



December 03, 2024

**STATE OF ALABAMA  
COUNTY OF SHELBY**

**SEALED BIDS for South Water Plant Modular Carbon Adsorption System  
Shelby County Commission**

Sealed bids for **South Water Plant Modular Carbon Adsorption System** for use in Shelby County will be received in the office of the Chief Financial Officer, Shelby County Administration Building, 200 West College Street in Columbiana, Room 125 Alabama 35051, until **2:00 p.m. on December 13, 2024**, at which time bids will be publicly opened and read. The County Commission reserves the right to reject any or all bids and to waive informalities in awarding this bid to the lowest responsive bidder. Bidders are to state that bids submitted are firm and that no claims for errors will be made after bids are opened and subsequent thereof. Any entity of Shelby County Commission may purchase from this bid.

If you have any questions concerning this bid, please contact Phillip Crunk at 205-215-8826.

**GENERAL INFORMATION**

All bidders must use our form for submitting their bids. **Approved equals shall be submitted and approved prior to bidding. All exceptions to the specifications shall be listed in a separate document. Proposed purchase agreements must be submitted and approved prior to bidding.** All bids must be sealed and marked in the lower left-hand corner "**BID – South Water Plant GAC Contactor Equipment**" with opening date and time. Late bids will not be opened. Bids will not include State Sales Tax or Federal Excise Tax.

Records showing successful bidder(s) and prices quoted will be placed on file and may be examined upon request. If contract is awarded to someone other than lowest bidder, a note of explanation will appear in the bid file and Commission Minutes.

Use of trade names and numbers shall be interpreted as establishing a standard of quality and performance and shall not be construed as limiting competition.

**INSURANCE, LICENSING AND OTHER REQUIREMENTS**

The owner requires all documentation be in place and the execution of a Purchase Order, no later than December 31, 2024. This contract shall not be executed by the County Manager until the successful bidder has supplied the following information in a timely manner, as outlined in the attached contract specifications:

- A. Section 84 State/County privilege license and all other required license(s).
- B. Proof of Insurance containing additional coverage for the Shelby County Commission, its successors, or assigns.
- C. A W-9 and E-verify will be required before the bid is awarded. All bidders shall submit completed W-9 and E-verify documentation with your bid packet.

If applicable to this bid this project must meet any and all AIS Buy American Guidelines.

This project is subject to all other Federal Requirements for Federally Funded Projects:

- 1) Buy American Preference (49 USC § 50101)
- 2) Trade Restriction Certification (49 USC § 50104, 49 CFR part 30)
- 3) Disadvantaged Business Enterprise (49 CFR part 26)
- 4) Procurement of Recovered Materials (2 CFR § 200.322, 40 CFR part 247, Solid Waste Disposal Act)
- 5) Debarment and Suspension (2 CFR part 180 (Subpart C), 2 CFR part 1200, DOT Order 4200.5)
- 6) Lobbying and Influencing Federal Employees. (31 USC § 1352, 2 CFR part 200 Appendix II(J), 49 CFR part 20 Appendix A)

Contractor awarded the project shall be registered in SAM (System for Award Management, [www.sam.gov](http://www.sam.gov)). Registration in SAM is required to participate in Federal funding programs. Information on registering for SAM can be found at <https://www.e-verify.gov/e-verify-user-manual>. A UEI (unique entity identifier) is required in bid submission.

Installation will be by County. Do not include installation in your bid.

**Prices shall be valid for a period of 90 days.**

Delivery to the following address shall be included as a part of this bid:

South Shelby Water Plant  
7935 HWY 61  
Wilsonville, AL 35186

**DISQUALIFICATION OF BIDS**

Bids may be disqualified before awarding of the contract for any of the following:

- A. Failure to mark envelope as required;
- B. Failure to sign or notarize the bid document;
- C. Failure to include requested information or other details of the bid, or
- D. Failure to include bid bond if required. (Note: no bid bond is required for this bid.)

**METHOD OF AWARD**

The award will be made to the lowest responsive bidder meeting specifications. It is not the policy of the Shelby County Commission to purchase on the basis of low bid only. Quality, conformity with specifications, purpose for which required, terms of delivery, and past service and experience are among the factors that may be considered in determining the responsive bidder.

