ADDENDUM NUMBER 1

LAKE HARTWELL WTP OGS IMPROVEMENTS
FOR
ANDERSON REGIONAL JOINT WATER SYSTEM
GMC PROJECT NO. CGRE230068

1. **Revisions to the Project Manual**

1.1. The following revisions are hereby added as Addendum No. 1 to the referenced Project Manual and Plans and shall be considered when preparing bids. All documents listed below are included with this Addendum.

- Revise Specification 01 10 00 to reflect requirements for owner furnished equipment.
- Addition of Specification 08 16 13 – Fiberglass Reinforced Plastic (FRP) Doors and Frames
- Revise Specification 46 33 44 to reflect proposed hose pump.
- Update Sheet I-801: Addition of WS8104 and valving. Addition of PRV and connection to softened water line to T8101.
- Update Sheet I-811: Additional nozzle on T8501 and T8502.
- Update Sheets D-801 and D-802: Addition of WS8104 and valving.
- Update sheets D-811 and D-812: Addition of PRV and connection to softened water line to T8101. Additional nozzle on T8501 and T8502.

2. **Questions**

2.1. Please confirm that owner is responsible for employing a material testing firm for this project.

Answer: Materials testing will be the responsibility of the contractor, per specification 01 40 10.

2.2. Are digital signatures for bid documents acceptable in lieu of wet ink signatures?

Answer: No

2.3. Can the Engineer confirm that demolition of all equipment (tanks, pipe, concrete, etc.) will be performed by the Owner as stated in specification section 01 10 00, 1.8, A.

Answer: The demolition plan sheets will be updated and reissued to reflect work performed by the Owner. Updates will be made in a later addendum prior to bid opening.

2.4. Can the Engineer confirm that storage of Owner provided equipment will be the responsibility of the Owner?

Answer: Receiving and storing Owner purchased equipment will be the responsibility of the contractor. See updated Specification 01 10 00 Section 1.7.

2.5. Can the Engineer confirm the depth of asphalt resurfacing for alternate No. 2?

Answer: Refer to detail on sheet C-901.

2.6. Can the Engineer confirm that in specification section 01 40 10, 1.1, D, "the Contractor is required to have geotechnical analysis performed on any fill material to ensure if meets the earthwork/backfill specifications", is required?

Answer: Yes. All materials testing (geotechnical, concrete, etc.) shall be paid for by the Contractor and included in the base bid as incidental to the work.

2.7. Can the Engineer please provide a painting schedule regarding specification section 09 96 00?

Answer: Painting is only required for interior walls.

2.8. Can the Engineer please provide a material for the Door Replacement on Alternate No. 1?

Answer: Refer to Specification 08 16 13 – Fiberglass Reinforced Plastic (FRP) Doors and Frames.

2.9. Is there currently a temporary chemical feed system? Is so, will the contractor be responsible for maintaining this system?

Answer: There is a temporary chemical feed system in place. The Owner will be responsible for maintaining the system during construction.

2.10. What chemicals are currently being used for the chemical feed system? What are the dosages being used?

Answer: There is a temporary chemical feed system in place. The Owner will be responsible for maintaining the system during construction.

2.11. Is asbestos or lead expected to be encountered during demolition?

Answer: Unknown. Contractor to take necessary precautions to confirm.

2.12. Will the Owner be responsible for supplying chemicals & storage totes during temporary dosing operations?

Answer: There is a temporary chemical feed system in place. The Owner will be responsible for maintaining the system during construction.

2.13. Can the approximate cost of Owner provided equipment please be provided for insurance purposes?

Answer: Approximately $1.2 million.

2.14. Please confirm the tank manufacturers are responsible for selecting a resin system for the stored chemicals service.

Answer: Yes.

2. Acknowledgement

2.1 Receipt of Addendum No. 1 shall be acknowledged in two ways:

2.1.1 Note on Bid Form of the Project Manual – Bidder acknowledges receipt of "Addendum No. 1" and date of "September 12, 2024".

AND

2.1.3 EMAIL Goodwyn Mills Cawood, LLC immediately at becca.pick@gmcnetwork.com

3. Attachments

3.1 Specifications 46 33 44, 01 10 00, and 08 16 13

3.2 Sheets I-801, I-811, D-801, D-802, D-811, D-812.

4. Conclusion

4.1 This is the end of Addendum Number 1, dated Wednesday, September 12, 2024.

Hannah Ribelin, EIT

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

A. This section includes drawing and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections.

1.2 RELATED DOCUMENTS

1.3 SUMMARY

A. Section Includes:

1. Project Information
2. Work Covered by Contract Documents
3. Work Sequence
4. Contractor-Furnished
5. Work by Owner
6. Access to Site
7. Coordination with Occupants
8. Work Restrictions
9. Adverse Weather
10. Specification and Drawing Conventions
11. Warranties

B. Related Requirements:

1. Section 01 50 00 - Temporary Facilities and Controls for limitations and procedures governing temporary use of Owner's facilities.

1.4 PROJECT INFORMATION

A. Project Identification: **Lake Hartwell WTP OGS Improvements**

1. Project Location: **998 Hunters Trail, SC 29625**

B. Owner: **Anderson Regional Joint Water System (ARJWS)**

1. Owner's Representative: **Jeff Caldwell, PE; Deputy Director**

C. Engineer: Goodwyn Mills Cawood, LLC; **Greenville, SC**

D. Engineer’s Consultants: The Engineer has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. **Electrical** – **Howard Engineering; Marietta, SC**

2. **Mechanical – Carolina Engineering Services; Greenville, SC**

E. Contractor: TBD.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The construction and modifications consist of the following:

a. Process Engineering / Treatment
b. Electrical Work and Controls
c. Any Other Subconsultants

B. Type of Contract:

1. Project will be constructed as a design-bid-build (DBB) contract.

1.6 WORK SEQUENCE

A. Contractor shall arrange the Work so that at no time shall it cause unnecessary interruption to the operation of existing facilities. Contractor shall prepare and submit to Engineer for approval, a complete detailed working schedule setting forth the sequence of operations the Contractor proposes to follow.

1.7 OWNER-FURNISHED EQUIPMENT

A. Owner's Responsibilities:

1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples to Contractor.
2. Arrange and pay for delivery to Site.
3. Upon delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:

1. Review Owner-reviewed Shop Drawings, Product Data, and Samples.
2. Receive and unload products at Site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install, and finish products.
4. Repair or replace items damaged after receipt.

C. Items furnished by Owner for installation by Contractor:

1. On-Site Hypochlorite Generation System. The Suppliers' (CleanWater1) scope of scope of supply is included in Appendix C to the project**.**

1.8 CONTRACTOR-FURNISHED AND INSTALLED PRODUCTS

A. Contractor shall furnish all products indicated in the bid documents. The Work includes unloading, handling, storing, and protecting Contractor-furnished products as directed and turning them over to Owner at Project closeout.

1.9 WORK BY OWNER

A. General: Cooperate fully with Owner so that work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1. Work to be Performed by Owner: **Demolition of existing equipment as defined in demolition plans.**

1.10 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other Contractors on portions of Project.

B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances clear and available to the Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storing materials.

a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.11 COORDINATION WITH OCCUPANTS

A. Limited Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place/install equipment in completed areas of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Engineer will prepare a Certificate of Substantial Completion for each specific phase of the project.
2. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. Upon

occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.

1.12 WORK RESTRICTIONS

A. General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Working hours shall be **coordinated with the owner**. Contractor shall contact the Engineer/Owner when working hours are extended beyond normal business hours or when weekend construction is expected to occur.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to neighbors with the Owner.

1. Obtain written permission from the Engineer before proceeding with disruptive operations.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1.13 ADVERSE WEATHER

A. General

1. Notice of rain delay days with the documentation of the aforementioned sources herein and on-site records must be submitted by the Contractor to the Inspector/Engineer on the **first** working day of every month for the previous month or at the monthly construction meeting as determined at the preconstruction meeting.

B. Definition

1. Adverse weather is defined as the occurrence of a condition that prevents construction activity exposed to weather conditions or access to the site for more than four (4) hours in a day.
2. Adverse weather may also include, if appropriate, “dry-out” or “mud” days.
3. Adverse weather includes days that temperature does not rise above the required temperature for a construction activity.

C. Qualifications

1. Adverse weather conditions having a direct effect on construction progress are to be handled as follows:

a. Precipitation is to be measured by the Contractor using a precipitation gauge on-site. For each month, the number of days (24 hours) that the site experiences precipitation of **0.10 inches or more** shall be totaled, confirmed with the Owner/Inspector, and reported to the Engineer.

b. For each month, the total number of days of 0.10 inches or more of precipitation shall be compared to the number of expected days for that month. The number of expected days with precipitation of 0.10 inches or more shall be established as follows:

1) Identify National Oceanic and Atmospheric (NOAA) weather stations as shown at https://www.ncdc.noaa.gov/cdo-web/search within a 100-mile radius of the project location.

a) If multiple weather stations are found within 100 miles of the project site, the weather station that is the closest to the site shall be used. Compile rain data from the previous 5 years and total the number of days with precipitation of 0.10 inches or more.
b) If a weather station is not found within a 100-mile radius of the site, the following schedule shall be used:

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
8	5	8	5	6	7	7	7	5	5	6	8
(Data from NOAA, > 0.10" Daily Precipitation, January 2017 – May 2024, (Anderson, SC)											

c. Rain delay days will be approved by the Engineer and added to the contract duration only if they exceed the number of expected days for that given month.

