PART 1  GENERAL

1.01  RELATED SECTIONS

15120 – VALVES
15130 – PIPING SPECIALTIES
15850 - AIR HANDLERS

1.02  SUMMARY COMMENTS

A.  Winterizing Chilled Water Coils:  Provide a means for dry air lay-up for winterization of all chilled water cooling coils on outside air.  This is intended to enable freeze protecting cooling coils without the use of glycol solutions.  See Cornell Design Standards, Detail No. 3.1.6 for installation guidelines.

B.  Refer to Cornell Design Standards, Detail No. 3.1.5 for standard coil details.

C.  Coils for all air-handling units shall be selected so as to maximize temperature rise and subsequent capacity while minimizing the waterside and airside pressure losses.  All chilled water coils in air handlers shall be sized with 47°F entering water temperature.  A 15°F rise is the minimum acceptable; 20°F should be investigated for each load.

D.  Maximum coil face air velocities are as follows:

   Chilled water coils - 475 fpm
   Hot water or steam - 700 fpm

E.  All coils shall incorporate an air-water counter flow piping arrangement.

F.  All coils shall employ ½" minimum connections for ball valve air vents and drains at the top and bottom of each header.

G.  On chilled water and hot water coils, headers shall be non-ferrous.  Cast iron headers are not acceptable.  Steel headers are acceptable on steam coils only.

H.  All coils shall have copper tubes and return bends with a minimum thickness of .035".  Standard tubing wall thickness 0.020" is acceptable in 200-1200 cfm fan coil units by approved manufacturers.
I. Fin spacing should not exceed 12 FPI. Fin spacing of 10 FPI or less is preferred.

J. All coils shall be certified by the manufacturer to comply with all requirements of ARI Standard 410.

1.03 DESIGN GUIDELINES

A. Drawings: All coil schedules shall, as a minimum, include:

   Entering/leaving air conditions (dB/WB)
   Entering/leaving water conditions (°F)
   Water flow (GPM)
   Water pressure drop (FT)
   Air volume (CFM)
   Air pressure drop (in H₂O)
   Fins per inch
   Rows

PART 2 PRODUCTS

2.01 PREFERRED MANUFACTURERS

A. Coils, Cooling and Heating:

   Aerofin
   Carrier
   McQuay
   Temtrol
   Trane
   Heatcraft

2.02 AIR HANDLER COILS

A. General

1. Fins: Construct of continuous aluminum or copper configured plate-fin type with full fin collars for accurate spacing and maximum fin-tube contact. Fin spacing shall be 12 fins per inch maximum.

2. Casings: Construct of 16-ga. 304 stainless steel for coil heights 33" and smaller; 14-ga. stainless steel for coil heights over 33". Provide formed end supports and top and bottom channels. Provide 16-ga. stainless steel center tube support for coil lengths 42" to 96", two or more supports for coil lengths.
over 96”.

3. **Tubes**: Construct of seamless copper tubing, expanded into fin collars for permanent fin-tube bond and expanded into header for permanent leak-tight joint. Tubes shall be arranged in staggered pattern with respect to airflow.

4. **Connections**: Grooved connections (i.e., Victaulic) are not acceptable on hot water and steam coils.

5. **Testing**: All water, steam and DX coils shall meet or exceed ASME Requirements for burst and maximum operating pressures.

6. **U-Bends**: Construct of copper tubes, machine die-formed on each end to provide an accurate fit for silver brazed joints.

7. **Air Bypass Barrier**: Provide foam seals around the coil to prevent air bypass between casing and coil.

B. **Hot Water Heating Coils**:

1. **Tubes**: Construct of 5/8” minimum tubing. Coils shall be drainable with non-trapping circuits.

2. **Headers**: Non-ferrous construction.

C. **Steam Heating Coils**:

1. **Headers**: Schedule 40 steel or non-ferrous construction.

2. **Connections**: Non-ferrous construction. Top connection for vacuum breakers where appropriate.

D. **Cooling Coils**:

1. All chilled water coils in air handlers shall be sized for the highest rise practical with 47°F entering water temperature. A 15°F rise is the minimum acceptable, 20°F should be investigated for each load. Air and water shall be piped full counterflow, with water inlet at the bottom of the supply header and outlet at the top of the return header.

2. **Tubes**: Construct of minimum 5/8" copper tubes. Coils shall be drainable with non-trapping circuits. All coils shall have non-ferrous tubing.

3. **Header**: Non-ferrous construction.
4. Frames and blank-off spacers between coil and frame housing shall be stainless steel. Use stainless steel hardware to fasten blank-offs and frames.

5. Cooling coils stacked one above another shall incorporate drip troughs on the downstream side of each of the upper coils to eliminate drip into the airstream of the bottom coil. Drip troughs shall be sloped to allow for proper drainage.

2.03 FAN COIL UNIT COILS

A. As with air handling coils, cooling coils should be selected for a water temperature rise as great as practical (13°F minimum). All coils shall be of the “low flow” or “high water temperature rise” type.

END OF SECTION