The Shelby County Commission reserves the right to award separate contracts for each item, each product, or any combination of products if in the best interest of the Shelby County Commission.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days.

**IMMIGRATION LAW**

By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

**OPEN TRADE**

By signing this contract, vendor agrees that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.

Please provide your bid response in triplicate, one original and two copies.

Bids will not include State Sales Tax or Federal Excise Tax.

Chad Scroggins  
County Manager

BID FORM: **South Water Plant Modular Carbon Adsorption System  
Shelby County Commission**

BID DATE: **December 13, 2024  
2:00 p.m.**

<u>ITEM DESCRIPTION</u>	<u>UNIT COSTS (\$)</u>
Furnish and deliver one modular carbon adsorption system as specified including two vessels sized to hold 40,000 lbs. of granular activated carbon, piping, valving, and ancillary components.	
Furnish and deliver three (3) complete modular units as described above.	<b><u>TOTAL BID COSTS (\$)</u></b>
Lead Time for Manufacturing and Delivery, Upon Receipt of Purchase Order	<b><u># of Months</u></b>

Installation will be by County. Do not include installation in your bid.  
Prices shall be valid for a period of 90 days.  
Delivery to the following address shall be included as a part of this bid:  
South Shelby Water Plant  
7935 HWY 61  
Wilsonville, AL 35186

Name of Company: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (include area code) \_\_\_\_\_  
Email: \_\_\_\_\_

Sworn to and subscribed before me this  
The \_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
Notary Public

My Commission Expires \_\_\_\_\_.

# **SPECIFICATIONS – Modular Carbon Adsorption System**

## **General**

The supplier shall furnish and deliver one or more Granulated Activated Carbon (GAC) Adsorption Systems. Each system shall include two carbon vessels, piping, valves, materials, parts, and components that shall conform to all specifications listed within.

The supplier shall coordinate delivery of equipment with the owner. The supplier shall coordinate a date for delivery that is satisfactory to the owner and in conformance with all bid requirements.

## **Vessels**

The carbon adsorber vessels shall be fabricated of carbon steel, conforming to ASTM A516 grade 70, 12'-0" diameter by 16'-0" straight side height with 2:1 elliptical top and bottom heads. Each vessel shall be sized to contain 40,000 pounds of GAC and to accommodate approximately 30% bed expansion within the straight side of the vessel using GAC. The vessels are designed, constructed and stamped in accordance with ASME Section VIII, Division 1 and registered with the National Board for a design pressure rating of 125 psig at 140F. Each vessel will be provided with one (1) 20" diameter round manway located on the lower straight side portion of the vessel and one 14" x 18" elliptical manway located on the bottom head. The vessels will be free standing utilizing four (4) structural steel support legs. The vessel will be provided with four (4) lift lugs located on the top head and one tailing lug on the bottom head. The structural aspects of the vessel will be sufficient to meet the requirements of the International Building Code, latest edition.

Each vessel shall be designed with an internal 30° cone bottom underdrain system that provides uniform distribution of the treated water using a minimum of one (1) septa for every nominal square foot of vessel cross section, facilitates GAC removal without the need to open the manway to manually hose out the remaining spent GAC, and allows replacement of the septa without the need to remove external piping. The septa shall be designed to contain the GAC within the adsorber and be constructed of stainless steel.

The vessel shall be provided with one 6" nozzle on the upper sidewall of the vessel for GAC fill, two (2) nozzles for GAC discharge, one (1) 6" GAC discharge nozzle is located on the vessel side wall and one (1) 4" centered on the bottom head, one (1) 8" influent nozzle located on the top head constructed of stainless steel and provided with an internal flange to support the inlet distributor, one (1) 8" effluent nozzle located on the bottom head, three (3) 2" sample nozzles located on the side wall, and one (1) 2" cone vent nozzle located on the lower side wall.

