

February 10, 2017

Riviera Beach Utility District
600 West Blue Heron Blvd
Riviera Beach, FL 33404

Re: Riviera Beach Utilities District (District)
Avenue U Repump Station Modifications

Per the District's request, we are providing a proposal to upgrade the Avenue U Repump Station (repump station) with the goal of improving chlorine residuals from the repump station and associated ground storage tank (GST). The initial request was to replace the existing gas chlorine system at the repump station. However, after visiting the site and discussing the project goals with staff and the Utility District's Technical Consultant, our recommended improvements also include adding a GST tank mixer, adding a flow meter, changing the existing chlorine gas system to a liquid sodium hypochlorite system, adding an ammonium sulfate system and adding associated appurtenances for the various equipment.

A. SCOPE

The proposed scope of work generally described below is to be performed by the Design-Build Entity (Globaltech). It includes furnishing all labor, equipment, materials, tools, supervision, and services required to permit, design, construct, test, and startup the proposed work as follows:

- Furnish and install mixer in the GST. The GST inlet and outlet are at the same approximate elevation and within 50 feet of each other on the circular tank. The tank is likely stratifying with the "newest/freshest" water being added to tank being withdrawn first. Improving the mixing of the tank will help limit the deterioration of water quality with in the GST and reduce water age.
- Furnish and install a flow meter on the inlet pipe of the ground storage tank. A GST tank influent flow meter is needed to in order to flow pace chemical addition (chlorine/ammonia). There is currently no inlet flow meter and chlorine gas addition is done manually.
- Furnish and install one ammonia analyzer (two channel) to measure free ammonia, total ammonia, and monochloramine on the inlet and outlet of the GST. The analytical information from the analyzer will provide operation staff the ability to determine how much chlorine or ammonia should be added.
- Furnish and install a liquid sodium hypochlorite system instead of a gas system to provide chlorine. The main reason for choosing the liquid sodium hypochlorite system over a gas chlorine system is safety for the operation staff and surrounding community.
- Furnish and install a liquid ammonium sulfate feed system. The addition of supplemental ammonia might be necessary in order to boost chloramine residual. A liquid ammonia sulfate system is recommended over a gas ammonia system or liquid ammonium hydroxide is for safety.
- Furnish and install a control panel with PLC to flow pace and residual trim sodium hypochlorite and ammonium sulfate addition.



The following is the scope of services:

Task 1 – Administrative and Engineering Services

1. Meet with the District to review project scope.
2. Develop subcontracts with mixer supplier, electrical contractor and other entities as may be required.
3. Prepare a preliminary (60%) design.
4. Submit five (5) half-size copies of the 60% design to the District. Meet with the District to review the design.
5. Incorporate the District comments and proceed to final design.
6. Submit FDEP/Palm Beach County Health Department and building department permit applications.
7. Prepare detailed construction schedule to include as a minimum; engineering and permitting services, site mobilization, detailed construction activities, scheduled shutdowns and durations, equipment/material delivery times, testing, startup and commissioning.
8. Prepare submittals, administer and track submittal process.
9. Schedule meetings, inspections, and testing with District staff.
10. Provide Engineer's site visits during construction to confirm construction is being performed in conformance with the Design Drawings and Specifications.
11. Prepare Record Drawings, Operation and Maintenance Manuals, and closeout permits.

Task 2 – Construction Services

1. Install GST Mixer:
 - a. Tank mixer from Pax Technology or Grid Bee is to be selected. Based on recent quotes, the lower cost Grid Bee G-12 mixer is assumed.
 - b. Mixer will completely mix the subject tank. In continuous operation, (1) at least once per 24 hours all water temperatures within the tank shall converge to within 0.8 degrees C, and (2) at least once per 72 hours all chlorine concentrations within the tank shall converge to within 0.2 mg/l.
 - c. The mixer shall be 120 V installed from the top access hatch. A minimum access hatch size of 12-inches is required.
 - d. Mixer shall be equipped with a control box with SCADA monitoring.
 - i. Control Box: 10" X 8" X 4" Carlon NEMA 4X enclosure, UL listed, HOA switch, contactor for mixer control, 15-Amp GFCI, run indicator light, SCADA monitoring, grounding lug, 120v/1ph male molded plug, and locking latch for security.
 - ii. SCADA: 4-20 mA current transducer provides analog output for motor current which allows for monitoring proper operation, and a 24 VDC relay for remote on / off control of the mixer.
2. Installation GST influent flow meter.
 - a. Install a new 12-inch magnetic flow meter in the existing underground vault for the inlet control valve. The flow meter is to be installed upstream of the existing tank control valve.
 - b. Flow signal is to be tied into the new control panel/PLC and used to flow pace sodium hypochlorite and ammonium sulfate.
3. Install one ammonia analyzer.



