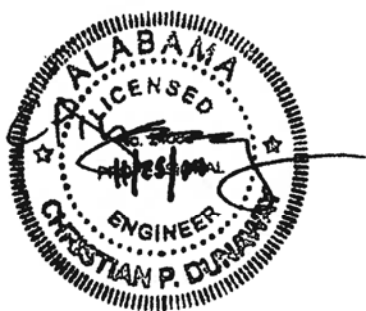


## CERTIFICATION PAGE

### HUNTSVILLE UTILITIES SOUTHEAST WATER TREATMENT PLANT

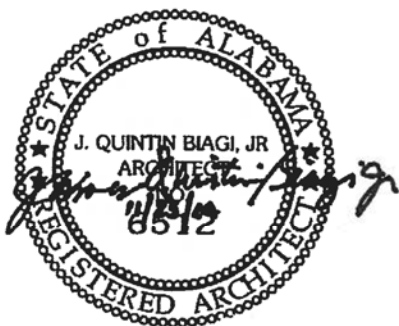
This Addendum forms a part of the Contract Documents and modifies or supplements the original Bidding Documents dated October 2014. The contents of this Addendum supersede all conflicting requirements set forth in the Bidding Documents and previous Addenda. Acknowledge receipt of this Addendum in the space provided on the Bid Proposal. Failure to do so may subject Bidder to disqualification.



Christian P. Dunaway, PE  
Civil and Process/Mechanical Items



David Andrew Burger, PE  
Electrical and Instrumentation Items



James Quintin Biagi, RA, LEED AP BD+C  
Architectural Items

To: All Plan Holders

From: Tetra Tech

Date: November 25, 2014

## HUNTSVILLE UTILITIES SOUTHEAST WATER TREATMENT PLANT

This Addendum forms a part of the Contract Documents and modifies or supplements the original Bidding Documents dated October 2014. The contents of this Addendum supersede all conflicting requirements set forth in the Bidding Documents and previous Addenda. Acknowledge receipt of this Addendum in the space provided on the Bid Proposal. Failure to do so may subject Bidder to disqualification.

This Addendum consists of 11 pages plus attachments.

### General Clarifications

Item No. 1: **Compact Disc Issued for Bidding.** The file naming convention for the compact disc is clarified below:

File Name on Compact Disc	Project Component
IFB Letter WTP 14-29	Letter from Huntsville Utilities inviting prequalified contractors to bid on the Project
Volume 1	Procurement Requirements, Contracting Requirements & Technical Specifications Divisions 1 through 22
Volume 2	Technical Specifications Divisions 23 through 46
Volume 3 – Intake Drawings	Drawing Volume 3A: Raw Water Intake Structure and Transmission Facilities
Volume 3A – WTP Drawings	Drawing Volume 3B: Southeast Water Treatment Plant (Including Finished Water Transmission Facilities)
Volume 4	Geotechnical Reports

### Specifications

Item No. 1: **Section 00 11 13 – Invitation to Bid & Section 00 21 13 – Instructions to Bidders/Terms and Conditions for Invitations for Bids.** There is a conflict among the Sections regarding the bid opening time. Bidders are hereby notified that **Bids will be received until 1:00 pm local time (Central Standard Time) on January 8, 2014.**

- Item No. 2: **Section 00 21 13 – Instructions to Bidders/Terms and Conditions for Invitations for Bids.** Paragraph 16.1.2 on Page 01 21 13-9 states “Each Bid must be accompanied by a copy of a valid Alabama Contractor’s license or a commitment to obtain required licensure prior to award of the Contract.” A Prospective Bidder has asked for confirmation that licensure is not required to submit a Bid. Confirmation is hereby provided.
- Item No. 3: **Section 00 41 13 – Bid Bond.** Replace the current form for the Bid Bond with the revised Bid Bond form (attached).
- Item No. 4: **Section 00 72 00 – General Conditions.** Paragraph 5.05 of the General Conditions sets forth a hierarchy with regard to various documents to address situations where conflicts among the documents arise. The Prospective Bidder has questioned as to where the Geotechnical Reports fit in this hierarchy. Bidders are hereby advised that the Geotechnical Reports are not part of the Contract Documents. This issue is specifically addressed in Paragraph 5.1 of the Section 00 21 13 – Instructions to Bidders/Terms and Conditions.
- Item No. 5: This Item addresses the following Sections:
- **Section 00 21 13 – Instructions to Bidders/Terms and Conditions**
  - **Section 00 41 13 – Bid Form**
  - **Section 00 52 13 – Contract**
  - **Section 00 72 00 – General Conditions**
  - **Section 00 73 00 – Supplementary Conditions**
  - **Any Other Section That Addresses Sales Tax**
- Bidders are hereby advised that Chapter 810-6-3-.77 of the Alabama Administrative Code allows for a sales tax exemption for contractors and subcontractors purchasing certain items that will be incorporated into facilities that will be owned by public entities, such as Huntsville Utilities. A copy of this Chapter and some guidance from the Alabama Department of Revenue is attached to this Addendum along with “Form ST: EXC-01, Sales and Use Tax Certificate of Exemption for Government Entity Project.” Bidders are required to take advantage of this Chapter when preparing their Bid.
- Item No. 6: **Section 00 72 00 – General Conditions.** Attachment “A” requires subcontractors to be governed by the same insurance requirements as the General Contractor. A prospective subcontractor has requested clarification regarding the need for Builder’s Risk Insurance. Bidders are hereby notified that Builder’s Risk Insurance is not required for subcontractors if the General Contractor provides the required Builder’s Risk Insurance.
- Item No. 7: **Section 01 32 36 – Color Audio-Video Preconstruction Record.** Add the following text at the end of Paragraph 1.01.A: “Also, provide audio-video pre-construction documentation along Walker Road from Guntersville Dam Road to 1,000 feet beyond the proposed water treatment plant entrance.”

Item No. 8: **Section 01 43 33 – Manufacturers Field Services.** Delete Paragraph 3.04.B.2 in its entirety. Multiple training sessions to address several shifts is not required.

Item No. 9: **Section 01 51 00 – Temporary Facilities.**

1. Huntsville Utilities will provide a temporary electrical service in the WTP switchyard for a fee of \$2,000.00 which will cover the cost of a transformer, circuit breaker, and service drop. The "basic" service will be a 240 volt, single phase, 200 amp service; however, if a larger service is required, or a 3-phase power is necessary, Huntsville Utilities can accommodate these needs at an additional cost. Prospective Bidders are advised to contact Ms. Stacy Cantrell with Huntsville Utilities at (256) 535-1312, to obtain information related to provision of temporary power for construction of the WTP. Monthly service charges for the electric service shall be borne by the Contractor.
2. Temporary water service may be obtained by contacting North Marshall Utilities at (256) 728-4116. All costs for temporary water service shall be borne by the Contractor.

Item No. 10: **Section 10 82 00 – Intake Screens.** Make the following revisions.

1. Revise the text for Paragraph 1.05.B to read "Manufacturer: Hendrick Screen Company, Cook Legacy Water & Energy, or an approved equal."
2. Add the following sentence after the first sentence of Paragraph 2.01.B: "TIG welded wedge wire is an acceptable alternative to mechanical pin construction."
3. Revise the text for the first sentence of Paragraph 2.01.C to read "The surface wire shall be Hendrick Screen Co. B12 profile wire, 3/16"-10 wire or an approved equal."

Item No. 11: **Division 26 – Electrical.** Add the following Specification Sections (attached):

- 26 13 02 – Medium-Voltage Pad-Mounted Switchgear (Outside)
- 26 28 50 – Power Factor Correction

Item No. 12: **Section 26 05 33 – Raceways and Boxes.** Add the following text at the end of Paragraph 3.1.A.4: "Use rigid metal conduit for all instrumentation and control conductors that are not 120 VAC."

Item No. 13: **Section 26 05 43 – Underground Ducts and Raceways for Electrical Systems.** Make the following revisions:

1. Under Paragraph 3.4.C change the text "minimum radius of 12.5 feet" to read "minimum radius of 2.5 feet (30 inches)".

2. Under Paragraph 3.4.K add the following text at the end of the Paragraph: "Warning planks shall be 6,000 psi concrete planks measuring 12" x 24" x 3" and shall be labelled "ELECTRIC" in 2" letters."

- Item No. 14: **Section 26 05 73.16 – Overcurrent Protective Device Coordination Study.** Add the following Paragraph after Paragraph 1.5.C.: "D. The electrical equipment supplier may complete the coordination study, arc flash analysis, and adjustment of the overcurrent devices per the coordination study; however, an independent agency must be used to provide any final adjustments and certifications of final adjustments in the field.
- Item No. 15: **Section 26 08 00 – Commissioning of Electrical Systems.** Various individual Specifications require independent testing of various electrical components. When such other individual Specifications require testing that is redundant to testing set forth in Section 26 08 00, the testing requirements in the individual Sections shall apply.
- Item No. 16: **Division 26 – Electrical.** A prospective subcontractor has noted that certain Specifications require a minimum number of days for a manufacturer's representative to be on-site while other Specifications require a lower level of involvement for the manufacturer's representative without a specified minimum. Bidders are hereby advised that when a specific minimum number of days of manufacturer's representative presence is not provided, there is in fact no specific time that the representative must be present on-site. However, Bidders are also advised that manufacturers must submit their field observations in writing and provide the required certifications related to the suitability of the installation which are set forth in Section 01 43 33 – Manufacturer's Field Services and other Sections.
- Item No. 17: **Section 26 12 00 – Medium Voltage Transformers.** Bidders are hereby advised that the dry-type transformers addressed in this Section are for indoor applications only.
- Item No. 18: **Section 26 29 23.11 – Medium Voltage Variable Frequency Motor Controllers.** Delete all references to "data sheets." Bidders are advised to refer to the one line diagrams, wiring schematics, and other equipment Specifications for supplemental requirements associated with the Medium Voltage VFDs.
- Item No. 19: **Section 31 23 13 – Subgrade Preparation.** A Prospective Bidder has requested the addition of a unit price provision to address additional undercutting described under Paragraph 3.01. Bidders are hereby advised that this request is not acceptable and is denied.
- Item No. 20: **Section 31 23 23.15 – Trench Backfill.** Replace the existing Section with the revised Section (attached).
- Item No. 21: **Section 40 27 00 – Process Piping, General.** Bidders are hereby advised that copper pipe and fittings identified in the "Piping Schedule" shall have soldered joints with lead-free plumbing solder.

Item No. 22:

**Section 40 27 00.01 – Cement Mortar Lined Ductile Iron Pipe and Fittings.** Replace the portion of the table on Page 40 27 00.01 - 3 with the following:

SECTION 40 27 00.01 CEMENT-MORTAR-LINED DUCTILE IRON PIPE AND FITTINGS	
Manufacturer	American Cast Iron Pipe Company or US Pipe. Pipe shall be manufactured in the USA by one of the two listed manufacturers. Fittings and flanges do not need to be manufactured in the USA; however, they must be furnished by one of the two listed manufacturers and they shall be in strict conformance with this Specification. Further, fittings and flanged pipe shall be subjected to the factory hydrostatic test described below. If the Bidder elects to use fittings and/or flanges not manufactured in the USA, documentation showing the cost savings shall be submitted to the Owner. Such documentation shall be submitted within three (3) days of the Bid Opening.
Factory Hydrostatic Pressure Test	All pipe 30-inch diameter or greater shall be subjected to a hydrostatic pressure test equal to 75% of the minimum yield strength. Provide written certification that this testing has been successfully completed to Owner or Owner's Representative.

Item No. 23:

**Section 40 27 02 – Process Valves and Operators.** Make the following revisions:

1. Under Paragraph 2.04.E.2.a. revise the text "Buna-N or NBR rubber" to read "Buna-N, EPDM, or NBR rubber".
2. Replace the 12<sup>th</sup> page of the Valve Schedule with a revised page (attached).

Item No. 24:

**This item addresses the following Sections:**

- Section 40 91 00: Process Control and Instrumentation
- Section 40 91 19.26: Pressure Measurement
- Section 40 91 23.33: Flow Process Measurement Devices
- Section 40 91 23.36: Level Measurement
- Section 40 97 00: Analytical Instruments
- Section 46 61 23: Filtration Equipment
- Section 46 61 24: Granular Activated Carbon Contactor Equipment

Currently the above Specifications state that control panels directly associated with the conventional filters and GAC contactors shall be furnished by the process equipment manufacturers as stated in the respective equipment Specification Sections. Further, the Specifications state that instruments associated with these systems such as level sensors, differential pressure transmitters, turbidimeters, and flow meters shall be provided by the filter and GAC equipment manufacturers. **The intent of these Specifications is hereby amended to allow the Instrumentation Supplier to provide these components; however, the filter and GAC contactor equipment manufacturers may also provide the any or all of the components at the discretion of the Contractor.**

- Item No. 25: **Section 40 91 19.36 – Temperature Measurement.** Delete this Section in its entirety as there are no dedicated temperature measurement devices within the process control system.
- Item No. 26: **Section 40 91 23.33 – Flow Process Measurement Devices.** Make the following revisions.
1. Delete the third sentence in Paragraph 2.02.G which will eliminate the requirement for a hand-held configuration device and software.
  2. Replace the Flow Meter Schedule with the revised Flow Meter Schedule (attached).
- Item No. 27: **Section 40 91 23.36 – Level Measurement.** Make the following revisions.
1. Revise the text in the first sentence of Paragraph 2.02.D from “molded ABS housing” to “Type 316 stainless steel housing”.
  2. Revise the text for Paragraph 2.04.L.5 to require a separation capability of at least 300 feet.
  3. Delete Paragraph 2.04.L.10 in its entirety.
  4. Replace the Level Instrument Schedule with the revised Level Instrument Schedule (attached).
- Item No. 28: **Section 40 91 23.33 – Flow Process Measurement Devices & Section 40 91 23.36 – Level Measurement.** A clarification: The ultrasonic level sensor/flow meter devices for the GAC contactor bypass channel and washwater outfall flow measurement box are listed in both the Flow Meter Schedule and Level Instrument Schedule.
- Item No. 29: **Section 40 95 14 – Spare Parts.** Delete Paragraph 2.01.C.3 in its entirety and replace with the following: “Provide one (1) spare sensor for each type of analytical instrument, pressure sensor, and level sensor. Also, provide one (1) spare magnetic flow meter transmitter.”
- Item No. 30: **Section 40 95 80 – Fiber Optic Communication System.** Delete Paragraphs 3.04.A.3 and 3.04.A.4 in their entirety and note that training is covered under Paragraph 3.05.
- Item No. 31: **Section 40 97 00 – Analytical Instruments.** Make the following revisions:
1. Add Paragraph 2.01.D: “D. Provide self-priming centrifugal sample pumps as shown on the Drawings. Each pump shall have a 1½ horsepower TEFC motor suitable for the power supply shown on the Drawings and shall deliver a flow of 25 GPM at a discharge pressure of 40 psi with a suction lift of 15 feet. Sample pumps shall be Sta-Rite Model DS3HF or an approved equal.”

2. Replace the Analytical Instrument Schedule with the revised Analytical Instrument Schedule (attached).

Item No. 32: **Section 43 21 13.03 – Submersible Solids Handling Pumps.** Replace the text for Paragraph 1.02.C. with the following: "The pumps shall be furnished complete with all accessories required and shall be as manufactured by Flygt, ABS, or KSB. Also, pumps offered by Hydromatic/Pentair, with oil-filled motors, are considered acceptable."

Item No. 33: **Section 43 33 00 – Liquid Chemical Feed Pumps.** Make the following revisions:

1. Delete the last three sentences of Paragraph 1.02.A and replace with the following: "The diaphragm metering pumps shall be as manufactured by Wallace & Tiernan ChemFeed, ProMinent, or an approved equal. The peristaltic pumps shall be manufactured by Watson-Marlow Bredel, Verderflex, ProMinent, or an approved equal. The pumps shall be as shown in Table 43 33 00."
2. On Page 43 33 00 – 20 delete all references to the polymer feed pumps. Also, note that the polymer pumps are addressed in Section 46 33 33.

Item No. 34: **Section 46 41 10 – Polyethylene Chemical Storage Tanks.** Add the following text at the end of Paragraph 1.02.A: "Tanks shall be manufactured by Snyder, Poly Processing, IMG, or an approved equal."

Item No. 35: **Section 46 41 20 – Fiberglass Reinforced Plastic Tanks.** Make the following revisions:

1. Replace the text for Paragraph 1.02.A.8 with the following: "ASTM RTP-1: Reinforced Thermoset Plastic Corrosion – Resistant Equipment."
2. Replace the text for Paragraph 2.01.A with the following: "The tanks shall be as manufactured by Augusta Fiberglass, Xerxes, Raven, Southeastern Fiberglass Products, An-Cor, Belco, Plant Maintenance Services or an approved equal. If a listed supplier cannot provide the RTP-1 certification, they will not be considered acceptable."