2. Adverse weather conditions having an indirect effect due to precipitation are to be handled as follows:

a. Precipitation that occurs beyond the standard baseline which results in "dry-out" or "mud" days.

1) The standard baseline is based on the NOAA's Point Precipitation Frequency (PPF) Estimate for the construction area using the latitude and longitude for a 1-year average recurrence interval and a 60-min time period. This can be found at PF Data Server-PFDS/HDSC/OWP (noaa.gov).

a) Select the desired state from the dropdown arrow or click on the map.
b) Insert the latitude and longitude, address, or select the station that is associated with the project.
c) Use the table generated below the map to identify the standard baseline

3. Adverse weather conditions due to temperature are as follows:

1) Cold Weather concreting shall be per ACI 306.

a) The Contractor shall have a calibrated thermometer onsite, which is logged by the Inspector and Contractor prior to any concrete pours during cold weather.

4. Adverse weather conditions due to wind speeds are as follows:

a. Wind speeds exceeding those permissible to use equipment or to perform certain tasks safely, including but not limited to operating crane(s) or other aerial equipment for construction or erection of a building structure.

1) The Contractor shall have a calibrated wind speed gauge on-site.

5. Adverse weather conditions resulting in compromised project site conditions are as follows:

a. Project site conditions such as mud, pooling of water, ice, or standing snow subsequent to the actual precipitation days, that prevents the performance of activities such as, but not limited to, mass grading, building pad grading, foundations, piping, excavations, backfill, concrete, masonry, etc. operations.

D. Weather Delay Days

1. Adverse weather delay days may be counted if adverse weather prevents work on the project during an event where:

a. Precipitation days for a specific month is greater than the recorded monthly average for a project location indicated above.

1) The number of average rain days shall be subtracted from the number of recorded rain days and the difference shall be the allotted time.

b. Precipitation for a given day is greater than the NOAA's PFF estimate indicated above.

1) One (1) day for each day or consecutive days of precipitation that exceeds the standard baseline.

c. Precipitation of 3.0 inches over a 24-hour period.

1) The number of allotted days shall be at the discretion of the Engineer/Owner based on site conditions, working conditions, and type of construction.
2) Temperature per ACI 306.

E. Exceptions

1. The Contractor shall take into account that certain construction activities are more affected by adverse weather and seasonal conditions than other activities, and that "dry-out" or "mud" days are not eligible to be counted as an Adverse Weather Delay Day until the standard baseline is exceeded. Hence, the Contractor should allow for an appropriate number of additional days associated with the Standard Baseline days in which such applicable construction activities are expected to be prevented and suspended.

F. Record Keeping

1. All Adverse Weather events shall be recorded by the on-site management team.

2. On-site records of daily rain and/or temperature readings shall be kept by the Contractor and may be accepted to verify weather and/or temperature variations which prevent earthwork, foundation and slabs, and/or roofing materials installation. The Inspector shall also be required to maintain on-site records of daily rain and/or temperature.

1.14 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Specification requirements are to be performed by Contractor, unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations.

1.15 WARRANTIES

A. Warranties shall conform to the requirements of the General Conditions.

B. All equipment supplied by the Contractor under these Specifications shall be warranted by the Contractor and the equipment manufacturers for a period of one (1) year. Warranty period shall commence on the date of Substantial Completion.

C. The equipment shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail due to workmanship, design and materials during the warranty period, it shall be replaced by the Contractor and the unit(s) restored to service at no expense to the Owner.

D. The manufacturer’s warranty period shall run concurrently with the Contractor’s warranty or guarantee period. No exception to this provision shall be allowed. The Contractor shall be responsible for obtaining equipment warranties from each of the respective suppliers or manufacturers for all the equipment specified.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 08 16 13 – FIBERGLASS REINFORCED PLASTIC (FRP) DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Fiberglass Reinforced Plastic (FRP) doors and frames
2. Louvers
3. Anchors for FRP frames hollow-metal work.

B. Related Requirements:

1. Section 08 71 00 - Door Hardware for door hardware for FRP doors.

1.2 COORDINATION

A. Coordinate anchorage installation for FRP frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and door plate thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Gel coat description and thicknesses

C. Schedule: Provide a schedule of door and frame work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of FRP door and frame assembly, for tests performed by a qualified testing agency.

B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver FRP doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver frames with two removable spreader bars across bottom of frames.

C. Store vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Corrim Company
2. Chem-Pruf Door Company, Brownsville, Texas.
3. Composite Structures, Inc. (Tiger Door)- Omaha, NB.
4. Approved Equal

B. Source Limitations: Obtain FRP doors and frames from single source from single manufacturer.

2.2 DOORS

A. Door shall be made of fiberglass reinforced plastic (FRP) using resins tailored to a corrosive environment, ultraviolet resistant and have a fiberglass content of 25% by weight over an end grain balsa wood, expanded polyurethane or phenolic coated kraft honeycomb core.

B. The doors shall be flush construction, having no seams or cracks. All mortises shall be prepared at the factory.

C. The doors shall be 1-3/4" thick with a 15 mil (plus or minus 3 mils) color gelcoat and have an R-factor of 12. Secondary painting over pultrusions to achieve color is not acceptable.

2.3 STILES AND RAILS

A. Shall be constructed starting from the outside toward the inside, of a 15-20 mil gel coat of the color specified followed by a matrix of at least two layers of 1.5 ounce per square foot of fiberglass mat, plus one layer of fiberglass cloth.

B. The stile and rail shall be the exact dimensions of the door. Pultrusions will be acceptable for stiles and rails.

2.4 DOOR PLATES

A. Door plates shall be molded in one continuous piece, starting with a 15-20 mil gel coat of the color specified, integrally molded with at least two layers of 1.5 ounce per square foot fiberglass mat and layer of 16 ounce per square yard unidirectional glass roving.

2.5 REINFORCEMENT

A. Adequate reinforcing and compression members shall be used to accommodate surface hinges, closers, locksets, kickplates, push or pull plates.

B. When engineering considerations dictate, mild steel is buried in the fiberglass matrix to provide enhanced screw holding power.

C. When thru-bolting is to occur, a compression member is to be located which will provide memory and resistance to the torqueing of thru-bolts.

2.6 2.5 COATING

A. The color of the door or frame shall be integrally molded as the part is made.

2.7 2.6 FRAMES

A. Frames shall be similar to the doors in construction and materials except the frames shall be solid fiberglass.

B. The stop and frame will be molded all in one piece.

C. The frame shall be integrally gel-coated to the customer's color when molded or pultruded and finished with a polyurethane coating.

D. Mortises shall be factory prepared.

E. Reinforcement for mounting hinges, closers, etc., shall be either of mild steel plates or fiberglass. Steel plates shall be encapsulated in the resin-glass matrix.

F. The jamb shall conform dimensionally to standard hollow metal jambs but may be flat on the backside.

2.8 LOUVERS

A. Louvers shall be identical to the doors in construction and materials or 304 stainless steel.

B. The fins shall be solid fiberglass or 304 stainless steel.

2.9 TRANSOMS:

A. All transoms shall be identical to the doors in construction, materials, thickness, and reinforcement.

2.10 HARDWARE:

A. All hardware (locksets, hinges, closers, etc.) shall be installed at the door manufacturing plant.

B. The hardware manufacturer's warranty shall be included with the hardware installation.

C. Hardware is specified elsewhere in Division 8.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove shipping spreaders installed at factory.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install FRP doors, frames and accessories work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. FRP Frames: Install FRP frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. Install frames with removable stops located on secure side of opening.
    b. Install door silencers in frames before grouting.
    c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
6. In-Place Concrete or Masonry Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. FRP Doors: Fit FRP doors accurately in frames, within clearances specified below. Shim as necessary.

1. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
2. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
3. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
4. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

D. Glazing:

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from FRP work immediately after installation.

C. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

END OF SECTION 08 16 13

SECTION 46 33 44 - PERISTALTIC METERING PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Peristaltic metering pumps and accessories.
2. Valves and Appurtenances.
3. Fabricated enclosure.

B. Related Requirements:

1. Division 26 – Electrical.
2. Division 27 – Communication.
3. Division 40 – Process Interconnections.
4. Section 43 41 45 – Fiberglass Reinforced Plastic Tanks.

1.2 REFERENCE STANDARDS

A. U.S. General Services Administration:

1. ZZ-R-765 - Commercial Item Description: Rubber, Silicone.

B. Instrument Society of America (ISA):

1. ISA 5.1 - Instrumentation Symbols and Identification.
2. ISA 20 - Specification Forms for Process Measurement and Control Instruments Primary Elements and Control Valves.

C. National Electric Code (NEC)

D. Occupational Safety and Health Administration (OSHA)

1.3 COORDINATION

A. Section 01 31 00 – Project Management and Coordination: Requirements for coordination.

B. Section 01 32 16 – Construction Progress Schedule: Requirements for scheduling.

C. Coordinate Work of this Section with Engineer/Owner. Schedule Work of this Section after finishing concrete work for housekeeping pad and prior to connecting piping work.

D. Integrate instrumentation and control devices provided under other Sections.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit pump performance characteristics.
2. Submit electrical characteristics and connection requirements.
3. Submit manufacturer model number, dimensions, service sizes, and finishes.

