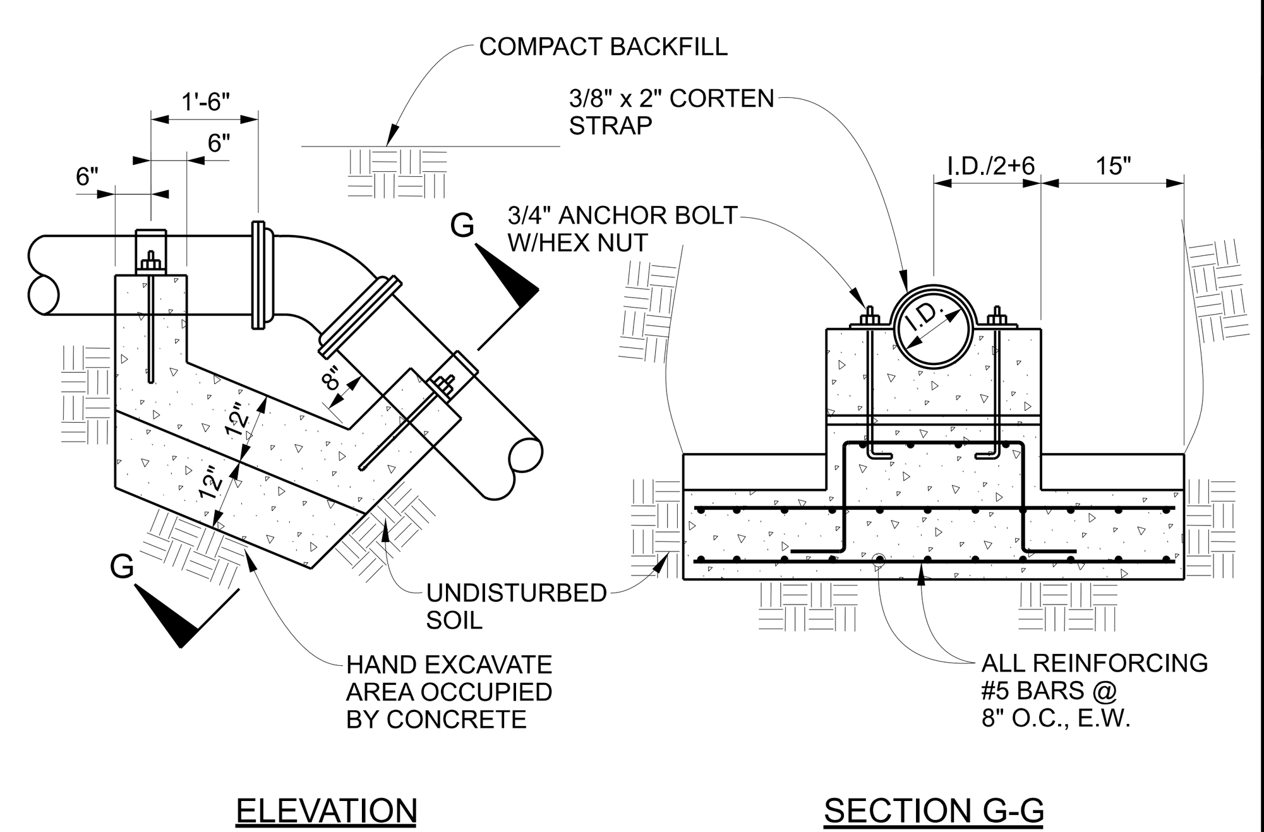
NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 11¼° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	1	1
8"	5"	3'-0"	1	1
10"	5"	3'-0"	1	2
12"	6"	5'-0"	2	3
14"	6"	5'-0"	2	4
16"	6"	5'-0"	3	4
18"	6"	5'-0"	3	5
20"	6"	5'-0"	4	7
24"	7"	5'-0"	6	9
30"	8"	5'-0"	9	14
36"	8"	5'-0"	12	20
42"	9"	5'-0"	17	28
48"	9"	5'-0"	22	36

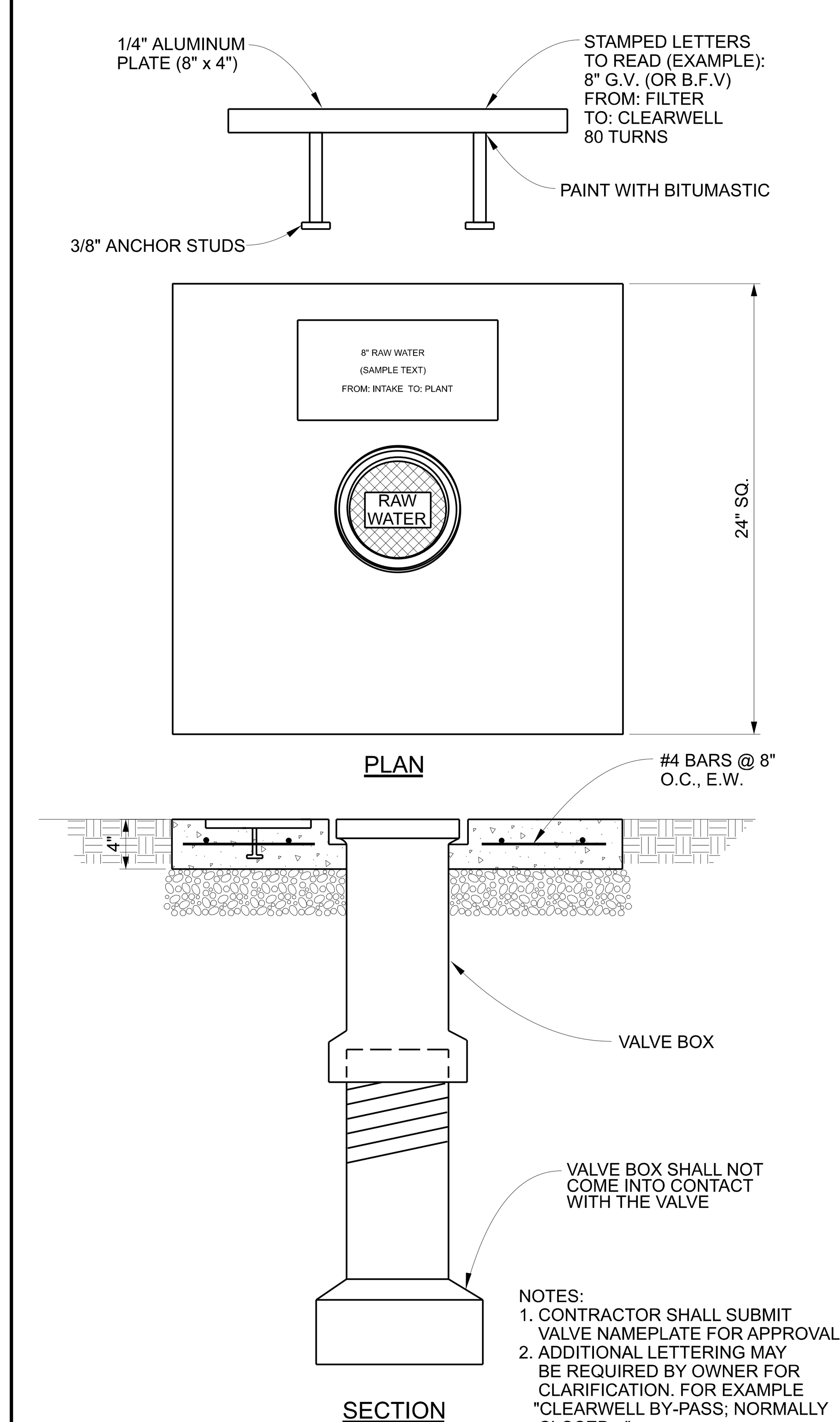




CONCRETE BRACING FOR VERTICAL BENDS

A1 STANDARD PIPE BRACING DETAILS

NO SCALE

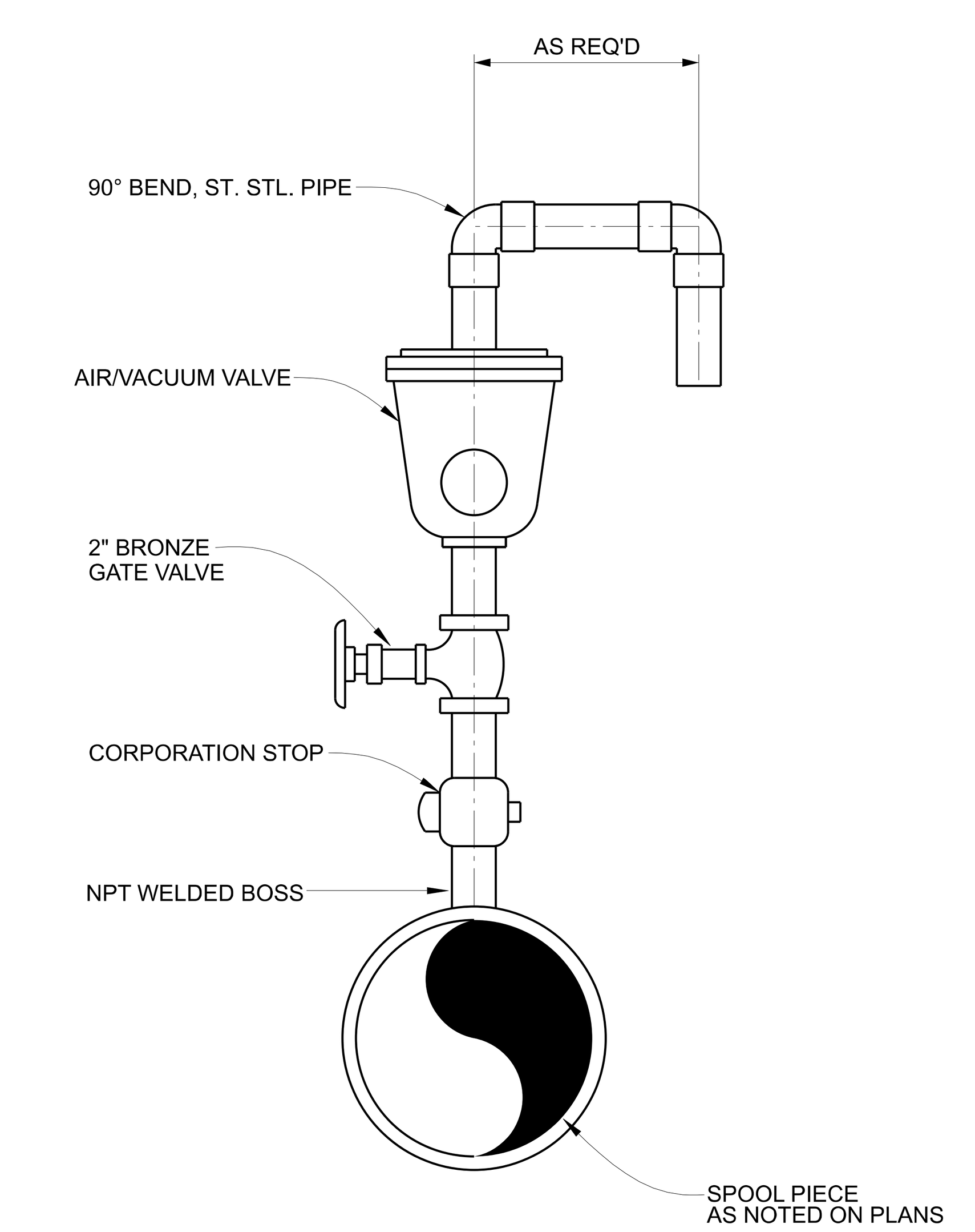


NOTES:
1. CONTRACTOR SHALL SUBMIT VALVE NAMEPLATE FOR APPROVAL
2. ADDITIONAL LETTERING MAY BE REQUIRED BY OWNER FOR CLARIFICATION. FOR EXAMPLE "CLEARWELL BY-PASS; NORMALLY CLOSED..."

G10 VALVE BOX DETAIL

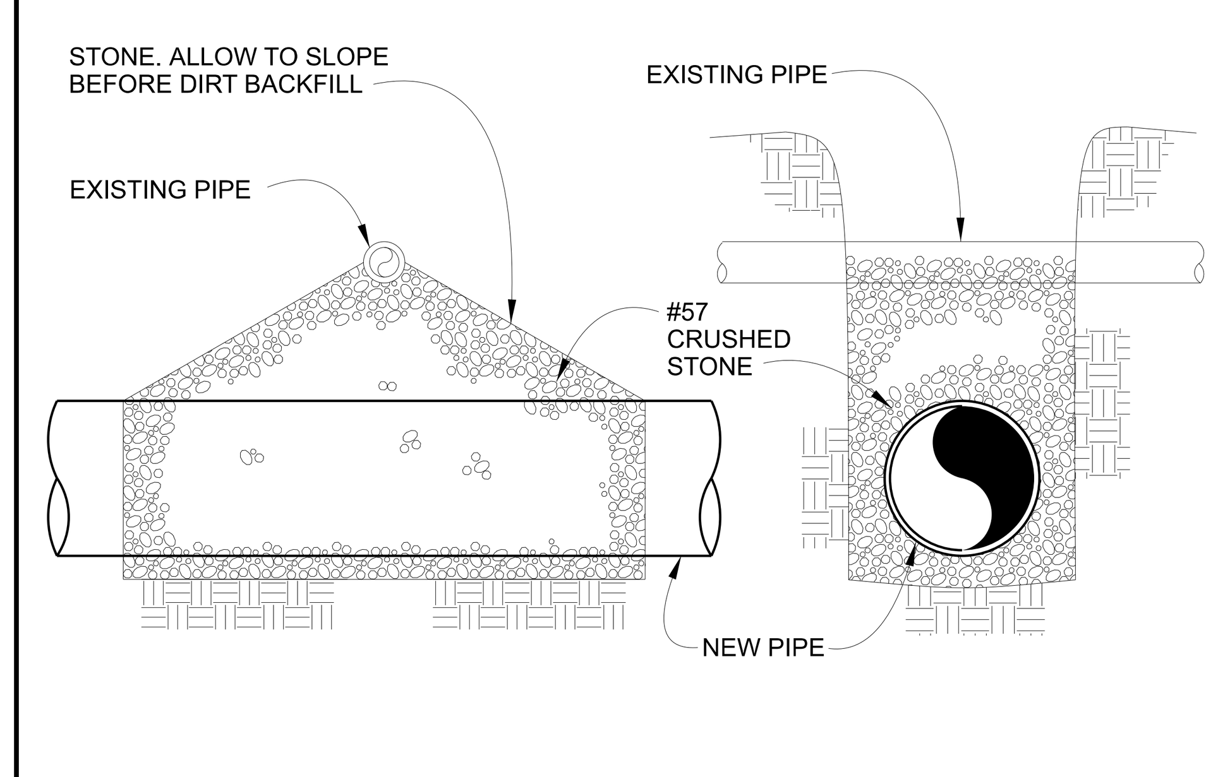
NO SCALE

NOTE: PIPE AND FITTINGS SHALL BE ST. STL. NPT. REFERENCE PLANS FOR PIPE AND FITTING SIZES.



NO SCALE

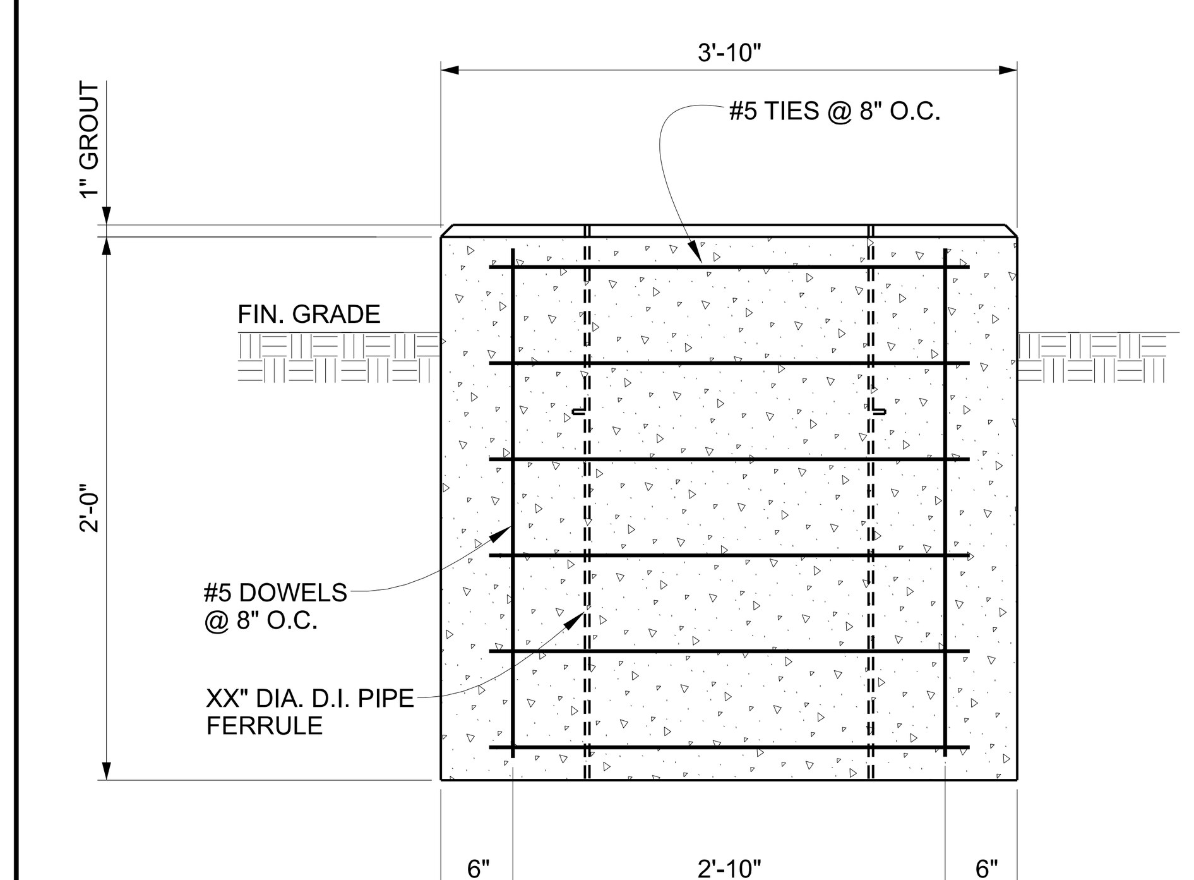
G13 WELL ARV & PIPING DETAIL



NOTE: WHERE NOT LOCATED UNDER PAVING.

