

## PART 1 - GENERAL

### 1.01 Intent of Document

The information included in this section is intended to identify the **SPECIFIC ITEMS** required by Oklahoma State University in the design and construction of facilities on the campus. Items of "normal, code, industry or standard construction practice" are not included in this section.

### 1.02 Design Criteria

- A. Provide design calculations for selecting seismic restraints, anchorages and attachments to structure, equipment supports, signed and sealed by a qualified professional engineer.
- B. Provide manufacturer recommended tube-removal space and install piping connections to allow service and maintenance of heat exchangers.
- C. Install relief valves on heat-exchanger heated-fluid connection and install pipe relief valves, full size of valve connection, to floor drain.
- D. Install vacuum breaker at heat-exchanger steam inlet connection

## PART 2 - PRODUCTS

### 2.01 Shell and Tube Heat Exchangers

- A. Manufacturers: Shall be registered with the Tubular Exchanger Manufacturers Association and be ISO 9001 certified.
  - 1. API Heat Transfer Inc.
  - 2. Armstrong Pumps, Inc.
  - 3. ITT Industries; Bell & Gossett.
  - 4. Taco, Inc.
  - 5. Thrush Company, Inc.
- B. Configuration: Steel shell with seamless with removable copper **U-tube** bundle. The shell piping connections shall be flanged inlet and outlet. The head shall be flanged and bolted to the shell. The head piping shall be threaded for NPS 2 inch and smaller and flanged for 2-1/2 inch and larger. Support saddles shall be fabricated from material similar to the shell. Tube bundles shall not exceed 4 passes. Steam heat exchangers shall be sized for a 10 PSIG maximum steam inlet pressure.

## 2.02 Gasketed Plate Heat Exchangers

- A. Manufacturers: Shall be ISO 9001.
1. Alfa Laval Thermal, Inc.
  2. API Heat Transfer Inc.
  3. Armstrong Pumps, Inc.
  4. Invensys APV, Inc.
  5. ITT Industries; Bell & Gossett.
  6. Mueller, Paul Company.
  7. Polaris Plate Heat Exchangers.
  8. Tranter PHE, Inc.
- B. Configuration: Freestanding assembly consisting of steel frame support, painted steel top and bottom carrying and guide bars, fixed and movable painted steel end plates, stainless steel tie rods, individually removable stainless steel plates, and one-piece EPDM gaskets. Enclose plates in a solid **aluminum** removable shroud. Frame shall be sized for 20 percent additional plates. Pipe connections shall be threaded pipe for NPS 2 and smaller, carbon steel flanged pipe connection for 2-1/2 and larger.

## 2.03 Brazed Plate Heat Exchangers

- A. Manufacturers:
1. Alfa Laval Thermal, Inc.
  2. API Heat Transfer Inc.
  3. Armstrong Pumps, Inc.
  4. FlatPlate, Inc.
  5. Invensys APV, Inc.
  6. ITT Industries; Bell & Gossett.
  7. Mueller, Paul Company.
  8. Polaris Plate Heat Exchangers.
  9. Tranter PHE, Inc.
- B. Configuration: Brazed assembly consisting of two end plates, one with threaded nozzles and pattern-embossed plates. Plate, end-plate, and threaded nozzles shall be type 316 stainless steel with nickel brazing material.

END OF SECTION 15710