

SECTION 15240 – COOLING TOWER SAND WATER FILTERS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

- A. Furnish and install all equipment, controls for complete filtering system or systems specified herein.
- B. All equipment shall be environmentally safe and compatible.

1.3 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.4 REFERENCES

- A. ASTM: American Society for Testing and Materials.
- B. D596-83 Standard methods of reporting results of analysis of water.
- C. NEMA: National Electric Manufacturers Association.
- D. UL: Underwriters Laboratory Inc.

1.5 SYSTEM DESCRIPTION

- A. Provide complete filtering systems and consulting analysis service for the initial start-up of each system and once a month for a year.
- B. Provide filtration system or systems to remove suspended solids from the indicated water system. The filtration system shall be a complete package system with single-point power connection including all interconnecting wiring. Unit shall be prepiped at the factory and shall be shipped as a complete unit to the job site.

- C. The Mechanical Contractor shall provide complete electrical control interlocking wiring for all chemical feeding and control equipment, for a complete system. All electrically driven equipment, such as pumps, shall be provided with starters and disconnect switches under this Contract.

1.6 SUBMITTALS

- A. See Section 15050 and General Conditions for additional requirements.
- B. Shall be in accordance with all other specified requirements as well as those following.
- C. Product Data: Submit manufacturer's technical product data, indicating chemical treatment materials, chemicals and equipment.
- D. Shop Drawings: Submit the initial manufacturer of all components and drawings indicating system schematics, equipment locations, and control schematics. In addition a clear concise written sequence of operation shall be provided.
- E. Water analysis.
- F. A complete scale drawing of the equipment installation
- G. Submit manufacturer's installation instructions.
- H. Submit reports indicating start-up of system is completed and is operating properly.
- I. Submit an Operations Manual providing equipment manuals and description of operating parameters.
- J. Shop Drawings: Indicate system schematic, equipment locations, control schematics, electrical characteristics and connection requirements.
- K. Manufacturer's Field Reports: Indicate start-up of treatment systems when completed and operating properly.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum five (5) years of documented experience and approved by manufacturer.

1.8 REGULATORY REQUIREMENTS

- A. Conform to applicable code for addition of non-potable chemicals to building mechanical systems and to public sewage systems.

- B. Products Requiring Electrical Connection: Listed and classified by UL testing firm and acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.9 MAINTENANCE SERVICE

- A. Service Period: Provide service for period of one (1) year from start-up date of equipment, including the following:
 - 1. Initial water analysis of water supply and recommendations.
 - 2. Systems start-up assistance.
 - 3. Training of operating personnel.
 - 4. Periodic field service and consultation.
 - 5. Provide monthly technical service visits to perform field inspections and make water analysis on site. Submit two copies of field service report after each visit.
- B. Include two (2) hour training course for operating personnel, instructing them on installation, care, maintenance, testing and operation of water treatment systems. Arrange course at start up of systems.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Acceptable Manufactures contingent on compliance with the specifications:
 - 1. Tower Flow
 - 2. Ameriwater
 - 3. Diamond

2.2 COOLING TOWER WATER FILTERS

- A. Self-contained filter plants shall consist of the following major components: base, pump, motor, strainer, face piping, controls, and filter vessel. The filter plant shall be designed for a maximum filtration rate of 20 GPM per square foot of filter surface area and be shipped as a complete, factory assembled and tested unit. Filter media and filter effluent laterals shall be shipped with the unit for field installation.
- B. Filters shall be fabricated of structural steel channel and plate, primed and coated.
- C. Pumps shall be non-self-priming and shall have a machined cast iron volute, bronze impeller, horizontal flooded suction, and be close coupled to a TEFC motor. GPM and TDH data are listed in the Schedule.

- D. Motors shall be 60 Hz TEFC, enclosed in a class 30 cast iron case, on a NEMA frame, rated at a service factor of 1.15, UL and CSA listed. See Motor section of the specification.
- E. Strainers shall have a cast iron body, stainless steel basket, cast iron cover with gasket, held in place with a yoke and bolt clamp.
- F. Face piping on filters shall include all valves, fittings, nuts, bolts and gaskets for a complete assembly. Valves shall be drilled lug style butterfly, cast iron body, 416 stainless steel stem, EPDM seat, nylon coated disc, joined by adjustable linkage with pneumatic actuation (40 psi maximum air pressure). All fittings shall be Class 1, 125 lb. cast iron flanged. Gaskets shall be full faced type of synthetic rubber. Nuts and bolts shall be zinc plated. System shall be provided with 3-1/2" face 0-60 psi influent and effluent pressure gauges with pressure snubbers mounted in a common panel, backwash sight glass, and a 3/4 HP air compressor with 10 gallon reservoir requiring separate 120 VAC power supply.
- G. The filter shall be equipped with controls for automatic backwash operation. The control panel for 3 phase power input shall be UL Listed and shall include the following: NEMA 3R enclosure; motor starter with thermal overload protection; transformer to convert supply to 120VAC control power; through-the-door power disconnect; differential pressure switch to initiate backwash; with adjustable timing controls for backwash steps, status lights, and alarms; 30-second time delay in delta P switch circuit; 1-100 hour resetting timer (ΔP switch closure resets timer) for either/or backwash initiation; operating program developed by United Industries, Inc. to meet the requirements of the individual system, program protected internally against power failure; manual backwash initiation switches; and backwash counter.
- H. Filter vessels shall be constructed of mild carbon steel of American manufacture with flanged and dished heads and be designed for a working pressure of 50 psi. All components of the filter tanks shall be assembled by a rated welder utilizing the continuous wire feed process. All welds are to be continuous butt welds. Lap welds of the heads to the side sheet will not be permitted, nor will the lap welding of the side sheet be permitted.
- I. Filter vessels shall be fitted with an 14" x 18" access manway with flange, cover, gasket, yoke, and bolt. Additional tank fittings shall include an automatic air relief valve, a 4" x 6" handhole in the side sheet for media removal, and a 1-1/4" tank drain with polyamide media retainer.
- J. Prior to fabrication, all internal steel parts shall be sandblasted to a near white finish. After fabrication, all welds shall be wire brushed clean and smooth and the filter vessel interior coated with an 8 to 10 mil epoxy coating, which meets or exceeds AWWA standards for potable water. Exterior of filter shall be solvent and wire brush cleaned, primed with one coat of zinc rich red oxide primer, and finished with one coat of high-grade industrial enamel.

PART 3 - EXECUTION

3.1 FILTER INSTALLATION

- A. Install in accordance with manufactures instructions and design documents.
- B. Install on house keeping pad.
- C. Connect city water from pressure back flow preventor to filter for backwash.
 - 1. Provide flanged connections.
 - 2. Provide shut off valves.
- D. Pipe backwash to floor sink.

3.2 START UP SERVICE

- A. Provide a factory authorized representative to start up and check out the system.
- B. Provide Three hours of owner operator instruction and provide owner with a video tape of the training session.

END OF SECTON