C. Shop Drawings:

1. Symbology and Nomenclature: Comply with ISA 5.1.
2. Submit detailed and certified dimensional Shop Drawings for materials and equipment, including wiring and control diagrams, performance charts and curves, installation and anchoring requirements, fasteners, and other details.
3. Indicate interfaces between instruments, motor starters, control valves, variable-speed drives and flow meters.

D. Data Sheets:

1. Comply with ISA 20.
2. Submit following:

a. Manufacturer's model number or designation.
b. Component system or loop.
c. Installation location.
d. Input and output characteristics.
e. Scale, range and units.
f. Requirements for electric and plant water requirements.
g. Materials of component parts in contact with process chemicals.
h. Special requirements or features.

E. Manufacturer's Instructions:

1. Submit detailed instructions on installation requirements, including storage and handling procedures, anchoring, and layout.
2. Submit application, selection, and hookup configuration with pipe and accessory elevations.
3. Submit hanging and support requirements and recommendations.

F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

G. Manufacturer Reports: Indicate that equipment has been installed according to manufacturer's instructions.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for closeout procedures.

B. Project Record Documents: Complete loop and schematic diagrams including field and panel wiring, piping, and tubing runs, routing, mounting details, and point-to-point diagrams with cable, wire, tube, and termination numbers. Record actual locations and final orientation of equipment and accessories.

C. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.

1.6 SPARE PARTS

A. Each chemical metering pump shall be provided with the following as applicable:

1. Two replacement hoses.
2. Two hose lubricant refills.

1.7 QUALITY ASSURANCE

A. Ensure that materials of construction on pump liquid end are compatible with chemicals listed in the chemical feed schedule at the end of this specification.

B. Pumps shall be supplied and labeled by the original manufacturer. Relabeled products shall not be acceptable.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 – Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept pumps on-site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

D. Protection:

1. Store products in areas protected from weather, moisture, or possible damage.
2. Do not store products directly on ground.
3. Handle products to prevent damage to interior or exterior surfaces.

1.9 WARRANTY

A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for warranties.

B. The Manufacturer and Contractor shall furnish a warranty extending twelve (12) months after substantial completion date on the wet end.

C. The Manufacturer shall furnish a warranty extending twenty-four (24) months after substantial completion date on the mechanical drive.

PART 2 - PRODUCTS

2.1 PERISTALTIC-TYPE METERING PUMPS

A. Manufacturers:

1. The equipment, peristaltic metering pumps, shall be manufactured by:

a. Watson-Marlow Bredel Pumps; Wilmington, MA.
b. Or Approved Equal.

2. Changes to the arrangement indicated in the specifications and in the plan, set shall be at the expense of the installing contractor. No change orders will be issued to the contractor for modifications to the laying length, footprint, concrete layout, electrical, mechanical, etc.

B. Description: Self-priming peristaltic metering pump and accessories.

C. Capacity:

1. See schedule.
2. Discharge Pressure: See schedule.
3. Process Fluid Viscosity: See schedule.

D. Materials:

1. As recommended by manufacturer for dosing chemical.

E. Construction:

1. The chemical feed pump shall be of the horizontal, positive displacement, peristaltic hose pump type capable of operating in either direction without flow variation.

a. Pump shall be capable of being rotated in 90-degree increments for four (4) different port-mounting configurations.

b. Hose shall be manufactured of three-layer elastomer with an extruded inner wetted layer compatible with the process fluid, four layers of nylon reinforcement and a Natural Rubber outer layer. Hose outside diameter shall be machined to maintain a wall thickness within $\pm$ 0.25 mm tolerance. The hose external surface shall have a surface roughness of Ra 8$\pm$ 4m. Hoses must have a smooth extruded internal surface and have tolerance controlled through machining. Hoses must have a minimum static burst pressure rating of 800 psi and be replaceable without cover or pump removal.

c. Pump housing shall be cast iron (ASTM A48 Class 40) and shall be supplied with an internal bearing hub to support the rotor on its own bearings. Provide a threaded drain plug at the lowest point of the pumping chamber to allow complete drainage of lubricant. Pump rotor shall be Cast Iron rotor ASTM A48 Class 25 with adjustable, shimmable shoes constructed of epoxy or extruded aluminum as

recommended by the manufacturer. Shims shall be constructed of 316 Stainless Steel with a shim thickness of 0.5mm. The specified manufacturing tolerance of the hose, when compressed, shall not exceed the occlusion setting of one shim.

d. Supply pump with flanged 316SS inlet and outlet to ANSI/ASA 150# standards with wetted inserts compatible with the process fluid as indicated in the Process Pump Schedule. Flange supports shall be 316SS and of one piece construction and shall secure to the pump housing via two or four bolts to maintain a compression seal between the pump housing and hose.

e. Pump cover shall be constructed of ASTM A245 Class 36 Cast Iron. Equip cover with a viewing window constructed of PMMA to allow clear visual confirmation of direction of rotation. Window shall be marked with a minimum lubricant registration mark for proper indication of lubricant level when pump is stationary. For pumps with adjustable shoes, the window shall be large enough to replace pressing shoes and allow shim adjustment without removing pump cover. Pump covers shall be bolted along the perimeter to the pump housing and shall seal via a captive quadring seal.

f. Each pump shall be provided with high lubricant leak detection system. Leak detection systems shall not trigger when exposed to water.

g. Provide premium efficient, TEFC or TENV, squirrel-cage induction motors, NEMA C face, conforming to the latest applicable requirements of NEMA, IEEE, ANSI, and NEC standards. Motors are to be designed for continuous duty for 3-phase, 230/460VAC operation, NEMA Design B with torque and starting currents in accordance with NEMA MG1-1993-12.35 and 12.38. Ratings to be based on a 40 degree C ambient 3,300 feet altitude or lower operation with a maximum temperature rise of 80 degree by resistance C at 1.0 service factor (and 90 degree C rise 1.15 service factor).

F. Operation:

1. Electrical Characteristics: As specified in Division 26 – Electrical and following:

   a. 2 hp.
   b. Voltage: 230/460 VAC, three phase, 60 Hz.

2. Motors: As specified in Section 40 05 93 - Common Motor Requirements for Process Equipment.
3. Disconnect Switch: Factory mounted at equipment.

G. Controls:

1. Panel shall be equipped with a three-position hand/off/auto switch. When in the Hand position, pump speed shall be regulated via panel mounted speed potentiometer and shall be started or stopped via the panel mounted local start/stop pushbuttons. When in the Off position, the pump shall be off. When in the Auto position, the panel will require a closed contact remote start signal and will pace pump speed based on a remote 4-20mA input signal. When in Auto, pump will not

stop until remote start contact is disengaged or the Emergency Stop has been engaged. Provide output status contact to indicate to a remote source when the pump is running in the Auto mode.

2. When running, the Pump Running light shall be illuminated and running time shall be logged on the ETM. Provide output status contact to indicate to a remote source that the pump is running and an output 4-20mA signal to indicate pump speed. When stopped, the Pump Stopped light shall be illuminated.

3. Provide Pump Failure detection which shall stop the pump in the event of a hose failure, overpressure, or drive failure. When such an event occurs, the Pump Failure light shall be illuminated simultaneously with the corresponding Fault light. Provide output status contact to indicate to a remote source when the pump has stopped due to failure. Alarm horn shall engage in the event of a failure and shall be equipped with a silence pushbutton. Provide a reset pushbutton to restore the pump to functional mode once failure has been corrected.

4. Hose failure shall be detected by a Normally Closed float switch mounted on the pump.

5. High discharge pressure shall be detected by a Normally Closed pressure switch located within the discharge line of the pump.

6. Drive failure shall be detected via current limit and software fault detection of the VFD

7. Provide local forward/reverse switch to locally change pump direction.

2.2 ACCESSORIES

A. Hose:

1. Material: As indicated on schedule.

2. Pressure Rating: As indicated on schedule.

B. Feed System:

a. Feed system design shall be such that the wetted end of the pump is orientated at the open end of the framework for easy access. Systems designed with the wet end of the pump facing the back wall of the skid shall not be acceptable.

C. Calibration Column:

a. One calibration column shall be supplied with each metering pump. The calibration column shall be constructed of clear PVC. Graduations shall be in milliliters and it shall be sized for a minimum 30 second drawdown when the metering pump is operating at 100% capacity.

2. Pressure Relief Valve:

   a. Two pressure relief valves shall be installed in the common discharge piping. Pressure relief valves shall be of the 2-port design and shall be equipped with socket, flanged or compression connections. Pressure relief valves shall be field adjustable from 10 to 150 psig without the need for special tools.

3. Discharge Pressure Gauge with Diaphragm Seal:

   a. One discharge pressure gauge and diaphragm seal assembly shall be supplied with each system discharge. The 2.5" pressure gauge shall be rated 0-100 psig, have a white face with black lettering and be of phenolic construction. Discharge Gauge shall be assembled to a Diaphragm Seal with a Viton Diaphragm and 1/2-inch NPT PVC process connection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power and control and wiring as specified in Division 26 – Electrical.

B. Flush hosing with clean water.

3.2 START-UP AND PERFORMANCE WARRANTY TESTS

A. Make equipment adjustments required to place system in proper operating condition.

B. Test each feed system for proper operation in the presence of the Owner. All testing costs are the Contractors.

C. Furnish all testing equipment, special instruments and devices required for performance testing.

D. Modify and/or replace defective equipment until it meets specified requirements. Re-test system to verify satisfactory operation.

E. Demonstrate the accuracy of each metering pump using job supplied calibration column.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 – Quality Requirements: Requirements for inspecting and testing.

