

February 5, 2024

**NOTICE OF ADDENDUM
ADDENDUM 4**

**CONTRACT NO. 9342
PROJECT NO. 14092**

UNIT WELL 15 PFAS TREATMENT FACILITY

Revise and amend the contract document(s) for the above project as stated in this addendum, otherwise, the original document shall remain in effect.

Changes to SPECIFICATIONS:

1. Section 40 23 13.01 Process Valves and Appurtenances, REPLACE in its entirety.
 - a. Removed vendor listed as can be supplied by others, but manufacturer name remained.
2. Section 44 43 31 Pressure Filtration Equipment – GAC and Ion Exchange, REPLACE in its entirety.
 - a. Clarifications on ASME design and removal of jack legs.
 - b. Note – other vendors may provide bids if they have written approval that they meet the same criteria and sizing standards listed.
 - c. Note – other GAC media or ion exchange media are not acceptable.
 - d. Note – media will not be backwashed after being placed into service (backwash expansion is not critical).

Changes to PLANS:

1. 09-N-03 P&ID DIAGRAM – TANK RESERVOIR AND BWW/FTW TANKS, REPLACE:
 - a. New plan noting portable pump for overflow as needed.
2. 10-D-02 PROCESS FIRST FLOOR PLAN, REPLACE:
 - a. New plan providing more detail on reducers and valves to match P&IDs.
3. 10-D-03 PROCESS SECTION A, REPLACE:
 - a. New plan with updated discharge elevation from ion exchange vessels, butterfly valves and reducers also shown.
4. 10-D-04 PROCESS SECTION B, REPLACE:
 - a. New plan providing more detail on reducers and valves to match P&IDs.
5. 10-D-05 PROCESS SECTION C, REPLACE:
 - a. New plan providing more detail on reducers and valves to match P&IDs.
6. 10-H-01 HVAC FIRST FLOOR PLAN, REPLACE:
 - a. New plan providing detail on fire protection modification needed.



Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

Electronic version of these documents can be found on the Bid Express web site at:

<http://www.bidexpress.com>

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

2/5/2024

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SECTION 40 23 13.01

PROCESS VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide and test valves and appurtenances as indicated and specified.
 - 1. Provide sizes and capacities as indicated or specified.

1.02 SUBMITTALS:

- A. Submit the following in accordance with Section 01 33 00:
 - 1. Data, regarding valve characteristics and performance including Cv.
 - 2. Shop drawing data for accessory items.
 - 3. Manufacturer's literature as needed to supplement certified data.
 - 4. Operating and maintenance instructions and parts lists.
 - 5. Listing of reference installations as specified with contact names and telephone numbers.
 - 6. Valve shop test results.
 - 7. Qualifications of field service technician.
 - 8. Shop and Field inspections reports.
 - 9. List of recommended spare parts other than those specified.
 - 10. Recommendations for short and long term storage.
 - 11. Special tools.
 - 12. Shop and field testing procedures and equipment to be used.
 - 13. Number of service technician days provided and per diem field service rate.
 - 14. Manufacturer's product data and specifications for shop painting.
 - 15. Provide a layout drawing, plan and section showing orientation of plug, gate, check, ball valves and actuators and nearest obstructions for each valve.
 - 16. Manufacturer's product data and specifications for shop painting.
 - 17. Provide a listing of the materials recommended for each service specified and indicated. Provide documentation showing compatibility with process fluid and service specified and indicated.
 - 18. Material Certification:
 - a. Provide certification from the equipment manufacturer that the materials of construction specified are recommended and suitable for the service conditions specified and indicated. If materials other than those specified are proposed based on incompatibility with the service conditions, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated including an installation list of a minimum of five installations in operation for a minimum of 5 years. Provide proposed materials at no additional cost to the Owner.
 - b. Where materials are not specified, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated.

- B. A copy of this specification section with addenda and all referenced specification sections with addenda, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations and clarifications from the specified requirements.
 - 1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.
 - 2. Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in submittal return without review until marked up specification and justification are resubmitted with the entire package.

1.03 SPARE PARTS:

- A. Comply with requirements specified in Section 01 61 00.

1.04 QUALITY ASSURANCE:

- A. Comply with the requirements specified in Section 01 43 00.
- B. Provide enclosures for the area classifications specified and indicated.
- C. Contractor responsible for verifying outside diameter of pipe to be tapped.
- D. Services of Manufacturer's Representative as stated in Section 01 43 00 and specified herein.
- E. Manufacturer of valve shall have a minimum of five operating installations with in the same service as specified operating for not less than 5 years.
- F. If equipment proposed is heavier, taller, different laying length or requires more operating space than specified and indicated; provide all structural, architectural, mechanical, electrical and plumbing revisions at no additional cost to the Owner.
 - 1. If equipment is heavier than specified, the Contractor shall provide all hoisting equipment sized to maintain the minimum safety factor between the specified maximum equipment weight and the lifting capacity of the hoisting equipment indicated and specified.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Comply with the requirements specified in Section 01 61 00 and as specified.

PART 2 - MATERIALS

2.01 RESILIENT SEAT GATE VALVES 3-INCH (80 MM) AND LARGER:

- A. Resilient Seat Gate Valves:
 - 1. Manufacturers-OS&Y Type Valves:
 - a. American.
 - b. Mueller.

- c. Clow.
- d. M&H
- e. Or approved equal

2. Manufacturers-NRS Type Valves:

- a. American.
- b. Mueller.
- c. Clow.
- d. M&H
- e. Or approved equal

B. General:

- 1. Provide valves that conform to NSF Standard 61.
- 2. Non-potable water service: Provide resilient seat gate valves for all sizes indicated. If resilient seat valves are not available provide solid wedge gate valves.
- 3. Potable water service: Provide resilient seat gate valves for all sizes indicated. If resilient seat valves are not available provide double revolving disc gate valves.
- 4. Provide metallic seated valves conforming to AWWA C500 except as herein modified. (Valves larger than 48-inch, size shall comply with the intent of AWWA C500.)
- 5. Provide resilient seated valves conforming to AWWA C509 except as modified herein.

C. Materials:

- 1. Body and Bonnet: ASTM A536 ductile iron.
- 2. Wedge: ASTM A536 ductile iron encapsulated with EPDM.
- 3. Provide all other materials as specified in AWWA C500 and C509.

Working water pressure:

Valve Size		Pressure Rating	
inch	mm	psi	bar
3 to 16	80 to 400	250	17
18 & Larger	450 & Larger	150	10

- 4. Buried Valves: Mechanical joint or push-on joint ends, non-rising stem valves with operating nut in lieu of hand wheel. Provide gate boxes, steel extension stems or universal-joint operating rods with 2-inch square operating nuts at upper end with coupling connected to valve stem to bring to operating nut to within 6 inches of ground surface.
- 5. Provide counterclockwise rotation to open valves.
- 6. Provide handwheels with arrow and word "open" to indicate open direction.
- 7. Provide geared operators for all valves 16-inch and larger. Gearing shall be steel with enclosed cases.
 - a. Provide spur gears for buried valves with stems vertical
 - b. Provide bevel gears where required by position of valve.
 - c. Provide buried valves with totally enclosed gear cases to enclose both the gears and valve stuffing box and provide gasketed Type 316 stainless steel removable cover plates with Type 316 stainless steel fasteners to allow access to the stuffing box.
- 8. Provide conventional packing in OS&Y valves.

9. Provide conventional packing or double O rings in non-rising stem valves.
10. Valves capable of being repacked or O ring replaceable while under pressure.
11. Provide Type 316 stainless steel bolts and bronze nuts for stuffing box follower.
12. Provide bypass valves for valves 16-inch and larger where required for opening under pressure with a maximum 40-lb rim pull at the valve pressure rating.

D. Provide all gate valves with all internal and external wetted parts coated with a fusion bonded epoxy in accordance with ANSI/AWWA C550.

2.02 BUTTERFLY VALVES – LIQUID SERVICE (AWWA):

A. Manufacturers:

1. Pratt 2FII ~~by Plant and Flanged~~
2. Pratt Triton XR-70 ~~by Plant and Flanged~~
3. DeZurik BAW
4. No substitutes

B. Provide valves that conform to NSF Standard 61.

C. Provide valves conforming to AWWA Standard C504 for Rubber Seated Butterfly Valves except as modified herein.

D. Valve Bearings: Self-lubricating, nonmetallic material to effectively isolate the disc-shaft assembly from the valve body. Cast or ductile iron thrust or journal bearing surfaces are NOT acceptable.

E. Class 150B valves except as specified or indicated.

F. Valve Body: ASTM A126 Class B cast iron or ductile iron.

1. Exposed service: Flanged or grooved joint short body valve.
2. Buried service: Mechanical joint body.
3. Wafer, lug wafer or tapped wafer valves may be used only as specified or indicated.

G. Valve Seats:

1. Potable Water Service: Molded new natural rubber or synthetic rubber.
2. Wastewater or Sludge Service: Molded neoprene, Buna-N or other synthetic elastomer resistant to oil and grease.
3. Provide seat mounted on disc or in body.
4. Provide seats offset from shaft and field replaceable for all valves 24-inch and larger.
5. Provide seats mounted on disc, mechanically fastened to disc with Type 316 stainless steel hex head screws. Provide rubber seat reinforced with stainless steel retaining ring. Seats vulcanized or bonded to the disc are not acceptable.

H. Mating surfaces for valves with seat on disc: Type 316 stainless steel.

1. Provide mating surface mechanically retained in body and sealed with O-ring.

I. For valves with seats mounted on body provide the seats clamped or mechanically secured with Type 316 stainless steel fasteners.