All surfaces shall be degreased prior to sandblasting. The adsorber internal surface shall be blasted to a white metal finish (SSPC-SP5) to provide a 3 to 4 mil anchor pattern. The exterior surfaces of the adsorber will be prepared by blasting per SSPC-SP6. The interior surfaces of the vessel shall be lined as follows: the surfaces above the internal cone with a nominal lining thickness of 35 to 45 mil dry film thickness (dft) and the surfaces under the internal cone bottom a nominal lining thickness of 20 to 25 mil dft. The lining material shall meet the requirements of ANSI 61 when applied and cured per the manufacturer's requirements. The lining material will be Carboline's Plasite 4110, vinyl ester lining, Blome International's TL-220S AR, or Carboline's Reactamine 760, aromatic polyurethane hybrid liner. The exterior surface of the adsorbers shall be painted to a dry film thickness of 10 to 14 mil with a high solids epoxy (gray color) paint and finished with a polyurethane topcoat of 2 to 3 mil dft.

## **Piping and Valves**

The process and utility piping on the adsorption system shall include influent water to the system, treated water (effluent), backwash water supply and discharge, adsorber vent lines and

granular activated carbon fill and discharge piping. The influent and effluent pipe network shall allow series (lead/lag) and parallel only operating modes. Lead/lag operation shall allow either; a) flow from the influent flange to Adsorber A, to the pipe module, to Adsorber B, to the pipe module then to the effluent flange, or b) flow from the influent flange, to Adsorber B, to the pipe module, to Adsorber A, to the pipe module then to the effluent flange. The change in flow pattern is accomplished with a change of valve positions. Process piping (influent, effluent and backwash) will be 8" diameter, constructed of schedule 40 carbon steel, ASTM A53 Grade B materials with 125# ASTM A126 Class B cast iron flanged fittings. Vent piping will be 3" diameter, constructed of schedule 40 carbon steel, ASTM A53 Grade B materials. Carbon fill piping will be 4" diameter, constructed of schedule 40 carbon steel, ASTM A53 Grade B materials. The connection at the vessel side wall will be a 4"x 6" reducing elbow. The GAC fill connection will be supplied with an adjustable stainless-steel insert. There is a total of one (1) GAC fill line per vessel. Carbon discharge piping will be 4" diameter, constructed of schedule 40 polypropylene lined carbon steel, ASTM 53 Grade B materials with ppl lined flanged fittings. There are a total of two (2) GAC discharge lines per vessel. The connection at the vessel side wall will include a 4"x 6" reducing elbow. The GAC side wall discharge connection will be supplied with an adjustable stainless-steel insert. The vessel must be designed with an adjustable GAC removal system to allow for removal of the spent in 20,000 lbs. increments. Utility piping will be constructed of threaded schedule 80 carbon steel, ASTM 53 Grade B materials. All piping surfaces will be prepared by blasting per SSPC-SP7. The exterior surface of the piping will be painted to a dry film thickness of 10 to 14 mil with high solids epoxy paint prior to assembly to minimize oxidation at flanged connections, then finished with a polyurethane topcoat of 2 to 3 mil dft after assembly. The piping network will be provided with a structural steel support frame for support of the piping module.

The process and utility piping; excluding GAC fill and discharge piping will be equipped with butterfly valves to direct flow. A total of ten (10) 8" diameter butterfly valves will be supplied to accommodate the process and backwash functions. Two (2) valves are needed for backwash supply, two (2) valves are needed for influent isolation, two (2) valves for effluent isolation, two (2) valves for staging of the vessels and two (2) valves for the vent function. The influent, effluent, and backwash valves will be a cast iron wafer type body butterfly valve with aluminum-bronze disc, BUNA-N seats, and stainless-steel shaft to mate to 150-pound ANSI flanges. The valves are rated for 200 psig in closed position at 180F and meet or exceed section 5.0 of AWWA specification C-504-87. The carbon fill and discharge valves are 4" diameter full port ball valves, 316 stainless steel construction with TFE seats and seals. A total of four (4) valves are supplied, two (2) for carbon fill and two (2) for carbon discharge. Utility valves for the compressed air supply will be bronze or brass or barstock brass body regular port ball valves.

