



**SAN ANTONIO WATER SYSTEM
WECO DISINFECTION SYSTEM- SAWS
SAWS Job No. 14-6004
Solicitation No. CO-00025**

ADDENDUM NO. 1

April 8, 2016

To: All Document Holders of Record

Addendum No. 1 consists of 4 items outlined in 5 pages. In addition to these pages, Addendum No. 1 includes a new specification Section 11610 which becomes part of the bid documents for a total of 15 pages for Addendum No. 1.



ADDENDUM NO. 1

A. GENERAL

1. Question: I am unable to locate a physical address for the work site in the specs or plans. Is there an address?

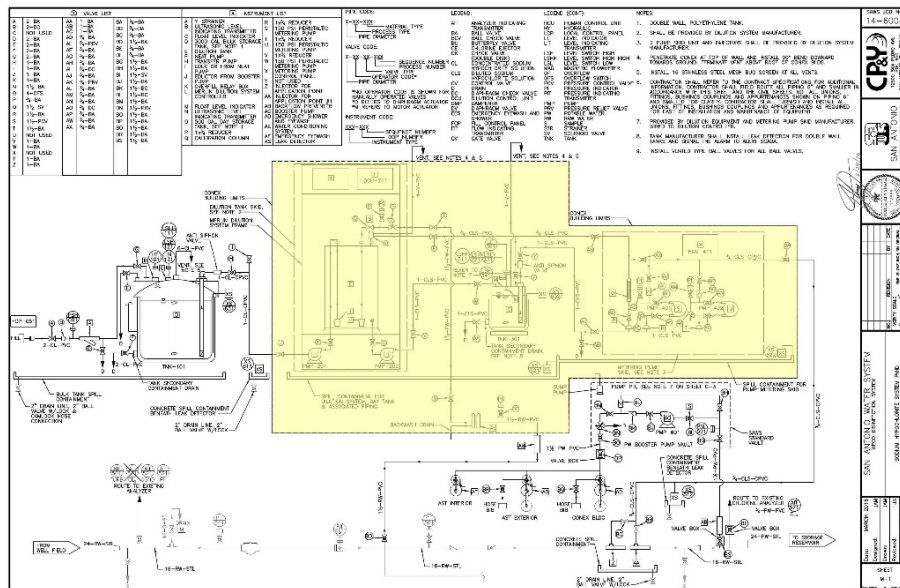
Response: The recorded address for the project site is 19001 Blanco Road, San Antonio, TX 78258. However, the project site is accessed from Huebner Road. See page 4 of this Addendum for a map view of where the project site is located in reference to Huebner Road.

B. SPECIFICATIONS

2. Section 11600
 - a. Remove Section 11600 Temporary Gas System in its entirety.
3. Section 11610
 - a. Insert Section 11610 Temporary Gas System (Vacuum Type) attached at the end of this Addendum into the bid documents.

C. DRAWINGS

4. Question: Can you confirm that the pipe, fittings, and valves within the highlighted area of the attached drawings are included in the \$30,000.00 bid allowance for Bid Item No 7?





This addendum, applicable to work referenced above, forms a part of the Contract Documents and modifies the original Contract Documents dated March 2016. Acknowledge receipt of this addendum by entering the addendum number and issue date in the spaces provided on submitted copies of the proposals.

ACKNOWLEDGEMENT BY RESPONDENT

The Undersigned acknowledges receipt of this Addendum No. 1 and the proposal submitted herewith is in accordance with the information and stipulation set forth.

Date

Signature of Respondent

END OF ADDENDUM

SECTION 11610

TEMPORARY GAS FEED SYSTEM (VACUUM TYPE)

PART 1 GENERAL

1.01 DESCRIPTION

- A. The CONTRACTOR shall furnish a new portable 8'W X 10'L X 7'H FRP skid mounted building complete with all chemical feed equipment required to provide a 200 lb/day chlorine gas feed system.
- B. The CONTRACTOR shall furnish the temporary gas feed system within six (6) weeks (42 calendar days) from Notice to Proceed on the project.
- C. The chlorine gas feed system shall consist of two (2) manual control gas feeders, eight (8) Cylinder mounted vacuum regulators, (1) Wall mounted Switchover Unit, eight (8) 150 lbs cylinder scales, eight (8) fail safe cylinder mounted safety actuators complete with control panels, one (1) chlorine gas detector, two (2) chlorine solution booster pumps, one (1) emergency ventilation shutoff button, and one (1) SCBA and wall cabinet and all ancillary component necessary to have a complete and operational system.
- D. Refer to Figure 1 and Figure 2 at the end of this specification for the layout of the equipment within the 8' x 10' FRP building.
- E. The system shall deliver a chlorine solution to the designated point of application as shown on the plans and be housed in a fiberglass reinforce building.