- J. Mating surfaces for valve with seat in body: Type 316 stainless steel or plasma applied nickel-chromium material containing 80 percent nickel, 20 percent chrome.
 - K. Plated or sprayed on mating surface material not acceptable.
 - L. Seat Placement:
 - 1. If seat on disc provide disc of ASTM A126 Class B cast iron or ductile iron.
 - 2. If seat in body, provide disc of ASTM A126 Class B cast iron, ductile iron or Type 316 stainless steel. Type 316 Stainless steel edge on cast or ductile-iron discs secured with Type 316 stainless steel threaded fasteners, heat shrunk on disc, a welded-on overlay, or a plasma applied nickel-chrome material.
 - M. Shaft: Type 316 stainless steel. Either one piece extending completely through disc or stub shafts inserted into valve disc stubs.
 - N. Shaft seal of the split-V type or O-ring type. Seal replaceable without disassembly of valve.
 - O. Manual Operators:
 - 1. Operator capable of valve operation at rated pressure with a maximum 80 lb pull on actuator. Operator to be self-locking.
 - 2. Valves 8-inch and smaller, provide lever operator, 18-inch maximum length.
 - 3. Valves 10-inch and larger, or where chain wheels are required, provide traveling nut operator. Provide position indicator.
 - 4. Chainwheels: Provide where required as specified herein.
 - P. Buried valves: Provide gear operator with operating nut and valve box as shown. Gear operator to be totally enclosed with gasketed Type 316 stainless steel covers with Type 316 stainless steel fasteners for access to valve packing.
- 2.03 BALL VALVES – GENERAL SERVICE:
- A. Manufacturers:
 - 1. Jamesbury
 - 2. KF
 - 3. Inline
 - 4. Kitz
 - B. Valves 1/2-inch thru 4-inch
 - 1. Materials:
 - a. Body and End Cap: Three piece, ASTM A351 Grade CF8M.
 - b. Body Seal: PTFE.
 - c. Seat: RTFE.
 - d. Ball: Type 316 stainless steel.
 - e. Stem: Type 316 stainless steel.

2. Pressure Rating:
 - a. 1/2-inch thru 2-inch: 1000 psi at 100 degree F
 - b. 2-1/2-inch thru 4-inch: 800 psi at 100 degree F
3. Ends:
 - a. 2-inch and Smaller: Screwed or flanged.
 - b. 3-inch and larger: Flanged.

C. Valves 4-inch thru 12-inch.

1. Materials:
 - a. Body and Adaptor: Two piece, ASTM A351 Grade CF8M.
 - b. Seat: TFE.
 - c. Ball: Type 316 stainless steel.
 - d. Stem: Type 316 stainless steel.
2. Pressure Rating: ANSI Class 150.
3. Ends: Flanged.

D. Actuators:

1. Manual:
 - a. 4-inch and Smaller: Lever.
 - b. 6-inch and Larger: Gear operator.
 - c. Provide chainwheels where required as specified herein.

2.04 BALL VALVES - NON-METALLIC:

A. Manufacturers:

1. Spears
2. ASAHI
3. NIBCO/Chemtrol
4. Hayward

B. Materials:

1. Body: Material as specified or indicated.
 - a. PVC: ASTM D-1784, Type 1, Grade 1, Class 12454B.
 - b. CPVC: ASTM D-1784, Type 4, Grade 1 with hydrostatic design stress of 1600 psi at 73.4 degree F.
 - c. Polypropylene: ASTM D-2146, Type 1 with tensile strength of 4977 psi at 77 degree F.
 - d. PVDF: Minimum tensile strength of 5000 to 7000 psi at 77 degree F.
2. Ball: Same material as valve body.

3. Seats: Teflon, concave design to absorb expansion.
 - a. Triangular seat design is not acceptable.
 - b. Provide viton or EPDM back up cushions to absorb expansion.
 4. Seals: Viton, all Viton shall contain a minimum of 55 percent viton.
 5. Provide vented ball valves for sodium hypochlorite and caustic services.
- C. Ends: Type as specified or indicated:
1. Provide ends flanged in accordance with ANSI B16.1 150 pounds standard drilling.
 2. True union design with integral union nuts on both ends of valve.
 - a. Threads between union nuts and valve body: Provide Buttress threads to protect against pipeline expansion and water hammer stresses.
- D. Machine the following to final tolerances:
1. Exterior of ball
 2. Interior of socket and threaded connections
 3. Teflon seat recesses
 4. Stem
 5. Neck I.D.
 6. Both end connectors
 7. Both carriers
- E. Valve Port:
1. 2-inch and smaller valves: full port.
 2. 3-inch and 4-inch valves: maximum of one pipe size reduction.
 3. 6-inch valves: venturi design.
- F. Valve Ratings:
1. PVC: 150 psi at 120 degree. F.
 2. CPVC: 85 psi at 175 degree F.
 3. Polypropylene: 85 psi at 175 degree F.
 4. PVDF: 85 psi at 210 degree F.
 5. All valves rated for 29.92 inch mercury vacuum.
- G. Physical Properties:
1. Tensile stress, psi; per ASTM D638 Test Method:
 - a. PVC: 7800
 - b. CPVC: 9200
 - c. PP: 5000
 - d. PVDF: 7800
 2. Flexural Stress, psi; per ASTM D790 Test Method:
 - a. PVC: 15650

- b. CPVC: 17060
 - c. PP: 9240
 - d. PVDF: 14930
3. Compressive Strength, psi; per ASTM D695 Test Method:
- a. PVC: 14220
 - b. CPVC: 15650
 - c. PP: 9950
 - d. PVDF: 14220
4. Hardness, Rockwell R, per ASTM D785 Test Method:
- a. PVC: 115
 - b. CPVC: 118
 - c. PP: 95
 - d. PVDF: 110
5. Water Absorption, percent, 24 hour., 1/8-inch thickness, per ASTM D570 Test Method:
- a. PVC: 0.07 percent
 - b. CPVC: 0.15 percent
 - c. PP: 0.01 percent
 - d. PVDF: 0.03 percent

H. Operators:

- 1. Lever, with retaining screw.
- 2. Electric Motor Actuators:
 - a. Provide 120V (220V) single phase actuators.
 - b. Enclosure:
 - (1) NEMA 7 explosion proof for classified areas
 - (2) NEMA 4 or 4X for non-classified areas.

2.05 BALL VALVES – AWWA – METAL SEATED:

A. Manufacturers:

- 1. Golden Anderson.
- 2. Pratt.
- 3. Val-Matic.

B. Type: AWWA Ball Valves:

- 1. Provide the main valve with a full, circular, unobstructed waterway.
 - a. Trunnion mounted.
 - b. Metal-to-metal seated in complete conformance with the requirements of AWWA C507, latest revision.

2. Pressure Class 150/250 and consist of a main valve assembly and a motor actuator, completely assembled, tested and ready for field installation and wiring.

C. Body:

1. Provide valves with valve body consisting of four components: two end pieces, through bolted and O-ring sealed against two center sections bolted together and O-ring sealed.
2. Material: Ductile iron ASTM A536 Grade 65-45-12.
3. Provide the end pieces with ANSI B16.1 Class 150/250 flanges with a true, 100 percent full circular port opening equal to the nominal size of the valve.
4. Provide the two center sections with integrally cast bronze bushed trunnions.
 - a. Provide one center section for rigid mounting and support of the valve operating mechanism without the need for additional support.
 - b. Provide the other section for a mounting pad to support the weight of the valve.
 - c. Provide a minimum shell thickness of all four sections in accordance with Table 3 of AWWA C507, latest edition.

D. Body Seat:

1. Provide a single fixed seat of Alloy 400 Monel located on the pump side end piece and retained in the end piece only by a mechanical means.
2. Provide a spherically generated the seating surface on an eccentric seating axis eliminating seat contact during rotation.

E. Operators:

1. Manually Valve:

- a. Provide totally enclosed gear operators in a permanently lubrication, watertight and dustproof enclosure, with adjustable open and closed stops and ball position indicator.
- b. Provide chainwheels where required as specified herein.

2.06 SWING CHECK VALVES – NON METALLIC:

A. Manufacturers:

1. Spears.
2. ASAHI/America, Inc.
3. NIBCO/Chemtrol Inc.
4. Hayward Industrial Plastics.

B. Materials:

1. Body and Disc: PVC, ASTM D-1784, Type 1, Grade 1.
2. Seats and Seals: EPDM.

C. Fabrication:

1. Solid thermoplastic construction with no metal to media contact.
2. Single disc design.

3. Provide integral top entry to valve body.
4. Machine finish all seat surfaces.
5. Provide outside level and weight.

D. Pressure Rating at 30 to 120 degree F (-1 to 38 degree C):

1. 3/4-inch thru 2.5-inch: 100 psi.
2. 3-inch thru 6-inch: 75 psi.
3. 8-inch: 45 psi.

E. Ends: Flanged, 150 pounds (PN10) rating.

2.07 TILTING DISC CHECK VALVES:

A. Manufacturers:

1. Val-Matic.
2. Crispin.
3. Pratt.

B. Materials:

1. Body: Cast Iron ASTM A48 Class 30.
2. Disc:
 - a. Valves 24-inch and smaller: Cast Iron ASTM A48 Class 30 or solid, one piece CDA #C83600 bronze disc with no attached disc ring.
3. Seat Ring: Cast Aluminum Bronze ASTM B271 Alloy 954; BHN 150 or CDA #C83600 bronze.
4. Disc Ring: Cast Aluminum Bronze ASTM B271 Alloy 955; BHN 190 or CDA #C83600 bronze.
5. Pivot Pin: Aluminum Bronze ASTM B505, Alloy 955; BHN 195 or Type 303 stainless steel.
6. Pivot Pin Bushing: Aluminum Bronze ASTM B505 Alloy 954; BHN 170.

C. Body:

1. Two piece construction bolted together at the seat with the seat at approximately a 55 degree angle.
2. Inlet body section to contain seat ring and outlet body section to contain two pivot trunnions about which the disc rotates.
3. Provide an inspection port each body half. Locate inspection port in inlet body section on bottom of valve and on top of valve on outlet section.
4. Area through valve must equal to full pipe area.
 - a. Area through seat must equal 1.4 times the area through the inlet and outlet.
5. Provide an indicator to visually show valve disc position at all times.
6. Ends: Flanged, faced and drilled in accordance with 125 pound ANSI B16.1.

