

SECTION 15755 - "HEAT EXCHANGERS"

- 1.0 All heat exchangers shall be constructed in accordance with the ASME Pressure Vessel Code, bear the ASME "U" Stamp and be registered with the National Board of Boiler and Pressure Vessel Inspectors.
- 2.0 All heat exchangers shall be rated for minimum 150 psig operating pressure at 300°F or greater if system pressures dictate. (Note: Campus chilled water heat exchangers require a test pressure to 300 psig.)
- 3.0 U-tube heat exchangers shall be used in all steam to hot water applications. Chilled water isolating and condenser water free cooling shall be designed around the use of plate and frame heat exchangers.
- 4.0 U-tube heat exchangers shall be constructed as follows:
 - A. Shell - steel.
 - B. Tubes - 3/4" OD copper with a maximum tube velocity of 7.5 feet per second.
 - C. Heads - cast iron.
 - D. Tube sheets - brass or stainless steel (if >200°F, use brass only).
 - E. Tube supports - brass or stainless steel (if >200°F, use brass only).
 - F. Minimum scale factor - 0.002 sq. ft.hr-°F/BTU.
 - G. Maximum water side pressure drop - 12 feet of water.
 - H. Provide brass or stainless steel baffle plates on discharge of steam heat exchangers.
 - I. Stainless steel tubes should be considered for process or corrosive applications. Specific construction shall match process requirements.
- 5.0 Plate and frame exchangers shall be constructed as follows:
 - A. Plates - type 316 stainless steel.
 - B. Frames - carbon steel with baked epoxy enamel paint.

- C. Heat transfer coefficient - greater than 1000 btu/ft²-hr-°F.
 - D. HTRI tested, certified and rated.
- 6.0 All systems shall be designed to assure adequate service and maintenance clearances for tube pulling and frame dismantling. Piping connections shall be designed and detailed on contract drawings to permit pulling of the tube-bundle without disassembling any piping except flanged elbows into the unit.
- 7.0 Typically two steam control valves shall be provided and sized so that the load is split 1/3 and 2/3 between the valves. Provide constant flow variable temperature control for perimeter radiation systems, and variable flow constant temperature control for all reheat systems.
- 8.0 Provide N+1 fully redundant steam systems for 100% outdoor air systems and on critical applications such as reheat for laboratories. The level of redundancy for all other applications should be established during the schematic design stage of the project.

END OF SECTION