

SECTION 235700 - HEAT EXCHANGERS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes shell-and-tube heat exchangers.

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Operation and Maintenance Data: For heat exchangers to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. ASME Compliance: Fabricate and label heat exchangers to comply with ASME Boiler and Pressure Vessel Code: Section VIII, "Pressure Vessels," Division 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SHELL-AND-TUBE HEAT EXCHANGERS

- A. Manufacturers:
 - 1. Armstrong Pumps, Inc.
 - 2. ITT Industries; Bell & Gossett; Type SU.
 - 3. Patterson-Kelley.
 - 4. Taco, Inc.

- B. Configuration: U-tube with removable bundle.
- C. Shell Materials: Steel with exterior coated of rust-proof paint.
- D. Head:
 - 1. Materials: Cast iron.
 - 2. Flanged and bolted to shell.
 - 3. Easily removable for inspection and cleaning.
- E. Tube:
 - 1. Seamless copper tubes.
 - 2. Tube diameter is determined by manufacturer based on service.
- F. Tubesheet Materials: Steel tubesheets.
- G. Baffles: Steel.
- H. Piping Connections:
 - 1. Shell: Flanged inlet and threaded outlet fluid connections, threaded drain, and vent connections.
 - 2. Head: Threaded inlet and outlet connections for less than 2 ½ inches nozzle size and flanged inlet and outlet connections for 2 ½ inches and larger nozzle size.
- I. Support Saddles:
 - 1. Fabricated of material similar to shell.
 - 2. Foot mount with provision for anchoring to support.
- J. Characteristics:
 - 1. Tube Side:
 - a. Fluid: Water.
 - b. Design Pressure: 125 psi for threaded connections or 150 psi for flanged connections.
 - c. Design Temperature, Deg F: 375.
 - 2. Shell Side:
 - a. Fluid: Steam.
 - b. Design Pressure, psi: 150.
 - c. Design Temperature, Deg F: 375.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas for compliance with requirements for installation tolerances and for structural rigidity, strength, anchors, and other conditions affecting performance of heat exchangers.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 HEAT-EXCHANGER INSTALLATION

- A. Install shell-and-tube heat exchangers on saddle supports on steel floor stands or trapeze hangers as indicated
- B. Provide required clearance for services and tube bundle removal.
- C. Install shell-and-tube heat exchangers on concrete base. Concrete base is specified in Division 23 Section "Common Work Results for HVAC," and concrete materials and installation requirements are specified in Division 03.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Maintain manufacturer's recommended clearances for service and maintenance. Install piping connections to allow service and maintenance of heat exchangers.
- C. Install shutoff valves at heat-exchanger inlet and outlet connections.
- D. Install relief valves on heat-exchanger heated-fluid connection and install pipe relief valves, full size of valve connection, to floor drain.
- E. Install vacuum breaker at heat-exchanger steam inlet connection.
- F. Install hose end valve to drain shell.

3.4 FIELD QUALITY CONTROL

- A. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.5 CLEANING

- A. After completing system installation, including outlet fitting and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes.

3.6 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain heat exchangers. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 235700