TETRA TECH

Addendum No. 3

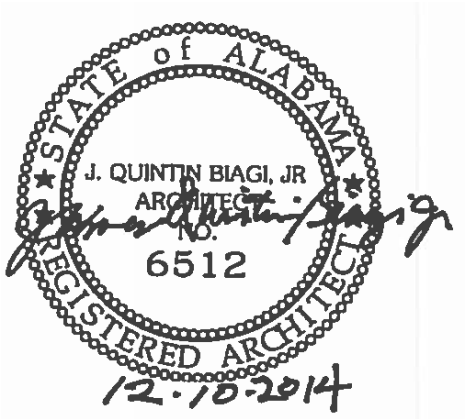
CERTIFICATION PAGE

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

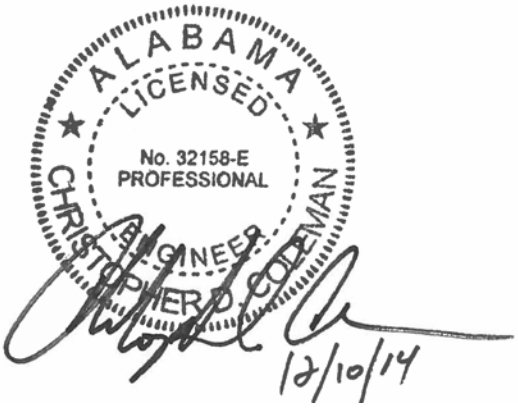
This Addendum forms a part of the Contract Documents and modifies or supplements the original Bidding Documents dated October 2014. The contents of this Addendum supersede all conflicting requirements set forth in the Bidding Documents and previous Addenda. Acknowledge receipt of this Addendum in the 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



Christopher D. Coleman, PE
Structural Items

TETRA TECH

Addendum No. 3

To: All Plan Holders

From: Tetra Tech

Date: December 10, 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 13 pages plus attachments.

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. The date of the Bid opening has been revised. Bidders are hereby notified that Bids will be received until 1:00 pm local time (Central Standard Time) on January 15, 2015.

Item No. 2: Section 00 21 13 – Instructions to Bidders/Terms and Conditions for Invitations for Bids. Paragraph 3.2.2 on Page 00 21 13-2 and the second bullet under Paragraph 26 on Page 8IB both require the Bidder or the proposed pipeline subcontractor to have completed at least three (3) projects in the last ten (10) years involving at least 10,000 LF of pipe 36 inches in size or larger. The size requirement is hereby reduced to 30-inches and larger.

Item No. 3: Section 00 52 13 – Contract. Delete the last paragraph on Page 22C and replace with the following: "In the event the CONTRACTOR fails to complete the work within the time limit or extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the OWNER in the amount of $10,000.00 Dollars per calendar day."

Item No. 4: Section 03 30 00 – Cast-in-Place Concrete. Bidders shall consider the following:

1. Paragraphs 2.15.B and 3.10.C have differing requirements regarding time restrictions. Bidders are hereby advised that Paragraph 2.15.B shall govern.

2. Replace Pages 6, 7, 11, 12, 13, 19, 21 and 22 with revised pages (attached). Note the following revisions, directives, and clarifications.

- Type I/II sulfate resistant cement is to be used in Class A-1, A-2, and G concrete mixes.
- There have been revisions in fly ash content and slump.
- Monofilament polypropylene, Type F1 shall be added to Class A-1, A-2, and G concrete mixes as shown in the table.
- Use Class A-2 concrete (5,000 psi) for all structural concrete associated with the intake structure/pump station.
- Use Class A-1 concrete (4,000 psi) concrete for all components at the water treatment plant unless noted otherwise.
- Use Class G grout (4,000 psi) when sweeping in final surfaces in sanitary structures and for toppings less than 2" in thickness.
- Use Class P (3,500 psi) concrete for exterior concrete pavement unless noted otherwise.
- Use Class B (3,000 psi) concrete for exterior sidewalks unless noted otherwise.
- Use Class C concrete (2,000 psi) for fill within manholes, mud mats, fill under structures, and encasement.
- Use Class F concrete (50 – 100 psi) concrete for flowable fill for filling spaces as permitted and directed by the Engineer.
- Finish formed surfaces as follows:
  a. Surfaces Below Grade & Fully Concealed From View: Provide Rough-Formed Finish as set forth in Section 03 30 00, Paragraph 3.11. A.
  b. Low Visibility Surfaces - Interior Concrete Walls of Water Bearing Structures: Provide Smooth-Formed Finish as set forth in Section 03 30 00, Paragraph 3.11.B.
  c. Exposed Surfaces: Provide Smooth Formed Finish as set forth in Section 03 30 00, Paragraph 3.11.B PLUS Rubbed Finish as set forth in Section 03 30 00, Paragraph 3.11.C. (Bidders shall note that the requirement for the Sikagard Elastomeric Coating has been eliminated from Paragraph 3.11.C)
- The above requirements supersede contrary requirement shown on the Drawings (Volumes 3A and 3B)

3. Bidders are hereby advised that Paragraph 3.7.G only applies to slab on grade/ground situations.

Item No. 5: <u>Section 03 31 30 – Tightness Testing of Concrete Structures</u>. Add the following sentence at the end of Paragraph 1.01.A: "All water used for testing shall be potable water supplied by the Contractor."

Item No. 6: Section 09 90 00 – Painting and Coating. Add the following sentence at the end of Paragraph 1.02.L.10: "The Contractor shall note that fluid-applied waterproofing, as specified in Section 07 14 00, shall be provided on certain surfaces as required on the Drawings."

Item No. 7: Section 26 05 05 – Conductors. Replace the text under Paragraph 3.06.B with the following: "Install arc and fireproofing tape on all medium voltage cables over their full length within manholes, handholes, and vaults. Further, install arc and fireproofing tape on all medium voltage cables over their full length within the crawlspace under the electrical room at the generator building. Also, install arc and fireproofing tape at all splices in medium voltage cabling regardless of the location." Bidders shall note that this requirement supersedes conflicting notes on the Drawings.

Item No. 8: Section 26 05 29 – Hanger and Supports for Electrical Systems. Add Paragraph 2.1.F as presented below:

"F. Medium Voltage Cable Trays: Provide UL listed medium voltage cable trays conforming to NEC Article 392.3 (B). Trays shall be ladder-type trays fabricated from aluminum and shall be designed to support the weight of the cables plus a concentrated load of 200 pounds. Rung spacing shall not exceed 9 inches. Bends and intersections shall be addressed with fittings specifically designed by the manufacturer for the intended application. The trays shall be hung from roof or ceiling structures using Type 304 stainless steel threaded rods, channels, or specially designed components provided by the tray manufacturer. The structural design of the tray and related support system shall be the responsibility of the tray manufacturer. Tray systems shall be manufactured by CB-Line or an approved equal."

Item No. 9: Section 26 05 43 – Underground Ducts and Raceways for Electrical Systems. Replace the current Specification with a revised version (attached) noting changes in conduit material requirements and concrete encasement requirements, as well as the elimination of the need for concrete planks and other items.

Item No. 10: Section 26 09 13 – Electrical Power Monitoring and Control. Under Paragraph 2.1 add Siemens to the list of acceptable manufacturers.

Item No. 11: Section 26 12 00 – Medium Voltage Transformers and Section 26 22 00 – Low Voltage Transformers. A Prospective Subcontractor has noted that both Sections do not specifically require copper or aluminum windings. Bidders are hereby advised that either material is acceptable. Further, Bidders must note that in areas where space is limited units must be provided to address the space constraints which may force the provision of a transformer with a particular of type winding material.

Item No. 12: Section 26 22 00 – Low Voltage Transformers. Under Paragraph 2.01.A add Siemens to the list of acceptable manufacturers.

Item No. 13: Section 26 13 00 – Medium Voltage Switchgear.

1. Add the following text at the end of Paragraph 2.7.I: "Provide Type II treatment in accordance with MIL-T-152B and ASTM D3955."

2. Under Paragraph 2.3.E.2., change duty cycle fault closing to 25,000 asymmetrical amps.

Item No. 14: Section 26 24 19 – Motor Control Centers. Under Paragraph 2.1.A add GE to the list of acceptable manufacturers.

Item No. 15: Section 26 29 23.11 – Medium Voltage Variable Frequency Motor Controllers. Under Paragraph 2.1.A add Siemens and Eaton to the list of acceptable manufacturers.

Item No. 16: Section 35 20 16.25 – Hydraulic Gates. Replace the first sentence of Paragraph 1.07.A with the following: "Any seal that needs replacement in less than ten (10) years shall not be acceptable."

Item No. 17: Section 40 27 00 – Process Piping, General – Piping Schedule.

1. There is some question as to the material requirements for the piping that will be used to supply potable water for flushing certain chemical feed lines and the sludge piping. The Pipe Schedule has been revised to address this issue and it is attached to this Addendum. Revised portions of the Schedule are highlighted in yellow.

2. There is some question regarding the pipe wall thickness designation for the structure underdrain piping and sludge drying bed underdrain piping. The Pipe Schedule has been revised to address this issue and it is attached to this Addendum. Revised portions of the Schedule are highlighted in yellow.

Item No. 18: 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. 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.

SECTION 40 27 00.01 CEMENT-MORTAR-LINED DUCTILE IRON PIPE AND FITTINGS	
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. 19: Section 40 27 00.10 – Polyvinyl Chloride (PVC) Pipe, Tubing and Fittings. There is some question regarding the pipe wall thickness designation for the structure underdrain piping and sludge drying bed underdrain piping. The Pipe Schedule has been revised to address this issue and it is attached to this Addendum. Revised portions of the Schedule are highlighted in yellow. Additionally, this issue is further clarified in a revised version of Page 40 27 00.10-1 (attached) which shall replace the existing page.

Item No. 20: Section 40 27 01 – Process Piping Specialties. Make the following revisions:

1. Delete the first sentence of Paragraph 2.08.D.1 and note that one (1) 50-foot length of 1½" hose is to be provided at each 1½" hose bibb.

2. Delete the text in Paragraph 2.08.E.1 and replace with the following: "Furnish one (1) 1½" cast brass satin finish hose nozzle for each hose furnished. Nozzles shall have adjustable fog, straight-stream and shut-off feature, rubber bumper, and threaded female connection compatible with the hose."

3. Add Paragraphs 2.08.G and 2.08.H as presented below:

   "G. Swivel Joints for Sludge Piping: Provide steel, cast iron, or ductile iron swivel joints with flanged end connections compatible with the piping configuration shown on the Drawings. Swivel joints shall be Style 30 as manufactured by HPF or an approved equal.

   H. Hose Bibbs: Small (3/4") hose bibs shall be brass units rated for a working pressure of at least 200 psi and shall be manufactured by Nibco, Arrowhead Brass and Plumbing, or an approved equal. The hose bibbs shall be furnished with threaded male outlet connections. Large (1½") hose bibs shall be brass angle valves rated for working pressure of at least 200 psi manufactured by Elkhart Brass, United Brass Works, or an approved equal. The angle valves shall be furnished with threaded male outlet connections or they shall be furnished with an adapter or threaded nipple to facilitate connection of a washdown hose."

Item No. 21: Section 40 27 02 – Process Valves and Operators.

1. Paragraphs 2.04.C.1.a, 2.04.D.1.a, and 2.04.E.2.a require all valve castings to be manufactured in the United States. Bidders are hereby advised that the castings do not need to be manufactured in the United States, however, they must be

furnished by one of the listed manufacturers and they shall be in strict accordance with the Specifications. If the Bidder elects to use castings not manufactured in the United States, documentation showing the cost savings shall be submitted to the Owner. Such documentation shall be submitted within three (3) days of the Bid Opening.

2. Add the following sentence at the end of Paragraph 2.04.E.3.a: "Valves for backwash air service do not need to be in accordance with AWWA C504."

3. Replace Pages 11, 12, and 13 of the Valve Schedule with revised pages (attached). Revised portions of the Valve Schedule are highlighted in yellow.

Item No. 22: Section 43 21 13.01 – Vertical Turbine Pumps. Make the following revisions:

1. Paragraphs 1.01.A.1.a through 1.01A.1.e set forth motor sizes for the various pumps required for this Project. These horsepower values represent the maximum allowable motor sizes that will be considered acceptable for the various applications. Pump manufacturers may supply smaller motors provided that the associated pump does not overload the motor at any point on the entire operating curve. The full intent of this requirement is clarified in Paragraph 2.02.B.2 and revised in Paragraph 2.02.B.4, below.

2. Under Paragraph 1.02.C.2 add Fairbanks Morse to the list of acceptable manufacturers.

3. Replace Paragraph 2.02.B.4 with the following: "When operating at full motor speed, the maximum brake horsepower required by each pump at any point on the pump operating curve shall not exceed the nameplate horsepower of its drive motor. If a pumping unit requires more than the nameplate horsepower of its drive motor at the motor output shaft at any full motor speed operation point, it will be rejected."

4. Replace Pages 43 21 13.01-20 and 43 21 13.01-21 with revised pages (attached).

Item No. 23: 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, Pulsafeeder, 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. Under Paragraph 2.02.A.4 change the text "46 33 00" to "43 33 00".

Item No. 24: Section 46 41 30 – Steel Chemical Storage Tank. Under Paragraph 1.02.C.1 revise the pneumatic test pressure to read "2.0 psig".

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

Item No. 1: General Revision and Clarification: Addendum No. 2 clearly stated that the Contractor is responsible for the power and signal raceways between the raw water intake and the water treatment plant site. There have been some questions related to the sectionalizing cabinets and communications pull boxes shown on the civil sheets and Sheet E-9503. Bidders are hereby advised that the Owner will furnish the sectionalizing cabinets and ground sleeve for the electric raceways; however, the Contractor will be required to install these items. The Owner will install the power conductors and provide terminations. Pull boxes for the communications conduits shall be furnished and installed by the Contractor. These pull boxes shall be 30" X 60" (nominal size) and comply with ANSI/SCTE 77 2010 for Tier 15 integrity. The Owner will provide and install fiber as stated in Addendum No. 2.

Item No. 2: Civil Sheets. A Prospective Bidder has requested specification sections for asphalt paving, sidewalks, and curb and gutters. Bidders are advised that the Drawings reference ALDOT specifications and such specifications are within the public domain. In view of these facts, dedicated specification sections for these items will not be provided.

Item No. 3: Sheet C-9501, Detail 2. Replace the current version of Detail 2 provided under Addendum No. 2 with the revised detail (attached).This detail replaces all other trench and ductbank details and is applicable to pipes, power conduits, communication/control conduits, and ductbanks. It also revises the position of the location tape set forth in revised Section 31 23 23.15, which was issued under Addendum No.2. Bidders shall note that all other requirements set forth in revised Section 31 23 23.15 remain valid

Item No. 4: Sheet S-1102, Beam Table & Sheet S-1304, Section K. Clarification: The beam depth for Beam B3 set forth in the Beam Table refers to the depth below the construction joint.

Item No. 5: Electrical Drawings. A Prospective Bidder has noted that the panelboard schedules on the Electrical Drawings do not include NEMA designations. Bidders are referred to Section 26 05 02, Paragraph 1.06.D for the established classifications.

Item No. 6: Sheet E-9501. Delete the "UNDERGROUND DUCT SECTIONS" and "TRENCHING WITH CONCRETE COVER DETAIL" from this sheet and note that the revised version of Detail 2 on Sheet C-9501 will govern trench construction as set forth under Item No. 2, above.

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

Item No. 1: General Revision and Clarification: Addendum No. 2 clearly stated that the Contractor is responsible for the power and signal raceways between the raw water intake and the water treatment plant site. There have been some questions related to the sectionalizing cabinets and communications pull boxes shown on the civil sheets and Sheet E-9503 of Volume 3A. Bidders are hereby advised that the Owner will furnish the sectionalizing cabinets and ground sleeve for the electric raceways; however, the Contractor will be required to install these items. The Owner will install the power conductors and provide terminations. Pull boxes for the communications conduits shall be furnished and installed by the Contractor. These pull boxes shall be 30" X 60" (nominal size) and comply with ANSI/SCTE 77 2010 for Tier 15 integrity. The Owner will provide and install fiber as stated in Addendum No. 2.

Item No. 2: Sheet G-0008 –Asset Attribute Data Table. Replace Sheet G-0008 with a revised version (attached) noting revisions related to valves and fittings. 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. 3: Civil Sheets. A Prospective Bidder has requested specification sections for asphalt paving, sidewalks, and curb and gutters. Bidders are advised that the Drawings reference ALDOT specifications and such specifications are within the public domain. In view of these facts, dedicated specification sections for these items will not be provided.

Item No. 4: Sheet C-1104. Concrete pavement or aprons are shown in the following locations:

- East of the chemical feed building.
- North of the GAC contactor building.
- North of the finished water pump building.
- East of the generator building.

Bidders are hereby advised that the pavement and aprons shall be in accordance with Detail 4 on Sheet C-9508.

Item No. 5: Sheets C-1104 and C-1105.

1. The points labelled "163" and "167" appear to be concrete slabs. This is not correct. Point 163 is associated with the finished water flow meter vault. This item is shown on Sheets P-4101, D-0101, D-4103, and E-0104. Also, a structural detail of this vault and a revised version of Sheet D-4103 are attached. Point 167 is associated with the static mixer vault. This item is shown on Sheets S-4101, D-0101, D-0104, and D-4101.

2. Point 165 is incorrectly labeled as pavement when in fact it is a concrete pad for the generator radiator, which shall be constructed in accordance with Detail 11 on Sheet S-9503.

Item No. 6: Sheet C-9501, Detail 2. Replace the current version of Detail 2 provided under Addendum No. 2 with the revised detail (attached).This detail replaces all other trench and ductbank details and is applicable to pipes, power conduits, communication/control conduits, and ductbanks. It also revises the position of the location tape set forth in revised Section 31 23 23.15, which was issued under Addendum No.2. Bidders shall note that all other requirements set forth in revised Section 31 23 23.15 remain valid.

Item No. 7: Sheet S-0001. Under "FOUNDATIONS, PARAGRAPH D" replace the existing text with the following: "REFER TO DIVISION 31 OF THE SPECIFICATIONS FOR SITE PREPARATION AND OTHER EARTHWORK REQUIREMENTS."

Item No. 8: Sheet S-2101, S-2102, S-2103, S-2104, S-2307 and Various Other Structural and Architectural Sheets. These drawings show 12" x 12" concrete columns supporting a concrete beam that, in turn, supports roof trusses. Bidders are hereby advised that reinforcement for these columns shall be 4#6 vertical and #3 ties at 12" on center.

Item No. 9: Sheet S-2106.

1. There is some question as to the specific requirements for piers designated as "P1" and P2". Bidders are hereby advised that details for "P2" piers are shown in Detail A on Sheet S-2311. Further, piers designated as "P1" shall be 20" x 20" with the same reinforcement as "P2" piers.

2. A Prospective Bidder is requesting clarification regarding two (2) small squares shown to the left of the blowers. Bidders are advised that these squares represent the baseplates for the air piping supports. This is clarified on Sheet D-2307.

Item No. 10: Sheet S-2301, Section B. A Prospective Bidder has requested clarification regarding the "CONC. EQUIP. BASE" call-out. Bidders are hereby advised that this base is to be provided for the walking beam flocculator equipment. Detail 1 on Sheet S-9504 provides the general requirements for the equipment base; however, the equipment manufacturer's installation recommendations will govern the actual configuration.

Item No. 11: Sheets S-2305, S-2306, and Various Architectural Sheets. The structural sheets call for 12" thick by 48" deep cast-in-place concrete beams over the openings for the overhead doors; however, the architectural sheets indicate that grout-filled CMU beams are required. Bidders are hereby advised that the structural sheets are correct and that cast-in-place concrete beams are required.

Item No. 12: Sheet S-2309, Section E and Sheet S-2310, Section A. There is a conflict between the sections with regard to the configuration of the beam at the wall separating the chemical feed area and the covered walkway. Bidders are hereby advised that Section A on Sheet S-2310 shows the correct configuration.

Item No. 13: Sheet S-2310, Details L and M. Bidders are hereby advised that the bent plate for the floor beam shown in these details shall be provided at the spacing of 4'-0" on-center.

Item No. 14: Sheet S-3304

1. Section E. Clarification: This section shows stepped footing/stem wall construction that occurs at each end of the pipe gallery. The reinforcement in the stem walls shall be identical to that shown in Section J on Sheet S-3304, except that horizontal wall bars shall be #5 and 12" on-center.

2. Section E. The slab shown in this section with a top elevation of 608.00 shall be 6" thick and have thickened edges. Detail K on Sheet S-3304 is applicable to construction of this slab.

Item No. 15: Sheet S-5301, Section C. Add a call-out requiring abrasive metal nosings for the concrete stairway.

Item No. 16: Sheet S-6102. A Prospective Bidder has requested clarification in regard to the splash pads. Bidders are hereby advised that the splash pads are simply an extension of the concrete runners and shall be 6" thick and reinforced in the same manner as the runners. A 3'-6" long saw cut joint shall be provided at each splash pad to prevent diagonal cracking.

Item No. 17: Sheets S-8101, S-8102, S-8301, S-8302, S-8303, A-8201, A-8301, and A-8302. Replace the existing sheets with revised sheets (attached) noting revised elevations.

Item No. 18: Sheet S-9507, Detail 3. Add the following information to the data table:

WF BEAM SIZE	EMBED PLATE MARK	EMBED THICKNESS "T"	EMBED LENGTH "H"	STUD SPACING "B"	BOLT QTY
W18	EB-2	5/8"	2'-0"	5"	10

Item No. 19: Sheet A-2108. Second floor ceiling heights shall be as follows:

• Stair Area:	9'-10"	Control Lab A:	9'-0"
• Open Office:	9'-0"	Control Lab B:	9'-0"
• Corridor:	9'-0"	Electrical:	9'-0"
• Lockers:	9'-0"	Supply:	9'-0"
• Restrooms:	9'-0"	Janitor:	9'-0"
• Shower:	9'-0"	Break:	9'-0"
• Offices:	9'-0"	Supply:	9'-0"
• Training:	9'-0"	Lobby:	9'-10"

Item No. 20: Sheet A-2401. Bidders are hereby advised that the stairs shown on Sheet A-2401 shall be metal pan stairs per Detail 5 on Sheet A-2502.

Item No. 21: Sheet A-2501, Detail 2. A Prospective Bidder has requested clarification regarding this detail. Bidders are hereby advised that the topping slab thickness shall vary between 2" and 5" and the specified reinforcement is WWF 6x6 W2.0. Class A-1 concrete shall be used in this application. Further, refer to Detail A on Sheet S-2310 and Detail 4 on Sheet A-2501.

Item No. 22: Sheet A-5102, Floor Plan. Change the call-out for the three (3) windows on the north side of the building from "W-1" to "W-2". Note that the "North Elevation" on Sheet A-5201 correctly identifies the windows.

Item No. 23: Sheets D-0101, D-0104, D-0601 and D-6103. Replace these sheets with revised sheets (attached) which clarify the water supply piping to the filtrate pump station.

Item No. 24: Sheet D-2104. A Prospective Bidder has questioned as to the need for mud valves at the two drains located on the east end of the sedimentation basins. Bidders are hereby advised that the Drawings are correct and that mud valves are not necessary for the drains located at the east end of the sedimentation basin.

Item No. 25: Sheets D-2303 and D-2304. Replace the existing sheets with revised sheets (attached) noting the requirements for wall pipes with wall collars at each end of the pipe gallery.

Item No. 26 Sheets D-3301 and D-3302. Replace the existing sheets with revised sheets (attached) noting the requirements for wall pipes with wall collars at each end of the pipe gallery.

Item No. 27: Sheets D-4102, D-5101, and D-7101. These sheets show a structural underdrain system to be constructed with Schedule 80 PVC pipe, a granular drainage blanket, and filter fabric. The Schedule 80 pipe requirement is hereby revised to be Schedule 40. The Pipe Schedule and Page 40 27 00.10-1 have been revised to reflect this change and they are both attached to this Addendum. Additionally, Bidders are advised that the granular drainage blanket shall be of No. 57 crushed stone.

Item No. 28: Sheet D-6101. Add the following note to the drawing:

"NOTE: CONCRETE PAVEMENT SHALL CONFORM TO ALL REQUIREMENTS SET FORTH IN DETAIL 4 ON SHEET C-9508 EXCEPT PAVEMENT SHALL BE 6" THICK".

Item No. 29: Sheet D-9505, Detail 1. Delete this detail and note that Detail 1 on Sheet S-9504 shall be used for construction of equipment bases.

Item No. 30: Sheet D-9506, Detail 5. A Prospective Bidder has noted that the stringent backfill requirements set forth in this detail apply to all structures except the elevated backwater water storage tank. This is correct due to the fact that the supplier/builder of the tank is responsible for the design of the entire tank, including the foundation. Bidders shall note that the basic backfill and compaction requirements set forth in Sections 31 23 23 and 31

23 23.23 still apply to this structure; however, the crushed stone base and/or envelope may or may not be necessary depending upon the tank supplier's design and interpretation of the geotechnical information.

Item No. 31: Electrical Drawings. A Prospective Subcontractor has noted that the panelboard schedules on the Electrical Drawings do not include NEMA designations. Bidders are referred to Section 26 05 02, Paragraph 1.06.D for the established classifications.

Item No. 32: Sheet E-0104. On the right side of the sheet below MHP-10 there is a call-out pertaining to continuation of conduits. Replace this call-out with the following: "CONTINUE CONDUITS 1, 2, 6, 7, 11, 12, 13, 14, & 15 PAST TRANSFORMER TO FINISHED WATER PUMP BUILDING, RUN CONDUITS ALONG BUS DUCT SUPPORT, 9'-0" AFF".

Item No. 33: Sheet E-0106. Under the section for Ductbank B replace the call-out for Conduit No. 13 with the following: "4" C (3#6,5KV,1#10G), MVSG-D TO XFMR #9 & 10".

Item No. 34: Sheet E-2402. Change the pipe gallery NEMA classification from "NEMA 4" to "NEMA 12". Motor control centers, disconnects, and panelboards in this space shall be NEMA 12.

Item No. 35: Sheets E-4601, E-4602, E-4603, E-8601, and E-8602. A Prospective Subcontractor has indicated that several potential switchgear suppliers have requested acceptance of their PLC rather than the Siemens unit specified on the listed drawings. Bidders are hereby advised that this concept is not acceptable and the specified Siemens product shall be furnished.

Item No. 36: Sheets E-4601 and E-8601. A Prospective Subcontractor has asked if transient voltage surge suppressors (TVSS) are required on MSVG-D and MSVG-B. TVSS is not required; only 15KV class arrestors are required.