1.02 SUBMITTALS

- A. Shop Drawings: The Contractor shall furnish complete shop drawings and product data for all equipment specified to include piping, valves and controls for review by the Owner in accordance with Section 01300- Submittals.
- B. Product Data: The Contractor shall furnish detailed specifications and data covering materials used, parts, instrumentation, devices, and other accessories forming a part of the equipment furnished for review by the Owner in accordance with Section 01300-Submittals.

1.03 SYSTEM INTEGRATOR

- A. The chlorine feed systems shall be designed, coordinated, and supplied by a competent CHEMICAL SYSTEM PROVIDER. The CHEMICAL SYSTEM PROVIDER shall be regularly engaged in the business of designing and assembling liquid chemical feed systems for water treatment or wastewater treatment plant projects. The CHEMICAL SYSTEM PROVIDER shall be responsible for ensuring that a complete functioning system is supplied for each Chemical Feed System. The CHEMICAL SYSTEM PROVIDER shall be responsible for coordinating all equipment, piping, and valves, and appurtenances for each Chemical Feed System. The CHEMICAL SYSTEM PROVIDER has successfully provided similar work for at least 5 year.

PART 2 PRODUCTS

2.01 VACUUM REGULATORS (AUTOMATIC SWITCHOVER)

- A. The vacuum regulator shall be cylinder mounted and rated for 200PPD.
- B. The system shall consist of Eight (8) vacuum regulating valves.
 - 1. A vacuum-regulating valve designed to reduce full supply pressure to a vacuum without venting.
 - 2. Gas shutoff capability
 - 3. Positive indication of operating mode
 - 4. Internal pressure relief
 - 5. A captive yoke connection conforming to Chlorine Institute drawing #189.

2.02 AUTOMATIC SWITCHOVER

- A. The automatic switchover device shall be a remote vacuum switchover unit capable of change over to a new supply as the on-line supply is depleted.
- B. The unit furnished shall be of the non-isolating type. This function provides for complete withdrawal of gas from the depleted cylinder or bank of cylinders, while withdrawing from a new cylinder or bank of cylinders.
- C. The unit shall have a manual override allowing an operator to manually initiate switchover for service or calibration. An isolating switchover device will not be acceptable.
- D. The Switchover Unit shall be a model 55-410 as manufactured by Wallace & Tiernan.

2.03 CONTROL UNIT (CHLORINATOR)

- A. The gas feeder control components shall be of a chemical resistant plastic construction and shall be vacuum regulator or wall mounted.
- B. Components shall be easily removed without the need for special tools
- C. It shall include a one-piece molded headblock that includes:
 - 1. A 5 inch glass rotameter
 - 2. An adjustable knob for manual control.
- D. Each chlorinator shall be an Evoqua/Wallace & Tiernan S10K chlorine gas feed system with a maximum capacity of 500PPD and size to feed 125PPD.

2.04 INJECTOR

- A. Each gas feeder shall have a remote PVC injector rated at 500 PPD to generate the operating vacuum for the system.
- B. The injector shall be 1" fixed throat differential pressure type aspirator capable of feeding against a backpressure of up to 135 psi. The System Integrator shall select the appropriate injector to meet the operating conditions during startup.

- C. The injector shall have built-in double check valves, a spring-loaded diaphragm with a spherical seat and poppet check valve, to protect against back flooding.