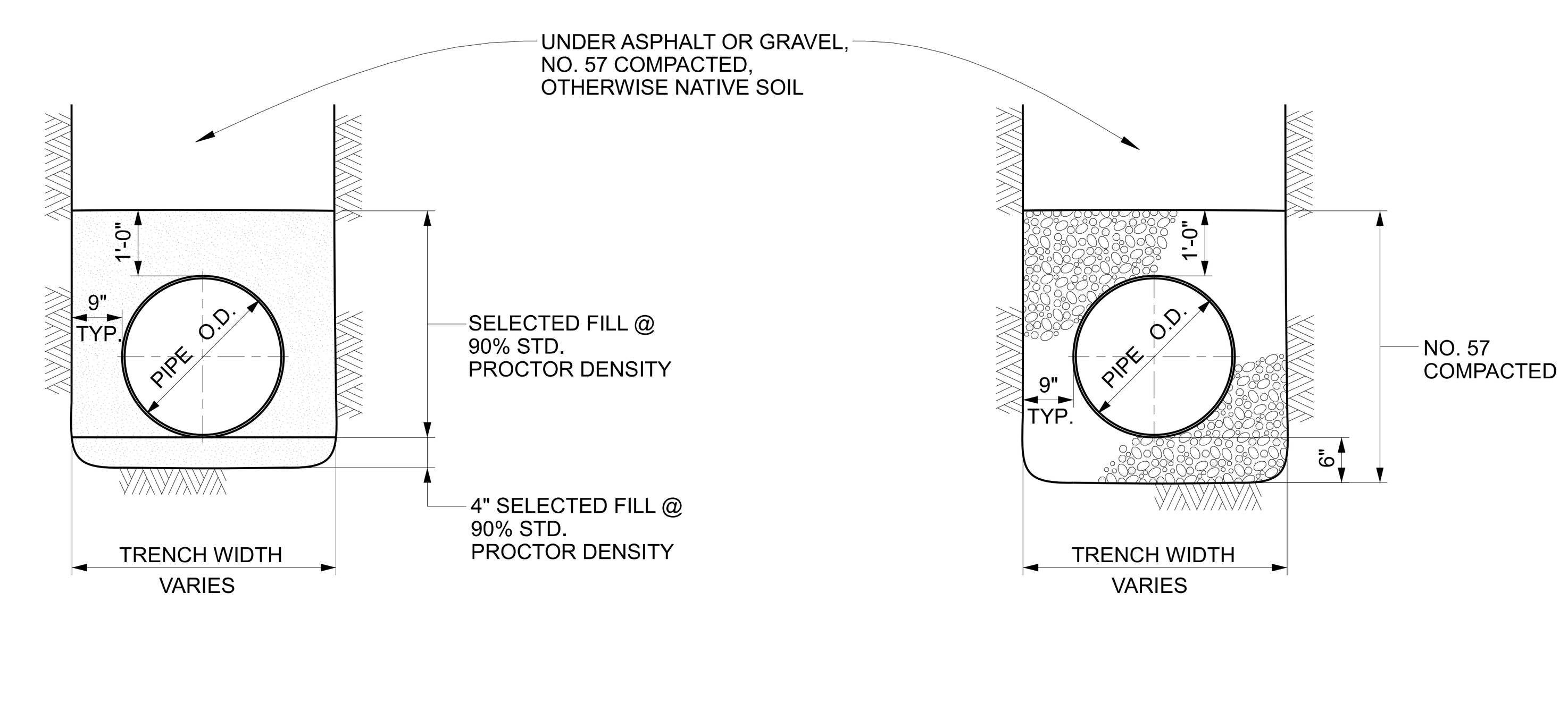
NO SCALE

D10 UTILITY CROSSING PROTECTION DETAIL



D13 WELL PUMP SUPPORT DETAIL

NO SCALE



A10 DUCTILE IRON PIPE BEDDING & BACKFILL DETAIL

NO SCALE

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

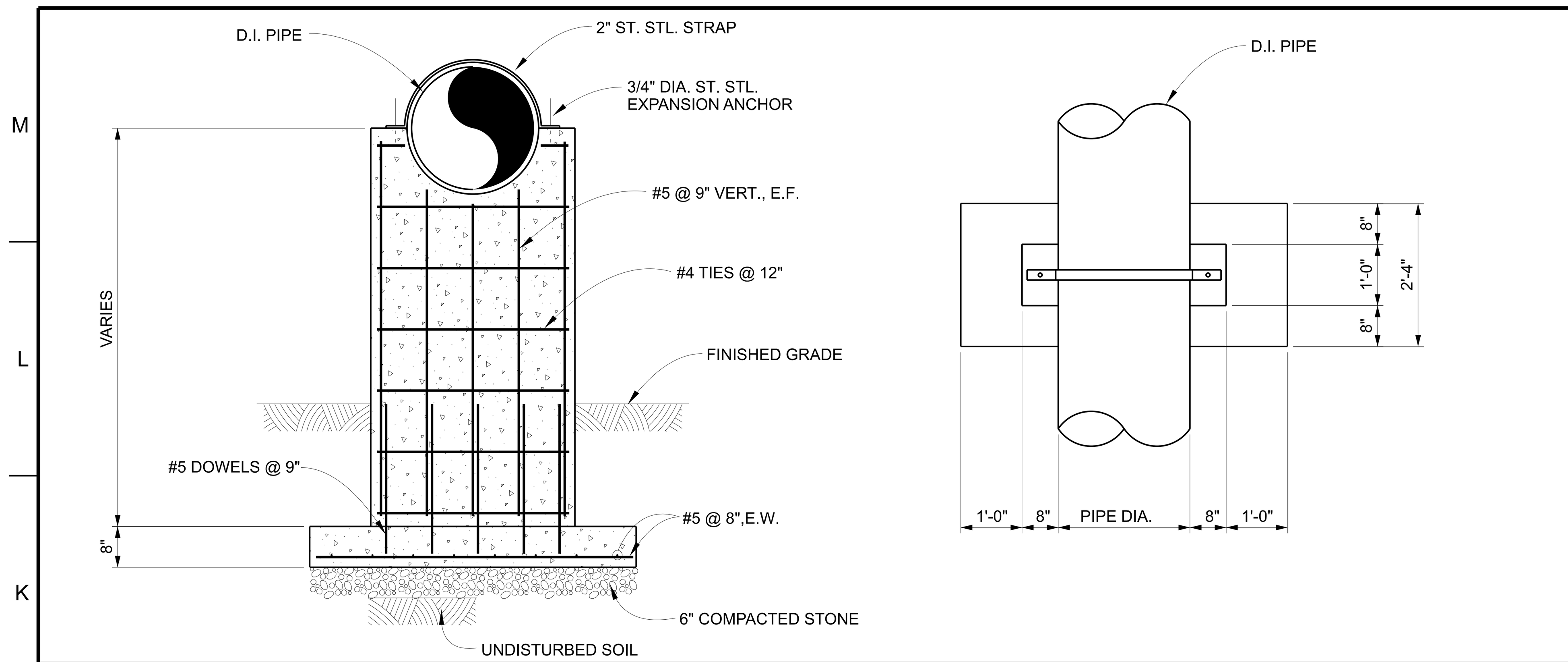
No.	Date	Description

Sheet Title: MISCELLANEOUS DETAILS

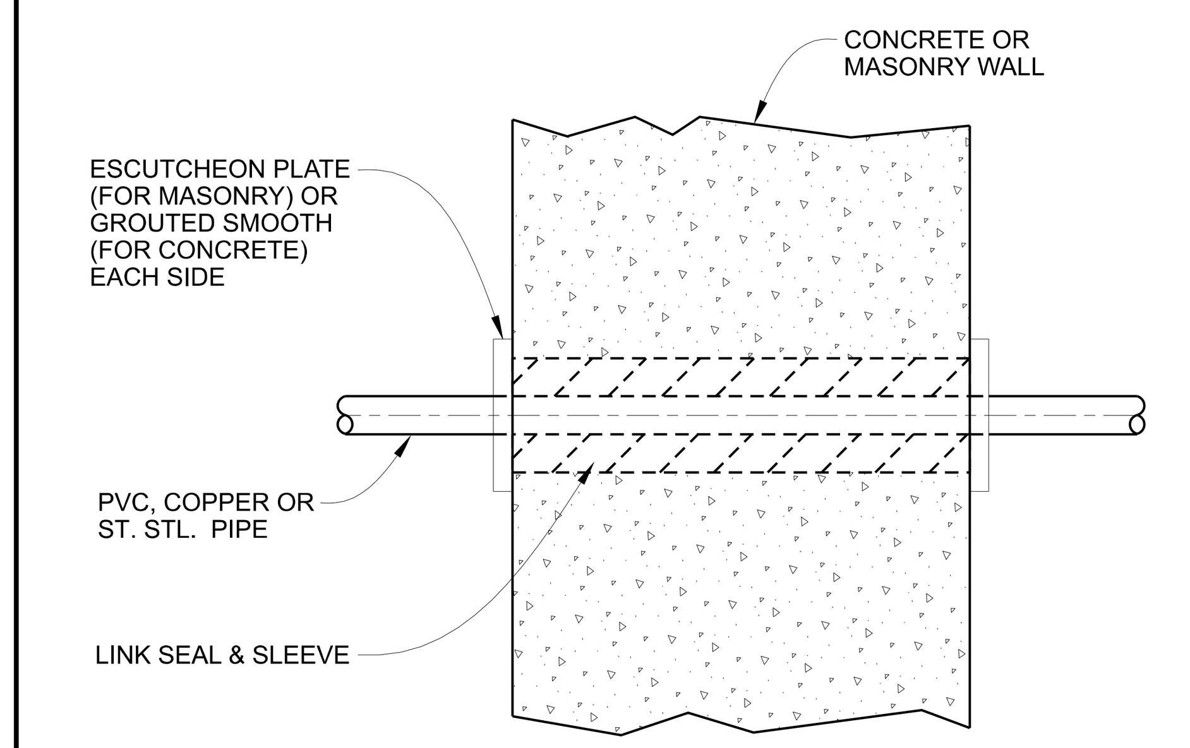
Issue Date: DEC., 2023

Sequence: 17 of 37

Sheet No.: DT-01

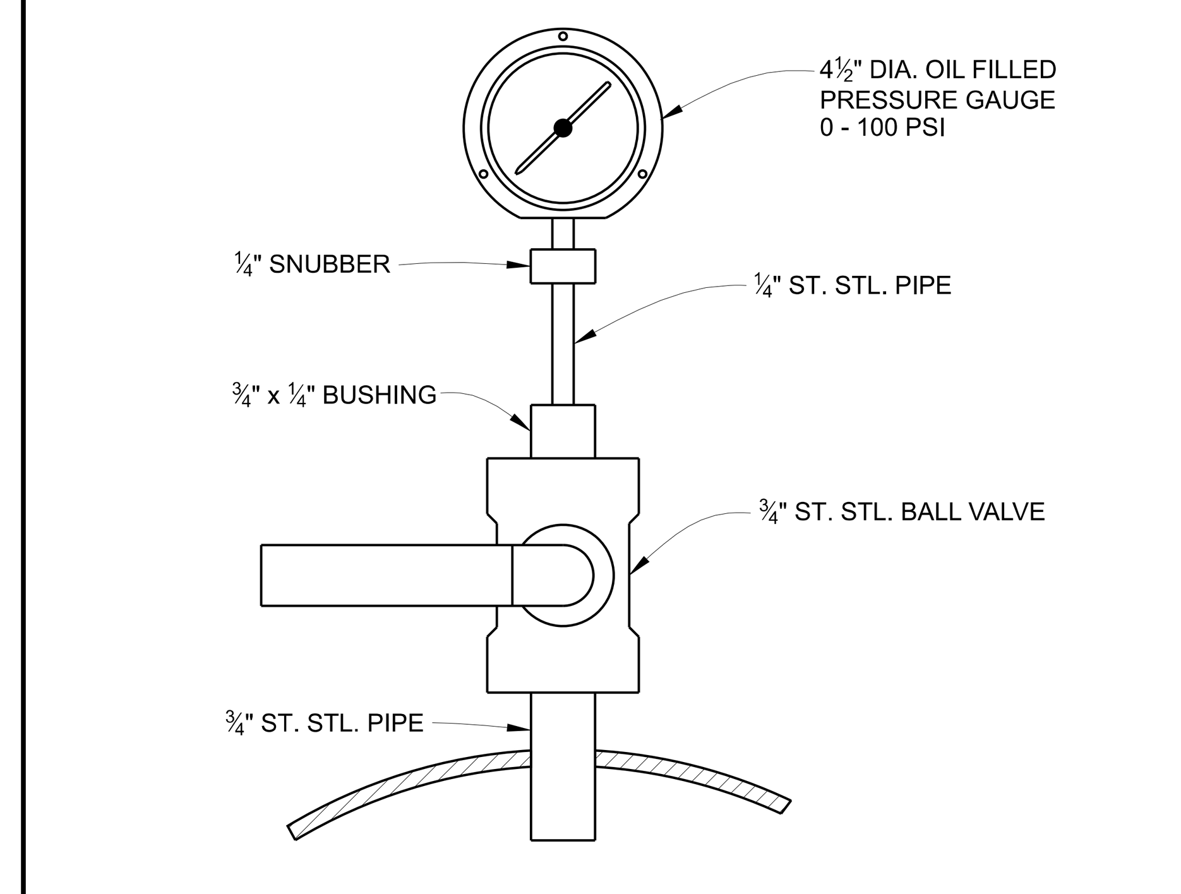


K1 CONCRETE PIPE SUPPORT DETAIL 1/2"=1'-0"



NO SCALE

K7 TYP. WALL PENETRATION (SM. DIA. PIPE)

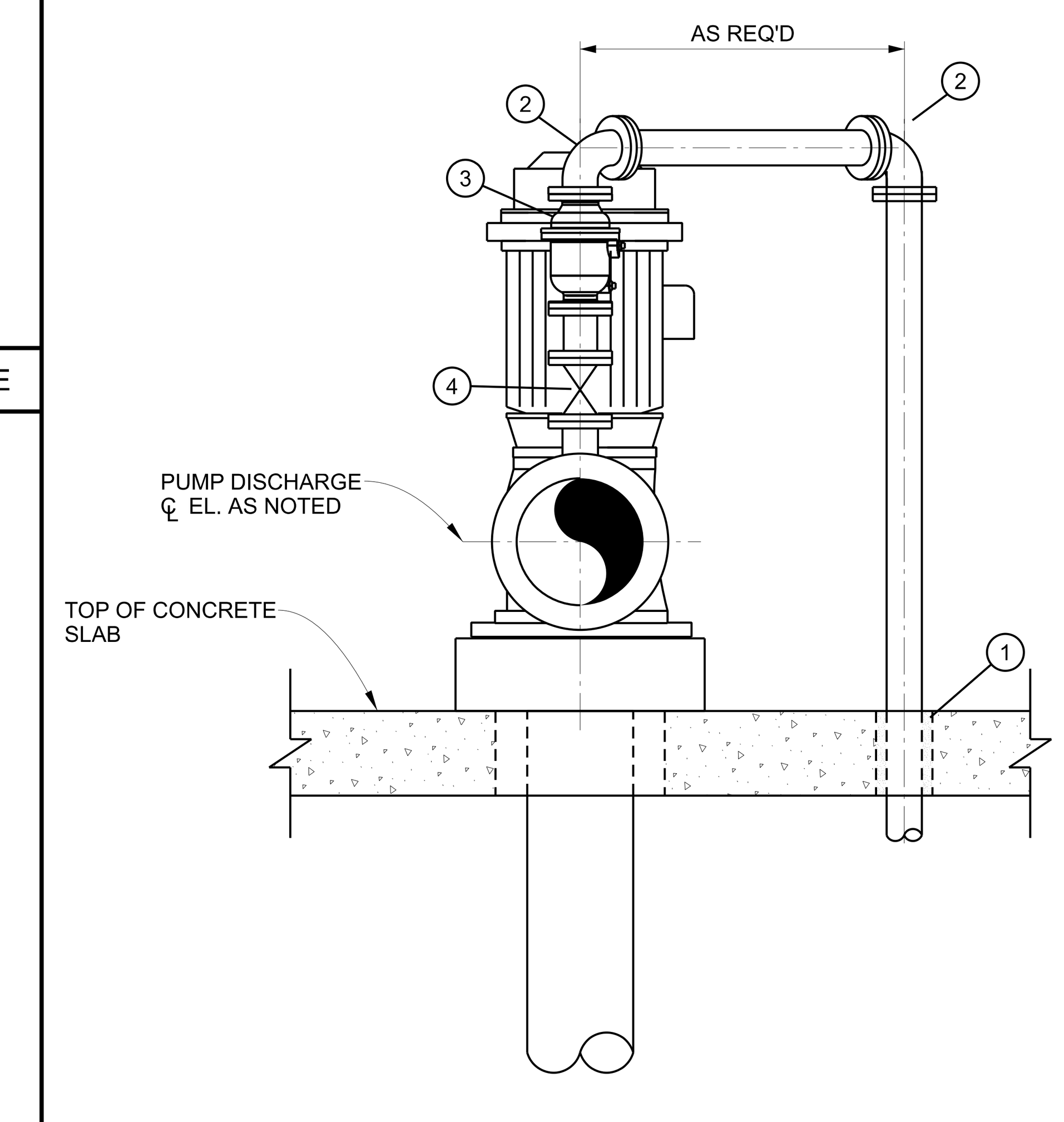


NOTE: ALL PIPE & FITTINGS THIS DETAIL TO BE STAINLESS STEEL, SIZE AS INDICATED.

K10 PRESSURE GAUGE ASSEMBLY NO SCALE

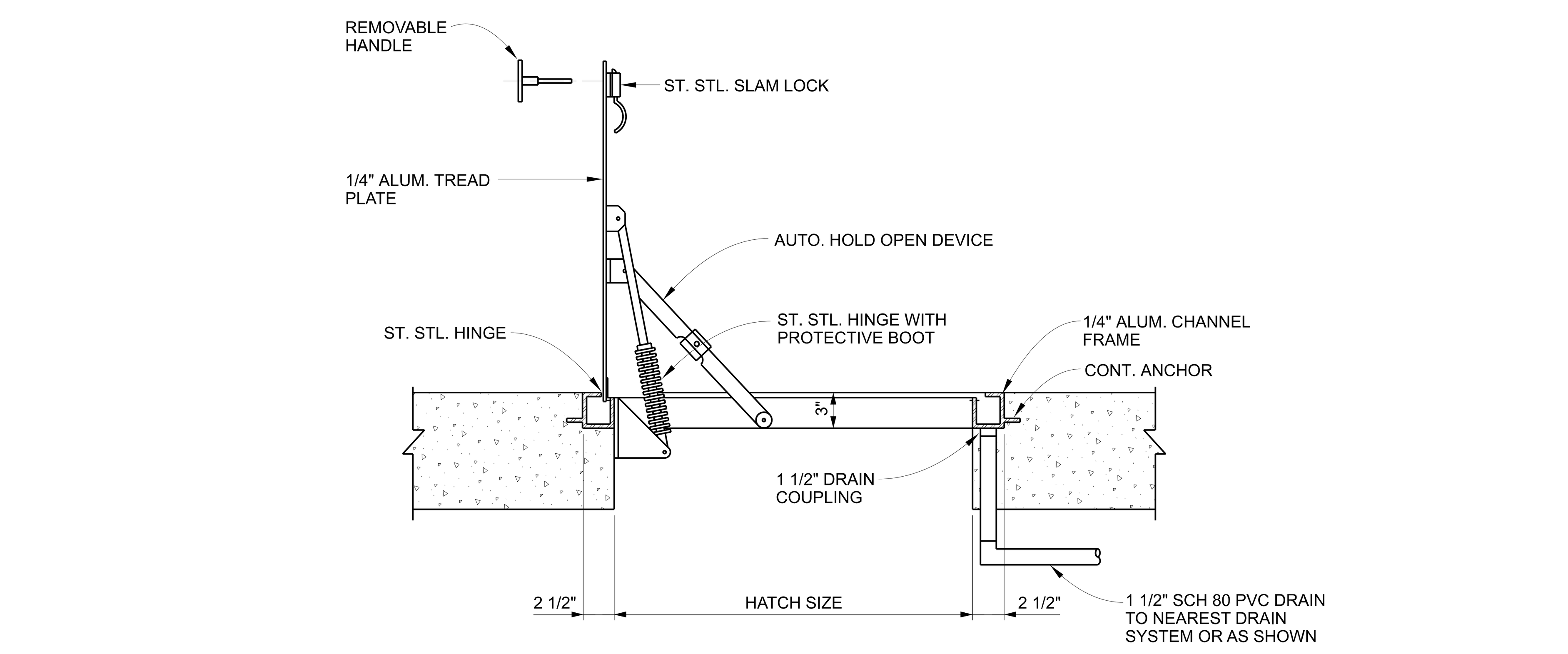
FITTINGS LIST

1. LINK SEAL & SLEEVE
2. 4" 90° BEND, FLG-FLG
3. 4" AIR AND VACUUM VALVE, FLG-FLG
4. 4" GATE VALVE, FLG-FLG



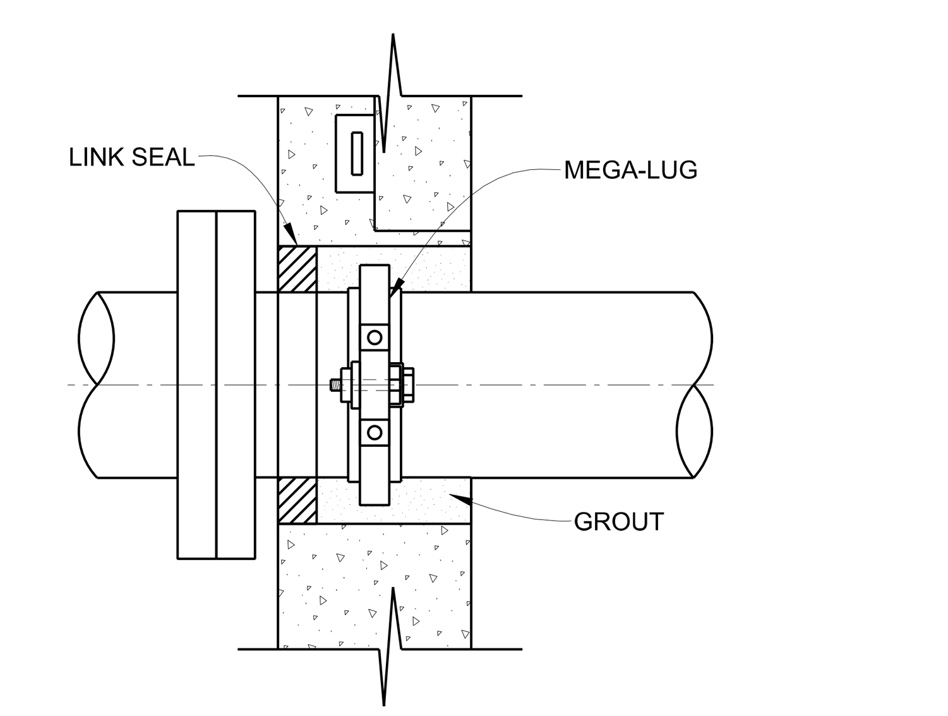
NO SCALE

G13 FINISHED WATER ARV & PIPING DETAIL



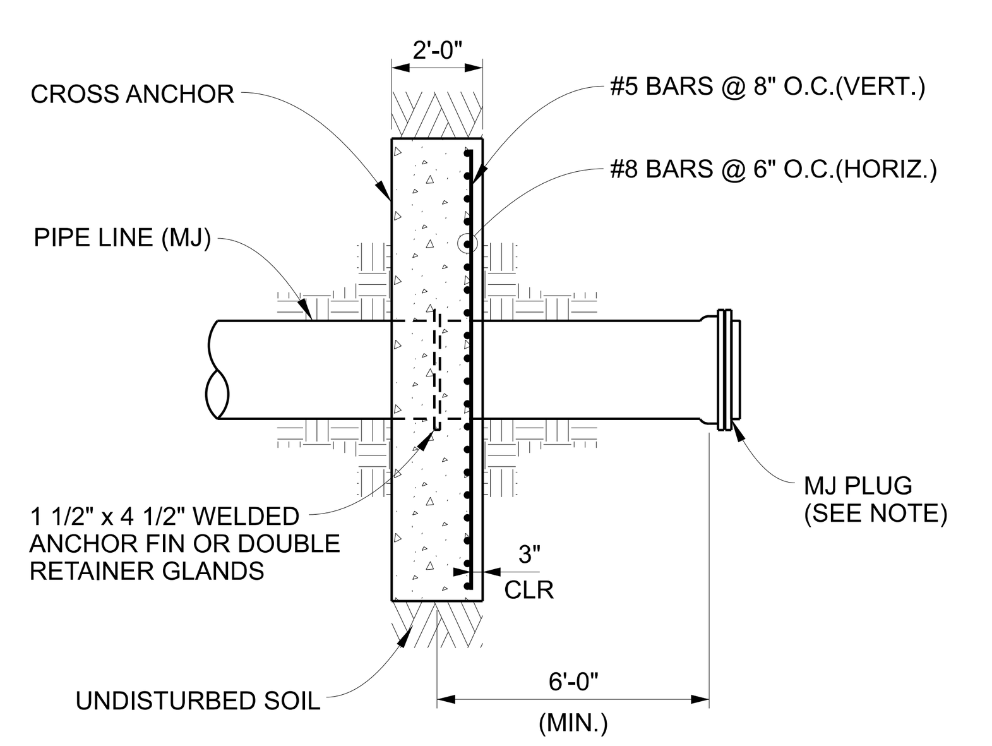
G1 ALUMINUM SINGLE LEAF HATCH DETAIL NO SCALE

G7 NO SCALE

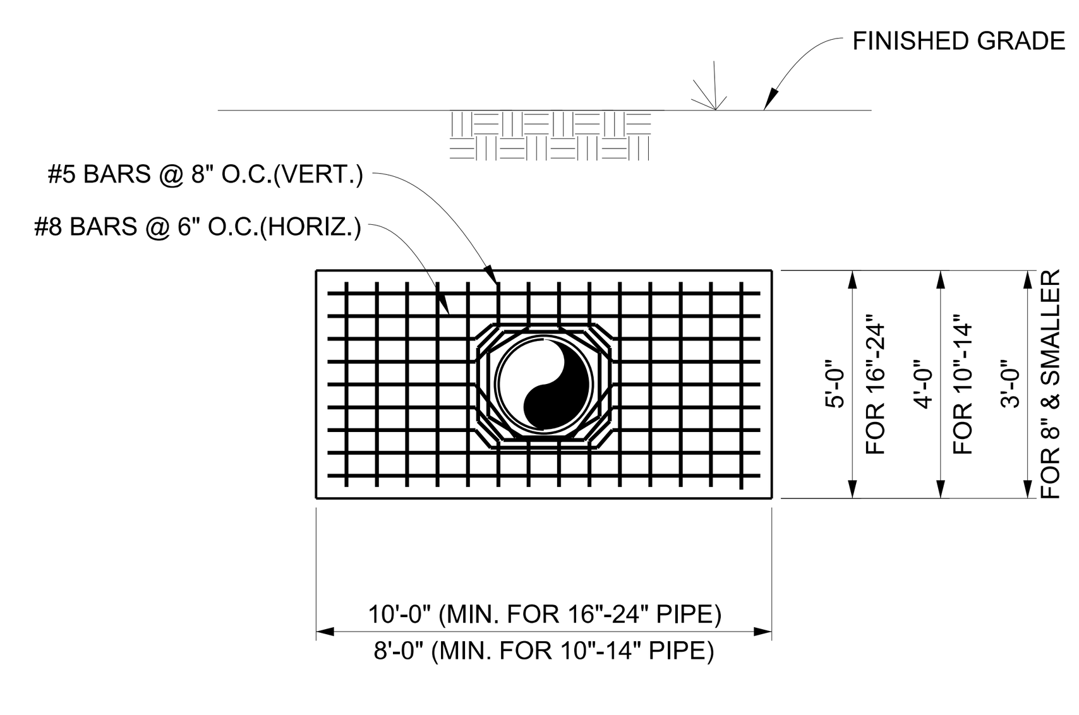


G10 LINKSEAL DETAIL NO SCALE

NOTE: OTHER METHOD OF RESTRAINING PLUG MAY BE CONSIDERED, IF DESIRED. SUBMIT OTHER OPTIONS TO ENGINEER FOR REVIEW.