Item No. 37: Sheet E-4602. Replace the call-out for Feeder #11 with the following: "1-4" C (3#6,5KV,1#10G)".

Item No. 38: Sheets E-4602, E-4603, E-8601 and E-8602. A Prospective Subcontractor has asked if CTs and PTs are required on branch circuits. The switchgear manufacturer's standard metering of branch breakers is all that is required with displays on the cover panel.

Item No. 39: Sheet E-8302. Replace the existing sheet with a modified sheet (attached) noting the additional circuit breaker.

Item No. 40: Sheet E-8401. A switchgear interface station is shown adjacent to the west door for the electrical room and a Prospective Subcontractor is requesting direction with regard to this item. Bidders are advised that this component is shown on Sheet E-0803 and it is further described in Section 26 09 13.

Item No. 41: Sheets E-9501 and E-9506. Delete the "TRENCHING DETAIL" and "UNDERGROUND DUCT SECTIONS" from Sheet E-9501 and delete Sheet E-9506 in its entirety. Further, note that the revised version of Detail 2 on Sheet C-9501 will govern trench construction as set forth under Item No. 3, above.

END OF ADDENDUM NO. 3

TETRA TECH

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PAGES 6, 7, 11, 12, 13, 19, 21, 22

G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.
3. Form ties for water-retaining structures shall have integral waterstops. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

C. Deformed-Steel Wire: ASTM A 496/A 496M.

D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs. Provide ASTM 1035, Grade 100 where indicated on the drawings.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, gray, Type I/II. Use one brand of cement throughout Project, unless otherwise acceptable to ENGINEER.

2. Fly Ash: ASTM C 618, Type F with loss on ignition not more than 6 percent.
3. Ground Granulated Blast-Furnace Slag: ASTM C 989.
4. Silica Fume: ASTM C 1240, amorphous silica.

B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M.

D. Potable Water Structures: For surfaces in contact with potable water, use only materials approved by Department of Public Health of the state that has jurisdiction.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions.
2. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. Water Reducing, Nonchloride Accelerator Admixture: ASTM C 494, Type E.
6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

2.6 FIBER REINFORCEMENT

A. Synthetic Micro-Fiber: Monofilament polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 to 2-1/4 inches long.

preparing and reporting proposed mix designs. Testing facility shall not be identical to that used for field quality control testing.

B. Fly ash shall be used to partially supplant cement content in Class A-1 and Class A-2 concrete, unless noted otherwise, and is optional in other classes. Replacement quantity of cement content by weight shall be not less than 15 percent for Class A-1 and Class A-2 concrete or more than 25 percent for all classes except Class F.

C. Not Used.

D. Not Used.

E. Ground granulated blast furnace slag (GGBFS) shall only be permitted for mass concrete placement and as approved by ENGINEER. Replacement quantity of cement content weight shall not be less than 35 percent or more than 50 percent.

F. Coarse aggregate shall be 1-1/2" top size, except for Class G concrete which shall be 3/8" top size.

G. Design mixes to provide normal weight concrete for following classes and properties:

1. Locations for concrete classes are as follows:

    a. Class A-1: Structural concrete (slabs, walls, columns, beams, equipment bases, and slab toppings 2 inches or greater in thickness).
    b. Class A-2: Structural concrete at raw water intake structure (slabs, walls, columns, beams, and equipment bases) where indicated on Drawings.
    c. Class G: Grout fill for use in sweeping in final surfaces in sanitary structures and slab toppings less than 2 inches in thickness.
    d. Class P: Exterior pavements (unless otherwise indicated on Drawings).
    e. Class B: Sidewalks and manhole bases (unless otherwise indicated on Drawings).
    f. Cass C: Fill within manholes, mud mats, fill under structures, encasement for piping below or adjacent to structures and encasement for floor drains, sewer inlets and similar items.
    g. Class F: Flowable fill for filling spaces as permitted and directed by ENGINEER.

2. Properties for concrete classes are as follows:

Concrete Class		**A-1**	**A-2**	**G**	**P**	**B**	**C**	**F**
28-Day* Compressive Strength (f'c), psi		4,000	5,000	4,000	3,500	3,000	2,000	50-100
Cement Content per cubic yard of concrete, sacks minimum **		6	7	6	5.5	5	4	0.4-3.0
Water/Cement Ratio by weight, maximum		0.44	0.40	0.44	0.44	0.58	0.75	0.40-0.75
Air Content, percent by volume		5±1	5±1	5±1	6.5±1.5	6.5±1.5	NA	NA
Slump at point of placement, inches.	WR***	2-4	2-4	2-4	2-4	3-5	3-6	NA
	MRWR	4-6	4-6	4-6	4-6	NA	NA	NA
	HRWR	6-8	6-8	6-8	6-8	NA	NA	NA
Monofilament Polypro-pylene, Type F1		Yes	Yes	Yes	NA	NA	NA	NA

* 7-day compressive strength for high-early-strength concrete.
56-day compressive strength for mass concrete with ground granulated blast furnace slag.

** For concrete with fly ash, values are total of cement plus fly ash (except Class F concrete).

*** Slump prior to the addition of mid-range or high-range water reducers.

3. Adjustment of Concrete Mixes: Mix designs may be adjusted when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, when approved by ENGINEER, at no additional cost to OWNER. Submit laboratory test data for revised mix design and strength results to ENGINEER before using in work.

4. Admixtures:

   a. Use water-reducing admixture or high range water-reducing admixture (superplasticizer) in concrete for placement and workability.
   b. Use nonchloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F (10 degrees C).
   c. Add air-entraining admixture at manufacturer's prescribed rate to result in placed concrete having total air content specified.
   d. Use nonstructural synthetic reinforcement, monofilament polypropylene Type F1 in Class A-1, A-2, and G concrete. The synthetic reinforcing fibers shall be added to the concrete mix at the rate of 2.0 pounds per cubic yard and in accordance with manufacturer's recommendations.

2.14 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.15 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

B. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.

2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

4. Apply temporary protective covering to lower 2 feet of finished walls where adjacent floor slabs are poured to guard against spattering during slab placement.

B. Comply with ACI 304R and as specified in this Section.

C. Not used.

D. Provide trip ticket in duplicate for each ready-mixed concrete load delivered, stating truck number, Project name, CONTRACTOR and producer, batching time, total yards of concrete and material contained therein. Show ticket to ENGINEER upon request. Fill in concrete discharge time and turn over to ENGINEER trip ticket copies at end of each day.

E. Deposit concrete continuously or in layers so that no concrete is placed on concrete which has hardened sufficiently to cause seams or planes of weakness. If section cannot be placed continuously, provide construction joints as specified. Deposit concrete as nearly as practical to its final location to avoid segregation.

F. When depositing by chute, provide equipment of size and design to ensure continuously flowing concrete. Provide discharge end of chute with baffle plate to prevent segregation. Position chute so that concrete need not flow more than 5 feet horizontally.

G. Do not drop concrete from chute end distances greater than 3 times the deposited layer thickness, nor more than 5 feet. Where distance from chute end to surface of concrete exceeds these distances, use spout and maintain lower end as near to deposit surface as practical. When operations are intermittent, discharge chutes into hoppers.

H. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches to avoid inclined construction joints. Where placement involves several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Fill bottom of wall space with 2 to 4 inches of cement slurry immediately before depositing concrete in walls. Use cement slurry composed of 1 part Portland cement, 2 parts fine aggregate, and sufficient water (but not to exceed 0.45 parts) for 7-inch slump mixture.
2. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for concrete consolidation in accordance with ACI recommended practices.

K. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

L. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.11 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces below grade and not exposed to view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces with low visibility exposure such as interior wall surfaces of water bearing structures.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete surfaces that are exposed to view, and where indicated:

1. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts

determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.12 FINISHING FLOORS AND SLABS

A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified, and slab surfaces which are covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise shown.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit power-driven float operation. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units.
2. Check and level surface plane to tolerances of floor flatness (FF) of 18 and floor levelness (FL) of 15 in accordance with ASTM E 1155.
3. Cut down high spots and fill low spots.
4. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.

B. Trowel Finish: Apply trowel finish to monolithic slab surfaces exposed-to-view, and slab surfaces covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.

1. After floating, begin first trowel finish operation using power-driven trowels. Begin last troweling when surface produces ringing sound when trowel moves over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance.
2. Check and level surface plane to tolerances of floor flatness (FF) of 20 and floor levelness (FL) of 17 in accordance with ASTM E 1155.
3. Grind smooth surface defects that would telegraph through applied floor covering system.

C. Trowel and Fine Broom Finish: Where ceramic or quarry tile is installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

TETRA TECH

REVISED SECTION 26 05 43

UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

SECTION 26 05 43
UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Direct-buried conduit, ducts, and duct accessories.

2. Concrete-encased conduit, ducts, and duct accessories.

3. Manholes.

1.2 ACTION SUBMITTALS

A. Product Data: For ducts and conduits, duct-bank materials, manholes, handholes, and boxes, and their accessories.

B. Shop Drawings:

1. Precast or Factory-Fabricated Underground Utility Structures:

a. Include plans, elevations, sections, details, attachments to other work, and accessories.
b. Include duct entry provisions, including locations and duct sizes.
c. Include reinforcement and joint details, frame and cover design, and manhole frame support rings.

2. Factory-Fabricated Handholes and Boxes:

a. Include dimensioned plans, sections, elevations, accessory locations, and fabrication and installation details.
b. Include duct entry provisions, including locations and duct sizes.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For concrete and steel used in precast concrete manholes and handholes, as required by ASTM C 858.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR DUCTS AND RACEWAYS

A. Comply with ANSI C2.

2.2 CONDUIT

A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.

B. RNC: NEMA TC 2, Type EPC-40-PVC and Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.3 NONMETALLIC DUCTS AND DUCT ACCESSORIES

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

1. Beck Manufacturing.

2. Cantex, Inc.

3. CertainTeed Corporation.

4. Condux International, Inc.

5. IPEX Inc.

6. Lamson & Sessions; Carlon Electrical Products.

7. Spiraduct/AFC Cable Systems, Inc.

B. Underground Plastic Utilities Duct: NEMA TC 2, UL 651, ASTM F 512, Type EPC-80, with matching fittings complying with NEMA TC 3 by same manufacturer as the duct.

C. Duct Accessories:

1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers.

2. Warning Tape: Underground-line warning tape specified in Section 26 05 53 "Identification for Electrical Systems."

2.4 PRECAST MANHOLES

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

1. Advance Concrete.

2. Oldcastle Precast Group.

3. Utility Concrete Products, LLC.

4. Wausau Tile Inc.

B. Comply with ASTM C 858.

C. Structural Design Loading: Comply with requirements in Section 33 05 16 "Precast Concrete Utility Structures".

D. Concrete Knockout Panels: 1-1/2 to 2 inches thick, for future conduit entrance and sleeve for ground rod.

E. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

2.5 CAST-IN-PLACE MANHOLES

A. Description: Underground utility structures, constructed in place, complete with accessories, hardware, and features. Include concrete knockout panels for conduit entrance and sleeve for ground rod.

B. Materials: Comply with ASTM C 858 and with Section 03 30 00 "Cast-in-Place Concrete."

C. Structural Design Loading: As specified in "Underground Enclosure Application" Article.

2.6 UTILITY STRUCTURE ACCESSORIES

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

1. Neenah Foundry Company.

2. Oldcastle Precast Group.

3. Quazite:Hubbell Power Systems, Inc.

4. Utility Concrete Products, LLC.

5. Wausau Tile Inc.

B. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.

1. Frame and Cover: Weatherproof, with nonskid finish and milled cover-to-frame bearing surfaces; diameter, 29 inches.

2. Cover Legend: Cast in. Selected to suit system.

3. Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening. Seal with mortar or preformed plastic or rubber seals.

C. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch- diameter eye, rated 13,000-lbf minimum tension, and 1-by-4-inch bolt.

D. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening.

1. Ultimate Yield Strength: 40,000-lbf shear and 60,000-lbf tension.

E. Bolting Inserts for Concrete Utility Structure Cable Racks and Other Attachments: Flared, threaded inserts of noncorrosive, chemical-resistant, nonconductive thermoplastic material; 1/2-inch ID by 2-3/4 inches deep, flared to 1-1/4 inches minimum at base.

1. Tested Ultimate Pullout Strength: 12,000 lbf minimum.

F. Ground Rod Sleeve: 3-inch, PVC conduit sleeve in manhole floors 2 inches from the wall adjacent to, but not underneath, the ducts routed from the facility.

G. Cable Rack Assembly: Nonmetallic. Components fabricated from nonconductive, fiberglass-reinforced polymer.

1. Stanchions: Nominal 36 inches high by 4 inches wide, with minimum of nine holes for arm attachment.

2. Arms: Arranged for secure, drop-in attachment in horizontal position at any location on cable stanchions, and capable of being locked in position. Arms shall be available in lengths ranging from 3 inches with 450-lb minimum capacity to 20 inches with 250-lb minimum capacity. Top of arm shall be nominally 4 inches wide, and arm shall have slots along full length for cable ties.

H. Portable Manhole Ladders: UL-listed, heavy-duty fiberglass specifically designed for portable use for access to electrical manholes. Minimum length equal to distance from deepest manhole floor to grade plus 36 inches. One required.

I. Cover Hooks: Heavy duty, designed for lifts 60 lbf and greater. Two required.

PART 3 - EXECUTION

3.1 CONCRETE ENCASED DUCT BANK

A. Ducts for Electrical Cables More than 600 V: RNC, NEMA Type EPC-80-PVC.

B. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40-PVC.

C. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-40-PVC.

3.2 UNDERGROUND DUCT APPLICATION

A. Underground Ducts Crossing Driveways and/or Roadways: RNC, NEMA Type EPC-40-PVC, encased in reinforced concrete.

3.3 UNDERGROUND ENCLOSURE APPLICATION

A. Handholes and Boxes for 600 V and Less:

1. Units in Roadways and Other Deliberate Traffic Paths: Precast concrete. AASHTO HB 17, H-20 structural load rating.

2. Units in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: SCTE77/ANSI 77 TIER 15.

3. Units in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Polymer concrete units, SCTE 77/Tier 8 structural load rating.

4. Units Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.

5. Cover design load shall not exceed the design load of the handhole or box.

B. Manholes: Precast or cast-in-place concrete.

1. Units Located in Roadways and Other Deliberate Traffic Paths by Heavy or Medium Vehicles: H-20 structural load rating according to AASHTO HB 17.

2. Units Not Located in Deliberate Traffic Paths by Heavy or Medium Vehicles: H-10 load rating according to AASHTO HB 17.

3.4 DUCT INSTALLATION

A. Install ducts according to NEMA TCB 2.

B. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes, to drain in both directions.

C. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 12.5 feet, both horizontally and vertically, at other locations unless otherwise indicated.

D. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.

E. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.

F. Pulling Cord: Install 100-lbf- test nylon cord in empty ducts.

G. Direct-Buried Duct Banks:

1. Excavate trench bottom to provide firm and uniform support for duct bank

2. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.

3. Space separators close enough to prevent sagging and deforming of ducts, with not less than five spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.

4. Depth: Install top of duct bank at least 36 inches below finished grade unless otherwise indicated.

5. Set elevation of bottom of duct bank below frost line.

6. Install ducts with a minimum of 3 inches between ducts for like services and 6 inches between power and signal ducts.

7. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction.

8. Rigid galvanized steel conduit (RGSC) in direct contact with earth shall be coated with asphalt or other appropriate material. RGSC in concrete does not require coating.

3.5 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES

A. Cast-in-Place Manhole Installation:

1. Finish interior surfaces with a smooth-troweled finish.

2. Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for cast-in-place concrete, formwork, and reinforcement.

B. Precast Concrete Handhole and Manhole Installation:

1. Comply with ASTM C 891 unless otherwise indicated.

2. Install units level and plumb and with orientation and depth coordinated with connecting ducts, to minimize bends and deflections required for proper entrances.

3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevations:

1. Manhole Roof: Install with rooftop at least 15 inches below finished grade.

2. Manhole Frame: In paved areas and trafficways, set frames flush with finished grade. Set other manhole frames 1 inch above finished grade.

3. Install handholes with bottom below frost line,18 inches below grade.

4. Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.

5. Where indicated, cast handhole cover frame integrally with handhole structure.

D. Drainage: Install drains in bottom of manholes where indicated. Coordinate with drainage provisions indicated.

E. Manhole Access: Circular opening in manhole roof; sized to match cover size.

1. Install chimney, constructed of precast concrete collars and rings, to support cast-iron frame to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for frame to chimney.

F. Waterproofing: Apply waterproofing to exterior surfaces of manholes and handholes after concrete has cured at least three days. Waterproofing materials and installation shall be Elastomeric sheet style. After ducts have been connected and grouted, and before backfilling, waterproof joints and connections, and touch up abrasions and scars. Waterproof exterior of manhole chimneys after mortar has cured at least three days.

G. Dampproofing: Apply dampproofing to exterior surfaces of manholes and handholes after concrete has cured at least three days. After ducts are connected and grouted, and before backfilling, dampproof joints and connections, and touch up abrasions and scars. Dampproof exterior of manhole chimneys after mortar has cured at least three days.

H. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, and insulators, as required for installation and support of cables and conductors and as indicated.

I. Field-Installed Bolting Anchors in Manholes and Concrete Handholes: Do not drill deeper than 3-7/8 inches for manholes and 2 inches for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.

3.6 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts, to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by manufacturer.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas and trafficways, set cover flush with finished grade. Set covers of other handholes 1 inch above finished grade.

D. Install handholes and boxes with bottom below frost line,18 inches below grade.

E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in enclosure.

F. Field cut openings for ducts and conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.7 GROUNDING

A. Ground underground ducts and utility structures according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.

2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 6-inch- long mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.

3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Section 26 05 26 "Grounding and Bonding for Electrical Systems."

B. Correct deficiencies and retest as specified above to demonstrate compliance.

3.9 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump. Remove foreign material.

END OF SECTION

TETRA TECH

SECTION 40 27 00

PROCESS PIPING, GENERAL

PIPING SCHEDULE

Piping Schedule - Revised Per Addendum No. 3

Service	Drawings Label	Materials											Pressure/Thickness Class	Test Pressure (psig)
		Above Grade					Below Grade							
		Pipe	Interior Lining	Joints	Exterior Protection	Spec Section	Pipe	Lining	Joints	Exterior Protection	Spec Section			
Raw Water Main	RWM	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	125
Settled Water	SW	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Filtered Water	FW	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
GAC Effluent	FW	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Finished Water - Upstream of Finished Water Pumps	-	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Finished Water - Downstream of Finished Water Pumps	FWM	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating/PE Wrap Per Drawings	40 27 00.01		Push-On or Mechanical Joint: PC 250 (minimum) Flanged: Class 53	190
Overflow - Pretreatment or Finished Water Storage	OF	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Potable Water 4" & Larger	PW	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 250 (minimum) Flanged: Class 53	190
Potable Water 3" & Smaller	PW	Copper	N/A	Lead-Free Solder	Finish Coating in Field	40 27 00	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Copper: Type K , Rigid - No Tubing PVC: Schedule 80	190
Backwash Supply	BWS	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	100
Spent Backwash Water	SBW	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Air Release Valve Discharges/Filter & GAC Contactor Vents	-	Galvanized Steel	N/A	Flanged or Threaded Per Drawings	Finish Coating in Field	40 27 00.03	Galvanized Steel	N/A	Flanged or Threaded Per Drawings	Finish Coating in Field	40 27 00.03		Schedule 40	N/A
Backwash Air Supply	-	Type 316L Stainless Steel	N/A	Welded or Flanged per Drawings	N/A	40 27 00.08	N/A	N/A	N/A	N/A	N/A		Schedule 5S	10
Sludge - Thickened & Unthickened (Gravity Service)	SW, TSL & SBSL	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Sludge - Thickened & Unthickened (Pump Service)	TSL & SBSL	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	50
Supernatant -From Thickener or Spent Backwash Water Storage Tank	TSN & WWSN	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Tank & Process Drains (Flocculation & Sedimentation Basins)	DR	N/A	N/A	N/A	N/A	N/A	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	15
Sample, Floor, and Vault Drains	DR	N/A	N/A	N/A	N/A	N/A	PVC	N/A	Push-On or Solvent Weld	N/A	40 27 00.10		SDR 26	N/A
Filtrate - Underdrain from Sludge Drying Beds	SF	N/A	N/A	N/A	N/A	N/A	PVC	N/A	Push-On or Solvent Weld	N/A	40 27 00.10		SDR 26	N/A
Filtrate - Forcemain	SF	Ductile Iron	Cement Mortar	Flanged	Shop Prime/Finish Coating in Field	40 27 00.01	Ductile Iron	Cement Mortar	Push-On or Mechanical	Asphaltic Coating	40 27 00.01		Push-On or Mechanical Joint: PC 150 (minimum) Flanged: Class 53	50
Sanitary Sewer	-	N/A	N/A	N/A	N/A	N/A	PVC	N/A	Push-On or Solvent Weld	N/A	40 27 00.10		SDR 26	N/A
Sanitary Force Main to Septic Tank	-	N/A	N/A	N/A	N/A	N/A	PVC	N/A	Solvrnt Weld	N/A	40 27 00.10		Schedule 80	50
Chemical Feed Lines, Drains, Overflows, & Vents (Excluding Tubing)	-	PVC	N/A	Solvent Weld	Finish Coating in Field	40 27 00.10	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Schedule 80 for Pipe - Refer to Section 40 27 00.10 for Tubing Associated with Chemical Feed Systems	100
Sample Lines	-	PVC	N/A	Solvent Weld	Finish Coating in Field	40 27 00.10	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Schedule 80	100
Compressed Air & Instrument Air Tubing	IA	Type 316L Stainless Steel	N/A	Welded	N/A	40 27 00.08	Type 316L Stainless Steel	N/A	Welded	N/A	40 27 00.08		Minimum Wall Thickness: 0.065"	200
Hydraulic Oil	-	Black Carbon Steel	N/A	Threaded	Shop Prime/Finish Coating in Field	40 27 00.03	N/A	N/A	N/A	N/A	40 27 00.03		Schedule 40	200
Generator Exhaust	-	Black Carbon Steel	N/A	Flanged	N/A	40 27 00.03	N/A	N/A	N/A	N/A	N/A		Schedule 40	N/A
Sump Pump Discharge	-	PVC	N/A	Solvent Weld	Finish Coating in Field	40 27 00.10	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Schedule 80	N/A
Structure Underdrains for Ground Water Control	-	N/A	N/A	N/A	N/A	N/A	PVC	N/A	Push-On or Solvent Weld	N/A	40 27 00.10		Schedule 40	N/A
Flushing Water for Sludge Piping	-	Copper	N/A	Lead-Free Solder	Finish Coating in Field	40 27 00	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Copper: Type K , Rigid - No Tubing PVC: Schedule 80	190
Flushing Water for Chemical Piping	-	PVC	N/A	Solvent Weld	Finish Coating in Field	40 27 00.10	PVC	N/A	Solvent Weld	N/A	40 27 00.10		Schedule 80	190

TETRA TECH

SECTION 40 27 00.10

POLYVINYL CHLORIDE (PVC) PIPE, TUBING, AND FITTINGS

SECTION 40 27 00.10 POLYVINYL CHLORIDE (PVC) PIPE, TUBING, AND FITTINGS		
Item	**Service**	**Description**
General	All	Materials in contact with potable water shall conform to NSF Standard 61.
Piping	Chemical Feed Lines, Sample Lines & Secondary Containment	Schedule 80 PVC: Type I, Grade I or Class 12454-B conforming to ASTM D1784 and ASTM D1785. Pipe shall be manufactured with titanium dioxide for ultraviolet protection.
	Sanitary Sewer & Drains Upstream of Filtrate Pump Station	SDR 26 conforming to ASTM D3034
	Underdrains for Sludge Drying Beds	SDR 26 conforming to ASTM D3034. Perforation shall comply with ASTM F-758.
	Structural Underdrains for Groundwater Control	Schedule 40 PVC conforming to ASTM D1785 and D2665. Perforation shall comply with ASTM F-758.
	Threaded Nipples	Schedule 80 PVC.
Tubing	Chemical Feed	Provide black PVC tubing with nylon braid reinforcement embedded in the wall of the tubing with smooth inside bore and smooth outside where PVC tubing is called for in the Drawings. Design for continuous indoor and outdoor (ultraviolet-resistant) service. Minimum operating pressure shall be 200 psi for tubing 1/2 inch and smaller, 150 psi for 3/4 inch, 100 psi for 1 and 1-1/4 inches, and 75 psi for 1-1/2 inches. Burst pressure shall be at least 4.0 times the specified operating pressure. Join tubing to pipe with a single-barb male adapter fitting. Secure tubing to the fitting with a stainless steel hose clamp. Connect tubing sections by means of barbed insert-type hose fittings with stainless steel clamp. Products: Ryan-Herco “Herco-Chemical Black PVC Hose” or Engineer approved equal. Test pressure for PVC tubing shall be the same as the PVC piping to which it is connected.
Fittings	All	Schedule, SDR, or pressure class of fittings shall match adjacent pipe. Solvent weld fittings shall conform to ASTM D2467. Threaded fittings shall conform to ASTM D2464. Push-on joint fittings shall conform to ASTM D3034. Exposed fittings shall be manufactured with titanium dioxide for ultraviolet protection.

SECTION 40 27 00.10 POLYVINYL CHLORIDE (PVC) PIPE, TUBING, AND FITTINGS		
Item	**Service**	**Description**
Joints	Chemical Feed & Sample Lines	Solvent socket weld except where connection to threaded or flanged valves and equipment may require future disassembly.
	Drains Upstream of Filtrate Pump Station	Push-on joints conforming to ASTM D-3212.
	Underdrains for Sludge Drying Beds	Solvent socket weld or push-on joints.
	Structural Underdrains for Groundwater Control	Solvent socket weld or push-on joints.
Flanges	All	One piece, molded hub type PVC flat face flange in accordance with "Fittings" above, 125-pound ASME B16.1 drilling.
Bolting	All	ASTM A193/A193M, Type 316 stainless steel Grade B8M hex head bolts and ASTM A194/A914M Grade 8M hex head nuts.
Gaskets	All	Flat Face Mating Flange: Full faced 1/8-inch thick ethylene propylene (EPR) rubber. Raised Face Mating Flange: Flat ring 1/8-inch thick ethylene propylene (EPR) rubber, with filler gasket between OD of raised face and flange OD to protect the flange from bolting moment.
Solvent Cement	All	Socket type joints shall be made employing solvent cement that meets or exceeds the requirements of ASTM D2564 and primer that meets or exceeds requirements of ASTM F656 and as recommended by pipe and fitting manufacturer, except solvent weld cement for PVC pipe joints in sodium hypochlorite service shall be free of silica filler and shall be certified by the manufacturer to be suitable for that service. Certification shall be submitted.
Thread Lubricant	All	Teflon tape.
Secondary Containment Piping	Selected Chemical Feed Lines in Certain Locations	Schedule 80 pre-engineered, factory fabricated, tested and assembled double-wall containment piping furnished such that field assembly is minimized primarily to straight runs of pipe. Two-piece clamshell style containment fittings are not acceptable. Containment systems shall be as manufactured by Asahi, Ipex Guardian, or an approved equal. Carrier pipe shall be Schedule 80 PVC.