B. Section 01 70 00 – Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

C. Pre-operational Check: Before operating system or components, vent air from system to ensure water in pump.

D. Startup and Performance Testing:

1. Test metering pump flow rate by measuring time to fill or by draining calibration column with potable water.
2. Operate each chemical feed system on clear water for continuous period of four hours.
3. Hydrostatically test system piping for leaks at the pumps listed pressure rating.
4. Tags: Attach calibration and testing tag to each device, signed and dated by device manufacturer's representative after calibration has been completed.

E. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than two (2) 8-hour days on-Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.

F. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified, and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.

G. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.4 DEMONSTRATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

C. Demonstrate system control functions and alarms.

3.5 ATTACHMENTS

A. Chemical Feed Pump Schedule:

1. Sodium Hypochlorite Pumps: P8501, P8502, P8503

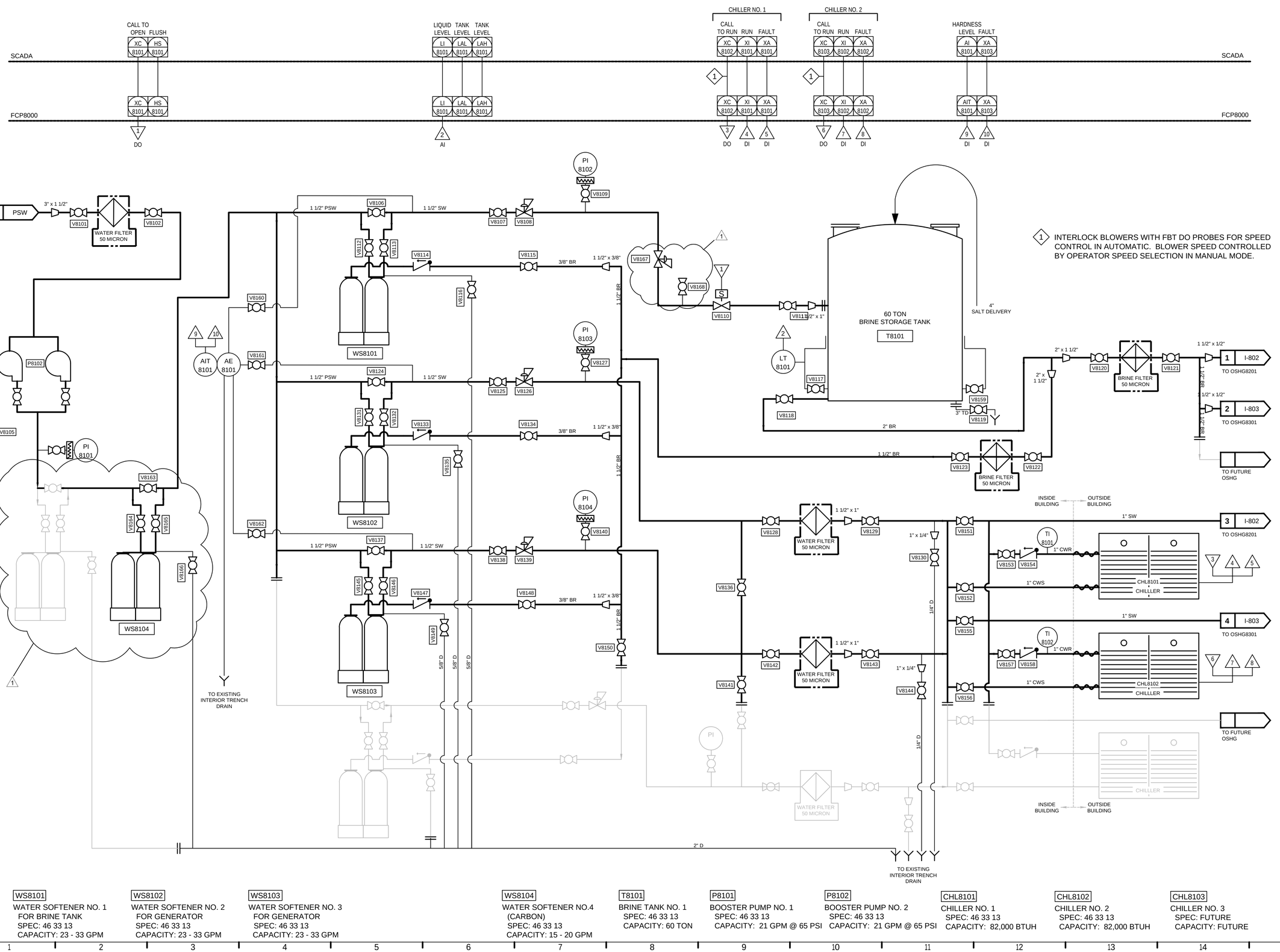
a. Location: Chemical Building.
b. Pump Type: Peristaltic.
c. Dosing Chemical: Sodium hypochlorite.

1) Physical state: Clear to slightly greenish-yellow liquid.
2) Concentration by weight: 0.8 %.
3) Specific gravity: 1.02 @ 60 degrees F.
4) Viscosity: 1.0 cPs
5) Minimum temperature: 55 degrees F.
6) Maximum temperature: 95 degrees F.

d. Flow Capacity: 15.38 GPM.

e. Discharge Pressure: < 5 psig.
f. Motor Size: 2 HP, direct drive.
g. Skid triplex assembly.
h. 1 1/2" pipe connection.
i. Viton seals or approved equal.
j. Pressure relief valves (2).
k. Pressure gauges with guards (2).
l. Calibration columns (2).

END OF SECTION 46 33 44



1 INTERLOCK BLOWERS WITH FBT DO PROBES FOR SPEED CONTROL IN AUTOMATIC. BLOWER SPEED CONTROLLED BY OPERATOR SPEED SELECTION IN MANUAL MODE.

WS8101
WATER SOFTENER NO. 1
FOR BRINE TANK
SPEC: 46 33 13
CAPACITY: 23 - 33 GPM

WS8102
WATER SOFTENER NO. 2
FOR GENERATOR
SPEC: 46 33 13
CAPACITY: 23 - 33 GPM

WS8103
WATER SOFTENER NO. 3
FOR GENERATOR
SPEC: 46 33 13
CAPACITY: 23 - 33 GPM

WS8104
WATER SOFTENER NO.4
(CARBON)
SPEC: 46 33 13
CAPACITY: 15 - 20 GPM

T8101
BRINE TANK NO. 1
SPEC: 46 33 13
CAPACITY: 60 TON

P8101
BOOSTER PUMP NO. 1
SPEC: 46 33 13
CAPACITY: 21 GPM @ 65 PSI

P8102
BOOSTER PUMP NO. 2
SPEC: 46 33 13
CAPACITY: 21 GPM @ 65 PSI

CHL8101
CHILLER NO. 1
SPEC: 46 33 13
CAPACITY: 82,000 BTUH

CHL8102
CHILLER NO. 2
SPEC: 46 33 13
CAPACITY: 82,000 BTUH

CHL8103
CHILLER NO. 3
SPEC: FUTURE
CAPACITY: FUTURE

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
GOODWYN MILLS CAWOOD, LLC
No. 6451
NOLTY ZIGLAR

ISSUE	DATE
90% Submittal	05.22.2024
100% Submittal	07.15.2024
Bid Set	08.02.2024
Addendum 1	09.06.2024
Conformed Set	
Project Manager:	AH
Engineer:	TR
Designer:	HR
Drawn By:	LS

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC
CGRE230068

SOUTH CAROLINA PROFESSIONAL ENGINEER
9/11/2024
No. 31959
REGISTERED
TIMOTHY ANTHONY REID

P&ID - BRINE TANK & WATER SOFTENERS

I-801

DRAWING FILE T:\ Projects\SC\Anderson Regional Joint Water System\CGRE230068 - Lake Hartwell WTP Raw Water Pumps and OGS Improvements\02 DWG\+PLANS\02 Bid Drawings\02 INSTRUMENTATION\I-801 - P&ID Main.dwg
PLOTTED Sep 05, 2024 - 8:26am

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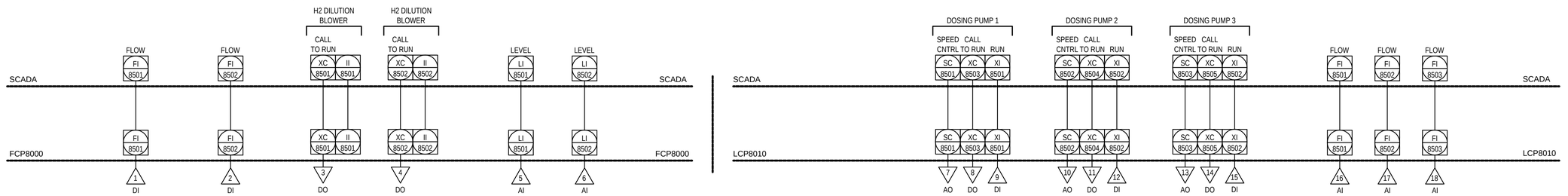

