Sections Included In This Standard:
1.1 General
1.2 Boilers
1.3 Heat Exchangers / Coils
1.4 Plumbing Equipment

1.1 GENERAL

A. EQUIPMENT ACCESS:
   a. All equipment that supports the facility shall be located so as to be accessible for
      maintenance. It is unacceptable that demolition be required for removal of equipment
      the supports the facility.
   b. Disassembly of equipment in order to install it is also not allowed.
      i. If equipment comes disassembled from the factory with specific assembly
         instructions that is allowed.
   c. Manufacturer recommended services access shall be the minimum.

B. 100% redundancy is required for Heating Hot Water systems for Labs, Research facilities
   and facilities that house animals

1.2 BOILERS

A. APPLICABLE DESIGN CODE

   1. All installations shall be designed, constructed, inspected and stamped in accordance
      with the current ASME Code, all State of Florida Boiler laws and rules and Insurance
      mandates.
      a. Boilers used in closed loop systems shall have an H stamp.
      b. Boilers used for domestic hot water boiler system shall have an HW stamp.

   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.

   3. All boilers shall have the capability to connect to the BAS system via Bacnet.

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, and present to UF Facilities Services 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.

D. Manufacturers: Preferred: Locinvar, Aircor Not allowed: Patterson Kelly,

1.3 HEAT EXCHANGERS / COILS

A. GENERAL

1. Swimming Pools: Shell and tube shall be 316 Stainless Steel only.
2. Heating Hot Water: Shell (Standard) 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 as a primary source. Equipment cooling shall be accomplished using properly designed heat exchangers connected to the chilled water distribution.

C. HEATING HOT WATER HEAT EXCHANERS

a. It is required to have two heat exchangers.
b. Each heat exchanger shall have all systems and components that allow it the capability of running independent of the other.

D. STEAM COILS: Are not allowed. There use needs to be approved by Facilities Services in writing. Design Pressure: Design steam coils for 30 psig maximum. Provide reducing stations as required.

E. 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.
   a. All other design parameters (CFM, Room temperatures) need to be met while keeping the Delta T.
2. Provide inlet and outlet pressure gauges (for Delta P). (water flow, outlet gauge downstream of control valve)

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. (?, need to better understand what is being asked for here)

F. 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 140 degrees F from the particular heat exchanger.

2. Provide inlet and outlet pressure gauges (for Delta P). (water flow, outlet gauge downstream of control valve)

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. (If dissimilar need to use dielectric waterways)

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 throughout campus) air vents piped to a drain.

6. 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.
   a. This blow down valve shall be accessible with normal ladders or removal of ceiling grid.

1.4 OTHER HEATING EQUIPMENT

A. EXPANSION TANKS – HEATING HOT WATER:

1. Designed and built in accordance with ASME BPV Code Section VII, Division 1
2. Installation: vertical and horizontal
3. Shell: Carbon Steel
5. Tanks with replaceable bladders shall have high quality butyl rubber bladders.
6. Maximum acceptance volume is approximately 90% of the tank capacity.
7. Standard factory pre-charge

END OF SECTION