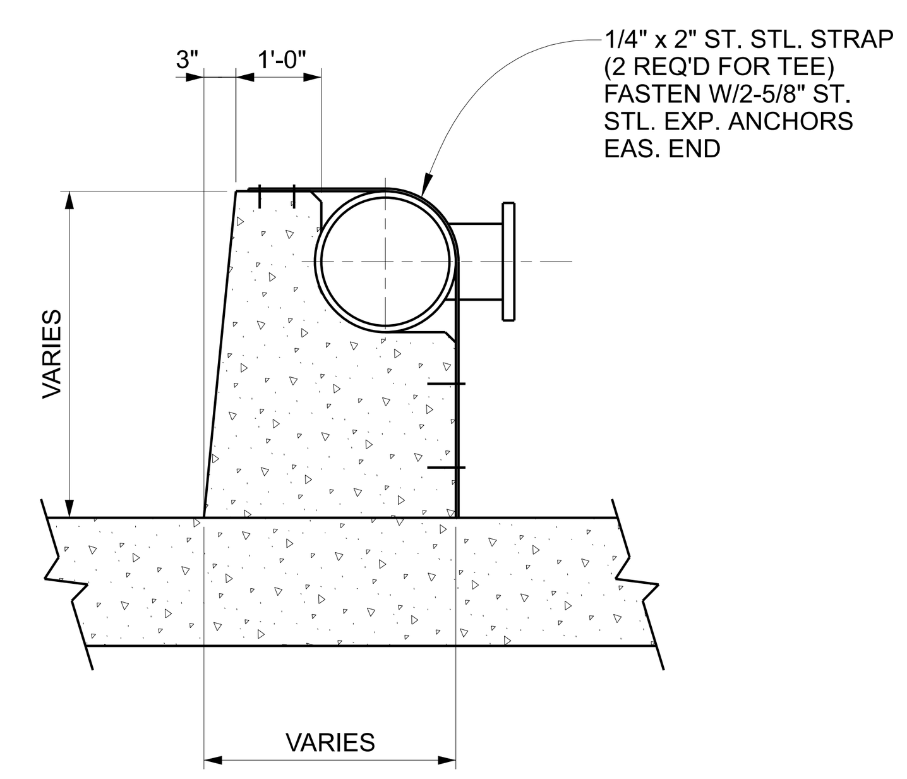


PLAN



ELEVATION

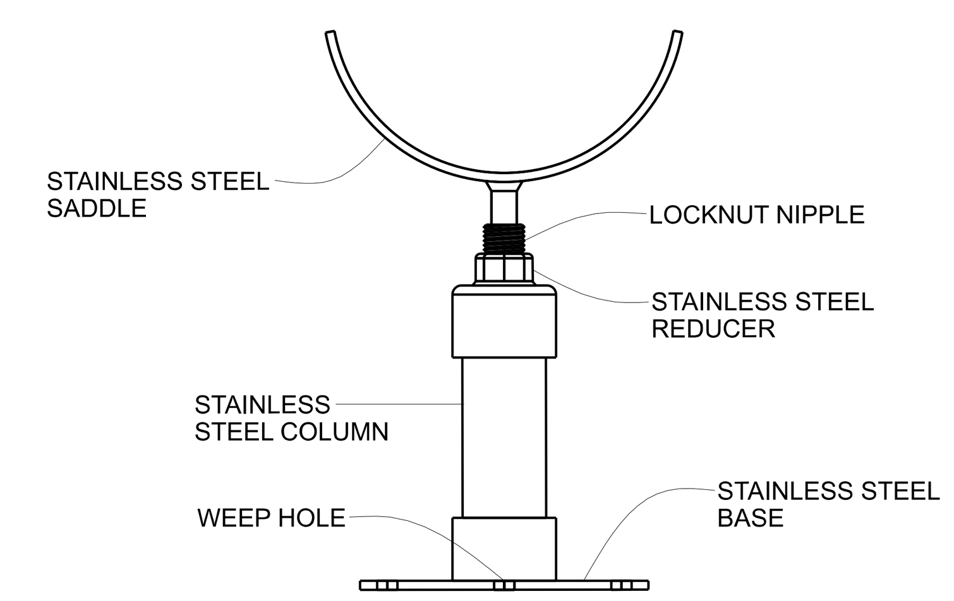
D1 CONCRETE CROSS ANCHOR DETAIL NO SCALE



NOTE:

SEE STRUCTURAL DETAILS FOR REINFORCING

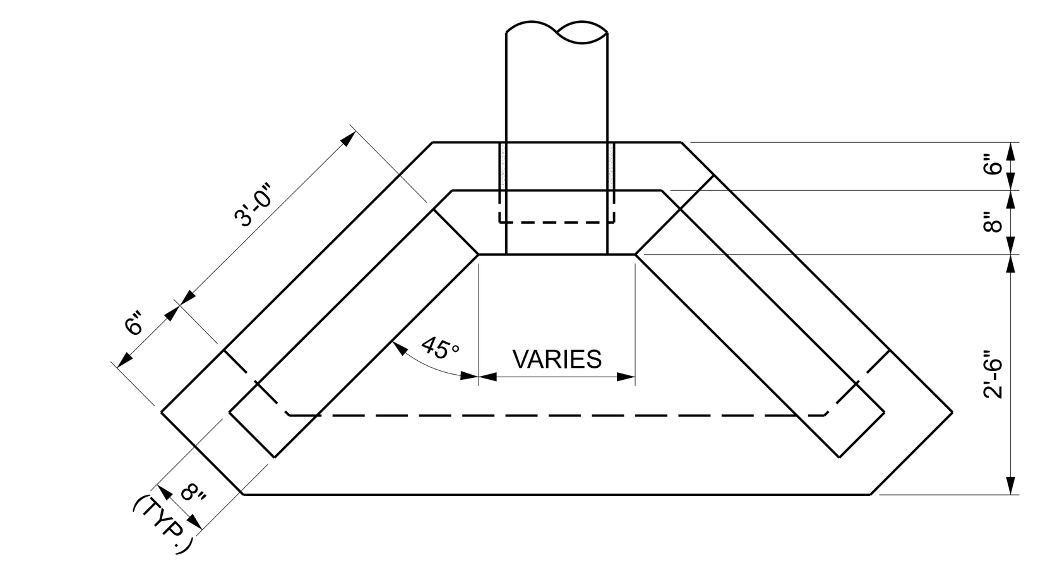
D7 CONCRETE PIPE SUPPORT NO SCALE



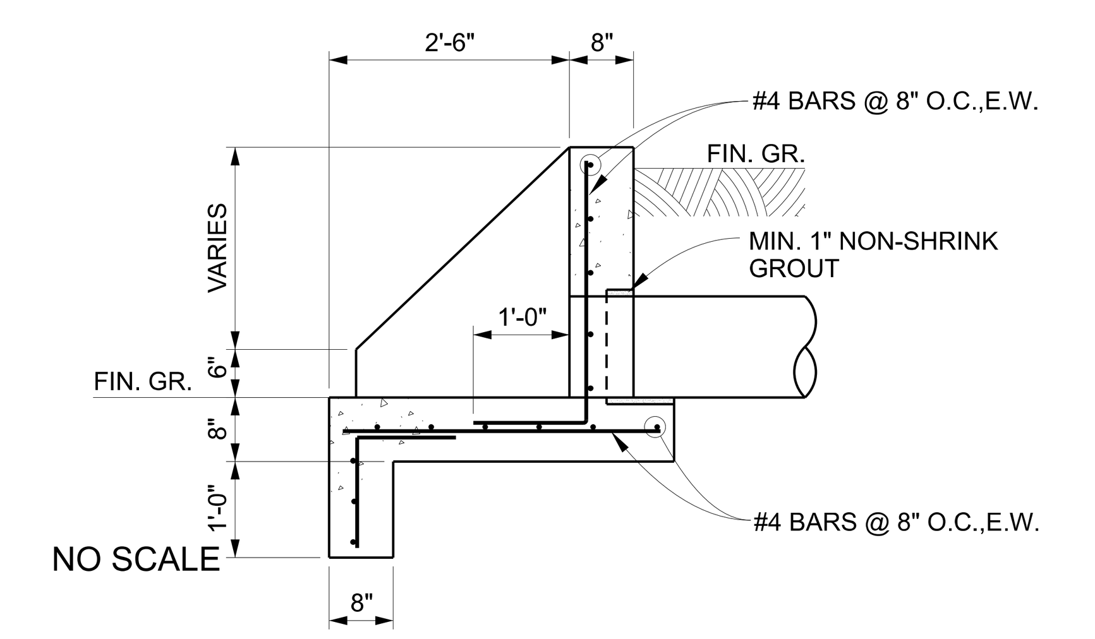
NOTES:

1. PROVIDE PIPE SUPPORTS AS REQUIRED TO SUPPORT PIPING WITHOUT PUTTING STRESSES ON CONNECTIONS TO EQUIPMENT.
2. SUPPORT BASE SHALL BE ANCHORED ON 4-SIDES WITH 5/8" STAINLESS STEEL ANCHOR BOLTS.
3. ADJUSTABLE PIPE SUPPORTS SHOULD BE PLACED AT 6'-0" O.C. FOR HORIZONTAL RUNS OF PIPE GREATER THAN 6'-0".

D10 ADJUSTABLE PIPE SUPPORT NO SCALE



PLAN



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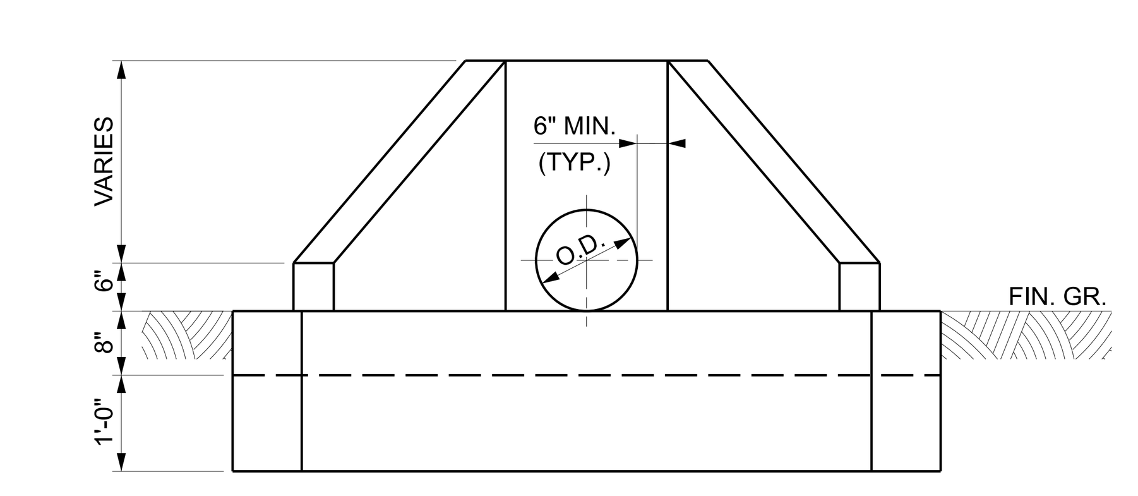
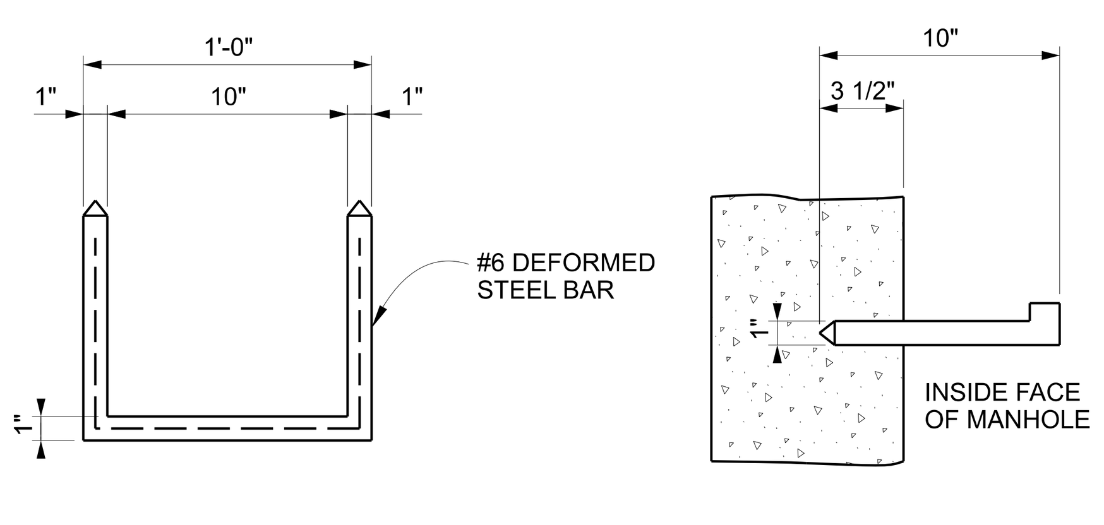
SECTION



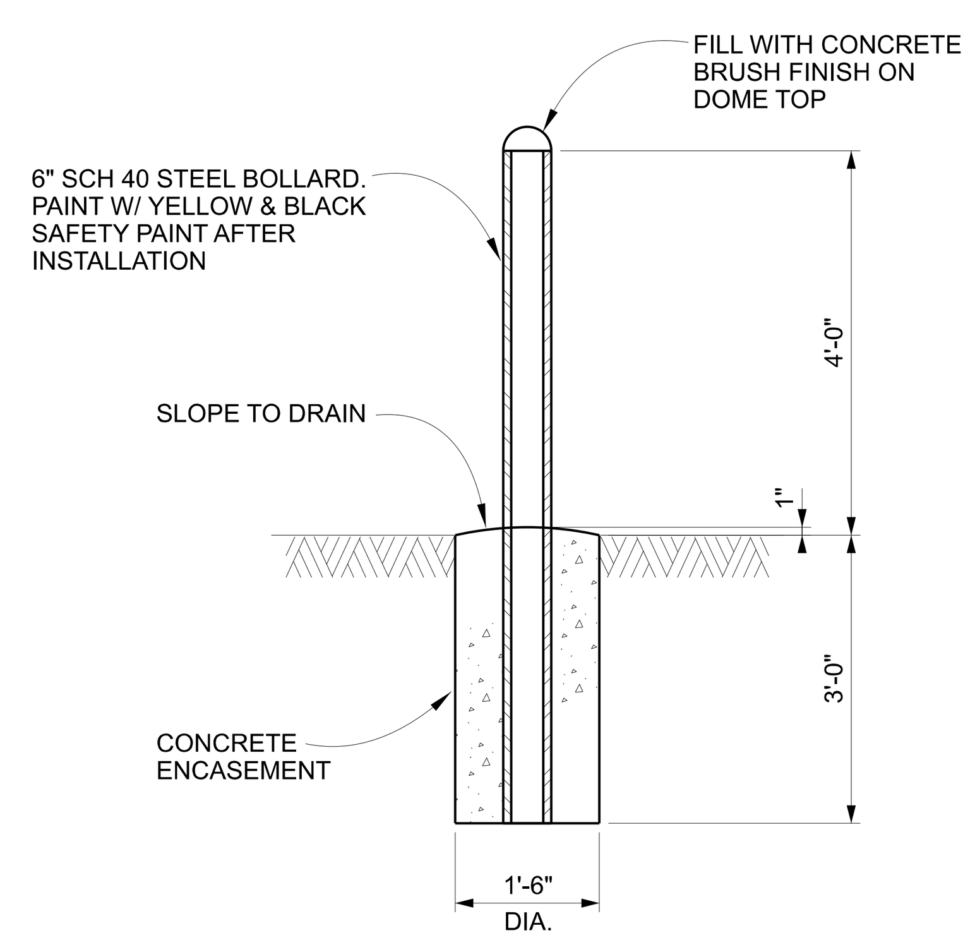
ELEVATION



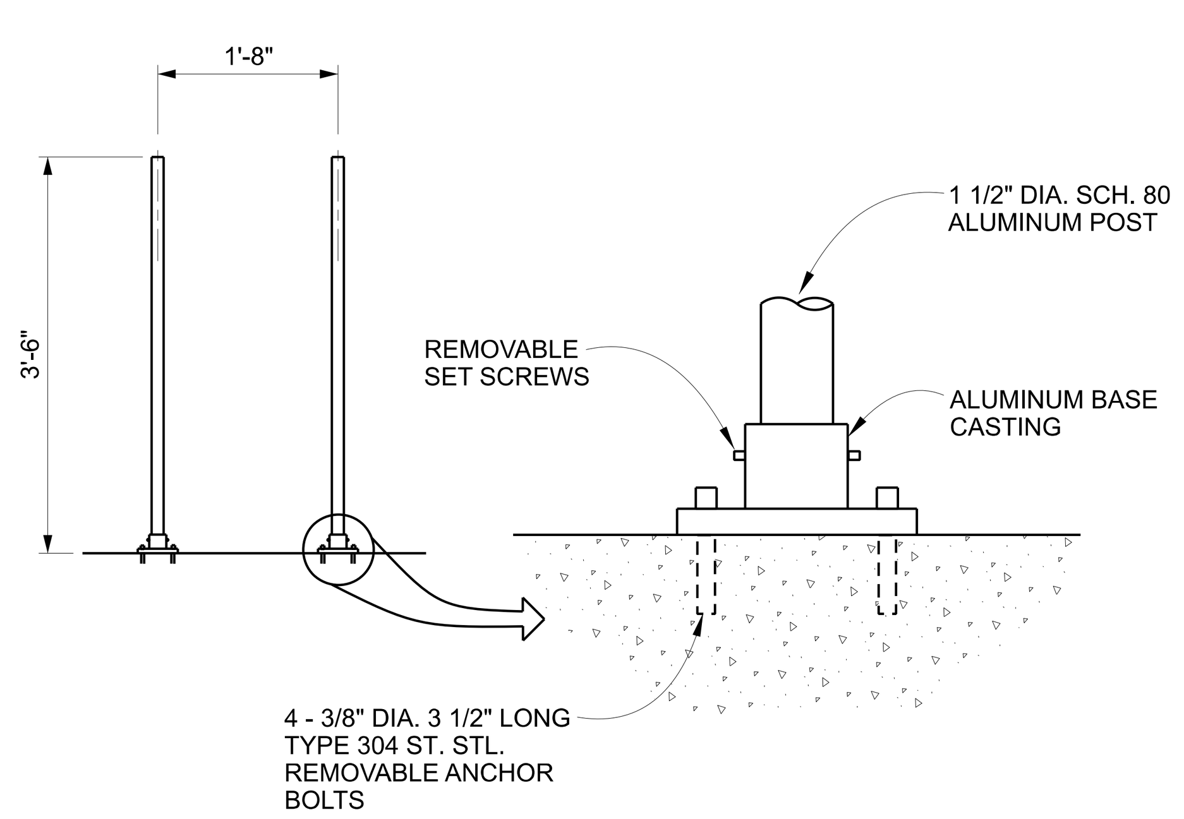
PLAN

SECTION

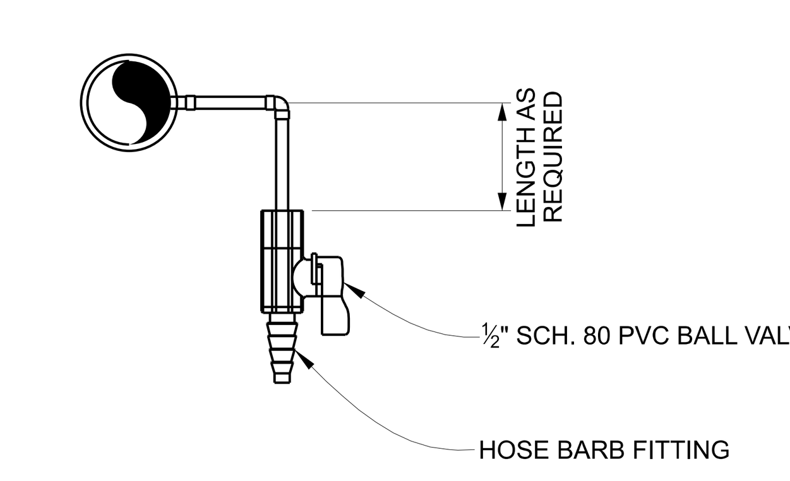
A1 STANDARD MANHOLE STEP 1 1/2" = 1'-0"



A4 BOLLARD DETAIL 1/2"=1'-0"



A7 REMOVABLE GRAB BAR DETAIL NO SCALE



NOTES:

1. PROVIDE PIPE SUPPORTS AS REQUIRED FOR A UNIFORM, RIGID INSTALLATION.
2. BALL VALVE FOR HYPOCHLORITE SHALL BE VENTED PORT.

A10 SAMPLE TAP NO SCALE

A13 HEADWALL DETAIL NO SCALE

KREBS ENGINEERING

BID SET

CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS PHASE 1
FAIRHOPE, ALABAMA

Designed	ADM	Project No.
Drawn	CLM	23040.3
Checked	CLL	

Revisions

No.	Date	Description

Sheet Title: MISCELLANEOUS DETAILS

Issue Date: DEC., 2023
Sequence: 18 of 37
Sheet No.: DT-02

GENERAL ELECTRICAL LEGEND

$SX — SWITCH OUTLET – MANUAL MOTOR STARTER – TOGGLE TYPE – 3 POLE – SQUARE "D" TYPE K02 WITH ENCLOSURE AS REQUIRED BY APPLICATION – PROVIDE LOCK–OFF HARDWARE.

DUPLEX / DOUBLE DUPLEX — WALL OUTLET – RECEPTACLE – 20A – 125V – 2P – 3W – GROUNDING – "GFI" TYPE – WEATHER RESISTANT – NEMA 5–20R – SINGLE PLATE.

J — FLOOR OR SURFACE–MOUNTED OUTLET – JUNCTION BOX.

OUTLET DESIGNATIONS (APPLY TO ALL OUTLETS, DEVICES & EQUIPMENT):

- ES EQUIPMENT MOUNTED TO ALUMINUM SUPPORT FRAME – SEE DETAIL "E–ES".
- SRS PROVIDE SUN/RAIN SHIELD FOR DEVICE/EQUIPMENT PER DETAIL "E–SRS".
- VL VERIFY EXACT OUTLET LOCATION WITH OWNER PRIOR TO ROUGH–IN.
- W WEATHER PROOF – OUTLET SHALL BE INSTALLED WITH WEATHERPROOF, IN–USE, CAST COVER.

FLEXIBLE CONNECTION TO EQUIPMENT.

BRANCH CIRCUIT – RISER UP.

BRANCH/FEEDER CIRCUIT – CONCEALED IN WALLS OR CEILING.

BRANCH/FEEDER CIRCUIT – EXPOSED ON WALLS OR CEILING.

BRANCH/FEEDER CIRCUIT – CONCEALED IN FLOOR SLAB OR DIRT FILL.

BRANCH/FEEDER CIRCUIT – TO BE DEMOLISHED – MAY BE USED WITH OTHER LINE TYPES.

BRANCH/FEEDER CIRCUIT – HOMERUN – CAN BE USED WITH OTHER BRANCH/FEEDER TYPES.

BRANCH/FEEDER CIRCUIT MODIFIERS:

- ——— : 2#12 & 1#12G UNLESS NOTED OTHERWISE.
- ———// : 3#12 & 1#12G, ETC. UNLESS NOTED OTHERWISE (TICK MARKS INDICATE CONDUCTOR QUANTITY NOT INCLUDING GROUND WIRE).
- ——10—— : 2#10 & 1#10G UNLESS NOTED OTHERWISE (NUMBER INDICATES WIRE AWG).

SIZE CONDUIT PER N.E.C. UNLESS INDICATED OTHERWISE.

–·–OHP–·– OVERHEAD PRIMARY POWER SERVICE CABLING (WITH TELECOMMUNICATIONS CABLING WHERE APPLICABLE).

■■■UGP■■■ UNDERGROUND PRIMARY POWER SERVICE – PROVIDE CONDUITS (QUANTITIES, SIZES, TYPES & INSTALLATION) AS DIRECTED BY UTILITY COMPANY) TO POINT AS DIRECTED BY UTILITY CO. – WHERE SO REQUIRED BY UTILITY CO., PROVIDE PULLBOXES (QUANTITIES, LOCATION, TYPES & INSTALLATION) AS PER UTILITY CO. REQUIREMENTS – COORDINATE LOCATION(S) & EXACT REQUIREMENTS WITH UTILITY CO. PRIOR TO BID AND INCLUDE ALL COSTS IN BID.

■■■UGS■■■ UNDERGROUND SECONDARY POWER SERVICE – SEE ASSOCIATED SINGLE LINE DIAGRAM – VERIFY EXACT SERVICE TRANSFORMER LOCATION(S) WITH UTILITY CO. PRIOR TO BID AND INCLUDE ALL COSTS IN BID.

POWER/TELECOMMUNICATIONS POLE WITH GUYING AS REQUIRED.

■■■■■■ POWER AND INSTRUMENTATION DUCT BANK – SEE DETAIL "E–DR".

POWER DISTRIBUTION EQUIPMENT.

LIGHTING PANEL – SURFACE MOUNTED.

TRANSFORMER – POWER.

SC*–**–*** TYPICAL CONTROL & INSTRUMENTATION WIRING MARK (WHERE "**" REPRESENTS A UNIQUE IDENTIFIER CONSISTING OF LETTERS AND NUMBERS) – SEE CONTROL & INSTRUMENTATION WIRING SCHEDULES.

DISCONNECT SWITCH – NONFUSED.

DISCONNECT SWITCH – FUSED.

MOTOR OUTLET – SIZE AS SHOWN.

UNIT HEATER – ELECTRICAL – ARROW INDICATES DIRECTION.

CP CONDENSATE PUMP – 120V–1ø – PROVIDE WITH LOCAL TOGGLE–TYPE MANUAL MOTOR STARTER DISCONNECT SWITCH..

T AC THERMOSTAT – AIR CONDITIONING – LOW VOLTAGE – WALL MOUNTED AT 48" A.F.F. – LABEL FUNCTION WITH ENGRAVED NAMEPLATE.

PUSHBUTTON STATION – NUMBER OF BUTTONS AS SHOWN – SEE DETAIL "E–CS".

--G-- BARE SUPPLEMENTAL GROUND WIRE – #4/0G IF NOT INDICATED OTHERWISE – INSTALLED A MINIMUM OF 24" BELOW GRADE AND 24" MINIMUM FROM STRUCTURES WHERE POSSIBLE.

SUPPLEMENTAL GROUNDING SYSTEM – GROUND ROD – 3/4" x10'–0" COPPER–CLAD – TOP DRIVEN A MINIMUM OF 24" BELOW GRADE.

SUPPLEMENTAL GROUNDING SYSTEM – GROUND CONNECTION – CADWELD WHERE BELOW GRADE OR CONCEALED.

SUPPLEMENTAL GROUNDING SYSTEM – CAST GROUND PLATE ASSEMBLY (ERICO OR EQUAL) – CAST FLUSH WITHIN CONCRETE WITH FLEXIBLE BARE COPPER GROUND WIRE CONNECTIONS VIA COMPRESSION LUGS TO EQUIPMENT.