## Drawings – Volume 3A: Raw Water Intake Structure and Transmission Facilities

- Item No. 1: Sheet C-9501, Detail 2. Replace the current Detail 2 with the revised detail (attached).
- Item No. 2: Sheet S-9502, Detail 7: Bollard. In lieu of providing a 1" rounded concrete top for each bollard provide full height yellow HDPE bollard covers having a wall thickness of at least 0.25". Covers shall be as manufactured by Ideal Shield or an approved equal. Note that the bollards must still be filled with concrete and painted to prevent corrosion. This requirement applies to all bollards.
- Item No. 3: Sheet E-1101. Replace existing Sheet E-1101 with revised sheet (attached) noting ductbank section revisions and notes.
- Item No. 4: Sheets E-1101 and E-1201. These sheets show a pull string in a 6" conduit but no conductors; however, Sheet E-8601 in Volume 3B shows the installation of 15 kV cable between MVSG-B and Transformer RWI-T-1 (XFMR#1). Bidders are hereby advised that the Owner will be installing the 15 kV cable between the medium-voltage pad-mounted switch at the WTP and Transformer RWI-T-1 (XFMR#1). The Contractor is responsible for raceway system in its entirety. Revised Sheet E-0601 (attached) depicts clarification.
- Item No. 5: Sheet E-1201. The single line diagram and switchgear elevations are not entirely clear with regard to the breakers for the future raw water pumps. Bidders are hereby advised that the switchgear cabinets shall have buckets, cable compartments, shutters, shutter covers, CTs, breaker compartments, and bus structure for the breakers for the future pumps; however, the breakers themselves are not required under this Project.
- Item No. 6: Sheets E-1202 and E-1301. These sheets show a circuit breaker and non-fused safety switch for future AHU-3. Bidders are hereby advised that the circuit breaker for future AHU-3 is required under this Project; however, conduit, wire, and the non-fused safety switch are not necessary.
- Item No. 7: Sheet E-1302. Change the call-outs for the lights at the personnel access door canopies from "A2" to "C".

## Drawings – Volume 3B: Southeast Water Treatment Plant (Including Finished Water Transmission Facilities)

- Item No. 1: Sheet G-0008 – FW Asset Attribute Data Table. At Station 808+06.31, 40.62'R, Station 808+48.78, 40.87'R and at Station 808+58.59 40.93'R 42" 22.5° bends are called out. These bends should be 48" 22.5° bends. Also, modify the Asset Table to add a 48" 22.5° bend at Station 807+93.36, 40.50'R. Bidders are hereby advised that all tables and schedules are provided for convenience and that all components shown of the various Drawings shall be provided regardless of exclusion from any schedule.
- Item No. 2: Sheets C-2005 and C-2006. Replace the existing sheets with revised sheets (attached) noting ductbank revisions.
- Item No. 3: Sheets C-2008, C-2020, C-2022, C-2022A, C-2029, C-2036, C-2043, C-2049, C-2054, and C-2057. The plan views show 48" butterfly valves on the above sheets; however, the call-outs in the profiles show 42" butterfly valves. Bidders are hereby advised that the butterfly valves shall be 48".
- Item No. 4: Sheet C-9501, Detail 2. Replace the current Detail 2 with the revised detail (attached).
- Item No. 5: Sheet C-9515, Detail 4. The following fire hydrants are acceptable for use on this Project:
- American Darling (AFC) E-84-B
  - U.S. Pipe Metropolitan M-94
  - Clow Medallion with Top Stop Nut
  - M&H Style 129 Traffic Model with Top Stop Nut
  - Mueller Super Centurion 200 with Top Stop Nut
- Item No. 6: Sheet A-8302 and A-9601. There are conflicts surrounding Window Type W4 and Door Frame Type F5. Bidders are advised of the following:
- The doors and windows for the generator building shall be sized based on the elevations shown on Sheet A-8201 and the details shown on Sheet A-8302. The 4'-0" x 3'-4" Window Type W4 as shown on Sheet A-9601 is located at the chemical feed building as shown on Sheet A-2202.
- Item No. 7: Sheet S-9504, Detail 3: Typ. Bollard Detail. In lieu of providing a 1" rounded concrete top for each bollard provide full height yellow HDPE bollard covers having a wall thickness of at least 0.25". Covers shall be as manufactured by Ideal Shield or an approved equal. Note that the bollards must still be filled with concrete and painted to prevent corrosion. This requirement applies to all bollards.
- Item No. 8: Sheet D-3102. Remove the call-out "(TYP OF 5)" pertaining to the level sensor. Bidders are advised that only one (1) ultrasonic level sensor is required at the GAC contactors and it will be located at the influent channel.

- Item No. 9: **Sheet D-4104.** Change the call-out for the 48" x 8" tapping sleeve to read "PROVIDE 8" MJ WELDED-ON OUTLET AND 8" MJ GATE VALVE."
- Item No. 10: **Sheet D-4301, Section B.** Delete the call-out "WALL THIMBLE FOR GATE MFR (TYP)". Bidders are hereby advised that wall thimbles are not required.
- Item No. 11: **Sheet D-9501, Details 1 and 3.** Delete these details. The revised bollard detail on Sheet S-9504 shall be used for all bollards. Also, trench details are addressed in revised Detail 2 on Sheet C-9501, which is attached to this Addendum.
- Item No. 12: **Sheets E-0105 and E-1101 / General Clarification.** The Owner will provide and install fiber optic underground (fiber only, raceway by Contractor) from RWI-PP-01 to WTP-PP-2B. The Owner will pull fiber to the patch racks. Terminations and testing will be the responsibility of the Contractor. Refer to revised sheets (attached) E-0105 and E-1101 noting changes.
- Item No. 13: **Sheet E-0501 – Luminaire Schedule.** Delete Type L1, L7, and L11 luminaires from the Schedule as they are not needed for this Project.
- Item No. 14: **Sheet E-0601.** Replace the existing sheet with the revised sheet (attached) noting clarified scope of cable installation.
- Item No. 15: **Sheet E-2406.** Bidders are hereby advised that the currently unlabeled lights for the stairwell shall be Lithonia ZLIN L24 3000 LM L/LENS MVOLT 30K80CRI WH or an approved equal.
- Item No. 16: **Sheet E-4403 and I-0802.** There is some question as to the requirement for an operator interface terminal (OIT) for Panel WTP-RCP-1. Bidders are hereby advised that an OIT is not required for WTP-RCP-1.
- Item No. 17: **"E" Sheets and "I" Sheets.** There is some question to the requirement for OITs for Panels WTP-RCP-2, 3, 4 & 5. Bidders are hereby advised that OITs are not required for these panels.
- Item No. 18: **Sheet E-4301 and E-4302.** The main breaker for the future switchgear has been moved into future work. Refer to revised Sheets E-4301 and E-4302 (attached) which replace the current sheets
- Item No. 19: **Sheet E-4601, E-4602, and E-4603.** Replace the current sheets with revised sheets (attached) noting the following revisions:
1. Clarified future work demarcation line.
  2. Changed Note 9 from Controllogix to Siemens Simatic.
  3. Changed ModBus RTU TCP/IP to TCP/IP; Contractor to provide gateway as necessary.

- Item No. 20: **Clarification.** A prospective subcontractor has requested clarification regarding the required level of preparation for future switchgear and future transformers. Bidders are hereby advised to include raceways, pull strings and housekeeping pads.
- Item No. 21: **Sheet E-8302.** Replace the current sheet with the revised sheet (attached) noting that the breaker for Gen #3 is future but that the breaker compartment, cable compartment, shutters, shutter covers, and CTs are to be installed by Contractor.
- Item No. 22: **E-8601 and E-8602.** Replace the current sheets with the revised sheets (attached) noting the following revisions:
1. Changed Note 9 from Controllogix to Siemens Simatic.
  2. Changed ModBus RTU TCP/IP to TCP/IP; Contractor to provide gateway as necessary.
- Item No. 23: **Sheet I-0801.** Replace the existing sheet with the revised sheet (attached) noting changes related to fiber, conductors, signal converters, uninterruptible power systems, and other components.

END OF ADDENDUM NO. 2

# REVISED BID BOND FORM

## BID BOND

BIDDER (Name and Address):

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SURETY (Name and Address of Principal Place of Business):

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OWNER (Name and Address):

City of Huntsville, a municipal corporation d/b/a Huntsville Utilities, P.O. Box 2048, Huntsville, Alabama 35804

BID

BID DUE DATE: \_\_\_\_\_

PROJECT (Brief Description Including Location):

Southeast Water Treatment Plant Project, Marshall County, Alabama

BOND

BOND NUMBER: \_\_\_\_\_

DATE (Not later than Bid Due Date): \_\_\_\_\_

PENAL SUM: \_\_\_\_\_

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

**BIDDER**

**SURETY**

\_\_\_\_\_  
(Seal)

Bidder's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title

Attest: \_\_\_\_\_  
Signature and Title

\_\_\_\_\_  
(Seal)

Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

Note: (1) Above addresses are to be used for giving required notice.  
(2) Any singular reference to Bidder, Surety, OWNER, or other party shall be considered plural where applicable.

EJCDC NO. 1910-28-C (1990 Edition)

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay OWNER upon default of Bidder the penal sum set forth on the face of this Bond.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any performance payment bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
  - 3.1 OWNER accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or
  - 3.2 All bids are rejected by OWNER, or
  - 3.3 OWNER fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by OWNER and Bidder, provided that the time for issuing notice of award including extensions

shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.

6. No suit or action under this Bond shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety, and in no case later than one year after Bid Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage prepaid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and find the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

# ALABAMA ADMINISTRATIVE CODE CHAPTER 810-6-3-.77



810-6-3-.77 Exemption for Certain Purchases by Contractors and Subcontractors in Conjunction with Construction Contracts with Certain Governmental Entities.

(1) On and after January 1, 2014, the sale to, or the storage, use, or consumption by, any contractor or subcontractor of any tangible personal property to be incorporated into realty pursuant to a contract entered into on or after January 1, 2014, with a governmental entity is exempt from all state, county, and municipal sales and use taxes. For the purpose of this rule, a governmental entity is defined as:

(a) The State of Alabama.

(b) A county or incorporated municipality of the State of Alabama.

(c) An educational institution of the State of Alabama, or a county or incorporated municipality of the State of Alabama.

(d) An industrial or economic development board or authority that is exempt from the payment of Alabama sales and use taxes.

(e) Other governmental agencies that are exempt from the payment of Alabama sales and use taxes excluding those agencies as provided in sections (2) and (3) below.

(2) The exemption outlined in section (1) shall not apply to any of the following:

(a) Purchases of tangible personal property by a contractor or subcontractor for storage, use, or consumption in conjunction with performing a contract with a governmental entity that is not itself exempt from Alabama sales and use taxes.

(b) Purchases of tangible personal property by a contractor or subcontractor that are not incorporated into realty pursuant to the contract.

(c) Purchases of tangible personal property for contracts with the federal government.

(d) Purchases of tangible personal property made for any contracts for the construction of any highway, road or bridge for, or on behalf of, any governmental entity as outlined above.

(e) Purchases of tangible personal property made pursuant to any contract entered into prior to January 1, 2014.

(3) The exemption outlined in section (1) shall not apply to the sale to, or the storage, use, or consumption by, any contractor or subcontractor of any tangible personal property to be incorporated into realty pursuant to a contract with a state other

than the State of Alabama, a county or incorporated municipality of a state other than the State of Alabama, an industrial development board created pursuant to the Constitution or general or local laws of a state other than the State of Alabama, an educational institution of a state other than the State of Alabama, or an educational institution of a county or incorporated municipality of a state other than the State of Alabama.

(4) In order to qualify for the sales and use tax exemption referenced in section (1), the governmental entity shall complete an application (Form ST: EXC-01) for a sales and use tax certificate of exemption (Form STC-1) for each tax-exempt project. Contractors and subcontractors licensed by the State Licensing Board for General Contractors, shall also apply per project to the Department of Revenue for a sales and use tax certificate of exemption (Form STC-1). Upon review and approval of the application, the department shall issue the applicant a Form STC-1 which shall be used by the certificate holder to claim the exemption when making qualifying tax-exempt purchases for the project listed on the certificate. Before approving or denying the application, the Department of Revenue may require the applicant to submit additional documentation that the property to be purchased tax-exempt with the certificate will be incorporated into realty pursuant to contracts with one of the governmental entities enumerated in section (1) or to subcontracts arising from contracts with one of the governmental entities enumerated in section (1). If the department denies the application, the applicant may appeal the denial in accordance with Section 40-2A-8, Code of Alabama 1975.

(5) A contractor or subcontractor who obtains a Form STC-1 shall comply with all of the provisions of the Code of Alabama 1975, as amended, Section 40-23-9 and shall maintain records sufficient to document the tax-exempt status of qualifying purchases. Further, the contractor or subcontractor who presents Form STC-1 to a vendor for purchases of tangible personal property without the payment of sales or use tax must make a report of all exempt purchases to the Department of Revenue in a manner prescribed by the department. The report of exempt purchases shall be a prerequisite to the renewal of a certificate of exemption. Failure to report the exempt purchases will result in an assessment against the contractor or subcontractor for sales and use taxes on any items purchased with the certificate of exemption.

(6) Any contractor or subcontractor who intentionally uses a certificate of exemption (STC-1) in violation of Act 2013-205 shall be (a) liable for the actual sales and use tax due, (b) subject to a civil penalty levied by the department in the amount of not less than a minimum of two thousand dollars (\$2,000) or two times any state and local sales or use tax due for the tangible personal property, whichever is the greater; and (c) may be barred from the use of any certificate of exemption (STC-1) on any project for up to two years based on the contractor's or subcontractor's willful misuse of a certificate of exemption. Contractors and subcontractors may appeal any such decisions in accordance with Section 40-2A-8, Code of Alabama 1975.

(7) The date of the sale to, or the purchase, withdrawal, storage, use or consumption by, the contractor shall be used to determine if an otherwise qualifying transaction or event qualifies for the exemption. Jobs or projects entered into prior to, January 1, 2014 shall not qualify for the exemption regardless of the transaction date.

(8) For the purpose of this rule, the term “entered into” shall mean the date that a contractor or subcontractor signs a contract with a governmental entity defined in section (1).

(9) The amendatory language in this rule shall become operative on January 1, 2014.

Author: Traci Floyd, Ginger L. Buchanan

Authority: Sections 40-2A-7(a)(5), 40-2A-8, 40-23-31, 40-23-83, Code of Alabama 1975, and Act 2013-205

History: New rule: Filed February 20, 2001, effective March 27, 2001.

Amended: Filed May 6, 2005, effective June 10, 2005.

Amended: Filed November 20, 2013, effective December 25, 2013.

# **ALABAMA DEPARTMENT OF REVENUE SALES TAX EXEMPTION GUIDANCE**



JULIE P. MAGEE  
Commissioner

# State of Alabama Department of Revenue

([www.revenue.alabama.gov](http://www.revenue.alabama.gov))  
50 North Ripley Street  
Montgomery, Alabama 36132

MICHAEL E. MASON  
Assistant Commissioner

JOE W. GARRETT, JR.  
Deputy Commissioner

CURTIS E. STEWART  
Deputy Commissioner

## Alabama Department of Revenue NOTICE

### Tax Guidance for Contractors, Subcontractors and Alabama Governmental Entities Regarding Construction-related Contracts

Legislative Act 2013-205 requires the Department of Revenue to issue Form STC-1, *Sales and Use Tax Certificate of Exemption for Government Entity Projects*, to all contractors and subcontractors working on qualifying governmental entity projects once the Form ST: EXC-01 is approved.

Each exempt entity, contractor and subcontractor must make application for qualification of the exemption using Form ST: EXC-01 for each tax-exempt project. The application is available on the department's website at <http://revenue.alabama.gov/salestax/ST-EXC-01.pdf>. Applications should be submitted directly to the Sales and Use Tax Division Central Office, P.O Box 327710, Montgomery, AL 36132-7710.

The sales and use tax exemption provided for in Act 2013-205 applies to the purchase of building materials, construction materials and supplies, and other tangible personal property that become part of the structure pursuant to a qualifying contract entered into on or after January 1, 2014. Qualifying projects and contracts are those generally entered into with the following governmental entities, unless otherwise noted: the State of Alabama, a county or incorporated municipality of Alabama, an Alabama public school, or an Alabama industrial or economic development board or authority already exempt from sales and use taxes. **Please note that contracts entered into with the federal government and contracts pertaining to highway, road, or bridge construction or repair do not qualify for the exemption provided for in Act 2013-205.** [Reference: Sales and Use Tax Division Administrative Rule 810-6-3-.77 *Exemption for Certain Purchases by Contractors and Subcontractors in Conjunction with Construction Contracts with Certain Governmental Entities*.]

The Alabama Department of Revenue will assign each contractor and sub-contractor a consumers use tax account, if one is currently not in place, at the time the Form STC-1, *Sales and Use Tax Certificate of Exemption for Government Entity Projects*, is issued.

Contractors and sub-contractors for qualifying projects will be required to file monthly consumers use tax returns and report all exempt purchases for ongoing projects, as well as all taxable purchases on one return. These returns are required to be filed through the department's online tax return filing and payment portal, My Alabama Taxes (<https://myalabamataxes.alabama.gov>).

As another option for these types of contracts, as well as with other contracts entered into with other types of exempt entities, the Form ST:PAA1, *Purchasing Agent Appointment*, may be used. However, please be advised that the use of the Form ST:PAA1 option will require the exempt entity to be invoiced directly and pay for directly from their funds any construction and building material and supply purchases.

For additional information concerning this guidance, taxpayers should contact Sales and Use Tax Division representative Thomas Sims at 334-242-1574 or by email at [Thomas.Sims@revenue.alabama.gov](mailto:Thomas.Sims@revenue.alabama.gov).