2.08 BALL CHECK VALVES -NON-METALLIC:

A. Manufacturers:

1. Spears.
2. ASAHI.
3. NIBCO/Chemtrol.
4. Hayward.

B. Materials:

1. Body: Material as specified or indicated.
 - a. PVC: ASTM D-1784, Type 1, Grade 1, Class 12454B.
 - b. CPVC: ASTM D-1784, Type 4, Grade 1 with hydrostatic design stress of 1600 psi at 73.4 degree F (23 degree C).
 - c. Polypropylene: ASTM D-2146, Type 1 with tensile strength of 4977 psi at 77 degree F (25 degree C).
 - d. PVDF: Minimum tensile strength of 5000 to 7000 psi at 77 degree F (25 degree C).
2. Ball: Same material as valve body.
3. Seats: Teflon, concave design to absorb expansion.
 - a. Triangular seat design is not acceptable.
 - b. Provide Viton or EPDM back up cushions to absorb expansion.
4. Seals: Viton, all Viton to contain a minimum of 55 percent Viton.

C. Ends: Type as specified or indicated.

1. Provide ends flanged in accordance with ANSI B16.1 150 pound (PN10) standard drilling.
2. True union design with integral union nuts on both ends of valve.
 - a. Provide O-rings suitable for the service specified and indicated.
 - b. Threads between union nuts and valve body: Deep molded square ACME threads to protect against pipeline expansion and water hammer stresses.

2.09 SOLENOID VALVES – NON METALLIC:

A. Manufacturers:

1. Hayward Industrial products.

B. Type:

1. Size: 1/4-inch to 1-inch.
2. Globe type.
3. 2-way.
4. Energize to open.
5. Operating Pressure Differential: 120 psi.

C. Materials:

1. Body: CPVC.
2. End Connectors: CPVC.
3. Seals and O-rings: EPDM.
4. Seal Cartridge: CPVC.
5. Union Nut and Bonnet Nut: CPVC.

D. Coil: Class F.

E. Electrical: 120 V, 1 phase, 60 Hz (220 V, 1 phase, 50 Hz).

F. Ends: True Union or Flanged as indicated.

G. Enclosure: NEMA 4X for locations in non-classified areas and NEMA 7 for use in classified areas.

2.10 AIR RELEASE VALVES – CLEAN WATER SERVICE:

A. Manufacturers:

1. Val-Matic.
2. Crispin.
3. ARI.

B. Valves: Provide air release valves of the automatic float operated type designed to release accumulated air from a piping system while the system is in operation and under pressure.

C. Provide valves manufactured and tested in accordance with AWWA C512.

D. Provide valves used in potable water service certified to ANSI/NSF 61 Drinking Water System Components - Health Effects.

E. Valve manufacturer must have a quality management system that is certified to ISO 9001:2000 by an accredited, certifying body.

F. Provide valves with the cover bolted to the valve body and sealed with a flat gasket.

G. Provide replaceable resilient seats.

H. Provide drop tight shut off to the full valve pressure rating.

I. Provide floats guaranteed against failure including pressure surges.

J. Mechanical linkage to provide sufficient mechanical advantage so that the valve will open under full operating pressure.

1. Simple lever designs: Provide valves consisting of a single pivot arm and a resilient orifice button.
2. Compound lever designs: Provide valves consisting of two levers and an adjustable threaded resilient orifice button.

- K. Provide valve body with threaded NPT inlets and outlets.
 - 1. Inlet Connection: Provide hexagonal for a wrench connection.
 - 2. Working Pressure: 150 psi.
 - 3. Provide valves with two additional NPT connections with ball valves as specified herein, one connection with a plug and one with a hose coupling for the gauges, testing, and draining.
 - 4. Provide a vacuum check on the outlet to prevent air from re-entering the system during negative pressure conditions.

- L. Provide valves with an inflow preventer to prevent the introduction of contaminated water through the air valve outlet.
 - 1. Provide the inflow preventer to allow the admittance and exhausting of air while preventing contaminated water from entering during normal operating conditions.
 - a. Provide the inflow preventer flow tested by an independent testing lab approved by the American Society of Sanitary Engineers.

- M. Materials:
 - 1. Valve Body, Cover and Baffle:
 - a. ASTM A126 Class B cast iron for working pressures up to 300 psig.
 - b. ASTM A536 Grade 65-45-12 Cast Ductile Iron. For working pressures 300 psig and greater.
 - c. ASTM A216 Grade WCB cast steel.
 - d. ASTM A351 Grade CF8M stainless steel.
 - e. ASTM B584 Alloy C83600 cast bronze.
 - 2. Floats, Orifice and linkage: Type 316 stainless steel, non-metallic components are not acceptable.
 - 3. Orifice Button: Viton for simple lever valves and Buna-N for compound lever designs.
 - 4. Hardware: Type 316 stainless steel.
 - 5. Screened Hood: Type 316 stainless steel.

- N. Testing:
 - 1. Test valves at 1.5 times the rated working pressure.

2.11 AIR/VACUUM RELIEF VALVES:

- A. Manufacturers:
 - 1. Val-Matic
 - 2. Crispin.
- B. Vacuum Valve: Provide fully automatic, center guided, spring loaded disc designed to admit large quantities of air during the draining of the pipe or if a negative pressure occurs.

- C. Spring: Designed for a minimum of 100,000 cycles without failure and provide a seat cracking pressure of 0.25 psi and to fully open the valve at a pressure differential of 2 psi. Spring Material: Type 302 stainless steel.
- D. Provide valve with a bolted cover and bottom inlet.
- E. Provide a through flow area equal to the nominal size of the valve.
- F. Provide seat with machine registered fits to the body to insure proper alignment of the guide shaft and operation of the seat.
- G. Provide Type 316 stainless steel bird screen on the inlet.
- H. Floats: Type 316 stainless steel with Type 316 stainless steel guide shaft, bushing and fasteners. Float shall be center guided. A resilient bumper shall be provided to cushion the float during sudden opening.
- I. Valve Seats: ASTM A351 Grade CF8M stainless steel.
- J. Seals: Type 316 stainless steel and Buna-N.
- K. Valves shall be rated for ANSI Class 150 constructed of ASTM A536 Grade 65-45-12 ductile iron.
- L. Provide ANSI Class 150 flanged bottom connection.

- 1. Provide size as indicated.

2.12 CHAINWHEEL OPERATORS – STAINLESS STEEL (DUCTILE IRON):

- A. Provide chainwheels with chain and chain guides. For all valves with handwheels or gear operators higher than 6.5 feet above operating floor level.
- B. Provide chain that reaches to within 3 feet of the operating floor level.
- C. For valves with gear operator mount with chainwheel in the vertical position.
- D. Provide secondary safety restraint system.
- E. Manufacturer:
 - 1. Trumbull.
- F. Materials:
 - 1. Chainwheels: Pocket type wheel, Type 316 stainless steel.
 - 2. Chain: Type 316 stainless steel straight link machine chain.
 - 3. Hardware and Attachments: Type 316 stainless steel.
 - 4. Safety Restraint Cables and Hardware: Type 316 stainless steel.

G. Materials:

1. Chainwheels: Sprocket type wheel, ductile iron.
2. Chain: Galvanized steel connecting link chain.
3. Hardware and Attachments: Galvanized steel.
4. Safety Restraint Cables and Hardware: Type 316 stainless steel.

2.13 POSITION INDICATORS:

A. Manufacturer:

1. Trumbull Industries.

B. Provide position indicators installed on all multi-turn valves and quarter turn valves with gear boxes 3 inch and larger.

1. Type: Planetary gear design.

C. Materials:

1. Provide the sun gear, planet gear, ring gears and scale plate constructed of Delrin.
2. Housings of carbon steel or aluminum are not acceptable.
3. Hardware and Fasteners: Type 316 stainless steel.

D. Position Indicator Design Features:

1. Provide the position indication to show the position of the valve, from fully open to fully closed, identified at ground level.
2. Movement of the indicating arrow must be visible through a window covering a minimum of 300 degrees of the circumference of the indicator.
3. Size of the characters and numerals: minimum 3/16-inch (5 mm).
4. Provide the top scale plate with markings representing the number of turns, contain the word "CLOSED", and a directional arrow.
5. Provide permanently recessed, embossed or engraved markings in the scale plate. The use of adhesive labels is not acceptable.
6. Provide the "OPEN" line marked on a transparent polycarbonate window, field adjusted for the number of turns of each valve size.
7. Provide the position of the adjustable "OPEN" window secured to the top surface of the scale plate by the outside diameter of three Type 316 stainless button head cap screws.
8. Provide all adapters to secure the position indicator, for installation in either a valve box, floor box or wall bracket as indicated and required.
9. Provide the position indicator and adapter with matching flat sides to prevent rotation of the indicator during operation.

E. Exposed and Submerged Valves:

1. Provide a Type 316 stainless steel extension stem connected to a 2 inch square nut on the valve and extend up through the position indicator, terminating in a 2 inch square nut, operable by a standard waterworks tee-handle wrench.

2.14 SHOP PAINTING:

- A. Coat internal and external ferrous surfaces of valve with NSF Certified Epoxy in accordance with ANSI/NSF Std. 61, and in conformance to AWWA D102 Inside System No. 1 for all valves not specified to have a fusion bonded epoxy coating.
- B. Process Valve Color: Red.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Prior to installation, protect stored valves and appurtenances from damage due to exposure to sunlight, heat, dirt, debris, freezing and thawing, vandalism, etc.
- B. Clean all debris, dirt, gravel, etc, from inside of piping before placing valves in place.
- C. Erect and support valves in respective positions free from distortion and strain on appurtenances during handling and installation. Inspect material for defects in workmanship and material. Clean out debris and foreign material from valve openings and seats, test operating mechanisms to check functioning, and check nuts and bolts for tightness. Repair, valves and other equipment which do not operate easily or are otherwise defective at no additional cost to the Owner.
- D. Set plumb and support valves in conformance with instructions of manufacturer. Shim valves mounted on face of concrete vertically and grout in place. Install valves in control piping for access.
- E. Provide bolted split sleeve coupling or flexible type grooved coupling on downstream side of buried valves to assist in valve removal.
- F. Where indicated provide Type 316 stainless steel stem extension to operating floor elevation as shown and provide the bevel gear operator with a fabricated steel floorstand and handwheel.

3.02 GATE VALVES:

- A. Install gate valve stem as shown or with stems between vertical and 45 degrees above the horizontal. Valves installed with stems below horizontal are not acceptable.