2.05 CHLORINE SCALES

- A. Scale shall be of the single hydraulic load cell design as manufactured by FORCE FLOW. Load cell shall be of the temperature stable, rolling diaphragm type. Flexible PVC coated copper tubing shall connect load cell to indicator to allow easy remote installation of the digital indicator. Tubing length shall be 6 ft. in length. Cylinder chaining bracket shall be wall mounted and use a double loop coil chain and a spring loaded snap hook to secure cylinder. Chaining bracket shall have an integral tool rack for storing cylinder change-out tools.
- B. Indicator shall have a Loop-powered (12-36 volts DC by others) 4-20mA output proportional to the net weight. An 18 inch flying lead shall be provided for termination in a users supplied junction box.
- C. Scale shall carry a Full Five (5) Year Warranty. "Limited" Warranties shall be considered unacceptable.
- D. Full scale accuracy shall have an error margin of less than 1%. Scale shall be CHLOR-SCALE® 150 with TUF-COAT™ coating and SOLO™ XT digital display, Model XT150MA-2, as manufactured by FORCE FLOW Concord, CA.

2.06 SOLENOID VALVE

- A. The solenoid valve shall be energized upon the demand to feed chlorine. The valve shall have a remote control panel with an H-O-A switch. In the (H) position the valve is locally energized thus allowing water to flow to the chlorine injector. In the (A) position the valve is energized remotely via SCADA, in the (O) position the valve is de-energized thus shutting off water flow to the chlorine injector.
- B. Solenoid Valve shall be a (Normally Closed) electric actuated type with true union end connections that required no differential pressure drop for normal operation.
- C. Materials of construction shall be PVC with FPM seals
- D. Valves shall be rated for 120 psi inlet pressure.
- E. Voltage shall be 115 VAC, 60 hz.

2.07 PRESSURE VACUUM GAUGE

- A. Chlorine Solution
 1. 2 ¾" minimum diameter 316 Stainless Steel case.
 2. PVC isolation diaphragm seal
 3. Rate for 100 psi
 4. ¼" Gauge connection, ½" process connection
- B. Supply Water Service
 1. 2 ¾" minimum diameter 316 Stainless Steel case.
 2. PVC isolation diaphragm seal.
 3. Rated for 160 psi
 4. ¼" Gauge connection, ½" process connection

2.08 SYSTEM VALVES, PVC (CHLORINE GAS UNDER VACUUM)

- A. The valves shall be of the vented ball type with true union end connection (threaded or socket type) and rate for a maximum pressure of 150 psi.
- B. Valves shall be manually operated with visual position indicator.
- C. Valves shall be constructed of PVC with Viton O-rings. Metal wetted parts are not acceptable.

2.09 PIPING

- A. Piping shall be threaded Schedule 80 PVC. Sizes shown in Figure 2 provided.

2.10 EMERGENCY SHUTOFF SYSTEM

- A. The emergency shut off system shall be a Halogen Gemini system. The system shall be comprised of eight (8) electrically driven actuators and two (2) 4-channel Hexacon III control panels.
- B. The actuators shall mount upon each cylinder valve stem by means of a drive bushing and two parallel rods that straddle the gas valve nozzle so as to be removable during cylinder changes.
- C. Each actuator shall deliver 40-50 ft.-lb. of closing torque to the valve stem upon receipt of an emergency shutdown signal.
- D. Control panels shall be contained within a single electrical enclosure of NEMA 4X rating. All cables, connectors, switches and fittings shall be of a similar rating to resist the chemical environment.
- E. Each control panel shall have a dedicated power source (battery) and microprocessor controller. Electrical power shall be delivered to Two (2) actuators by means of a flexible cable.
- F. Each control panel enclosure shall have a membrane panel attached to the front which the operator may observe the status lights. Light conditions shall indicate ARMED/READY status, BATTERY status and BATTERY CHARGER status.
- G. Each control panel shall operate on (115 / 230 volts ac, 60 Hz) single phase.
- H. Standard accessories for each actuator system shall include wall mounted storage brackets for temporary placement of the actuator during cylinder changes and (1) one mushroom-style shutoff switch.

2.11 SCBA (SELF-CONTAINED BREATHING APPARATUS)

- A. The respiratory breathing apparatus shall consist of the following major components:
 - 1. A cylinder and valve assembly for storing breathing air under pressure.
 - 2. A full face-piece assembly.
 - 3. A removable face-piece mounted, positive pressure breathing regulator with an air saver switch and purge valve.
 - 4. A backframe and harness assembly for supporting the equipment on the body of the wearer.