**TETRA TECH**

# **ALABAMA APPLICATION FOR SALES AND USE TAX CERTIFICATE OF EXEMPTION: FORM ST. EXC-01**



ALABAMA DEPARTMENT OF REVENUE  
SALES AND USE TAX DIVISION  
P.O. Box 327710 • Montgomery, AL 36132-7710

ST: EXC-01  
10/14

# Application For Sales and Use Tax Certificate of Exemption

## FOR GOVERNMENT ENTITY PROJECT

This Certificate of Exemption will be limited to purchases which qualify for an exemption of sales and use taxes pursuant to Rule No. 810-6-3-.77

### PROJECT INFORMATION:

PROJECT NAME			PROJECT OWNER'S FEIN (EXEMPT ENTITY)	
STREET ADDRESS OF PROJECT (CITY AND COUNTY INCLUDED)		CITY	ZIP	COUNTY

### APPLICANT'S INFORMATION:

RELATION: (CHOOSE ONE)

☐

Government Entity

☐

General Contractor

☐

Sub-Contractor

APPLICANT'S LEGAL NAME			FEIN	
DBA			CONSUMER'S USE TAX ACCOUNT NUMBER	
MAILING ADDRESS: STREET		CITY	STATE	ZIP
				COUNTY

CONTACT PERSON	BUSINESS TELEPHONE NUMBER (      )
EMAIL ADDRESS	

PROJECT START DATE (PROVIDED BY GENERAL CONTRACTOR)	PROJECT COMPLETION DATE (PROVIDED BY GENERAL CONTRACTOR)
ESTIMATED START DATE (FOR APPLICANT)	ESTIMATED COMPLETION DATE (FOR APPLICANT)
WILL THE APPLICANT HAVE ANY SUB-CONTRACTORS ON THIS JOB? <input type="checkbox"/> Yes <input type="checkbox"/> No   If yes, please attach list.	NAME OF PARTY WITH WHOM YOUR CONTRACT IS WITH

JOB DESCRIPTION

WILL ANY POLLUTION CONTROL EXEMPTION BE APPLICABLE? <input type="checkbox"/> Yes <input type="checkbox"/> No		ESTIMATED POLLUTION CONTROL COST \$
TOTAL PROJECT BID AMOUNT (APPLICANT'S PORTION OF PROJECT) \$	LABOR COST (APPLICANT'S PORTION OF PROJECT) \$	MATERIAL COST (APPLICANT'S PORTION OF PROJECT) \$

PROJECT NAME

PROJECT OWNER'S FEIN (EXEMPT ENTITY)

FORM OF OWNERSHIP:

☐ Individual ☐ Partnership ☐ Corporation ☐ Multi member LLC ☐ Single member LLC ☐ Government Entity

If applicant is a corporation, a copy of the certified certificate of incorporation, amended certificate of incorporation, certificate of authority, or articles of incorporation should be attached. If the applicant is a limited liability company or a limited liability partnership, a copy of the certified articles of organization should be attached.

OWNERSHIP INFORMATION:

Corporations – give name, title, home address, and Social Security Number of each officer.

Partnerships – give name, home address, Social Security Number or FEIN of each partner.

Sole Proprietorships – give name, home address, Social Security Number of owner.

LLC – give name, home address, and Social Security Number or FEIN of each member.

LLP – give name, home address, and Social Security Number or FEIN of each partner.

NAME (PLEASE PRINT)

SIGNATURE

TITLE

DATE

**REVENUE DEPARTMENT USE ONLY**

Examiner's Remarks \_\_\_\_\_

Examiner \_\_\_\_\_ Date \_\_\_\_\_

Supervisor's Recommendation \_\_\_\_\_

Supervisor \_\_\_\_\_ Date \_\_\_\_\_



## Instructions For Preparation of Form ST: EXC-01 Sales and Use Tax Certificate of Exemption for Government Entity Project

NOTE: Exemption Certificates will be issued as of the project start date or the received date of the application. If, upon receipt of the application, the project has already commenced, the certificate will be issued as of the received date of the application. Any purchases made prior to the issuance of a certificate will not be exempt.

In order to expedite the processing of your application, please include the following documentation when submitting your application:

**Exempt Entity:**

1. Signed Application
2. Copy of Executed/Signed Contract and/or Letter of Intent

**General Contractor:**

1. Signed Application
2. Copy of Executed/Signed Contract and/or Letter of Intent
3. List of Sub-Contractors
4. Alabama Board of General Contractor's License
5. State/County Business License (usually obtained through county probate office)
6. Any other municipal business licenses associated with the project

**Sub-Contractor:**

1. Application
2. Alabama Board of General Contractor's License
3. State/County Business License (usually obtained through county probate office)
4. Any other municipal business licenses associated with the project
5. List of Sub-Contractors (if any)

**General contractors and sub-contractors:**

- Any additions and/or deletions to the list of sub-contractors working on a project must be submitted to the Department within 30 days of occurrence.
- If an extension is needed for a project, please contact the Department of Revenue at the address, numbers, or emails listed below.
- Sub-Contractor's Estimated Start Date should be the date they will begin working on the project and ordering materials instead of the General Contractor's Estimated Start Date for the project.

THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED. The return will be filed through the Consumer's Use Tax account. Please see the following page for detailed instructions and general information regarding the reporting requirements.

The application and required documentation may be mailed, faxed, or emailed to the following:

Fax: (334) 353-7867

Emails: [amber.hartley@revenue.alabama.gov](mailto:amber.hartley@revenue.alabama.gov)      [owen.carothers@revenue.alabama.gov](mailto:owen.carothers@revenue.alabama.gov)

Mailing Address: ATTN: Contractor's Exemption  
Alabama Department of Revenue  
Sales & Use Tax Division  
Room 4303  
PO Box 327710  
Montgomery, AL 36132-7710

## *General Information and Instructions Regarding the Reporting Requirements for Contractors Awarded an Exemption Certificate*

A contractor's exemption certificate for a Government Entity project is needed in order to purchase materials tax exempt for the qualified project. Once the exemption certificate has been applied for and awarded, there is a monthly filing requirement to report the purchases that have been made for each exempt project. The Consumer's Use (CNU) tax account is used to report the tax-exempt purchases made with each certificate for each exempt project for each month.

The consumer's use tax return must be filed for each of the months covered by the exemption certificate. (For example, if the certificate's effective date is June 29, 2014 and the expected completion date is October 1, 2014, a consumer's use tax return must be filed for each of the following months: June, July, August, September, and October.) A return **MUST** be filed each month to report the monthly purchases, even if monthly purchases for the project were \$0.

If a CNU tax account is not already open under the taxpayer/business name, one will automatically be assigned at the time the exemption certificate is generated. Electronic filing is required through the Department's online filing system, My Alabama Taxes (MAT). A letter containing the online filing information will be mailed to the address on file within a few days after the new CNU tax account has been assigned. This letter will contain all the information needed to create your online filing account in MAT. For questions relating to setting up the account on [www.myalabamataxes.alabama.gov](http://www.myalabamataxes.alabama.gov), please contact Business Registration at 334-242-1584 or the Sales Tax Division at 1-866-576-6531.

Once the MAT account is set up, please log in and file the monthly CNU tax return. There is a table located at the bottom left hand corner labeled "Contractor's Exemption for Government Construction Projects." All three fields in the table are required to be completed: exemption number, project number, and total amount of purchases for that specific project for the month. Additional projects may be added on the additional rows that appear as data is added; the table will allow the addition of more projects.

\*\*\*Please do not use lines 1 through 9 of the return for reporting exempt project information. Leave these lines blank unless taxable purchases were made outside of the state of Alabama that need to be reported and tax remitted. (Lines 1 through 9 do not have anything to do with the exemption reporting requirements).

When the certificate expires (upon the project's completion) and the CNU tax account is no longer needed, please contact the Business Registration Unit at 334-242-1584 and close the CNU tax account. Please be advised that if there are multiple government entity projects open, the consumer's use tax account should remain open until the last project completion date. For example, if Project EXC00ABCD ends in June of 2014 but Project EXC00EFGH ends January of 2015, the CNU tax account must remain open until the end of January 2015. A return for Project EXC00EFGH must be filed all the way through January 2015.

If the applicant already has a CNU tax account and it is currently set up online, please use this account to report exempt project purchases through [www.myalabamataxes.alabama.gov](http://www.myalabamataxes.alabama.gov) using the instructions provided above. The return may then be filed as usual.

\*\*\*All Consumer's Use Tax returns are due on the 20th of the month following the month in which purchases were made (i.e., the return for the month of June is due July 20th, etc. There are 20 days to file the return before it is deemed late.)

\*\*\*Any penalty waiver requests may be directed to the Sales and Use Tax Division at 1-866-576-6531. Only one waiver per 18 month period is allowed.

**SECTION 26 13 02**

**MEDIUM-VOLTAGE PAD-MOUNTED  
SWITCHGEAR (OUTDOOR)**

**SECTION 26 13 02**  
**MEDIUM-VOLTAGE PAD-MOUNTED SWITCHGEAR (OUTDOOR)**

**PART 1      GENERAL**

1.01    SCOPE

- A.     The work under this section includes furnishing and installing medium voltage pad-mounted outdoor air interrupter switchgear in accordance with the Drawings and these Specifications.

1.02    RELATED WORK

- A.     Applicable provisions of Division 1 govern work under this section.
- B.     Section 26 05 43 – Underground Ducts and Raceways for Electrical Systems
- C.     Section 26 08 00 - Commissioning of Electrical.

1.03    REFERENCES

- A.     C37.74 - IEEE Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV
- B.     C57.12.28 – IEEE Standard for Pad-Mounted Equipment Enclosure Integrity.
- C.     NFPA 70 - National Electrical Code

1.04    SUBMITTALS

- A.     Furnish third party certified test abstracts for all padmount switchgear models proposed for use on this project. The certified test abstracts shall contain, as a minimum, the manufacturer's current engineering sales brochure showing all equipment proposed with model numbers, and a summary of test procedures (described below) and resultant values actually recorded during the tests. The test procedure and resultant values summary shall contain model numbers (if available) similar to those listed in the current engineering sales brochure.
- B.     The padmount switchgear assemblies shall meet the requirements of the applicable sections of ANSI/IEEE C37.74 and C57.12.28. The following tests shall be performed on assemblies similar to those proposed for this project. Assemblies shall be complete with enclosure and all internal components such as switch, ground pads, ground rods, metal and insulating barriers, etc.
  - 1.     Voltage and dielectric performance tests including maximum design voltage, BIL impulse, and 60 Hz withstand tests.

2. Load current performance tests at maximum design voltage including rated load interrupting, fault closing, and momentary withstand current tests.
  3. Temperature rise performance tests including continuous load current and thermal runaway tests.
  4. Mechanical performance tests including open-close endurance tests.
  5. Enclosure integrity tests including pry, pull, and wire entry tests.
- C. Submit the following shop drawings.
1. Outline dimensions, enclosure construction, lifting and supporting points.
  2. Conduit and cable entrance locations.
  3. Electrical single line diagram.
  4. Equipment electrical ratings.
  5. Certification of ratings of the integrated padmounted switchgear assembly consisting of the basic switch components in combination with the enclosure.
  6. Product data for components and accessories.
  7. Manufacturer's installation instructions.
- D. All submittals are to comply with submission and content requirements specified in Division 1.

#### 1.05 OPERATION AND MAINTENANCE DATA

- A. All operations and maintenance data shall comply with the submission and content requirements specified under Division 1.
- B. In addition to the general content specified under Division 1 supply the following additional documentation:
1. Equipment adjustment instructions.
  2. Lubrication instructions.

#### 1.06 QUALITY ASSURANCE

- A. Enclosure Manufacturer: Company specializing in medium voltage interrupter switch enclosures with five years documented experience.
- B. Switch Manufacturer: Company specializing in medium voltage interrupter switch components with five years documented experience. Approved manufacturers:
1. ABB
  2. Eaton
  3. S&C

- C. The manufacturer/assembler of the overall switchgear assembly shall be completely and solely responsible for the performance of the basic components as well as the complete integrated assembly as rated.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect products.
- B. Accept switchgear on site and inspect for damage.

#### 1.08 EXTRA MATERIALS

- A. Provide one (1) 15 kV rated hotstick designed for removing/installing fuses and grounding jumpers.
- B. Provide four (4) sets of three grounding jumpers with heavy duty hotstick operable connectors at each end to enable one switchgear unit to be completely grounded.
- C. Provide two (2) pentahead socket wrenches for opening compartment doors.
- D. Provide one (1) switch operator handle/wrench for each interrupter switch.
- E. Provide one spare set of three (3) fuses for each fuse compartment.

### **PART 2 PRODUCTS**

#### 2.01 GENERAL

- A. The pad-mounted switchgear shall be an outdoor rated, metal-enclosed compartmentalized design suitable for mounting on a prefabricated polymer concrete box pad.
- B. The medium voltage switchgear units shall be equipped with four (4) 3-pole group operated, 600 amp rated switches. Switchgear to be S&C model PMH-10, or similar. Other manufacturer's meeting the requirements of this specification will be considered acceptable.

#### 2.02 ENCLOSURE

- A. The maximum height of the pad-mounted switchgear enclosure shall be 52".
- B. The pad-mounted switchgear enclosure shall be free-standing, self-supporting construction with provisions for cable entering and exiting through the bottom.

- C. Enclosure material shall be minimum 11-gauge steel sheet. All structural joints shall be welded.
- D. The enclosure shall be tamper resistant construction and shall not utilize any externally accessible hardware.
- E. The inside surface of the enclosure roof shall contain a heavy coating of anti-condensation roof undercoating.
- F. Compartment doors shall utilize a pentahead security bolt and three-point latching mechanism.
- G. Doors shall be tamper resistant and contain provisions for padlocking.
- H. Doors shall have stainless-steel hinges with stainless-steel hinge pins.

## 2.03 AIR INTERRUPTER SWITCHES

- A. Air interrupter switch ratings shall meet or exceed the following:
  - 1. Nominal Voltage: 14.4 kV, three phase, 60 Hz.
  - 2. Maximum Design Voltage: 17.0 kV.
  - 3. Basic Impulse Level: 95 kV.
  - 4. Load Carrying Ampacity: 600 amperes, continuous.
  - 5. Load Break Ampacity: 600 amperes.
  - 6. Short Circuit Rating: 14,000 symmetrical amperes at rated nominal voltage.
  - 7. Fault Close Rating: 22,400 rms asymmetrical amperes.
- B. Interrupter switches shall be three-pole load-break interrupting devices utilizing a stored energy quick-make, quick-break mechanism. The quick-make, quick-break mechanism shall be integrally mounted on the switch frame, and shall swiftly and positively open and close the interrupter switch independent of the switch-operating hub speed.
- C. Switch contacts shall be clearly visible in the open position to allow the operator to easily verify the switch position.
- D. Interrupter switches shall be operated by means of an externally accessible switch-operating hub. The switch-operating hub shall be located within a recessed pocket mounted on the side of the pad mounted switchgear enclosure and shall accommodate a hex-head socket wrench. Provide one (1) switch operator handle/wrench for each interrupter switch. The switch-operating hub pocket shall include a padlockable access cover that shall incorporate a hood to protect the padlock shackle from tampering. Labels to indicate switch position shall be provided in the switch-operating hub pocket.

- E. Grounding studs shall be provided at all switch terminals.

#### 2.04 MEDIUM VOLTAGE BUS

- A. Main bus shall be rated 600 amps continuous.
- B. Bus and interconnections shall consist of copper or aluminum bar with an oxide inhibiting compound at all bus joints.
- C. Bus and interconnections shall withstand the stresses associated with short-circuit currents up through the maximum rating of the pad-mounted switchgear.

#### 2.05 ACCESSORIES

- A. Each switchgear compartment shall include mounting provisions for surge arresters.
- B. The switchgear compartments shall include dual purpose front barriers, interphase barriers and end wall barriers. The barriers shall be constructed of glass reinforced polyester.
- C. One (1) pad per compartment shall be provided for grounding the equipment. Each compartment shall be equipped with cable supports and a ground bar. Each switch compartment shall include a grounding stud.

#### 2.06 FACTORY FINISHING

- A. All surfaces shall be chemically cleaned before applying paint.
- B. An anticorrosion primer shall be applied to all non-stainless steel structural surfaces, supporting surfaces and enclosure surfaces including those surfaces that may become inaccessible.
- C. At the completion of the finish coat, the complete finish shall maintain an average thickness of 2 mils.
- D. The standard finish color shall be dark olive green, Munsell 7GY-3.29/1.5. One (1) pint of paint for touchup shall be provided.



## 2.07 WARNING SIGNS

- A. All external doors shall be provided with "Danger - High Voltage - Keep Out" signs.
- B. The inside of each door shall be provided with a "Danger - High Voltage - Keep Out - Qualified Persons Only" sign.
- C. The inside of each door providing access to a medium voltage switch shall be provided with a sign indicating "Warning - Switch Blades May Be Energized in Any Position."

## 2.08 NAMEPLATES, RATINGS LABELS AND CONNECTION DIAGRAMS

- A. The outside of each door (or set of double doors) shall be provided with a nameplate indicating the manufacturer's name, catalog number and model number. Also provide an engraved identification nameplate for each switch indicating where the circuit comes from and goes to, and the circuit number.
- B. The inside of each door (or set of double doors) shall be provided with a ratings label indicating the following: voltage ratings; main bus continuous ampere ratings; short-circuit ratings (amperes rms symmetrical and MVA three-phase symmetrical at rated nominal voltage); and interrupter switch ratings (including continuous amperes and duty-cycle fault-closing capability).
- C. A three-line connection diagram showing interrupter switches and bus along with the manufacturer's model number shall be provided on the inside of the front and rear doors (or set of double doors), and on the inside of each switch-operating hub access cover.

## 2.09 SWITCHGEAR BOX PAD

- A. A prefabricated one piece box pad shall be provided for each pad mounted switchgear unit. Each box pad shall be specifically designed for each switchgear model. The box pad shall be composed of polymer concrete reinforced with glass fibers. The box pad shall be 36-inches deep and have a rigid, flat top lip sized to permit secure fastening of equipment on all sides. The box pad shall contain an integral bottom flange to support the equipment weight without sinking or tilting. The box pad shall be manufactured by Quazite, Concast, or similar.