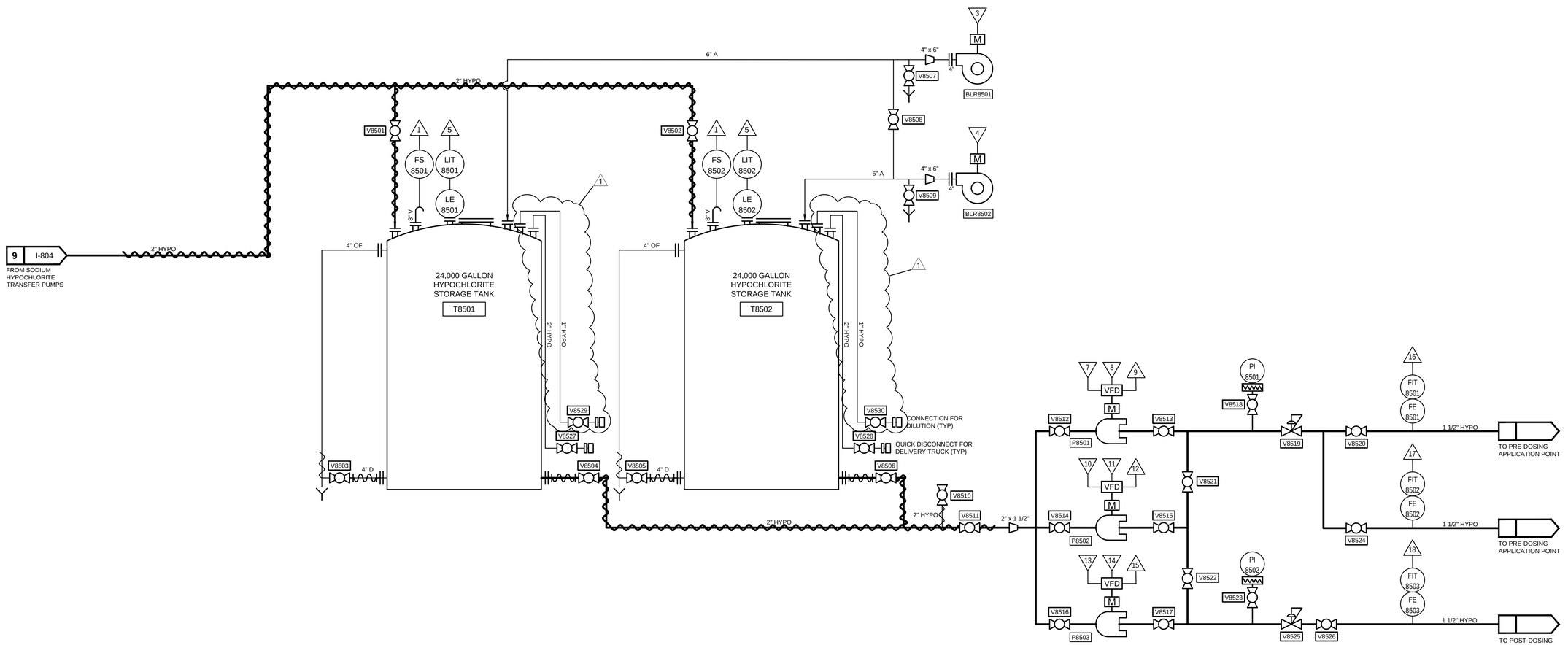

T8501
HYPO STORAGE TANK NO. 1
SPEC: 43 41 45
CAPACITY: 24,000 GAL

T8502
HYPO STORAGE TANK NO. 2
SPEC: 43 41 45
CAPACITY: 24,000 GAL

P8501
DOSING PUMP NO. 1
SPEC: 46 33 41
CAPACITY: 0.0005 - 17.6 GPM
MAX BACK PRESSURE: 30 PSI

P8502
DOSING PUMP NO. 2
SPEC: 46 33 41
CAPACITY: 0.0005 - 17.6 GPM
MAX BACK PRESSURE: 30 PSI

P8503
DOSING PUMP NO. 3
SPEC: 46 33 41
CAPACITY: 0.0005 - 17.6 GPM
MAX BACK PRESSURE: 30 PSI

BLR8501
HYDROGEN DILUTION BLOWER NO. 4
SPEC: 46 33 13
CAPACITY: 609 CFM

BLR8502
HYDROGEN DILUTION BLOWER NO. 5
SPEC: 46 33 13
CAPACITY: 609 CFM

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SOUTH CAROLINA PROFESSIONAL ENGINEER GOODWYN MILLS CAWOOD, LLC No. 6451 CERTIFICATE OF AUTHORITY

1" 0" 5" 1"

ISSUE	DATE	
90% Submittal	05.22.2024	AH
100% Submittal	07.15.2024	TR
Bid Set	08.02.2024	HR
Addendum 1	09.06.2024	LS
Conformed Set		
Project Manager:		
Engineer:		
Designer:		
Drawn By:		

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC

CGRE230068

SOUTH CAROLINA PROFESSIONAL ENGINEER 9/11/2024 NO. 31993 LICENSED PROFESSIONAL ENGINEER

P&ID - HYPOCHLORITE STORAGE TANKS & DOSING PUMPS

I-811

DRAWING FILE: T:\1 Projects\SC\Anderson Regional Joint Water System\CGRE230068 - Lake Hartwell WTP Raw Water Pumps and OGS Improvements\0 DWG\+PLANS\01 Bid Drawings\02 INSTRUMENTATION\I-201 - P&ID Main.dwg
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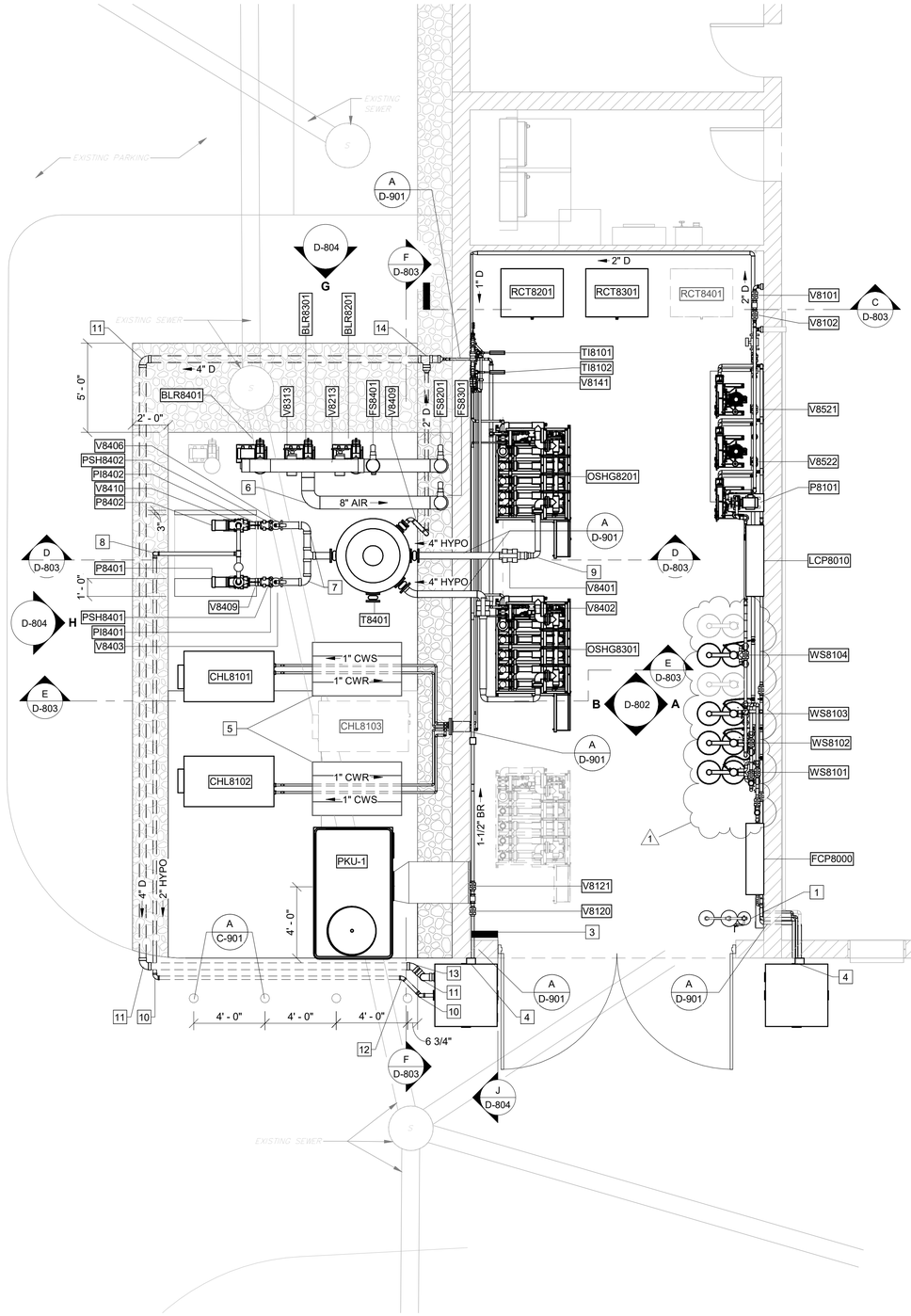

