

**ADDENDUM #6
BID NO. 2009-T**

Issue Date: August 26, 2009

Project: South Columbia County Regional Wastewater Treatment Plant

Notice to all bidders is hereby given that the following modification is made to the Request for Bids referenced above:

Revision to Technical Specifications – Section 11270

Section 11270 of the Technical Specifications has been revised. The attached Section 11270 shall replace in its entirety the previous Section 11270.

Each bid submitted in response to this Request for Bids shall include an acknowledgement of this addendum.

SECTION 11270

AUTOMATIC BACKWASH SAND FILTERS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope of Work: The Work included in this Section consists of furnishing all labor, equipment, and materials and in performing all operations necessary for the complete installation of two (2) sand filters. The filter shall consist of a cylindrical tank with a conical hopper; feed inlet manifold, feed distribution radials; filtrate weir and flume; airlift pipe, internal sand washer, sand distribution cone(s), reject compartment with weir and flume and a compressed air control system. The filter shall operate in a manner such that the total cross-sectional area of each filter shall be in a continuous filtration and a continuous backwash mode. There shall be no interruption of the filtration process by shutting down a part or a whole filter for backwashing
- B. Related Work Described Elsewhere:
1. Material and Equipment: Section 01600.
 2. Start-Up: Section 01650.
 3. Electrical: Division 16

1.02 QUALITY ASSURANCE

- A. Applicable Standards:
1. ASTM -American Society for Testing and Materials
 2. AISI -American Iron and Steel Institute
 3. AGMA -American Gear Manufacturer's Association
 4. NEMA- National Electrical Manufacturer's Association
 5. NEC -National Electric Code
- B. To assure unity of responsibility, the entire functional filter system, including but not limited to the main structure, filter media support, inner piping, automatic backwash assembly with pump, air compressor, and trough, drive mechanism, automatic control system and other components as necessary, shall be furnished and/or coordinated by a single supplier.
- C. All painting shall be per Manufacturer's standards.

1.03 QUALIFICATIONS

- A. Each manufacturer shall submit a list of at least five U.S. installations on similar applications which have been in continuous operation for at least two years.
- B. To be considered acceptable as alternate process equipment, the manufacturer shall send the Engineer a written request 14 days prior to the bid which is to include such drawings, specifications, literature, performance data, list of installation in US as well as in state of Florida, and other information necessary to describe the proposed equipment as meeting the minimum requirements of the project.
- C. Acceptable manufacturers include Parkson Corporation and Siemens Water Technologies.

1.04 SUBMITTALS

- A. Submit as specified in Division 1.
- B. Shop Drawings: The Contractor shall furnish shop drawings, catalog data, operation and maintenance manuals, installation instructions, parts list, layout drawings, equipment design data, testing data and reports of the new and upgraded filter system to show full compliance with these specifications.
- C. Operating Instructions: The Contractor shall furnish the following:
 - 1. Copies of an operating and maintenance manual shall be furnished in accordance with Section 01730: Operating and Maintenance Data.
 - 2. Instructions shall be prepared specifically for this equipment and installation.
 - 3. Operation and maintenance instructions shall include the following as a minimum: All required equipment cuts; drawings; list of facilities to obtain spare parts for all equipment; and list of manufacturer-approved service organizations for all equipment.
 - 4. A factory representative with complete knowledge of proper operation and maintenance shall be provided for two (2) days to instruct representatives of the Owner and the Engineer on proper operation and maintenance. This work may be conducted in conjunction with the inspection of the installation and test run as provided under PART 3 – EXECUTION of this Section. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner.