5. A shoulder strap mounted, remote gauge indicating cylinder pressure.
- B. The SCBA shall be NIOSH certified and shall conform to the CODE of Federal Regulations, Title 42, part 84. This SCBA shall meet OSHA requirements.
- C. The 2216 psig cylinder and valve assembly shall be in accordance with Department of Transportation (DOT) specifications, have a working pressure of 2216 psig and a duration of 30 minutes as rated by the National Institute of Occupational Safety and Health (NIOSH). The cylinder shall be available in all aluminum or a lightweight composite cylinder consisting of an aluminum inner lining and full wrap of resin impregnated fiberglass or carbon filament. The 30-minute cylinder shall have a water capacity of 523 cubic inches and a free gas capacity of 45 cubic feet.
- D. Provide One (1) ENCON protective wall cabinet for housing the SCBA.
- E. The SCBA shall be an Airhawk MMR air Mask and Cylinder as manufactured by MSA.
- F. Sizes shall be large, where applicable.
- G. Provide Chlorine Institute Emergency Kit "A" for 150-lb chlorine cylinders per site and a small bottle of fresh ammonia solution (or approved equal) for testing in the event of an emergency.

2.12 GAS DETECTOR

- A. The gas detection system shall monitor the gas supply storage area and gas feed equipment area for the presence of Chlorine gas in the ambient atmosphere.
- B. The gas detector shall be ranged for 0-10 PPM Chlorine.
- C. The gas detector shall have two independent alarm set points adjustable from 5% to 100% of range, with separate alarm LED's and an integral audible horn.
 1. There should also be a 4 digit sunlight readable LED to display gas concentration in PPM as well as a 4-20 mA output signal proportional to gas concentration.
 2. The gas sensor shall be capable of being remotely mounted up to 1,000 ft. away from the control electronics.
 3. An alarm shall be sounded if the sensor fails the self-test.
 4. The unit shall be equipped with a battery back-up in the event of a power failure.
- D. This system shall be ACUTECH 35 Gas Detection System as manufactured by USFilter/Wallace & Tiernan.

2.13 BOOSTER PUMPS

- A. Two (2) booster pumps shall be provided and installed within the FRP building. The booster pumps shall be sized to supply adequate flow to accommodate the 200 PPD feedrate injector flow and pressure requirements. The pumps shall be corrosion resistant with a TEFC motor sized for the maximum pump horsepower rating.
- B. Provide a booster pump control panel for control of a booster pump and electric actuated valve. The control cabinet shall receive a digital signal to call for the booster pump and a digital signal to call for the electric actuated valve. The control panel shall

contain a VFD that shall control the pump. The cabinet shall have a speed control pot on the door for allowing the operator to set the pump speed. There shall be an HOA for both the pump and electric actuated valve. The panel shall contain a light indicating the call status of the pump and electric actuated valve. Panel shall be NEMA 4X FRP. Provide control logic that will allow the standby booster pump to turn on automatically when the primary booster pump malfunctions or is brought out of service.

- C. Ventilation
- D. Provide a single switch on the outside of the building to operate the lights and ventilation system.
- E. Provide an Emergency Ventilation Shutoff Button to satisfy the International Fire Code 5004.3.1.4. The emergency button shall be located on the front of the building next to the front door. The switch shall be a break-glass or other approved type and shall be labeled: "VENTILATION SYSTEM EMERGENCY SHUTOFF".