-
- a. This proposal is based on furnishing one Hach AMC 5500 ammonia analyzer, dual channel. Hach Warranty Plus service, startup, and initial reagents (1-month supply) are also included.
 - b. Ammonia analyzer is to be installed in the pump room near the existing Hach CL 17 analyzer. They shall be mounted on Unistrut in front of the existing chlorine room window.
 - c. The ammonia analyzer signals will be sent to the new control panel/PLC.
 - d. New sample piping and valves shall be routed from the analyzer to the inlet and outlet of the GST. Exact sampling points location that are to be determined. The sample piping/valves will be PVC or polyethylene.
4. Install new sodium hypochlorite storage and feed system
- a. The new hypochlorite system is to be housed in the existing chlorine gas feed room. The new system shall consist of a duplex metering pump skid and 150-gallon (maximum) storage tank.
 - b. Duplex metering pump skid. The duty and standby metering pumps shall be DDA Grundfos metering pumps. The pump skid shall be floor mounted with a calibration column and pressure relief valve. Each pump shall be capable of delivering a chlorine dose between 0 and 5 mg/L of chlorine to a flow rate of up to 2.0 mgd. Pumps will have with a maximum flow rate of 2.0 gph, each. Design parameters for the pumps are to be reviewed with District staff before finalizing order.
 - c. Sodium hypochlorite storage tank. A new 150 gallon (maximum) HDPE storage tank with containment basin shall be used to store sodium hypochlorite. It is assumed that 10 to 12% sodium hypochlorite will be delivered in 55-gallon drums to be supplied by the District.
 - i. A new drum pump shall be provided to and transferred sodium hypochlorite from the 55-gallon drums to the new 150-gallon storage tank.
 - ii. The tank will be equipped with 1-inch PVC fill ball valve, 1/2-inch PVC discharge ball valve, 1-inch vent, and 1-inch overflow.
 - iii. The tank will be equipped with an ultrasonic level sensor and transmitter.
 - d. Piping and Valves
 - i. Tank and pump skid piping shall be schedule 80 PVC. Piping shall be labelled for sodium hypochlorite and flow direction.
 - ii. A new sodium hypochlorite injection point shall be added in the existing underground vault downstream of the GST inlet control valve. Piping from the metering pumps to the new inject pint shall be 3/8" PFA/PTFE tubing in 2" PVC sleeves.
 - iii. Plasmatic degassing 1/2-inch valves shall be mounted on feed line at the high point from the discharge of the pump skid.
 - iv. Isolation valves shall be vented PVC true union ball valves.
 - e. In automatic control, the duty pump would provide feed rate using flow proportioning control, ammonia residual, and chlorine residual trimming. Control of the pumps shall be will via new control panel/PLC. The PLC will calculate the required dose based on the chlorine residual from plant/distribution system, free ammonia available and measured flow into the tank.
 - f. Miscellaneous improvements to existing gas chlorine room
 - i. The existing exhaust fan shall be replaced.
 - ii. Interior walls and ceiling are to be painted. Tile floor will remain as is.
 - iii. Signage indicating "SODIUM HYPOCHLORITE" shall be added to the entry door of the modified room along with a diamond hazardous material sign.
 - iv. An eyewash/shower shall be installed near the sodium hypochlorite room.
-