3.03 CHECK VALVES:

- A. Install swing check valves horizontally in pipelines unless otherwise indicated.

3.04 FIELD TESTING:

- A. Pressure test valves with pipeline pressure testing.
- B. Test functions of each valve.
- C. Make all adjustments necessary to place valves in specified working order at time of above tests.

- D. Remove all replace valves and appurtenances at no additional cost to the Owner with equipment that will meet all requirements specified and indicated if unable to demonstrate to the satisfaction of the Engineer that valves will perform the service specified, indicated and as submitted and accepted.
- 3.05 FIELD TOUCH-UP PAINTING:
- A. After installation and accepted testing by the Engineer, apply touch-up paint to all scratched, abraided and damaged shop painted surfaces. Coating type and color shall match shop painting.
- 3.06 CONTRACT CLOSEOUT:
- A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 44 43 31

PRESSURE FILTRATION EQUIPMENT – GAC AND ION EXCHANGE

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide and test filtration equipment including, pressure vessel[s], valves, piping, fittings, underdrains, media, with water from potable water drinking water supply as indicated and in compliance with Contract Documents.
- B. Granular Activated Carbon (GAC) and Ion Exchange (IX) will not be backwashed automatically. Media replacement and backwash will be operated manually.
- C. All materials shall meet Buy America – Build America Act.
- D. Provide equipment information with bid as noted in the bid form.

1.02 REFERENCES:

- A. American Society for Testing and Materials International (ASTM):
 - 1. A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- B. American Water Works Association (AWWA):
 - 1. B100: Granular Filter Material
 - 2. C200: Steel Water Pipe - 6 in. (150 mm) and Larger
 - 3. C207: Steel Pipe Flanges for Waterworks Service— Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)
- C. NSF International (NSF):
 - 1. 61: Drinking Water System Components - Health Effects

1.03 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01 33 00.
 - 1. Certified shop and erection drawings.
 - 2. Data, regarding filter characteristics and performance:
 - a. Prior to fabrication and testing, provide guaranteed performance based on service conditions specified.
 - 3. Shop drawing data for accessory items.

4. Certified setting plans, with tolerances, for anchor bolts.
 5. Manufacturer's literature as needed to supplement certified data.
 6. Operating and maintenance instructions and parts lists.
 7. Listing of reference installations as specified with contact names and telephone numbers.
 8. Qualifications of field service engineer.
 9. Shop and Field inspections reports.
 10. List of spare parts.
 11. Recommendations for short and long term storage.
 12. Special tools.
 13. Shop and field testing procedures and equipment to be used.
 14. Recommended location and mounting of equipment and appurtenances.
 15. Number of service person days provided and per diem field service rate.
 16. Manufacturer's product data and specifications for shop painting including statement of compliance for compatibility and NSF Std. 61 approval.
 17. The latest ISO 9001 series certification or other quality control plan.
 18. Material Certification:
 - a. Provide certification from the equipment manufacturer that the materials of construction specified are recommended and suitable for the service conditions specified and indicated. If materials other than those specified are proposed based on incompatibility with the service conditions, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated including an installation list of a minimum of five (5) installations in operation for a minimum of five (5) years. Provide proposed materials at no additional cost to the Owner.
 - b. Where materials are not specified, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated.
- B. A copy of the contract mechanical process, electrical and instrumentation drawings, with addenda that are applicable to the equipment specified in this section, marked to show all changes necessary for the equipment proposed for this specification section. If no changes are required, mark all drawings with "No changes required" or provide a statement that no changes are required.

1. Failure to include all drawings or a statement applicable to the equipment specified in this section will result in submittal return without review until a complete package is submitted.
- C. A copy of this specification section with addenda and all referenced specification sections with addenda, with each paragraph check-marked to indicate specification compliance or marked and indexed to indicate requested deviations and clarifications from the specified requirements.
1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.
 2. Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in submittal return without review until marked up specifications and justifications are submitted in a complete package.
- 1.04 SPARE PARTS:
- A. Comply with the requirements specified in Section 01 61 00.
 - B. Provide manway gaskets 2 for each size and type.
 - C. Spare water distribution and collection nozzles – 10 percent of each size and type where used, as applicable.
 - D. Flange gaskets 2 for each size and type.
 - A-E. Provide other spare parts as required for first year preventative maintenance and to maintain warranties noted in contract documents.
- 1.05 QUALITY ASSURANCE:
- A. Comply with the requirements specified in Section 01 43 00.
 - B. Standardization and System Responsibility:
 1. For specific purposes of standardization and total system responsibility, equipment included in this section shall be furnished by single manufacturer.
 2. To ensure proper operating systems, manufacturer of filtration equipment shall also be responsible for providing following:
 - a. Butterfly valves, ball valves, and air release valves associated with equipment operation.
 - b. Piping associated with standard equipment package. Piping shall include all piping to vessel isolation valves.
 - C. Services of Manufacturer's Representative as stated in Section 01 43 00 and as specified herein.

D. Provide services of factory-trained Service Technician, specifically trained on type of equipment specified:

1. Service Technician must have a minimum of five (5) years of experience, all within the last seven (7) years, on the type and size of equipment.
2. Service Technician must be present on site for all items listed below. Person-day requirements listed are exclusive of travel time, and do not relieve Contractor of the obligation to place equipment in operation as specified.
3. Installation: Inspect grouting, location of anchor bolts; setting, leveling, alignment, field erection; coordination of piping, electrical and miscellaneous utility connection:
 - a. 2 person-days.
4. Functional Testing: Calibrate, check alignment and perform a functional test dry and a test with water. Tests to include all items specified.
 - a. 4 person-days.
5. Performance Testing: Field performance test equipment specified.
 - a. 2 person-days.
6. Vendor Training: Provide classroom and field operation and maintenance instruction including all materials, slides, videos, handouts and preparation to lead and teach classroom sessions.
 - a. 1 person-days.
7. Credit to the Owner, all unused service person-days specified above, at the manufacturer's published field service rate.
8. Any additional time required of the factory trained service technician to assist in placing the equipment in operation, or testing or to correct deficiencies in installation, equipment or material shall be provided at no additional cost to the Owner.

E. Manufacturer of specified equipment shall have a minimum of ten (10) operating installations with equipment of the size specified and in the same service as specified operating for not less than five (5) years.

1.06 DELIVERY STORAGE AND HANDLING:

- A. Comply with the requirements specified in Section 01 61 00.
- B. Transport and store media to avoid contamination.
- C. Transport, delivery and store in accordance with written instructions from the manufacturer.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION:

A. Design Requirements:

1. Hydraulic Conditions:

- a. Design Flow, gpm: 700
- b. Working Pressure, psi: less than 100
- c. Maximum Loading Rate, gpm/ft²: 6.2

2.02 MANUFACTURERS:

A. Calgon Carbon.

B. AqueoUS Vets.

2.03 PRESSURE VESSELS:

A. Vertical Pressure Filter:

- 1. Minimum Filtering Area/Filter, feet²: 113.1
- 2. Number of Vessels: 4
- 3. Filter size: 12 feet diameter
 - a. 20,000 lb capacity GAC media
 - b. 3 minute minimum IX media contact time.
 - c. 3 foot minimum IX media depth (minimum 340 cubic feet).
- 4. Maximum overall height – see drawings
- 5. Material: Welded Steel Construction:
 - a. SA-516 Grade 70 steel.
 - b. Design with safety factor of 43.5.
 - c. Factory test per ASME standards to 50 percent above design system pressure.
 - d. 100 psi or higher ASME code with stamp.
- 6. Access manhole in each filter at both the top above the media and the bottom. Provide with spare gasket. Minimum 12 inches (300 mm) x 16-18 inches (400 mm) manway.
- ~~7. Adjustable cast iron jacklegs.~~

8.7. Flanges for piping connections.

B. Vessel:

1. Provide all pressure vessels constructed in accordance with Section VIII of the ASME code requirements for cold fired pressure vessels, and bear the ASME stamp.
 - a. Minimum thicknesses: Provide accordance with ASME code requirements. Verification of ASME code design to include calculated head and shell thicknesses. Submit with the first submittal drawing and be approved by the Engineer Representative prior to authorization of fabrication. Vessels shall be fabricated in a facility holding a current ASME U-stamp. Facilities holding an ASME R (“repair”) or other certification are not acceptable.
2. Provide all flanges, plates, angles, channels, and beams, including side shell to head connections, joined by full penetration welds, each side, continuous welding.
3. Flanges: Factory welded on split centers.

C. Vessel Interior Construction:

1. Influent and Collection System:

- a. The influent and collection system shall be the manufacturer standard design and shall be capable of continuously collecting water at the maximum design loading rates.
- b. Provide the influent and collection system capable of uniform water distribution.
- c. Adjust IX media influent system to accommodate reduced media capacity in vessel.
- d. Materials must be compatible with media.
- e. Metals internals shall be 316 Stainless Steel Schedule 10 or higher.
- e.f. Use of teflon tape on internal systems is prohibited.

D. Vessel Miscellaneous Components:

1. Provide each filter cell equipped with a sufficient number of 14-inches (350 mm) x 18-inches (450 mm) manways, rated for the working pressure of the vessel for the purposes of media loading, observation of backwash functions and inspection.
2. Provide 1/2-inch (13 mm) diameter, full couplings for sample taps.
3. Provide Type 316 anchor bolts and hardware.
4. Provide pipe and isolation valves for media replacement as noted in drawings.
- 4.5. Provide expansion joint at connections to the vessels as noted in the drawings.

2.04 GAC MEDIA:

- A. 20,000 lbs of C400 Calgon Carbon GAC media per 2 vessels (40,000 lbs total):
 - 1. F400 Media
 - 2. Mesh Size 12x40
 - 3. Mean Diameter 9.7 micrometer
 - 4. Conform to NSF 61.
- B. Media installed in field.

2.05 IX MEDIA:

- A. PFA 694 E by Purolite OR PSR 2+ by Dow
 - 1. Mesh Size 16x50 Or 16x40
 - 2. Conform to NSF 61.
- B. Media installed in field.