END OF SECTION

TETRA TECH

SECTION 40 27 02

PROCESS VALVES AND OPERATORS

VALVE SCHEDULE

PAGES 11, 12, 13

Valve Schedule - Revised Per Addendum No. 3

(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
71-BFV-2	Backwash Water Storage Tank/Above Grade/Outdoors	Finished Water	30"	Butterfly	40 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Backwash Water Flow Meter Isolation Valve
71-BFV-3	Backwash Water Storage Tank/Above Grade/Outdoors	Finished Water	30"	Butterfly	40 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Backwash Water Flow Meter Isolation Valve
71-FV-1	Backwash Water Storage Tank/Above Grade/Outdoors	Finished Water	10"	Flap	N/A	Flanged	N/A	Flap Valve at Storage Tank Overflow to Drainage System
Raw Water Main Air Release Valves								
RW-ARV-1	Station 126+25	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-2	Station 136+50	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-3	Station 139+70	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-4	Station 147+88	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-5	Station 153+10	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-6	Station 178+50	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-7	Station 192+50	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-8	Station 216+00	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-9	Station 257+80	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-10	Station 274+00 (36.92L)	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-11	Station 274+00 (44.92L)	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-12	Station 292+96	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-13	Station 293+01	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
RW-ARV-14	Station 458+25	Raw Water	6"	Air Release	70 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Raw Water Main/Provide Isolation Gate Valve
Raw Water Isolation Valves								
RW-BFV-1	Station 261+25	Raw Water	42"	Butterfly	70 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Raw Water Main
RW-BFV-2	Station 261+30	Raw Water	42"	Butterfly	70 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Raw Water Main
RW-BFV-3	Station 261+36	Raw Water	42"	Butterfly	70 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Raw Water Main

Valve Schedule - Revised Per Addendum No. 3

(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
Finished Water Main Isolation Valves								
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+23	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 874+87	Finished Water	48"	Butterfly	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Isolation Valve for Finished Water Main
FW-BFV-5A	Station 926+68	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+77	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+27	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+38	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	42"	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
Finished Water Main Air Release Valves								
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+14	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+94	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve

Valve Schedule - Revised Per Addendum No. 3

(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
FW-ARV-7	Station 906+37	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-8	Station 971+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-9	Station 1000+59	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-10	Station 1027+38	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-11	Station 1040+50	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-12	Station 1060+86	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-13	Station 1113+56	Finished Water	6"	Air Release	150 psi	Flanged	Manual/Handwheel (For Isolation Valve)	Air Release Valve for Finished Water Main/Provide Isolation Gate Valve
Finished Water Main Fire Hydrant Valves								
FW-FHV-1	Station 802+24	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-2	Station 854+65	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-3	Station 907+00	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-4	Station 959+50	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-5	Station 1010+75	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-6	Station 1061+00	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant
FW-FHV-7	Station 1112+00	Finished Water	6"	Gate Valve	150 psi	Mechanical Joint	Manual/Gear/2" Operating Nut/Valve Box	Gate valve for fire hydrant

NOTES:
1. Valves associated with chemical feed, compressed air, plumbing, fire protection, and fuel systems are not addressed in this schedule.
2. All valve shown on the various Drawings shall be furnished and installed regardless of whether or not they are included in this schedule.

TETRA TECH

SECTION 43 21 13.01

VERTICAL TURBINE PUMPS

PAGES 20 AND 21

TABLE 43 21 13-B

PUMPING UNIT DESIGN REQUIREMENTS

Item/Design Conditions	Raw Water Pumps No. 1A & No. 3B	Raw Water Pump No. 2A	Backwash Supply Pump	Finished Water Pumps No. 1 & No. 2	Finished Water Pump No. 3
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine
Motor to be Supplied (Maximum HP)	250	450	150	450	1,000
Maximum Nominal Pump Design Speed (rpm)	1,200	1,200	1,200	1,200	1,200
Column Diameter (inches)	16	20	12	16	20
Discharge Size (inches)	16	20	12	16	20
Minimum Pump Shut-Off Head (feet)	185	185	170	440	440
Design Capacity (gpm)	4,200	8,400	3,000	4,200	8,400
TDH at Design Capacity (feet)	140	140	115	285	285
Minimum Efficiency at Design Point	74	79	78	82	82
Pressure Gauge Range (psi)	0-100	0-100	0-100	0-200	0-200

Notes:

1) Pump shall not exceed the furnished motor nameplate rating over the entire pump curve.

2) System curve points under minimum TDH conditions for the Raw Water Pumps are presented below. Pump operation shall not result in cavitation, excessive vibration, or other undesirable conditions at the minimum TDH conditions specified below. The minimum TDH conditions will occur when there is 11 feet of liquid in the pump chamber.

Minimum TDH System Curve Data for Raw Water Pump	
Flow (gpm)	TDH (ft.)
0	46
3,000	48
6,000	52
9,000	59
12,000	69
15,000	81
18,000	96

3) System curve points under minimum TDH conditions for the Backwash Supply Pump are presented below. Pump operation shall not result in cavitation, excessive vibration, or other undesirable conditions at the minimum TDH conditions specified below. The minimum TDH conditions will occur when there is 7.00 feet of liquid in the pump chamber.

Minimum TDH System Curve Data for Backwash Supply Pump	
Flow (gpm)	TDH (ft.)
0	74
2,000	75
4,000	77
6,000	82
8,000	89

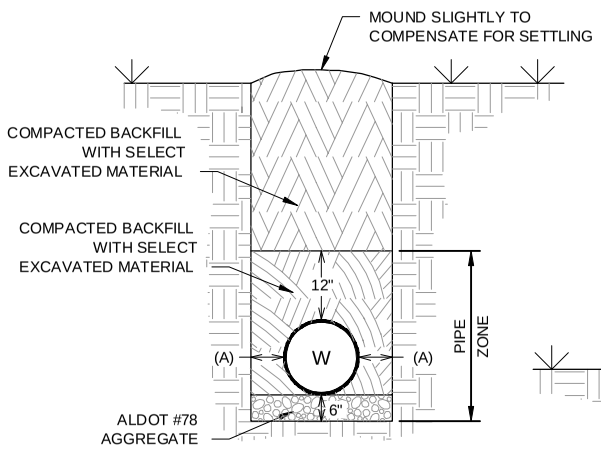
4) The finished water pumps shall be capable of satisfactorily operation at a TDH of 230 feet. Pump operation shall not result in cavitation, excessive vibration or other undesirable condition at the reduced TDH condition. The water level in the pump chamber will be 7.00 feet above the sump floor under the reduced TDH condition.

END OF SECTION

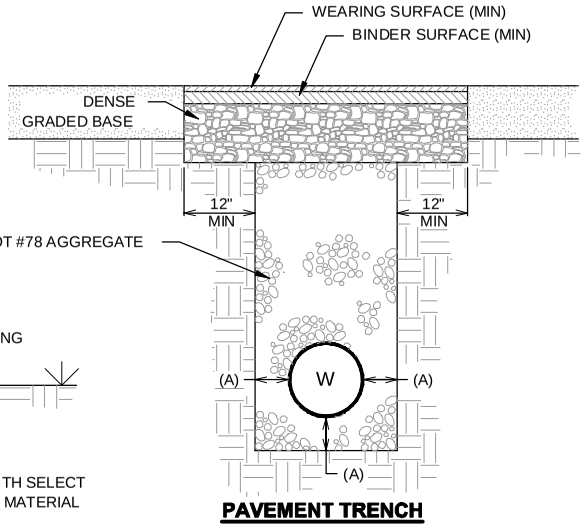
TETRA TECH

STANDARD TRENCH DETAIL

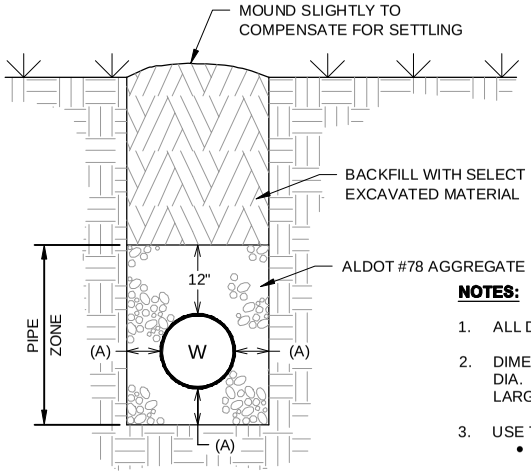
(SHEET C-9501, VOLUMES 3A AND 3B)



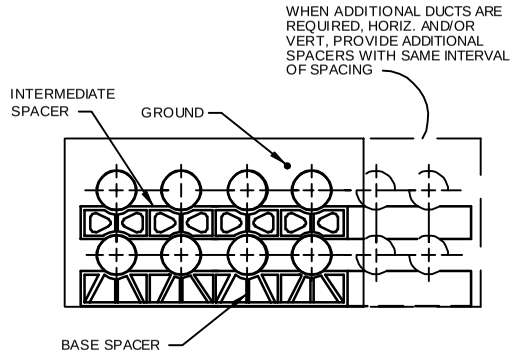
EARTH TRENCH



PAVEMENT TRENCH



ROCK TRENCH



UNDERGROUND DUCT SECTION

NO SCALE

STANDARD TRENCH

2 - DETAIL

SCALE: N.T.S.

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS.
2. DIMENSION (A) SHALL BE 6" MIN. FOR PIPES LESS THAN 30" DIA. DIMENSION (A) SHALL BE 9" MIN. FOR PIPES 30" AND LARGER.
3. USE TRENCH DETAILS AS FOLLOWS:
   - EARTH TRENCH: USE FOR PIPES & CONDUITS LESS THAN 16" IN SIZE AND NOT UNDER PAVEMENTS.
   - ROCK TRENCH: USE FOR ALL PIPES 16" IN SIZE AND LARGER AND FOR ALL PIPES AND CONDUITS IN BLASTED EXCAVATIONS WHICH ARE NOT UNDER PAVEMENTS.
   - PAVEMENT TRENCH: USE FOR ALL PIPES AND CONDUITS UNDER PAVEMENTS.
4. PROVIDE 42" (MIN.) COVER ON POWER AND COMMUNICATION CONDUITS.
5. PROVIDE CONCRETE ENCASEMENT OF DUCT BANK SHOWN ON SHEETS E-0104 AND E-0105.

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HUNTSVILLE UTILITIES

SOUTHEAST WATER TREATMENT PLANT

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

ADDENDUM #3

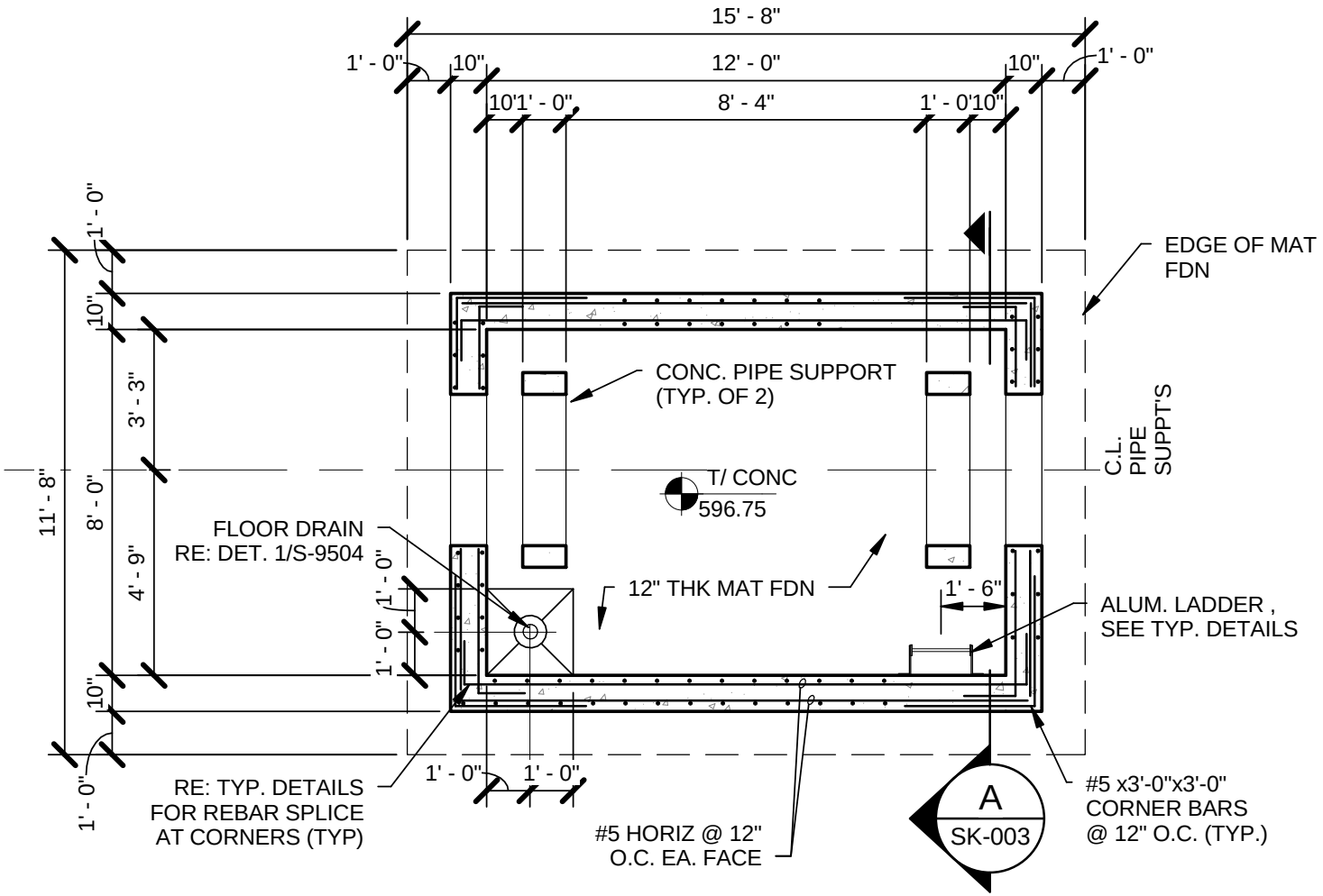
Project No.: 200-11740-10003
Date: 11/2014
Designed By: JPT

Bar Measures 1 inch

TETRA TECH

FINISHED WATER FLOW METER VAULT

STRUCTURAL DETAILS



FOUNDATION PLAN

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

NOTE: NOT ALL VERT REINF SHOWN FOR CLARITY

ALABAMA LICENSED No. 32158-E PROFESSIONAL CHRISTOPHER D. COLEMAN ENGINEER

12/10/14

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HUNTSVILLE UTILITIES

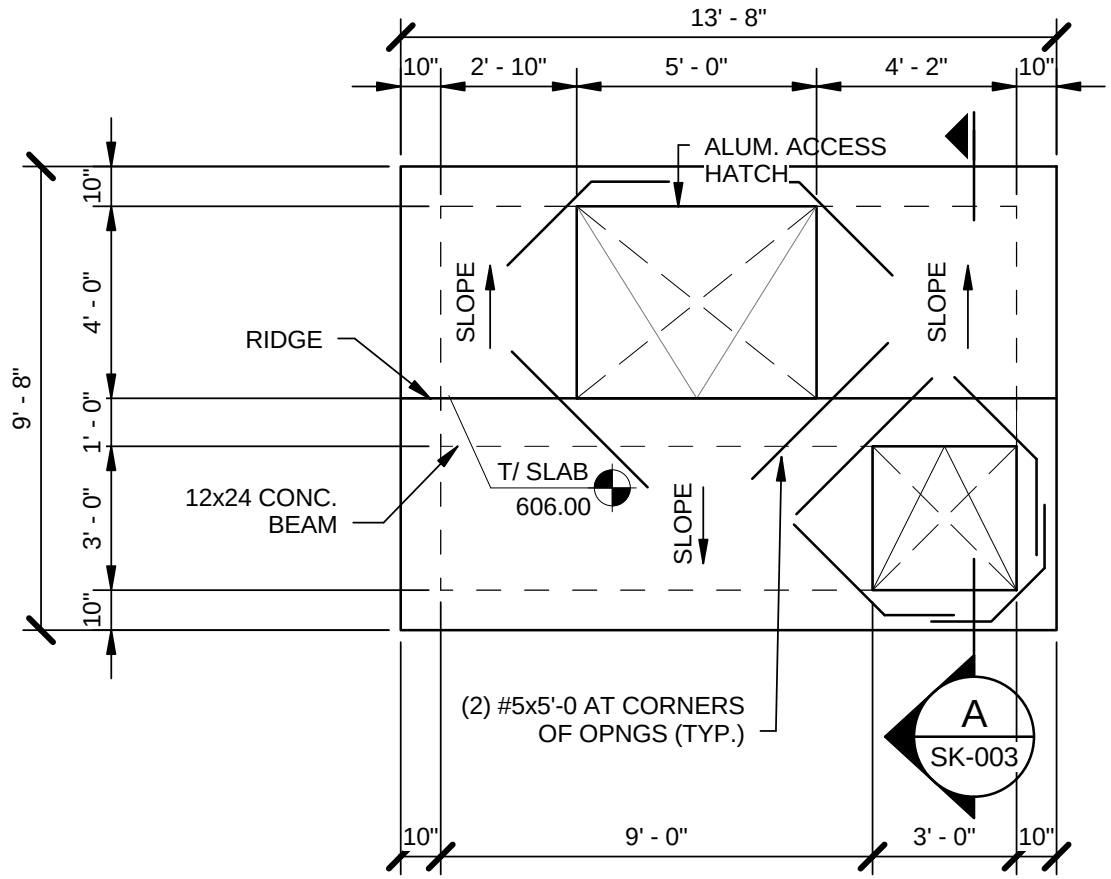
SOUTHEAST WATER TREATMENT PLANT

METER VALVE VAULT FOUNDATION PLAN

Project No.:	200-11740-10003
Date:	12/9/2014
Designed By:	JLB

SK-001

Bar Measures 1 inch



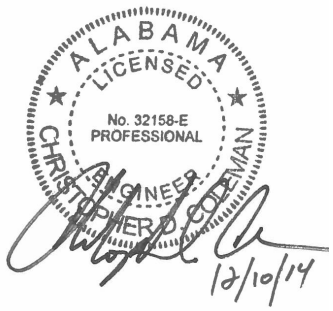
PLAN NOTES:

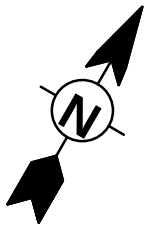
1. REFER TO G-0003 FOR OVERALL SITE KEY PLAN AND PROCESS AREA LOCATIONS
2. REFER TO S-0001 THRU S-0003 FOR GENERAL NOTES
3. COORDINATE ALL PIPE PENETRATION AND SUPPORT LOCATIONS WITH PROCESS PRIOR TO CONSTRUCTION
4. WALLS MAY BE BACK-FILLED PRIOR TO CONSTRUCTION OF TOP SLAB. REFER TO SPEC. 31 23 23 FOR BACKFILL REQUIREMENTS
5. ALUM. ACCESS HATCHES SHALL BE WATERTIGHT W/ A 200PSF LL RATING
6. DESIGN HIGH GROUND WATER ELEV. = 605.50
7. TOP SLAB DESIGN LIVE LOAD = 200 PSF
8. (A) INDICATES WATERTIGHT CONSTRUCTION JT. TYPE RE: TYP. DTL'S

TOP SLAB PLAN

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

NOTE: SLOPE T/SLAB TO DRAIN





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HUNTSVILLE UTILITIES

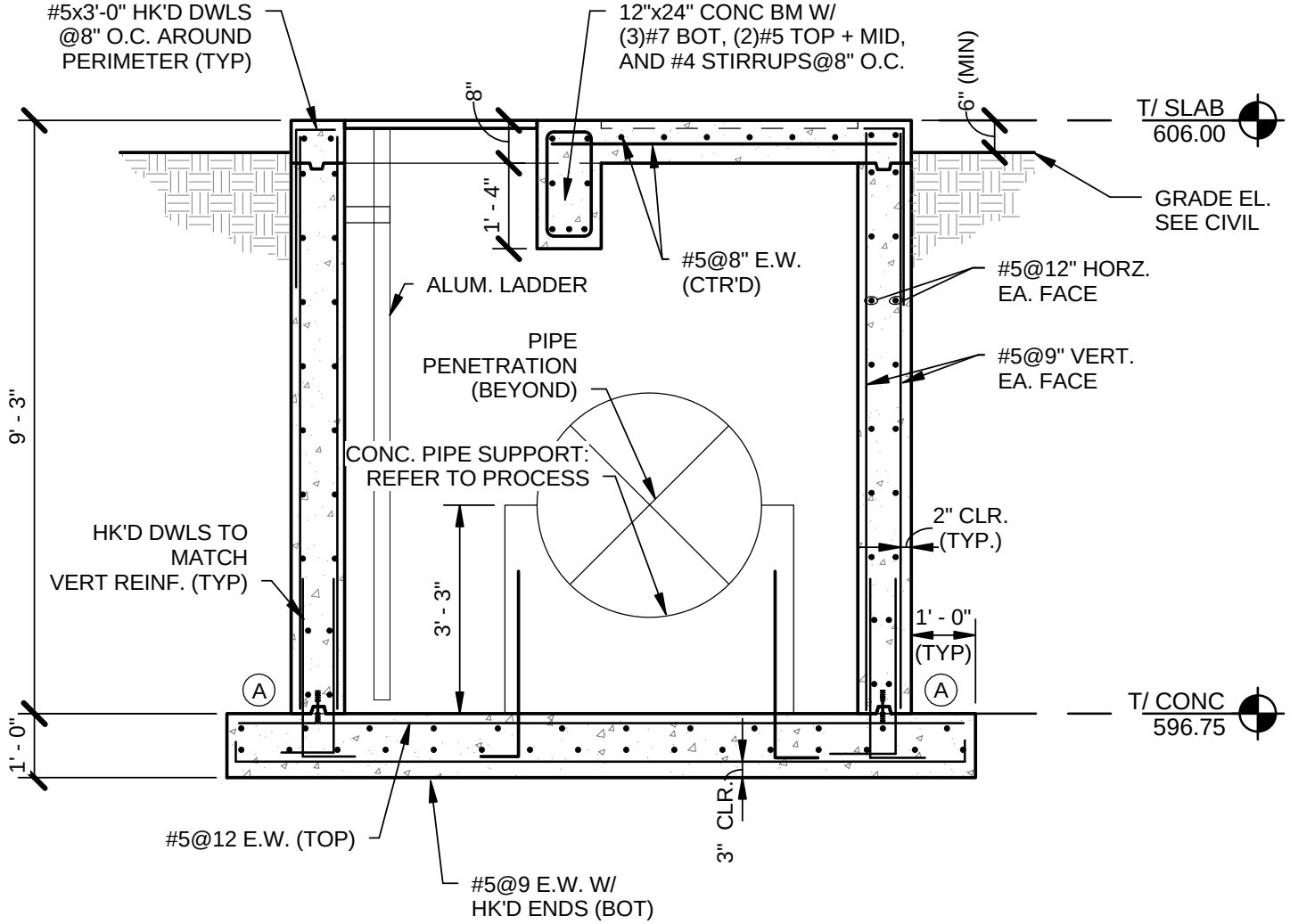
SOUTHEAST WATER TREATMENT PLANT

METER VALVE VAULT TOP SLAB PLAN

Project No.:	200-11740-10003
Date:	12/9/2014
Designed By:	JLB

SK-002

Bar Measures 1 inch



A SECTION

SK-003 SCALE 3/8" = 1'-0"

ALABAMA LICENSED No. 32158-E PROFESSIONAL CHRISTOPHER D. COLEMAN ENGINEER

12/10/14

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HUNTSVILLE UTILITIES

SOUTHEAST WATER TREATMENT PLANT

METER VALVE VAULT SECTION

Project No.:	200-11740-10003
Date:	12/9/2014
Designed By:	JLB

SK-003

Bar Measures 1 inch

12/9/2014 3:24:28 PM C:\Users\jason.burkett\Documents\Revit Local\WTP-11740-S-METVALV_jason.burkett.rvt

TETRA TECH

VOLUME 3B REPLACEMENT SHEETS

- Sheet G-0008
- Sheet S-8101
- Sheet S-8102
- Sheet S-8301
- Sheet S-8302
- Sheet S-8303
- Sheet A-8201
- Sheet A-8301
- Sheet A-8302
- Sheet D-0101
- Sheet D-0104
- Sheet D-0601
- Sheet D-2303
- Sheet D-2304
- Sheet D-3301
- Sheet D-3302
- Sheet D-4103
- Sheet D-6103
- Sheet E-8302

