



February 4, 2021

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

Re: Riviera Beach Utility Special District (District)  
High Service Pump 2 and 5 Installation Proposal

Currently only two of the high service pumps (HSPs) are operational. At times, both pumps need to run to meet the demand. This situation has left the District in a vulnerable position if one of the two operating pumps were to go down. The WTP staff are not comfortable switching to generator power while in this vulnerable position. Because of this, removal of the old generator and associated electrical and relocation of the polymer system, associated with the Chemical Feed System Improvements Project has been delayed for over three (3) months. These are not critical path items so it has not impacted the overall schedule yet, but those items will need to be completed within the next four (4) weeks to avoid overall schedule impacts to that project.

Globaltech previously reviewed the existing HSPs installation and developed a plan to install two additional HSPs quickly. The existing new pumps are variable speed 250 HP Goulds vertical turbine pumps rated for 4,000 gpm at 201 feet (87 psi). One of the new pumps can be placed in the Pump 2 slot and be powered by the new variable frequency drive in Slot 2. One of the other new pumps can be put in the Pump Slot 5 position but the existing auto-transformer is only rated for 200 HP. It would take over three (3) months to new a new starter, so the only option to quickly operate a pump in the slot would be to trim down its impellers so it will not draw more than 200 HP. This will reduce the capacity of that pump to approximately 3,800 gpm at 74 psi. Riviera Beach has confirmed that this design point is acceptable and the discharge pressure at the high service pumps is normally about 72-74 psi. After these two new pumps are installed and operational, the WTP will have three (3) full-capacity variable speed pumps and one reduced-flow constant-speed pump. Currently, two full-capacity pumps are required to meet peak flows. Therefore, these modifications will result in one full-capacity redundant pump, which meets regulatory and standard engineering design minimum requirements as well as the ability to rest one of the larger pumps when flow demands are lower, and the smaller pump is being used. The WTP should continue work to install some of the additional pumps to provide additional redundancy.

The District has requested Globaltech submit a proposal to install the two (2) HSPs as soon as possible. Per the District's request, we are providing this proposal to install HSPs in Pump Slots 2 and 5. The work will include the following:

- Take one of the new 250 HP-rated vertical turbine pumps, located on the pallet outside, to Electric Motors of Palm Beach County, a local machine shop authorized to trim Goulds Pump impellers, and have the impeller trimmed to meet the new 200 HP motor. The resulting new design point of the pump will be between 3,600-3,800 gpm at 74 psi.



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- Pick up the trimmed pump and return it to the water treatment plant (WTP).
  - Install one of the recently purchased 250 HP HSPs and motors in Pump Slot 2 and power that pump with the recently installed VFD in Slot 1.
  - Remove the pump currently installed in Pump Slot 5 and place it on the pallet outside.
  - Install the newly trimmed pump and 200 HP motor in Pump Slot 5 and power that pump with the existing autotransformer located in Starter Slot 5.
  - Complete the electrical work necessary to connect HSPs 2 and 5.
  - Install new HSP discharge spools, air release valves, pressure gauges and pipe supports at HSPs 2 and 5.
  - Perform steel weld repair work on the recycle-pump motor stands.

#### A. SCOPE

The proposed scope of work generally described below is to be performed by the Design-Build Entity (Globaltech):