2.06 SUPPORT GRAVELS MEDIA:

- A. In lieu of support gravel, GAC or IX media shall be used, respectively, and collection headers shall be self-supporting.

2.07 VALVES:

- A. Filter function valves: Provide motor actuated valves.
 - 1. Valve size as specified and indicated
- B. Valves: Wafer lug style butterfly valves in accordance with Section 40 23 13.01.
- C. Provide four motor actuators for FCV 15-, FCV 15-2, FCV 15-3, FCV 15-4.
 - 1. Rotork QT-3 or Equal.
- D. Provide position switches integral to motor operator.
- E. Provide all valves with visual valve position indicators.
- F. Provide manual hand-wheel overrides.
- G. Combination air/ vacuum release valves, provide one for each vessel in accordance with Section 40 23 13.01.

2.08 INSTRUMENTATION:

- A. Loss of Head Gauge Panel PI/PDIT 15-1, PI/PDIT 15-2, PI/PDIT 15-2, and PI/PDIT 15-4.
1. Provide a Type 316 stainless steel loss of head gauge panel completely factory fabricated.
 2. The gauge panel shall have the following 4-1/2 inch flush-mounted gauges:
 - a. Inlet header: 0-100 psi (0 – 690 kPa)
 - b. Effluent header: 0-100 psi (0 – 690 kPa)
 - c. Loss of head - between influent and effluent headers, 0-10 psi (0 – 70 kPa) differential pressure gauge with switch
 3. Provide a differential pressure transmitter manufactured by Rosemount (3051 series) or equal to indicate the differential pressure between the influent and effluent of each filter. The 4~20 mA differential pressure signal shall be wired to the UW15 PLC control panel.
 4. Each panel shall be equipped with the following components:
 - a. Phenolic nameplates identifying gauges and sample taps.
 - b. Two flush mounted sample taps for influent and effluent locations.
 - c. Manufacturer nameplate, aluminum construction.
 5. Provide mounting hardware (brackets, U-bolts, nuts, washers, etc.) for affixing to face piping.

2.09 SHOP PAINTING:

- A. The interior of the filter including above and below the underdrain plate shall be sandblasted and protected from corrosion by proper application of approved coatings for potable water. The exterior of the vessel shall be sandblasted and prime painted at the factory.
- B. Surface preparation:
1. Interior - Sandblast to near white blast cleaning (SSPC-SP10).
 2. Exterior - Sandblast to commercial blast cleaning (SSPC-SP6).
- C. Coating:
1. Interior - All interior coatings shall be NSF Std. 61 approved. Stripe coating: hand-apply one coat Tnemec pota-pox tank white to all welds and hard to reach areas using high quality natural or synthetic bristle brush, to a dry film thickness of 3-5 mils. Prime coating: Tnemec pota-pox Beige primer to a dry mil thickness of 3-5 mils before any rust can form. Finish coating: Tnemec pota-pox tank white to a dry mil thickness of 4-6 mils for a total dry film thickness of 7-11 mils.

2. Exterior - Stripe coating: hand-apply one coat Tnemec Series 20 tank white to all welds and hard to reach areas using high quality natural or synthetic bristle brush, to a dry film thickness of 3-5 mils. Prime coating: Tnemec Series 20 Beige primer to a dry mil thickness of 3-5 mils before any rust can form. The exterior finish coat shall be applied by others with compatible system.
- D. The total paint system shall be the product of and be applied in accordance with the recommendations of one manufacturer. Alternate paint systems must be pre-approved by Engineer Representative. Contractor shall provide an adequate amount of field touch-up paint.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Installation shall be as shown on the plans and in accordance with the manufacturer's recommendations, installation instructions and assembly drawings. Manufacturer's installation instructions and assembly drawings shall be submitted and approved by the Engineer Representative prior to shipment of equipment. Installation of the filtration system shall be in strict accordance with the details shown on the drawings and in complete conformance to manufacturer's instructions and procedures.

A.B. Mount tanks level.

B.C. Disinfection of IX media vessels shall be completed prior to IX media installation but following installation of all other media influent and collection piping systems within the vessel.

3.02 FACTORY SERVICES AND START-UP:

A. Installation Supervision. The Contractor shall coordinate with the treatment equipment manufacturer to provide factory supervision (as outlined on the Equipment Schedule) or direction during critical phases of installation. Critical phases will include setting of equipment, installation of internals, installation of controls, wiring instrumentation and other components critical to the successful operation of the system.

B. Media Installation. Installation of support gravels and filter media shall be under the direct supervision of an employee of the filter manufacturer experienced in this procedure as required by AWWA B100 standard and in accordance with the Equipment Schedule. This includes GAC backwash and IX flushing (manual processes).

C. System Start-Up and Training:

1. The contractor will verify in writing that the project is ready for manufacturer's field services. Copies of written verification shall be given to the manufacturer, Engineer Representative and Owner prior to scheduling field services.
2. The contractor shall provide the services of a factory representative during installation and on-site start-up supervision of the treatment equipment. The contractor shall provide installation and on-site start-up supervision. At a minimum, the equipment manufacturer's technician shall perform the following start-up functions:

- a. Provide the number of days indicated to the Contractor during installation of the equipment.
- b. Inspect the final installation to assure proper installation, connection and wiring of all equipment of the manufacturer's supply.
- c. Start-up of the equipment in the presence of the Contractor and Owner's operating personnel.
- d. Training of Owner's operating personnel in proper operation and maintenance procedures, start-up/shutdown procedures, response to emergency conditions, and troubleshooting. The responsibility of the Contractor and the factory service representative with regard to start-up shall be fulfilled when the start-up is complete, the equipment is functioning properly, operating personnel have been trained and the equipment has been accepted by the Owner.

3.03 FIELD TOUCH-UP PAINTING:

- A. After installation and approved testing by the Engineer Representative, Contractor shall apply field touch-up paint to all scratched, abraded and damaged shop painted surfaces. Coating type and color shall match shop painting.

3.04 CONTRACT CLOSEOUT

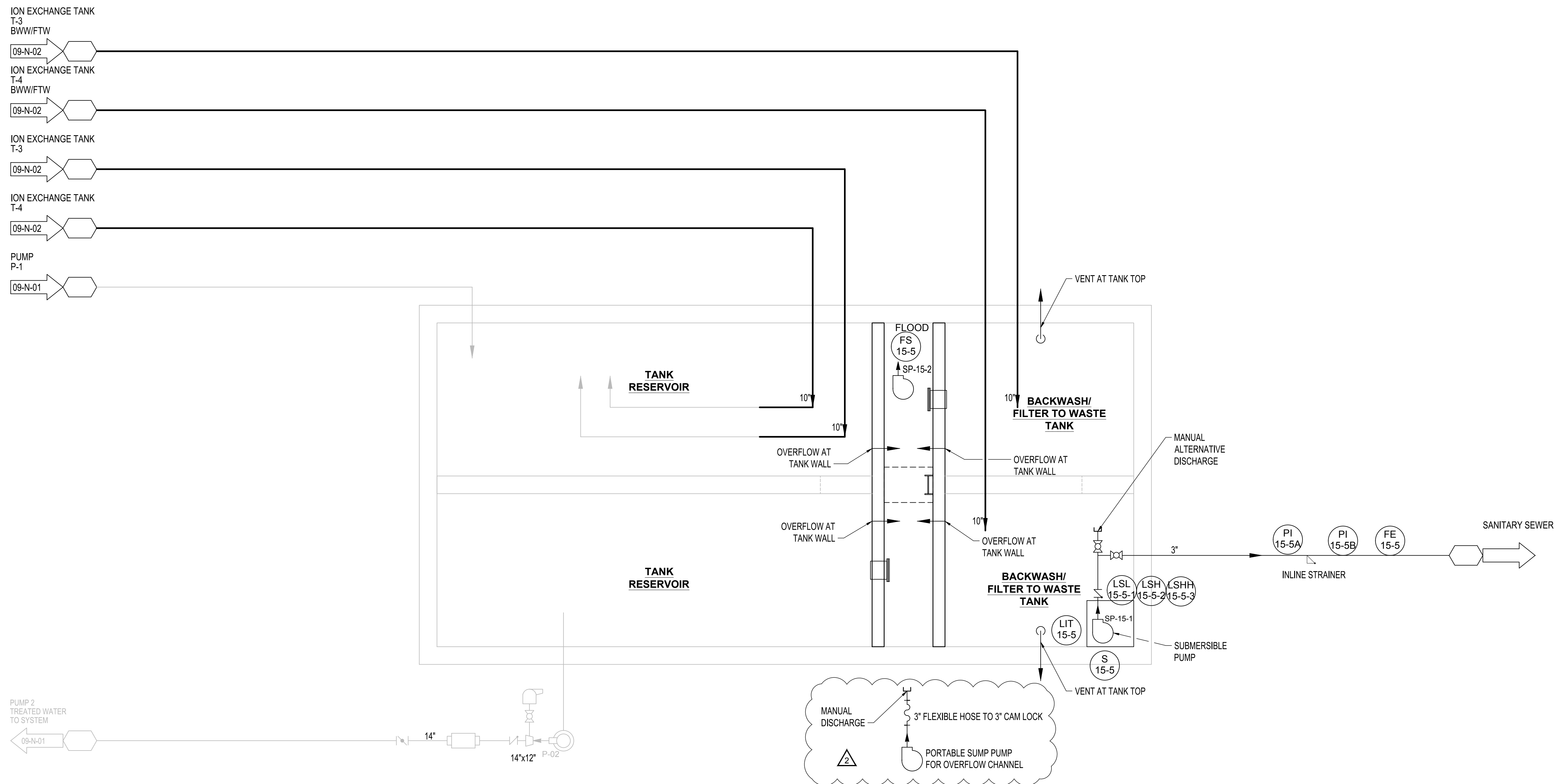
- A. Provide in accordance with Section 01 77 00.