2.14 FRP BUILDING

- A. The FRP building shall be 8'.0" x 10'.0" x 7'.0" and designed for easy and rapid installation in areas of corrosive chemicals and high humidity. The exterior surface in White gel-coated for attractiveness, excellent weatherability, and low maintenance. All buildings are designed to withstand winds of 125 mph and 30 lb/ft sq snow loading.
- B. CONSTRUCTION
 - 1. FRP building and FRP door shall be constructed of fiberglass reinforced polyester resin, molded by hand lamination process. The exterior shall be gel coated with a FRP back up. Wall and roof incorporate a fiberglass rib on 16 inch centers. The panel shall be covered with 1" of rigid polyisocyanurate insulation: over which FRP is laminated, creating a rigid sandwich laminate. The exterior laminate shall be .180" thick consisting of 3 plies of 1 ½ ounce mat. The interior laminate shall be .125" thick consisting of 2 plies of 1 ½ ounce mat. The building shall be attached to a concrete slab floor with stainless steel concrete anchors through a base flange on all wall sections. All anchors shall be provided by the building manufacturer. The interior shall be painted with a white surface coat.
- C. MATERIAL
 - 1. Gel Coat and Surface Coat:
 - a. All gel coats and surface coating are a chemical resistant neopentyl glycol based polyester resin. Pigments are selected for their long term weatherability in corrosive applications.
 - 2. Laminating Resin
 - a. The laminating resin is a rigid orthophthalic polyester. Suitable for use in corrosive atmospheric conditions.
 - 3. Fiberglass Reinforcement
 - a. Fiberglass reinforcement of the outer laminate shall consist of three plies of 1½ ounce per foot chopped strand mat. The inner laminate shall consist of 2 plies of 1 ½ ounce per foot chopped mat.
 - 4. Insulation:
 - a. Modified polyisocyanurate rigid foam 1" thick shall be used throughout as insulation. Insulation has a K-factor of 7.2 BTU in/hr/ft/F degree, R-7.2 per inch. Insulation shall be completely encapsulated with FRP.

2.15 BUILDING SKID

- A. The FRP building shall be installed on a FRP skid designed to fully support the building and all equipment without flexing. The skid and floor must be constructed of FRP. Must be weatherproof exterior construction. Floor must be constructed of treated plywood. Particleboard, chipboard, or MDF will not be accepted.
1. The building must be constructed by the building supplier and shall be shipped to the site complete.
 2. The building shall be portable and must be constructed so that it can be loaded onto a flatbed truck using a single large fork lift without damaging the building in any way.
 3. No components of the building should be susceptible to damage from wind during shipping on an open sided flatbed truck.
 4. Connections for electrical feed, water, and solution piping must be provided on the outside of the building.
 5. Contractor shall provide an entrance ramp to accommodate chlorine cylinder loading and unloading.
- B. BUILDING INSTALLATION:
1. The CONTRACTOR must prepare the building subgrade prior to placement and install concrete blocks per the building manufacturer's instructions to insure settlement building does not take place.
- C. TOLERANCES:
1. Wall and roof dimensions may vary (+) or (-) 1/4" and the wall thickness may vary (+) or (-) 1/16".
- D. BUILDING SHALL CONTAIN THE FOLLOWING EQUIPMENT:
1. STANDARD FEATURES:
 - a. Two Plated lifting eyes.
 - b. Continuous 4" inward mounting flange
 - c. Continuous 316 stainless steel hinge on door
 - d. All molded construction
 - e. Building exterior shall be white
 - f. Building interior shall be white
 - g. Exterior color – White with UV Inhibitors
 - h. Interior color – White with UV Inhibitors
 - i. 1" Insulation
 - j. Two Cadmium Plated Lifting Eyes
 - k. 125 MPH Wind Load
 - l. 30 lb/ft sq Snow Load
 2. DOOR HARDWARE:
 - a. (1) Single door 36" x 78"
 - b. (1) 316 SS Panic Door Hardware
 - c. (1) Cadmium Door Stop with Chain
 - d. (1) Door Window
 3. ELECTRICAL EQUIPMENT:
 - a. (1) Lockable electrical disconnect compatible for chemical installation must be provided on the exterior of the building.
 - b. (1) Load Center 125 AMP, 8 Circuit
 - c. (4) Breakers 20 Amp
 - d. (2) Receptacles Standard 15 Amp in weatherproof box

- e. (1) 1500 Watt Heater w/thermostat
 - f. (1) Corrosion Resistant Exhaust Fan 12" (500 cfm)
 - g. (1) V.T. Incandescent Light
 - h. (1) 120 volt GFI Electrical Outlet
 - i. Conduit shall be Carflex non-metallic material
4. NON ELECTRICAL EQUIPMENT:
- a. (1) 10" Corrosion Resistant Shutter

PART 3 EXECUTION

3.01 INSTALLATION

- A. The equipment shall be installed per the contract documents and manufacturer's/systems integrator's recommendations.

