PART 1 - GENERAL

1.1 SUMMARY
A. This Section includes shell-and-tube heat exchangers and plate heat exchangers for HVAC applications.

1.2 SUBMITTALS
A. Product Data: For each model indicated, provide dimensions, weights, capacities at scheduled conditions, required clearances, field assembly method, components, and location and size of each field connection.
B. Operation and maintenance data.

1.3 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; if applicable due to temperature and pressure requirements.
B. ANSI: Liquid to Liquid heat exchangers shall be tested and performance certified in accordance with ANSI/AHRI Standard 400.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 SHELL-AND-TUBE HEAT EXCHANGERS
A. Manufacturers:
   1. Armstrong Pumps, Inc.
   2. Bell & Gossett.
   3. Taco, Inc.
   4. Thrush Company, Inc.
B. Configuration: Straight tube with removable bundle and heads.
C. Shell Materials: Steel.
D. Head:
1. Materials: Cast iron.
2. Flanged and bolted to shell.

E. Tube:
   1. Seamless copper tubes.
   2. Tube diameter is determined by manufacturer based on service.

F. Tube sheet Material: Steel.

G. Baffles: Steel.

H. Piping Connections:
   1. Inlet and outlet fluid connections, threaded drain, and vent connections.

I. Support Saddles:
   1. Fabricated of material similar to shell.
   2. Foot mount with provision for anchoring to support.
   3. Fabricate attachment of saddle supports to pressure vessel with reinforcement strong enough to resist heat-exchanger movement during a seismic event when heat-exchanger saddles are anchored to building structure.

2.3 GASKETED PLATE HEAT EXCHANGERS

A. Manufacturers:
   1. Alfa Laval Thermal, Inc.
   2. Bell & Gossett
   4. Tranter PHE, Inc.

B. Configuration: Freestanding assembly consisting of frame support, top and bottom carrying and guide bars, fixed and movable end plates, tie rods, plates, individually removable plates and one-piece gaskets.

C. Frame:
   1. Capacity to accommodate 20 percent additional plates.
   2. Painted carbon steel with provisions for anchoring to support.

D. Top and Bottom Carrying and Guide Bars: Painted carbon steel, aluminum, or stainless steel.
   1. Fabricate attachment of heat-exchanger carrying and guide bars with reinforcement strong enough to resist heat-exchanger movement during a seismic event when heat-exchanger carrying and guide bars are anchored to building structure.

E. End-Plate Material: Painted carbon steel.

F. Tie Rods and Nuts: Steel or stainless steel.
G. Plate Material: 0.020 inch thick before stamping; Type 316 Stainless Steel.
H. Gasket Material: EDPM.
I. Piping Connections:
   1. Threaded port for NPS 2 and smaller. For larger sizes, furnish end-plate port with threaded studs suitable for flanged connection.
J. Enclose plates in a solid aluminum removable shroud.

PART 3 - EXECUTION

3.1 HEAT EXCHANGER INSTALLATION
A. Maintain manufacturer’s recommended clearances for service and maintenance. Install piping connections to allow service and maintenance of heat exchangers.
B. Install shell-and-tube heat exchangers on, and anchor to, saddle supports.
C. Install plate heat exchangers on, and anchor to, concrete base.

3.2 CONNECTIONS
A. Install shutoff valves at all heat exchanger inlet and outlet connections.
B. Install relief valves on each circuit between the heat-exchanger and the heat exchanger shutoff valves. The relief pipe shall be full size from valve connection to floor sink.
C. Install full size drain with shutoff valve in-line with the lowest connection of each circuit of plate heat exchangers.
D. If a plate heat exchanger is connected to an open loop system, a full sized backflush crossover must be provided.

END OF SECTION