FW ASSET ATTRIBUTE DATA TABLE

	STATION	DESCRIPTION	NORTHING	EASTING	SERVICE TYPE
	792+00.00, 105.52'L	AIR RELEASE VALVE	1448548.87	492390.45	FINISH WATER
	799+71.21, 106.59'L	48" BUTTERFLY VALVE	1449204.86	491985.51	FINISH WATER
	800+24.33, 37.00'R	48" 90° BEND	1449325.54	492079.77	FINISH WATER
	800+24.33, 106.60'L	48" 90° BEND	1449250.34	491957.44	FINISH WATER
	800+34.35, 37.03'R	48" BUTTERFLY VALVE	1449334.09	492074.54	FINISH WATER
	800+37.79, 37.03'R	WATER SAMPLE STATION	1449337.03	492072.75	FINISH WATER
	801+04.66, 37.24'R	48" 22.5° BEND	1449394.11	492037.86	FINISH WATER
	801+14.37, 37.28'R	48" 22.5° BEND	1449402.44	492032.77	FINISH WATER
	801+66.57, 37.54'R	48" 22.5° BEND	1449447.08	492005.49	FINISH WATER
	801+75.00, 37.61'R	48" 22.5° BEND	1449454.27	492001.09	FINISH WATER
	802+00.00, 37.80'R	AIR RELEASE VALVE	1449475.60	491988.05	FINISH WATER
1	802+27.77, 83.72'R	FIRE HYDRANT ASSEMBLY	1449520.71	492014.12	FINISH WATER
	807+93.36, 40.50'R	48" 22.5° BEND	1449981.97	491678.57	FINISH WATER
	808+06.31, 40.62'R	48" 22.5° BEND	1449992.89	491671.89	FINISH WATER
1	808+48.78, 40.87'R	48" 22.5° BEND	1450029.13	491649.75	FINISH WATER
	808+58.59, 40.93'R	48" 22.5° BEND	1450037.48	491644.64	FINISH WATER
	808+90.23, 41.11'R	AIR RELEASE VALVE	1450064.48	491628.14	FINISH WATER
	840+05.72, 47.93'R	AIR RELEASE VALVE	1452719.09	489997.97	FINISH WATER
1	854+65.05, 90.82'R	FIRE HYDRANT ASSEMBLY	1453983.65	489268.15	FINISH WATER
	854+75.00, 48.32'R	48" BUTTERFLY VALVE	1453969.86	489226.73	FINISH WATER
	859+94.56, 67.15'R	48" 22.5° BEND	1454422.05	488970.32	FINISH WATER
	860+08.58, 67.90'R	48" 22.5° BEND	1454434.39	488963.63	FINISH WATER
	866+50.00, 102.60'R	WATER SAMPLE STATION	1454998.69	488656.95	FINISH WATER
	870+14.00, 109.44'R	AIR RELEASE VALVE	1455312.08	488471.23	FINISH WATER
	870+23.00, 109.65'R	48" BUTTERFLY VALVE	1455319.85	488466.69	FINISH WATER
	870+28.97, 109.79'R	48" 22.5° BEND	1455325.00	488463.68	FINISH WATER
	870+79.39, 110.72'R	48" 22.5° BEND	1455367.94	488438.58	FINISH WATER
	873+79.94, 104.34'R	48" 22.5° BEND	1455622.31	488274.99	FINISH WATER
	874+24.75, 103.46'R	48" 22.5° BEND	1455659.03	488251.37	FINISH WATER
	874+87.00, 102.24'R	48" BUTTERFLY VALVE	1455711.40	488217.69	FINISH WATER
	874+94.00, 102.10'R	AIR RELEASE VALVE	1455717.29	488213.91	FINISH WATER
	906+37.35, 68.52'R	AIR RELEASE VALVE	1458375.90	486536.86	FINISH WATER
1	907+00.00, 84.87'R	FIRE HYDRANT ASSEMBLY	1458437.98	486517.95	FINISH WATER
	926+67.85, 72.40'R	48" BUTTERFLY VALVE	1460107.81	485477.00	FINISH WATER
	936+00.00, 102.64'R	WATER SAMPLE STATION	1460918.01	485014.96	FINISH WATER
	936+50.09, 102.67'R	48" 11.25° BEND	1460960.66	484988.83	FINISH WATER
	938+59.80, 67.36'R	48" 11.25° BEND	1461121.15	484848.87	FINISH WATER
1	959+50.00, 85.97'R	FIRE HYDRANT ASSEMBLY	1462911.91	483770.87	FINISH WATER
	971+90.73, 67.16'R	AIR RELEASE VALVE	1463959.35	483106.31	FINISH WATER

FW ASSET ATTRIBUTE DATA TABLE

	STATION	DESCRIPTION	NORTHING	EASTING	SERVICE TYPE
	975+75.00, 66.98'R	48" BUTTERFLY VALVE	1464286.65	482905.36	FINISH WATER
	1000+59.32, 71.80'R	AIR RELEASE VALVE	1466357.86	481524.54	FINISH WATER
	1006+75.00, 73.44'R	WATER SAMPLE STATION	1466852.75	481158.90	FINISH WATER
1	1010+75.00, 85.71'R	FIRE HYDRANT ASSEMBLY	1467182.21	480930.91	FINISH WATER
	1027+38.98, 77.58'R	AIR RELEASE VALVE	1468513.93	479933.40	FINISH WATER
1	1027+50.00, 77.59'R	48" BUTTERFLY VALVE	1468522.78	479926.84	FINISH WATER
	1039+58.03, 76.15'R	48" 11.25° BEND	1469492.46	479206.72	FINISH WATER
	1040+50.51, 57.82'R	AIR RELEASE VALVE	1469556.04	479136.79	FINISH WATER
	1041+57.89, 37.00'R	48" 11.25° BEND	1469629.54	479055.95	FINISH WATER
	1055+56.75, 36.73'R	48" 22.5° BEND	1470753.45	478222.53	FINISH WATER
	1055+65.59, 36.71'R	48" 22.5° BEND	1470760.50	478217.20	FINISH WATER
	1060+86.76, 37.45'R	AIR RELEASE VALVE	1471176.34	477902.68	FINISH WATER
1	1061+00.00, 88.89'R	FIRE HYDRANT ASSEMBLY	1471218.05	477935.56	FINISH WATER
	1072+76.88, 37.73'R	48" BUTTERFLY VALVE	1472131.31	477192.98	FINISH WATER
	1075+26.92, 51.08'R	48" BUTTERFLY VALVE	1472340.21	477055.65	FINISH WATER
	1075+30.52, 51.27'R	WATER SAMPLE STATION	1472343.22	477053.67	FINISH WATER
	1080+87.65, 48.86'R	48" 22.5° BEND	1472790.61	476722.05	FINISH WATER
	1081+00.72, 48.74'R	48" 22.5° BEND	1472801.23	476714.16	FINISH WATER
	1083+43.65, 49.08'R	48" 22.5° BEND	1472997.11	476570.17	FINISH WATER
	1083+63.25, 48.59'R	48" 22.5° BEND	1473012.62	476558.10	FINISH WATER
	1111+38.11, 27.99'R	48" BUTTERFLY VALVE	1475235.81	474898.03	FINISH WATER
1	1112+00.00, 58.15'R	FIRE HYDRANT ASSEMBLY	1475303.62	474885.51	FINISH WATER
	1113+56.65, 28.27'R	AIR RELEASE VALVE	1475412.15	474768.49	FINISH WATER
	1130+37.63, 28.19'R	48" BUTTERFLY VALVE	1476767.23	473774.28	FINISH WATER
	1130+61.54, 28.13'R	48" 22.5° BEND	1476786.62	473760.05	FINISH WATER
	1130+78.13, 28.10'R	48" 90° BEND	1476800.00	473750.24	FINISH WATER
	1130+78.13, 115.24'L	48" 90° BEND	1476715.31	473634.59	FINISH WATER
	1130+89.43, 115.19'L	48" BUTTERFLY VALVE	1476724.45	473627.95	FINISH WATER
	1130+92.93, 115.18'L	WATER SAMPLE STATION	1476727.28	473625.89	FINISH WATER
1	1133+39.00, 113.97'L	WATER SAMPLE STATION TEMPORARY JUMPER CONNECTION	1476925.16	473482.09	FINISH WATER
	1133+44.00, 113.89'L	48"x36" REDUCER	1476929.21	473479.15	FINISH WATER
	3973+47.70, 0.00'	42" BUTTERFLY VALVE	1447476.17	490024.23	FINISH WATER
	3973+52.58, 0.00'	48"x42" REDUCER	1447478.58	490028.47	FINISH WATER
	3973+63.83, 0.00'	48" 22.5° BEND	1447483.65	490037.41	FINISH WATER
1	3973+71.28, 0.00'	48" 22.5° BEND	1447487.81	490044.74	FINISH WATER
	3975+13.69, 0.00'	48" 45° BEND	1447558.05	490168.63	FINISH WATER
	3978+88.91, 0.00'	48" 45° BEND	1447458.11	490530.29	FINISH WATER
	3988+00.00, 0.00'	48" BUTTERFLY VALVE	1447882.57	491336.47	FINISH WATER
	4000+47.49, 0.00'	48" 90° BEND	1448521.92	492407.08	FINISH WATER

RW ASSET ATTRIBUTE DATA TABLE

	STATION	DESCRIPTION	NORTHING	EASTING	SERVICE TYPE
	456+05.21, 0.00'	42" TEE W/PLUG	1447309.85	489307.84	RAW WATER
	456+29.21, 0.00'	42" 90° BEND	1447330.73	489296.00	RAW WATER
	458+14.20, 0.00'	42" 90° BEND	1447239.48	489135.07	RAW WATER
	458+25.00, 0.00'	AIR RELEASE VALVE	1447230.09	489140.40	RAW WATER
	463+04.69, 0.00'	42" 45° BEND	1446812.81	489377.00	RAW WATER
	466+22.26, 0.00'L	42" 45° BEND	1446681.60	489666.20	RAW WATER
	473+96.90, 0.00'	42" 45° BEND	1445956.47	489938.71	RAW WATER
	499+97.05, 0.00'	42" BUTTERFLY VALVE	1444882.19	492306.55	RAW WATER

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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DAUGHERTY

MARK	DATE	DESCRIPTION	BY
1	12/2/14	PER ADDENDUM #3	

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

RAW & FINISH WATER ASSET ATTRIBUTE TABLE

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

G-0008

Bar Measures 1 inch

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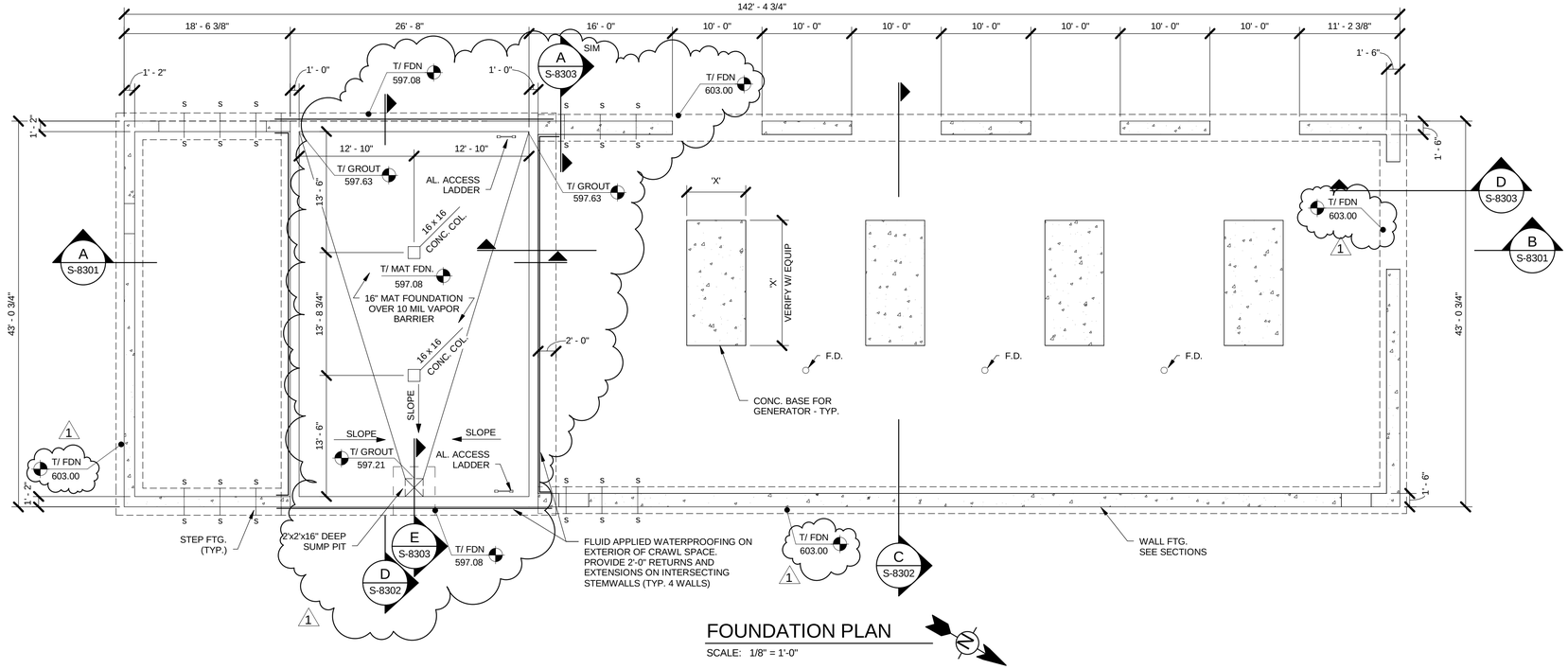


FOUNDATION PLAN

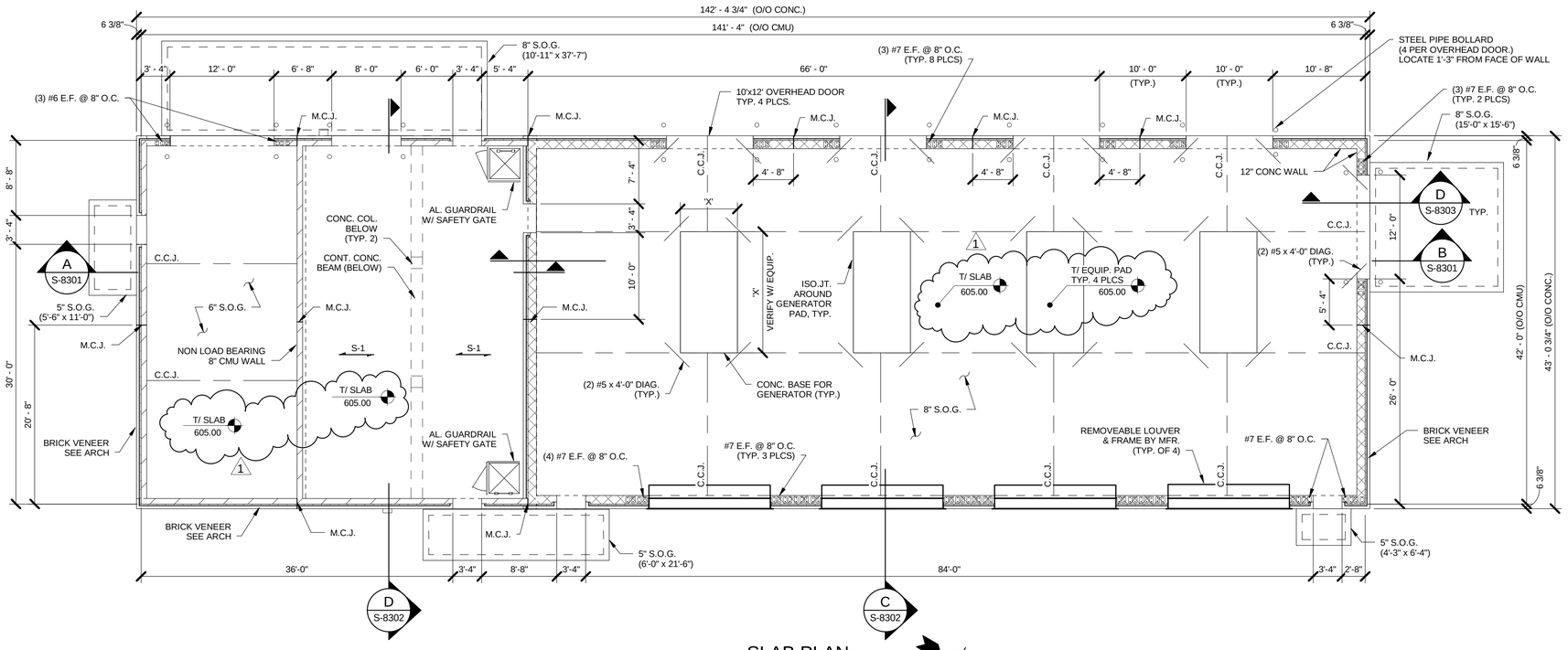
SCALE: 1/8" = 1'-0"

PLAN NOTES:

1. REFER TO S-001 THRU S-003 FOR GENERAL NOTES
2. REFER TO G-0003 FOR OVERALL SITE KEY PLAN AND PROCESS AREA LOCATIONS
3. TOP OF FOOTING ELEVATION = 603.00, U.N.O. 1
4. BELOW GRADE WALLS AT ELECTRICAL ROOM SHALL BE WATERTIGHT W/ WATERSTOPS AT ALL CONSTRUCTION JOINTS.
5. 5" S.O.G., INDICATES 5" THICK CONC. SLAB ON GRADE REINFORCED W/ 6x6-W2.9xW2.9 WWF PLACED 2" FROM T/SLAB. TURN DOWN EDGES TO 8"x12" W (2) #5 CONT. BOT.
6. 8" S.O.G., INDICATES 8" THICK CONC. SLAB ON GRADE REINFORCED W/ #6 @ 12" O.C., E.W. PLACED 2" FROM T/ SLAB
7. REFER TO TYPICAL DETAIL SHEETS FOR EQUIP. PAD DETAILS. COORDINATE W/ EQUIP. MFR. DWG'S PRIOR TO CONSTRUCTION
8. TOP SLAB DESIGN LIVE LOADS:
   ELECT. ROOM = 300 PSF
   GENERATOR ROOM = 8000 lb FORKLIFT WHEEL
9. WALLS OF ELECTRICAL CRAWL SPACE MAY BE BACKFILLED PRIOR TO POURING THE TOP SLAB

LEGEND:

- INDICATES 8" CMU W/ #5 VERTICALS CTR'D IN GROUT FILLED CELLS 32" O.C. MAX., CORNERS, AND INTERSECTIONS, U.N.O. OPENINGS < 4'-0" WIDE SHALL RECEIVE (2) #5 VERT. (CTRD) EA. SIDE OPENINGS > 4'-0" WIDE SHALL RECEIVE (2) #6 E.F., EA. SIDE U.N.O.
- INDICATES 12" CMU W/ #6 VERTICALS E.F. IN GROUT FILLED CELLS 24" O.C. MAX., CORNERS, AND INTERSECTIONS, U.N.O. OPENINGS < 4'-0" WIDE SHALL RECEIVE (1) #5 VERT. (CTRD.) EA. SIDE OPENINGS > 4'-0" WIDE SHALL RECEIVE REINF. AS NOTED
- S-1 — SPAN DIRECTION OF 12" CONCRETE SLAB W/ #6 @ 6" O.C. TOP & BOT., #6 @ 12" O.C. TOP & BOT. TRANSVERSE
- M.C.J. — INDICATES MASONRY CONTROL JOINT
- C.C.J. — INDICATES SLAB CRACK CONTROL JOINT
- S —— S — DENOTES STEPPED FOOTING, RE: 8/ S-9502



SLAB PLAN

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

0 4'-0 8'-0 16'-0

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

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BID SET

ALABAMA LICENSED No. 32158-E PROFESSIONAL ENGINEER CHRISTOPHER D. CRAWFORD 12/10/14

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

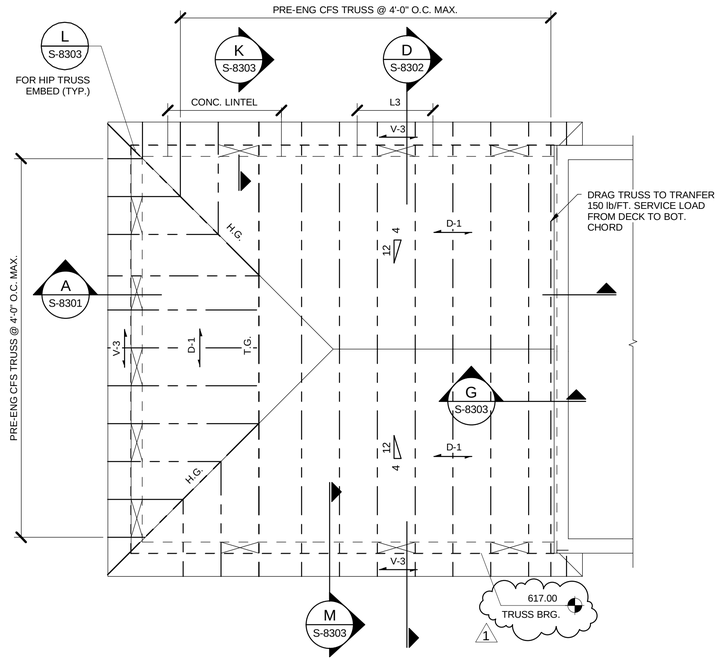
GENERATOR BUILDING FOUNDATION PLAN

Project No.:	200-11740-10003
Designed By:	JRG
Drawn By:	BRF
Checked By:	CDC

S-8101

Bar Measures 1 inch

12/4/2014 2:26:01 PM C:\Users\brent.fox\Documents\WTP-11740-GENATR-Central_brent.fox.rvt



LOWER ROOF FRAMING PLAN

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

ROOF PLAN NOTES:

1. REFER TO G-0003 FOR OVERALL SITE PLAN AND PROCESS AREA LOCATIONS
2. REFER TO S-001 THRU S-003 FOR GENERAL NOTES
3. TRUSS BEARING ELEVATION = 617.00 (LOW ROOF) / 629.00 (HIGH ROOF) 1
4. ROOF TRUSSES SHALL BE DESIGNED TO INCLUDE A 10 PSF COLLATERAL LOAD WHICH INCLUDES ALL HANGING LOADS FOR SPRKINKLERS, DUCTWORK, PLUMBING, CEILING AND OTHER COMPONENTS.
5. CONTRACTOR SHALL PROVIDE TRUSS MFR. WITH LOCATION OF ALL HANGING LOADS PRIOR TO TRUSS DESIGN

LEGEND:

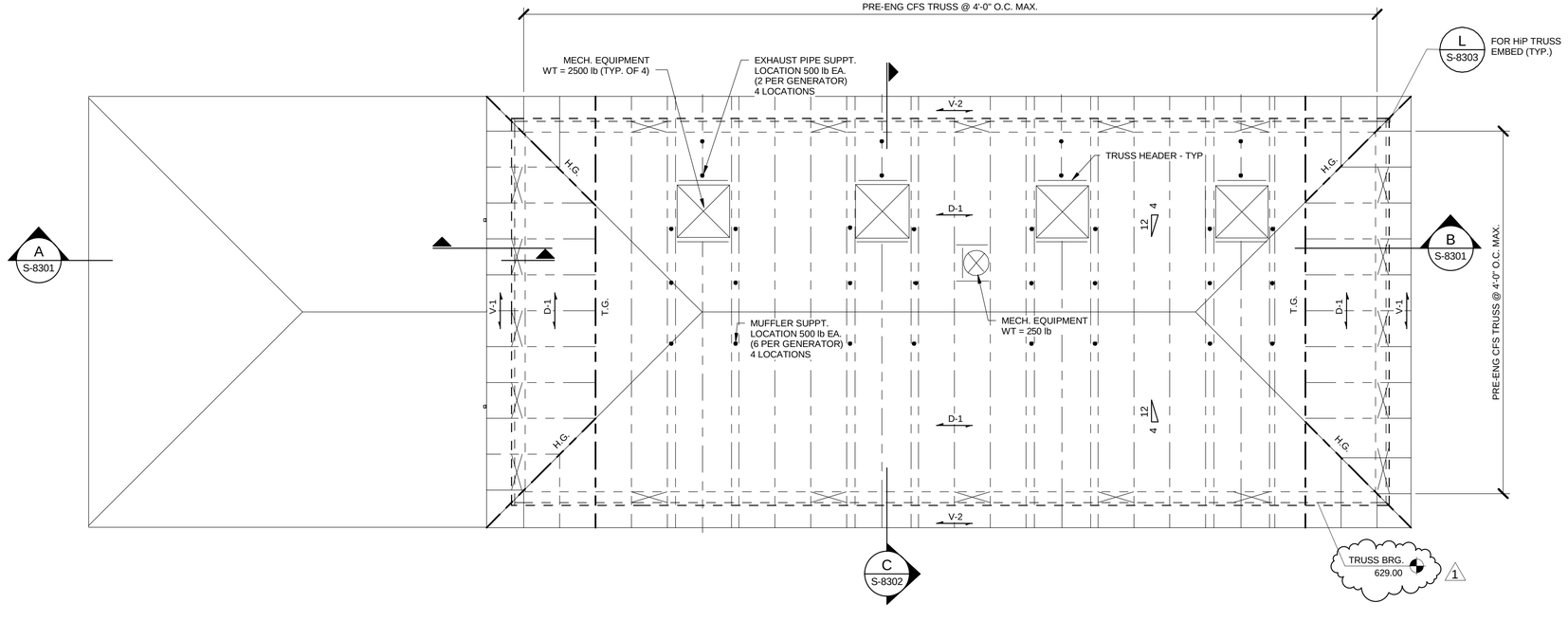
- D-1 — DENOTES SPAN DIRECTION OF 1 1/2"-20 GA. TYPE 'B' (Fy=33 KSI) STEEL ROOF DECK. ROOF DECK IS A DIAPHRAGM. ATTACH TO SUPPORTING STEEL W/ #12 TEK SCREWS IN A 36/9 PATTERN AND 6" O.C. AT RIDGES, HIPS AND LONGITUDINAL SUPPORTS. SIDELAP FASTENERS #10 TEK SCREWS @ 12" O.C.
- DENOTES TRUSS HEEL BRACING PROVIDED BY TRUSS MFR. TO RESIST DIAPHRAGM SHEAR
- V-1 — INDICATES 425 lb/ft SERVICE SHEAR LOAD TO BE RESISTED BY TRUSS HEEL BRACING
- V-2 — INDICATES 100 lb/ft SERVICE SHEAR LOAD TO BE RESISTED BY TRUSS HEEL BRACING
- V-3 — INDICATES 150 lb/ft SERVICE SHEAR LOAD TO BE RESISTED BY TRUSS HEEL BRACING

T.G. - INDICATES TRUSS GIRDER

H.G. - INDICATES HIP TRUSS GIRDER

12 - INDICATES ROOF SLOPE, COORD W/ ARCH. DWGS.