SUPPLEMENTAL GROUNDING SYSTEM – GROUND CONNECTION – TO EQUIPMENT OR STRUCTURE AS FOLLOWS (UNLESS NOTED OTHERWISE):

- GEQ #4/0 BARE COPPER GROUND WIRE (UNLESS INDICATED OTHERWISE) – BOND TO EQUIPMENT/MOTOR/PANEL/TRANSFORMER, ETC.
- GES #2 BARE COPPER GROUND WIRE – BOND TO EQUIPMENT STAND.
- GF #2 BARE COPPER GROUND WIRE – BOND TO FENCE POST.
- GHR #2/0G BARE COPPER GROUND WIRE – BOND TO HANDRAIL & WALKWAY STRUCTURE USING CAST GROUND PLATE & FLEXIBLE JUMPER – SEE DETAIL "E–MMG".
- GP #2 BARE COPPER GROUND WIRE – BOND TO PIPE FLANGE.
- GS #4/0 BARE COPPER GROUND WIRE – BOND TO STRUCTURE/REBAR/WIRE MESH REINFORCEMENT.

CR CHLORINE RESIDUAL SENSOR.

PH PH SENSOR.

FS FLOAT SWITCH.

UT ULTRASONIC LEVEL TRANSDUCER.

AIT ANALOG INDICATING TRANSMITTER.

FIT FLOW INDICATING TRANSMITTER.

LIT LEVEL INDICATING TRANSMITTER.

PIT PRESSURE INDICATING TRANSMITTER.

A / E-1 DETAIL DESIGNATOR – "A" INDICATED DETAIL MARK – "E–1" INDICATED SHEET NUMBER WHERE DETAIL IS LOCATED (TYPICAL).

GENERAL ABBREVIATIONS:

- (EX) EXISTING TO REMAIN.
- (EX–R) EXISTING TO BE REMOVED – REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMENT, DEVICES, CONDUIT AND WIRING CONNECTIONS TO OTHER ELECTRICAL ITEMS.
- (EX–RL) EXISTING TO BE RELOCATED – REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMENT, DEVICES, CONDUIT AND WIRING AT EXISTING LOCATION. RELOCATE ITEM TO NEW LOCATION SHOWN ON ELECTRICAL PLANS.
- (EX–RP) EXISTING TO BE REPLACED – EXTEND AND RECONNECT EXISTING CONDUIT AND WIRING TO REPLACED ITEM.

ELECTRICAL ABBREVIATIONS:

A	AMPERES.	NSV	NEW, SPARE OR VACATED.
AIC	AMPERES INTERRUPTING CAPACITY.	OC	ON CENTER.
AFF	ABOVE FINISHED FLOOR.	P	POLES.
AL	ALUMINUM.	PF	POWER FACTOR.
ATS	AUTOMATIC TRANSFER SWITCH.	ø	PHASE.
AWG	AMERICAN WIRE GAUGE.	PVC	POLYVINYL CHLORIDE.
C	CONDUIT.		
CU	COPPER.	SLD	SINGLE LINE DIAGRAM.
EC	EMPTY CONDUIT. OR ELECTRICAL CONTRACTOR	SS	STAINLESS STEEL.
		UL	UNDERWRITERS LABORATORY.
FPN	FUSE PER NAMEPLATE.	UNO	UNLESS NOTED OTHERWISE.
G	GROUND CONDUCTOR.	V	VOLTS.
KVA	KILOVOLT–AMPERES.	W	WIRES.
KW	KILOWATT.		
LV	LOW VOLTAGE.	CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED.
MCM	THOUSAND CIRCULAR MILS.		
MV	MEDIUM VOLTAGE.	CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED.
N	NEUTRAL.		
NEC	NATIONAL ELECTRICAL CODE.	OFOI	OWNER FURNISHED, OWNER INSTALLED.
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION.	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED.
NIC	NOT IN CONTRACT.		

TYPICAL CIRCUITRY DESIGNATIONS:

2 SETS OF 4#3/0 & 1#3G – 2 1/2"C

- 2 — QUANTITY OF PARALLEL SETS OF THE PHASE/NEUTRAL CONDUCTORS, GROUND CONDUCTOR AND CONDUIT SPECIFIED.
- 4 — QUANTITY OF PHASE/NEUTRAL CONDUCTORS (PER SET).
- 3 — QUANTITY OF GROUND CONDUCTORS (PER SET)
- 3 — GROUND CONDUCTOR WIRE GAUGE.
- 4 — PHASE/NEUTRAL CONDUCTOR WIRE GAUGE.
- 2 1/2" — CONDUIT SIZE.

MULTI–CONDUCTOR CONTROL 600V TRAY CABLE DESIGNATIONS:

(2) 4C#14 W/G – 1 1/4"C

- (2) — QUANTITY OF MULTI–CONDUCTOR CABLES OF THE TYPE SPECIFIED WITHIN THE SPECIFIED CONDUIT.
- 4C — QUANTITY OF CONDUCTORS IN EACH CABLE SHEATH (NOT INCLUDING GROUND).
- #14 — WIRE GAUGE.
- W/G — "W/G" = WITH ADDITIONAL INTEGRAL GROUND CONDUCTOR WITH GREEN INSULATION IN EACH CABLE SHEATH.
- 1 1/4" — CONDUIT SIZE.

TWISTED, SHIELDED INSTRUMENTATION CABLE DESIGNATIONS:

(2) #16TSP – 1"C

- (2) — QUANTITY OF INSTRUMENTATION CABLES IN THE SPECIFIED CONDUIT.
- #16 — WIRE GAUGE.
- TSP — "TSP" = TWISTED SHIELDED PAIR.
- 1" — CONDUIT SIZE.

GENERAL ELECTRICAL NOTES

1. SPECIAL ATTENTION IS CALLED TO THE FACT THAT THE REQUIRED WORK IS AT OPERATING FACILITIES, AND AS SUCH, NO UNNECESSARY SHUTDOWNS WILL BE ALLOWED. ANY NECESSARY SHUTDOWNS SHALL BE APPROVED IN WRITING BY THE PLANT MANAGER A MINIMUM OF TWO (2) WEEKS IN ADVANCE. TEMPORARY/PORTABLE PUMPING PROVISIONS (AND OTHER TEMPORARY PROVISIONS AS REQUIRED FOR OPERATION OF THE EXISTING SYSTEMS) SHALL BE PROVIDED BY THE CONTRACTOR IF OWNER–MANDATED MAXIMUM SHUTDOWN PERIODS ARE ANTICIPATED OR ARE POSSIBLE.
2. ELECTRICAL PLANS & DETAILS INDICATE TYPICAL WIRING REQUIREMENTS FOR PROCESS EQUIPMENT. VERIFY EXACT WIRING REQUIREMENTS & ALL DEVICE LOCATIONS WITH APPROVED MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGH–IN. NO ADDITIONAL COMPENSATION WILL BE PAID FOR MINOR CIRCUITRY ADJUSTMENTS REQUIRED TO COMPLY WITH MANUFACTURERS INSTALLATION DETAILS.
3. THIS CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT FROM MANUFACTURER'S RECOMMENDATIONS PRIOR TO ROUGHING IN CONDUIT AND SHALL ADJUST CONDUIT SIZE, WIRE SIZE AND CIRCUIT PROTECTION SIZE ACCORDINGLY. IF REQUIREMENTS ARE LARGER THAN CALLED FOR ON ELECTRICAL PLANS NOTIFY ENGINEER IMMEDIATELY.
4. CONTRACTOR SHALL VISIT THE SITE(S) OF THE WORK PRIOR TO SUBMITTING BID TO EXAMINE CAREFULLY LOCAL CONDITIONS AND DIFFICULTIES TO BE ENCOUNTERED. ANY DISCREPANCY BETWEEN PLANS AND EXISTING CONDITIONS SHALL IMMEDIATELY BE CALLED TO THE ATTENTION OF THE ENGINEER.
5. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH NEC.
6. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MOUNTING OF ALL INSTRUMENTATION DEVICES (EXCLUDING THOSE PRE–INSTALLED ON SKIDS BY THE MANUFACTURER). SEE INSTALLATION DETAILS ON CIVIL & ELECTRICAL DRAWINGS AND PROVIDED BY SUPPLIERS. COORDINATE ALL REQUIREMENTS WITH SUPPLIERS PRIOR TO ROUGH–IN.
7. ALL HVAC CIRCUITRY (INCLUDING CONTROL CIRCUITRY NOT SHOWN ON THESE PLANS) SHALL BE INSTALLED TO MEET DIVISION 26 SPECIFICATIONS. COORDINATE ALL HVAC CONTROLS CIRCUITRY REQUIRED WITH HVAC CONTRACTOR PRIOR TO BID.
8. REMOVE ALL EXISTING ELECTRICAL EQUIPMENT AND WIRING MADE OBSOLETE BY THIS RENOVATION AND DISPOSE OF AS DIRECTED BY THE ENGINEER.
9. THIS CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR NECESSARY TO EXTEND CIRCUITS AND MAKE RECONNECTIONS TO ANY ACTIVE ELECTRICAL DEVICES ON WHICH THE BRANCH CIRCUIT IS INTERRUPTED BY THIS ALTERATION. CARE SHALL BE TAKEN TO INSURE THAT EXISTING PANEL AND FEEDER RATINGS ARE NOT EXCEEDED.
10. WET OR PROCESS AREAS (FOR USE IN DETERMINING TYPES OF MATERIALS REQUIRED PER ELECTRICAL SPECIFICATIONS) SHALL BE DEFINED AS ALL AREAS WITHIN THE PROJECT SCOPE EXCEPT THE FOLLOWING:
    A. DRY, NON–PROCESS, INTERIOR AREAS: EXISTING ELECTRICAL ROOM.
    B. EXTREMELY CORROSIVE AREAS: EXISTING CHEMICAL ROOM, CHLORINE ROOM, LIME ROOM, AND LIME STORAGE ROOM.
11. ALL INDICATING TRANSMITTER DEVICES (FLOW TRANSMITTERS, LEVEL TRANSMITTERS, ETC.) LOCATED IN EXTERIOR ENVIRONMENTS & NOT UNDER CANOPIES SHALL BE INSTALLED WITHIN SUN/RAIN SHIELDS PER DETAIL "E–SRS". CONTRACTOR SHALL PROVIDE SUN/RAIN SHIELDS (INCLUDING INSTRUMENTS FURNISHED BY OTHERS). CONTRACTOR SHALL COORDINATE WITH INSTRUMENT SUPPLIER(S) PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING 120V AND ANALOG SURGE PROTECTION DEVICES AT ALL INSTRUMENTS LOCATED IN EXTERIOR ENVIRONMENTS (OR IN SEPARATE BUILDINGS FROM THE SCADA/CONTROL PANEL TO WHICH THEY CONNECT) (INCLUDING INSTRUMENTS FURNISHED BY OTHERS). CONTRACTOR SHALL COORDINATE WITH INSTRUMENT SUPPLIER(S) PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
    A. SURGE PROTECTION DEVICES AT 2–WIRE INSTRUMENTS SHALL BE DEHN DEHNPIPE SERIES (IP67 STAINLESS STEEL DEVICE WITH 10kA TOTAL NOMINAL DISCHARGE CURRENT PER LINE) OR EQUAL BY MTL TECHNOLOGIES.
    B. SURGE PROTECTION DEVICES AT 4–WIRE INSTRUMENTS SHALL BE EDCO SLAC SERIES (NEMA 4X DEVICE WITH VIEWING WINDOW, 10kA DISCHARGE CURRENT PER LINE FOR ANALOG, 15kA DISCHARGE CURRENT PER LINE FOR 120V POWER) OR EQUAL BY DEHN.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING IDENTIFICATION/LABELING FOR ALL NEW, RENAMED, OR REFED INSTRUMENTS, UTILIZATION EQUIPMENT (PUMPS, BLOWERS, ETC.), CONTROL DEVICES, CONTROL PANELS, STARTERS, POWER PANELS, ETC. (REGARDLESS OF WHICH ENTITY PROVIDES THE EQUIPMENT) PER DETAILED REQUIREMENTS OF SPECIFICATION SECTION 16075.
14. CONTRACTOR SHALL VERIFY ALL REQUIREMENTS FOR POWER AND TELECOMM SERVICES WITH UTILITY COMPANIES PRIOR TO SUBMITTING BID. IF THEIR REQUIREMENTS ARE AT A VARIANCE WITH THOSE SHOWN ON PLANS THE CONTRACTOR SHALL INFORM ENGINEER IMMEDIATELY. ALL COSTS INCURRED WITH UTILITY COMPANIES FOR SERVICES SHALL BE INCLUDED IN BID PRICE. IF SUCH COSTS ARE NOT AVAILABLE AT BID TIME CONTRACTOR SHALL INCLUDE WITH BID A LETTER FROM A RESPONSIBLE PARTY WITH THE UTILITY COMPANY STATING SUCH, AND COSTS WILL THEN BE EXCLUDED FROM THE BID PRICE.

KREBS ENGINEERING

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12/8/2023

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CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	Project No.
PDB	23040.3
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Sheet Title: ELECTRICAL LEGEND AND NOTES

Issue Date	Sheet No.
DEC, 2023	E0-01
Sequence 19 of 37	

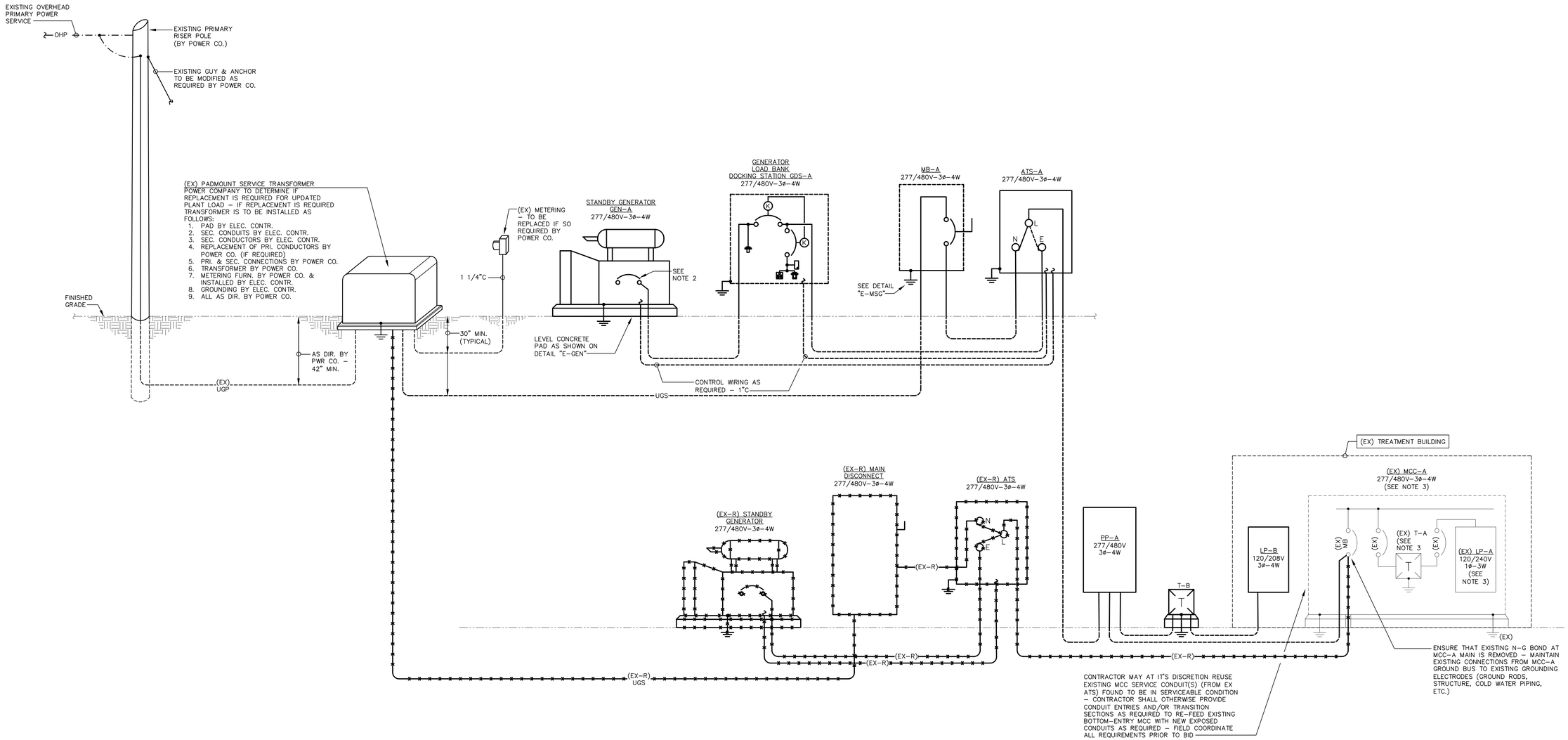

DIAGRAM NOTES

1. REFER TO EQUIPMENT, PANELBOARD, MCC AND TRANSFORMER SCHEDULES FOR ALL APPLICABLE FEEDER SIZES, BREAKER RATINGS, BUS RATINGS, TRANSFORMER RATINGS, ETC. NOT SHOWN ON THIS DIAGRAM.
2. NEUTRAL–GROUND BONDS SHALL ONLY BE MADE AT THE FOLLOWING LOCATIONS:
   A. MAIN BREAKER MB–A.
   B. SECONDARY SIDE OF ALL TRANSFORMERS.
3. PROVIDE NEW ENGRAVED MASTER NAMEPLATES FOR ALL EXISTING DISTRIBUTION EQUIPMENT (MCC'S, PANELS, TRANSFORMERS) PER DETAIL "E–EDL".

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Sequence: 20 of 37

A1 | SINGLE LINE DIAGRAM | SCALE: NONE

MAIN BREAKER SCHEDULE - MB-A

PANEL TYPE:	ENCLOSED ELECTRONIC TRIP LSI TYPE			AIC RATING:	50KAIC (MINIMUM)
VOLTAGE:	277/480V-3P-4W			MOUNTING:	SURFACE
AMPS & TYPE:	800/3 MAIN BKR (SEE NOTE 3)			LOCATION:	ELECTRICAL EQUIPMENT STAND
FED FROM:	UTILITY			FEEDER:	3 SETS OF 4-300MCM - 3"C

CIR. NO.	DESCRIPTION	VOLTS	P	HP	KW OR KVA	AMPS	BKR SIZE	LOCAL SAFETY SW. RATING	WIRE AND COND. SIZE	REMARKS
1	ATS-A (N)	277/480	3		414.2		800/3	-	3 SETS OF 4-300MCM & 1#1/0G - 3"C	

TOTAL CONNECTED LOAD:	552.8 KVA	NOTES:	
	691.0 AMPS	1. ENCLOSURE SHALL BE NEMA 4X STAINLESS STEEL.	
TOTAL DEMAND LOAD:	408.8 KVA	2. EQUIPMENT SHALL BE SERVICE-ENTRANCE RATED.	
	511.0 AMPS	3. MAIN BREAKER SHALL BE ELEC. TRIP LSI TYPE.	
TOTAL COMPUTED LOAD:	414.2 KVA		
	517.7 AMPS		

GENERATOR SCHEDULE - GEN-A

KW RATING:	500KW (MINIMUM)	SKVA RATING (AT 35%V. DIP):	
VOLTAGE:	277/480V-3P-4W	SOUND ATTENUATION:	CRITICAL SILENCER
FUEL TYPE:	DIESEL	LOCATION:	EXTERIOR

CIR. NO.	DESCRIPTION	VOLTS	P	HP	KW OR KVA	AMPS	BKR SIZE	SWITCH SIZE		WIRE AND COND. SIZE
								SWITCH AMPS	F-TRON AMPS	
1	GDS-A	277/480	3		414.2		800/3			3 SETS OF 4-300MCM & 1#1/0G - 3"C

TOTAL CONNECTED LOAD:	552.8 KVA	NOTES:	
	691.0 AMPS	1. THE GENERATOR SUPPLIER SHALL SUBMIT A SIZING REPORT SHOWING THAT THE MAXIMUM GENERATOR VOLTAGE DIP WILL BE LESS THAN 20% & FREQUENCY DIP LESS THAN 10% WITH THE LOAD(S) SEPERATED INTO THREE (3) STEPS AS FOLLOWS: STEP 1 - 32KVA MISCELLANEOUS THREE-PHASE LINEAR LOAD. TWO (2) 50HP - 3PHASE PUMP MOTORS WITH PART-WINDING STARTERS. STEP 2 - ONE (1) 60HP - 3PHASE PUMP MOTOR WITH RVSS, (400% CURRENT LIMIT) AND ONE (1) 50HP 3PHASE PUMP MOTOR WITH PART-WINDING STARTER. STEP 3 - ONE (1) 150HP PUMP MOTOR WITH ACTIVE FRONT VFD.	
TOTAL DEMAND LOAD:	408.8 KVA		
	511.0 AMPS		
TOTAL COMPUTED LOAD:	414.2 KVA		
	517.7 AMPS	2. CONTRACTOR SHALL CONFIRM THE EXACT STARTER TYPES AND MOTOR CHARACTERISTICS PRIOR TO SUBMITTING SHOP DRAWINGS.	
		3. THE GENRATOR SUPPLIER SHALL DESIGN GENERATOR SUCH THAT NO CIRCUIT BREAKER, CONTROL PANEL, ETC. IS ABOVE 67" ABOVE FINISHED GRADE.	