## **Instrumentation**

Instrumentation will be accessible from grade. Pressure relief will be provided by a 3" rupture disk constructed of impervious graphite and designed to relieve pressure at the design pressure of the vessel and at the maximum flow to the system. The rupture disks will be mounted off the vessel vent line and vent to atmosphere. A total of two (2) will be provided for the system. Each vessel will be provided with an indicating differential pressure switch, 4" diameter dial, scaled for 20-0-20psi. The switch is rated at 1.0 amp @ 115 volts AC for remote indication. A total of two (2) will be provided for the system. The process piping will be equipped with pressure gauges to indicate the pressure entering and exiting each adsorber and to provide information on pressure drop across each adsorber and the system. The pressure gauges will have 4 1/2" face diameter with a stainless-steel bourdon tube in a phenolic case housing (1 to 160 psig range). A total of three (3) will be provided for the system. The process piping will be equipped with sample taps to enable sampling of the water entering and exiting each adsorber. A total of three (3) will

be provided for the system.

### **Miscellaneous**

The carbon fill and discharge will be fitted with female hose connections, such that carbon transfer to and from the adsorbers can be facilitated using carbon transfer hoses. These connectors will be 4" Quick Disconnect Adaptors constructed of aluminum as manufactured by Dover Corp. as Kamlock connectors or equal.

Two (2) flush connections will be provided on each GAC fill line, one upstream and one downstream of the valve. One (1) flush connection will be provided on each GAC discharge line, downstream of the valve. The connections will be welded into the steel or stainless-steel pipe or screwed into solid propylene "spacers" for the lined pipe. Flush connections will consist of a short section of  $\frac{3}{4}$ " pipe, a  $\frac{3}{4}$ " full port ball valve and a  $\frac{3}{4}$ " quick disconnect adaptor to match with water hose fittings. Each vessel will be provided with one (1) 8" stainless steel effluent strainer basket mounted in the effluent line from the vessel. The basket strainer shall be constructed of 316 stainless 14 gage plate with 1/8" diameter holes drilled on 3/16" centers, covered with 40 mesh 316 stainless steel screen and topped by a 4 mesh 316 stainless steel support screen (0.063" wire diameter). A total of two (2) will be provided for the system. The influent and effluent pipe for each vessel will be provided with a molded neoprene reinforced rubber expansion joint which allows 4-way movement and 19° angular misalignment. A total of four (4) will be provided for the system.

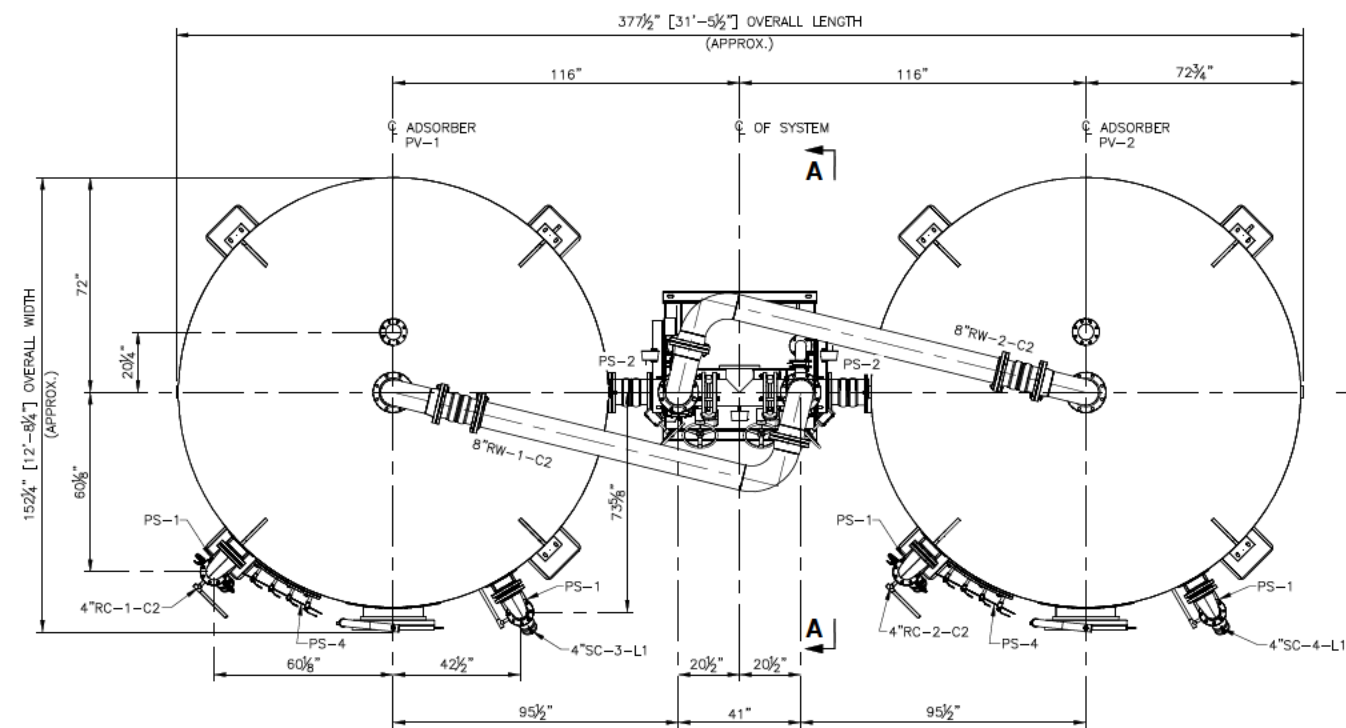
Each vessel will be provided with an inlet distributor constructed of 316 stainless steel. The distributor will connect to the inlet nozzle and be fitted with multiple arms. Each arm is drilled along its length to facilitate even distribution of water during normal operation and collection of backwash water. A total of two (2) distributors will be provided for the system.