L-# - INDICATES CMU LINTEL, REF: TYP. DETALS FOR SCHEDULE



HIGH ROOF FRAMING PLAN

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

0 4'-0 8'-0 16'-0

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

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED No. 32158-E PROFESSIONAL ENGINEER
12/10/14

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES

SOUTHEAST WATER TREATMENT PLANT

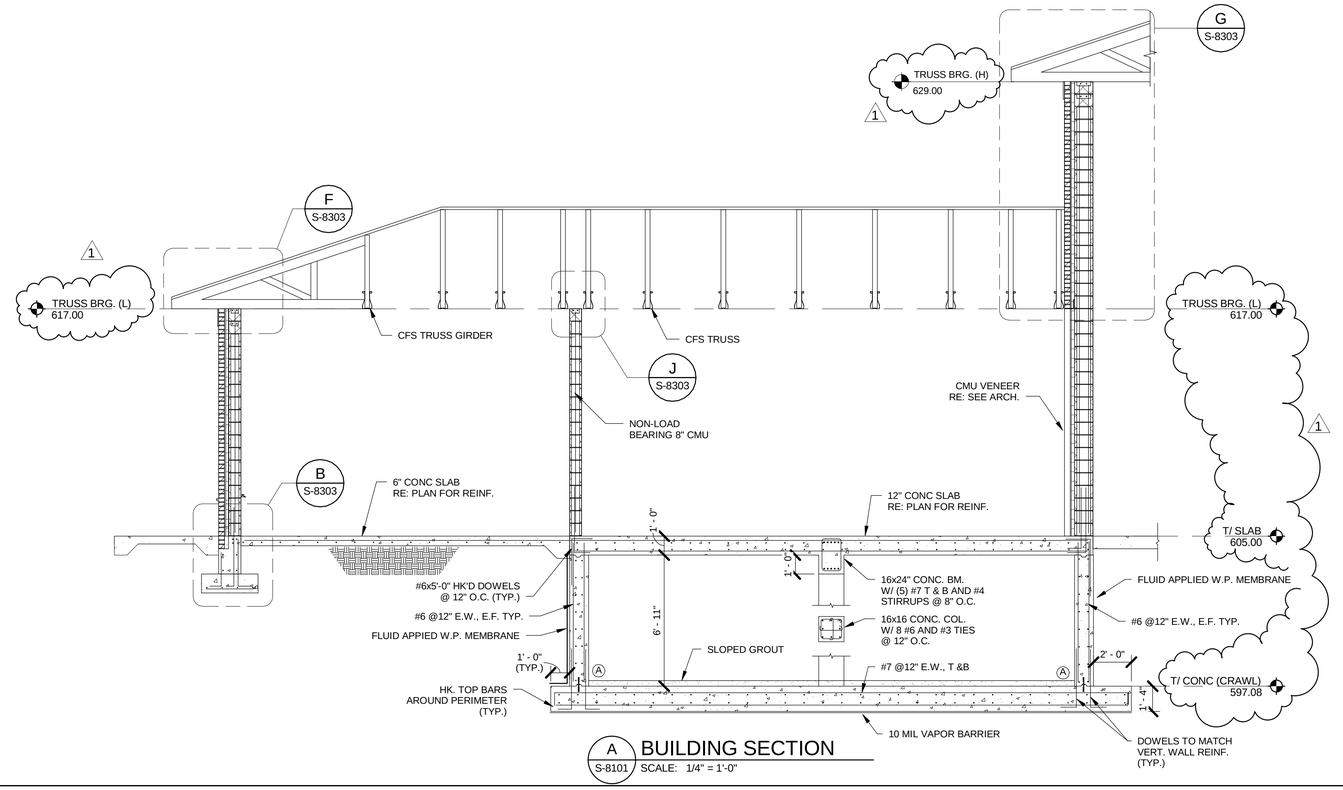
GENERATOR BUILDING ROOF FRAMING PLANS

Project No.:	200-11740-10003
Designed By:	JRG
Drawn By:	BRF
Checked By:	CDC

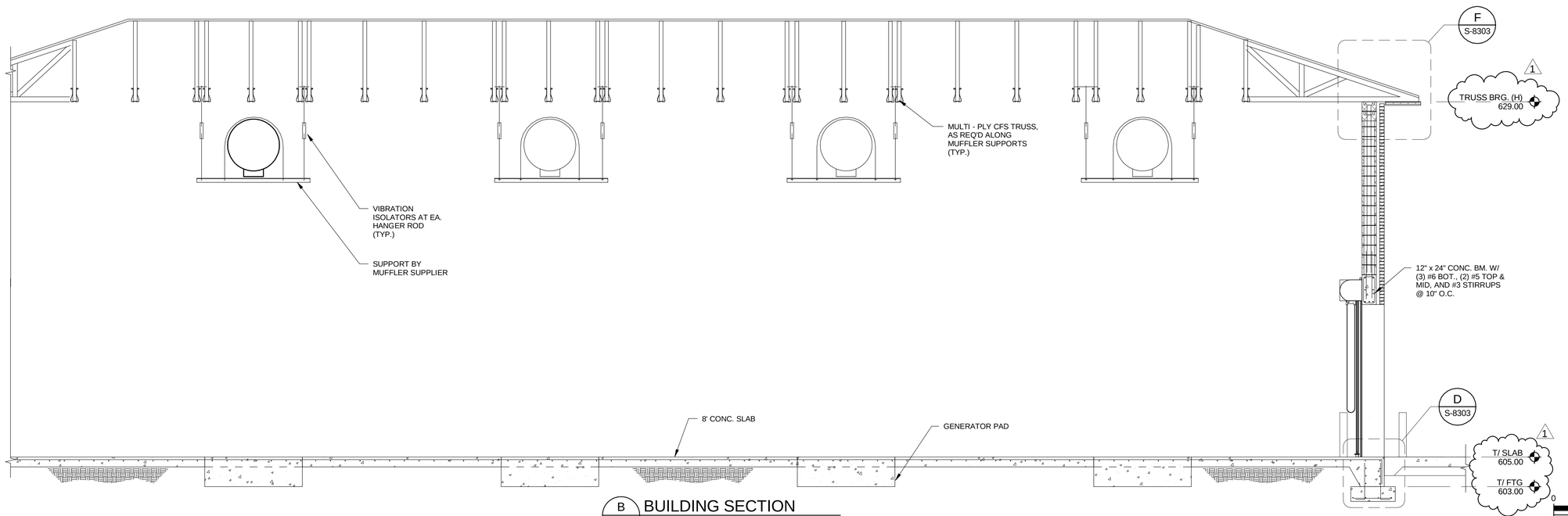
S-8102

Bar Measures 1 inch

12/4/2014 2:26:02 PM C:\Users\brent.fox\Documents\WTP-11740-GENATR-Central_brent.fox.rvt



A S-8101 BUILDING SECTION
SCALE: 1/4" = 1'-0"



B S-8101 BUILDING SECTION
SCALE: 1/4" = 1'-0"

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

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BID SET

ALABAMA LICENSED No. 32158-E PROFESSIONAL CHRISTOPHER D. CRAWFORD ENGINEER
12/10/14

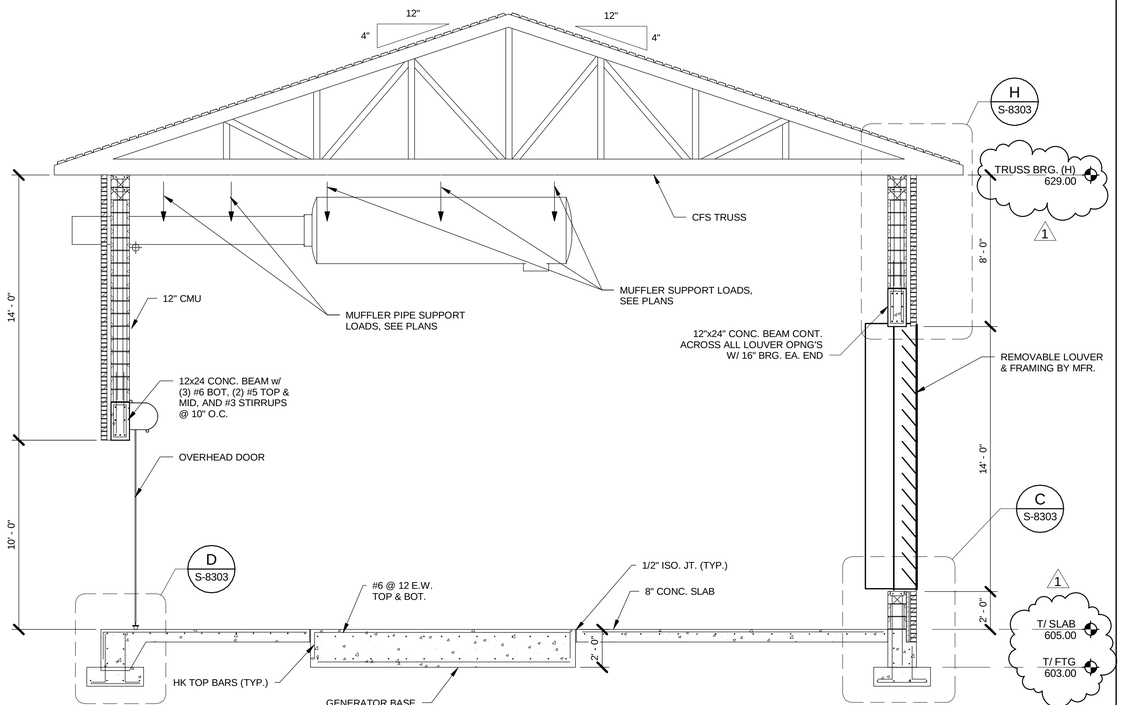
MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT
GENERATOR BUILDING SECTIONS

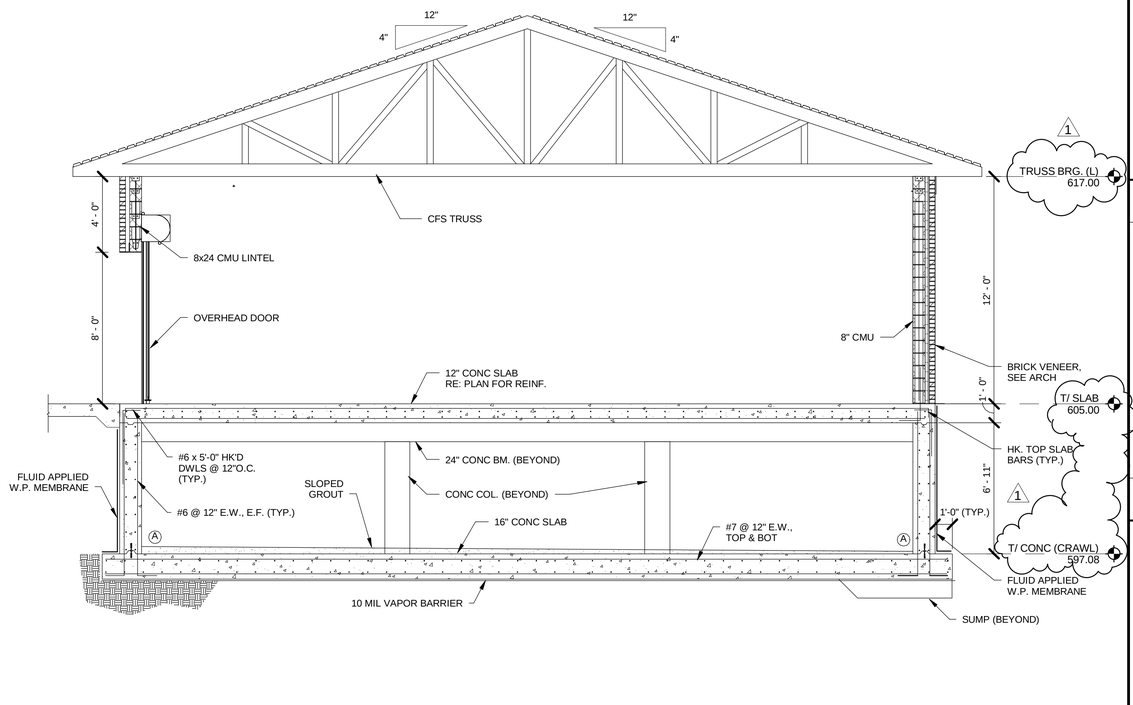
Project No.:	200-11740-10003
Designed By:	JRG
Drawn By:	BRF
Checked By:	CDC

S-8301

Bar Measures 1 inch



C S-8101 BUILDING SECTION
SCALE: 1/4" = 1'-0"



D S-8101 BUILDING SECTION
SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0""
SCALE: 1/4" = 1'-0"

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BID SET

ALABAMA LICENSED No. 32158-E PROFESSIONAL CHRISTOPHER D. CRAWFORD ENGINEER
12/10/14

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

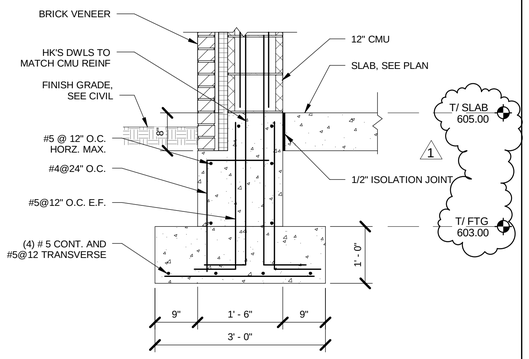
HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT
GENERATOR BUILDING SECTIONS

Project No.:	200-11740-10003
Designed By:	JRG
Drawn By:	BRF
Checked By:	CDC

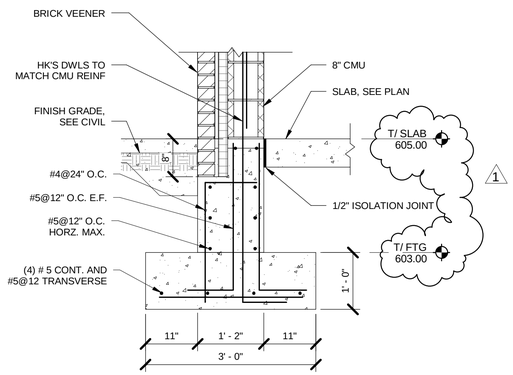
S-8302

Bar Measures 1 inch

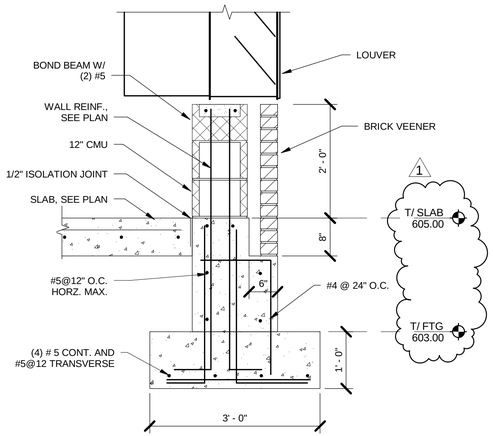
12/4/2014 2:26:05 PM C:\Users\brent.fox\Documents\WTP-11740-GENATR-Central_brent.fox.rvt



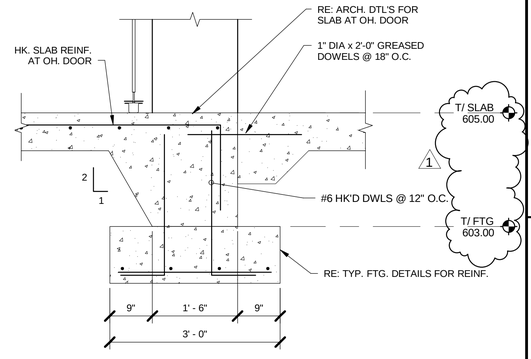
A S-8101 TYPICAL 12" CMU FTG.
SCALE: 3/4" = 1'-0"



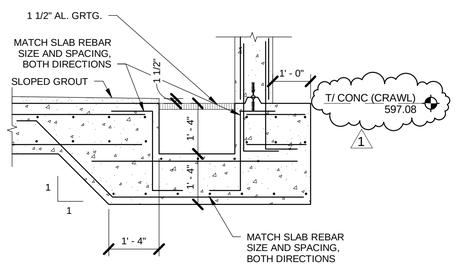
B S-8301 TYPICAL 8" CMU FTG.
SCALE: 3/4" = 1'-0"



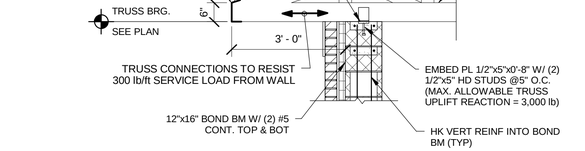
C S-8302 SECTION @ LOUVER
SCALE: 3/4" = 1'-0"



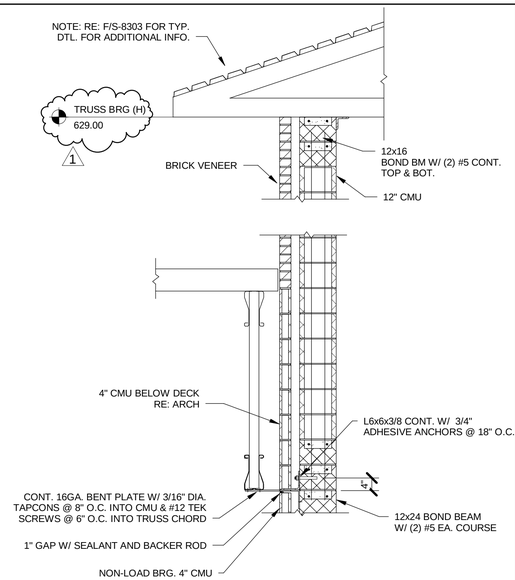
D S-8101 DOORWAY SECTION
SCALE: 3/4" = 1'-0"



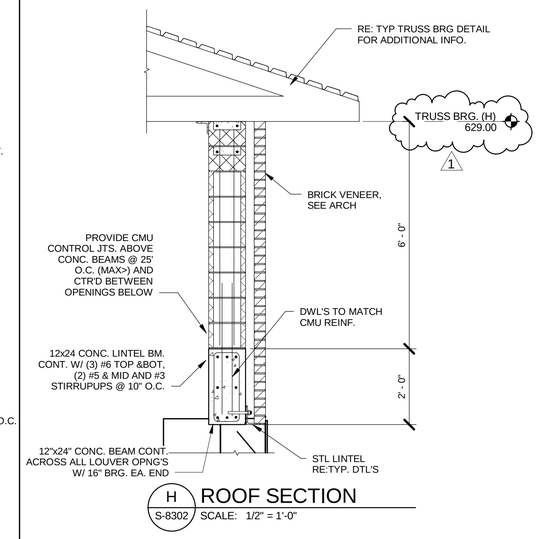
E S-8101 SUMP PIT SECTION
SCALE: 1/2" = 1'-0"



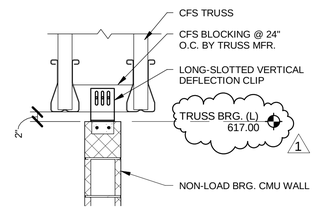
F S-8301 TYP. TRUSS BRG. @ 12" CMU
SCALE: 1/2" = 1'-0"



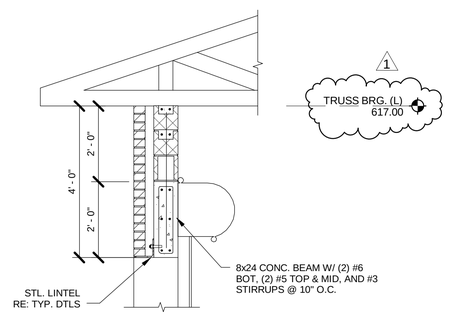
G S-8102 ROOF SECTION
SCALE: 1/2" = 1'-0"



H S-8302 ROOF SECTION
SCALE: 1/2" = 1'-0"

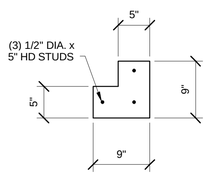


J S-8301 DEFLECTION CLIP DETAIL
SCALE: 3/4" = 1'-0"



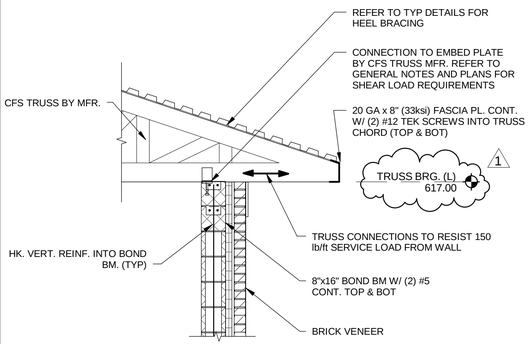
NOTE: RE: DTL. M/S-8303 FOR TYP. DETAIL FOR ADDITIONAL INFORMATION

K S-8102 SECTION @ OVERHEAD DOOR
SCALE: 1/2" = 1'-0"



(MAX. UPLIFT REACTION = 5,000lb)

L S-8102 HIP TRUSS EMBED
SCALE: 1" = 1'-0"



M S-8102 TYP. TRUSS BRG @ 8" CMU
SCALE: 1/2" = 1'-0"

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

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. CRAWFORD
12/10/14

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

GENERATOR BUILDING SECTIONS AND DETAILS

Project No.:	200-11740-10003
Designed By:	JRG
Drawn By:	BRF
Checked By:	CDC

S-8303

Bar Measures 1 inch

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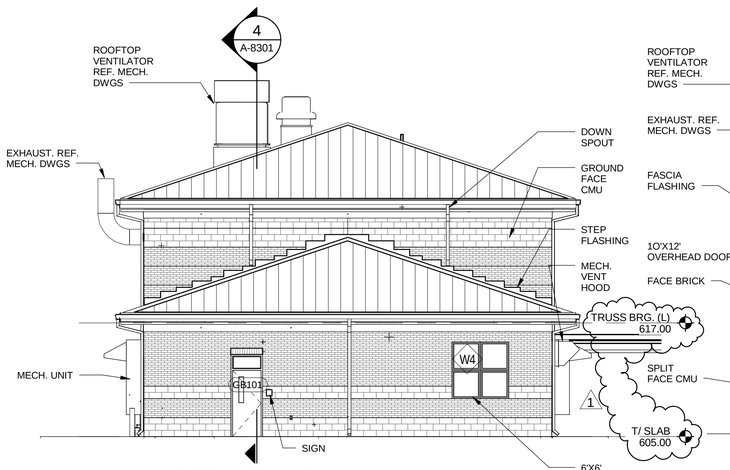
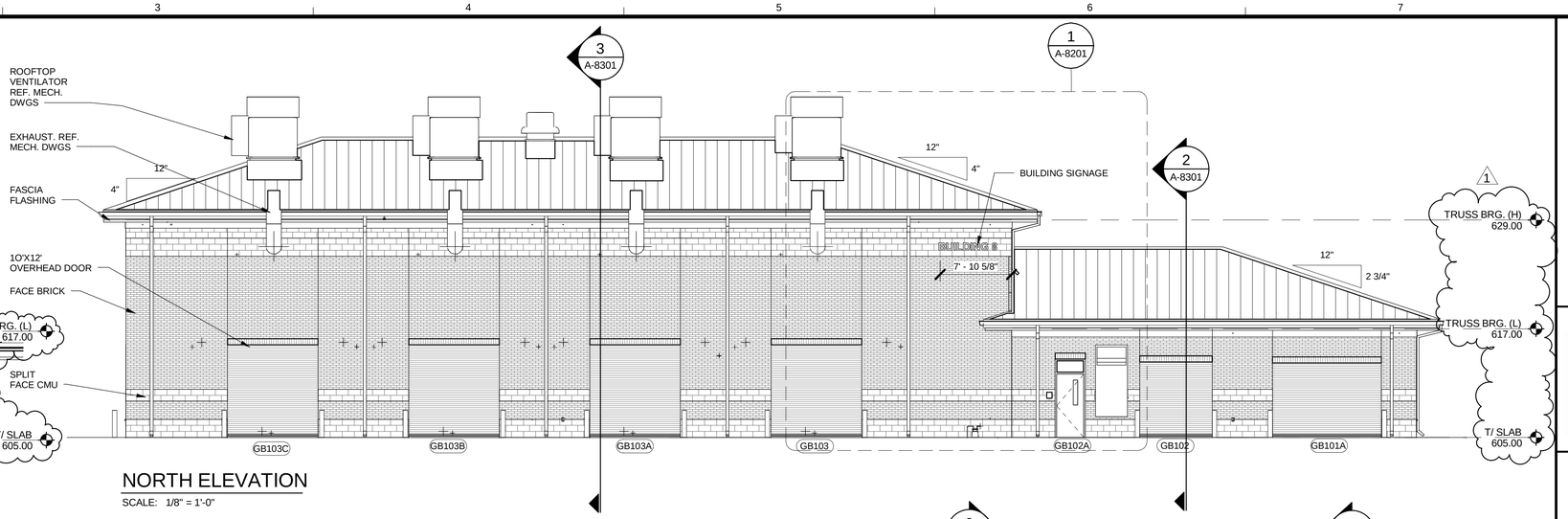


WEST ELEVATION

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

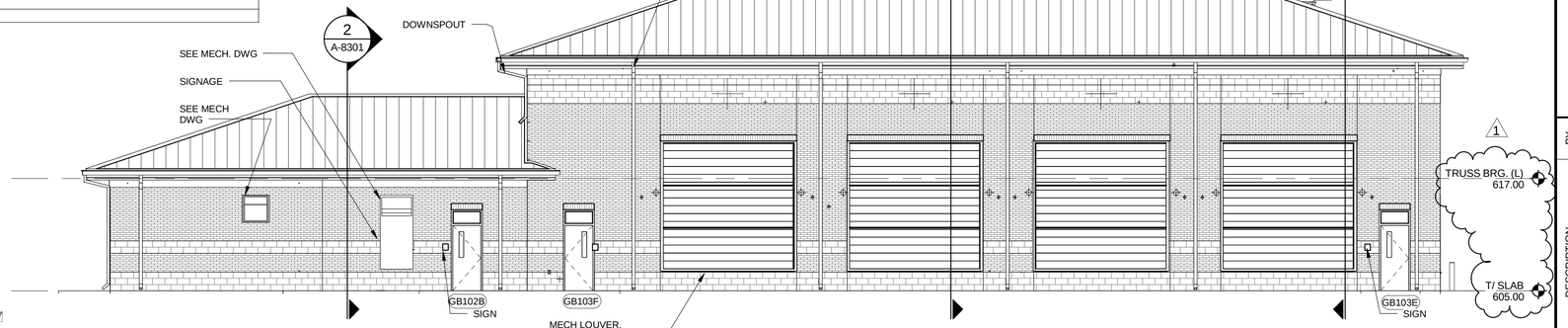


NORTH ELEVATION

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

GENERAL NOTES - MASONRY VENTS AND WEEPS

1	VERTICAL JOINT MASONRY VENTS LOCATED AT TOP OF WALL SHALL BE MODULAR INSERTS WITH INSECT RESISTANT VENT OPENINGS.
2	VENTS SHALL BE SPACE @ 24" O.C. IN FACE BRICK OR AT 16" O.C. IN GROUND FACE MASONRY.
3	WEEPS AT WALL BASE SHALL BE LOCATED ABOVE THROUGHWALL FLASHING AND BE TUBE AND WICK OR INSECT RESISTANT VENT AND WICK CONSTRUCTION
4	WEEPS SHALL BE SPACE @ 24" O.C. IN FACE BRICK OR AT 16" O.C. IN GROUND FACE MASONRY.

