

## SECTION 23 57 00

### HEAT EXCHANGERS FOR HVAC

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section includes shell and tube type heat exchangers, plate type heat exchangers and accessories and trim.
- B. Related Sections:
  - 1. Division 23 - Hangers and Supports for HVAC Piping and Equipment: Execution requirements for heat exchanger supports specified by this section.
  - 2. Division 23 - HVAC Insulation: Field applied insulation for heat exchangers.
  - 3. Division 23 - Hydronic Piping: Product requirements for hydronic piping connected to heat exchangers.
  - 4. Division 23 - Hydronic Piping Specialties: Product requirements for heat exchanger trim for placement by this section.
  - 5. Division 23 - Steam and Condensate Heating Piping: Product requirements for steam supply and steam condensate return piping connected to heat exchangers.

##### 1.02 REFERENCES

- A. American Society of Mechanical Engineers:
  - 1. ASME Section VIII - Boiler and Pressure Vessel Code - Pressure Vessels.

##### 1.03 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate dimensions, locations, size of taps, and support frame.
- C. Product Data: Submit performance data.
- D. Test Reports: Indicate shop test reports of tube bundle shop pressure tests.

##### 1.04 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for submittals.
- B. Operation and Maintenance Data: Submit start-up and shut down instructions, assembly drawings, and spare parts lists.

##### 1.05 QUALIFICATIONS

- A. Manufacturer: Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 5 years documented experience.

##### 1.06 PRE-INSTALLATION MEETINGS

- A. Division 01 - Administrative Requirements: Pre-installation meeting.

- B. Convene minimum one week prior to commencing work of this section.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Division 01 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept heat exchangers on site in factory protective packaging. Inspect for damage.
- C. Protect openings with temporary caps to prevent entry of foreign material.

#### 1.08 WARRANTY

- A. Division 01 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish one year manufacturer's warranty for heat exchangers

#### 1.09 EXTRA MATERIALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for extra materials.
- B. Furnish two sets of replacement gaskets.
- C. Furnish one set of wrenches for disassembly of plate type heat exchangers.

### PART 2 PRODUCTS

#### 2.01 SHELL AND TUBE TYPE HEAT EXCHANGERS

- A. Manufacturers:
  - 1. AJAX Boiler
  - 2. ITT Bell & Gossett.
  - 3. Substitutions: Division 01 - Product Requirements.
- B. Tubes: U-tube type with 3/4 inch OD minimum seamless copper tubes suitable for 150 psig Working pressure at 300 degrees F.
- C. Shell: Steel with flanged piping connections and necessary taps for thermometer wells and drains, steel saddle and attaching U-bolts, prime painted.
- D. Heads: Fabricated steel with steel flanged for piping connections.
- E. Water Chamber and Tube Bundle: Removable for inspection and cleaning.
- F. Design: Heating fluid in shell and heated fluid in tubes.

### PART 3 EXECUTION

#### 3.01 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 HEAT EXCHANGER INSTALLATION

- A. Install heat exchangers according to manufacturer's written instructions.
- B. Install shell-and-tube heat exchangers on saddle supports with provisions to drain shell.
- C. Vent Condenser (VC-1) shell and tube heat exchanger shall conform to this specification. Install unit per manufacturer's installation guide to ensure condensate drainage.

### 3.03 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections.
- B. Maintain manufacturer's recommended clearances for service and maintenance. Install piping connections to allow service and maintenance of heat exchangers.
- C. Install piping with threaded or flanged connections at heat exchangers.
- D. Install shutoff valves at heat exchanger inlet and outlet connections.
- E. Install relief valves on heat exchanger heated-fluid connection.
- F. Install vacuum breaker at heat exchanger steam inlet connection.

### 3.04 CLEANING

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

### 3.05 COMMISSIONING

- A. Verify that heat exchangers are installed and connected according to the approved Developer Design/Builder's Contract Documents.
- B. Adjust flows and controls to deliver specified performance.
- C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

### 3.06 DEMONSTRATION

- A. Engage a factory-authorized service representative to train County's maintenance personnel to adjust, operate, and maintain heat exchangers as specified below:
  - 1. Train County's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining heat exchangers.
  - 2. Review data in maintenance manuals. Refer to Division 1 "Contract Closeout."
  - 3. Review data in maintenance manuals. Refer to Division 1 "Operation and Maintenance Data."
  - 4. Schedule training with County's Representative, with at least seven days' advance notice.

END OF SECTION