GENERATOR DOCKING STATION SCHEDULE - GDS-A

PANEL TYPE:	SEE NOTE 1	AIC RATING:	42KAIC (MINIMUM)
VOLTAGE:	277/480V-3P-4W	MOUNTING:	SURFACE
AMPS & TYPE:	TWO (2) 800/3	LOCATION:	ELECTRICAL EQUIPMENT STAND
FED FROM:	GEN-A	FEEDER:	SEE GENERATOR SCHEDULE - GEN-A

CIR. NO	DESCRIPTION	VOLTS	P	HP	KW OR KVA	AMPS	BKR SIZE	LOCAL SAFETY SW. RATING	WIRE AND COND. SIZE	REMARKS
1	ATS-A (E)	277/480	3		414.2		800/3	-	3 SETS OF 4-300MCM & 1#1/0G - 3"C	

TOTAL CONNECTED LOAD:	552.8 KVA	NOTES:	
	691.0 AMPS	1. EQUIPMENT SHALL BE TRYSTAR DUAL PURPOSE DOCKING STATION WITH NEMA 3R STAINLESS STEEL ENCLOSURE WITH MALE CAM-LOK CONNECTIONS (FOR PORTABLE GENERATOR CONNECTION), FEMALE CAM-LOK CONNECTIONS (FOR LOAD BANK CONNECTIONS), HARDWIRED LUGS FOR CONNECTION TO DOWNSTREAM EQUIPMENT, PHASE REVERSAL PROTECTION RELAY, BREAKER FOR PERMANENT GENERATOR FEED, BREAKER FOR TEMPORARY GENERATOR FEED, AND KIRK KEY INTERLOCK SYSTEM AND SCHEME FOR BREAKERS THAT SHALL ALLOW ONLY ONE BREAKER TO BE CLOSED AT ANY GIVEN TIME. SEE SPECIFICATION SECTION 26 36 33 FOR ADDITIONAL REQUIREMENTS.	
TOTAL DEMAND LOAD:	408.8 KVA		
	511.0 AMPS		
TOTAL COMPUTED LOAD:	414.2 KVA		
	517.7 AMPS		

AUTOMATIC TRANSFER SWITCH SCHEDULE - ATS-A

KAIC / WCR RATING:	50KAIC (MINIMUM)	NORMAL FED FROM:	MB-A
VOLTAGE:	277/480V-3P-4W	NORMAL FEEDER:	SEE MAIN BREAKER SCHEDULE - MB-A
AMP RATING:	800 AMP	EMERGENCY FED FROM:	GDS-A
LOCATION:	ELECTRICAL EQUIPMENT STAND	EMEGENCY FEEDER:	SEE GENERATOR DOCKING STATION SCHEDULE - GDS-A

LOAD SIDE FEEDER DESCRIPTION	VOLTS	P	HP	KW OR KVA	AMPS	WIRE AND COND. SIZE
MP-A	277/480	3		414.2		3 SETS OF 4-300MCM & 1#1/0G - 3"C

EMERGENCY		NORMAL	NOTES:
552.8 KVA	TOTAL CONNECTED LOAD:	552.8 KVA	
691.0 AMPS		691.0 AMPS	
408.8 KVA	TOTAL DEMAND LOAD:	408.8 KVA	
511.0 AMPS		511.0 AMPS	
414.2 KVA	TOTAL COMPUTED LOAD:	414.2 KVA	
517.7 AMPS		517.7 AMPS	

PANELBOARD SCHEDULE - MP-A

PANEL TYPE:	SQUARE 'D' I-LINE SERIES	AIC RATING:	42KAIC (MINIMUM)
VOLTAGE:	277/480V-3P-4W	MOUNTING:	SURFACE
AMPS & TYPE:	800/3 MAIN BKR (ELEC. TRIP LSI TYPE)	LOCATION:	ELECTRICAL ROOM
FED FROM:	ATS-A	FEEDER:	SEE AUTOMATIC TRANSFER SWITCH SCHEDULE - ATS-A

CIR. NO	DESCRIPTION	VOLTS	P	HP	KW OR KVA	AMPS	BKR SIZE	LOCAL SAFETY SW RATING	WIRE AND COND. SIZE	REMARKS
1	MCC-A	277/480	3		184.9		400/3	-	4#500MCM & 1#3G - 4"C	ELEC. TRIP LSI TYPE
2	FINISHED WATER PUMP NO. 1	480	3	150			400/3	-	3-350MCM & 1#4G - 3"C	ELEC. TRIP LSI TYPE
3	FINISHED WATER PUMP NO. 2	480	3	150			400/3	-	3-350MCM & 1#4G - 3"C	ELEC. TRIP LSI TYPE
4	WELL PUMP NO. 8B RVSS	480	3	60			175/3	-	3#1 & 1#4G - 2 1/2"C	ELEC. TRIP LSI TYPE
5	LP-B (45 KVA X-FORMER)	480	3		22.0		60/3	-	3#4 & 1#8G - 1 1/4"C	
6	AERATOR NO. 2 STARTER	480	3	1			15/3	-	3#12 & 1#12G - 3/4"C	
7	SPARE	277/480	3				20/3	-		
8-12	SPACES	277/480	3				-/3	-		

TOTAL CONNECTED LOAD:	552.8 KVA	NOTES:	
	691.0 AMPS	1. PROVIDE INTEGRAL 240KA (PER PHASE) SURGE PROTECTION DEVICE.	
TOTAL DEMAND LOAD:	408.8 KVA	2. ENCLOSURE SHALL BE NEMA 4X STAINLESS STEEL.	
	511.0 AMPS	3. PROVIDE INTEGRAL POWER METER (SQ. D #PM5563) WITH DOOR-MOUNTED DISPLAY & ETHERNET COMMUNICATION CARD.	
TOTAL COMPUTED LOAD:	414.2 KVA		
	517.7 AMPS		

PANELBOARD SCHEDULE - LP-B

PANEL TYPE:	SQUARE 'D' TYPE NQ	AIC RATING:	10KAIC (MINIMUM)
VOLTAGE:	120/208V-3P-4W	MOUNTING:	SURFACE
AMPS & TYPE:	150/3 MAIN BKR	LOCATION:	ELECTRICAL ROOM
FED FROM:	MP-A	FEEDER:	4#1/0 & 1#6G - 2"C

CKT. NO.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	CKT NO.
1	-	20/1	WELL NO. 8B E.Q. STAND RECEP.	200	A	2,600	OHP-1	40/2	-	22
2	-	20/1	WELL NO. 8B FLOW TRANSMITTER	500	B	2,600	|	|	-	23
3	-	20/1	SPARE		C	2,600	OHP-2	40/2	-	24
4	-	20/1	SPARE		A	2,600	|	|	-	25
5	-	20/1	FMFV SUMP PUMP RECEPTACLE	400	B	3,000	GEN-A LOAD CENTER	60/2	-	26
6	-	20/1	ELECTRICAL EQ. STAND RECEP.	200	C	3,000	|	|	-	27
7	-	20/1	GDS-A INTEGRAL HEATER	800	A		SPARE	20/1	-	28
8	-	20/1	CLEARWELL LEVEL TRANSMITTER	200	B		SPARE	20/1	-	29
9	LON	20/1	CLEARWELL LLCO	200	C		SPARE	20/1	-	30
10	LON	20/1	SCADA PLC-A	800	A		SPARE	20/1	-	31
11	LON	20/1	R.W. FLOW AND TANK LEVEL C.P.	200	B		SPARE	20/1	-	32
12	-	20/1	HVAC CONDENSATE PUMPS	200	C		SPARE	20/1	-	33
13	-	20/1	HVAC EXTERIOR RECTPTACLE	200	A		SPARE	20/1	-	34
14	-	20/1	SPARE		B		SPARE	20/1	-	35
15	-	20/1	SPARE		C			20/1	-	36
16	-	20/1	SPARE		A			20/1	-	37
17	-	20/1			B			20/1	-	38
18	-	20/1			C			20/1	-	39
19	-	20/1			A			20/1	-	40
20	-	20/1			B			20/1	-	41
21	-	20/1			C			20/1	-	42

NOTES:	PH. A:	PH. B:	PH. C:		
1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE PROTECTION DEVICE.	7,200	6,900	6,200	TOTAL CONNECTED LOAD:	20.3 KVA
					56.4 AMPS
				TOTAL DEMAND LOAD:	20.3 KVA
					56.4 AMPS
				TOTAL COMPUTED LOAD:	22.0 KVA
					61.1 AMPS

TRANSFORMER SCHEDULE

MARK	SIZE (KVA)	DESCRIPTION	PRIMARY VOLTAGE & PHASE	SECONDARY VOLTAGE & PHASE	PANEL FED	MOUNTING	GROUND SIZE	REMARKS
T-B	45	DRY-TYPE	480V-3P-3W	120/208V-3P-4W	LP-B	6" CONCRETE PAD	#6	PROVIDE NEMA 3R ENCLOSURE / WEATHERSHIELD

TRANSFORMER SCHEDULE NOTES:
1. EXACT TRANSFORMER LOCATIONS SHALL BE FIELD COORDINATED TO PROVIDE CODE-REQUIRED CLEARANCES AND WORKING SPACES AROUND TRANSFORMERS AND ADJACENT EQUIPMENT (SUCH AS PANELBOARDS).
2. ALL TRANSFORMERS SHALL BE MOUNTED ON VIBRATION ISOLATORS PER SPECIFICATION REQUIREMENTS.

KREBS ENGINEERING

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12/8/2023

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CITY OF FAIRHOPE

WTP No. 1 IMPROVEMENTS PHASE 1

FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

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Sequence: 21 of 37

Sheet No.: E0-11

A1 | ELECTRICAL SCHEDULES | SCALE: NONE

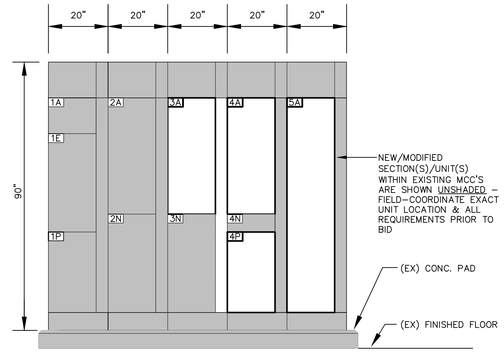
MOTOR CONTROL CENTER SCHEDULE - (EX) MCC-A

MCC TYPE:	CUTLER-HAMMER FREEDEOM SERIES 2100	AIC RATING:	65KAIC (MINIMUM) (EXISTING)
VOLTAGE:	277/480V-3P-4W	LOCATION:	ELECTRICAL ROOM
MAIN AMPS:	400/3 MAIN BKR (EXISTING)	REMARKS:	
FED FROM:	MP-A	FEEDER:	SEE PANELBOARD SCHEDULE - MP-A

UNIT NO.	NAMEPLATE DESCRIPTION	MCC UNIT TYPE	ELECT. EQUIP. CHARACTERISTICS					STARTER NEMA OR AMPERAGE RATING	CIR. BKR. OR MCP	ELEM. DIAG. NO.	LOCAL SAFETY SWITCH RATING	WIRE AND COND. SIZE	REMARKS
			V	P	HP	KW OR KVA	AMPS						
1 A	(EX) AERATOR NO. 1		480	3	1/2						-		SEE NOTE 3
1 E	(EX) LP-A (25 KVA X-FORMER)	EXISTING PANEL - WITHIN MCC	120/240	1		28.0					-		SEE NOTE 4
1 P	TRANSFORMER T-A	EXISTING 25KVA TRANSFORMER - WITHIN MCC	480	1							-		SEE NOTE 4
2 A	(EX) WELL NO. 8	EXISTING STARTER	480	3	50						-		SEE NOTE 3
2 N	(EX) WELL NO. 1	EXISTING STARTER	480	3	50						-		SEE NOTE 3
3 A	**(EX) HIGH SERVICE PUMP NO .1**	**EXISTING STARTER**	**480**	**3**							-		**RELABEL AS "SPARE" (SEE NOTE 1)**
3 N	(EX) WELL NO. 7	EXISTING STARTER	480	3	50						-		SEE NOTE 3
4 A	**(EX) HIGH SERVICE PUMP NO. 1**	**EXISTING STARTER**	**480**	**3**							-		**RELABEL AS "SPARE" (SEE NOTE 1)**
4 N	SPACE	PROVISIONS FOR FUTURE PLUG-IN UNITS							-/		-		
4 P	**(EX) MAIN BREAKER**	**EXISTING MAIN BREAKER**	**277/480**	**3**							-		**SEE NOTE 4**
5 A	**(EX) CONTROLS UNIT**	**EXISTING CONTROLS SECTION**	**120**	**1**							-		**(SEE NOTE 2)**

NEW/MODIFIED SECTION(S)/UNIT(S) WITHIN EXISTING MCC'S ARE SHOWN UNSHADED. – FIELD–COORDINATE EXACT UNIT LOCATION & ALL REQUIREMENTS PRIOR TO BID

NOTES:
1. FOR INDICATED UNITS, REMOVE ALL (EX) FIELD WIRING AND RELABEL AS INDICATED.
2. FOR INDICATED UNITS REMOVE ALL OBSOLETE INTERIOR AND DOOR MOUNTED COMPONENTS. REPLACE EXISTING UNIT DOOR.
3. FOR INDICATED UNITS, MAINTAIN ALL EXISTING CONTROL RELAY, CONTACTS, TERMINAL BLOCKS, ETC. FOR EXISTING NON-OBSOLETE CHEMICAL CONTROL SYSTEMS. ADD NEW RELAYING, CONTACTS TERMINAL BLOCKS, ETC. FOR NEW ON/OFF CONTROL/MONITORING, ALARMS, ETC. SEE PLANS AND SCADA POINTS LISTS/SCHEDULES FOR ALL REQUIREMENTS.
4. FOR INDICATED UNITS, RELABEL PER DETAIL "E-EDL".



(EX) MCC–A ELEVATION

SCALE : 1/2" = 1'–0"

SEPARATELY ENCLOSED STARTERS SCHEDULE

"FED FROM" EQUIPMENT	NAMEPLATE DESCRIPTION	UNIT DESCRIPTION	MOUNTING/ENCLOSURE	LOCATION	CHARACTERISTICS					STARTER SIZE/ CONTINUOUS RATING (MIN.)	ASSOCIATED ELEM DIAG	WIRE & COND. SIZE (TO MOTOR)	KAIC RATING	REMARKS
					V	P	HP	KW	AMPS					
MP-A	WELL PUMP NO. 8B RVSS	COMBINATION RVSS WITH MCP WITH LINE ISOLATION CONTACTOR SPD, AND SHORTING CONTACTOR	SEPARATE NEMA 12 ENCLOSURE	FINISHED WATER PUMP ROOM	480	3	60			95 AMPS	1	3#1 & 1#4G - 2"C	42KAIC	
MP-A	AERATOR NO. 2 STARTER	COMBINATION FVNR STARTER WITH MCP	SEPARATE NEMA 12 ENCLOSURE	FINISHED WATER PUMP ROOM	480	3	1			NEMA 1	2	3#12 & 1#12G - 3/4"C	42KAIC	
MP-A	FINISHED WATER PUMP NO. 1 VFD	COMBINATION LOW-HARMONIC ACTIVE FRON END (AFE) VARIABLE TORQUE VFD WITH MCP, LINE ISOLATION CONTACTOR, SPD, BYPASS STARTER, AND ACCESSORIES PER SPECS	SEPARATE NEMA 12 ENCLOSURE	FINISHED WATER PUMP ROOM	480	3	150			240 AMPS	4	(1) 3C#313MCM W/G (SHIELDED VFD CABLING) - 3"C	42KAIC	OWNER-FURNISHED CONTRACTOR-INSTALLED VFD
MP-A	FINISHED WATER PUMP NO. 2 VFD	COMBINATION LOW-HARMONIC ACTIVE FRON END (AFE) VARIABLE TORQUE VFD WITH MCP, LINE ISOLATION CONTACTOR, SPD, BYPASS STARTER, AND ACCESSORIES PER SPECS	SEPARATE NEMA 12 ENCLOSURE	FINISHED WATER PUMP ROOM	480	3	150			240 AMPS	4	(1) 3C#313MCM W/G (SHIELDED VFD CABLING) - 3"C	42KAIC	OWNER-FURNISHED CONTRACTOR-INSTALLED VFD

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

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Revisions

No.	Date	Description

Sheet Title: ELECTRICAL SCHEDULES

Issue Date: DEC, 2023
Sheet No.: E0-12
Sequence: 22 of 37

A1 | ELECTRICAL SCHEDULES | SCALE: NONE

SEPARATELY ENCLOSED CONTROL PANELS SCHEDULE

NAMEPLATE DESCRIPTION	EQUIPMENT ID	UNIT DESCRIPTION	"FED FROM" EQUIPMENT	MOUNTING/ENCLOSURE	FURNISHED BY	INSTALLED BY	ASSOCIATED SPECIFICATION SECTIONS	ASSOCIATED ELEM. DIAG.	MINIMUM KAIC RATING
RAW WATER FLOW AND TANK LEVEL TRANSMITTER CONTROL PANEL	20-CP-101	120V CONTROL PANEL	LP-B	SEPARATE NEMA 12 ENCLOSURE	SCADA INTEGRATOR	CONTRACTOR	26 29 00 & 27 60 00	N/A	10KAIC
CLEARWELL LOW LEVEL CUTOFF CONTROL PANEL	30-CP-101	120V CONTROL PANEL	LP-A	SEPARATE NEMA 12 ENCLOSURE	SCADA INTEGRATOR	CONTRACTOR	26 29 00 & 27 60 00	3	10KAIC
SCADA PLC-A	90-PLC-101	120V CONTROL PANEL	LP-A	SEPARATE NEMA 12 ENCLOSURE	SCADA INTEGRATOR	CONTRACTOR	26 29 00 & 27 60 00	N/A	10KAIC

NOTES:
1. SEE SPECIFICATIONS SECTION 26 29 00 ("MANUFACTURED CONTROL PANELS") FOR ADDITIONAL REQUIREMENTS.
2. THIS SCHEDULE IS NOT INTENDED TO IDENTIFY ALL CONTROL PANELS REQUIRED FOR PROJECT (SUCH AS HVAC PANELS, ETC.), BUT IDENTIFIES MAJOR PANELS ONLY. REFER TO PLANS & SPECIFICATIONS FOR ADDITIONAL CONTROL PANEL REQUIREMENTS.

CONTROL & INSTRUMENTATION WIRING SCHEDULES LEGEND & NOTES

LEGEND:
"DI" - DISCRETE INPUT POINT
"DO" - DISCRETE OUTPUT POINT
"AI" - ANALOG INPUT POINT
"AO" - ANALOG OUTPUT POINT

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS & INFORMATION.
2. ALL CONTROL CABLING (IDENTIFIED WITH "*C#14" OR SIMILAR DESIGNATIONS) SHALL BE 600V MULTI-CONDUCTOR TRAY CABLE PER SPECIFICATION REQUIREMENTS.
3. ALL INSTRUMENTATION CABLING (IDENTIFIED WITH "*SP" OR "SHD" DESIGNATIONS) SHALL BE 300V TWISTED, OVERALL-SHIELDED TRAY CABLE.
4. ALL NETWORKED POINTS LISTED ARE REPRESENTATIVE ONLY. EQUIPMENT SUPPLIERS OF PANELS/EQUIPMENT CONNECTED TO SCADA SYSTEM VIA NETWORK CONNECTIONS SHALL PROVIDE REGISTER LISTS OF ALL AVAILABLE POINTS TO THE SCADA INTEGRATOR AND CIVIL ENGINEER PRIOR TO PREPARATION OF SHOP DRAWINGS. SCADA INTEGRATOR SHALL PROVIDE PROGRAMMING/HMI FOR ALL NETWORKED POINTS CHOSEN BY THE CIVIL ENGINEER.

PLC-A SCADA POINT LIST AND CONTROL & INSTRUMENTATION WIRING SCHEDULE

HOMERUN MARK	TO	EQUIP. ID NO.	EQUIPMENT DESCRIPTION	PARAMETER	POINT TYPE	TAG	WIRING	SHEET	REMARKS
10-P-110	PLC-A	10-P-110	WELL PUMP NO. 1	ON/OFF CONTROL	DO	10-P-110-YC	(4) 8C#14 - 2"C	E5-02	
				ON/OFF STATUS	DI	10-P-110-YI			
				H/O/A SWITCH POSITION INDICATION	DI	10-P-110-HS			
				ALARM	DI	10-P-110-YA			
		10-P-710	WELL PUMP NO. 7	ON/OFF CONTROL	DO	10-P-710-YC			
				ON/OFF STATUS	DI	10-P-710-YI			
				H/O/A SWITCH POSITION INDICATION	DI	10-P-710-HS			
				ALARM	DI	10-P-710-YA			
		10-P-810	WELL PUMP NO. 8	ON/OFF CONTROL	DO	10-P-810-YC			
				ON/OFF STATUS	DI	10-P-810-YI			
				H/O/A SWITCH POSITION INDICATION	DI	10-P-810-HS			
				ALARM	DI	10-P-810-YA			
		20-M-110	AERATOR NO. 1	ON/OFF CONTROL	DO	20-M-110-YC			
				ON/OFF STATUS	DI	20-M-110-YI			
				H/O/A SWITCH POSITION INDICATION	DI	20-M-110-HS			
				ALARM	DI	20-M-110-YA			
10-P-820	PLC-A	10-P-820	WELL PUMP NO. 8B	ON/OFF CONTROL	DO	10-P-820-YC	(1) 10C#14 - 1"C & (1) #16TSP - 3/4"C	E5-02	
				ON/OFF STATUS	DI	10-P-820-YI			
				H/O/A SWITCH POSITION INDICATION	DI	10-P-820-HS			
				OVERLOAD ALARM	DI	10-P-820-YA:OL			
				TEMPERATURE ALARM - HIGH	DI	10-P-820-TAH			
				CURRENT (AMPERAGE) INDICATION - 3 PHASE AVG.	AI	10-P-820-I			
10-FIT-821	PLC-A	10-FIT-821	WELL PUMP NO. 8B FLOW TRANSMITTER	FLOW INDICATION	AI	10-FIT-821-FI	(1) #16TSP - 3/4"C	E3-01	
20-CP-101	PLC-A	20-CP-101	RAW WATER FLOW AND TANK LEVEL TRANSMITTER CONTROL PANEL	TOTAL RAW WATER FLOW INDICATION	AI	20-CP-101-FI.TF	(4) #16TSP - 1 1/4"C	E5-02	
				AERATOR NO. 1 FLOW INDICATION	AI	20-FE-111-FI			
				AERATOR NO. 2 FLOW INDICATION	AI	20-FE-121-FI			
				ELEVATED TANK LEVEL INDICATION	AI	70-LIT-110-LI			
20-M-120	PLC-A	20-M-120	AERATOR NO. 2	ON/OFF CONTROL	DO	20-M-120-YC	(1) 8C#14 - 1"C	E5-02	
				ON/OFF STATUS	DI	20-M-120-YI			
				H/O/A SWITCH POSITION INDICATION	DI	20-M-120-HS			
				ALARM	DI	20-M-120-YA			
30-CP-101	PLC-A	30-CP-101	CLEARWELL LOW LEVEL CUTOFF CONTROL PANEL	LEVEL ALARM - LOW	DI	30-CP-101-LAL	(1) 4C#14 - 3/4"C	E5-02	
				SYSTEM DISABLED ALARM	DI	30-CP-101-YA:DS			
30-LIT-201	PLC-A	30-LIT-201	CLEARWELL LEVEL TRANSMITTER	LEVEL INDICATION	AI	30-LIT-201-LI	(1) #16TSP - 3/4"C	E5-02	
40-P-110	PLC-A	40-P-110	FINISHED WATER PUMP NO. 1	ON/OFF CONTROL	DO	40-P-110-YC	(1) 14C#14 - 1"C & (3) #16TSP - 1 1/4"C	E5-02	
				ON/OFF STATUS	DI	40-P-110-YI			
				H/O/A SWITCH POSITION INDICATION	DI	40-P-110-HS			
				VFD ALARM	DI	40-P-110-YA:VFD			
				TEMPERATURE ALARM - HIGH	DI	40-P-110-TAH			
				LEVEL ALARM - LOW	DI	40-P-110-LAL			
				VFD-BYPASSED STATUS	DI	40-P-110-HS:BP			
				SPEED CONTROL	AO	40-P-110-SC			
				SPEED INDICATION	AI	40-P-110-SI			
				CURRENT (AMPERAGE) INDICATION - 3 PHASE AVG.	AI	40-P-110-I			
40-P-120	PLC-A	40-P-120	FINISHED WATER PUMP NO. 2	ON/OFF CONTROL	DO	40-P-120-YC	(1) 14C#14 - 1"C & (3) #16TSP - 1 1/4"C	E5-02	
				ON/OFF STATUS	DI	40-P-120-YI			
				H/O/A SWITCH POSITION INDICATION	DI	40-P-120-HS			
				VFD ALARM	DI	40-P-120-YA:VFD			
				TEMPERATURE ALARM - HIGH	DI	40-P-120-TAH			
				LEVEL ALARM - LOW	DI	40-P-120-LAL			
				VFD-BYPASSED STATUS	DI	40-P-120-HS:BP			
				SPEED CONTROL	AO	40-P-120-SC			
				SPEED INDICATION	AI	40-P-120-SI			
				CURRENT (AMPERAGE) INDICATION - 3 PHASE AVG.	AI	40-P-120-I			
50-FIT-101	PLC-A	50-FIT-101	FINISHED WATER FLOW TRANSMITTER	FLOW INDICATION	AI	50-FIT-101-FI	(2) #16TSP & 1#14G - 1"C	E3-03	
		50-PIT-102	FINISHED WATER PRESSURE TRANSMITTER	PRESSURE INDICATION	AI	50-PIT-102-PI			
50-AIT-201	PLC-A	50-AIT-201	FINISHED WATER TOTAL CHLORINE AND PH TRANSMITTER	CHLORINE RESIDUAL LEVEL INDICATION	AI	50-AIT-201-AIT:CR	(2) #16TSP - 1"C	E5-02	
				PH LEVEL INDICATION	AI	50-AIT-201-AIT:PH			
60-AIT-101	PLC-A	60-AIT-101	CHLORINE LEAK ALARM SYSTEM	CHLORINE LEAK ALARM	DI	60-AIT-101-CL2L	(1) 2C#14 - 3/4"C	E5-02	
90-GEN-201	PLC-A	90-GEN-201	GENERATOR GEN-A	ON/OFF STATUS	DI	90-GEN-201-YI	(1) 8C#14 - 3/4"C	E3-01	
				MINOR ALARM	DI	90-GEN-201-YA:H			
				MAJOR ALARM	DI	90-GEN-201-YA:HH			
				LOW FUEL LEVEL ALARM	DI	90-GEN-201-LAF			
90-ATS-202	PLC-A	90-ATS-202	AUTOMATIC TRANSFER SWITCH ATS-A	NORMAL POWER AVAILABLE INDICATION	DI	90-ATS-202-JNI	(1) 8C#14 - 3/4"C	E5-02	
				EMERGENCY POWER AVAILABLE STATUS	DI	90-ATS-202-JEI			
				NORMAL/EMERGENCY SWITCH POSITION STATUS	DI	90-ATS-202-ZI:NE			
				H/O/A SWITCH POSITION INDICATION	DI	90-ATS-202-HS			
90-PM-211	PLC-A	90-PM-211	MPA POWER METER	LOSS OF PHASE ALARM	EN- DI	90-PM-211-JPA	(1) CBL-FILLED CAT6 ETHERNET CABLE 3/4"C	E5-02	
				POWER (KW)	EN- AI	90-PM-211-JI			
				POWER (KVA)	EN- AI	90-PM-211-JA1			
				VOLTAGE INDICATION - PHASE A	EN- AI	90-PM-211-EIA			
				VOLTAGE INDICATION - PHASE B	EN- AI	90-PM-211-EIB			
				VOLTAGE INDICATION - PHASE C	EN- AI	90-PM-211-EIC			
				VOLTAGE INDICATION - 3 PHASE AVG.	EN- AI	90-PM-211-EI			
				CURRENT (AMPERAGE) INDICATION - 3 PHASE AVG.	EN- AI	90-PM-211-II			
N/A	PLC-A	90-PLC-101	SCADA PLC-A	120V POWER INPUT FAILURE	DI	90-PLC-101-PIA	N/A - INTEGRAL	E5-02	INTEGRAL TO PLC
				UPS POWER FAILURE	DI	90-PLC-101-PUA			INTEGRAL TO PLC
				DC POWER FAILURE	DI	90-PLC-101-PDA			INTEGRAL TO PLC
				PROCESSOR FAILURE	DI	90-PLC-101-PRA			INTEGRAL TO PLC
		90-TT-101	PLC-A TEMPERATURE TRANSMITTER	TEMPERATURE INDICATION		90-TT-101-TI			

INSTRUMENT SCHEDULE

INSTRUMENT NAME	INSTRUMENT TYPE	INSTRUMENT ID	SHEET	ASSOCIATED SPECIFICATION SECTION	FURNISHED BY	PROVIDE 2-WIRE SURGE PROTECTION DEVICE	PROVIDE 4-WIRE SURGE PROTECTION DEVICE	PROVIDE SUNRAIN SHIELD	NOTES
WELL PUMP NO. 8B FLOW TRANSMITTER	DIFFERENTIAL PRESSURE TRANSMITTER	10-FIT-821	E3-01	27 60 05	SCADA INTEGRATOR		X	X	PROVIDE HEATED ENCLOSURE & HEAT TRACING AS NOTED ON PLANS
AERATOR NO. 2 FLOW TRANSMITTER	2-WIRE PROPELLER TYPE FLOW METER WITH 4-20mA OUTPUT	20-FE-121	E-301	27 60 05	SCADA INTEGRATOR	X			
CLEARWELL LOW LEVEL FLOAT SWITCH	NON-MERCURY SUSPENDED FLOAT SWITCH	30-FS-101	E5-02	27 60 05	SCADA INTEGRATOR				
CLEARWELL LEVEL TRANSMITTER	ULTRASONIC TRANSDUCER WITH REMOTE TRANSMITTER	30-LIT-201	E5-02	27 60 05	SCADA INTEGRATOR				
FINISHED WATER FLOW TRANSMITTER	DIFFERENTIAL PRESSURE TRANSMITTER	50-FIT-101	E3-03	27 60 05	SCADA INTEGRATOR	X			
FINISHED WATER PRESSURE TRANSMITTER	GAUGE PRESSURE TRANSMITTER	50-PIT-102	E3-03	27 60 05	SCADA INTEGRATOR	X			
PLC-A TEMPERATURE TRANSMITTER	2-WIRE AMBIENT TEMPERATURE TRANSMITTER	90-TT-101	E5-02	27 60 05	SCADA INTEGRATOR				PANEL-MOUNTED TO SCADA PLC ENCLOSURE BY SCADA INTEGRATOR

NOTES:
1. SEE INSTRUMENTATION & EQUIPMENT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT MOUNTING HARDWARE REQUIREMENTS WITH INSTRUMENT MANUFACTURERS.
3. SEE PLANS FOR ADDITIONAL REQUIREMENTS.
4. RANGES AND/OR MOUNTING HEIGHTS OF ALL INSTRUMENTS/DEVICES LISTED ABOVE SHALL BE AS DIRECTED BY CIVIL ENGINEER.