## 2.10 LOCKS

- A. Provide padlocks on all pad mounted switchgear installed. All external doors and panels shall be padlocked, rendering all internal equipment inaccessible and inoperable by unauthorized personnel. This includes all access covers to switch operating hubs. Padlocks shall match user agency's present padlock type and be

keyed per user agency requirements. Coordinate and confirm padlock information with the facility maintenance personnel.

## **PART 3      EXECUTION**

### **3.01    GENERAL**

- A.    Each switchgear unit shall be installed in the location indicated on the Drawings. Contractor shall determine locations of existing utilities in the area before commencing installation. Should unforeseen existing underground obstruction(s) prevent installation in the location specified, the Contractor shall contact the Engineer before commencing installation.
- B.    Furnish and install a box pad for each pad mounted switchgear unit unless otherwise noted. Top of box pad shall extend 6" above finished grade. Provide 6" of pea gravel inside bottom of each box pad BEFORE installing the switchgear. Install switchgear on the box pad BEFORE backfilling. Secure the switchgear to the box pad using anchor bolts or hold down brackets in a minimum of four (4) places around the inside perimeter of the switchgear base.
- C.    Provide one ¾" x 10' ground rod within each switchgear base. Drive in to ground 9'0". Bond the switchgear enclosure to ground rod with #1/0 copper wire.
- D.    Install in accordance with the manufacturer's instructions, and in accordance with recognized industry practices.
- E.    Cables shall be supported at each termination using the provided cable supports in each compartment. In no case shall the cable be supported by the termination.
- F.    Touch-up paint all chips and scratches.
- G.    Where indicated on the Drawings, guard posts shall be installed.

### **3.02    CONSTRUCTION VERIFICATION**

- A.    Contractor is responsible for utilizing the construction verification checklists supplied under specification Section 26 08 00.

**END OF SECTION**

# SECTION 26 28 50

## POWER FACTOR CORRECTION

**SECTION 26 28 50**  
**POWER FACTOR CORRECTION**

**PART 1      GENERAL**

**1.01 SUMMARY**

- A. Section Includes: Types of power factor correction equipment required for this Project include:

1. Corrective capacitors (motor connected).

**1.02 SUBMITTALS**

- A. Shop Drawings: Submit in accordance with Section 01 33 00 – Submittal Procedures covering the items included under this Section. Shop Drawing submittals shall include:

1. Product Data: Submit manufacturer's data on power factor corrective capacitors.

**1.03 QUALITY ASSURANCE**

- A. Codes and Standards:

1. UL Compliance: Comply with applicable requirements of UL Standards 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," and 810, "Capacitors." Provide power factor correcting equipment and associated equipment which are UL listed and labeled.
2. IEEE Compliance: Comply with applicable recommended installation practices of IEEE Standard 241, "Recommended Practice for Electric Power Systems in Commercial Buildings," and Standard 141, "Recommended Practice for Electric Power Distribution for Industrial Plants," pertaining to power-factor correcting equipment.

**PART 2      PRODUCTS**

**2.01 MANUFACTURERS**

- A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:

1. Motor Connected:
  - a. ABB, Inc.
  - b. Cornell Dubilier.
  - c. Cutler-Hammer.

- d. Myron Zucker, Inc.
- e. Sprague Electric Co.
- f. Versatex.

- B. This Specification is based upon equipment as manufactured by Versatex Industries. Equipment manufactured by other reputable companies shall be acceptable if deemed equal by ENGINEER. For "or equal" approval, complete engineering data and diagrams shall be submitted in writing to ENGINEER at least 10 days prior to Bid date.

## 2.02 POWER FACTOR CORRECTIVE CAPACITORS (MOTOR CONNECTED)

- A. Provide power factor corrective capacitors and associated components which comply with manufacturer's standard materials, design, and construction in accordance with published product information, as required for complete installation, and as specified herein.
- B. Capacitors: Constructed of internally fused, individually replaceable, unit cells enclosed in NEMA type protective enclosures suitable for location in which capacitors are installed. Provide neon blown fuse indicators. Provide capacitors with discharge resistors which reduce voltage to 50 volts or less within 1 minute after capacitors are disconnected. Provide resistors and fuses on each phase. Select capacitors with single-case housings of welded heavy gauge steel, and equip with solderless connecting terminal lugs. Provide with dry type dielectric (no liquids). Apply manufacturer's standard light gray baked-on enamel to enclosure exteriors.

## **PART 3 EXECUTION**

NOT USED

**END OF SECTION**

# REVISED SECTION 31 23 23.15 TRENCH BACKFILL

## **SECTION 31 23 23.15 TRENCH BACKFILL**

### **PART 1 GENERAL**

#### **1.01 REFERENCES**

- A. The following is a list of standards which may be referenced in this section:
1. American Public Works Association (APWA): Uniform Color Code for Temporary Marking of Underground Utility Locations.
  2. ASTM International (ASTM):
    - a. C33, Standard Specification for Concrete Aggregates.
    - b. C117, Standard Test Method for Materials Finer than 75 Micrometer (No. 200) Sieve in Mineral Aggregates by Washing.
    - c. C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
    - d. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-mJm<sup>3</sup>)).
    - e. D1140, Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75 micrometer) Sieve.
    - f. D1557, Standard Test Method for Laboratory Compaction Characteristics of Soil using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-mJm<sup>3</sup>)).
    - g. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
    - h. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
    1. D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
  3. National Electrical Manufacturers Association (NEMA): Z535.1, Safety Color Code.

#### **1.02 DEFINITIONS**

- A. Imported Material: Material obtained by Contractor from source(s) offsite.
- B. Lift: Loose (uncompacted) layer of material.
- C. Pipe Zone: Backfill zone that includes full trench width and extends from prepared trench bottom to an upper limit above top outside surface of pipe, conduit, cable or duct bank. The limits of this zone are shown on the Drawings and specified herein.

- D. Prepared Trench Bottom: Graded trench bottom after excavation and installation of stabilization material, if required, but before installation of pipe zone material.
- E. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D698. Corrections for oversize material may be applied to either as- compacted field dry density or maximum dry density, as determined by Engineer.
- F. Relative Density: As defined by ASTM D4253 and ASTM D4254.
- G. Selected Backfill Material: Material available onsite that Engineer determines to be suitable for a specific use.
- H. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes producing a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
- I. Standard Specifications: Where the term "Standard Specifications" is used, such reference shall mean the current edition of Alabama Department of Transportation Standard Specifications for Highway Construction. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this Section of the Specifications. In case of a conflict in the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

### 1.03 SUBMITTALS

#### A. Action Submittals:

- 1. Shop Drawings: Manufacturer's descriptive literature for marking tapes.
- 2. Samples:
  - a. Trench stabilization material.
  - b. Pipe base and pipe zone material.
  - c. ALDOT No. 78 stone.
  - d. Earth backfill.
  - e. Sand(s).

#### B. Informational Submittals:

- 1. Certified Gradation Analysis: Submit not less than 30 days prior to delivery for imported materials or anticipated use for excavated materials, except for trench stabilization material that will be submitted prior to material delivery to Site.



## PART 2 PRODUCTS

### 2.01 MARKING TAPE

#### A. Nondetectable:

1. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
2. Thickness: Minimum 5 mils.
3. Width: 6 inches.
4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
5. Manufacturers and Products:
  - a. Reef Industries; Terra Tape.
  - b. Mutual Industries; Non-detectable Tape.
  - c. Presco; Non-detectable Tape.

#### B. Detectable:

1. Solid aluminum foil, visible on unprinted side, encased in protective high visibility, inert polyethylene plastic jacket.
2. Foil Thickness: Minimum 0.35 mils.
3. Laminate Thickness: Minimum 5 mils.
4. Width: 6 inches.
5. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
6. Joining Clips: Tin or nickel-coated furnished by tape manufacturer.
7. Manufacturers and Products:
  - a. Reef Industries; Terra Tape, Sentry Line Detectable.
  - b. Mutual Industries; Detectable Tape.
  - c. Presco; Detectable Tape.

#### C. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

Color*	Facility
Red	Electric power lines, cables, conduit, and lightning cables
Orange	Communicating alarm or signal lines, cables, or conduit
Yellow	Gas, oil, stream, petroleum, or gaseous materials
Green	Sewers and drain lines
Blue	Potable Water
Purple	Reclaimed water, irrigation, and slurry lines
* As specified in NEMA Z535.1, Safety Color Code.	

## 2.02 TRENCH STABILIZATION MATERIAL

- A. No. 78 stone as specified in the ALDOT Standard Specifications.

## 2.03 PIPE BASE AND PIPE ZONE MATERIAL

- A. Earth Trench: Use ALDOT No. 78 stone below pipe or conduit. For remainder of pipe zone use selected native material obtained from trench excavation, free from roots, debris, and rocks larger than 8 inches. Provide imported material as necessary.
- B. Rock Trench and Pavement Trench: No. 78 stone as specified in the ALDOT Standard Specifications.

## 2.04 TRENCH BACKFILL ABOVE PIPE ZONE

- A. Use ALDOT No. 78 stone for backfill above the pipe zone when pipes or conduits are installed under existing or proposed pavements.
- B. Use select native material obtained from trench excavation for backfill above the pipe zone when pipes or conduits will be installed in open areas (i.e., areas that are not or will not be paved). Such material shall be free from roots, debris, and rocks larger than 3-inch in any direction. Provide imported material as necessary.

## 2.05 GRAVEL SURFACING MATERIALS

- A. Gravel surfacing for roads and drives shall conform to Type B in Standard Specification Section 825.

## 2.06 IMPORTED TOPSOIL

- A. Imported topsoil shall be suitable sandy loam from an approved source and shall possess friability and a high degree of fertility. It shall be free of clods, roots, gravel, and other inert material. It shall be free of quack grass, horsetail, and other noxious vegetation and seed. Should such regenerative material be present in the soil, the Contractor shall remove, at his expense, all such growth, both surface and root, which may appear in the imported topsoil within one (1) year following acceptance of the job in a manner satisfactory to the Owner.

## **PART3      EXECUTION**

### **3.01    TRENCH PREPARATION**

#### **A.      Water Control:**

1.      Promptly remove and dispose of water entering trench per governing regulatory authority as necessary to grade trench bottom and to compact backfill and install manholes, pipe, conduit, direct-buried cable, or duct bank. Do not place concrete, lay pipe, conduit, direct-buried cable, or duct bank in water.
2.      Remove water in a manner that minimizes soil erosion from trench sides and bottom, as well as preventing turbid discharge in accordance with local, state, and federal regulation.
3.      Provide continuous water control until trench backfill is complete.
4.      Contractor shall have sole responsibility for dewatering operations and shall obtain any required local, state, federal or other necessary approvals or associated permits.

#### **B.      Remove foreign material and backfill contaminated with foreign material that falls into trench.**

### **3.02    TRENCH BOTTOM**

- A.      Firm Subgrade: Grade with hand tools, remove loose and disturbed material, and trim off high areas and ridges left by excavating bucket teeth. Allow space for bedding material if shown or specified.
- B.      Soft Subgrade: If subgrade is encountered that may require removal to prevent pipe settlement, notify Engineer. Engineer will determine depth of overexcavation, if any required.

### **3.03    TRENCH STABILIZATION MATERIAL INSTALLATION**

- A.      Rebuild trench bottom with trench stabilization material.
- B.      Place material over full width of trench in lifts not exceed 6 inches to required grade, providing allowance for pipe zone thickness.
- C.      Compact each lift so as to provide a firm, unyielding support for the pipe zone material prior to placing succeeding lifts.

### **3.04    PIPE BASE MATERIAL**

- A.      Place pipe base material over the full width of the prepared trench bottom in lifts not exceeding 6 inches.

- B. Grade and compact each lift to provide a firm, unyielding surface.
- C. Minimum Thickness:
  - 1. Pipe and Conduit 24 Inches and Smaller: 6 inches.
  - 2. Pipe 30 Inches and Larger: 9 inches.
- D. Install to form continuous and uniform support except at bell holes, if applicable, or minor disturbances resulting from removal of lifting tackle.
- E. Bell or Coupling Holes: Excavate in bedding at each joint to permit proper assembly and inspection of joint and to provide uniform bearing along barrel of pipe or conduit.

### 3.05 PIPE ZONE BACKFILL

- A. Upper limit of pipe zone shall not be less than following:
  - 1. Pipe: 12 inches, unless shown otherwise.
  - 2. Conduit: 3 inches, unless shown otherwise.
  - 3. Direct-Buried Cable: 3 inches, unless shown otherwise.
  - 4. Duct Bank: 3 inches, unless shown otherwise.
- B. Restrain pipe, conduit, cables, and duct banks as necessary to prevent their movement during backfill operations.
- C. Place material simultaneously in lifts not exceeding 6 inches on both sides of pipe and, if applicable, between pipes, conduit, cables, and duct banks installed in same trench.
  - 1. Pipe 10-Inch and Smaller Diameter: First lift less than or equal to 1/2 pipe diameter.
  - 2. Pipe Over 10-Inch Diameter: Maximum 6-inch lifts.
- D. Thoroughly tamp each lift, including area under haunches, with handheld tamping bars supplemented by "walking in" and slicing material under haunches with a shovel to ensure that voids are completely filled before placing each succeeding lift.
- E. After pipe zone material has been placed as specified, compact the material by using a vibratory plate compactor only over the area between the sides of the pipe and the trench walls.
- F. Do not use power-driven impact compactors to compact pipe zone material.

### 3.06 MARKING TAPE INSTALLATION

- A. Continuously install marking tape along centerline of all buried piping and conduits, on top of last lift of pipe zone material. Coordinate with piping installation drawings.
  - 1. Detectable Marking Tape: Install with nonmetallic piping and conduits.
  - 2. Nondetectable Marking Tape: Install with metallic piping.

### 3.07 BACKFILL ABOVE PIPE ZONE

- A. General:
  - 1. Process excavated material to meet specified gradation requirements.
  - 2. Place material in lifts not exceeding 6 inches.
  - 3. Adjust moisture content as necessary to obtain specified compaction.
  - 4. Do not allow backfill to free fall into the trench or allow heavy, sharp pieces of material to be placed as backfill until after at least 2 feet of backfill has been provided over the top of pipe.
  - 5. Do not use power driven impact type compactors for compaction until at least 4 feet of backfill is placed over top of pipe.
  - 6. Backfill to grade with proper allowances for topsoil, crushed rock surfacing, and pavement thicknesses, wherever applicable.
  - 7. Backfill around structures with same class backfill as specified for adjacent trench unless otherwise shown or specified.
- B. Earth Trench and Rock Trench:
  - 1. Backfill with earth backfill.
  - 2. Leave trench with backfill material neatly mounded across the entire trench width, but not more than 6 inches above the adjacent ground surface.
  - 3. In lawn, garden, or similar type areas, maintain trench level with the existing adjacent grade.
- C. Pavement Trench:
  - 1. Use ALDOT No. 78 stone for the full depth of the trench less the allowance for the base course under existing or future roadway as shown on Drawings.
  - 2. Repair roadway, driveways, concrete, etc. damaged as specified in Drawings.

### 3.08 COMPACTION

- A. All fill and backfill shall be compacted to 100 percent of the ASTM D698 density.

### 3.09 MAINTENANCE OF TRENCH BACKFILL

- A. After each section of trench is backfilled, maintain the surface of the backfilled trench even with the adjacent ground surface until final surface restoration is completed.
- B. Gravel Surfacing Rock: Add gravel surfacing rock where applicable and as necessary to keep the surface of the backfilled trench even with the adjacent ground surface, and grade and compact as necessary to keep the surface of backfilled trenches smooth, free from ruts and potholes, and suitable for normal traffic flow.

### 3.10 SETTLEMENT OF BACKFILL

- A. Settlement of trench backfill, or of fill, or facilities constructed over trench backfill will be considered a result of defective compaction of trench backfill and shall be corrected. Structures damaged by settlement shall be restored to their original condition by the Contractor.