END OF SECTION

ANSI D 22' x 34'

Project Management Initials: Designer: _____ Checked: _____ Approved: _____
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SEE LEGEND ON PROCESS AND INSTRUMENTATION DIAGRAM SYMBOLS DRAWING 01-G-07



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	01/26/24	PORTABLE SUMP PUMP FOR OVERFLOW CHANNEL
1	12/22/23	ISSUE FOR BID

KEY PLAN

PROJECT NUMBER

60686092

SHEET TITLE

P&ID DIAGRAM - TANK RESERVOIR AND BWW/FTW TANKS

DWG NUMBER

09-N-03

SHT NUMBER

20 OF 55

GENERAL NOTES

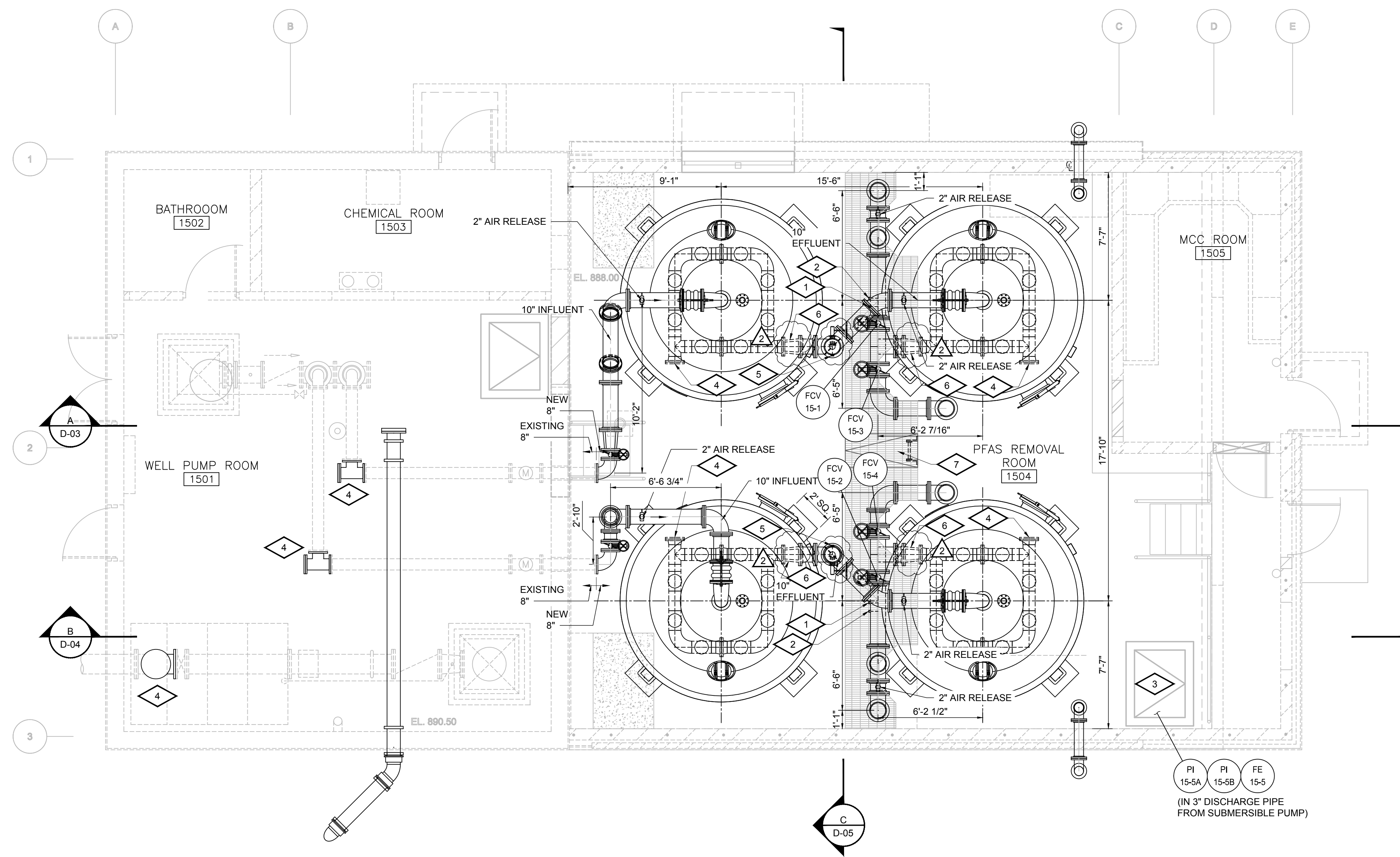
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2. PIPES INCLUDED FLANGED CONNECTIONS AND GROOVED CONNECTIONS. SEE LEGEND SHEET FOR CONNECTIONS.
3. SEE P&ID AND SPECIFICATIONS FOR CHEMICAL PIPE ROUTING. PROVIDE TUBE FOR CHEMICAL FEED FROM CHEMICAL ROOM TO APPLICATION POINTS IN 2-INCH SCHEDULE 80 CPVC. PROVIDE LONG RADIUS ELBOWS ON CARRIER PIPE.
4. FIELD VERIFY EXISTING PIPING CONNECTIONS.

PLAN NOTES

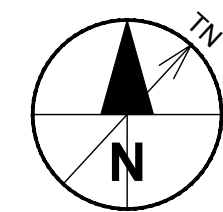
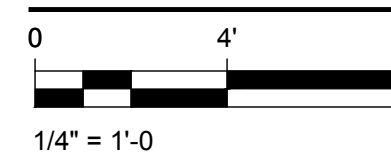
- 1 CHEMICAL INJECTION POINT
- 2 CHEMICAL INJECTION POINT
- 3 3-INCH LINE FROM SUMP PUMP CAM-LOCK CONNECTION TO HUB DRAIN IN PIPE PIT AT HIGH SERVICE PUMP DISCHARGE. WALL PENETRATION PER DETAILS.
- 4 REPLACE ELBOW WITH TEE AND ADD BLIND FLANGE FOR START UP AND MEDIA REPLACEMENT.
- 5 1" WELDED TAP AND BALL VALVE.
- 6 8"x10" EXPANSION JOINT REDUCER.
- 7 REMOVABLE GRATING FOR ACCESS TO BELOW AND PUMPING OUT THE OVERFLOW CHANNEL.

ANSI D 22' x 34'

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FIRST FLOOR PLAN



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	01/26/24	10x8 RED.EXP.JT., BFLY VALVE
1	12/22/23	ISSUE FOR BID

KEY PLAN

PROJECT NUMBER

60686092

SHEET TITLE

PROCESS
FIRST FLOOR PLAN

DWG NUMBER

10-D-02

SHT NUMBER

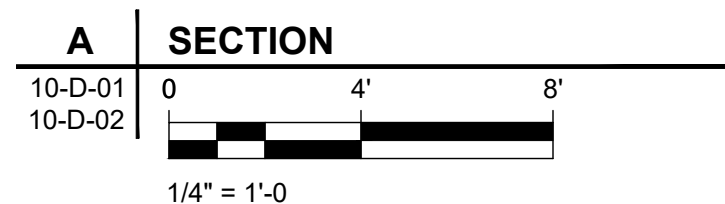
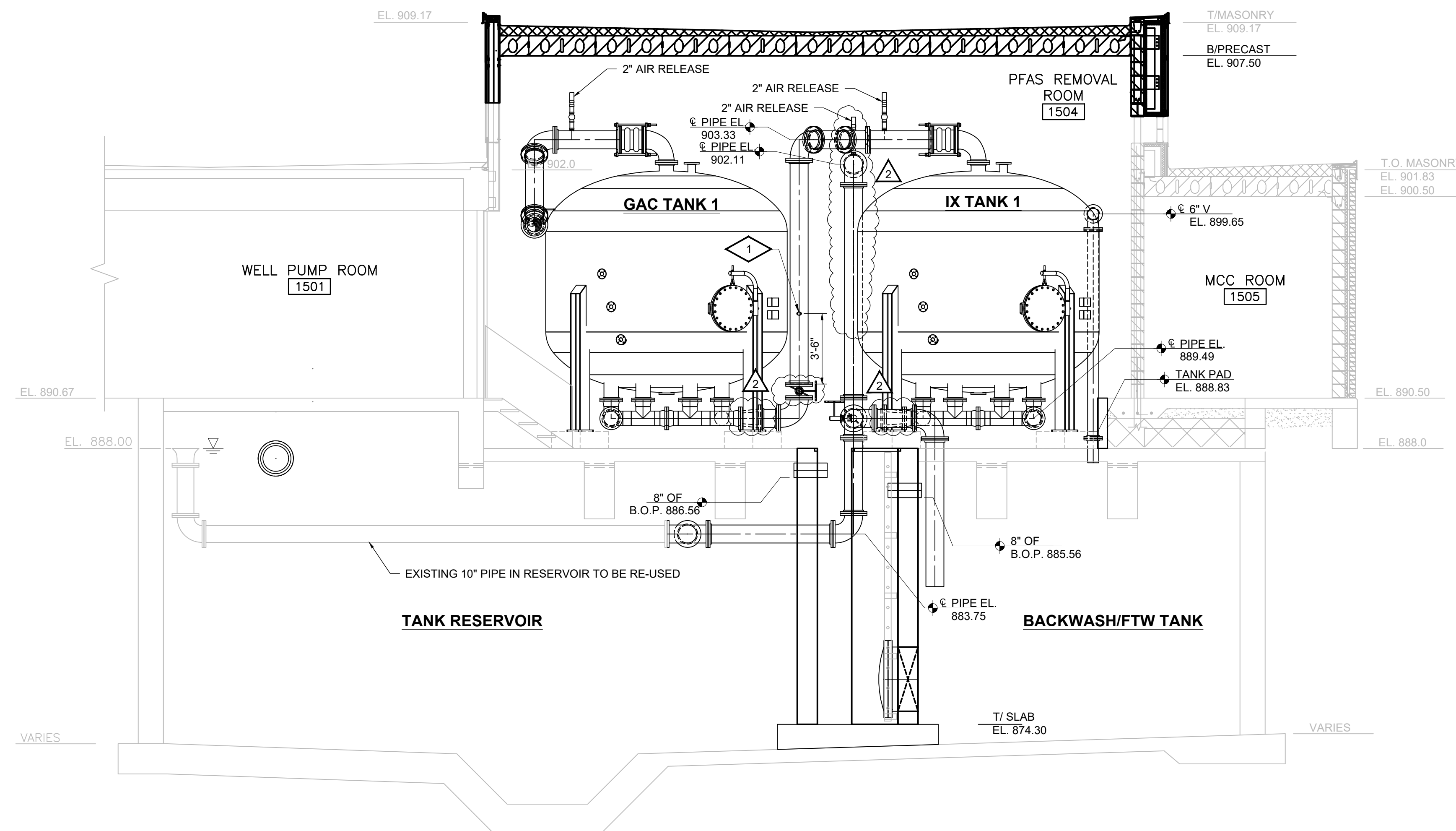
38 OF 55

GENERAL NOTES

1. PIPE SUPPORTS NOT SHOWN. SEE SPECIFICATIONS.
2. PIPES INCLUDED FLANGED CONNECTIONS AND GROOVED CONNECTIONS. SEE LEGEND SHEET FOR CONNECTIONS.
3. SEE P&ID AND SPECIFICATIONS FOR CHEMICAL PIPE ROUTING. PROVIDE TUBE FOR CHEMICAL FEED FROM CHEMICAL ROOM TO APPLICATION POINTS IN 2-INCH SCHEDULE 80 CPVC. PROVIDE LONG RADIUS ELBOWS ON CARRIER PIPE.
4. FIELD VERIFY EXISTING PIPING CONNECTIONS.