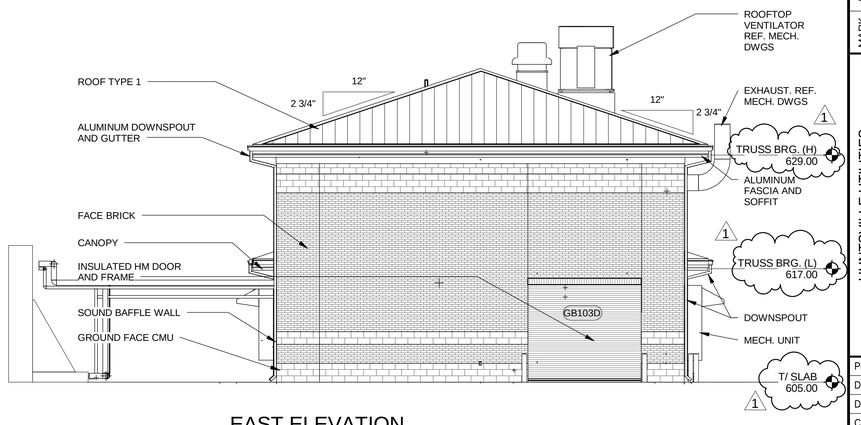


SOUTH ELEVATION

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

1 A-8201 ENLARGED ELEVATION VIEW

1/4" = 1'-0"



EAST ELEVATION

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

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

BID SET

STATE OF ALABAMA
J. QUINTIN BIAGI JR
REGISTERED
6512
REGISTERED ARCHITECT
12-18-2014

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

GENERATOR BUILDING ARCHITECTURAL EXTERIOR ELEVATIONS

Project No.:	200-11740-10003
Designed By:	Q. BIAGI
Drawn By:	Q. BIAGI
Checked By:	D. GALANTE

A-8201

Bar Measures 1 inch

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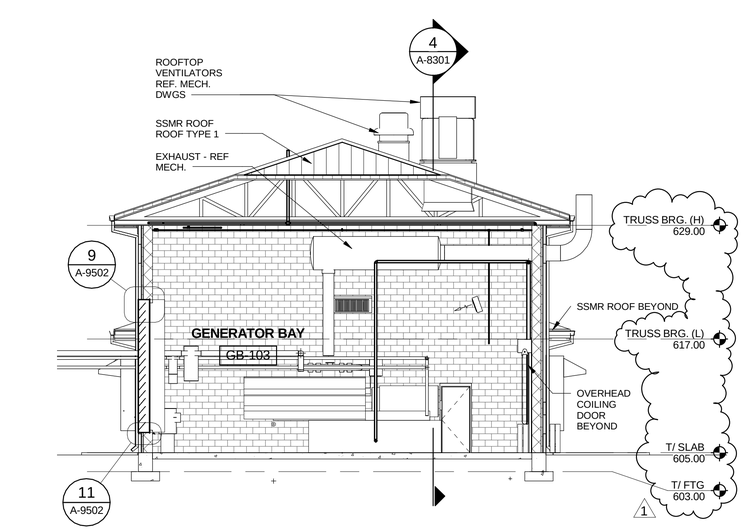
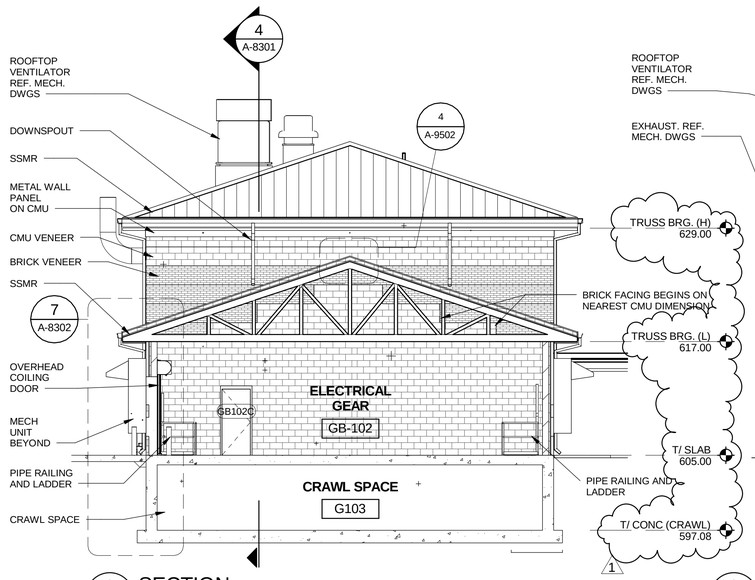


1 SECTION
A-8102 SCALE: 1/8" = 1'-0"



2 SECTION
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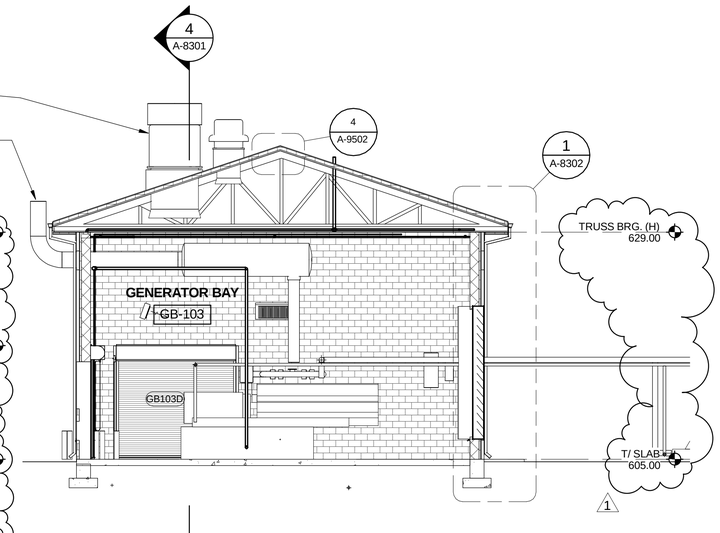
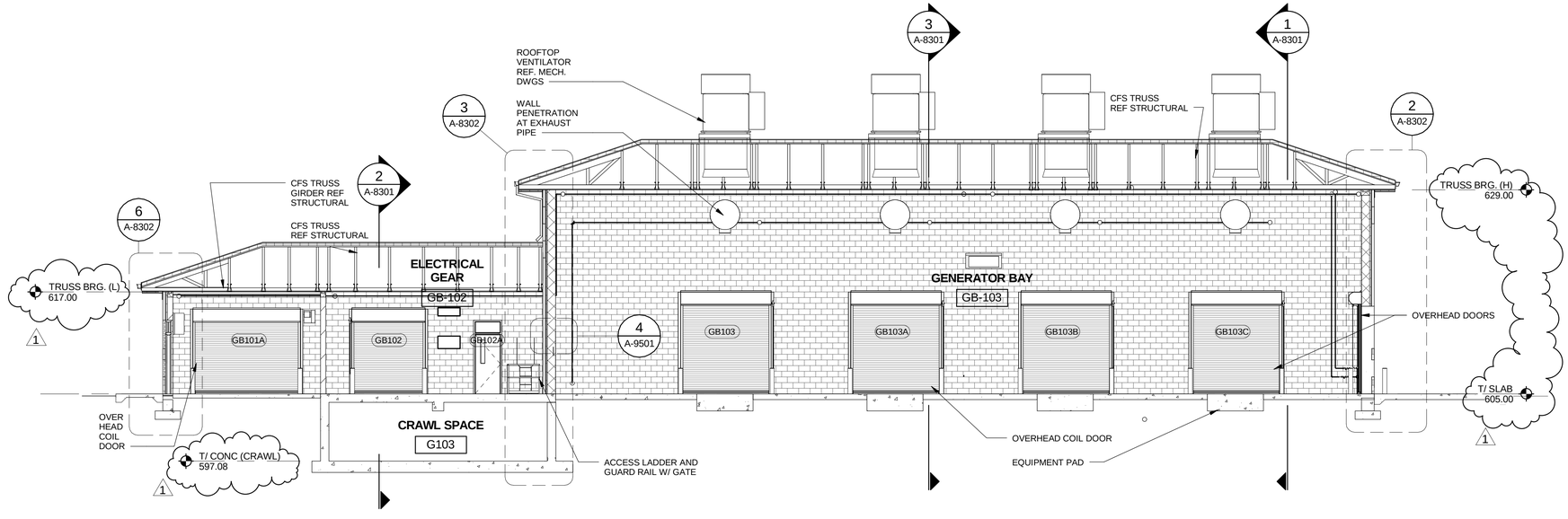


3 SECTION
A-8102 SCALE: 1/8" = 1'-0"



4 SECTION
A-8102 SCALE: 1/8" = 1'-0"

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

BID SET

STATE OF ALABAMA
Q. QUINTIN BIAGI JR
ASSOCIATE
6512
REGISTERED ARCHITECT
12-18-2014

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

GENERATOR BUILDING ARCHITECTURAL SECTIONS

Project No.:	200-11740-10003
Designed By:	Q. BIAGI
Drawn By:	Q. BIAGI
Checked By:	D. GALANTE

A-8301

Bar Measures 1 inch

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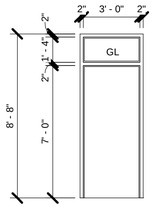
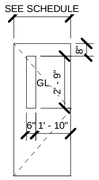


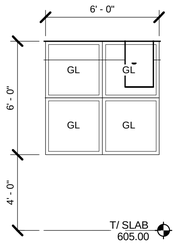
F5

F2



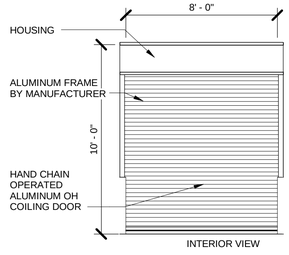
G

F

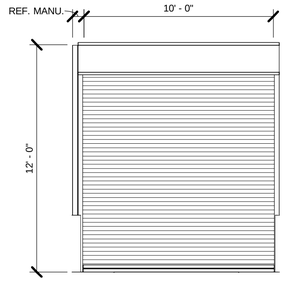


W4

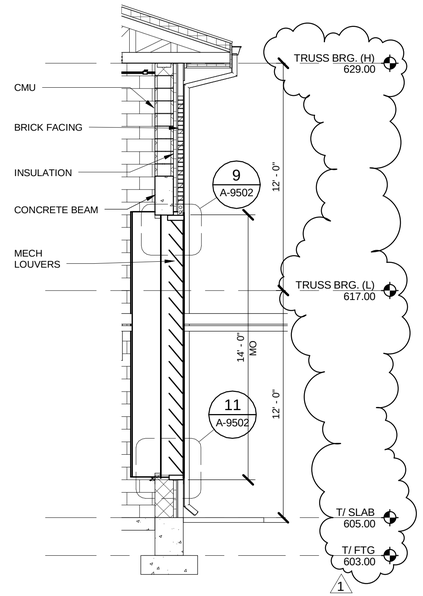
THERMALLY BROKEN ALUMINUM FRAMES WITH INSULATED GLASS WITH LOW-E COATING



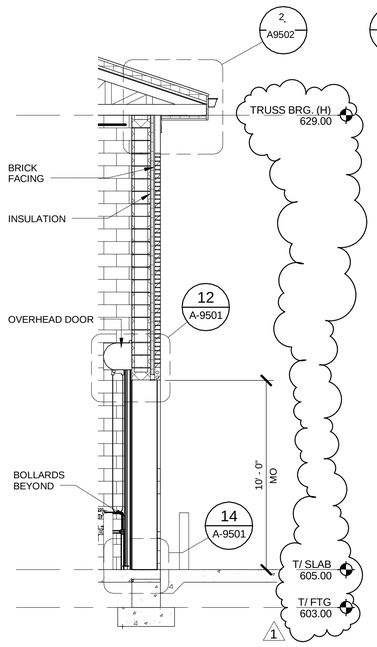
OHC 1



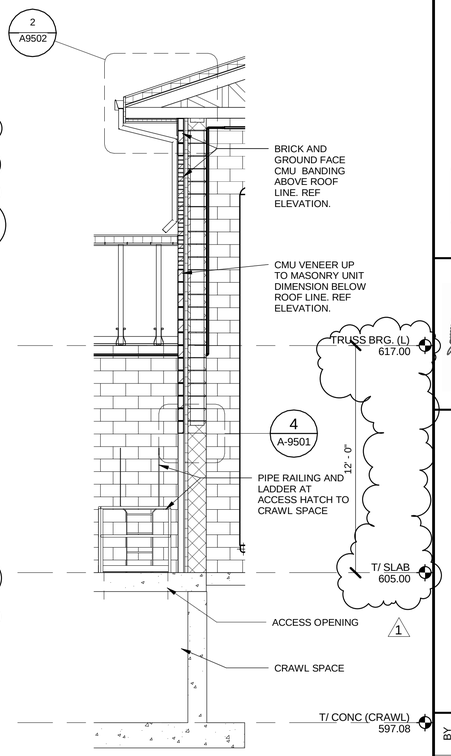
OHC 2

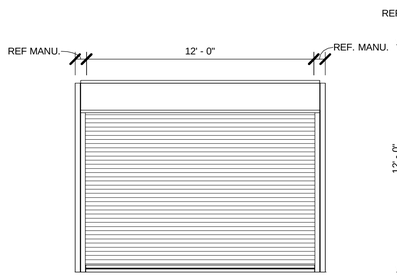


1 A-8301 14' LOUVER @ RM 3
SCALE: 1/4" = 1'-0"

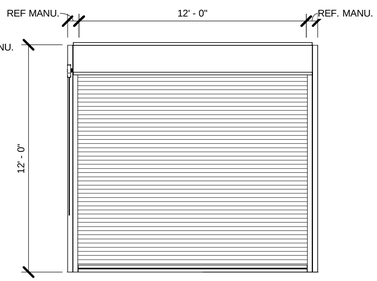


2 A-8301 OH DOOR @RM 3
SCALE: 1/4" = 1'-0"

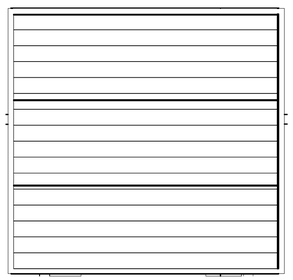




OHC 3



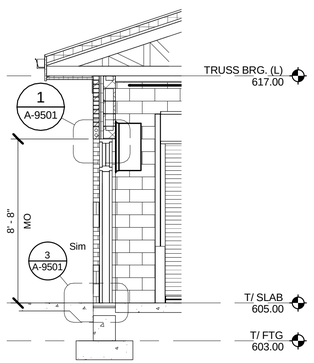
OHC 4



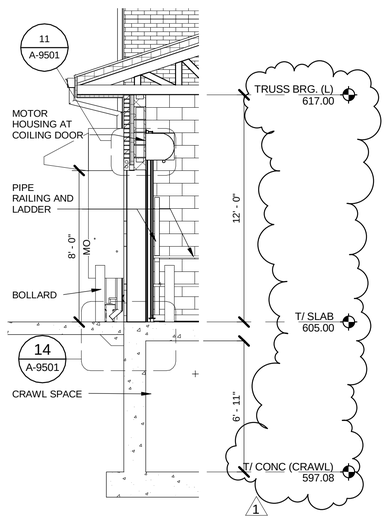
L9

MECHANICAL LOUVER. REFER TRO MECH DRAWINGS.

3 A-8301 PARTITION WALL
SCALE: 1/4" = 1'-0"



6 A-8301 END WALL
SCALE: 1/4" = 1'-0"



7 A-8301 OH DOOR @RM 2
SCALE: 1/4" = 1'-0"

GENERAL NOTES - DOORS, FRAMES, WINDOWS AND SIGNAGE	
1	ALL EXTERIOR DOORS ARE TO BE PEBBLEGRAIN FRP FLUSH DOORS WITH ALUMINIUM FRAMES.
2	DOORS AND FRAME BASIS OF DESIGN COLOR KYNAR 500 PVDF RESIN BASED FINISH - SKY BLUE - COLOR SHALL MEET OR EXCEED AAMA 2605-05.
3	ALL OUTSIDE DIMENSIONS FOR EXTERIOR DOORS AND WINDOWS ARE ROUGH OPENINGS IN WALL. ACTUAL DOOR AND WINDOW DIMENSIONS SHALL BE DETERMINED BY MANUFACTURER'S SHOP DRAWINGS.
4	WINDOWS BASIS OF DESIGN: KAWNEER AA 3350 ISOPORT WINDOW OR APPROVED EQUAL
5	ALL EXTERIOR GLAZING SHALL BE GREY LOW IRON INSULATING GLASS UNITS WITH LOW-E COATING. UNO.
6	EXTERIOR DIMENSIONAL METAL LETTERS SHALL BE CLEAR ANODIZED ALUMINUM 12" HIGH WITH MINIMUM OF 2 STANDOFF POSTS.
7	REFER TO DRAWING A-9601 FOR SIGNAGE SCHEDULE AND SIGNAGE TYPES SHOWN.
8	ALL INTERIOR SIGNAGE (TEXT, BRAILLE, PICTOGRAMS, SIZES, ETC) SHALL CONFORM WITH ICC/ANSI A117.1 'ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES', CHAPTER 703.
9	ALL PERMANENT SIGNAGE TEXT TO BE VERIFIED WITH OWNER PRIOR TO FABRICATION.
10	BASIS OF DESIGN INTERIOR SIGNAGE: BEST SIGN SYSTEMS, INC H300 SERIES ADA SIGNS - COLOR MP56060 PRICKLY PEAR LRV 8 OR APPROVED EQUAL

LISTED MANUFACTURER NOTE:

MANUFACTURERS ARE REFEREENCED TO ESTABLISH STYLE, SIZE, COLOR AND MATERIAL CHARACTERISTICS AND ARE NOT INTENDED TO LIMIT SELECTIONS FROM OTHER MANUFACTURERS. WHEN AN ALTERNATE SELECTION IS SUBMITTED, SUBMITTALS SHALL HAVE INCLUDED THE MATERIAL LISTED FOR COMPARISON.

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

STATE OF ALABAMA
J. QUINTIN BRAGG JR
ASSOCIATE
6512
REGISTERED ARCHITECT
12.18.2014

MARK	DATE	DESCRIPTION	BY
1	12/04/14	PER ADDENDUM 3	BRF

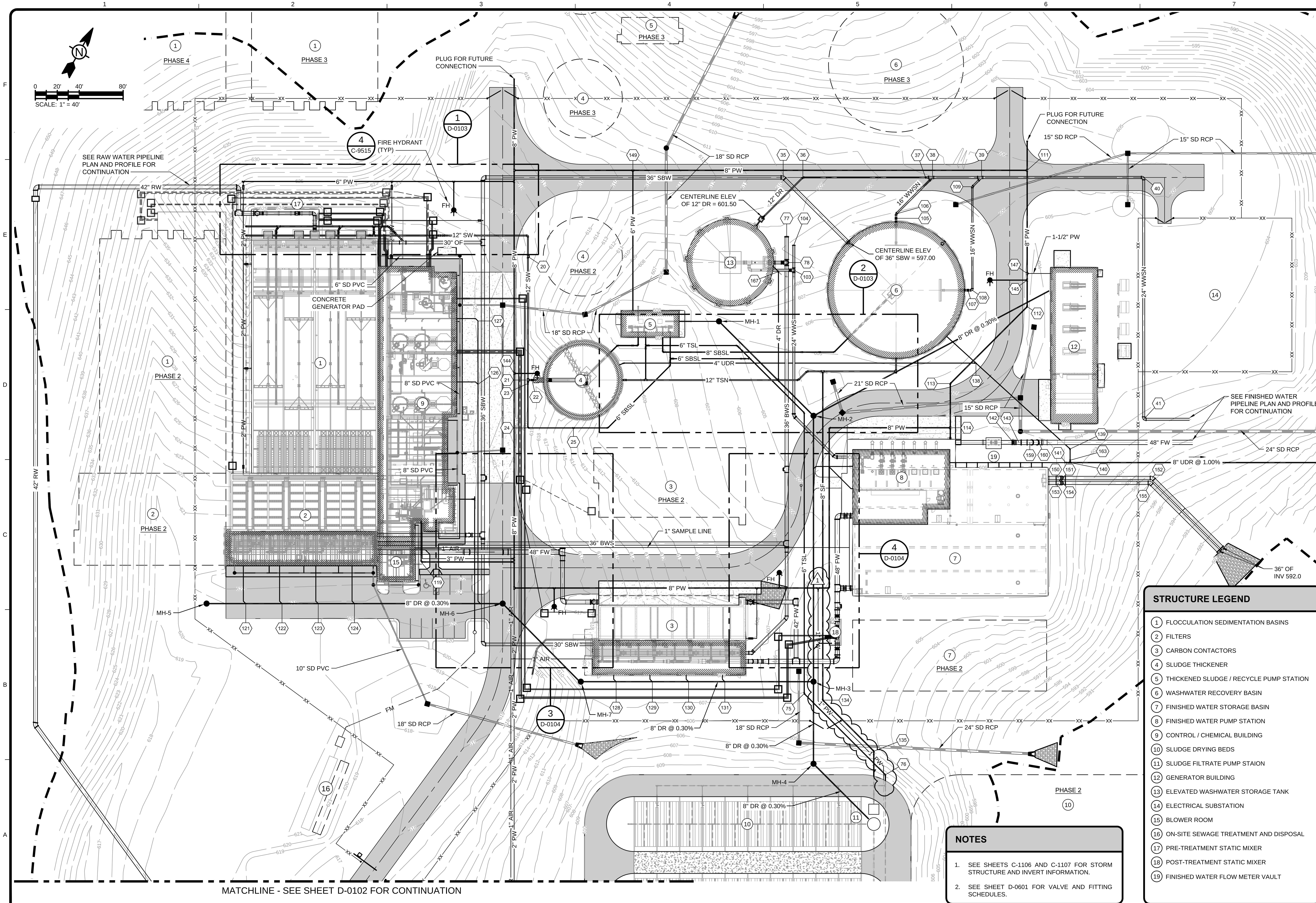
HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

GENERATOR BUILDING
WALL SECTIONS DOOR AND WINDOW TYPES

Project No.:	200-11740-10003
Designed By:	Designer
Drawn By:	Author
Checked By:	Checker

A-8302

Bar Measures 1 inch



STRUCTURE LEGEND

1. FLOCCULATION SEDIMENTATION BASINS
2. FILTERS
3. CARBON CONTACTORS
4. SLUDGE THICKENER
5. THICKENED SLUDGE / RECYCLE PUMP STATION
6. WASHWATER RECOVERY BASIN
7. FINISHED WATER STORAGE BASIN
8. FINISHED WATER PUMP STATION
9. CONTROL / CHEMICAL BUILDING
10. SLUDGE DRYING BEDS
11. SLUDGE FILTRATE PUMP STAION
12. GENERATOR BUILDING
13. ELEVATED WASHWATER STORAGE TANK
14. ELECTRICAL SUBSTATION
15. BLOWER ROOM
16. ON-SITE SEWAGE TREATMENT AND DISPOSAL
17. PRE-TREATMENT STATIC MIXER
18. POST-TREATMENT STATIC MIXER
19. FINISHED WATER FLOW METER VAULT

NOTES

1. SEE SHEETS C-1106 AND C-1107 FOR STORM STRUCTURE AND INVERT INFORMATION.
2. SEE SHEET D-0601 FOR VALVE AND FITTING SCHEDULES.