## **END OF SECTION**

**REVISED PAGE 12 OF VALVE SCHEDULE**

## Valve Schedule - Revised Per Addendum No. 2

(Process Valves 3" & Larger - Excluding Chemical Feed, Compressed Air, Plumbing, Fire Protection & Fuel System Valves)

Valve Number	General Location & Environment	Service	Valve Size	Valve Type	Nominal Operating Pressure	End Connections	Actuator	Remarks
RW-BFV-4	Station 499+97	Raw Water	42"	Butterfly	70 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Raw Water Main
<b>Finished Water Main Isolation Valves</b>								
FW-BFV-1	Station 799+71	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-2	Station 800+34	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-3	Station 854+75	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-4	Station 870+51	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-5	Station 873+91	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-6	Station 975+75	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-7	Station 1027+50	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-7A	Station 1072+76	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-8	Station 1075+30	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-9	Station 1111+38	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-10	Station 1130+37	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-11	Station 1130+89	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-12	Station 3973+47	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-13	Station 3988+00	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
<b>Finished Water Main Air Release Valves</b>								
FW-ARV-1	Station 792+00	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
FW-ARV-2	Station 802+00	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
FW-ARV-3	Station 808+90	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
FW-ARV-4	Station 840+05	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
FW-ARV-5	Station 870+40	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
FW-ARV-6	Station 874+00	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve



# REVISED FLOW METER SCHEDULE

- b. Company factory trained representative
- c. Owner's personnel

FLOW METER SCHEDULE – REVISED PER ADDENDUM NO. 2				
Flow Meter Description/Location	Type	Size	Supplier	Remarks
Raw Water Flow Meter/Adjacent to Flocculation Basins	Magnetic	30"	Instrumentation Supplier	Above-grade Installation
Filter No. 1 Effluent Flow Meter/Filter Pipe Gallery	Magnetic	16"	Filter Equipment Supplier or Instrumentation Supplier	Above-grade Installation
Filter No. 2 Effluent Flow Meter/Filter Pipe Gallery	Magnetic	16"	Filter Equipment Supplier or Instrumentation Supplier	Above-grade Installation
Filter No. 3 Effluent Flow Meter/Filter Pipe Gallery	Magnetic	16"	Filter Equipment Supplier or Instrumentation Supplier	Above-grade Installation
Filter No. 4 Effluent Flow Meter/Filter Pipe Gallery	Magnetic	16"	Filter Equipment Supplier or Instrumentation Supplier	Above-grade Installation
GAC Contactor No. 1 Effluent Flow Meter/GAC Contactor Pipe Gallery	Magnetic	16"	GAC Contactor Equipment Supplier or Instrumentation Supplier	Above-grade Installation
GAC Contactor No. 2 Effluent Flow Meter	Magnetic	16"	GAC Contactor Equipment Supplier or Instrumentation Supplier	Above-grade Installation
GAC Contactor No. 3 Effluent Flow Meter	Magnetic	16"	GAC Contactor Equipment Supplier or Instrumentation Supplier	Above-grade Installation
GAC Contactor No. 4 Effluent Flow Meter	Magnetic	16"	GAC Contactor Equipment Supplier or Instrumentation Supplier	Above-grade Installation
Backwash Water Flow Meter	Magnetic	30"	Instrumentation Supplier	Below-grade vault installation
Finished Water Flow Meter	Magnetic	42"	Instrumentation Supplier	Below-grade vault installation

FLOW METER SCHEDULE – REVISED PER ADDENDUM NO. 2				
Flow Meter Description/Location	Type	Size	Supplier	Remarks
GAC Contactor Bypass Flow Meter/GAC Contactor Influent Channel	Ultrasonic Level/Flow	N/A	GAC Contactor Equipment Supplier or Instrumentation Supplier	Refer to Section 40 91 23.36
Backwash Water Outfall Flow Meter/Outfall Flow Measurement Box	Ultrasonic Level/Flow	N/A	Instrumentation Supplier	Refer to Section 40 91 23.36
Notes: 1. When a particular type of instrument is furnished by separate suppliers the instruments shall be products of the same manufacturer to provide standardization. 2. Ultrasonic level measurement devices are required at the influent channel for the GAC contactors and at the washwater outfall flow measurement structure. It is intended that these devices measure levels at each location and display the calculated flows locally. The flow signals shall be transmitted to the plant control system which shall use software to display both level and flow measurements.				

**END OF SECTION**

# REVISED LEVEL INSTRUMENT SCHEDULE

LEVEL INSTRUMENT SCHEDULE – REVISED PER ADDENDUM NO. 2		
Item Description/Location	Supplier	Remarks
<b>Float Switches</b>		
Raw Water Pump No. 1A Low Level Shutdown Float Switch/Raw Water Pump Chamber No. 1	Instrumentation Supplier	N/A
Raw Water Pump No. 2A Low Level Shutdown Float Switch/Raw Water Pump Chamber No. 2	Instrumentation Supplier	N/A
Raw Water Pump No. 3A Low Level Shutdown Float Switch/Raw Water Pump Chamber No. 3	Instrumentation Supplier	N/A
Alum Bulk Storage Area Leak Detection Float Switch No.1/Alum Bulk Storage Tank Area	Instrumentation Supplier	N/A
Alum Bulk Storage Area Leak Detection Float Switch No.2/Alum Bulk Storage Tank Area	Instrumentation Supplier	N/A
Alum Feed Area Leak Detection Float Switch/Alum Feed Area	Instrumentation Supplier	N/A
Sodium Hydroxide Bulk Storage Area Leak Detection Float Switch/Sodium Hydroxide Bulk Storage Tank Area	Instrumentation Supplier	N/A
Sodium Hydroxide Feed Area Leak Detection Float Switch/Sodium Hydroxide Feed Area	Instrumentation Supplier	N/A
Sodium Hypochlorite Bulk Storage Area Leak Detection Float Switch No.1/Sodium Hypochlorite Bulk Storage Tank Area	Instrumentation Supplier	N/A
Sodium Hypochlorite Bulk Storage Area Leak Detection Float Switch No.2/Sodium Hypochlorite Bulk Storage Tank Area	Instrumentation Supplier	N/A
Sodium Hypochlorite Feed Area Leak Detection Float Switch/Sodium Hypochlorite Feed Area	Instrumentation Supplier	N/A
Corrosion Inhibitor Bulk Storage Area Leak Detection Float Switch/Corrosion Inhibitor Bulk Storage Tank Area	Instrumentation Supplier	N/A
Corrosion Inhibitor Feed Area Leak Detection Float Switch/Corrosion Inhibitor Feed Area	Instrumentation Supplier	N/A
Fluoride Bulk Storage Area Leak Detection Float Switch/Fluoride Bulk Storage Tank Area	Instrumentation Supplier	N/A
Fluoride Feed Area Leak Detection Float Switch/Fluoride Feed Area	Instrumentation Supplier	N/A
Sodium Thiosulfate Low Level Float Switch/Sodium Thiosulfate Tote	Instrumentation Supplier	N/A
Filter Influent Channel High Level Float Switch/Filter Influent Channel	Instrumentation Supplier	N/A
Filter Gallery Pipe Trench Float Switch/Filter Gallery Pipe Trench	Instrumentation Supplier	N/A

<b>LEVEL INSTRUMENT SCHEDULE (Continued) – REVISED PER ADDENDUM NO. 2</b>		
<b>Item Description/Location</b>	<b>Supplier</b>	<b>Remarks</b>
GAC Contactor Gallery Pipe Trench Float Switch/GAC Contactor Gallery Pipe Trench	Instrumentation Supplier	N/A
Elevated Backwash Water Storage Tank High Level Float Switch/Elevated Backwash Water Storage Tank	Instrumentation Supplier	N/A
Elevated Backwash Water Storage Tank High High Level Float Switch/Elevated Backwash Water Storage Tank	Instrumentation Supplier	N/A
Clearwell Low Level Float Switch/Clearwell	Instrumentation Supplier	N/A
Finished Water Pump Chamber Low Level Float Switch/Finished Water Pump Chamber	Instrumentation Supplier	N/A
Filtrate Pump Station "Pumps Off" Float Switch/Filtrate Pump Station	Instrumentation Supplier	N/A
Filtrate Pump Station "Lead Pump On" Float Switch/Filtrate Pump Station	Instrumentation Supplier	N/A
Filtrate Pump Station "Lag Pump On" Float Switch/Filtrate Pump Station	Instrumentation Supplier	N/A
Filtrate Pump Station "High Level Alarm" Float Switch/Filtrate Pump Station	Instrumentation Supplier	N/A
<b>Bubbler Level Sensors (With Transmitters)</b>		
Filter Influent Channel Level Sensor/Filter Influent Channel	Filter Equipment Supplier or Instrumentation Supplier	N/A
<b>Ultrasonic Level Sensors (With Transmitters)</b>		
Raw Water Intake River Level Sensor/Raw Water Pump Station	Instrumentation Supplier	N/A
Raw Water Pump Chamber No. 1 Level Sensor/Raw Water Pump Chamber No. 1	Instrumentation Supplier	N/A
Raw Water Pump Chamber No. 2 Level Sensor/Raw Water Pump Chamber No. 2	Instrumentation Supplier	N/A
Raw Water Pump Chamber No. 3 Level Sensor/Raw Water Pump Chamber No. 3	Instrumentation Supplier	N/A
Alum Bulk Storage Tank No. 1 Level Sensor/Alum Bulk Storage Tank No. 1	Instrumentation Supplier	N/A
Alum Bulk Storage Tank No. 2 Level Sensor/Alum Storage Bulk Tank No. 2	Instrumentation Supplier	N/A
Sodium Hydroxide Bulk Storage Tank Level Sensor/Sodium Hydroxide Bulk Storage Tank	Instrumentation Supplier	N/A
Sodium Hypochlorite Bulk Storage Tank No. 1 Level Sensor/Sodium Hypochlorite Bulk Storage Tank No. 1	Instrumentation Supplier	N/A

<b>LEVEL INSTRUMENT SCHEDULE (Continued) – REVISED PER ADDENDUM NO. 2</b>		
<b>Item Description/Location</b>	<b>Supplier</b>	<b>Remarks</b>
Sodium Hypochlorite Bulk Storage Tank No. 2 Level Sensor/Sodium Hypochlorite Bulk Storage Tank No. 2	Instrumentation Supplier	N/A
Corrosion Inhibitor Bulk Storage Tank Level Sensor/Corrosion Inhibitor Bulk Storage Tank	Instrumentation Supplier	N/A
Fluoride Bulk Storage Tank Level Sensor/Fluoride Bulk Storage Tank	Instrumentation Supplier	N/A
Filter No. 1 Level Sensor/Filter No. 1	Filter Equipment Supplier or Instrumentation Supplier	N/A
Filter No. 2 Level Sensor/Filter No. 2	Filter Equipment Supplier or Instrumentation Supplier	N/A
Filter No. 3 Level Sensor/Filter No. 3	Filter Equipment Supplier or Instrumentation Supplier	N/A
Filter No. 4 Level Sensor/Filter No. 4	Filter Equipment Supplier or Instrumentation Supplier	N/A
GAC Contactor Gallery Influent Channel Level Sensor/GAC Contactor Influent Channel	GAC Contactor Equipment Supplier or Instrumentation Supplier	Provide Flow Signal
Spent Backwash Water Storage Basin Level Sensor/Spent Backwash Water Storage Basin	Instrumentation Supplier	N/A
Washwater Outfall Flow Measurement Structure Level Sensor/Washwater Outfall Flow Measurement Structure	Instrumentation Supplier	Provide Flow Signal
Notes:	1. When a particular type of instrument is furnished by separate suppliers the instruments shall be products of the same manufacturer to provide standardization. 2. Ultrasonic level measurement devices are required at the influent channel for the GAC contactors and at the wastewater outfall flow measurement structure. It is intended that these devices measure levels at each location and display the calculated flows locally. The flow signals shall be transmitted to the plant control system which shall use software to display both flow and level measurements.	

## END OF SECTION

# REVISED ANALYTICAL INSTRUMENT SCHEDULE



ANALYTICAL INSTRUMENT SCHEDULE – REVISED PER ADDENDUM NO. 2		
Instrument Description/Location	Supplier	Remarks
<b>pH Meters (With Transmitters)</b>		
Raw Water pH Meter/Raw Water Pump Station	Instrumentation Supplier	Provide temperature signal with pH, Hach DPD1P electrode with sc200 Controller
Pre-Coagulant pH Meter/Chemical Feed Area	Instrumentation Supplier	No temperature signal, Hach DPD1P electrode with sc200 Controller
Post-Coagulant pH Meter/Chemical Feed Area	Instrumentation Supplier	No temperature signal, Hach DPD1P electrode with sc200 Controller
Clearwell pH Meter/Finished Water Pump Room	Instrumentation Supplier	No temperature signal, Hach DPD1P electrode with sc200 Controller
Finished Water pH Meter/Finished Water Pump Room	Instrumentation Supplier	No temperature signal, Hach DPD1P electrode with sc200 Controller
<b>Streaming Current Detectors (With Transmitters)</b>		
Post-Coagulant Streaming Current Detector/Chemical Feed Area	Instrumentation Supplier	ChemTrac DuraTrac 4 with HydroACT 600 Controller
<b>Turbidimeters (With Transmitters)</b>		
Raw Water Turbidimeter/Raw Water Pump Station	Instrumentation Supplier	Hach Surface Scatter 7 with sc200 Controller
Pre-Coagulant Turbidimeter/Chemical Feed Area	Instrumentation Supplier	Hach Surface Scatter 7 with sc200 Controller
Train No. 1 Settled Water Turbidimeter/Chemical Feed Area	Instrumentation Supplier	Hach 1720E with sc200 Controller
Train No. 2 Settled Water Turbidimeter/Chemical Feed Area	Instrumentation Supplier	Hach 1720E with sc200 Controller
Filter No. 1 Effluent Turbidimeter/Filter Pipe Gallery	Filter Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
Filter No. 2 Effluent Turbidimeter/Filter Pipe Gallery	Filter Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
Filter No. 3 Effluent Turbidimeter/Filter Pipe Gallery	Filter Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
Filter No. 4 Effluent Turbidimeter/Filter Pipe Gallery	Filter Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller

<b>ANALYTICAL INSTRUMENT SCHEDULE (continued) – REVISED PER ADDENDUM NO. 2</b>		
<b>Instrument Description/Location</b>	<b>Supplier</b>	<b>Remarks</b>
Combined Filter Effluent Turbidimeter/Filter Pipe Gallery	Filter Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
GAC Contactor No. 1 Effluent Turbidimeter/GAC Contactor Pipe Gallery	GAC Contactor Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
GAC Contactor No. 2 Effluent Turbidimeter/GAC Contactor Pipe Gallery	GAC Contactor Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
GAC Contactor No. 3 Effluent Turbidimeter/GAC Contactor Pipe Gallery	GAC Contactor Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
GAC Contactor No. 4 Effluent Turbidimeter/GAC Contactor Pipe Gallery	GAC Contactor Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
Combined GAC Contactor Effluent Turbidimeter/GAC Contactor Pipe Gallery	GAC Contactor Equipment Supplier or Instrumentation Supplier	Hach 1720E with sc200 Controller
Disinfectant Contact Basin Turbidimeter/Finished Water Pump Room	Instrumentation Supplier	Hach 1720E with sc200 Controller
Finished Water Tubidimeter/Finished Water Pump Room	Instrumentation Supplier	Hach 1720E with sc200 Controller
<b>Chlorine Analyzers (With Transmitters)</b>		
Clearwell Influent Chlorine Analzer/Finished Water Pump Room	Instrumentation Supplier	Hach CLF10sc
Finished Water Chlorine Analyzer/Finished Water Pump Room	Instrumentation Supplier	Hach CLF10sc
Note: When a particular type of instrument is furnished by separate suppliers the instruments shall be products of the same manufacturer to provide standardization.		

**END OF SECTION**

# REVISED STANDARD TRENCH DETAIL



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HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT

**STANDARD TRENCH  
DETAIL**  
(SHEET C-9501, VOLUMES 3A & 3B)

Project No.: 200-11740-10003

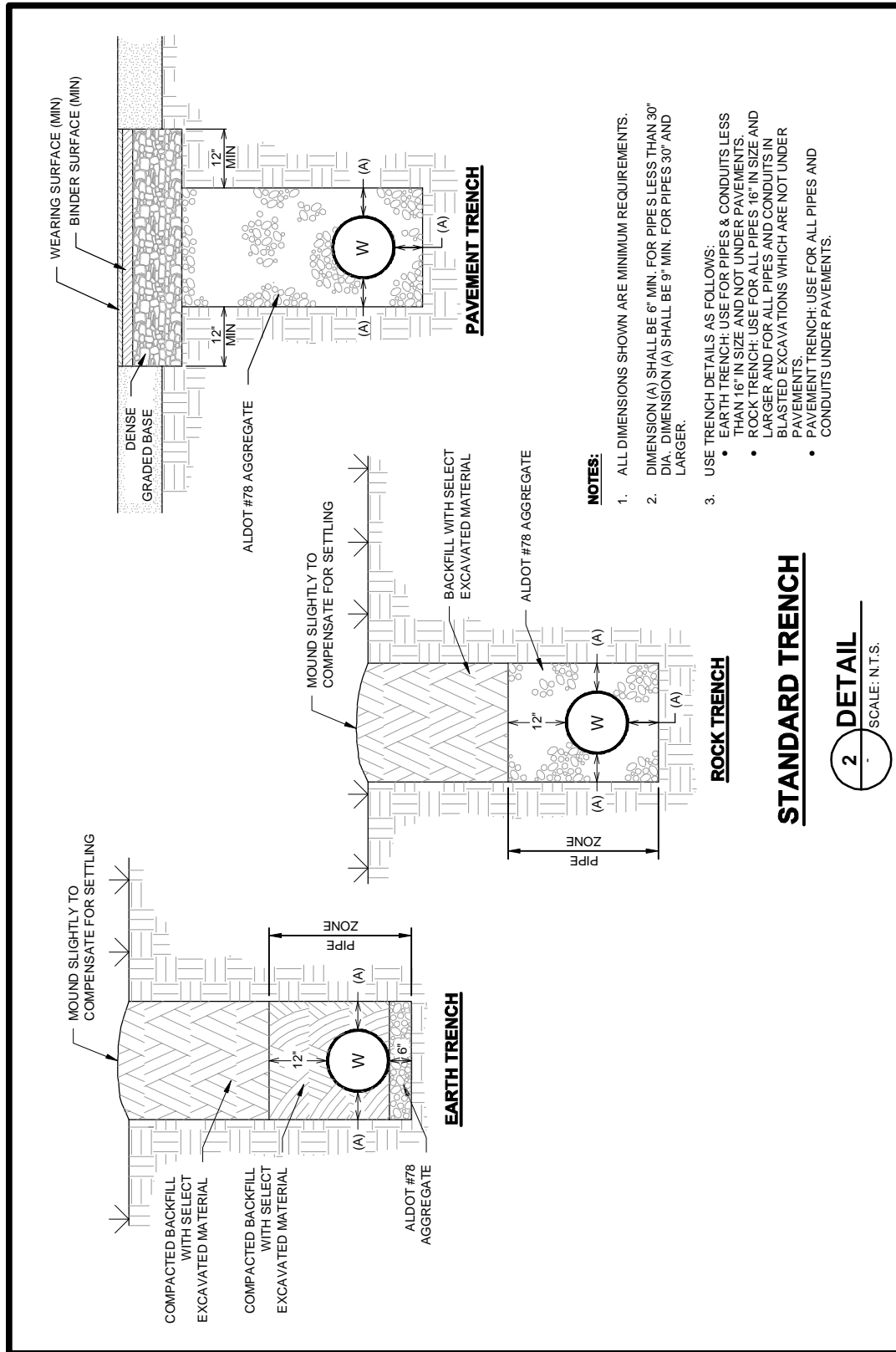
Date: 11/2014

Designed By: JPT

**ADDENDUM  
#2**

Bar Measures 1 inch

Copyright: Tetra Tech

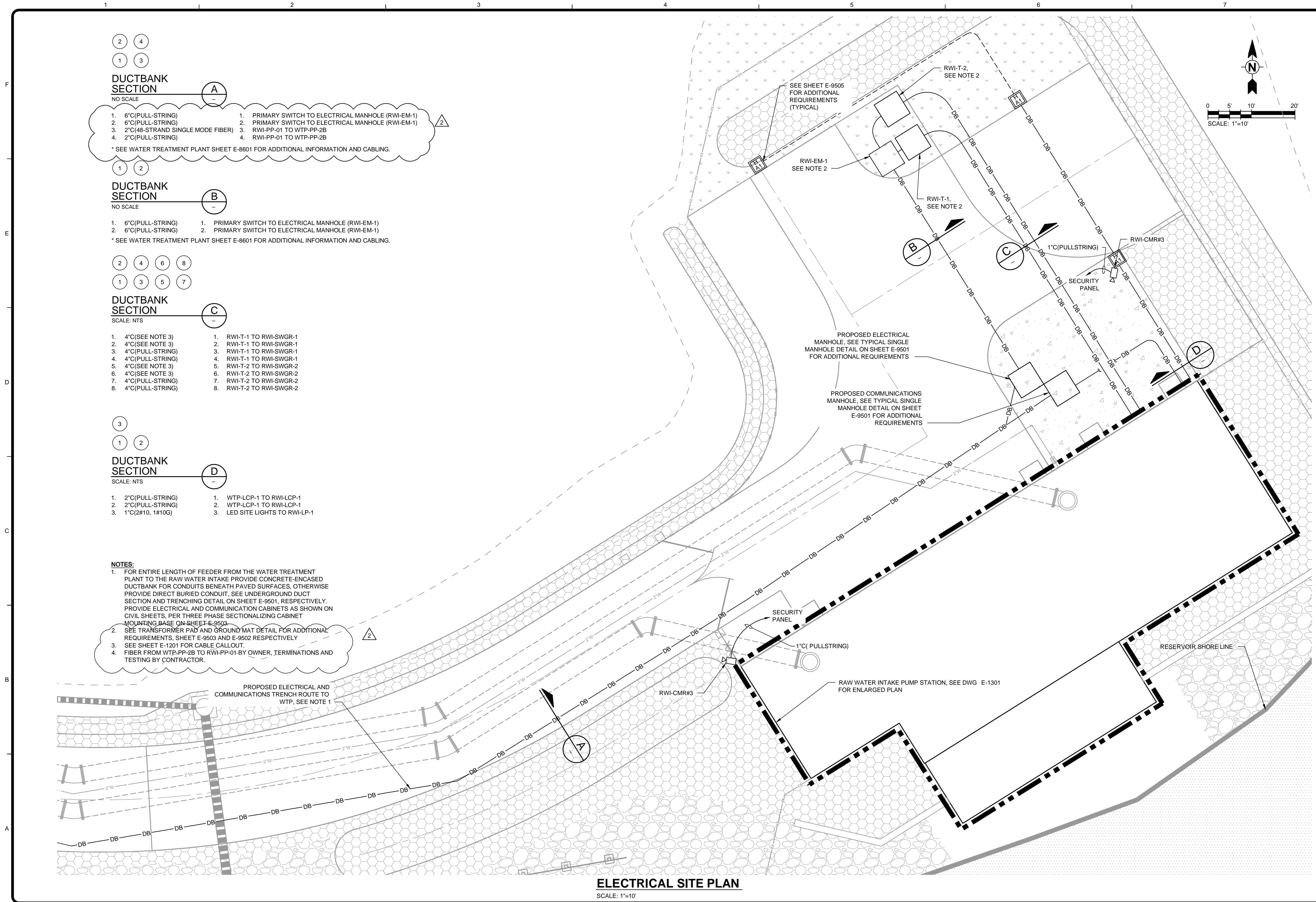


# VOLUME 3A REPLACEMENT SHEETS

- Sheet E-1101



11/24/2014 1:09:53 PM - P:\N\1740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\R\W-E-1101 ELECTRICAL SITE PLAN (ADDENDUM NO.2).DWG - CALZARETTA, TIMOTHY



2 4  
1 3

DUCTBANK  
SECTION

NO SCALE

1. 6"C(PULL-STRING)
2. 6"C(PULL-STRING)
3. 2"C(48-STRAND SINGLE MODE FIBER)
4. 2"C(PULL-STRING)
1. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
2. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
3. RWI-PP-01 TO WTP-PP-2B
4. RWI-PP-01 TO WTP-PP-2B

\* SEE WATER TREATMENT PLANT SHEET E-8601 FOR ADDITIONAL INFORMATION AND CABLING.

1 2

DUCTBANK  
SECTION

NO SCALE

1. 6"C(PULL-STRING)
2. 6"C(PULL-STRING)
1. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
2. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)

\* SEE WATER TREATMENT PLANT SHEET E-8601 FOR ADDITIONAL INFORMATION AND CABLING.

2 4 6 8  
1 3 5 7

DUCTBANK  
SECTION

SCALE: NTS

1. 4"C(SEE NOTE 3)
2. 4"C(SEE NOTE 3)
3. 4"C(PULL-STRING)
4. 4"C(PULL-STRING)
5. 4"C(SEE NOTE 3)
6. 4"C(SEE NOTE 3)
7. 4"C(PULL-STRING)
8. 4"C(PULL-STRING)
1. RWI-T-1 TO RWI-SWGR-1
2. RWI-T-1 TO RWI-SWGR-1
3. RWI-T-1 TO RWI-SWGR-1
4. RWI-T-1 TO RWI-SWGR-1
5. RWI-T-2 TO RWI-SWGR-2
6. RWI-T-2 TO RWI-SWGR-2
7. RWI-T-2 TO RWI-SWGR-2
8. RWI-T-2 TO RWI-SWGR-2

3  
1 2

DUCTBANK  
SECTION

SCALE: NTS

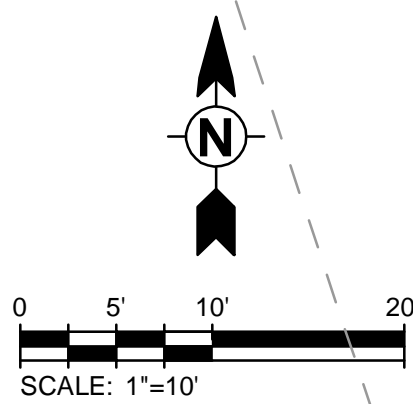
1. 2"C(PULL-STRING)
2. 2"C(PULL-STRING)
3. 1"C(2#10, 1#10G)
1. WTP-LCP-1 TO RWI-LCP-1
2. WTP-LCP-1 TO RWI-LCP-1
3. LED SITE LIGHTS TO RWI-LP-1

NOTES:

1. FOR ENTIRE LENGTH OF FEEDER FROM THE WATER TREATMENT PLANT TO THE RAW WATER INTAKE PROVIDE CONCRETE-ENCASED DUCTBANK FOR CONDUITS BENEATH PAVED SURFACES; OTHERWISE PROVIDE DIRECT BURIED CONDUIT. SEE UNDERGROUND DUCT SECTION AND TRENCHING DETAIL ON SHEET E-9501, RESPECTIVELY. PROVIDE ELECTRICAL AND COMMUNICATION CABINETS AS SHOWN ON CIVIL SHEETS. PER THREE PHASE SECTIONALIZING CABINET MOUNTING BASE ON SHEET E-9503.
2. SEE TRANSFORMER PAD AND GROUND MAT DETAIL FOR ADDITIONAL REQUIREMENTS, SHEET E-9503 AND E-9502 RESPECTIVELY.
3. SEE SHEET E-1201 FOR CABLE CALLOUT.
4. FIBER FROM WTP-PP-2B TO RWI-PP-01-BY OWNER, TERMINATIONS AND TESTING BY CONTRACTOR.

ELECTRICAL SITE PLAN

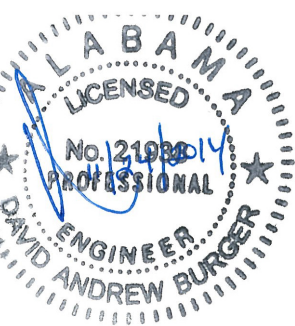
SCALE: 1"=10'



TETRA TECH



BID SET



MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES  
RAW WATER INTAKE STRUCTURE AND  
TRANSMISSION FACILITIES  
ELECTRICAL SITE PLAN

Project No.: 200-11740-10003  
Designed By: DAB  
Drawn By: TAC  
Checked By: DAB

E-1101

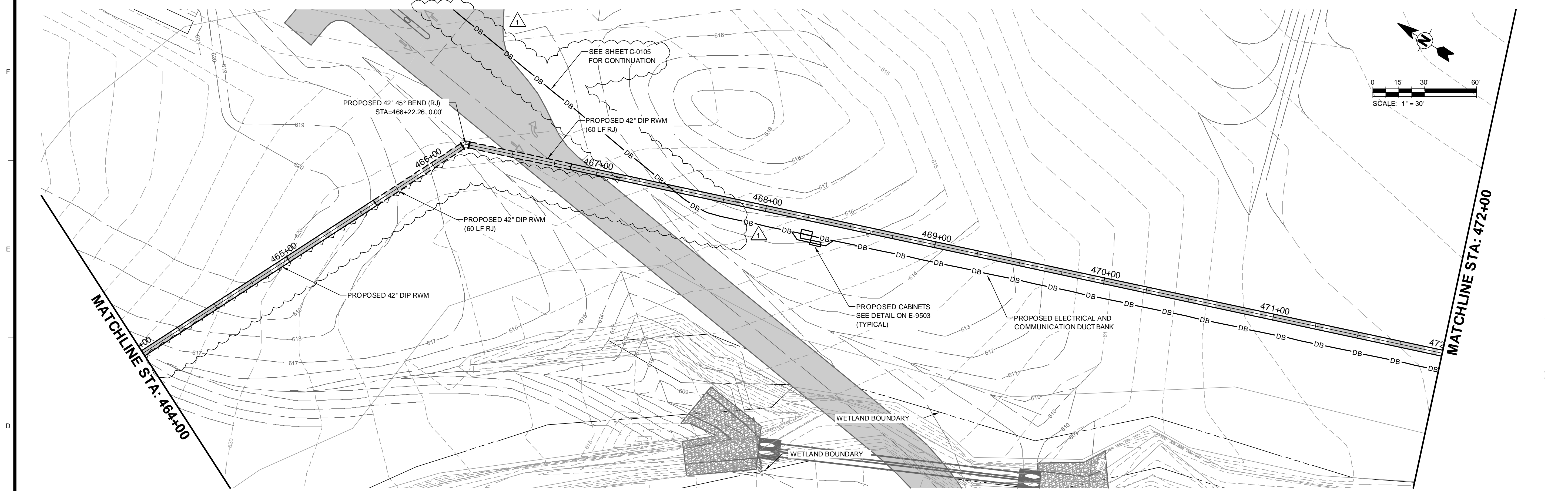
Bar Measures 1 inch

## VOLUME 3B REPLACEMENT SHEETS

- Sheet C-2005
- Sheet C-2006
- Sheet E-0105
- Sheet E-0601
- Sheet E-4301
- Sheet E-4302
- Sheet E-4601
- Sheet E-4602
- Sheet E-4603
- Sheet E-8302
- Sheet E-8601
- Sheet E-8602
- Sheet I-0801

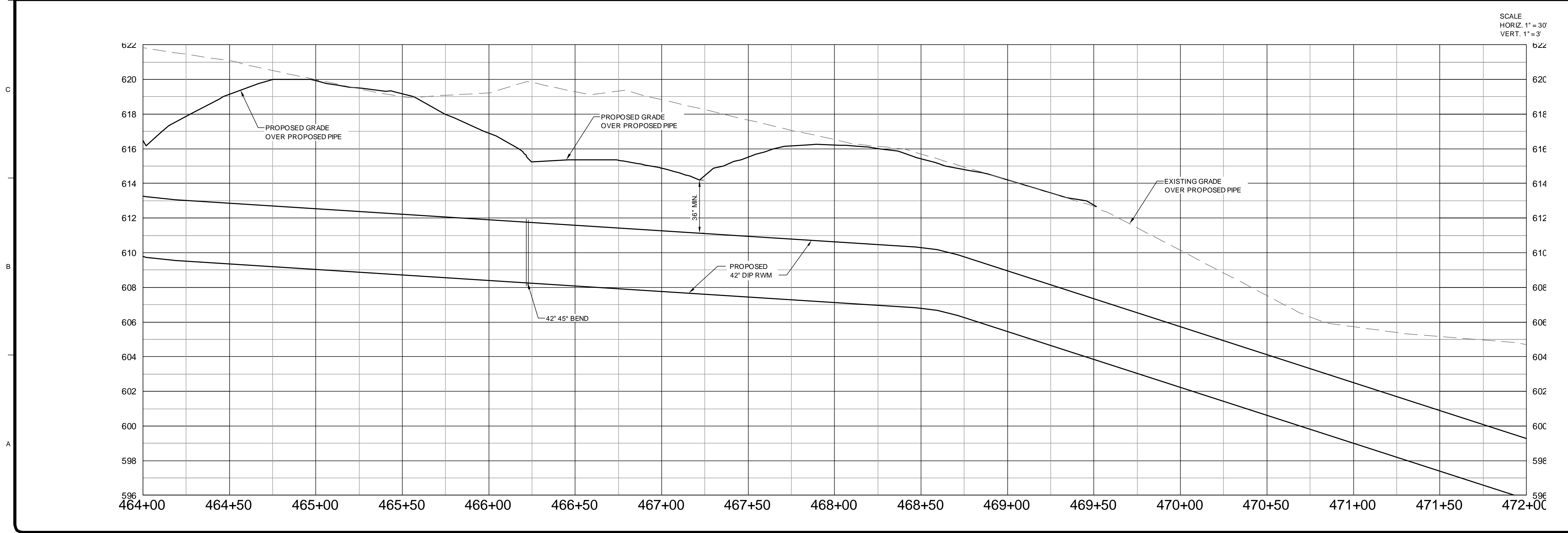


11/24/2014 1:24:58 PM - P:\R11740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\FW C-2003 TO C-2006 (ADDENDUM NO.2).DWG - DAVALOS, PAULA



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BID SET



**HUNTSVILLE UTILITIES**  
SOUTHEAST WATER TREATMENT PLANT

**RAW WATER MAIN  
PLAN AND PROFILE  
STA 464+00 TO 472+00**

Project No.: 200-11740-10003  
Designed By: DNL  
Drawn By: WDV  
Checked By: JPT