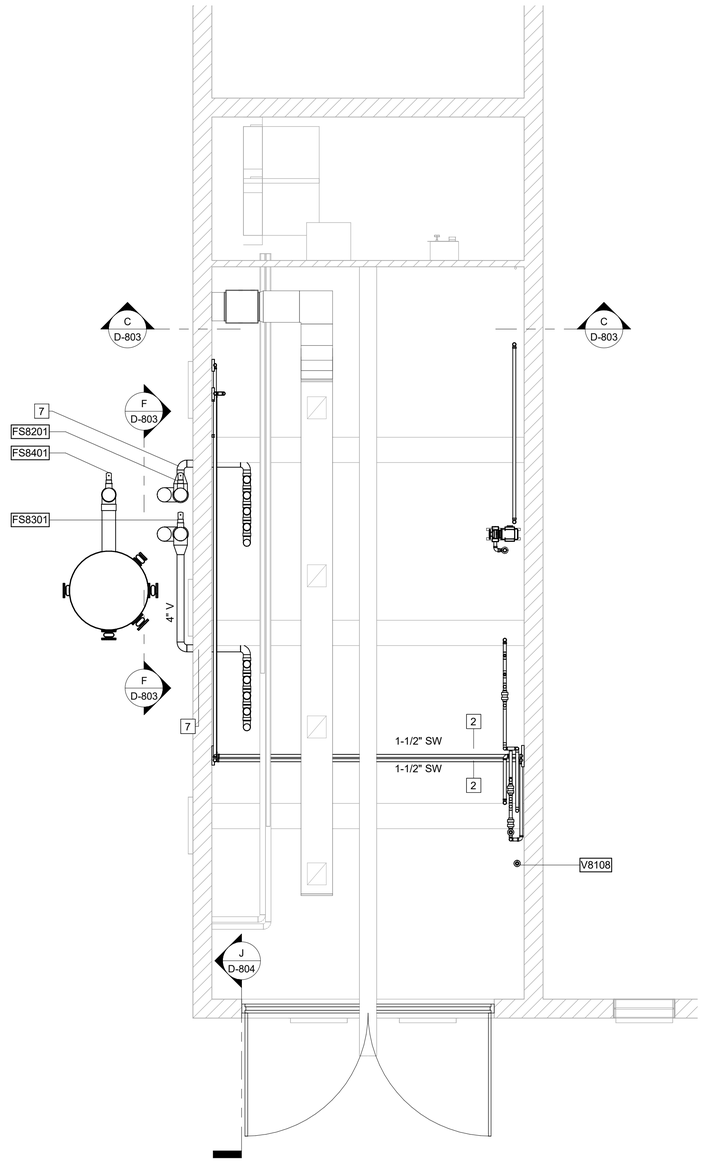

8A D-801 **LOWER PLAN**
SCALE: 1/4" = 1'-0"

8B D-801 **UPPER PLAN**
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. ALL PIPING TO BE SCH 80 PVC W/ PVC SOCLET AND PVC CEMENT
2. INSTALL HYDROGEN DETECTOR AND TRANSMITTER PROVIDED BY OSHG SKID MANUFACTURER ACCORDING TO MANUFACTURER INSTRUCTIONS
3. SECURE OSHG SKID AND RECTIFIER TO FLOOR WITH SST MECHANICAL ANCHORS

KEY NOTES: [#]

1. EMERGENCY SHOWER AND EYEWASH STATION
2. 1-1/2" SOFTENED WATER FEED TO OSHG SYSTEM
3. 1/2" BRINE FEED SYSTEM TO OSHG SYSTEM
4. METAL RACEWAY
5. 36" X 60" ANTI-SLIP PIPE COVER
6. 8" 90° FL BEND
7. 4" 90° FL BEND
8. 2" 90° FL BEND
9. 3" 90° FL BEND
10. 2" 90° MJ BEND
11. 4" 90° MJ BEND
12. 2" 45° MJ BEND
13. 4" 45° MJ BEND
14. 4" X 2" TEE FOR GRAVITY DRAIN LINE, INVERT = 780' (CONTRACTOR TO FIELD VERIFY DEPTH OF EXISTING SEWER)

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION GOODWYN, MILLS & CAWOOD LLC. No. 6481

1" .5" 1"

ISSUE | DATE

90% Submittal	05.22.2024
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Designer:	HR
Drawn By:	LS

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC

CGRE230068

SOUTH CAROLINA PROFESSIONAL ENGINEER ANTHONY T. REED NO. 31959 LICENSED 9/11/2024

GENERATION BUILDING - PLANS

D-801

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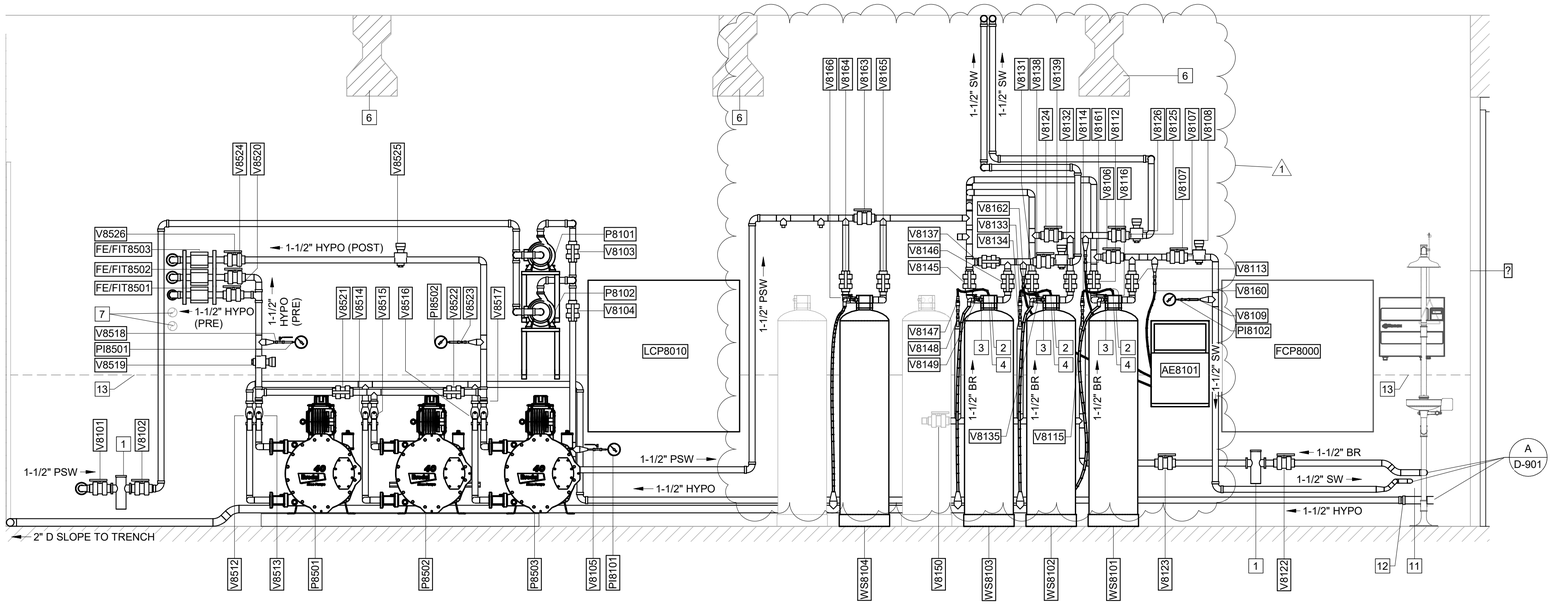
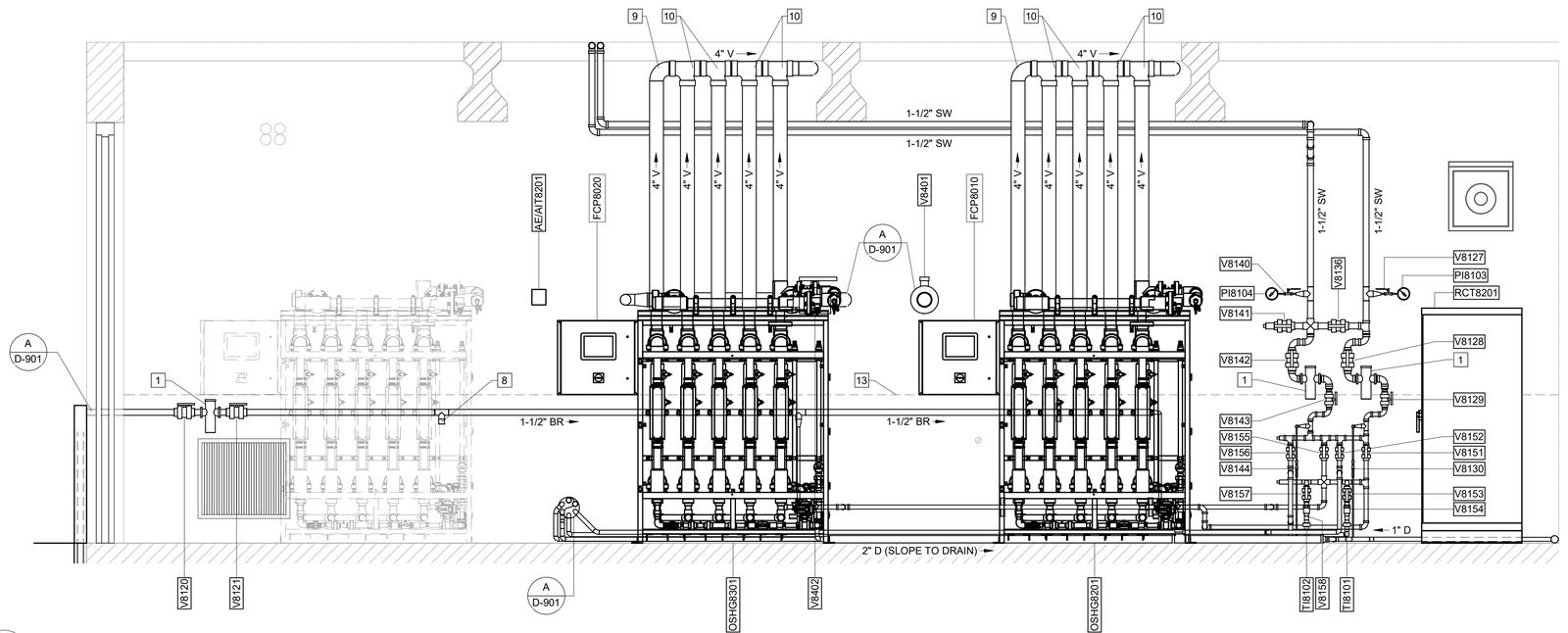