TETRA TECH
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097
www.tetratech.com

BID SET

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	CIS

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

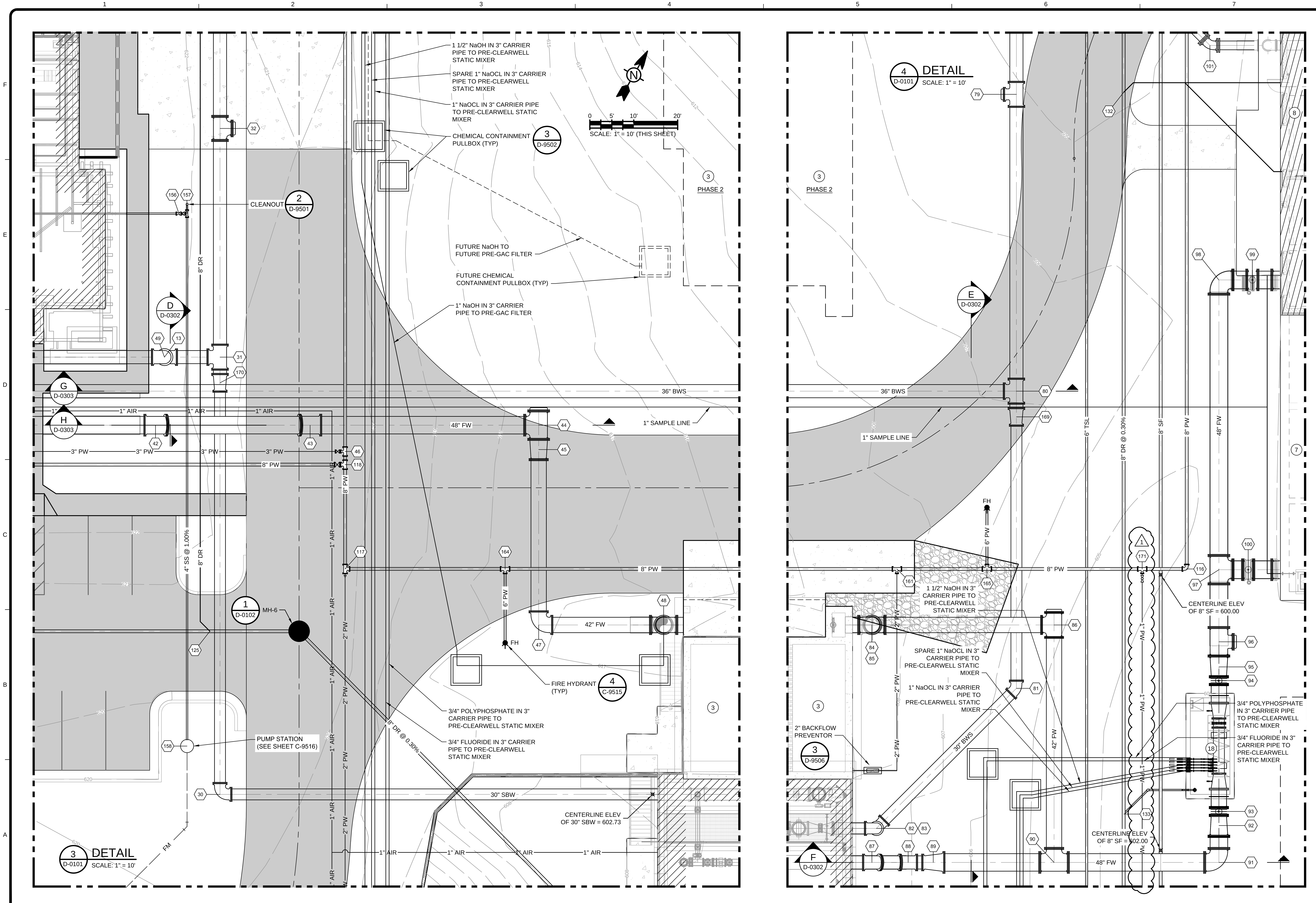
OVERALL YARD PIPING PLAN

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	CIS
Checked By:	JKK

D-0101

Bar Measures 1 inch

12/2/2014 10:29:14 AM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\TREATMENT PLANT\WTP-D-010X YARD PIPING PLANS.DWG - SANFORD, CHADWICK



1 1/2" NaOH IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
SPARE 1" NaOCL IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
1" NaOCL IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
CHEMICAL CONTAINMENT PULLBOX (TYP)
3 D-9502
SCALE: 1" = 10' (THIS SHEET)
0 5' 10' 20'
PHASE 2
CLEANOUT
2 D-9501
FUTURE NaOH TO FUTURE PRE-GAC FILTER
FUTURE CHEMICAL CONTAINMENT PULLBOX (TYP)
1" NaOH IN 3" CARRIER PIPE TO PRE-GAC FILTER
D D-0302
G D-0303
H D-0303
36" BWS
1" AIR
48" FW
3" PW
8" PW
8" DR
1" SAMPLE LINE
4" SS @ 1.00%
1 D-0102
MH-6
6" PW
FH
42" FW
FIRE HYDRANT (TYP)
4 C-9515
3/4" POLYPHOSPHATE IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
3/4" FLUORIDE IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
PUMP STATION (SEE SHEET C-9516)
8" DR @ 0.30%
2" PW
30" SBW
CENTERLINE ELEV OF 30" SBW = 602.73
FM
3 DETAIL D-0101 SCALE: 1" = 10'
4 DETAIL D-0101 SCALE: 1" = 10'
E D-0302
6" TSL
8" DR @ 0.30%
8" SF
8" FW
48" FW
1 1/2" NaOH IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
CENTERLINE ELEV OF 8" SF = 600.00
SPARE 1" NaOCL IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
1" NaOCL IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
3/4" POLYPHOSPHATE IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
3/4" FLUORIDE IN 3" CARRIER PIPE TO PRE-CLEARWELL STATIC MIXER
2" BACKFLOW PREVENTOR
3 D-9506
30" BWS
1" PW
CENTERLINE ELEV OF 8" SF = 602.00
F D-0302

12/2/2014 10:30:23 AM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\TREATMENT PLANT\WTP-D-010X YARD PIPING PLANS.DWG - SANFORD, CHADWICK

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	CIS

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

YARD PIPING ENLARGED PLANS

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	CIS
Checked By:	JKK

D-0104

Bar Measures 1 inch

COORDINATE DATA TABLE

ID	ITEM	DIAMETER (IN)	SERVICE	NORTHING	EASTING	ELEV OF CENTERLINE OF PIPE	NOTES	TAG
1	90° BEND	42	RW	1,447,330.73	489,296.00	618.00	ROTATE TO FIT	
2	TEE	42 X 42	RW	1,447,309.85	489,307.84	618.00	WITH PLUG	
3	90° BEND	42	RW	1,447,318.07	489,322.33	618.00		
4	CO	12	DR	1,447,302.77	489,319.51	615.50		
5	CO	12	SW	1,447,295.52	489,323.62	617.50		
6	TEE	6 X 2	PW	1,447,337.13	489,297.16	621.75	WITH PLUG	
7	TEE	6 X 2	PW	1,447,403.84	489,414.81	618.50		
8	WYE	12 X 12	DR	1,447,317.78	489,345.97	615.50		
9	WYE	12 X 12	DR	1,447,345.73	489,395.27	615.50		
10	45° BEND	12 X 12	DR	1,447,366.72	489,432.29	615.50		
11	WYE	30 X 12	OF	1,447,361.19	489,452.28	615.50		
12	22.5° BEND	30	OF	1,447,385.55	489,495.23	615.50		
13	90° BEND	36	SBW	1,447,158.32	489,634.80	605.35		
14	TEE	12 X 12	OF	1,447,360.15	489,420.71	615.50	ROTATE TO FIT	
15	TEE	12 X 12	SW	1,447,352.90	489,424.82	617.50		
16	PV	12	SW	1,447,351.18	489,421.78	617.50		20-PV-3
17	45° BEND	12	SW	1,447,382.42	489,476.87	617.50		
18	45° BEND	12	SW	1,447,384.14	489,479.91	614.00		
19	90° BEND	12	SW	1,447,422.12	489,546.89	614.00		
20	TEE	12 X 12	SW	1,447,405.52	489,556.31	614.07		
21	TEE	12 X 12	SW	1,447,307.61	489,611.82	614.50		
22	PV	12 X 12	SW	1,447,309.46	489,615.08	614.50		50-PV-1
23	RED	12 X 6	SBSL	1,447,304.90	489,613.36	614.50		
24	90° BEND	6	SBSL	1,447,269.67	489,633.33	614.50	ROTATE TO FIT	
25	11.25° BEND	6	SBSL	1,447,290.13	489,669.41	606.00		
26	45° BEND	6	SBSL	1,447,305.57	489,696.64	606.00		
27	45° BEND	6	SBSL	1,447,383.00	489,718.04	600.00		
28	PV	6	SBSL	1,447,386.27	489,716.19	600.00		52-PV-4
29	TEE	6 X 6	SBSL	1,447,388.44	489,714.96	600.00		
30	90° BEND	30	SBW	1,447,077.94	489,694.92	605.00		
31	TEE	36 X 36	SBW	1,447,164.56	489,645.80	605.35	ROTATE TO FIT	
32	TEE	36 X 36	SBW	1,447,209.87	489,620.11	605.53	WITH PLUG	
33	TEE	36 X 30	SBW	1,447,396.39	489,514.35	606.29	ROTATE TO FIT	
34	90° BEND	36	SBW	1,447,447.93	489,485.13	606.50		
35	45° BEND	36	SBW	1,447,582.81	489,723.02	598.00		
36	45° BEND	12	DR	1,447,591.67	489,738.63	600.50		
37	RED	24X 12	DR	1,447,646.78	489,835.82	593.67		
38	WYE	24X 16	WWSN	1,447,649.90	489,841.33	593.67		
39	WYE	24X 16	WWSN	1,447,671.92	489,880.17	593.67		
40	90° BEND	24	WWSN	1,447,744.72	490,008.56	593.54		
41	90° BEND	24	WWSN	1,447,553.05	490,117.24	593.32		
42	11.25° BEND	48	FW	1,447,143.84	489,640.67	618.00		
43	11.25° BEND	48	FW	1,447,161.20	489,671.30	611.00		
44	TEE	48 X 48	FW	1,447,186.86	489,716.55	611.00	WITH PLUG	
45	RED	48 X 42	FW	1,447,182.03	489,719.29	611.00		
46	TEE	8 X 3	PW	1,447,159.91	489,681.19	616.50	W/ 3" GV	
47	90° BEND	42	FW	1,447,147.28	489,739.00	611.00	ROTATE TO FIT	
48	90° BEND	42	FW	1,447,161.32	489,763.75	611.00		
49	90° BEND	36	SBW	1,447,158.32	489,634.80	618.00		
50	PV	12	SW	1,447,355.30	489,423.46	617.50		20-PV-4
51	45° BEND	12	SW	1,447,358.41	489,421.70	617.50		
53	90° BEND	12	TSN	1,447,351.12	489,688.56	606.50		
54	TEE	12 X 6	TSN	1,447,360.51	489,705.12	605.74		
55	45° BEND	12	TSN	1,447,429.05	489,825.99	600.00	ROTATE TO FIT	
56	45° BEND	12	TSN	1,447,439.85	489,828.97	600.00	ROTATE TO FIT	
57	TEE	12 X 8	TSN	1,447,446.94	489,841.47	600.00		
58	45° BEND	8	TSL	1,447,375.14	489,667.16	598.83		
59	90° BEND	8	TSL	1,447,384.49	489,683.67	604.00	ROTATE TO FIT	
60	TEE	6 X 6	TSL	1,447,387.86	489,689.61	601.62		
61	PV	6	TSL	1,447,385.69	489,690.84	601.95		51-PV-4
62	90° BEND	8	SBSL	1,447,390.29	489,706.05	604.00	ROTATE TO FIT	
63	45° BEND	8	SBSL	1,447,452.83	489,816.35	601.00		
64	45° BEND	8	SBSL	1,447,460.76	489,830.34	584.92		
65	45° BEND	8	SBSL	1,447,467.29	489,841.85	584.92		
66	PV	6	SBSL	1,447,389.67	489,717.13	600.00		52-PV-5
67	45° BEND	6	SBSL	1,447,420.33	489,771.19	600.00		
68	45° BEND	6	SBSL	1,447,421.81	489,773.80	597.00		
69	PV	6	TSL	1,447,389.10	489,691.78	601.62		51-PV-5
70	45° BEND	6	TSL	1,447,428.87	489,761.93	601.62		
71	45° BEND	6	TSL	1,447,428.34	489,763.86	601.62		
72	45° BEND	6	TSL	1,447,427.11	489,768.31	597.00		
73	WYE	6 X 6	TSL	1,447,424.35	489,778.29	597.00		
74	45° BEND	6	TSL	1,447,405.81	489,845.39	597.00		
75	45° BEND	6	TSL	1,447,183.25	489,971.58	601.00		
76	45° BEND	6	TSL	1,447,155.42	490,072.31	604.00		
77	MJ PLUG	36	BWS	1,447,537.55	489,752.32	594.00	STUB OUT FOR FUTURE CONNECTION	
78	TEE	36 X 30	BWS	1,447,516.93	489,764.01	594.00		
79	TEE	36 X 30	BWS	1,447,353.06	489,856.93	594.00	WITH PLUG	
80	TEE	36 X 36	BWS	1,447,294.26	489,890.25	594.00	ROTATE TO FIT	
81	45° BEND	30	BWS	1,447,235.37	489,923.66	594.00		
82	90° BEND	30	BWS	1,447,191.91	489,911.65	594.00		
83	90° BEND	30	BWS	1,447,191.91	489,911.65	602.67		
84	90° BEND	42	FW	1,447,231.71	489,887.90	611.75		
85	90° BEND	42	FW	1,447,231.71	489,887.90	599.25		
86	TEE	42 X 42	FW	1,447,252.17	489,923.98	599.25	WITH PLUG	
87	22.5° BEND	36	FW	1,447,184.67	489,914.58	602.67		
88	22.5° BEND	36	FW	1,447,188.74	489,921.77	599.25		
89	RED	48 X 36	FW	1,447,191.56	489,926.74	599.25		
90	TEE	48 X 42	FW	1,447,205.12	489,950.66	599.25		
91	90° BEND	48	FW	1,447,223.63	489,983.30	599.25		
92	RED	48 X 42	FW	1,447,230.94	489,979.15	599.25		
93	BFV	42	FW	1,447,233.73	489,977.57	599.25		40-BFV-1
94	BFV	42	FW	1,447,259.65	489,962.87	599.25		40-BFV-2
95	RED	48 X 42	FW	1,447,262.36	489,961.33	599.25		
96	TEE	48 X 36	FW	1,447,267.34	489,958.51	599.25	WITH PLUG	
97	TEE	48 X 48	FW	1,447,281.62	489,950.41	599.25		
98	90° BEND	48	FW	1,447,339.03	489,917.86	599.25		
99	BFV	48	FW	1,447,342.79	489,924.49	599.25		40-BFV-4

COORDINATE DATA TABLE

ID	ITEM	DIAMETER (IN)	SERVICE	NORTHING	EASTING	ELEV OF CENTERLINE OF PIPE	NOTES	TAG
100	BFV	48	FW	1,447,284.91	489,956.21	599.25		40-BFV-3
101	45° BEND	24	WWS	1,447,384.49	489,889.73	592.00		
102	45° BEND	24	WWS	1,447,398.63	489,838.56	592.00		
103	TEE	24 X 24	WWS	1,447,514.04	489,773.12	592.00		
104	MJ PLUG	24	WWS	1,447,533.95	489,761.83	592.00	STUB OUT FOR FUTURE CONNECTION	
105	BFV	16	WWSN	1,447,601.09	489,830.77	593.67		70-BFV-1
106	45° BEND	16	WWSN	1,447,604.57	489,828.80	593.67		
107	BFV	16	WWSN	1,447,576.42	489,920.06	593.67		70-BFV-2
108	90° BEND	16	WWSN	1,447,578.39	489,923.54	593.67		
109	45° BEND	16	WWSN	1,447,660.46	489,877.01	593.67		
110	TEE	8 X 8	PW	1,447,467.64	489,506.71	614.25		
111	TEE	8 X 8	PW	1,447,698.05	489,913.07	602.50		
112	45° BEND	8	PW	1,447,589.95	489,974.36	601.00		
113	45° BEND	8	PW	1,447,494.54	489,948.00	601.50		
114	TEE	8 X 8	PW	1,447,459.54	489,967.85	601.50		
115	90° BEND	8	PW	1,447,405.17	489,871.96	601.50		
116	90° BEND	8	PW	1,447,278.16	489,943.98	601.50	ROTATE TO FIT	
117	TEE	8 X 8	PW	1,447,136.64	489,694.38	616.50	ROTATE TO FIT	
118	TEE	8 X 8	PW	1,447,157.30	489,682.67	616.50	W/ 8" GV	
119	90° BEND	8	PW	1,447,115.53	489,608.99	612.00		
120	TEE	8 X 6	PW	1,447,458.79	489,511.72	614.50		
121	WYE	8 X 4	DR	1,447,003.74	489,488.75	611.50		
122	WYE	8 X 4	DR	1,447,020.02	489,517.46	611.40		
123	WYE	8 X 4	DR	1,447,036.30	489,546.16	611.30		
124	WYE	8 X 4	DR	1,447,052.57	489,574.87	611.20		
125	WYE	8 X 8	DR	1,447,109.11	489,674.59	610.85		
126	WYE	8 X 4	DR	1,447,281.78	489,574.16	611.41		
127	WYE	8 X 4	DR	1,447,331.99	489,545.70	611.57		
128	WYE	8 X 4	DR	1,447,108.24	489,817.22	596.41		
129	WYE	8 X 4	DR	1,447,124.51	489,845.92	596.31		
130	WYE	8 X 4	DR	1,447,140.79	489,874.63	596.21		
131	WYE	8 X 4	DR	1,447,157.07	489,903.34	596.10		
132	WYE	8 X 4	DR	1,447,365.51	489,877.94	593.18		
133	WYE	8 X 4	DR	1,447,222.52	489,959.02	592.69		
134	45° BEND	8	SF	1,447,186.42	489,989.18	602.00		
135	45° BEND	8	SF	1,447,168.90	490,052.59	602.00		
136	TEE	12 X 12	TSN	1,447,479.85	489,899.52	602.50	WITH PLUG	
137	22.5° BEND	4	UDR	1,447,364.06	489,680.10	600.07		
138	WYE	4 X 4	UDR	1,447,522.27	489,959.12	586.58		
139	45° BEND	4	UDR	1,447,496.52	490,072.27	586.33		
140	TEE	8 X 4	UDR	1,447,485.72	490,078.40	584.17	ROTATE TO FIT	
141	RED	8 X 4	UDR	1,447,483.74	490,074.91	584.17		
142	BFV	42	FW	1,447,476.17	490,024.23	600.00		42-BFV-7
143	RED	48 X 42	FW	1,447,478.71	490,028.69	600.00		
144	TEE	8 X 6	PW	1,447,306.66	489,597.98	616.50		
145	TEE	8 X 6	PW	1,447,611.06	489,962.39	601.29		
146	45° BEND	8	TSL	1,447,381.94	489,679.17	598.83		
147	SERVICE SADDLE	8 X 1-1/2	PW	1,447,616.28	489,959.43	601.37		
149	TEE	8 X 6	PW	1,447,520.96	489,600.74	610.68		
150	45° BEND	36	OF	1,447,468.19	490,075.87	599.75		
151	45° BEND	36	OF	1,447,470.41	490,079.79	595.37		
152	45° BEND	36	OF	1,447,510.50	490,150.49	593.78		
153	45° BEND	36	OF	1,447,464.28	490,078.09	599.75		
154	45° BEND	36	OF	1,447,466.50	490,082.01	595.30		
155	45° BEND	36	OF	1,447,505.67	490,151.09	593.75		
156	45° BEND	4	SS	1,447,188.38	489,621.56	614.30		
157	TEE	4 X 4	SS	1,447,189.29	489,623.16	612.46	WITH CLEANOUT	
158	PUMP STATION	4	SS	1,447,083.80	489,682.97	611.29		
159	22.5° BEND	48	FW	1,447,483.64	490,037.39	600.00		
160	22.5° BEND	48	FW	1,447,487.81	490,044.74	596.50		
161	TEE	8 X 2	PW	1,447,245.61	489,886.57	604.92	ROTATE TO FIT	
162	PV	12	SW	1,447,364.72	489,439.52	615.50		20-PV-5
163	45° BEND	4	UDR	1,447,487.60	490,077.33	586.33		
164	TEE	8 X 6	PW	1,447,154.61	489,726.07	614.50		
165	TEE	8 X 6	PW	1,447,255.72	489,904.40	603.86		
166	TEE	6 X 6	PW	1,447,431.66	489,463.88	615.25		
167	45° BEND	4	DR	1,447,506.03	489,761.57	597.52		
168	WYE	8 X 4	DR	1,447,419.58	489,810.59	596.86		
169	RED	36 X 30	BWS	1,447,289.17	489,893.15	594.00		
170	RED	36 X 30	SBW	1,447,159.47	489,648.63	606.33		
171	TAPPING SADDLE	8 X 1	PW	1,447,273.16	489,935.15	602.03	W/ 1" CORP STOP	

1

DRAIN MANHOLE SCHEDULE

MANHOLE	RIM ELEV	CONNECTED PIPES	NORTHING	EASTING
MH-1	606.39	E INV = 596.75 SW INV = 596.78	1,447,439.96	489,736.82
MH-2	604.40	W INV = 596.38 SE INV = 593.32 NE INV = 595.30	1,447,407.56	489,854.10
MH-3	605.04	NW INV = 592.60 SE INV = 592.52 SW INV = 595.86	1,447,196.88	489,973.55
MH-4	608.35	NW INV = 592.30 E INV = 592.23	1,447,131.78	490,010.46
MH-5	620.38	NE INV = 611.60	1,446,986.11	489,457.66
MH-6	620.30	E INV = 600.50 SW INV = 610.79	1,447,119.13	489,692.25
MH-7	607.32	W INV = 600.21 NE INV = 596.50	1,447,092.35	489,789.19

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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DAUGHERTY

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	CIS

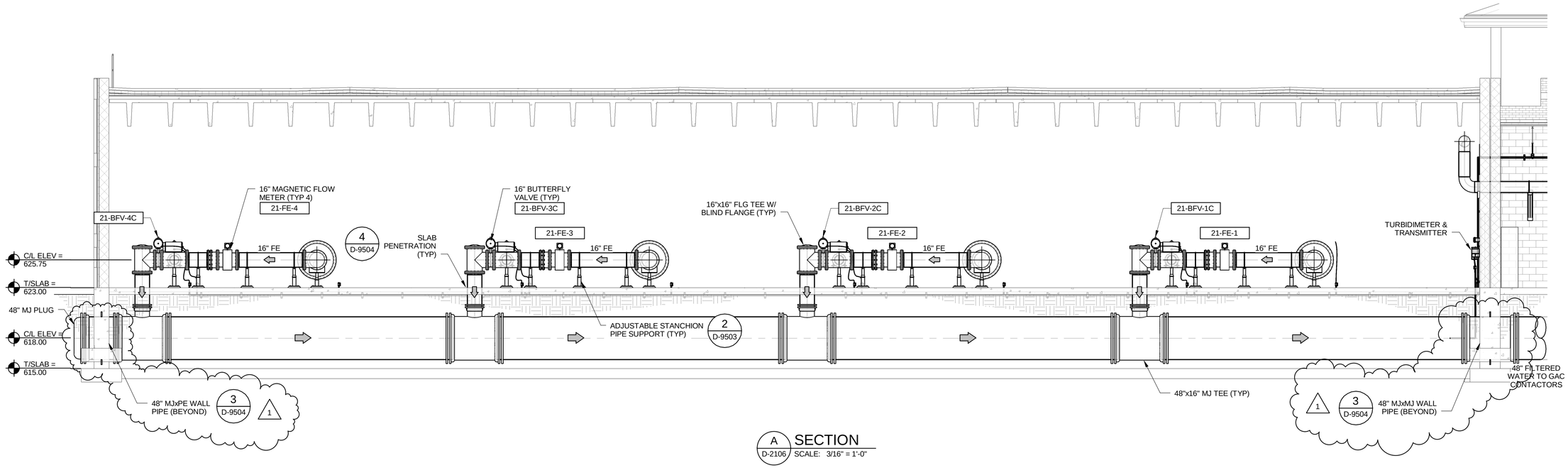
HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

YARD PIPING SCHEDULES

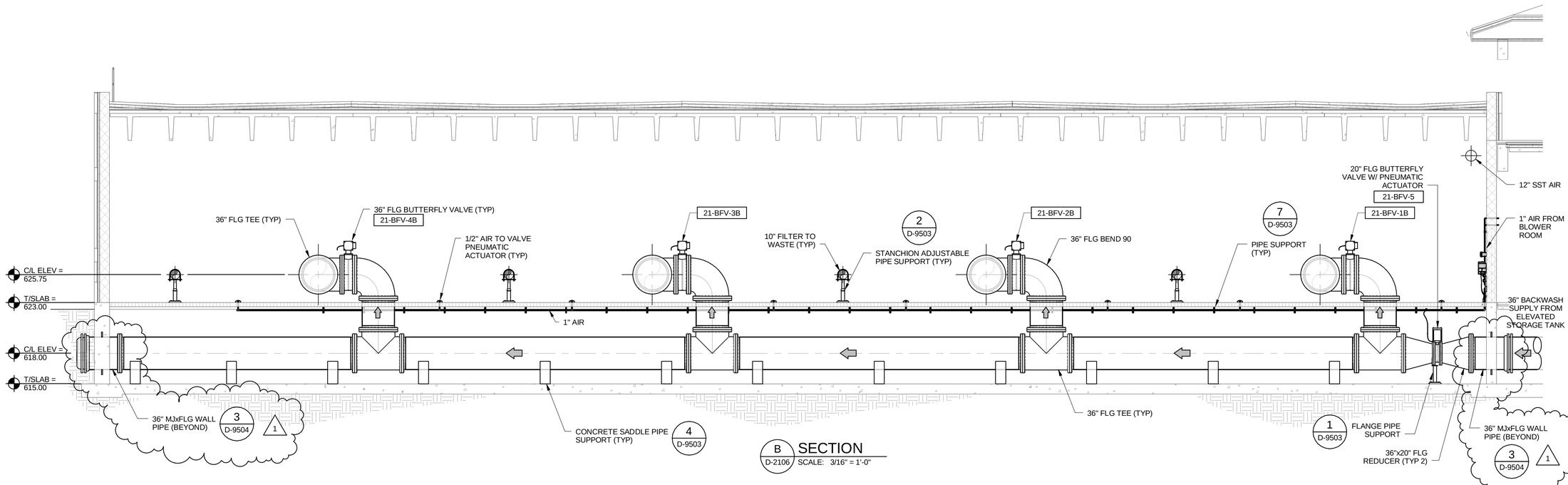
Project No.: 200-11740-10003
Designed By: JPT
Drawn By: CIS
Checked By: JKK

D-0601

Bar Measures 1 inch



A SECTION
D-2106 SCALE: 3/16" = 1'-0"



B SECTION
D-2106 SCALE: 3/16" = 1'-0"

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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DANIELEY