Each adsorber will be provided with three (3) 2" side sample nozzles for use with in-bed water sample probes. Sample probes consist of a 12" stainless steel pipe with a stainless-steel slotted septum to collect a water sample from within the carbon bed. The sample probe will be inserted through a 2" flanged nozzle and will be provided with stainless steel tubing drop line and stainless-steel shutoff valve external to the adsorber. A total of six (6) in-bed sample taps will be provided for the system.

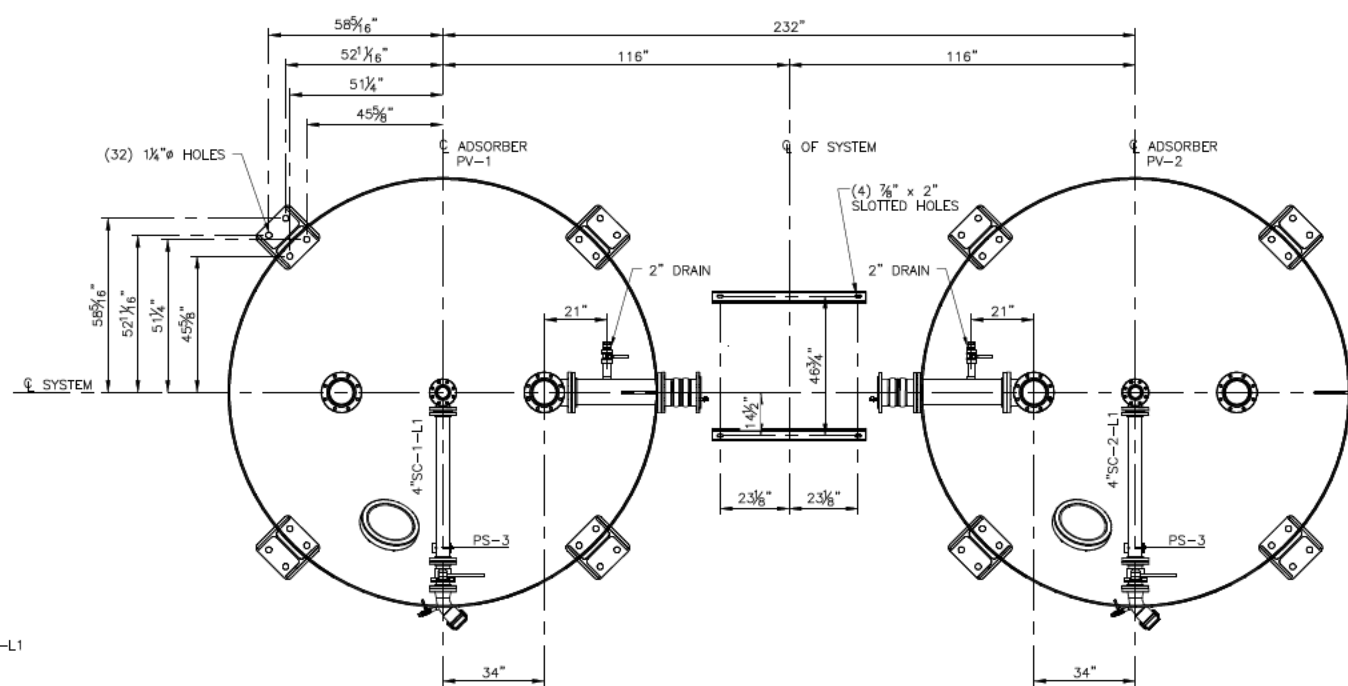
Each adsorber shall be provided with one (1) 1" combination air/vacuum release valve mounted at the top of the influent pipe. Two (2) 1" ball valves will be provided to isolate the air release valve, one ball valve positioned between the influent pipe and the air release valve and the second mounted at the bottom of the air release piping (at ground level). A total of two (2) will be provided for the system.