3.02 WARRANTY

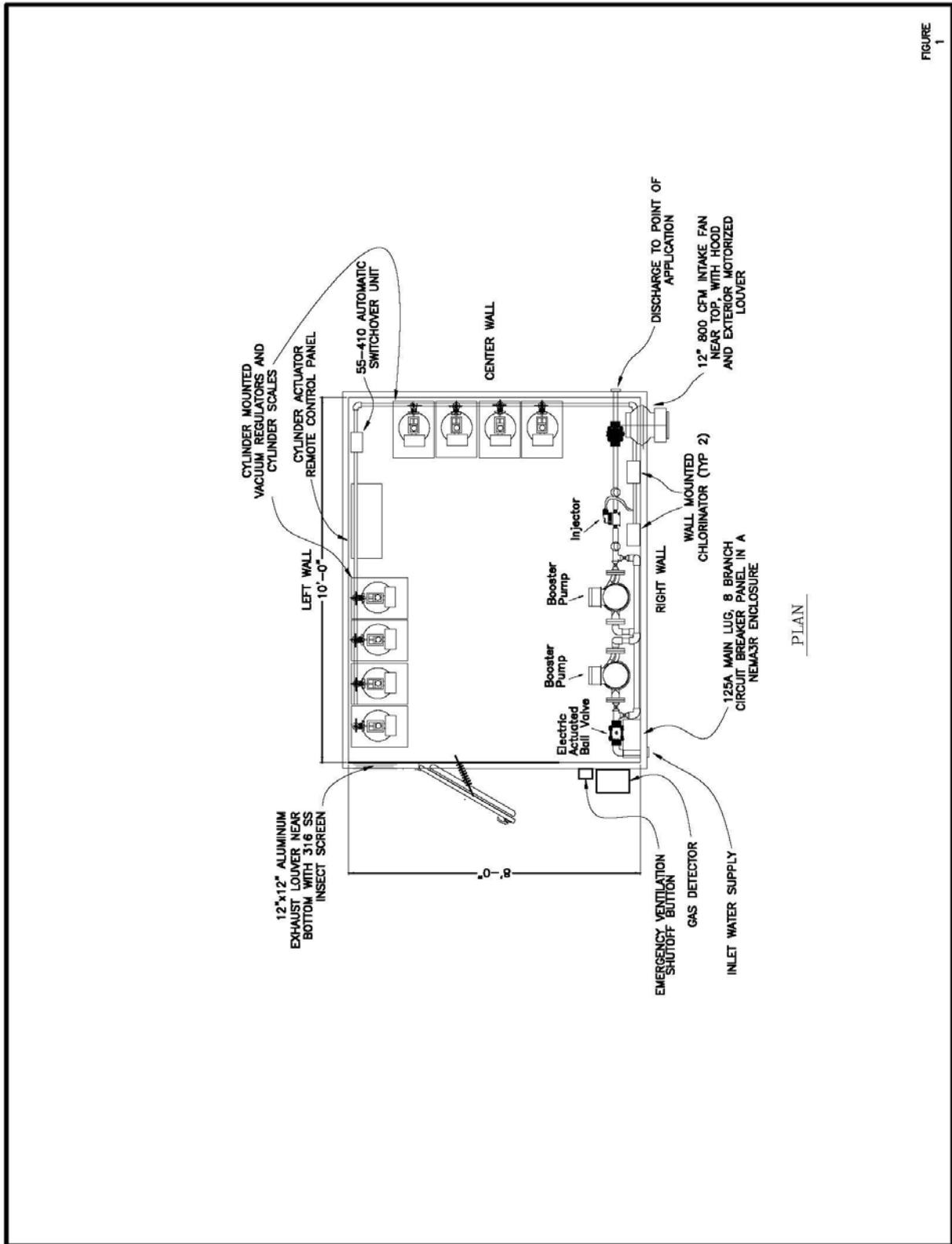
- A. The equipment/system warranty, unless otherwise stated, shall be two years from start-up or three years after shipment.

3.03 SPARE PARTS

- A. Provide Standard PM Kits for each chlorinator, injector and vacuum regulator.

