

235000 Central Heating Equipment

Sections Included In This Standard:

- 1.1 Equipment Access
- 1.2 Boilers
- 1.3 Heat Exchangers
- 1.4 Plumbing Equipment

1.1 GENERAL

- A. **EQUIPMENT ACCESS:** All plant equipment shall be located so as to be accessible for maintenance. It is unacceptable that demolition be required for removal of plant equipment (not the facility).

1.2 BOILERS

A. APPLICABLE DESIGN CODE

- 1. All installations shall be designed, constructed, inspected and stamped in accordance with the ASME Code, and the latest addenda thereto in effect.
- 2. All boilers shall bear the National Board Stamping and the manufacturer's N.B. numbers as registered with the National Board of Boiler and Pressure Vessel Inspectors. A copy of the Manufacturer's Data Report signed by the manufacturer's representative and the National Board Commissioned Inspector employed by the Authorized Inspection Agency shall be submitted to the A/E for submittal to UF prior to Substantial Completion.

B. POWER PIPING

- 1. Piping external to power boilers from the boiler to the first stop valve of a single boiler, and to the second stop valve in a battery of two or more boilers is subject to the requirements of Section 1 of the ASME Code, and the design, fabrication, installation and testing of the valves and piping shall be in accordance with ANSI B31.1.0, as adopted and incorporated by reference.
- 2. Welded piping is subject to the ASME Code requirements for proper code certification including stamping in conformance with the code and furnishing of applicable Manufacturer's Data Report forms to the A/E for submittal to UF prior to Substantial Completion.

C. BUILDER REQUIREMENTS

- 1. Builder shall complete State Fire Marshal form CSD-1, documenting properly the boiler startup report to UF PPD Systems as a requirement of Substantial completion. One copy of the completed form CSD-1 shall also be included in the Builder's O&M Manuals.

1.3 HEAT EXCHANGERS

A. GENERAL

1. Swimming Pools: Shell and tube shall be 316 Stainless Steel only.
2. Heating Hot Water: Shell and tube with copper tube.
3. Chilled Water: Shell and tube or plates. 316 Stainless Steel tubes or plates.

B. EQUIPMENT COOLING: Domestic potable water shall not be used as a once-through cooling agent for equipment cooling. Equipment cooling shall be accomplished using properly designed heat exchangers connected to the chilled water distribution.

C. STEAM COILS: Design Pressure: Design steam coils for 30 psig maximum. Provide reducing stations as required.

D. CHILLED WATER COILS

1. Coil Design Requirements: Design chilled water coils for a minimum of 18 degree Fahrenheit temperature rise ("Delta T") for Air-Handlers and a minimum and 20 degree Fahrenheit rise for Preconditioned outside air. Design for chilled water supply temperature available of 44 degrees F from the particular chiller plant. Select the most appropriate mix of options and strategies to satisfy the Delta T requirement.
2. Provide inlet and outlet pressure gauges (for Delta P).
3. Provide inlet and outlet thermometers and wells (for Delta T). Provide outlet temperature (return water temperature) sensor and well.
4. Provide access for inspection or calibration of temperature testing devices.
5. Coil Drains and Air Vents: All chilled water coils shall have properly installed drains (nipple, valves, valve plug, etc.) and only brass type automatic air vents piped to a drain.
6. For CHW coils, select coils such that heat transfer performance is maintained down to 25% of design CHW flow and provide supporting documentation.

E. HEATING HOT WATER COILS

1. Coil Design Requirements: Design hot water coils for a minimum of 20 degree Fahrenheit temperature rise ("Delta T") for Air-Handlers, and a minimum of 30 degree Fahrenheit rise for Preconditioned outside air. Design for hot water supply temperature available of 120 degrees F from the particular heat exchanger.
2. Provide inlet and outlet pressure gauges (for Delta P).
3. Provide inlet and outlet thermometers and wells (for Delta T). Provide outlet temperature (return water temperature) sensor and well.
4. Provide access for inspection or calibration of temperature testing devices.
5. Prohibition of Dissimilar Piping: There shall be no mixing of piping. The entire piping

system shall be copper piping throughout.

6. Coil Drains and Air Vents: All heating hot water coils shall have properly installed drains (nipple, valves, valve plug, etc.) and only brass type (automatic for HSC) air vents (manually operated) piped to a drain.
 7. All heating hot water coils are to have “Y” strainers with blow down valve and plug installed in the supply water side to the coil.
- F. CHILLED BEAM: With a supply design temperature of 58-59F, chilled water piping for chilled beams shall not require insulation.
- G. VARIABLE REFRIGERANT: Variable refrigerant (VRF) systems are an acceptable solution for space cooling and should be considered.

1.4 **PLUMBING EQUIPMENT**

- A. EXPANSION TANKS – HEATING HOT WATER:
1. Expansion tanks shall be an ASME galvanized welded steel tank with sight glass and valves.
 2. Expansion tanks sized 15 through 60 gallons shall have a maximum pressure rating of 150 psi.

END OF SECTION