**C-2005**

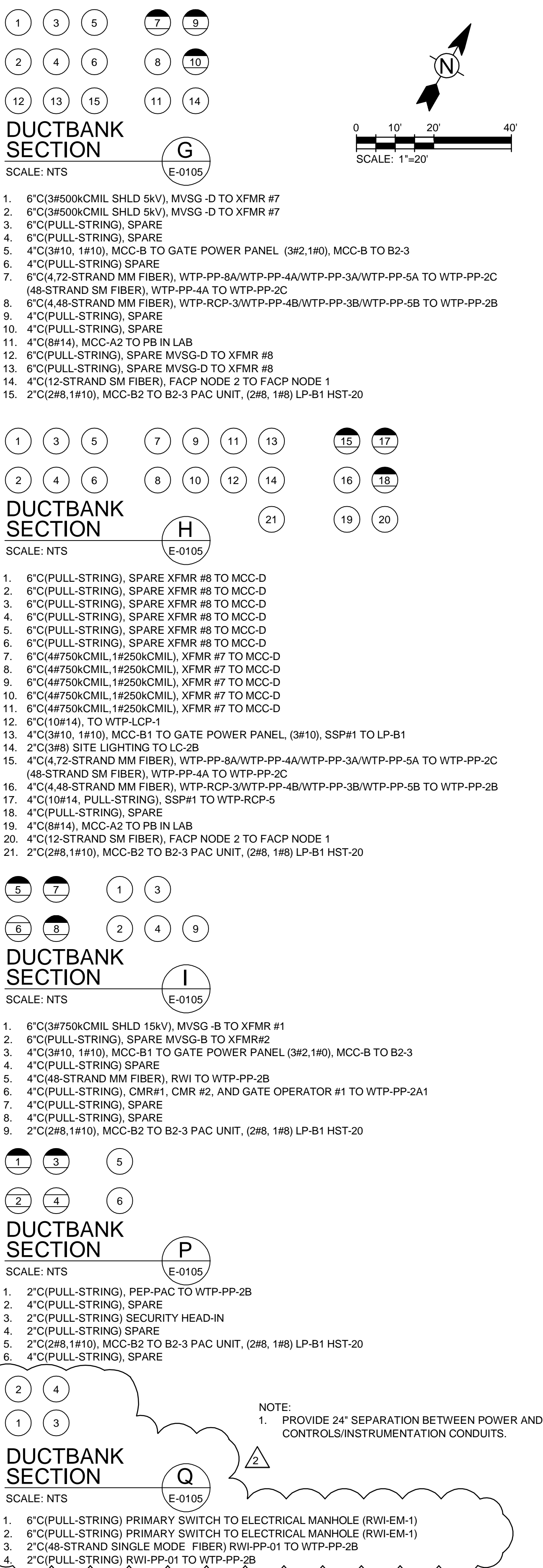
Copyright: Tetra Tech

Bar Measures 1 inch

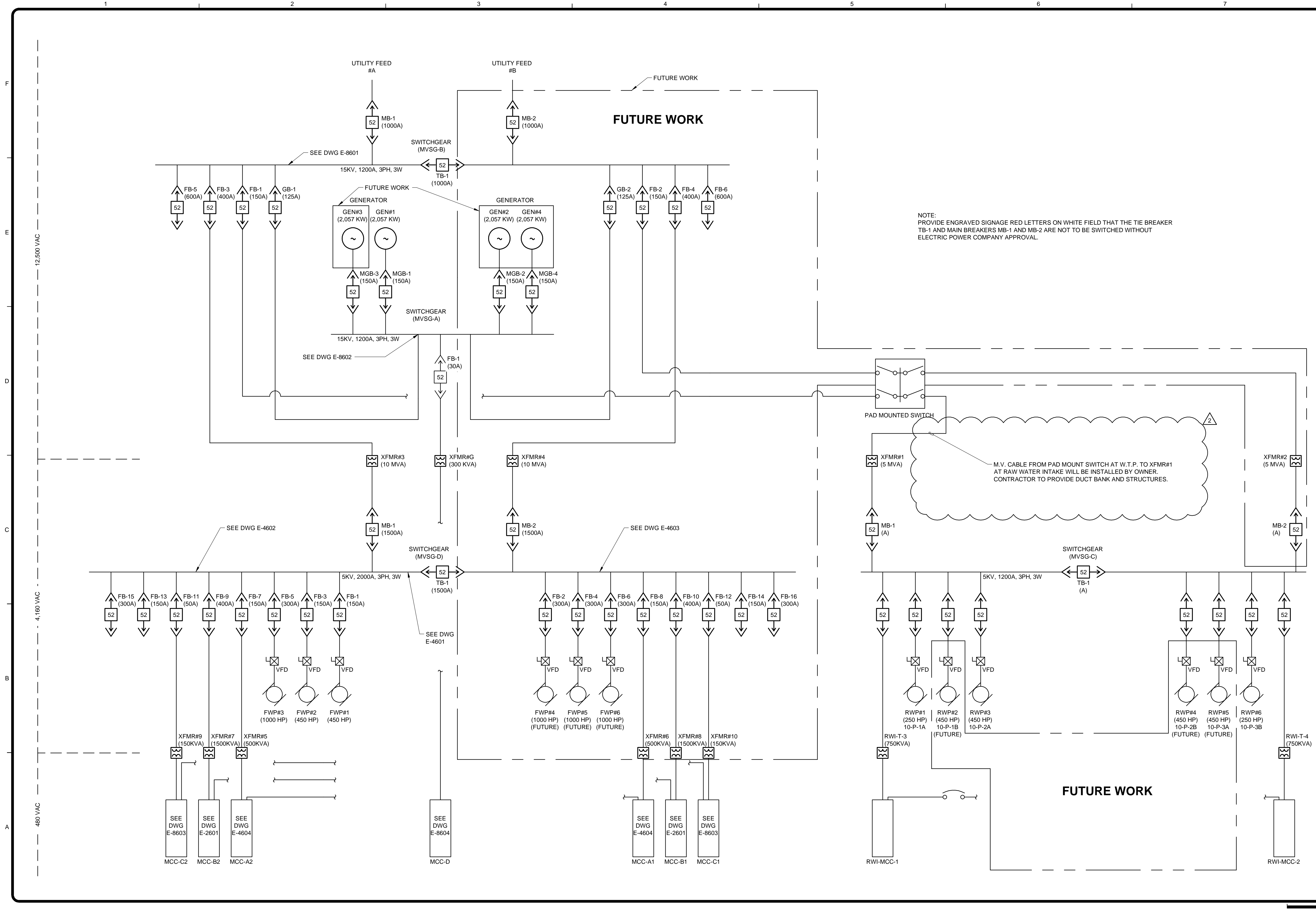








11/24/2014 1:12:37 PM - P:\N\11740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\WTP-E-0601 ELECTRICAL MEDIUM VOLTAGE NOTES (ADDENDUM NO.2).DWG - CALZARETTA, TIMOTHY



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HUNTSVILLE, ALABAMA 35806  
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA  
LICENSED  
No. 12198-PL  
PROFESSIONAL  
ENGINEER  
ANDREW BLUMER

MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT

OVERALL PLANT  
MEDIUM VOLTAGE ONE-LINE

Project No.: 200-11740-10003

Designed By: CSW

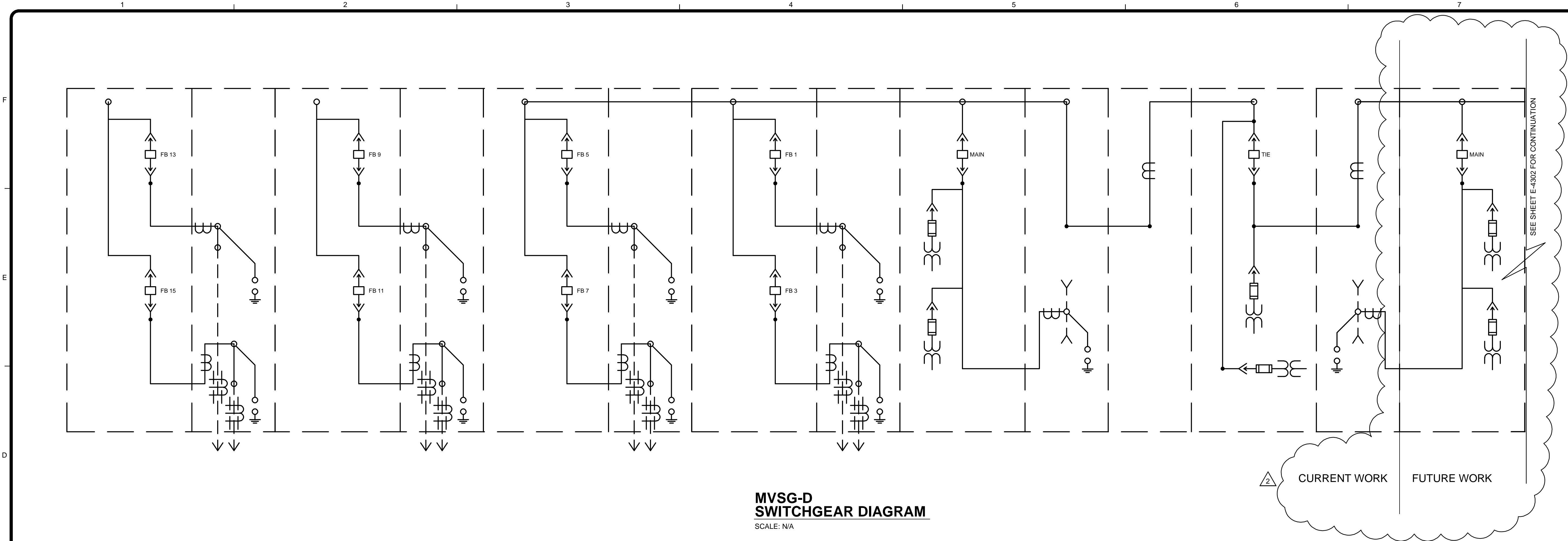
Drawn By: CSW

Checked By: DAB

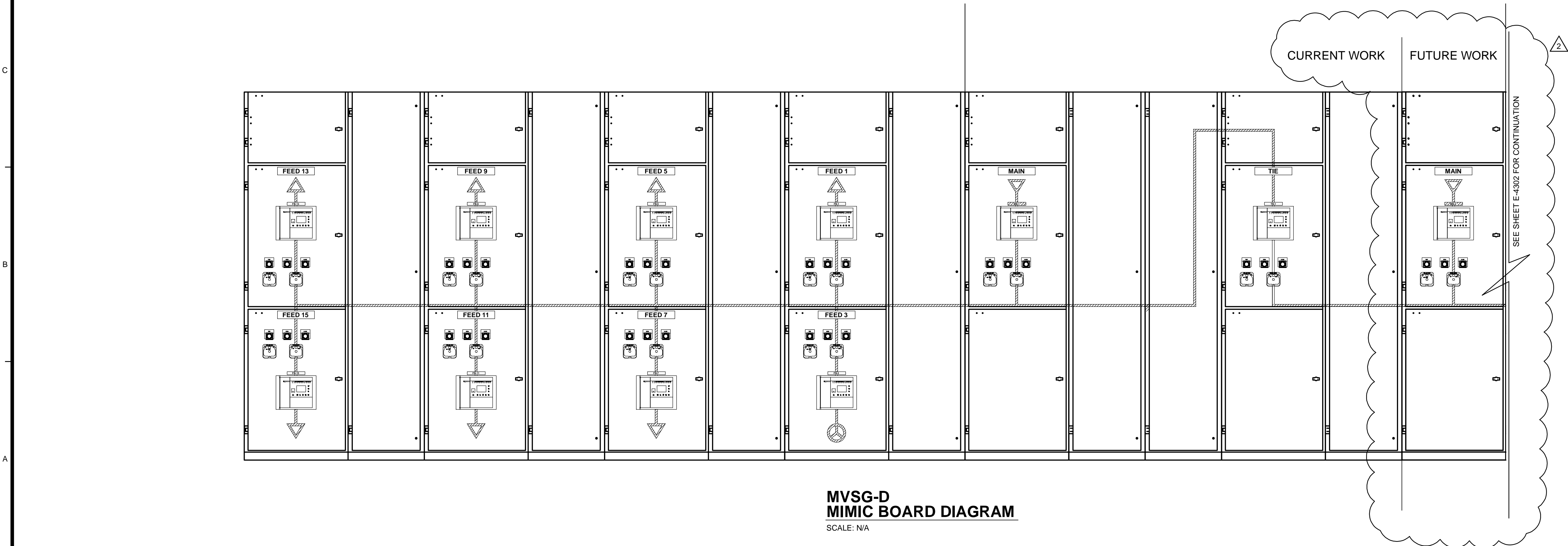
E-0601




11/24/2014 1:13:54 PM - P:\N\11740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\WTP-E-4301 ELECTRICAL SECTION VIEW (ADDENDUM NO.2).DWG - CALZARETTA, TIMOTHY



**MVSG-D  
SWITCHGEAR DIAGRAM**  
SCALE: N/A

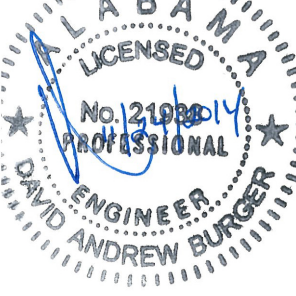


**MVSG-D  
MIMIC BOARD DIAGRAM**  
SCALE: N/A

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BID SET



ALABAMA  
LICENSED  
No. 12198-IV  
PROFESSIONAL  
ENGINEER  
ANDREW BLUM

MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT

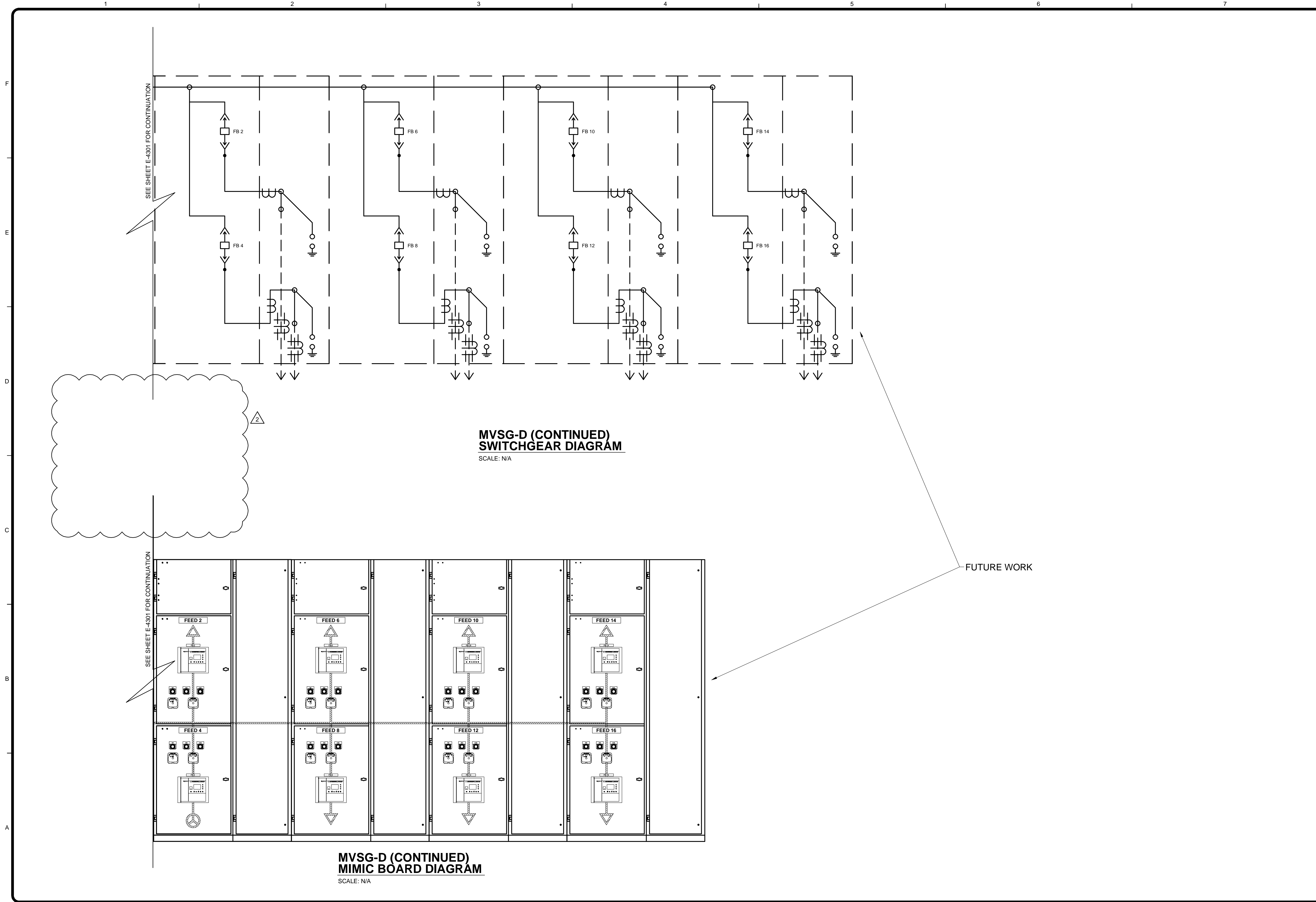
ELECTRICAL SECTION VIEW


Project No.: 200-11740-10003  
Designed By: CSW  
Drawn By: TAC  
Checked By: WAP

E-4301

Bar Measures 1 inch

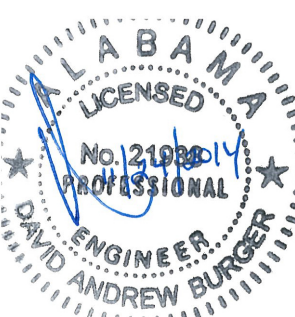
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BID SET



ALABAMA  
LICENSED  
No. 12198  
PROFESSIONAL  
ENGINEER  
ANDREW BLUM

MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT

ELECTRICAL SECTION VIEW

Project No.: 200-11740-10003

Designed By: CSW

Drawn By: TAC

Checked By: WAP

E-4302

Bar Measures 1 inch





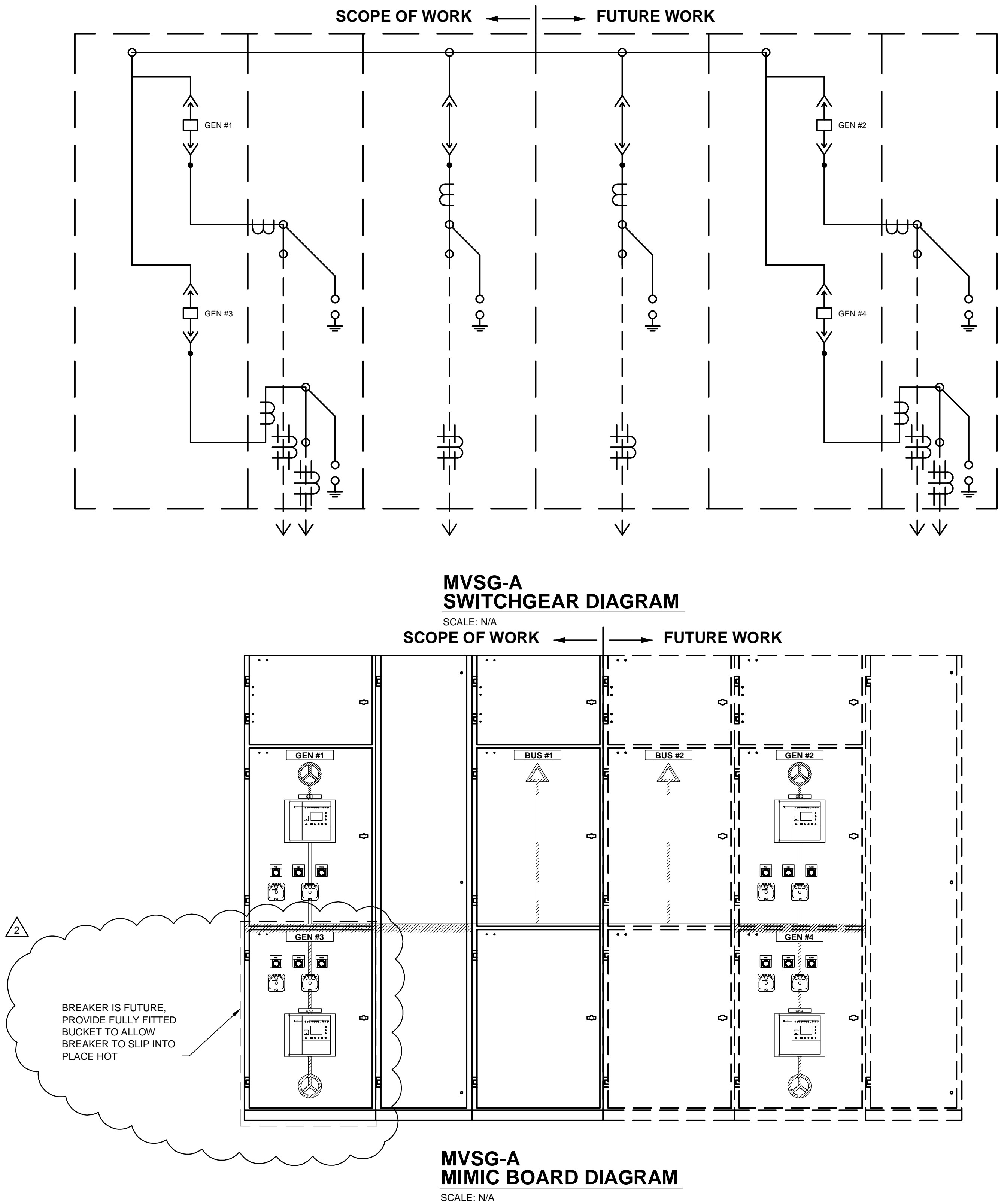









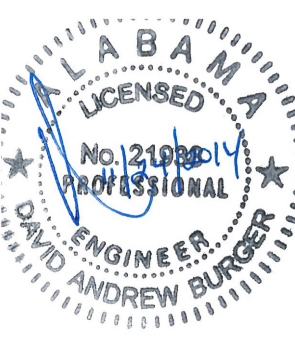
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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET



MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES

SOUTHEAST WATER TREATMENT PLANT

ELECTRICAL SECTION VIEW

Project No.: 200-11740-10003

Designed By: CSW

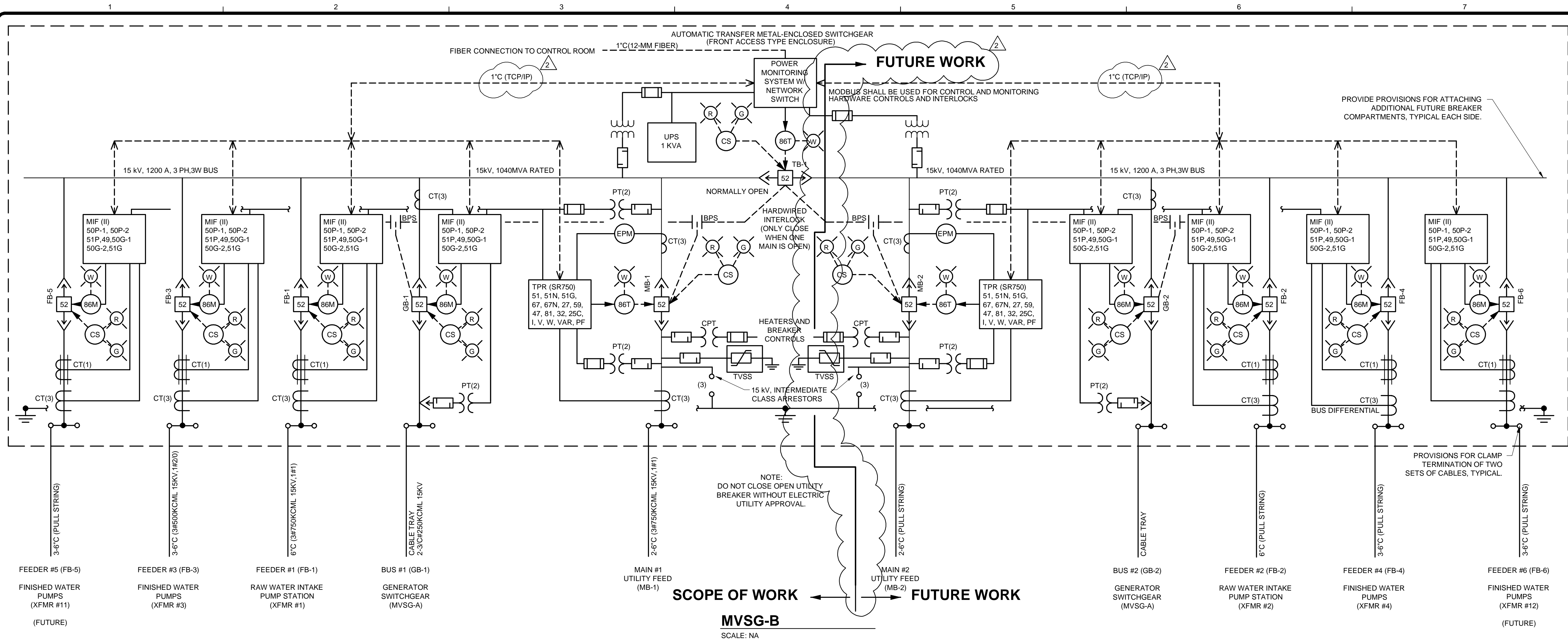
Drawn By: CSW

Checked By: WAP

E-8302

Bar Measures 1 inch

11/24/2014 1:16:49 PM - P:\N\1740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\WTP-E-8601 MEDIUM VOLTAGE ONE-LINE (ADDENDUM NO.2).DWG - CALZARETTA, TIMOTHY



MEDIUM VOLTAGE SWITCHGEAR RATINGS	
DESCRIPTION ANSI C37.06 BASIS	RATING
OPERATING SYSTEM VOLTAGE	12.5 KV
NOMINAL RATED VOLTAGE	12.5 KV
MAXIMUM DESIGN VOLTAGE	15 KV
LOW FREQUENCY WITHSTAND VOLTAGE	36 KV
BASIC IMPULSE LEVEL	95 KV
CONTINUOUS CURRENT BUS RATING	1200A
CLOSE AND LATCH CURRENT RATING	104 KA
SHORT TIME 2-SECOND CURRENT RATING	40 KA
THREE PHASE MVA INTERRUPTING RATING	1040 MVA
INTERRUPTING CURRENT AT RATING VOLTAGE	40 KA
MAXIMUM INTERRUPTING CURRENT	40 KA
INTERRUPTING TIME (60 HZ BASIS)	3 CYCLES
CONTROL OPERATING VOLTAGE	125 VAC
TRIP AND CLOSE CURRENT	15A MAX
CHARGING CURRENT	25A MAX
FEEDER CABLE ENTRY	BOTTOM
PRIMARY CABLE ENTRY	BOTTOM
BREAKER CONTINUOUS RATING	1200 A
POWER COMPANY METERING CUBICLE	NA

SYMBOL LEGEND	
	WATER FLOAT SWITCH
	SPACE HEATER (WITH EXTERNAL DISCONNECT)
	VALVE LIMIT SWITCH
	PRESSURE SWITCH
	VIBRATION MONITOR
	TEMPERATURE MONITOR
RES	RESISTOR
PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
PF	POWER FACTOR METER
W	WATTMETER
CS	CONTROL SWITCH
TI	TEMPERATURE INDICATOR
LI	LEVEL INDICATOR
AP	ALARM POINT
L.S.	LONG TIME-SHORT TIME
L.S.I.	LONG TIME-SHORT TIME INSTANT.
K	KEY INTERLOCK
	LOW VOLTAGE FUSE
	HIGH VOLTAGE FUSE
CPT	CONTROL POWER TRANSFORMER
(2) (3)	NUMBER OF DEVICES REQUIRED
G.F.I.	GROUND FAULT INTERRUPTER
BPS	BREAKER POSITION STATUS (CONTACT CLOSED WHEN BREAKER CLOSED)
WH	WATTHOUR METER
VFD	VARIABLE FREQUENCY DRIVE (CONTACTS SHALL TRIP MIN. 2 CYCLES BEFORE BREAKER)

ELECTRICAL INTERLOCK					
MAIN BREAKER	MAY NOT BE CLOSED WHEN THE TIE AND OTHER MAIN IS CLOSED				
TIE BREAKER	MAY NOT BE CLOSED WITH BOTH MAIN BREAKERS CLOSED				
GEN. BREAKER	MAY NOT BE CLOSED WITH BOTH MAIN BREAKERS CLOSED				
POWER CIRCUIT BREAKER SCHEDULE					
DEVICE	FRAME SIZE	CONT. CURRENT RATING	INTER. RATING RMS AMP SYMM.	RMS SOLID STATE TRIP DEVICES	REMARKS
MB-1	1200A	1000A	200 KA	L.S.I.G.	DISABLE INSTANTANEOUS FUNCTION
MB-2	1200A	1000A	200 KA	L.S.I.G.	DISABLE INSTANTANEOUS FUNCTION
TB-1	1200A	1000A	200 KA	L.S.I.G.	DISABLE LONG AND SHORT FUNCTION
GB-1	600A	125A	200 KA	L.S.I.G.	DISABLE INSTANTANEOUS FUNCTION
GB-2	600A	125A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION
FB-1	600A	150A	200 KA	L.S.I.	
FB-2	600A	150A	200 KA	L.S.I.	
FB-3	600A	400A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION
FB-4	600A	400A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION
FB-5	600A	500A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION
FB-6	600A	500A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION
FB-7	600A	500A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION-SPARE
FB-8	600A	500A	200 KA	L.S.I.	DISABLE INSTANTANEOUS FUNCTION-SPARE

## NOTES

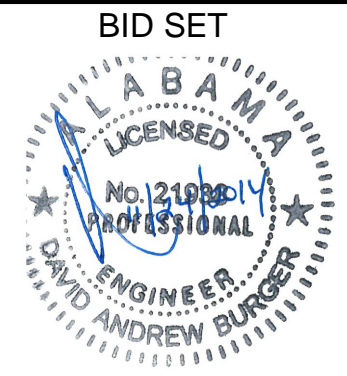
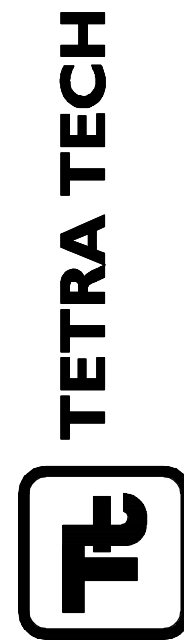
- PROVIDE 15 kV EPR (MV-105) SHIELDED CONDUCTORS WITH XHHW GROUND. INSTALL STRESS RELIEF CABLE TERMINATION KITS ON BOTH ENDS OF EACH 15 kV CABLE INSTALLED FOR DISSIPATION OF CHARGE ON CABLE SHIELDING.
- PROVIDE MONITORING NETWORK TO ALLOW FOR INTELLIGENT MONITORING OF THE SWITCHGEAR. SEE DRAWINGS FOR NETWORK LAYOUT. SEE DRAWING FOR MONITORING POINTS. SEE SWITCHGEAR SPECIFICATIONS.
- THE NETWORK SHOULD ALLOW FOR ADVANCED COMMUNICATION CAPABILITY VIA ETHERNET BASED IEC 61850 COMMUNICATION AND NETWORK ARCHITECTURE TECHNOLOGY, AND WILL ALLOW USERS TO COMBINE POWER MONITORING AND CIRCUIT PROTECTION WITH INTERNAL LOGIC AND SECURE COMMUNICATIONS.
- MEDIUM VOLTAGE WIRE INSULATION SHOWN IN THE ONE-LINE SHALL BE 133% RATED.
- MEDIUM VOLTAGE CABLES (IN VAULTS) SHALL BE WRAPPED WITH FIREPROOF TAPE/WRAPPING.
- MAIN AND FEEDER BREAKERS SHALL BE COORDINATED TO PROVIDE PROPER GROUND FAULT PROTECTION.
- PROVIDE INTERMEDIATE CLASS ARRESTORS.
- PROVIDE COOLING FANS IN PLC CABINET.
- PLC SHALL BE SIEMENS SIMATIC WITH ALL PROGRAMMING COMPLETED BEFORE SHIPPING.
- PROVIDE THERMOSTATICALLY CONTROLLED HEATER IN EACH CUBICAL.

MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES	SOUTHEAST WATER TREATMENT PLANT
MEDIUM VOLTAGE ONE-LINE	
Project No.: 200-11740-10003	
Designed By: CSW	
Drawn By: TAC	
Checked By: DAB	

E-8601

Bar Measures 1 inch



MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES	SOUTHEAST WATER TREATMENT PLANT
MEDIUM VOLTAGE ONE-LINE	
Project No.: 200-11740-10003	
Designed By: CSW	
Drawn By: TAC	
Checked By: DAB	

E-8601

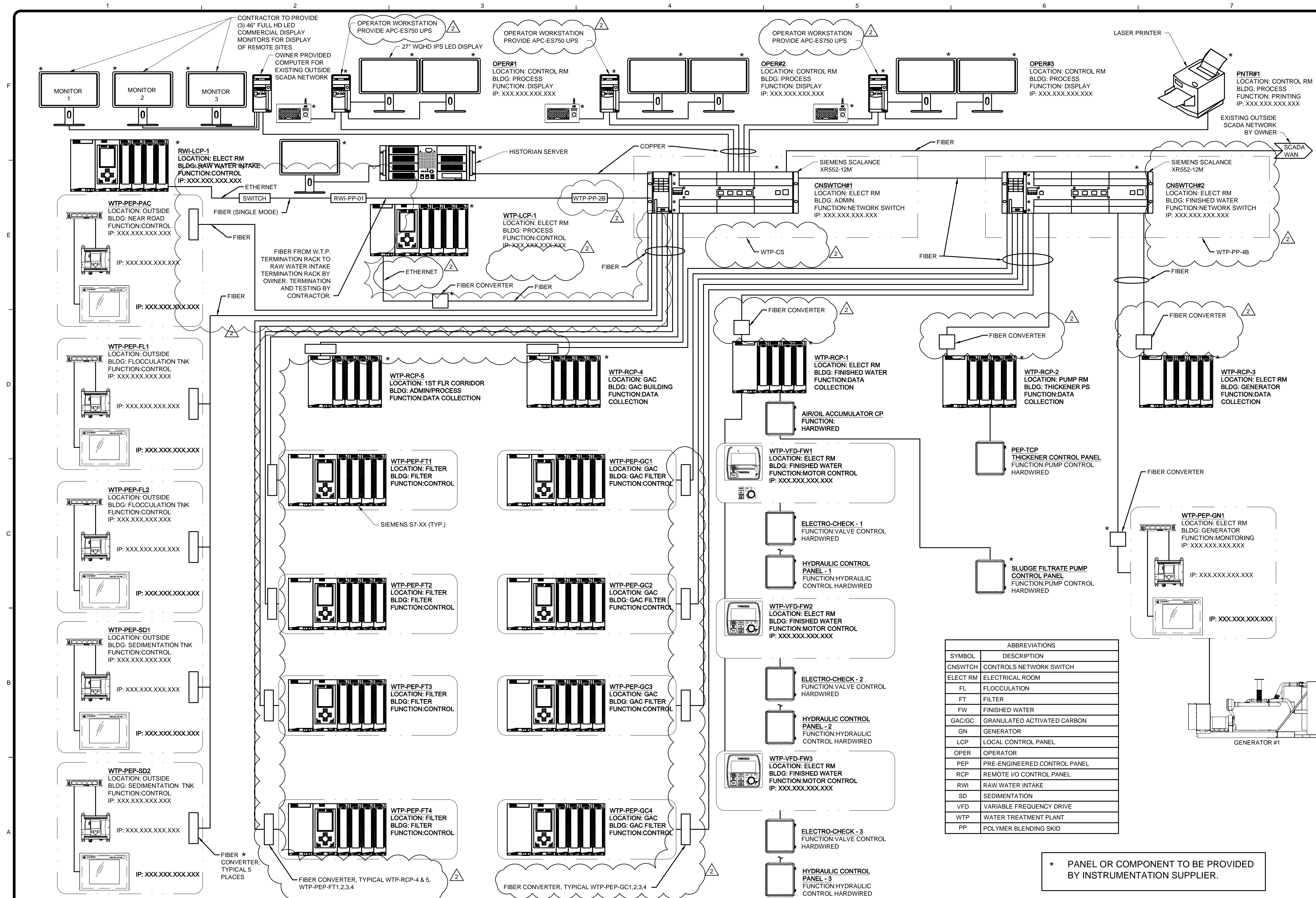
Bar Measures 1 inch



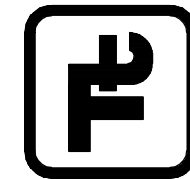




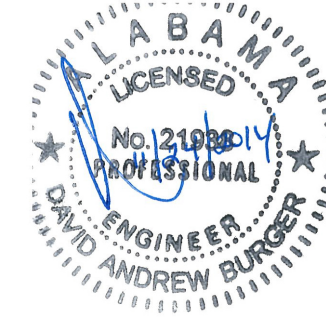
11/24/2014 1:11:57 PM - P:\N\1740\200-11740-10003\CAD\SHEETFILES\ADDENDUM 2\WTP-I-0801 SCADA NETWORK DIAGRAM (ADDENDUM NO.2).DWG - CALZARETTA, TIMOTHY



TETRA TECH



BID SET



MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT  
SCADA NETWORK DIAGRAM

Project No.: 200-11740-10003  
Designed By: CSW  
Drawn By: TAC  
Checked By: DAB

I-0801

Bar Measures 1 inch