3.04 STARTUP AND TRAINING

- A. The Contractor shall field test the temporary chlorine system to ensure proper operation.
- B. The Contractor shall provide one on-site training session for the Owner's operators. Training shall include O&M on each piece of equipment and proper operation of the system.



PLAN

FIGURE 1

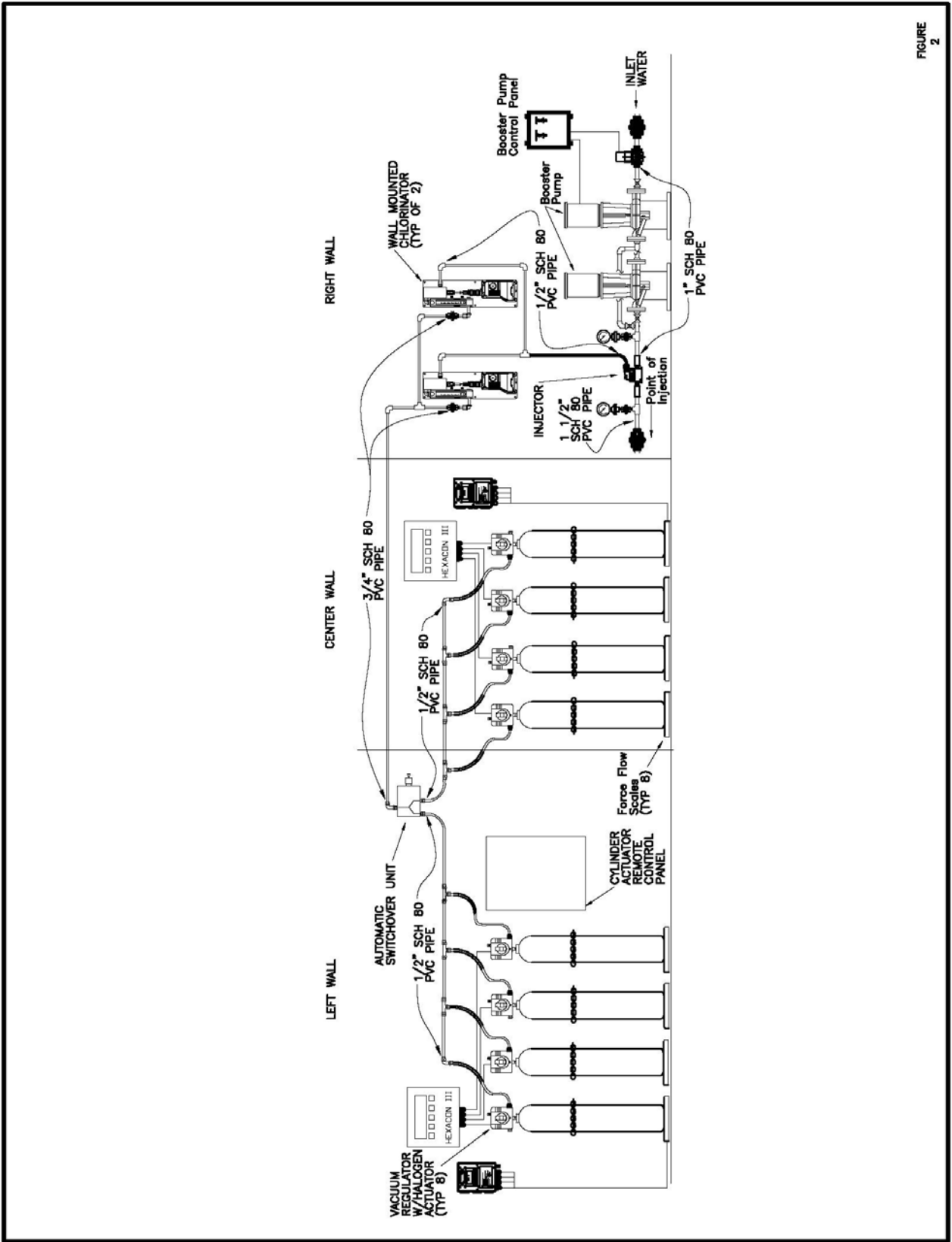


FIGURE 2