PLAN NOTES

- 1 1" WELDED TAP AND BALL VALVE.



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	01/26/24	10x8 RED.EXP.JT., BFLY VALVE IX DISCHARGE PIPE RAISED
1	12/22/23	ISSUE FOR BID

KEY PLAN

PROJECT NUMBER

60686092

SHEET TITLE

PROCESS SECTION A

DWG NUMBER

10-D-03

SHT NUMBER

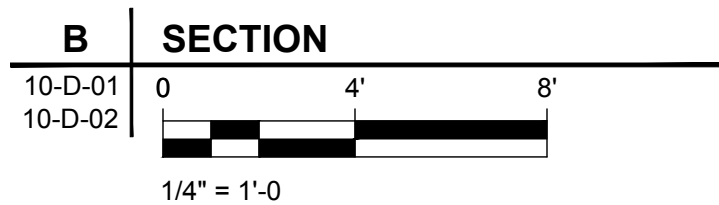
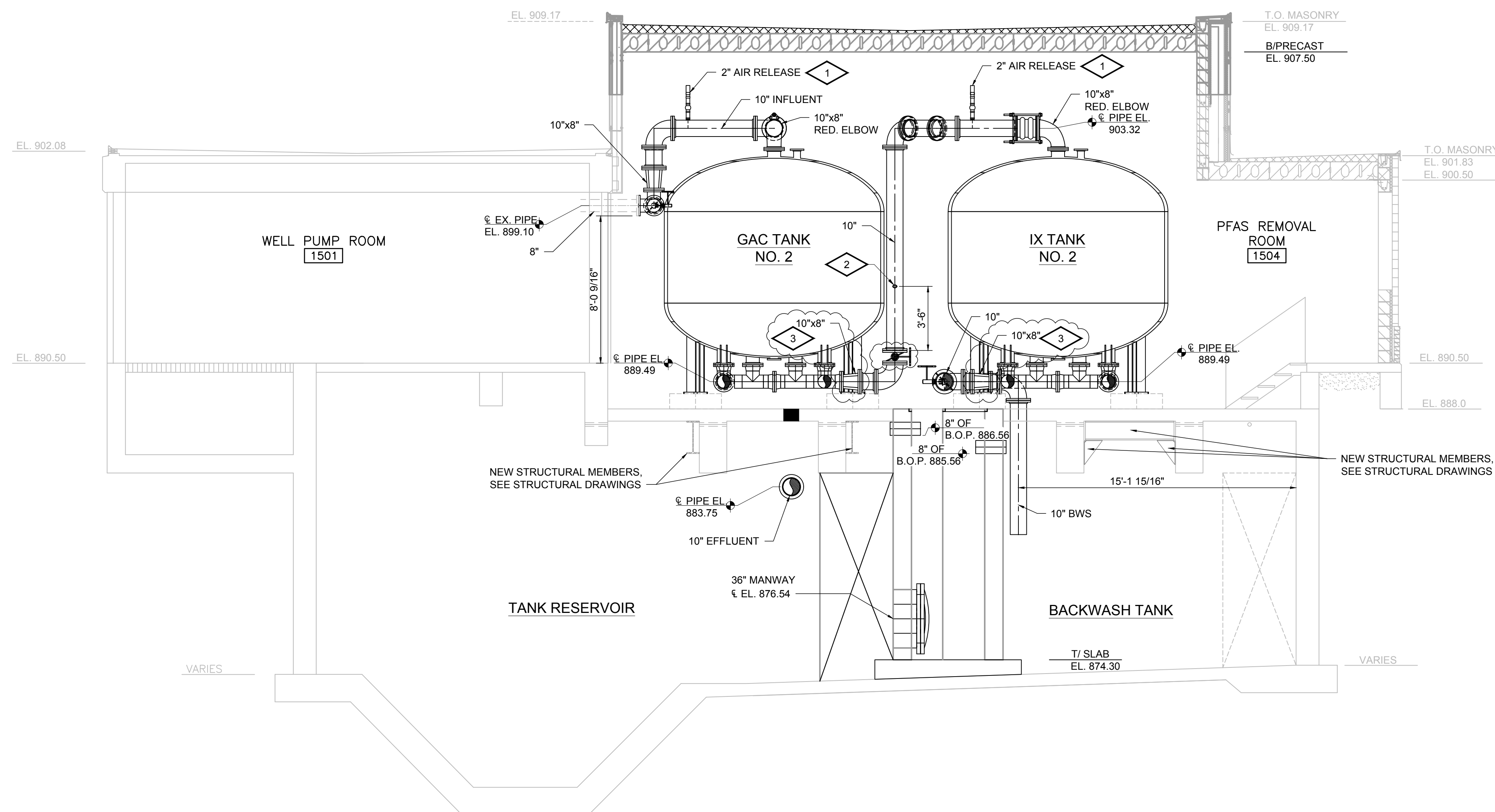
39 OF 55

GENERAL NOTES

1. PIPE SUPPORTS NOT SHOWN. SEE SPECIFICATIONS.
2. PIPES INCLUDED FLANGED CONNECTIONS AND GROOVED CONNECTIONS. SEE LEGEND SHEET FOR FOR CONNECTIONS.
3. SEE P&ID AND SPECIFICATIONS FOR CHEMICAL PIPE ROUTING. PROVIDE TUBE FOR CHEMICAL FEED FROM CHEMICAL ROOM TO APPLICATION POINTS IN 2-INCH SCHEDULE 80 CPVC. PROVIDE LONG RADIUS ELBOWS ON CARRIER PIPE.
4. FIELD VERIFY EXISTING PIPING CONNECTIONS.

PLAN NOTES

- 1. ROUTE DRAIN FROM AIR RELEASE TO HUB DRAIN
- 2. 1" WELDED TAP AND BALL VALVE.
- 3. 8"x10" EXPANSION JOINT REDUCER.



ISSUE/REVISION		
I/R	DATE	DESCRIPTION
2	01/26/24	10x8 RED.EXP.JT., BFLY VALVE
1	12/22/23	ISSUE FOR BID

KEY PLAN

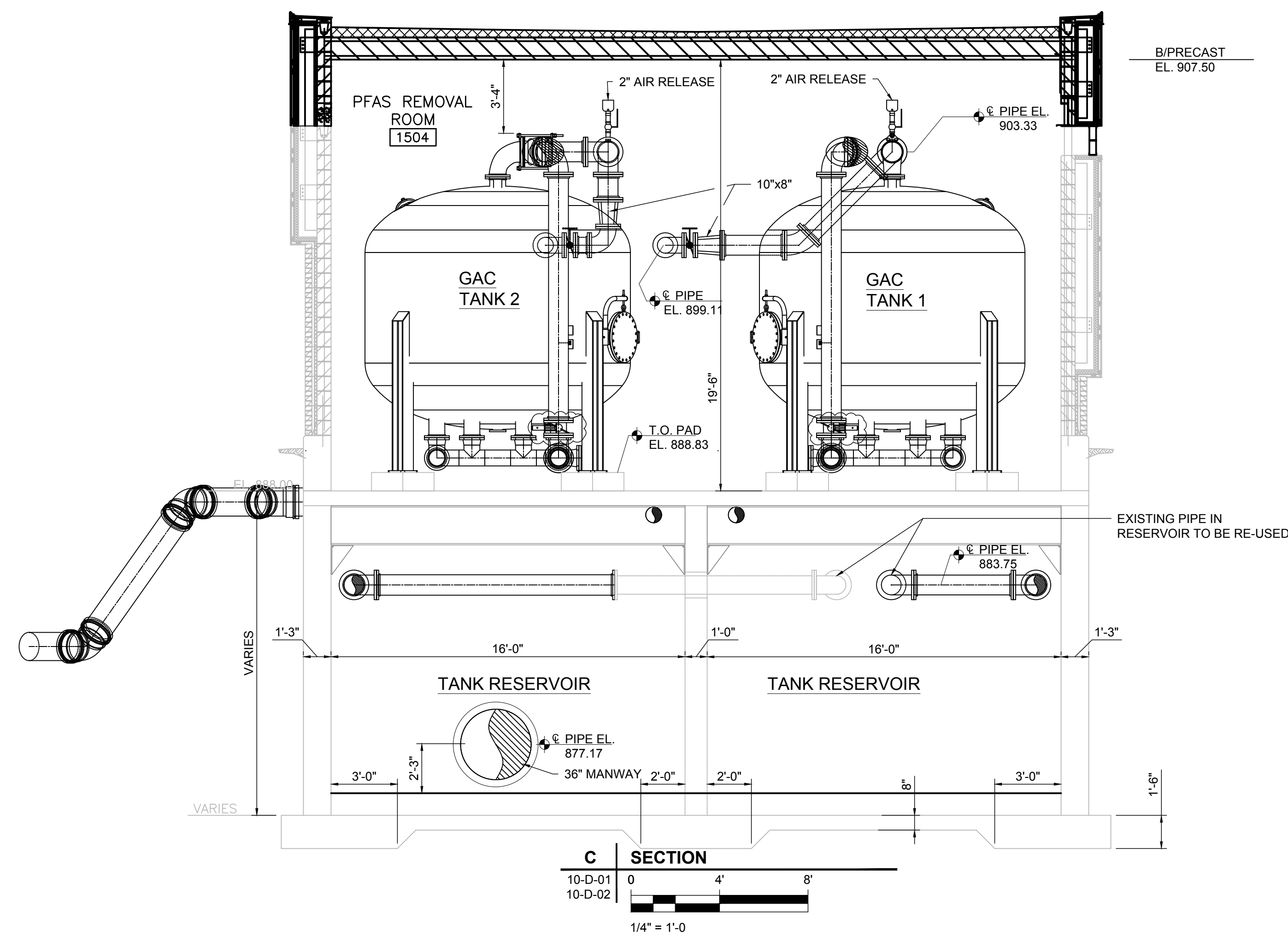
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DWG NUMBER	10-D-04
SHT NUMBER	40 OF 55