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12/8/2023

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CITY OF FAIRHOPE
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PHASE 1
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CITY OF FAIRHOPE ALABAMA

Designed	Project No.
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Revisions

No.	Date	Description

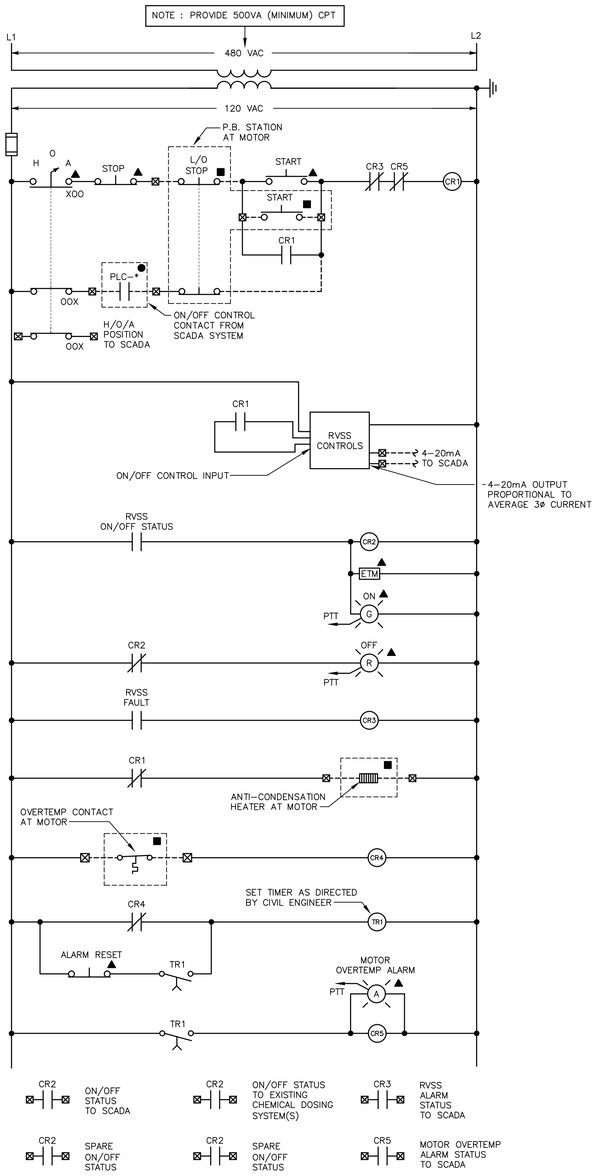
Sheet Title: CONTROL AND INSTRUMENTATION SCHEDULES

Issue Date: DEC, 2023
Sequence: 23 of 37
Sheet No.: E0-13

A1 | CONTROL AND INSTRUMENTATION SCHEDULES | SCALE: NONE

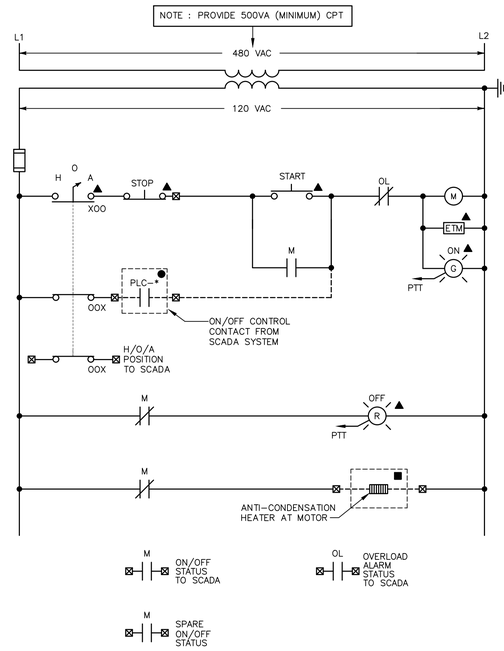
ELEMENTARY DIAGRAM LEGEND

START	PUSHBUTTON – START – NORMALLY OPEN – MOMENTARY CONTACT.
STOP	PUSHBUTTON – STOP – NORMALLY CLOSED – MOMENTARY CONTACT.
E–STOP	PUSHBUTTON – EMERGENCY STOP – NORMALLY CLOSED – MAINTAINED CONTACT – MUSHROOM HEAD.
H O A / XOO	SELECTOR SWITCH – HAND–OFF–AUTOMATIC – MAINTAINED CONTACT – "XOO" INDICATES THAT CONTACT IS ONLY CLOSED IN THE FIRST (HAND) POSITION (MAY BE USED WITH OTHER COMBINATIONS OF "X" & "O").
OFF ON / OX	SELECTOR SWITCH – ON–OFF – MAINTAINED CONTACT – "XO" INDICATES – THAT CONTACT IS ONLY CLOSED IN THE FIRST (ON) POSITION (MAY BE USED WITH OTHER COMBINATIONS OF "X" & "O").
N BP / OX	SELECTOR SWITCH – NORMAL–BYPASS – MAINTAINED CONTACT – "XO" INDICATES – THAT CONTACT IS ONLY CLOSED IN THE FIRST (NORMAL) POSITION (MAY BE USED WITH OTHER COMBINATIONS OF "X" & "O").
L O R / XOO	SELECTOR SWITCH – LOCAL–OFF–REMOTE – MAINTAINED CONTACT – "XOO" INDICATES THAT CONTACT IS ONLY CLOSED IN THE FIRST (HAND) POSITION (MUST BE USED WITH OTHER COMBINATIONS OF "X" & "O").
(M)	MOTOR STARTER COIL.
(BP)	BYPASS MOTOR STARTER COIL.
OL	OVERLOAD RELAY CONTACT.
(CR)	CONTROL RELAY COIL.
	CONTROL CONTACT – NORMALLY OPEN.
	CONTROL CONTACT – NORMALLY CLOSED.
	INDICATOR LIGHT – COLOR AS SHOWN.
	CONTROL TRANSFORMER.
ETM	ELAPSED TIME METER.
▲	DEVICE LOCATED ON STARTER DOOR.
■	DEVICE LOCATED ADJACENT TO MOTOR.
●	DEVICE LOCATED REMOTE – SEE PLAN.
⊠	TERMINAL BLOCK WITHIN STARTER UNIT.
	FLOAT SWITCH – CLOSES ON RISING LEVEL.
	FLOAT SWITCH – CLOSES ON FALLING LEVEL.
	PRESSURE SWITCH – CLOSES ON INCREASE PRESSURE.
	PRESSURE SWITCH – CLOSES ON DECREASE PRESSURE.
	LIMIT SWITCH – NORMALLY OPEN – HELD CLOSED.
	LIMIT SWITCH – NORMALLY CLOSED – HELD OPEN.
(TR)	TIME DELAY RELAY COIL.
	TIME DELAY RELAY CONTACT – NORMALLY CLOSED, TIME OPEN.
	TIME DELAY RELAY CONTACT – NORMALLY OPEN, TIME CLOSED.
	TIME DELAY RELAY CONTACT – NORMALLY OPEN, TIME OPEN.
	TIME DELAY RELAY CONTACT – NORMALLY CLOSED, TIME CLOSED.
	SOLENOID VALVE.
	THERMOSTAT – NORMALLY CLOSED, OPENS ON HIGH TEMP.
	THERMOSTAT – NORMALLY OPEN, CLOSES ON HIGH TEMP.
AD	AUTOMATIC DAMPER.
	ALARM HORN.



ELEMENTARY DIAGRAM NO. 1

WELL NO. 8B: SEPARATELY ENCLOSED RVSS



ELEMENTARY DIAGRAM NO. 2

AERATOR NO. 2
(SEPARATELY–ENCLOSED STARTER)

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CITY OF FAIRHOPE
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Designed	PDB
Drawn	ZJG
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Sheet Title: ELEMENTARY DIAGRAMS

Issue Date: DEC, 2023
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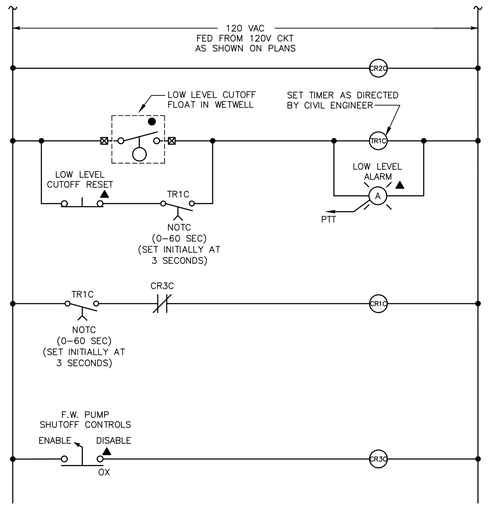
Sequence: 24 of 37

A1 | ELEMENTARY DIAGRAMS | SCALE: NONE



CR1C — LOW LEVEL ALARM (TO FINISHED WATER PUMP NO.1 STARTER)

CR1C — LOW LEVEL ALARM (TO FINISHED WATER PUMP NO.2 STARTER)

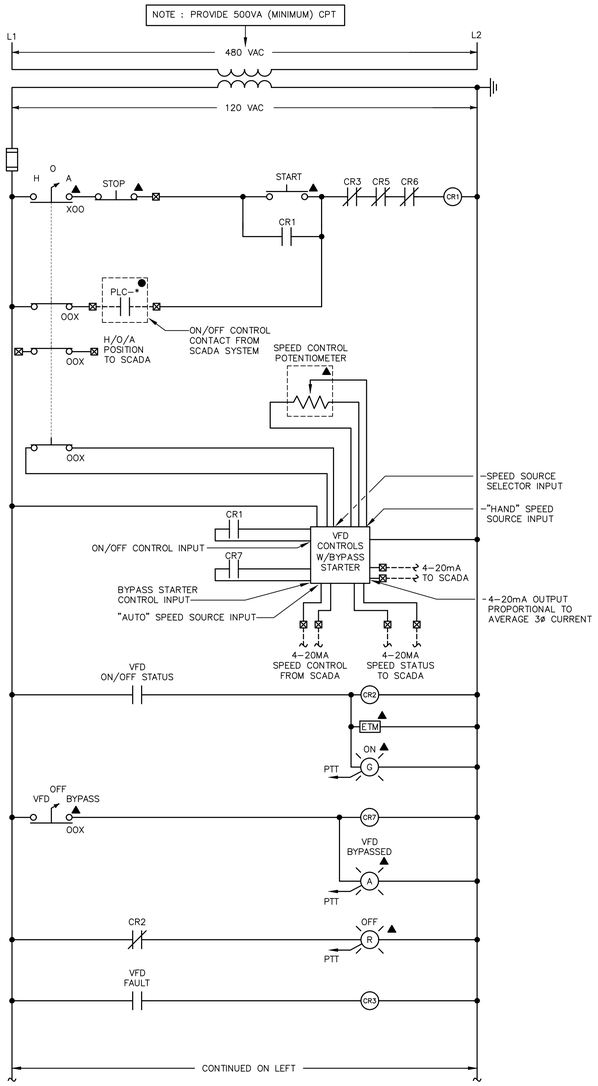
CR1C — LOW LEVEL ALARM TO SCADA

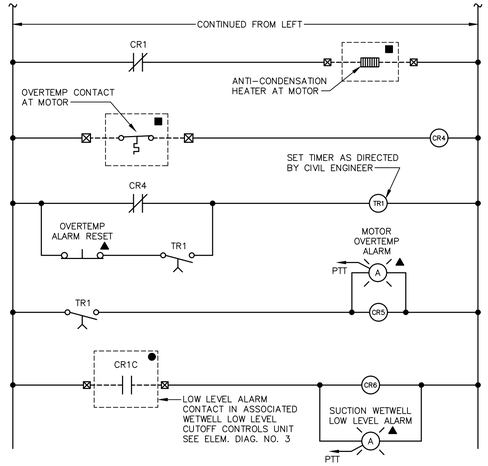
CR1C — SPARE LOW LEVEL ALARM

CR3C — CR2C — SYSTEM DISABLED ALARM TO SCADA

ELEMENTARY DIAGRAM NO. 3

CLEARWELL LOW LEVEL CUTOFF CONTROL PANEL (SEPARATELY–ENCLOSED CONTROL PANEL)





CR2 — ON/OFF STATUS TO SCADA

CR3 — VFD ALARM STATUS TO SCADA

CR5 — MOTOR OVERTEMP ALARM STATUS TO SCADA

CR6 — SUCTION WETWELL LOW LEVEL ALARM STATUS TO SCADA

CR7 — VFD BYPASSED STATUS TO SCADA

ELEMENTARY DIAGRAM NO. 4

FINISHED WATER PUMPS NO. 1 AND NO. 2: SEPARATELY ENCLOSED VFD's

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CITY OF FAIRHOPE

WTP No. 1 IMPROVEMENTS
PHASE 1

FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	Project No.
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No.	Date	Description

Sheet Title: ELEMENTARY DIAGRAMS

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Sheet No.: E0-22

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A1 | ELEMENTARY DIAGRAMS | SCALE: NONE

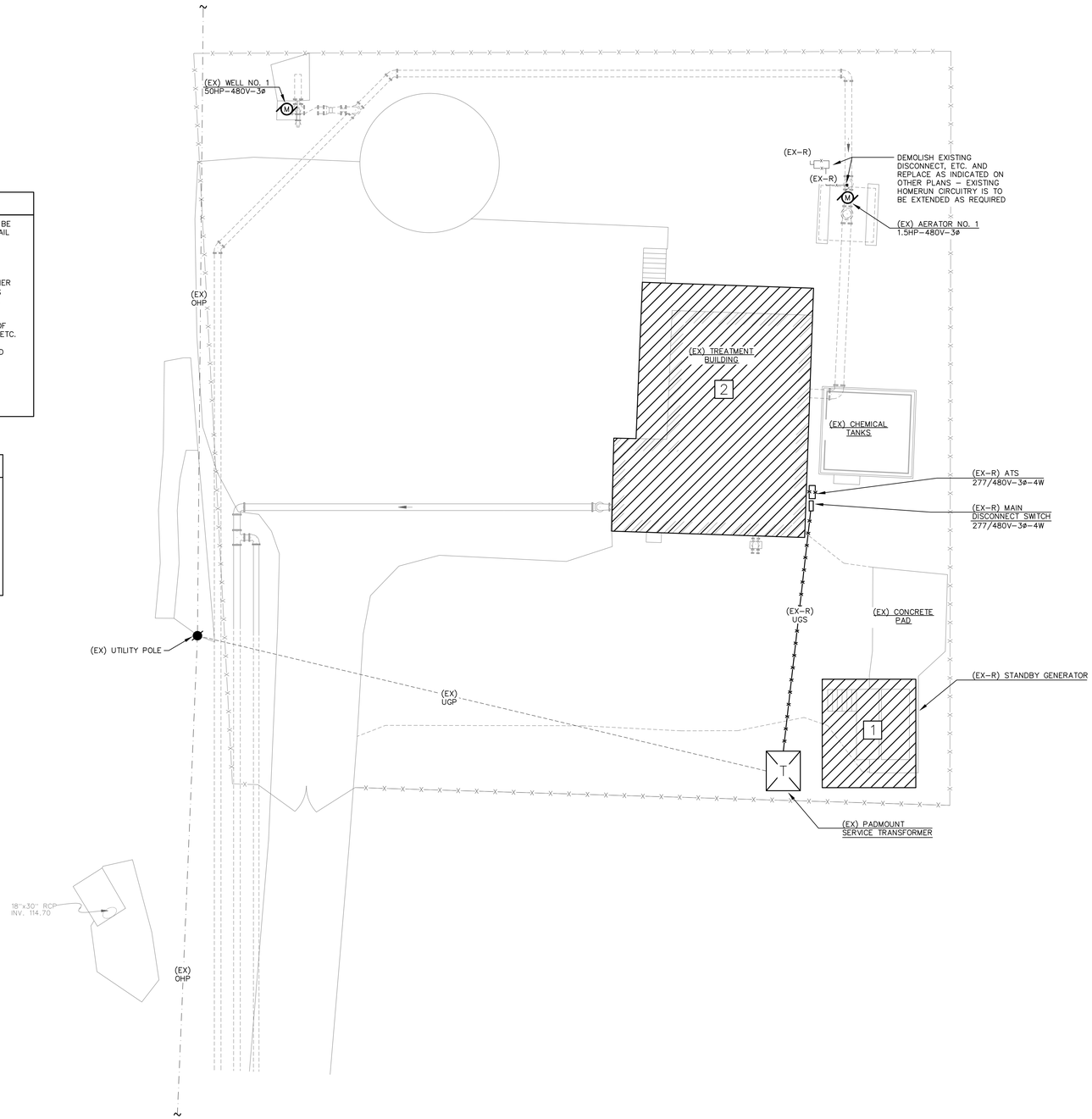
ELECTRICAL DEMOLITION NOTES

1. THE ELECTRICAL DEMOLITION PLANS INDICATE GENERAL SCOPE OF DEMOLITION WORK TO BE ACCOMPLISHED UNDER THIS CONTRACT. IT IS NOT THE INTENT OF THESE PLANS TO DETAIL ALL ELECTRICAL ITEMS THAT MUST BE REMOVED. THE ELECTRICAL CONTRACTOR SHALL REFER TO ALL OTHER PLANS IN THIS SET OF DRAWINGS FOR ADDITIONAL INFORMATION RELATED TO EXTENT AND SCOPE OF DEMOLITION WORK. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. VERIFY ALL REQUIREMENTS AT JOB SITE PRIOR TO BID.
2. EXISTING SALVAGEABLE MATERIALS REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO OWNER'S DESIGNATED STORAGE FACILITY. ANY MATERIALS REMOVED THAT THE OWNER DOES NOT WISH TO RETAIN SHALL BE DISPOSED OF BY THE CONTRACTOR.
3. NO EXISTING ELECTRICAL ITEMS SHALL BE REMOVED WITHOUT PRIOR WRITTEN CONSENT OF THE OWNER. THE EXISTING PLANT RWPS, GAC FILTER SYSTEM, MAINTENANCE BUILDING, ETC. SHALL BE KEPT OPERATIONAL THROUGHOUT THE CONSTRUCTION PROCESS UNTIL THE ASSOCIATED REPLACEMENT/NEW PLANT SYSTEMS ARE IN SERVICE AND PROPERLY TESTED AND DEEMED RELIABLE/ACCEPTABLE FOR PERMANENT SERVICE.
4. ALL EXISTING FEEDER WIRING MADE OBSOLETE BY THIS PROJECT SHALL BE DEMOLISHED COMPLETELY. SEE ELECTRICAL DEMOLITION NOTE 3.

ELECTRICAL DEMOLITION KEYED NOTES

1 EXISTING BUILDING/STRUCTURES TO BE DEMOLISHED WITHIN THIS PROJECT. DEMOLISH ALL OBSOLETE ELECTRICAL EQUIPMENT, DEVICES, DISCONNECTS, EXPOSED CONDUIT AND WIRING, ETC. TO INCLUDE FEEDERS AND CONTROL/INSTRUMENTATION WIRING CONNECTIONS TO OTHER BUILDINGS AND STRUCTURES.

2 EXISTING BUILDING/STRUCTURES TO BE MODIFIED WITHIN THIS PROJECT. REMOVE OBSOLETE POWER DISTRIBUTION EQUIPMENT INCLUDING MAIN DISCONNECT, AUTOMATIC TRANSFER SWITCH, ETC. ALL EXISTING MCC'S PANELBOARDS, RECEPTACLES, LIGHTS, AND ASSOCIATED CIRCUITRY, SWITCHES, CONDUIT AND WIRING, ETC. SHALL REMAIN IN SERVICE. SEE OTHER PLANS FOR NEW REQUIREMENTS.