-
5. Install new ammonium sulfate storage and feed system
 - a. The new ammonium sulfate system is to be housed in the pump room adjacent to the existing chlorine gas feed room. The new system shall consist of a duplex metering pump skid and 60-gallon storage tank.
 - b. Duplex metering pump skid. The duty and standby metering pumps shall be DDA Grundfos metering pumps. The pump skid shall be floor or wall mounted with a calibration column and pressure relief valve. Each pump shall be capable of delivering an ammonium sulfate dose between 0 and 1 mg/L to a flow rate of up to 2.0 mgd. Pumps will have with a maximum flow rate of 2.0 gph, each. Design parameters for the pumps are to be reviewed with District staff before finalizing order.
 - c. Ammonium sulfate storage tank. A new 60-gallon (maximum) HDPE storage tank with containment basin shall be used to store ammonium sulfate. It is assumed that ammonium sulfate will be delivered in 55-gallon drums to be supplied by the District.
 - i. A new drum pump shall be provided to and transferred sodium hypochlorite from the 55-gallon drums to the new 60-gallon storage tank.
 - ii. The tank will be equipped with 1-inch PVC fill ball valve, 1/2-inch PVC discharge ball valve, 1-inch vent, and 1-inch overflow.
 - iii. The tank will be equipped with an ultrasonic level sensor and transmitter.
 - d. Piping and Valves
 - i. Tank and pump skid piping shall be schedule 80 PVC. Piping shall be labelled for ammonia and flow direction.
 - ii. A new ammonia injection point shall be added in a new underground vault downstream of the GST inlet control valve. The new vault will be open top with grating. Piping from the metering pumps to the new inject pint shall be 3/8" PFA/PTFE tubing in 2" PVC sleeves.
 - iii. Isolation valves shall be PVC true union ball valves.
 - e. In automatic control, the duty pump would provide feed rate using flow proportioning control, ammonia residual, and chlorine residual trimming. Control of the pumps shall be will via new control panel/PLC. The PLC will calculate the required dose based on the free ammonia residual from plant/distribution system, free ammonia available and measured flow into the tank.
 - f. Signage indicating "AMMONIUM SULFATE" and diamond hazardous material sign shall be added to the three doors of the pump room.
 - g. A Self-contained eyewash station shall be mounted next to pump skid.
 6. Electrical/Instrumentation and Control:
 - a. Furnish and install conduit and wire for a two-pump skid for sodium hypochlorite feed system, ammonium sulfate feed system, (2) small storage tank ultrasonic transmitters, (2) drum pump transfer pump, influent flow meter, ammonia analyzer, tank mixer, eye wash and exhaust fan.
 - b. Provide remote alarm messaging.
 - c. Furnish and install a new combination starter for the exhaust fan.
 - d. Furnish and install a new control panel and transmitters.
 - e. Furnish and install switches and receptacles as required for the instruments.
 - f. Furnish and install grounding for new magnetic flow meter.
-



-
- g. PLC programming
 - 7. Restore site to existing conditions.
 - 8. Provide O&M manuals supplied with new equipment.

Permits and Fees

It shall be the Design-Build Entity's responsibility to secure all permits required to complete the work under this contract, except permits obtained by the District. The Design-Build Entity shall be responsible for all inspections and requirements to close-out the completed permits. The District shall pay all permit fees. The Design-Build Entity shall be responsible for all business tax fees for work within the county or Municipalities.

SALVAGED MATERIALS

- 1. Non-metal waste such as concrete, PVC, fiberglass etc., to be hauled and legally disposed by Design-Build Entity.
- 2. District staff shall identify whether equipment that is to be removed shall be salvaged by District.

ASSUMPTIONS

- 1. District shall pay associated permit fees for Palm Beach County Health Department and Building Department.
- 2. District shall remove and dispose of all 150-pound chlorine cylinders and 55-gallon drums of ammonium hydroxide.
- 3. It is assumed that no lead or asbestos is present in work that has to be demolished or modified. District should notify Design-Build Entity if they are known to be present. Should lead or asbestos be found, work is to be stopped until remediation measures can be taken by District.
- 4. It is assumed that the modifications will not require modifications to the repump station sprinkler or fire system.
- 5. Equipment sizes assumed in this proposal are approximate and based on information provided by staff.
- 6. District will make available all existing record drawings and surveys as may be required to coordinate and complete this scope of services.
- 7. District will review all submittals and provide comments within one calendar week and notify Design-Build Entity of status.
- 8. District shall provide IP Addresses where required and programming of SCADA screens.



B. COSTS

The costs for the proposed scope of work shall not exceed the Guaranteed Maximum Price of **\$397,899**. A cost breakdown is shown in **Attachment A**.

C. PROJECT SCHEDULE

Globaltech will begin work immediately following approval of this task order.

Task	From Notice to Proceed (NTP)
60% Design	12 Weeks
Final Design	16 Weeks
Permitting	18 Weeks
Construction/Installation of Improvements	32 Weeks
Note: Installation of GST mixer can be expedited separate from the rest of the project. However, it would require separate permits and additional permit fees to be paid by the District. If expedited separately, the mixer could be installed as early as 18 weeks from NTP.	



D. ACCEPTANCE:

Troy L. Lyn
Vice President
Globaltech, Inc.

Danny Jones, City Manager
City of Riviera Beach
600 W Blue Heron Blvd
Riviera Beach, FL 33404

Dated this _____ day of _____, 2017

Dean Mealy, Purchasing Manager
Purchasing Department
2051 MLK Blvd. Suite 310
Riviera Beach, FL 33404