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	JTE

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

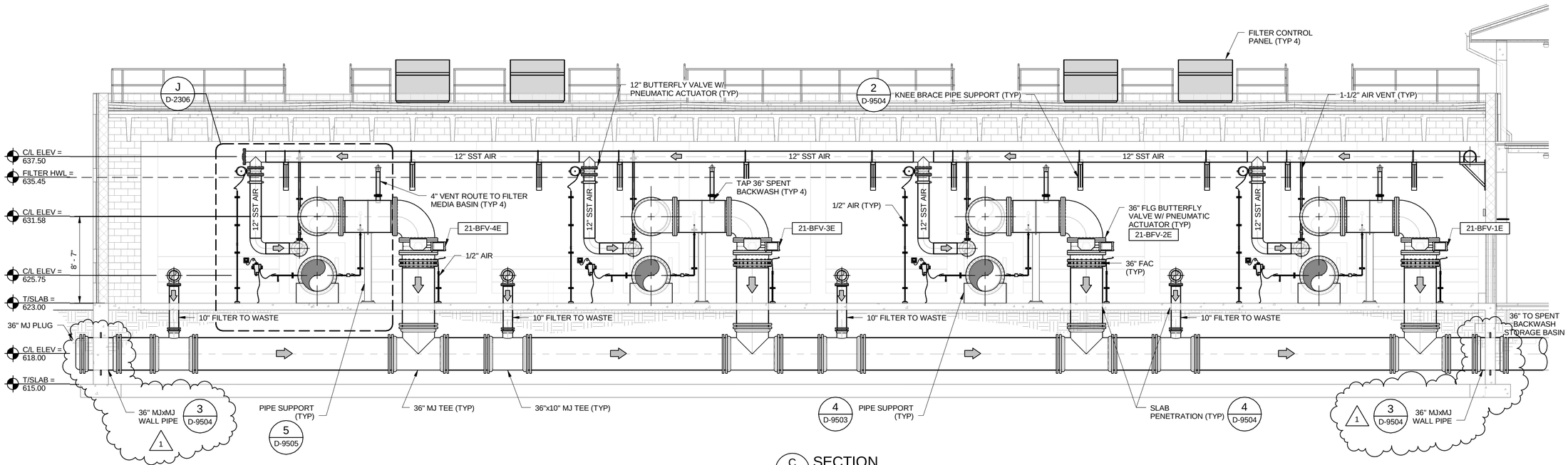
FILTERS & PIPE GALLERY SECTIONS

Project No.:	200-11740-10003
Designed By:	JCB
Drawn By:	JTE
Checked By:	JPT

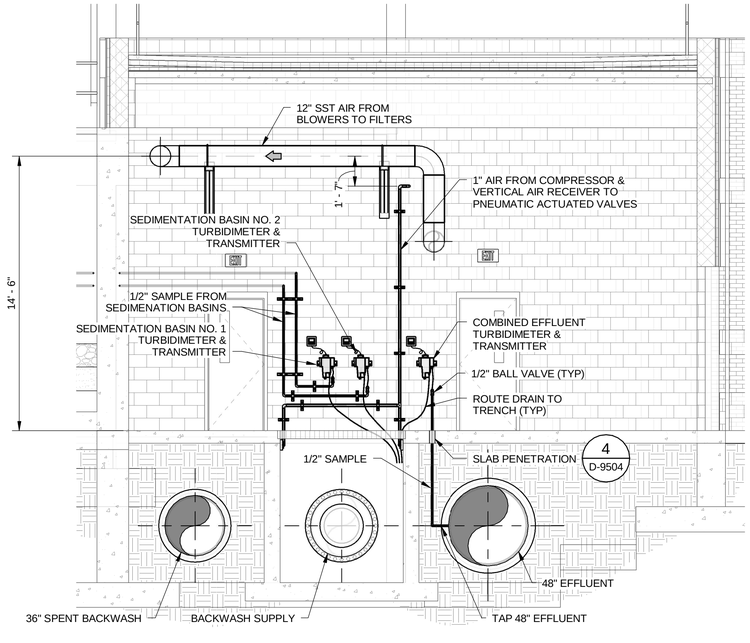
D-2303

Bar Measures 1 inch

12/1/2014 10:24:06 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\WTP-11740-D-MAINPR_jon.evans.rvt



C SECTION
D-2106 SCALE: 3/16" = 1'-0"



D SECTION
D-2106 SCALE: 1/4" = 1'-0"

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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	JTE

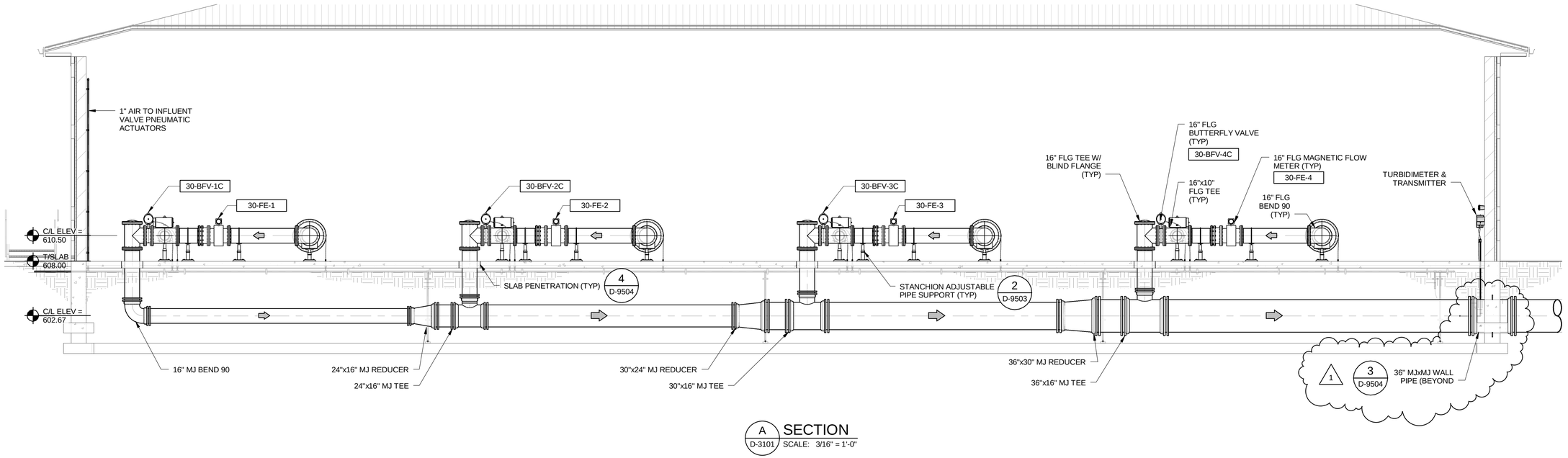
HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

FILTERS & PIPE GALLERY SECTIONS

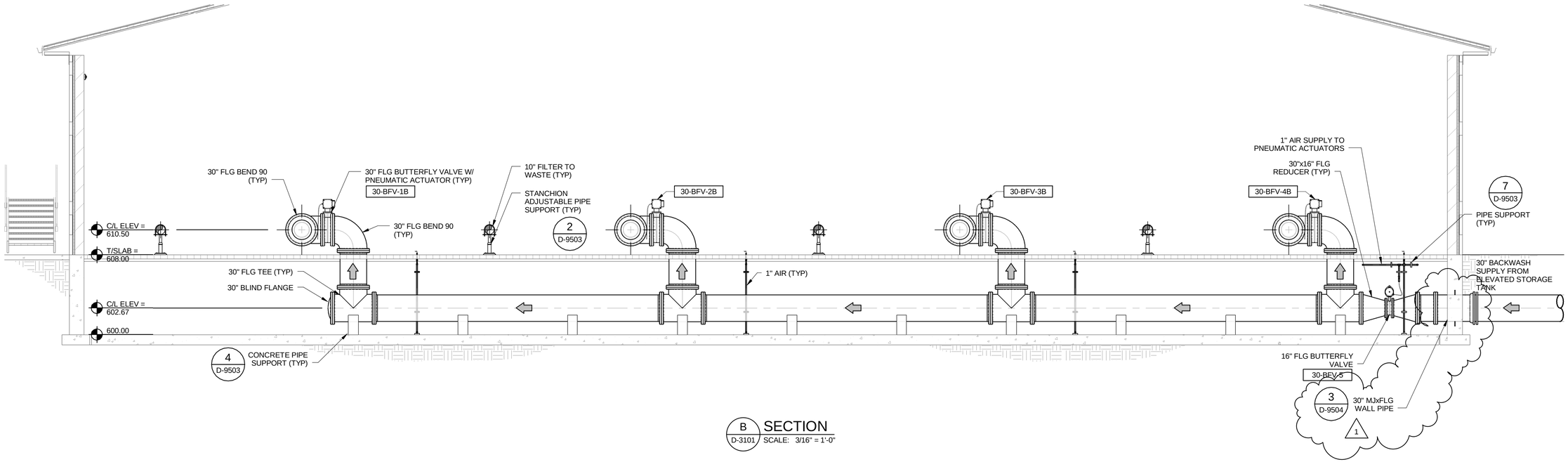
Project No.:	200-11740-10003
Designed By:	JCB
Drawn By:	JTE
Checked By:	JPT

D-2304

Bar Measures 1 inch



A D-3101 SECTION
SCALE: 3/16" = 1'-0"



B D-3101 SECTION
SCALE: 3/16" = 1'-0"

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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DOMINEY

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	JTE

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

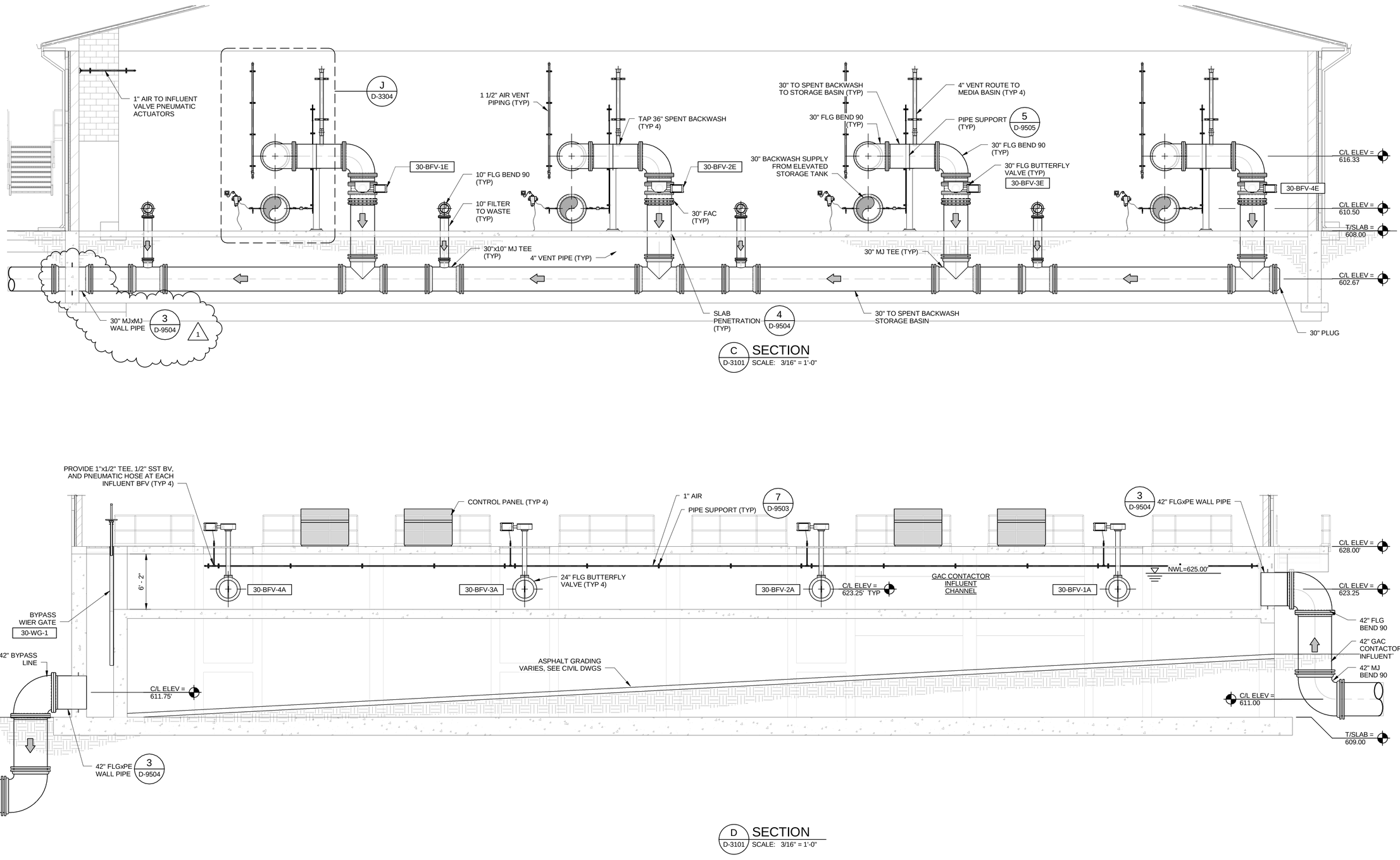
GAC/BAC FILTERS & PIPE GALLERY SECTIONS

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	RLM
Checked By:	JEC

D-3301

Bar Measures 1 inch

12/1/2014 11:15:27 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\WTP-11740-D-GACBAC_jon.evans.rvt



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BID SET

ALABAMA LICENSED No. 24033 PROFESSIONAL ENGINEER CHRISTIAN P. DARNELL

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	JTE

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

GAC/BAC FILTERS & PIPE GALLERY SECTIONS

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	RLM
Checked By:	JEC

D-3302

Bar Measures 1 inch

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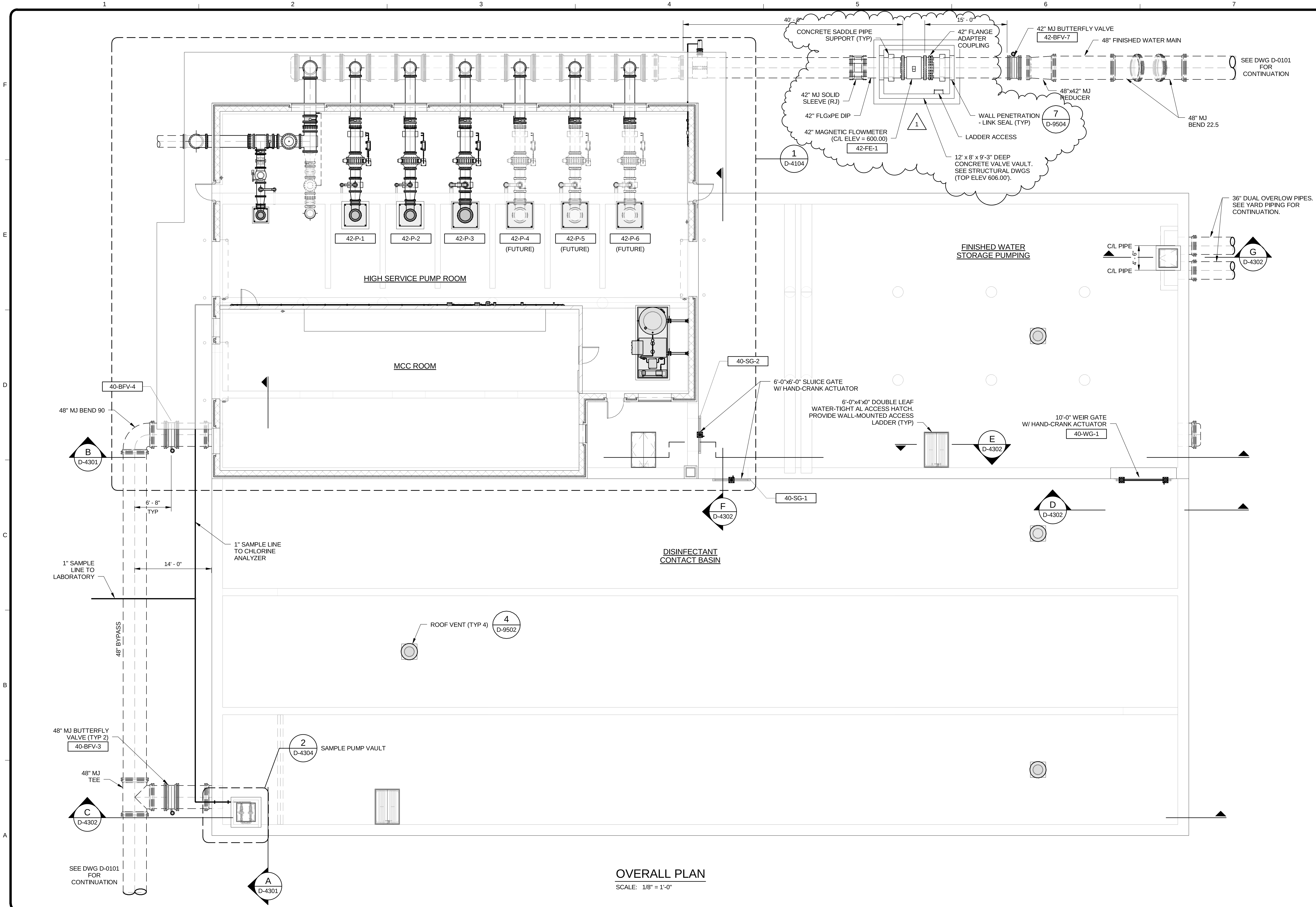

OVERALL PLAN

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

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BID SET

MARK	DATE	DESCRIPTION	BY
1	12/10/14	PER ADDENDUM #3	JTE

HUNTSVILLE UTILITIES

SOUTHEAST WATER TREATMENT PLANT

DISINFECTANT CONTACT & FINISHED WATER STORAGE BASIN PLAN

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	RLM
Checked By:	JEC

D-4103

Bar Measures 1 inch

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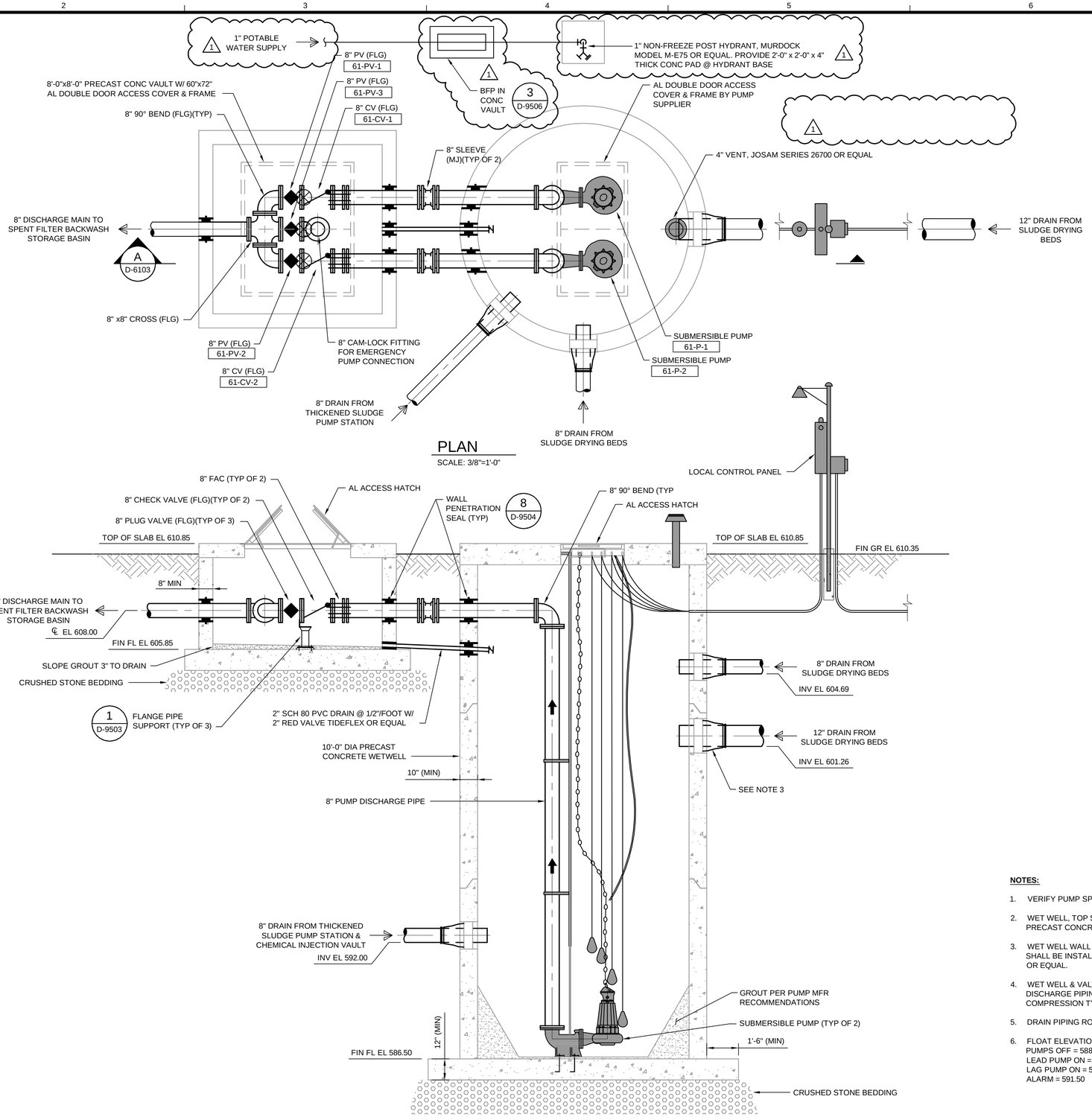

NOTES:

1. VERIFY PUMP SPACING & HATCH SIZES W/ PUMP MFR.
2. WET WELL, TOP SLAB & VALVE VAULT SHALL BE OF PRECAST CONCRETE.
3. WET WELL WALL PENETRATIONS FOR INFLUENT LINES SHALL BE INSTALLED WITH KOR-N-SEAL CONNECTORS OR EQUAL.
4. WET WELL & VALVE VAULT WALL PENETRATIONS FOR DISCHARGE PIPING & DRAIN SHALL BE INSTALLED W/ COMPRESSION TYPE WALL SEALS.
5. DRAIN PIPING ROTATED FOR CLARITY.
6. FLOAT ELEVATIONS:
   PUMPS OFF = 588.00
   LEAD PUMP ON = 590.50
   LAG PUMP ON = 591.00
   ALARM = 591.50

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BID SET

ALABAMA LICENSED No. 24033 ENGINEER CHRISTIAN P. DARNELL

MARK	DATE	DESCRIPTION	BY
1	12/01/14	PER ADDENDUM #3	JTE

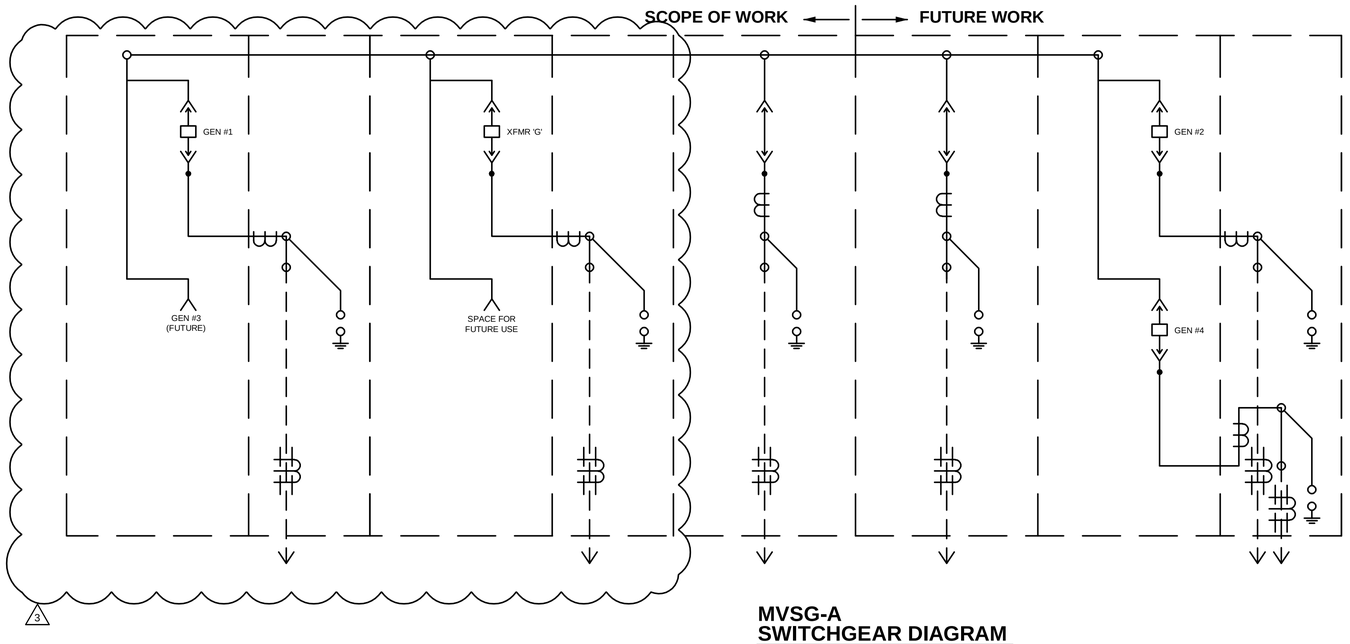
HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT

SLUDGE FILTRATE PUMP STATION PLAN & SECTION

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

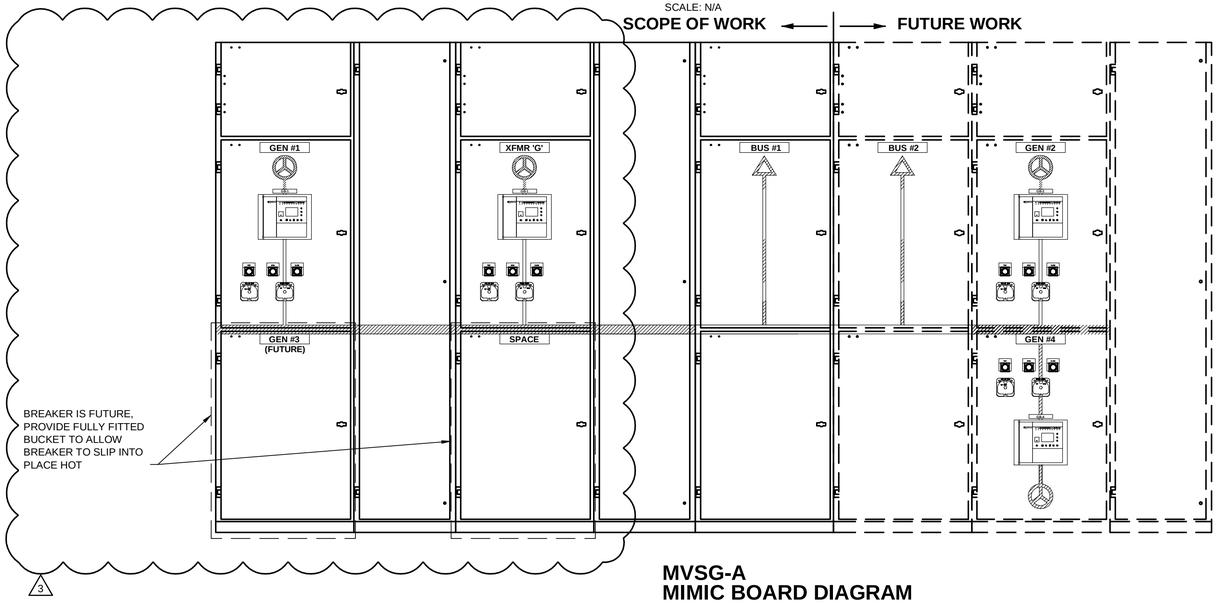
D-6103

Bar Measures 1 inch



MVSG-A
SWITCHGEAR DIAGRAM

SCALE: N/A



MVSG-A
MIMIC BOARD DIAGRAM

SCALE: N/A

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BID SET

ALABAMA LICENSED No. 21038 PROFESSIONAL ENGINEER DAVID ANDREW BUCKER

MARK	DATE	DESCRIPTION	BY
2	11/19/14	ADDENDUM #2	DAB
3	12/4/14	ADDENDUM #3	DAB

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT
ELECTRICAL SECTION VIEW

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

E-8302

Bar Measures 1 inch