A D-801 **ELEVATION**
SCALE: 1/2" = 1'-0"



B D-801 **ELEVATION**
SCALE: 1/2" = 1'-0"

KEY NOTES: #

1. 50 MICRON FILTER
2. CONNECT 1-1/2" SCH. 80 PVC PIPING TO BRASS ADAPTERS ON WATER SOFTNER USING PRO-PRESS MACHINE OR SWEAT AND 1-1/2" FEMALE PRESS; ALTERNATIVELY MAY USE 1-1/2" SCH. 80 MALE ADAPTER WITH 2-PART EPOXY; REMOVE #4 DISC FROM WATER SOFTENER AND INSTALL #1 DISC FOR PROPER OPERATION
3. 5/8" OD PE TUBING FOR WATER SOFTENER DRAIN; CONNECT TO 1/2"; CONNECT TO 1/2" SCH. 40 OR SCH. 80 PVC PIPING
4. 3/8" OD PE TUBING FOR BRINE FEED CONNECTED VIA BARB AND SST PIPE CLAMP TO 1-1/2" FEED PIPING DOWNSTREAM OF EXISTING ISOLATION AND CHECK VALVES; CONNECT TO WATER SOFTENER
5. CLEAR SCH. 80 PVC PIPING
6. BEAM LOCATION IS APPROXIMATE. CONTRACTOR TO FIELD LOCATE EXACT LOCATION & AVOID ANY CONFLICTS.
7. CAP EXISTING HOLES FOR FUTURE USE
8. CAP PIPE FOR FUTURE USE
9. 4" 90° FL BEND
10. 4" TEE
11. CONTRACTOR TO COORDINATE WITH ENGINEER PRIOR TO WORK ON EXISTING AND PROPOSED PIPING IN THIS AREA
12. 2" X 1-1/2" REDUCER
13. LIMIT OF HIGH-PERFORMANCE COATING

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1" 5" 1"

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Designer:		LS
Drawn By:		

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC

CGRE230068

GENERATION BUILDING - ELEVATIONS

D-802

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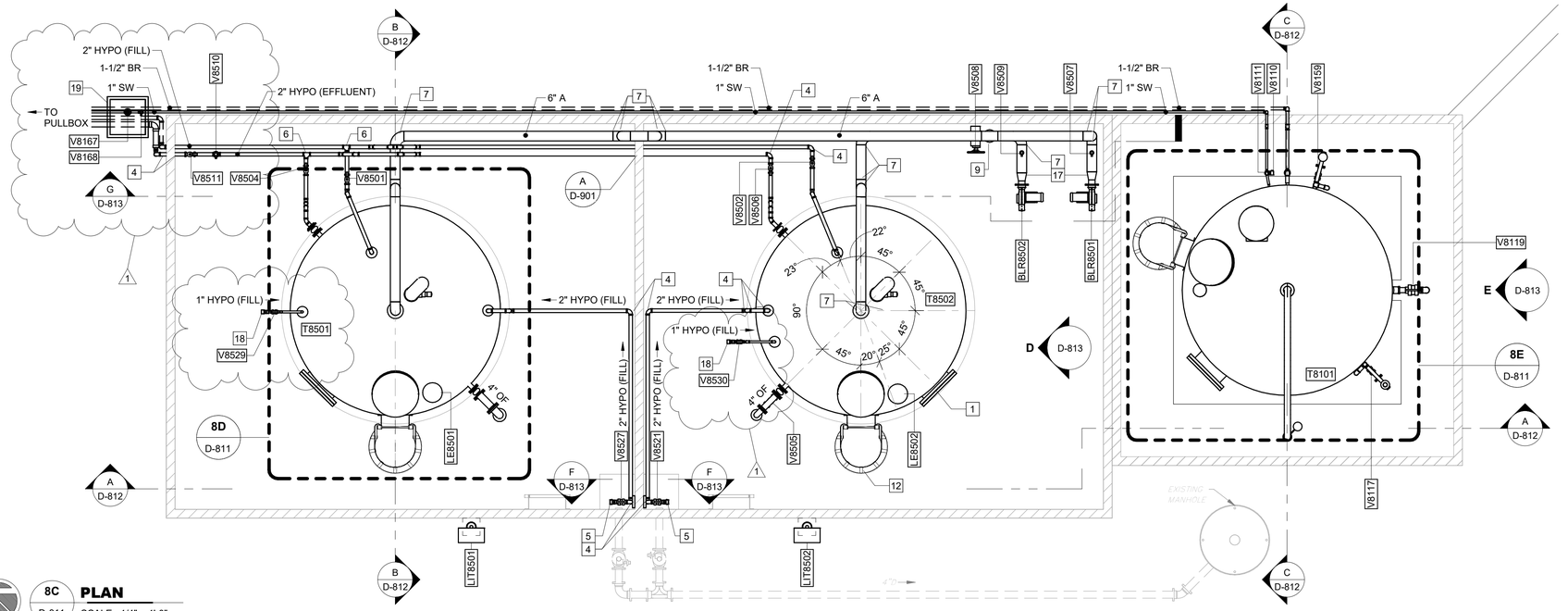
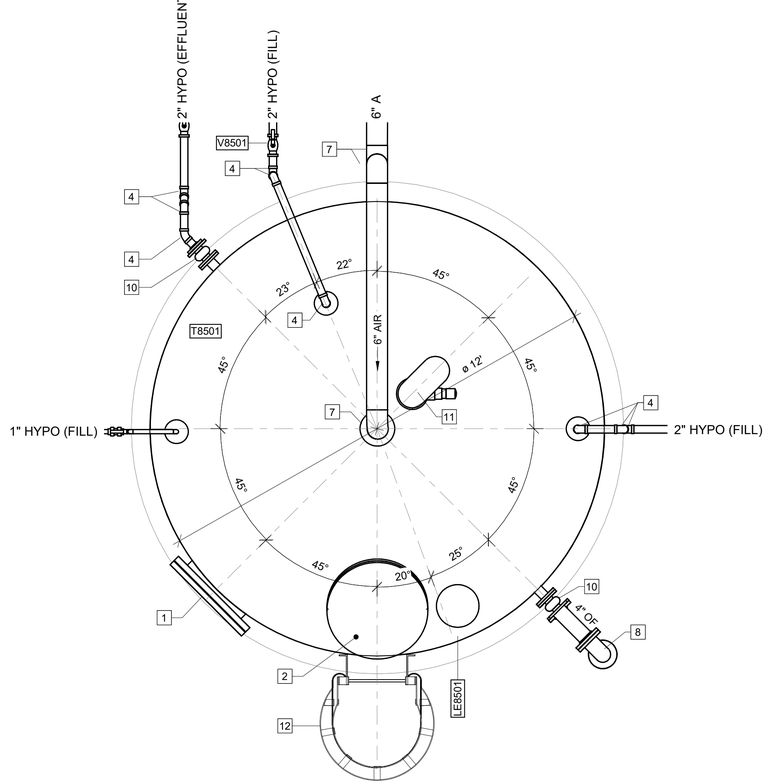
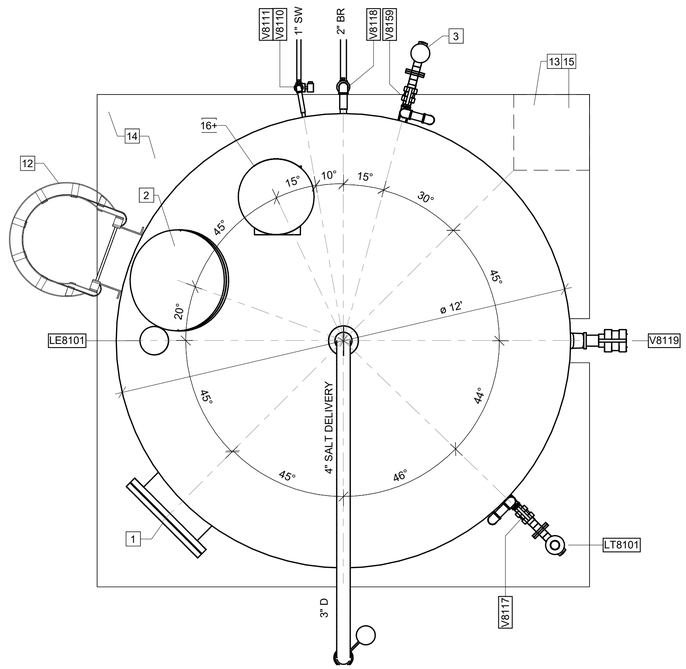


8C D-811 PLAN
SCALE: 1/4" = 1'-0"



8D D-811 ENLARGED PLAN
SCALE: 1/2" = 1'-0" **T8502 SIMILAR**



8E D-811 ENLARGED PLAN
SCALE: 1/2" = 1'-0"