1.05 PERFORMANCE REQUIREMENTS

- A. The automatic backwash sand filter system shall be suitable for filtering domestic wastewater after secondary treatment and clarification. Each filter shall be designed to operate on a continuous basis and shall be designed to operate while receiving varying flows.
- B. DESIGN CRITERIA
1. The expected influent to the filters is a secondary biological treatment effluent containing approximately 20 (+/- 1) mg/L of TSS, 12 mg/L of total nitrate, and 1 mg/L of total phosphorus.
 2. The overall flow of the plant is 160,000 GPD. The intermittent peak flow to be pumped from the SBR equalization tank into the filters is approximately 200 U.S. gpm.
 3. Design Performance Criteria:
 - a. The units shall be designed to filter out suspended solids to produce an effluent with less than 5 mg/L of TSS.
 - b. The units shall be designed with sufficient bed depth to accomplish 50% phosphorus removal (with suitable chemical addition) and 90% denitrification (with carbon source supplement).
 - c. The filter shall produce a continuous filtrate stream and a continuous reject stream and shall not be shut down for any backwash cycles. No backwash valves, pumps, instrumentation shall be required for backwash cycles.
 - d. The sand bed shall be continuously backwashed internally and redistributed on top of the sand bed.
 - e. Continuous sand cleaning shall be accomplished within the filter using filtered water. Filter influent (feed) shall not be used for sand cleaning.
 - f. The units shall be designed with hydraulic loading rate no greater than 5.2 gpm/ft² and headloss through the filter not to exceed 48" at the peak flow.

PART 2 – PRODUCTS

2.01 CONTINUOUS BACKWASH SAND FILTER SYSTEM

- A. The filter shall be a continuous backwash, upflow, standard bed, single- or multi-media filter. The feed shall be upflow with sand moving downward.
- B. Each filter shall come complete with 150# drilled flanged connections for feed, reject, filtrate, and drain connections.
- C. The filter shall not contain any moving parts and shall not use screens, wedgewires, grids, etc. to retain the media in place. Influent water feed assembly shall consist feed distribution radials
- D. The unit shall come complete with access ladder and platform.
- E. The filter shall be designed for Seismic Zone 0 installation. Material of construction shall be FRP or epoxy-coated carbon steel with sufficient strength determined by the manufacturer for long term operations.
- F. The units shall be supplied with sufficient amount of filter media.

2.02 COMPRESSED AIR SYSTEM

- A. The Compressed Air System shall be provided by the same provider of the automatic backwash filter system.
- B. The Compressor Package shall be a completely, pre-piped, pre-wired, compressed air system including filters, refrigerated air dryer, demister and all necessary components suitable for, and meets the requirements of the automatic backwash filter system operations.
- C. The air supply system shall consist of a separate panel including an air filter, control valve, air flow meter, pressure regulator and pressure gauge.
- D. The Compressed Air System shall be complete with a start-up kit, this includes two (2) replacement inlet air filter elements and enough synthetic oil for two (2) complete changes.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install the automatic backwash sand filter system as indicated on the drawings and specified and in compliance with the manufacturer's instructions.

3.02 INSPECTION AND TESTING

- A. Upon completion of installation, a full operating test shall be performed in the

presence of the Engineer and a qualified direct company employed manufacturer's representative. The Contractor shall furnish all labor, materials and equipment required for such test and shall correct any deficiencies noted.

3.03 OPERATION & MAINTENANCE MANUALS AND PRODUCTION RECORDS

- A. Operating and maintenance manuals prepared specifically for this project shall be provided. Manuals shall include all procedures, drawings, parts lists, etc. required to instruct personnel unfamiliar with such equipment. Operation and maintenance manuals shall be prepared in accordance with all specifications of this project.
 - 1. Complete operating and maintenance manuals shall be provided in PDF electronic format with bookmarks and index for easy navigation.
 - 2. Operating and maintenance manuals shall include a copy of in-house testing certificate.

3.04 WARRANTIES

- A. The new equipment shall materially conform to the description in this Specification and the Contract Documentation and shall be free from defects in material and workmanship. Warranty periods are 18 months from delivery or 1 year from beneficial use, whichever occurs first.

END OF SECTION