### **Execution**

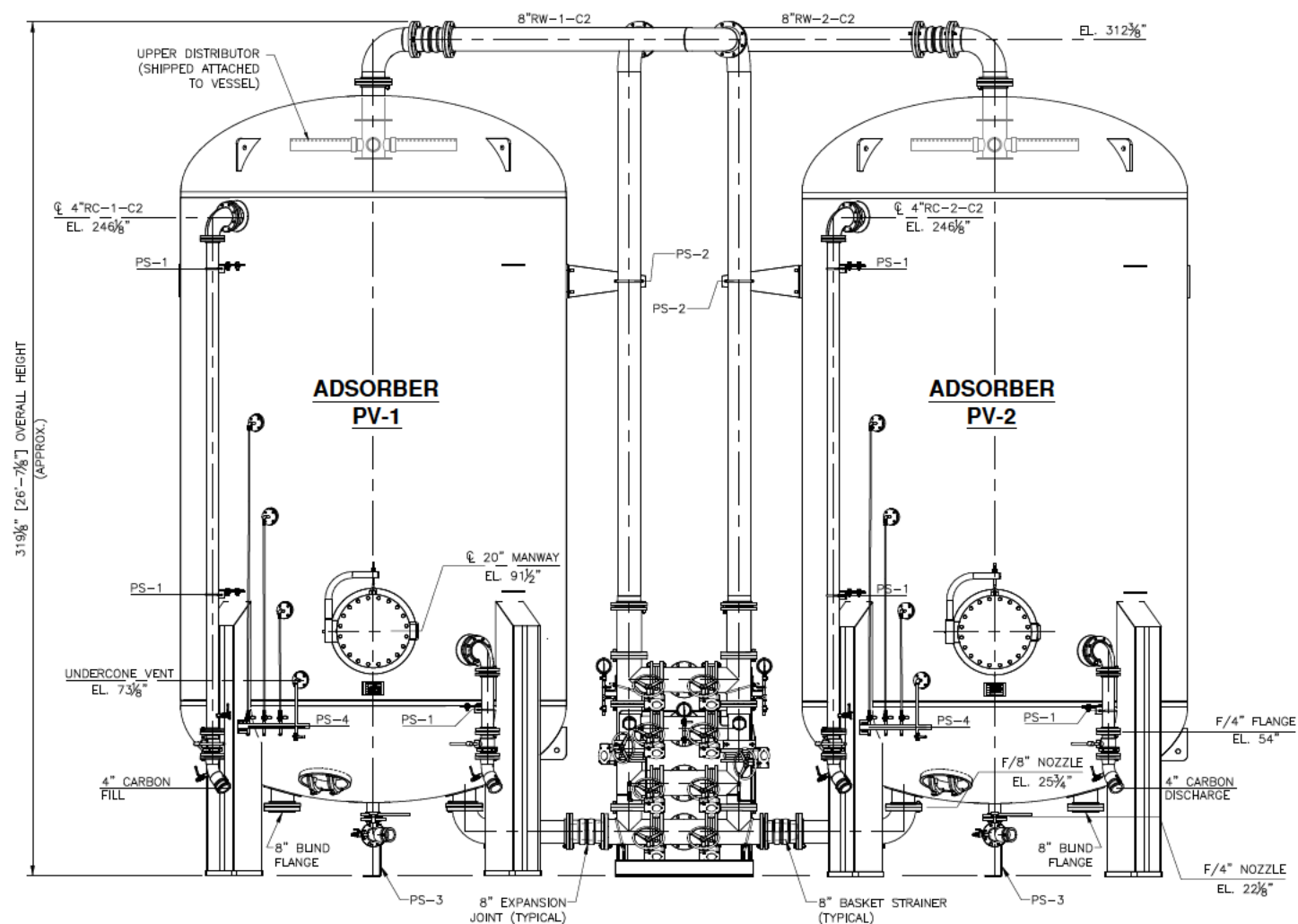
Manufacturer shall assign a Project Manager (PM) to facilitate the execution of the project. The PM will interface with the customer for both the technical and commercial aspects of the project. Manufacturer shall provide an Engineering Submittal Package. Manufacturer shall supply Operation and Maintenance Instructions upon completion of the project/shipment of the system.



