

## SECTION 23 57 00

### HEAT EXCHANGERS FOR HVAC

#### PART 1 GENERAL

##### 1.01 SUBMITTALS

- A. Product Data:
  - 1. Heat Exchangers, Condensate Coolers, Flat-Plate Heat Exchangers.
  - 2. Component and accessories list.
  - 3. Ratings and nameplate information.
- B. Quality Assurance Data: {the following are suggestions; include what is necessary}
  - 1. Conform to Sections 8D of the ANSI/ASME Boilers and Pressure Vessels Code for manufacture of tubular heat exchangers and heat exchanger shells.
- C. Project Record Documents:
  - 1. Shop Drawings:
    - a) Certified plan view drawings with dimensions.
    - b) Wiring and termination drawings.
- D. Operation and Maintenance Data:
  - 1. Operating and maintenance procedures.
  - 2. Complete set of manufacturer's drawings.
  - 3. Complete documentation of inspections and tests performed, including any logs, curves, and certificates. Documentation shall note any replacement of equipment or components that failed during testing.
  - 4. Spare parts lists.
  - 5. Data sheets updated to reflect field installation conditions.

#### PART 2 PRODUCTS

##### 2.01 SHELL AND TUBE-TYPE HEAT EXCHANGERS

- A. Acceptable Manufacturers:
  - 1. Ace Heating Solutions, LLC
  - 2. Armstrong
  - 3. Bell and Gossett
  - 4. Patterson-Kelley
  - 5. Taco
- B. Configuration: Two pass, U-tube.
- C. Shell and Head Materials: steel shell and cast-iron head.
- D. Tube and Tube Sheet Materials: seamless, 3/4-inch OD copper tubes with steel tube sheets.
- E. Heat exchanger rating: ASME "U" symbol for unfired pressure vessels.
- F. Shell shall include a valved drain.

##### 2.02 CONDENSATE COOLERS

- A. Acceptable Manufacturers:
  - 1. Ace Heating Solutions, LLC
  - 2. Armstrong

3. Bell and Gossett
  4. Patterson-Kelley
  5. Taco
- B. Condensate Cooler is a device that mixes hot condensate or hot water with a cold water supply to reduce the temperature to acceptable discharge drain temperatures as required by city and state codes. It is a pre-assembled package that is suitable for any plumbing system. When hot condensate or hot water is drained into the condensate cooler body, the tempering valve opens and allows cold water to enter the chamber and mix with hotter liquid, cooling it to a preset temperature level of 135°F (57°C) or to a desired field set temperature.

**2.03 PLATE HEAT EXCHANGERS:**

- A. Acceptable Manufacturers:
1. Alfa Laval Thermal, Inc.
  2. APV SPX
  3. Armstrong Fluid Handling; Div. of Armstrong International, Inc.
  4. Kelvion, Inc.
  5. Bell & Gossett, a xylem brand
  6. Mueller: Paul Mueller Co.
  7. Tranter, Inc.; Texas Div.
  8. Triangle Tube/Phase III Co., Inc.
- B. Configuration: Freestanding assembly consisting of frame support, fixed and movable end plates, tie rods, plates, and one-piece gaskets.
- C. End-Plate Material: Painted carbon steel with steel tie-rods.
- D. Gasket Material: EPDM.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Shell and Tube Heat Exchangers:
1. Install shell-and-tube heat exchangers on saddle supports with provisions to drain shell.
  2. In steam supply to shell, provide in-line an isolation valve, strainer, union, automatic control valve, union, and isolation valve with a globe valve bypass around assembly. Provide a plugged or capped valve at strainer for blow down. Consult with DPS regarding the option of using pressure and temperature-rated ball or butterfly valves for this application.
  3. In condensate return from shell, provide drip leg, strainer, union, steam trap, union, test tee, check valve and ball valve.
  4. At hot water outlet, provide ASME-rated pressure relief valve. Pipe the relief valve discharge to the floor drain.
  5. Provide pressure gages and thermometers at water inlets and outlets, and compound pressure/vacuum gauges at inlet and outlet of steam control valve.
  6. Provide heat exchanger piping with isolation valves and unions or flanges at all unit connections, to allow for both the removal of entire unit and for tube pull without dismantling the connected piping. Locate heat exchanger so adjacent equipment does not interfere with exchanger's tube pull.
  7. Provide a vacuum breaker, steam air vent, and a compound pressure/vacuum gauge with pigtail siphon, to be installed at factory-provided tappings in shell.
- B. Train DPS maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining heat exchangers.

**END OF SECTION 23 57 00**