- Confirm pump and motor shaft diameters and purchase two appropriately sized couplings. Determine motor oil requirements and obtain the required oil.
- Prepare and submit drawings showing the scope of the work.
- Take one of the 250 HP pumps from the pallet outside to the shop and have it trimmed. Return trimmed pump to WTP.
- Remove the 250 HP HSP currently located in Pump Slot 5 and place it on the pallet with the other new HSPs.
- Cut the existing anchor bolts, install new 316 SST epoxy anchors, and install the trimmed pump and 200 HP in Pump Slot 5.
- Chip out the concrete (about 1"-2") at HSP 2 Pump Slot location to allow for proper installation of the new HSP. The floor penetration will be temporarily sealed to prevent debris from entering the clearwell.
- Cut the existing anchor bolts, install new 316 SST epoxy anchors, and install the new 250 HP HSP in Pump Slot 2 with its associated sole plate.
- Repair the chipped concrete to provide a smooth level surface outside of the pump sole plate.
- Shim, level and grout the two HSPs into place.
- The pumps will be swabbed with a chlorine solution prior to installation.
- Furnish and install a PVC junction box to intercept existing conductors at HSP 1 to feed HSP 2.
- Furnish and install conduit, sealtight and wire from new PVC junction box to HSP 2.
- Furnish and install terminations at both the PVC junction box and HSP 2.
- Reuse existing conductors from autotransformer to HSP 5. Furnish and install new sealtight.
- Furnish and install new terminations at the HSP 5 motor.
- Properly label any wiring that is modified.
- Replace the DIP spools just downstream of the HSPs 2 and 5 with new properly restrained spools with tapping saddles (or a threaded boss) for installation of new air release valves (ARVs), Apco 146DAT, or equal). The spool for HSP 2 will be a welded 316 SST spool with a slight jog to account for the misalignment between the existing pipe and the clearwell penetration. The other spool may be 316 SST or DIP.



- Install new high-capacity 3-inch ARVs with isolation ball valves on HSPs 2 and 5. The NPT piping and ball valves will be brass or 316 stainless steel (SST). The ARV air discharge piping will be Sch. 80 PVC, and will be properly supported with 316 SST unistrut and routed to discharge on the HSP room floor, with an air gap.
- Install new 4-inch diameter SST pressure gauges and NPT tubing on the discharge of HSPs 2 and 5. If HSP 5 does not have a pressure tap, the new pressure gauge will be installed on the upstream tap of the check valve.
- Install 316 SST pipe supports on the HSP 2 and 5 discharge piping.
- Startup HSP 2 and HSP 5 with the Manufacturer's Representative. Collect the Manufacturer's Certificate of Proper Installation. Check for level, vibration, and proper operation.
- Conduct a PLC loop check.
- Submit Record Drawings and equipment O&M Manuals (as available from the vendor). Include any electrical/wiring modifications on the Drawings.
- Perform weld repairs to the two stands supporting the recycle pump motors.

#### **ASSUMPTIONS**

1. This is an "In-Kind" replacement project with modifications limited to that required to fit the replacement pumps. Re-engineering or reconfiguration of the existing high service pumps, pump bases or piping is not included in the scope of this project.
2. No PLC or SCADA modifications are needed.
3. The existing new 250 HP pumps are in good working order and no replacement parts are required.
4. This work will not require any permitting.
5. The existing VFD in Slot 1 and the autotransformer in Slot 5 are both operational. Allowances have been included for their repair/modification if required.
6. The isolation valves on HSPs 2 and 5 will hold and the associated check valves are operational.
7. Plant staff is responsible for operating existing valves and electrical equipment.
8. The existing crane rail in the HSP room can be used to lift and move the new HSPs.
9. Flange bolts will 316 SST and the gaskets chloramine-resistant EPDM.
10. Painting is not included in the scope of this proposal.

#### **B. COSTS**

The costs for the proposed scope of work shall not exceed the Lump Sum Price of **\$196,108.69**. A cost breakdown of the Lump Sum Price is attached. The costs include an allowance of **\$50,000**. The allowance will be used for unforeseen conditions and/or work beyond the scope of this proposal. The allowance shall not be accessed without prior written permission of the District.

#### **C. PROJECT SCHEDULE**

Globaltech will begin work immediately following approval of this proposal. It is anticipated that the pumps can be installed and started up within four (4) weeks after authorization. Installation of the air release valves will be completed within one (1) week of their delivery which may take 8 weeks or more.



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Should you have questions or need additional information about this project please feel free to call me at 561-997-6433. Thank you for your consideration.

Sincerely Yours,

David Schuman, P.E.  
Vice-President of Engineering  
Globaltech, Inc.