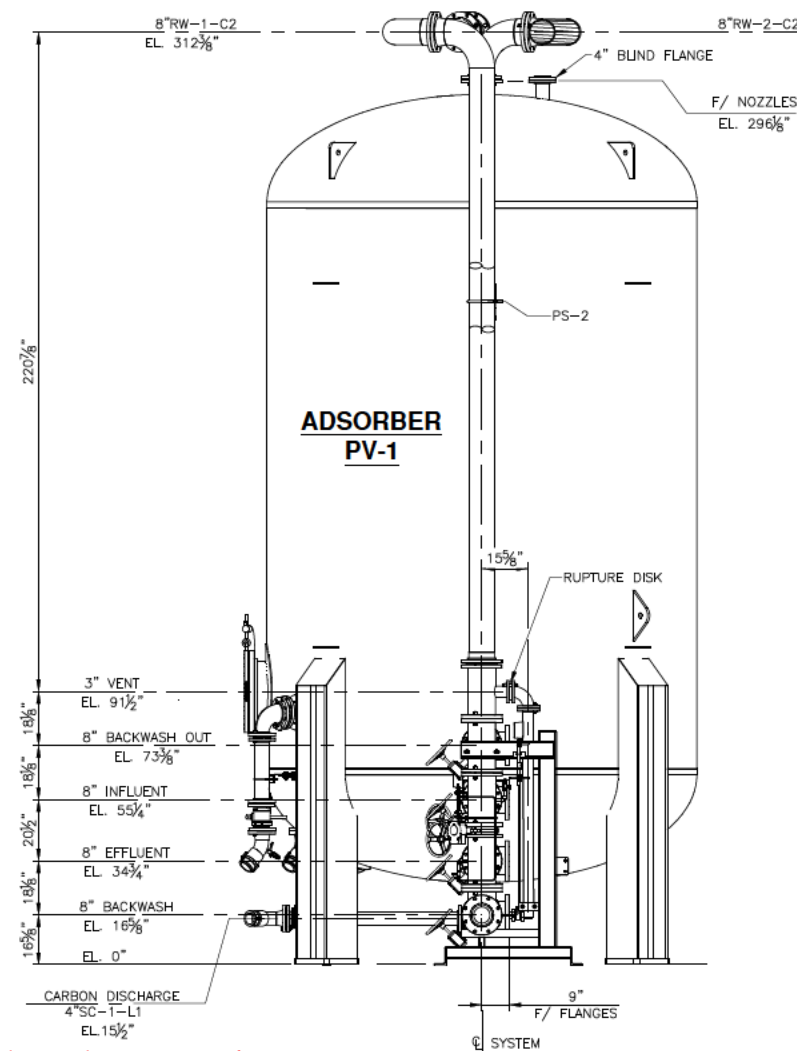
## PLAN



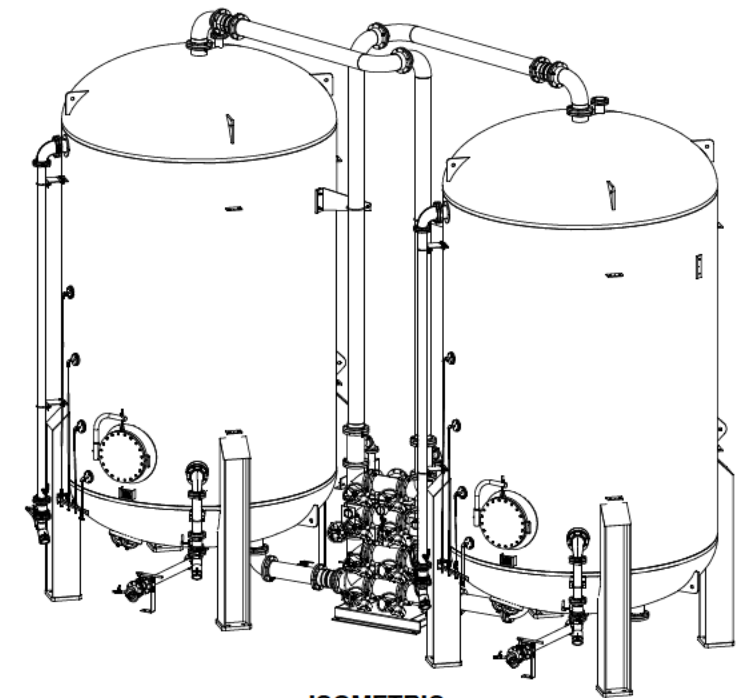
## LOWER PLAN



### ELEVATION



**VIEW A-A**



## ISOMETRIC


SYSTEM DATA			
DESIGN CONDITIONS		125 PSIG @ 140° F	
DESIGN CODE		ASME SECTION VIII DIVISION I	
APPROXIMATE WEIGHTS (LB.)			
VESSEL (EMPTY)		31,000	
CARBON (PER VESSEL)		40,000	
VESSEL (OPERATING)		191,000	
SYSTEM (EMPTY)		69,000	
SYSTEM (OPERATING)		391,000	
PAINT INFORMATION			
ITEM	MFG.	COLOR	SAMPLE
VESSEL	HEMPFEL	GRAY	
PIPING	HEMPFEL	GRAY	
SUPPORTS	HEMPFEL	GRAY	

PIPE SUPPORT SCHEDULE			
#	DRAWING NO.	DESCRIPTION	QTY.
PS-1	90160401	4" CARBON FILL, 4" CARBON DISCHARGE (UPPER)	6
PS-2	90130162	8" INFLUENT	2
PS-3	90130158	4" CARBON DISCHARGE	2
PS-4	90170541	SAMPLE/VENT PIPING	2

2			
1			
0	ISSUED FOR FABRICATION	GM	3/25/2024
REV	DESCRIPTION	APP	DATE

REVISIONS			
<u>TOLERANCES (unless otherwise specified)</u>			
ANGULAR	±0°30'	DECIMAL (2 PLACES)	±0.10
FRACTIONAL	±1/16"	DECIMAL (3 PLACES)	±.005
DECIMAL (1 PLACE)	±0.015	DECIMAL (4 PLACES)	±0.0005



CLIENT			
TITLE		MODEL 12-40 SYSTEM 8" PIPING, POTABLE GENERAL ARRANGEMENT	
DWG. SIZE	D	SHEET No. 1 OF 1	SCALE NONE
DWG. No.	91245133		REV. 0

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	NAME	DATE
DRAFTER	BKM	3/18/2024
DESIGNER		
CHECKER	GM	3/25/2024
APPROVAL		
PROJECT No.	CTO.240017.FOSTER	

This drawing is being provided to establish the anticipated general arrangement of system components and materials. Variations of this general arrangement are permitted from various manufacturers provided they meet the project specifications and intent. This drawing shall in no way be construed as establishing a sole source manufacturer.