NOTES:

1. PIPING SHALL BE INSULATED (EXCLUDING AIR PIPING) PER SPECIFICATIONS. INSULATION NOT SHOWN FOR CLARITY

KEY NOTES: [#]

1. 24" DIA. HINGED MANWAY W/ BLIND FLANGE
2. 24" DIA. HINGED MANWAY
3. 2" BRINE SUCTION BREAK ASSEMBLY
4. 2" 90° BEND
5. 2" CAMLOCK W/ DUST COVER
6. 2" TEE
7. 6" 90° BEND
8. 4" 90° FL BEND
9. 6" TEE
10. EXPANSION JOINT
11. 8" GOOSE NECK FITTING
12. ACCESS LADDER W/ SAFETY CAGE
13. 4" PIPE CLAMPS (SUPPLIED BY MANUFACTURE)
14. 11 1/2" SUSPENDED CONCRETE SLAB
15. 4" PNEUMATIC DELIVERY PIPING
16. 24" DUST COLLECTION
17. 6" X 4" REDUCER
18. 1" CAMLOCK W/ DUST COVER
19. QUAZITE BOX

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION GOODWYN, MILLS & CAWOOD LLC. No. 6481

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90% Submittal	05.22.2024	AH
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Conformed Set		
Project Manager:		
Engineer:		
Designer:		
Drawn By:		

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC

CGRE230068

SOUTH CAROLINA PROFESSIONAL ENGINEER ANTHONY T. REID NO. 31969 9/11/2024

HYPOCHLORITE BULK STORAGE - PLANS

D-811

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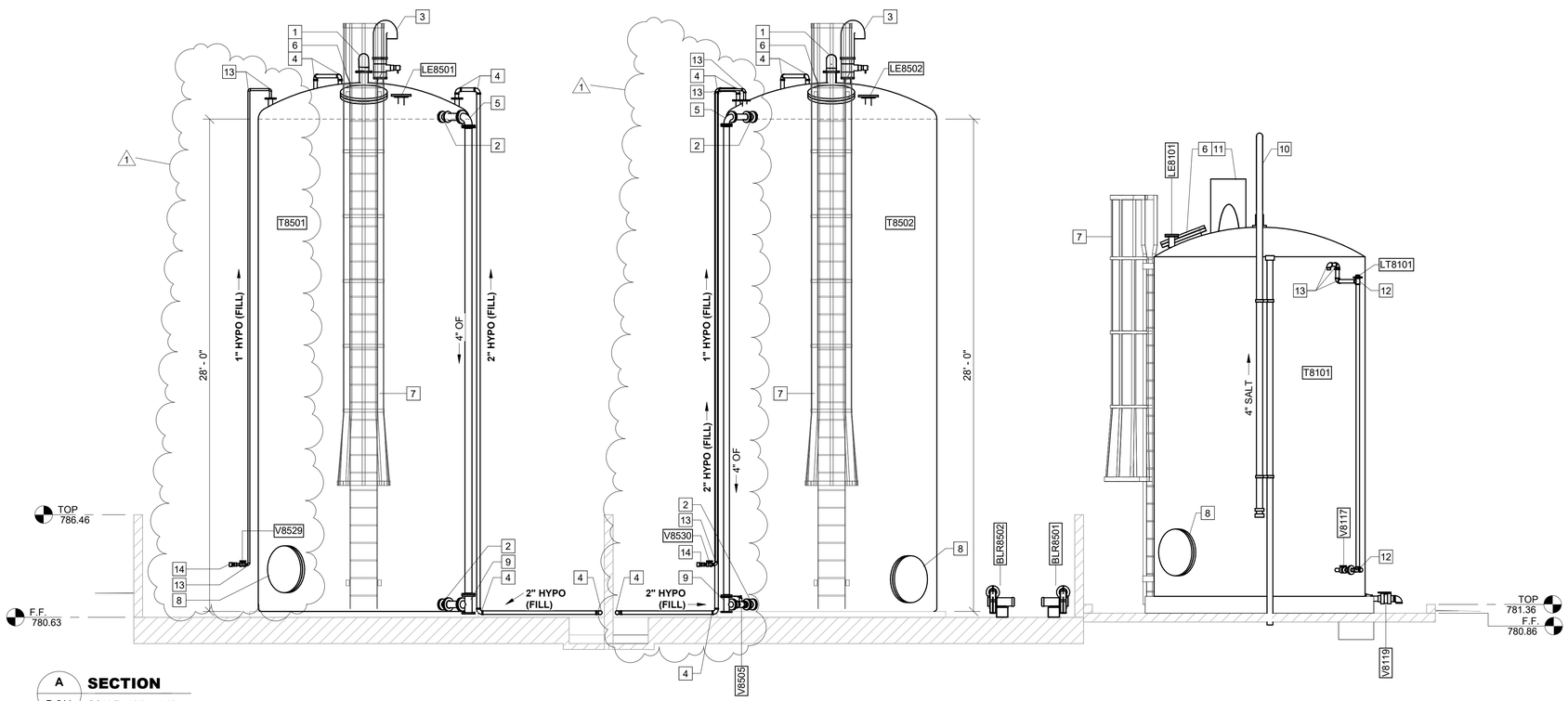
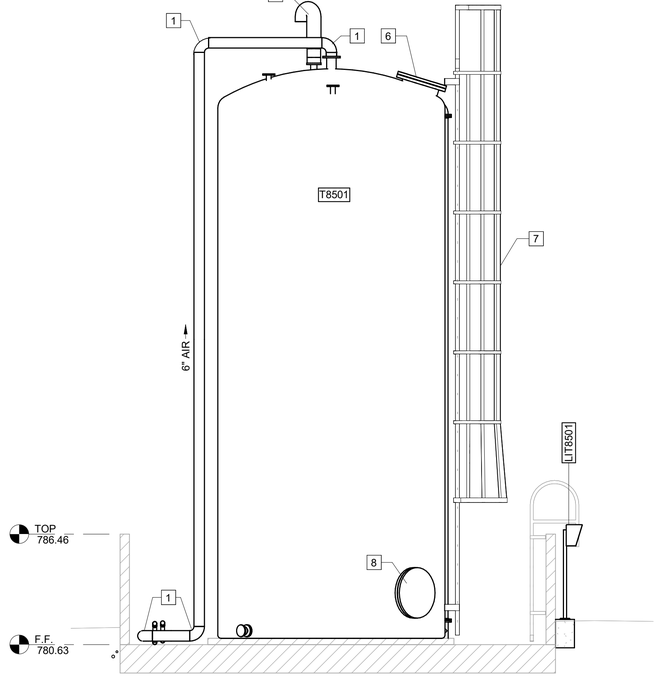
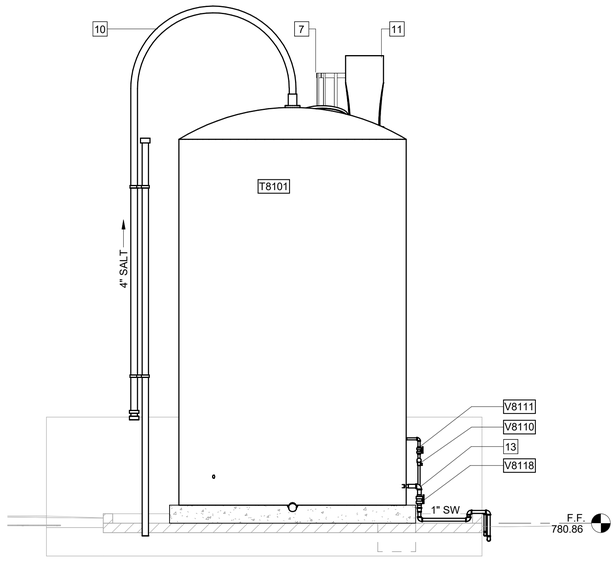


A **SECTION**
D-811 SCALE: 1/4" = 1'-0"



B **SECTION**
D-811 SCALE: 1/4" = 1'-0"



C **SECTION**
D-811 SCALE: 1/4" = 1'-0"

KEY NOTES: #

1. 6" 90° BEND
2. EXPANSION JOINT
3. 8" GOOSE NECK FITTING
4. 2" 90° BEND
5. 4" 90° BEND
6. 24" DIA HINGED MANWAY
7. ACCESS LADDER W/ SAFETY CAGE
8. 24" DIA HINGED MANWAY & BLIND FLANGE
9. 4" TEE
10. 4" PNEUMATIC DELIVERY PIPING
11. 24" DUST COLLECTION
12. 2" TEE
13. 1" 90° BEND
14. 1" CAMLOCK W/ DUST COVER

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION GOODWYN, MILLS & CAWOOD LLC. No. 6481

ISSUE	DATE	
90% Submittal	05.22.2024	AH
100% Submittal	07.15.2024	TR
Bid Set	08.02.2024	HR
Addendum 1	09.06.2024	LS
Conformed Set		
Project Manager:		
Engineer:		
Designer:		
Drawn By:		

LAKE HARTWELL WTP
OGS IMPROVEMENTS
ANDERSON REGIONAL JOINT WATER SYSTEM
ANDERSON, SC

CGRE230068

SOUTH CAROLINA PROFESSIONAL ENGINEER ANTHONY T. REED No. 31969 9/11/2024

HYPOCHLORITE BULK STORAGE - SECTIONS

D-812

BIM 360://Lake Hartwell WTP Raw Water Pumps and OGS Improvements/tank farm.rvt
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