A1 SITE ELECTRICAL DEMOLITION PLAN SCALE: 1" = 10'-0"

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Sheet Title: SITE ELECTRICAL DEMOLITION PLAN

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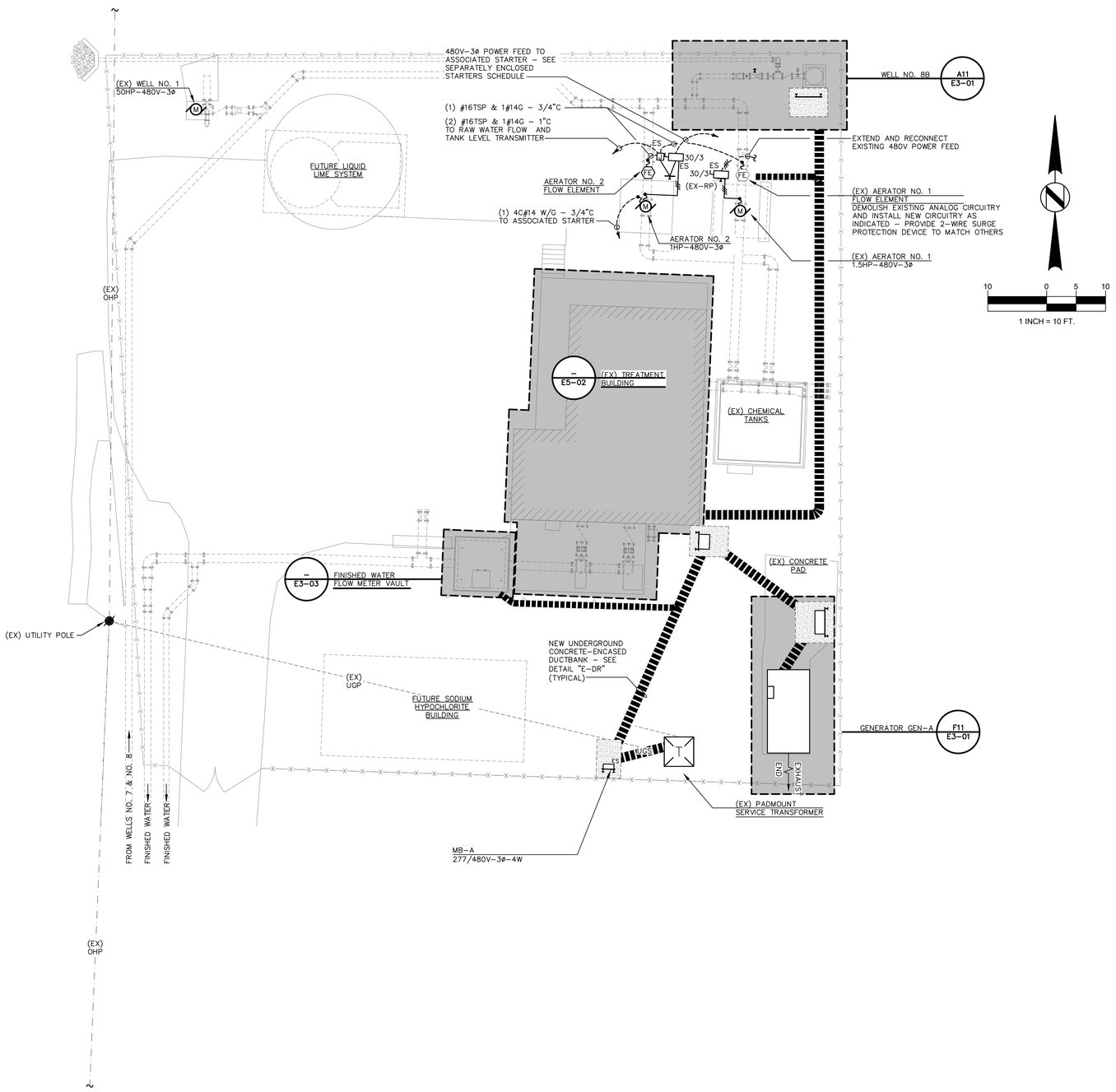
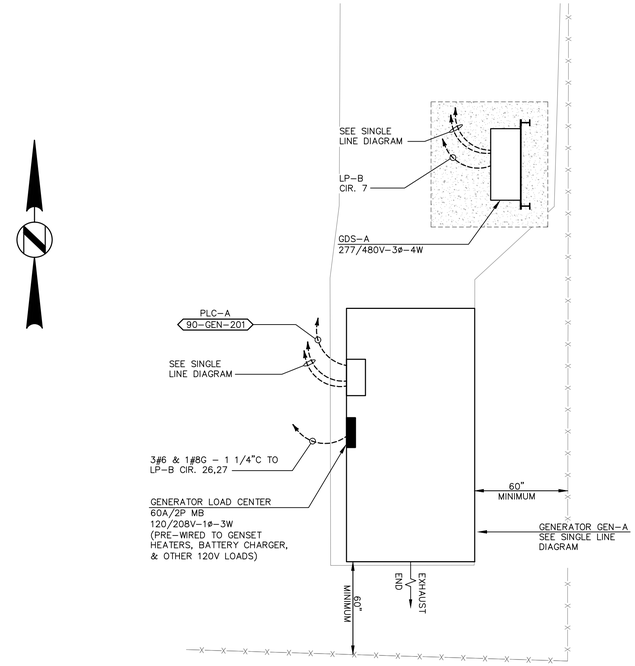
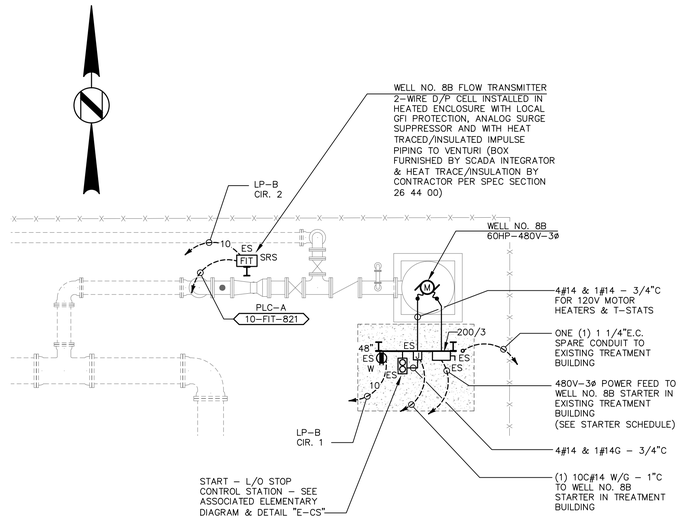


A1 SITE ELECTRICAL PLAN SCALE: 1" = 10'-0"



F11 GENERATOR PLAN SCALE: 1/4" = 1'-0"



A11 WELL 8B ELECTRICAL PLAN SCALE: 1/4" = 1'-0"

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Revisions

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Sheet Title: SITE ELECTRICAL PLAN

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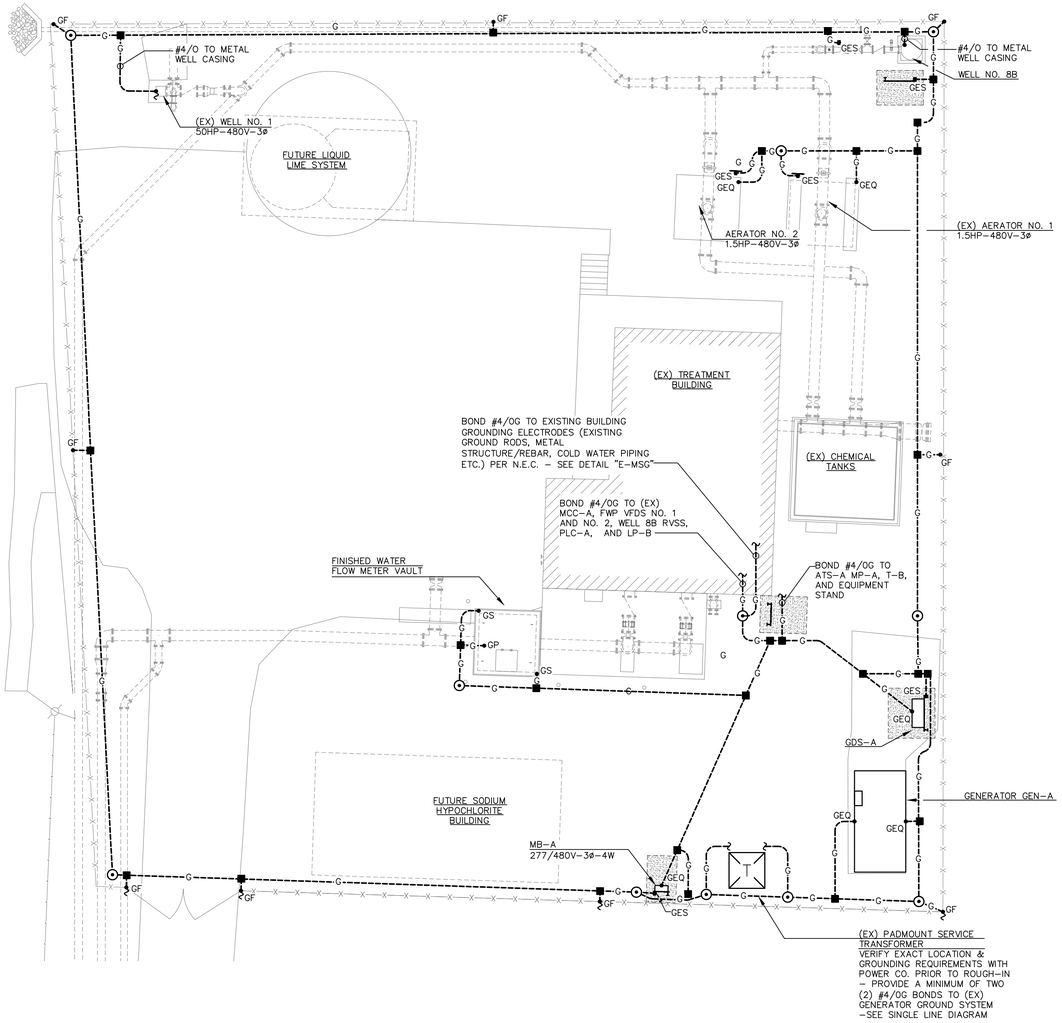

A1 SITE SUPPLEMENTAL GROUNDING PLAN SCALE: 1" = 10'-0"

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FAIRHOPE, ALABAMA

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Revisions

No.	Date	Description

Sheet Title: SITE SUPPLEMENTAL GROUNDING PLAN

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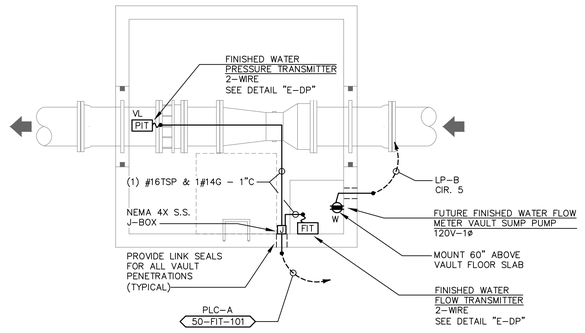

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Sheet Title

FINISHED WATER FLOW METER VAULT ELECTRICAL PLAN

Issue Date	Sheet No.
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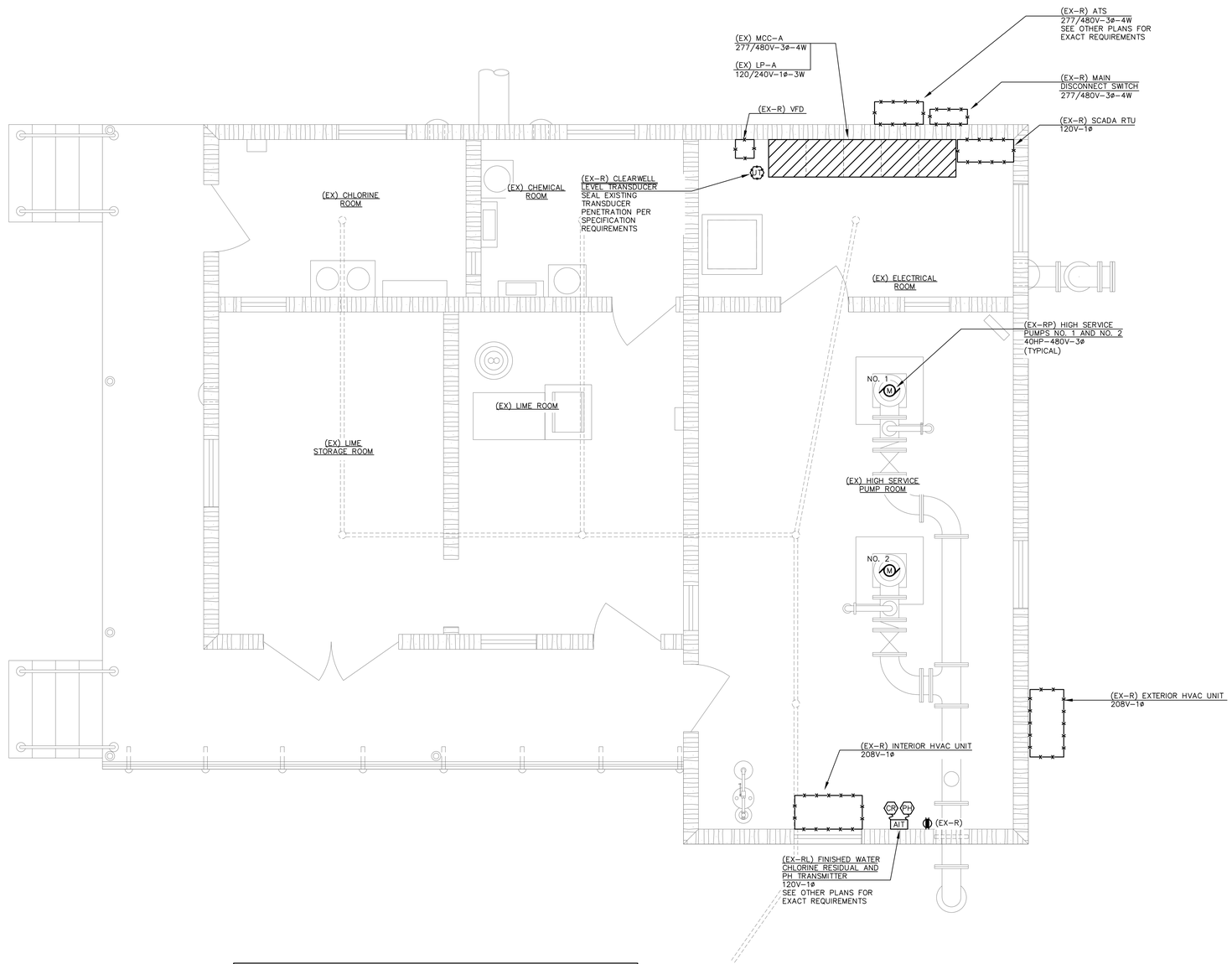
A1 | FINISHED WATER FLOW METER VAULT ELECTRICAL PLAN SCALE: 3/8" = 1'-0"



ELECTRICAL DEMOLITION NOTES

1. THE ELECTRICAL DEMOLITION PLANS INDICATE GENERAL SCOPE OF DEMOLITION WORK TO BE ACCOMPLISHED UNDER THIS CONTRACT. IT IS NOT THE INTENT OF THESE PLANS TO DETAIL ALL ELECTRICAL ITEMS THAT MUST BE REMOVED. THE ELECTRICAL CONTRACTOR SHALL REFER TO ALL OTHER PLANS IN THIS SET OF DRAWINGS FOR ADDITIONAL INFORMATION RELATED TO EXTENT AND SCOPE OF DEMOLITION WORK. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. VERIFY ALL REQUIREMENTS AT JOB SITE PRIOR TO BID.
2. EXISTING SALVAGEABLE MATERIALS REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO OWNER'S DESIGNATED STORAGE FACILITY. ANY MATERIALS REMOVED THAT THE OWNER DOES NOT WISH TO RETAIN SHALL BE DISPOSED OF BY THE CONTRACTOR.
3. NO EXISTING ELECTRICAL ITEMS SHALL BE REMOVED WITHOUT PRIOR WRITTEN CONSENT OF THE OWNER. THE EXISTING PLANT RWPS, GAC FILTER SYSTEM, MAINTENANCE BUILDING, ETC. SHALL BE KEPT OPERATIONAL THROUGHOUT THE CONSTRUCTION PROCESS UNTIL THE ASSOCIATED REPLACEMENT/NEW PLANT SYSTEMS ARE IN SERVICE AND PROPERLY TESTED AND DEEMED RELIABLE/ACCEPTABLE FOR PERMANENT SERVICE.
4. ALL EXISTING FEEDER WIRING MADE OBSOLETE BY THIS PROJECT SHALL BE DEMOLISHED COMPLETELY. SEE ELECTRICAL DEMOLITION NOTE 3.

A1 | TREATMENT BUILDING ELECTRICAL DEMOLITION PLAN | SCALE: 3/8" = 1'-0"

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No.	Date	Description

Sheet Title: TREATMENT BUILDING ELECTRICAL DEMOLITION PLAN

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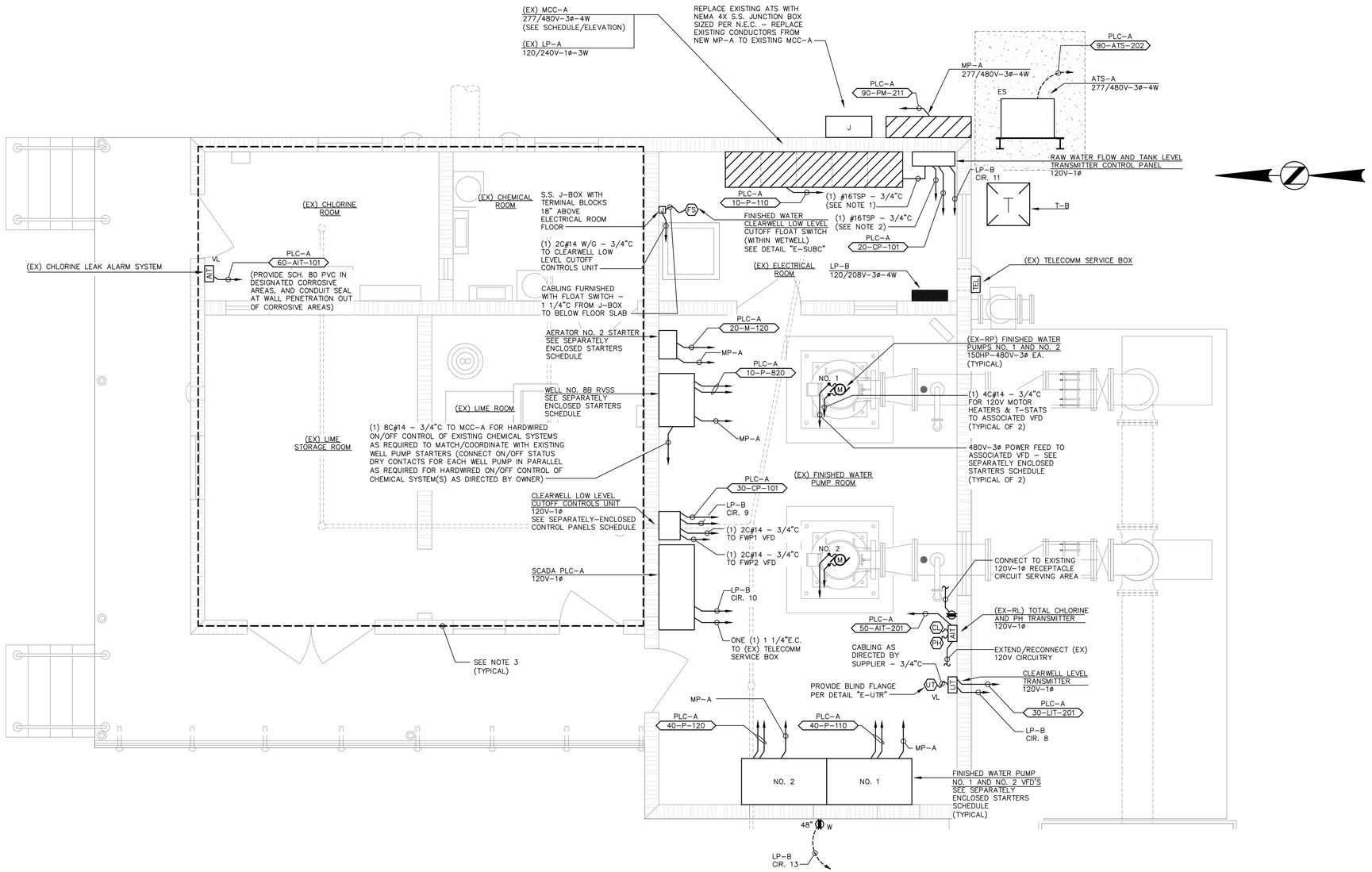

NOTES THIS SHEET ONLY

1. EXTEND AND RE-CONNECT EXISTING ELEVATED TANK LEVEL INDICATION CIRCUITRY TO RAW WATER FLOW AND TANK LEVEL TRANSMITTER CONTROL PANEL.
2. EXTEND AND RECONNECT TOTAL RAW WATER FLOW SIGNAL TO EXISTING CHEMICAL DOSING CONTROL SYSTEMS - DAISY-CHAIN THRU (EX) EQUIPMENT/DEVICES AS REQUIRED FOR FLOW PACING - VERIFY EXACT ROUTING WITH OWNER PRIOR TO ROUGH-IN
3. NO NEW ELECTRICAL CIRCUITRY, BOXES, EQUIPMENT, DEVICES, ETC. SHALL BE INSTALLED WITHIN THE EXISTING (EXTREMELY CORROSIVE) CHEMICAL ROOM, CHLORINE ROOM, LIME ROOM, OR LIME STORAGE ROOM UNLESS SPECIFICALLY SO SHOWN.

A1 | TREATMENT BUILDING MODIFICATIONS ELECTRICAL PLAN | SCALE: 3/8" = 1'-0"

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WTP No. 1 IMPROVEMENTS PHASE 1

FAIRHOPE, ALABAMA

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Sheet Title: TREATMENT BUILDING MODIFICATIONS ELECTRICAL PLAN

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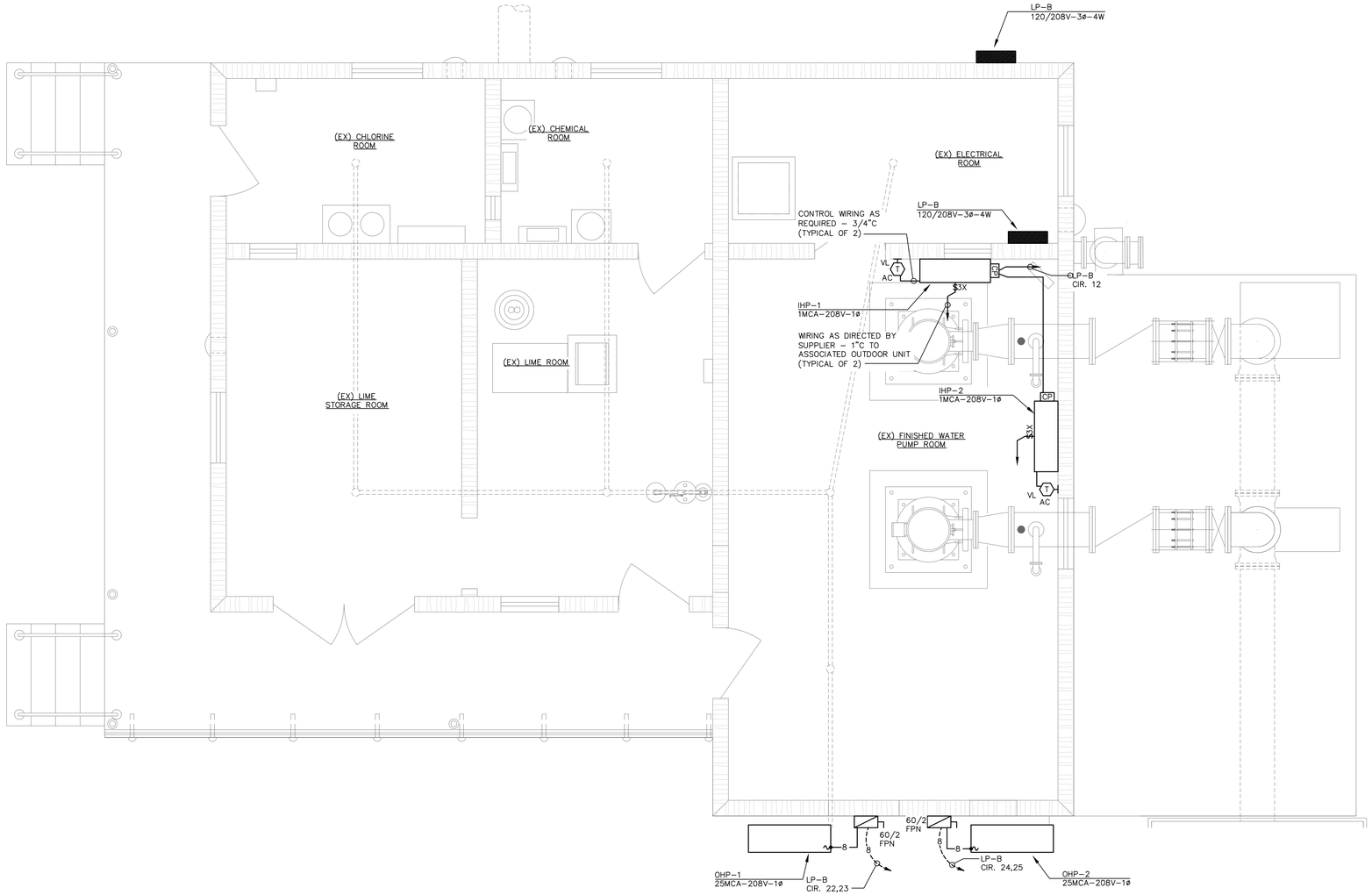

A1 TREATMENT BUILDING MODIFICATIONS HVAC ELECTRICAL PLAN SCALE: 3/8" = 1'-0"

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Sheet Title

TREATMENT BUILDING MODIFICATIONS HVAC ELECTRICAL PLAN

Issue Date	Sheet No.
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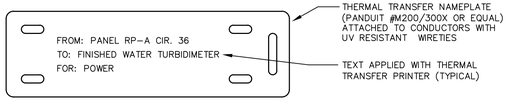
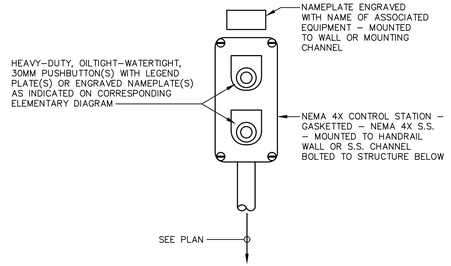
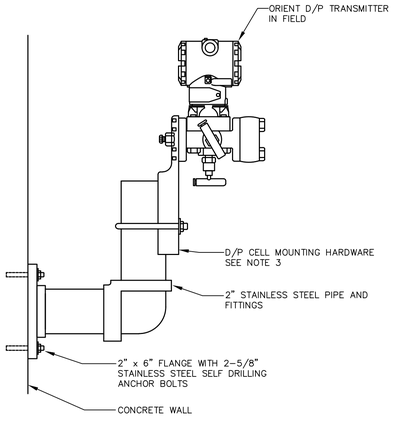


DETAIL "E–CL"
TYPICAL CIRCUIT LABEL
SCALE : NONE

NOTES THIS DETAIL ONLY
1. CIRCUIT LABEL TYPES SHOWN ABOVE SHALL BE USED TO IDENTIFY ALL CIRCUITS WITHIN PULLBOXES, HANDHOLES, VAULTS JUNCTION BOXES LARGER THAN 4–11/16", APPROXIMATELY EVERY 50 FEET WITHIN CABLE TRAYS (INCLUDING AT MAJOR CABLE TRAY JUNCTIONS AND BREAKOUT LOCATIONS) AND AT OTHER SIMILAR LOCATIONS. SEE SPECIFICATIONS FOR LABELING REQUIREMENTS IN OTHER AREAS.
2. CIRCUIT NUMBERS SHALL BE IDENTIFIED FOR ALL CIRCUITS FED FROM LIGHTING OR POWER PANELBOARDS.
3. "FROM", "TO" & "FOR" TEXT SHOWN ABOVE ARE FOR EXAMPLE PURPOSES ONLY. NAMES/NUMBERS SHALL BE ADJUSTED TO MATCH ASSOCIATED CIRCUITS/CABLES.
4. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

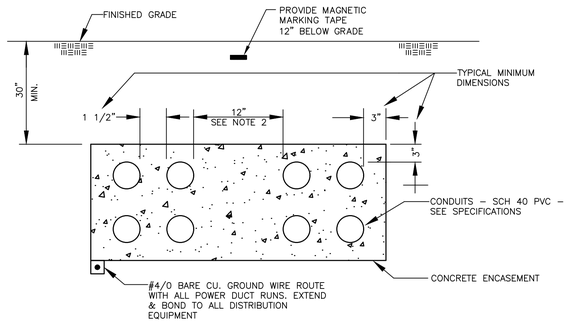


DETAIL "E–CS"
TYPICAL CONTROL STATION
SCALE : NONE



DETAIL "E–DP"
TYPICAL WALL MOUNTED D/P CELL INSTALLATION DETAIL
SCALE : NONE

DETAIL NOTES
1. INSTALLATION SHOWN IS TYPICAL. EXACT REQUIREMENTS SHALL BE DETERMINED BY APPROVED MANUFACTURER'S SHOP DRAWINGS.
2. REFER TO CIVIL DRAWINGS FOR ALL MECHANICAL PIPING REQUIREMENTS.
3. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT MOUNTING HARDWARE REQUIREMENTS WITH INTRUMENTATION PROVIDER.
4. D/P CELLS SHALL BE MOUNTED AT HEIGHTS AS DIRECTED BY CIVIL ENGINEER.
5. SIMILAR PIPE–MOUNTING PROVISIONS SHALL BE PROVIDED FOR FLOOR–MOUNTED OR HANDRAIL–MOUNTED D/P TRANSMITTERS.