ANSI D 22' x 34'

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GENERAL NOTES

1. PIPE SUPPORTS NOT SHOWN. SEE SPECIFICATIONS.
2. PIPES INCLUDED FLANGED CONNECTIONS AND GROOVED CONNECTIONS. SEE LEGEND SHEET FOR CONNECTIONS.
3. SEE P&ID AND SPECIFICATIONS FOR CHEMICAL PIPE ROUTING. PROVIDE TUBE FOR CHEMICAL FEED FROM CHEMICAL ROOM TO APPLICATION POINTS IN 2-INCH SCHEDULE 80 CPVC. PROVIDE LONG RADIUS ELBOWS ON CARRIER PIPE.
4. FIELD VERIFY EXISTING PIPING CONNECTIONS.



C SECTION
 10-D-01 0 4 8
 10-D-02
 1/4" = 1'-0"

ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	01/26/24	10x8 RED.EXP.JT., BFLY VALVE
1	12/22/23	ISSUE FOR BID

KEY PLAN

PROJECT NUMBER
60686092

SHEET TITLE
PROCESS SECTION C

DWG NUMBER 10-D-05 **SHT NUMBER** 41 OF 55

ANSI D 22' x 34'

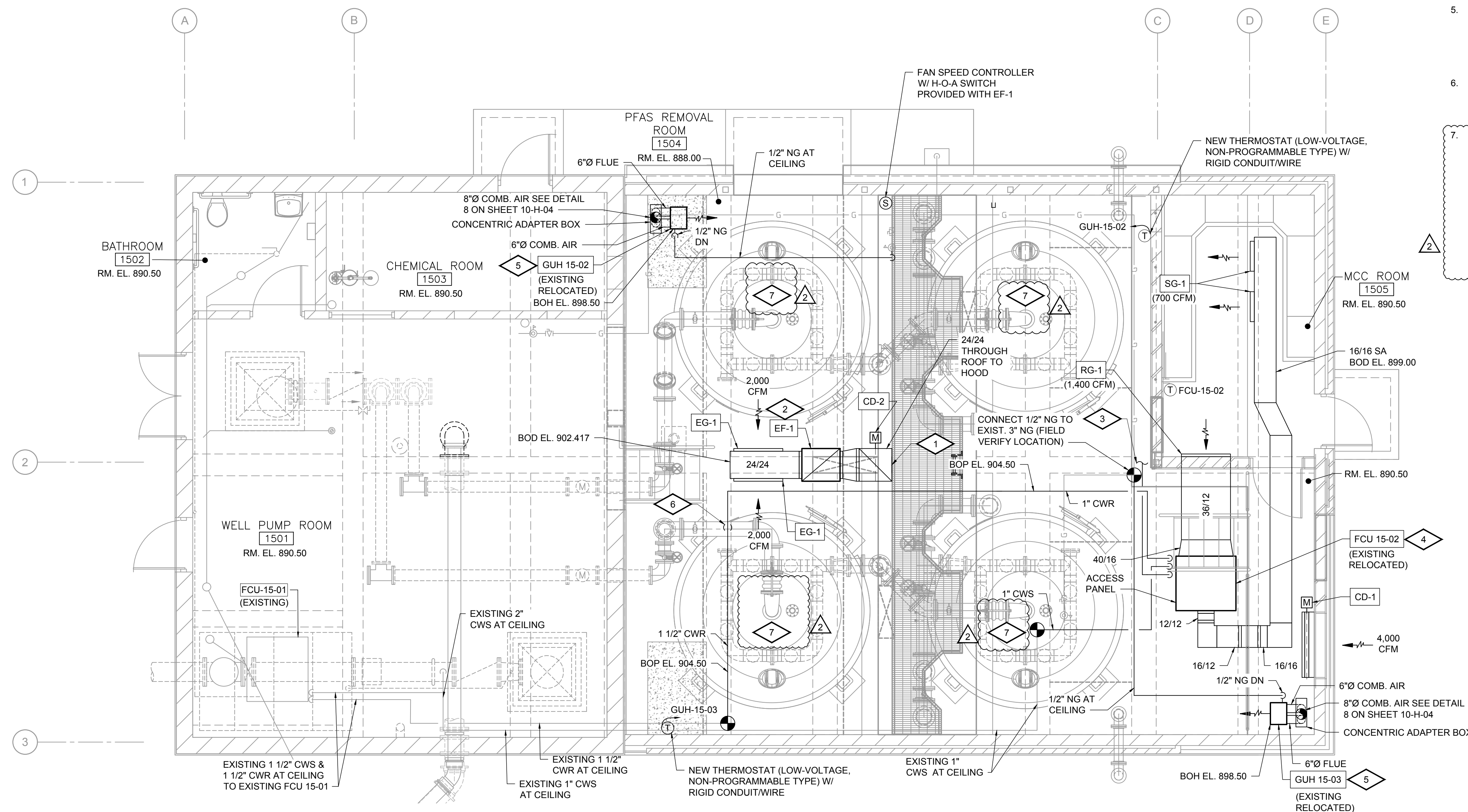
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GENERAL NOTES

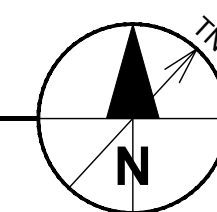
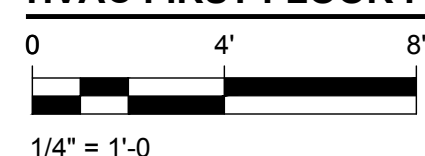
1. VENTILATION SYSTEM INSIDE PFAS REMOVAL ROOM SHALL BE OPERATED MANUALLY THROUGH MANUFACTURER FURNISHED SPEED CONTROLLER AND H-O-A SWITCH. FAN TO OPERATE DURING PROCESS BACKWASH OPERATION.
2. DEHUMIDIFIERS LOCATED INSIDE PFAS REMOVAL ROOM SHALL BE DISABLED TO OPERATE WHEN VENTILATION SYSTEM (EF-1) IS OPERATING.

PLAN NOTES

1. PROVIDE DRIP PAN ELBOW AT BOTTOM OF DUCT RISER FROM ROOF. SEE DETAIL 1 ON SHEET 10-H-04.
2. CENTRIFUGAL INLINE EXHAUST FAN. BOTTOM OF FAN INSTALLED AT EL. 898.00. FAN SHALL BE INTERLOCKED WITH OA DAMPER (CD-1) AND EA DAMPER (CD-2).
3. ROUTE 1" CONDENSATE OVER TO 4" HUB DRAIN ABOVE. SEE SHEET 10-P-01 FOR CONTINUATION.
4. RELOCATE/INSTALL EXISTING 3-TON FAN COIL UNIT/HEAT PUMP (FCU-15-02) IN LOCATION SHOWN. BOTTOM OF UNIT INSTALLED AT EL. 898.67. PROVIDE NEW CONNECTING SUPPLY AND RETURN DUCTWORK, COOLING WATER SUPPLY AND RETURN PIPING, AND CONDENSATE DRAIN PIPE.
5. RELOCATE/INSTALL EXISTING 24 MBH GAS-FIRED UNIT HEATER (GUH-15-03) INCLUDING SEPARATED COMBUSTION EXHAUST STACK THROUGH ROOF. PROVIDE NEW CONNECTING GAS PIPING AND CLASS B VENTING AS REQUIRED. EXTEND CONTROL WIRE/RIGID CONDUIT TO NEW WALL MOUNTED THERMOSTAT.
6. 2" CWR PIPE TO TIE INTO 10" INFLUENT PIPE ENTERING GAC TANK FOR WATER SOURCE HEAT PUMPS (FCU-15-01 & FCU-15-02) AS APPROVED BY THE WIDNR FOR EXISTING CONDITIONS. PROVIDE 2" CHECK VALVE.
7. THE ENTIRE BUILDING IS SPRINKLED WITH A WET PIPE SYSTEM, ORDINARY HAZARD GROUP 1, IN ACCORDANCE WITH NFPA 13. A WISCONSIN LICENSED FIRE SUPPRESSION CONTRACTOR SHALL REVIEW THE EXISTING SPRINKLER PIPING AND SPRINKLER HEADS LAYOUT INSIDE THE PFAS REMOVAL ROOM 1504 AND INCLUDE PROVISIONS IN THE BASE BID TO MODIFY THE SPRINKLER PIPING AND SPRINKLER HEADS LAYOUT FOR RAISING THE ROOF AS SHOWN ON ARCHITECTURAL/STRUCTURAL DRAWINGS. REVISED SPRINKLER LAYOUT DRAWINGS AND/OR CALCULATIONS SHALL BE SEALED BY LICENSED FIRE SUPPRESSION CONTRACTOR AND APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.



HVAC FIRST FLOOR PLAN



ANSI D 22" x 34"

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ISSUE/REVISION

NO.	DATE	DESCRIPTION
2	1/29/24	FIRE PROTECTION MOD.
1	12/22/23	ISSUE FOR BID
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60686092

SHEET TITLE

HVAC
FIRST FLOOR PLAN

DWG NUMBER

10-H-01

SHT NUMBER

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