DETAIL "E–DR"
TYPICAL DUCT RUN SECTION
SCALE : NONE

DETAIL NOTES
1. PVC SPACERS SHALL BE INSTALLED AT RECOMMENDED INTERVALS TO SUPPORT AND MAINTAIN SPACING FOR CONDUITS.
2. INSTRUMENTATION CONDUITS SHALL BE SEPARATED FROM POWER/CONTROL CONDUITS BY A MINIMUM OF 12" THROUGHOUT ANY DUCT RUNS.

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Sheet Title: ELECTRICAL DETAILS

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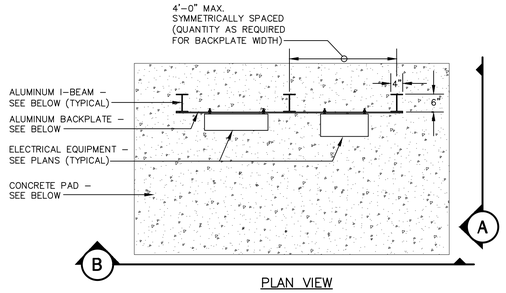
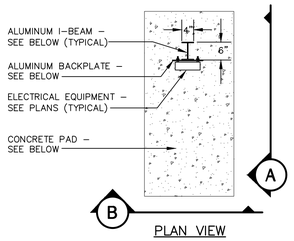
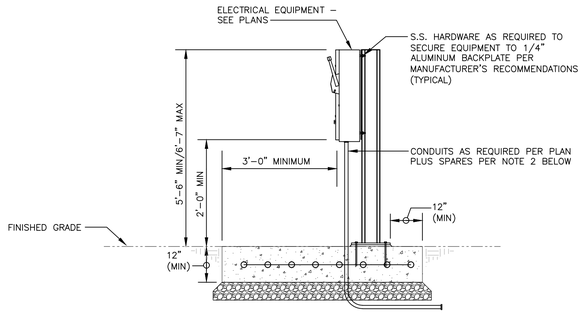
A1 | ELECTRICAL DETAILS | SCALE: NONE



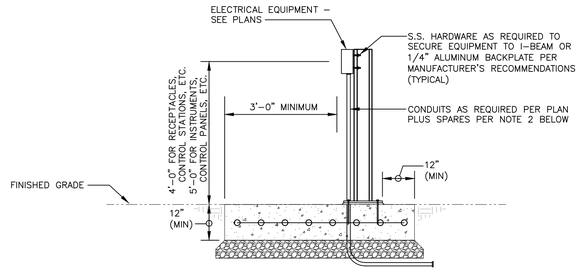
PLAN VIEW



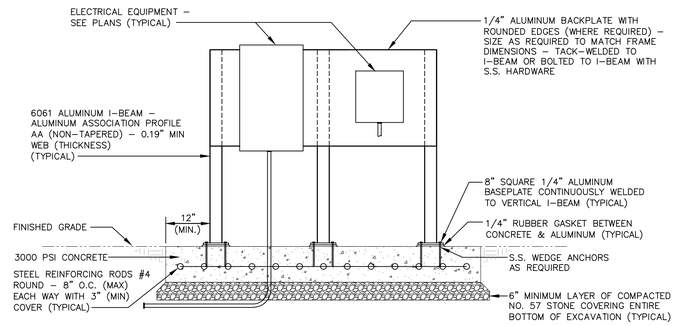
PLAN VIEW



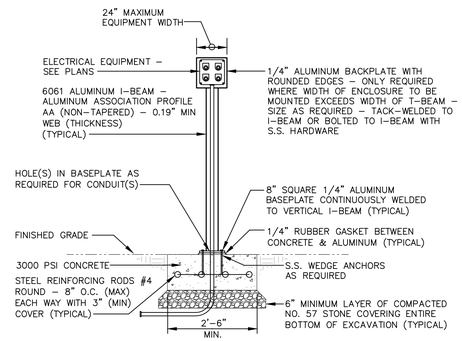
PROFILE VIEW



PROFILE VIEW



FRONT VIEW



FRONT VIEW

DETAIL "E-ES" EQUIPMENT SUPPORT

SCALE : NONE

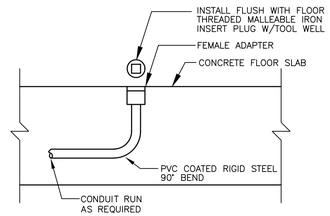
DETAIL NOTES
1. ALL DIMENSIONS SHOWN ARE TYPICAL.
2. PROVIDE TWO (2) 1"E.C. FROM ALL DISTRIBUTION PANELS, LIGHTING PANELS, PLC'S AND CONTROL PANELS ROUTED BELOW CONCRETE PAD TO NEAREST PULLBOX OR ACCESSIBLE STUB OUT LOCATION (NOT UNDERNEATH CONCRETE/ROCK/STRUCTURE/ETC).

NAME:	RP-A
RATING:	120/208V-3ø-4W
FED FROM:	PP-A CIR. 4 (IN MAIN ELEC. ROOM)

DETAIL "E-EDL" ELECTRICAL DISTRIBUTION EQUIPMENT LABEL

SCALE : NONE

DETAIL NOTES
1. PANEL NAMES & RATINGS LISTED ABOVE ARE FOR EXAMPLE PURPOSES ONLY. NAMES & RATINGS SHALL BE ADJUSTED TO MATCH ASSOCIATED EQUIPMENT.
2. THE INTENT OF THIS DETAIL IS TO DEMONSTRATE GENERAL ELECTRICAL IDENTIFICATION REQUIREMENTS FOR ELECTRICAL DISTRIBUTION AND UTILIZATION EQUIPMENT. REFER TO SPECIFICATIONS FOR SPECIFIC REQUIREMENTS REGARDING LOCATIONS, CONTENT, MATERIALS, ETC..



DETAIL "E-FC" FUTURE CONDUIT STUB-UP

SCALE : NONE

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CITY OF FAIRHOPE
WTP No. 1 IMPROVEMENTS
PHASE 1
FAIRHOPE, ALABAMA

CITY OF FAIRHOPE ALABAMA

Designed	Project No.
PDB	23040.3
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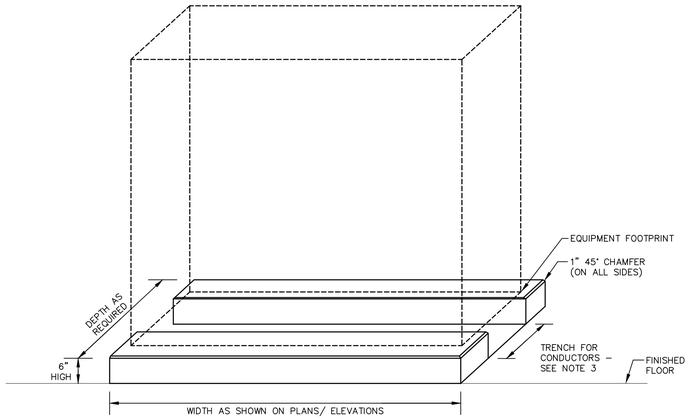


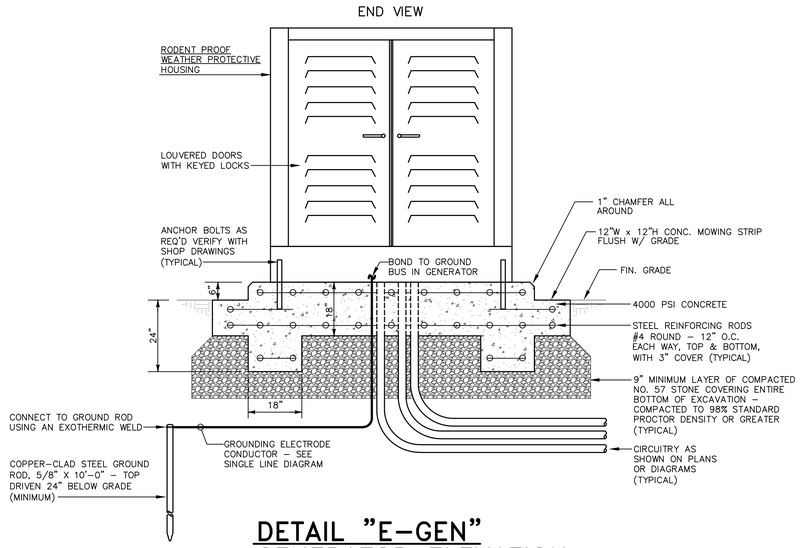
NOTES:

1. CONCRETE PAD SHALL BE EITHER POURED WITH SLAB BELOW OR SECURELY ANCHORED WITH EPOXIED DOWELS TO SLAB BELOW.
2. ALL PAD REQUIREMENTS SHALL BE COORDINATED WITH EQUIPMENT SUPPLIER TO ASSURE PROPER SUPPORT OF EQUIPMENT AND ACCESS FOR CABLES.
3. TRENCH SHALL BE COVERED WITH EITHER EQUIPMENT SECTIONS OR CUSTOM–FIT CHECKERPLATE COVERPLATE (BOLTED TO PAD). TRENCH SHALL BE OPEN–ENDED (WITH CHECKERPLATE COVER) FOR EXPANDABLE EQUIPMENT (MCC'S, SWITCHBOARDS, ETC.) AND SHALL BE CLOSED WITH CONCRETE SIDES) FOR NON–EXPANDABLE EQUIPMENT (SEPARATE CONTROL PANELS, ETC.).

DETAIL "E–HKP" FREESTANDING ELECTRICAL EQUIPMENT HOUSEKEEPING PAD

SCALE : NONE

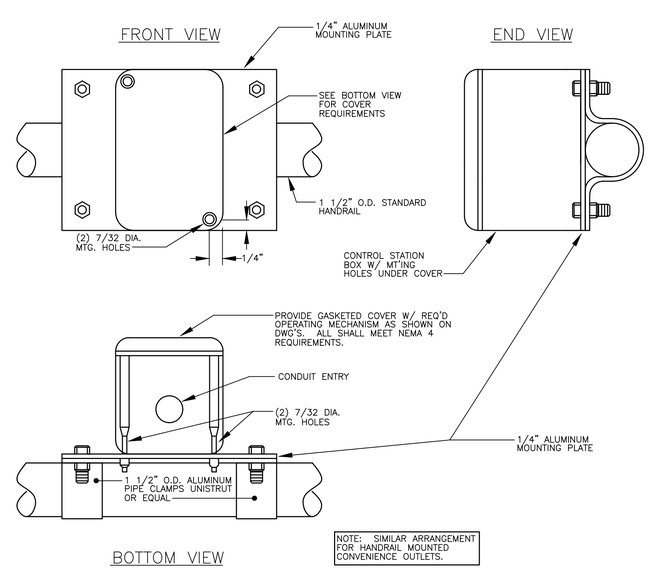
END VIEW



DETAIL "E–GEN" GENERATOR ELEVATION

SCALE : NONE

DETAIL NOTES
1. ALL DIMENSIONS SHOWN ARE TYPICAL AND MINIMUM. ADDITIONALLY, CONTRACTOR SHALL SIZE CONCRETE PAD SUCH THAT THE TOTAL PAD WEIGHT (AT AN ASSUMED CONCRETE DENSITY OF 150 LBS/CUBIC FOOT) IS A MINIMUM OF 1.5 TIMES THE TOTAL GENERATOR SET WEIGHT (INCLUDING ENCLOSURE(S), ACCESSORIES, FUEL, OIL, ETC.).
2. PROVIDE VIBRATION ISOLATORS, SPRING & PAD TYPE, QUANTITY AS RECOMMENDED BY THE GENERATOR SET MANUFACTURER TO MOUNT GENERATOR SET. ISOLATORS SHALL INCLUDE SEISMIC RESTRAINTS IF REQUIRED BY SITE LOCATION.



NOTE: SIMILAR ARRANGEMENT FOR HANDRAIL MOUNTED CONVENIENCE OUTLETS.

DETAIL "E–HR" NEMA 4 HANDRAIL MOUNTING

SCALE : NONE

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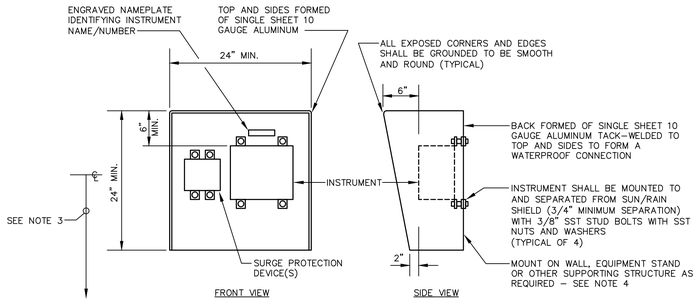
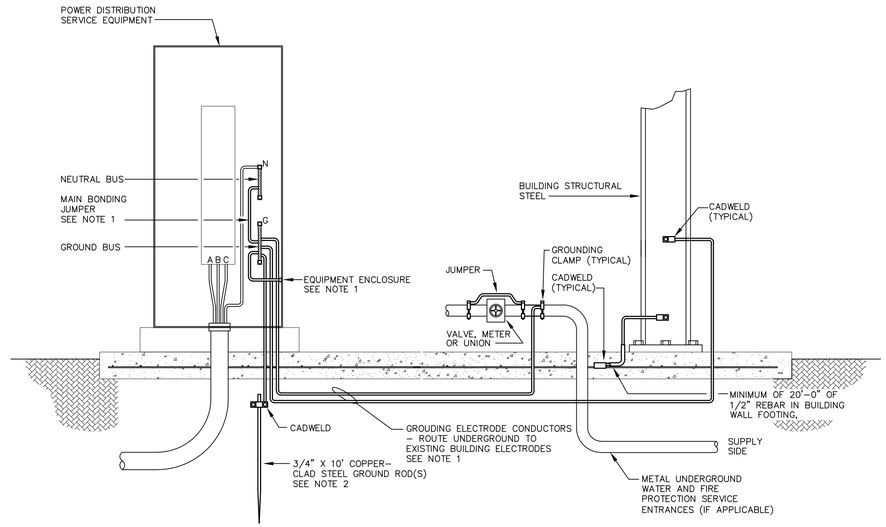


DETAIL "E-SRS" INSTRUMENT SUN/RAIN SHIELD INSTALLATION DETAIL

SCALE : NONE

DETAIL NOTES
1. SUN/RAIN SHIELDS SHALL BE FURNISHED FOR ALL ELECTRONIC INSTRUMENTS THAT WILL BE EXPOSED TO SUN OR RAIN (OR WHERE OTHERWISE SPECIFICALLY NOTED).
2. DIMENSIONS SHOWN ABOVE ARE MINIMUM. SUN/RAIN SHIELDS SHALL BE SUFFICIENTLY SIZED TO ACCOMODATE INSTRUMENT PLUS ASSOCIATED SURGE PROTECTION DEVICE(S), POWER SUPPLIES, AND OTHER SIMILAR DEVICES.
3. CENTERLINE OF INSTRUMENT SHALL BE LOCATED AT APPROXIMATELY 60" ABOVE GRADE/FLOOR LEVEL.



DETAIL "E-MSG" MAIN SERVICE GROUNDING

SCALE : NONE

DETAIL NOTES
1. UNLESS OTHERWISE NOTED, MAIN BONDING JUMPER SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.102(C)(1) AND ALL GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.66. ALL CONDUCTORS SHALL BE INSULATED COPPER.
2. ADDITIONAL GROUND RODS SHALL BE INSTALLED A MINIMUM OF SIX (6) FEET APART AND CONNECTED BY GROUNDING ELECTRODE CONDUCTORS UNTIL THE GROUND RESISTANCE DOES NOT EXCEED FIVE (5) OHMS.
3. ALL GROUNDING CONDUCTORS SHALL BE INSTALLED IN CONDUIT (TYPE PER SPECIFICATION REQUIREMENTS) UNLESS SPECIFICALLY NOTED OTHERWISE. METAL CONDUITS SHALL BE GROUNDED PER NEC REQUIREMENTS.
4. REFER TO "GROUNDING" SPECIFICATIONS SECTION FOR ADDITIONAL GROUNDING REQUIREMENTS.

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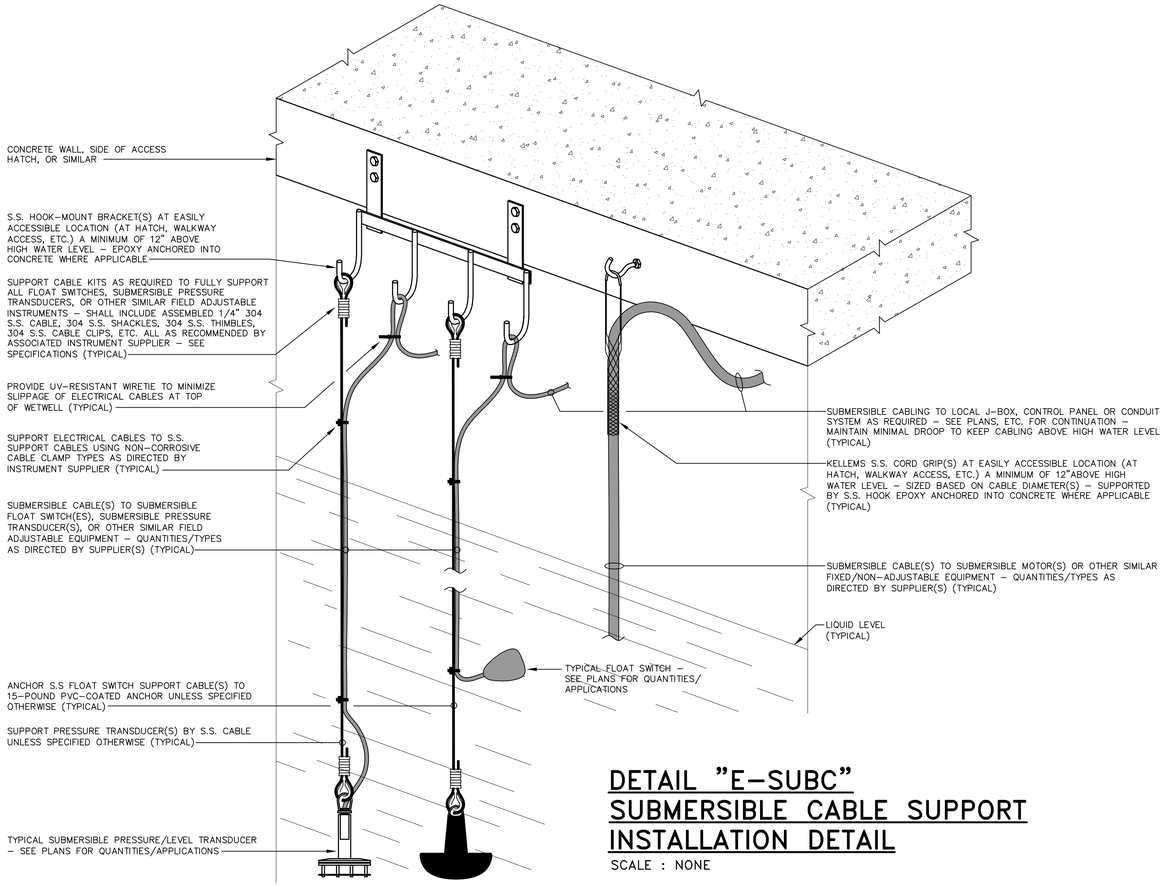
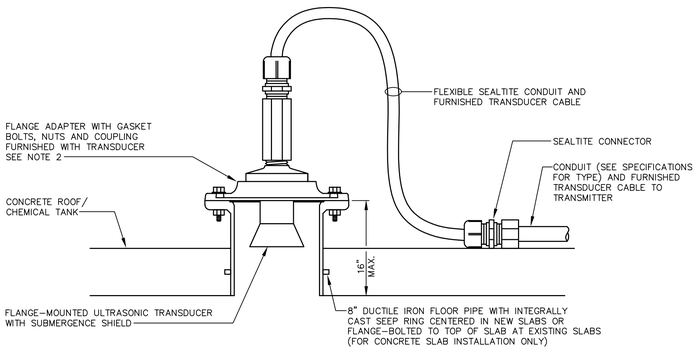


DETAIL "E–SUBC"
SUBMERSIBLE CABLE SUPPORT INSTALLATION DETAIL

SCALE : NONE



DETAIL "E–UTR"
TYPICAL ULTRASONIC LEVEL TRANSDUCER CONCRETE ROOF INSTALLATION DETAIL

SCALE : NONE

DETAIL NOTES
1. INSTALLATION SHOWN IS TYPICAL. EXACT REQUIREMENTS SHALL BE DETERMINED BY APPROVED MANUFACTURER'S SHOP DRAWINGS.
2. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT MOUNTING HARDWARE REQUIREMENTS WITH INTRUMENTATION PROVIDER.
3. TRANSDUCER SHALL BE LOCATED AS REQUIRED TO AVOID OBSTRUCTIONS INTERFERING WITH THE ULTRASONIC BEAMSPREAD AND TO PROVIDE PROPER MEASUREMENT OF THE ASSOCIATED LEVEL PER THE RECOMMENDATIONS OF THE TRANSDUCER SUPPLIER.

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