1. Structure of building Chilled Water Systems to be as follows;
   a. Primary circuit loading all main air handlers.
   b. Secondary circuit for all fan coil and condenser loads. (All year-round cooling loads.)
   c. Secondary blends return from primary.
   d. Isolated plug-load loop on the secondary.
   e. Main building cooling coils to utilize coil circulation pumps.

2. It is acceptable to use cooling coils for heat rejection for generating off-season chilled water for plug loads.

3. Ensure all equipment including reheat coils, perimeter radiation, force flows and panel radiation are easily accessible for inspection, cleaning and testing.

4. For all equipment containing glycol, cooling, heat water and reheat coils ensure that there is a minimum space of 8 inches between coils and 8 inches clear from coils to unit end-walls and bulk heads to provide access for coil cleaning and to ensure that sufficient room exists. Ensure both sides of each coil can be accessed. Provide access panels as necessary.

5. Chilled water is supplied from the Central Utilities Plant at the following conditions: chilled water supply (CWS) 41°F (5°C), chilled water return (CWR) 55°F (13°C). Blend to building to 48°F (9°C) peak.

6. To maintain proper efficiencies at the central chilled water plant Utilities installs a bridge at each building chilled water service connection. The bridge will automatically blend CWR into the CWS for the building, whenever the CWR temperature from the building is below 55°F (13°C). Therefore, whenever the CWR temperature is less than 55°F (13°C), the CWS temperature will be proportionally increased above the 41°F (5°C) noted above. **Coil design to be based on 48°F (9°C) entering water.**

   Comment: Performance history has shown that building operations limit the chilled water return temperature from individual air system cooling coils to 55°F (13°C) (or higher), which has a significant impact to the coil selection.

7. Bridge Spec:
   - Must be no smaller than 50% of main headers
   - Must be no shorter than the equivalent of 10 diameters of the mains.
   - Should be “U” shaped with 2 wells in the corners of the “U”.

8. Utilize glycol for all air system heating coils. Propylene glycol shall be used for all heating applications. Considerations shall be given to the use of multiple direct drive fans in parallel
operation within central units. This is to be reviewed for supply /general exhaust and return air fans.

9. Provide a secondary chilled water loop for localized cooling loads that are present 24 hours a day, such as computer server rooms and computer labs.

10. Due to the possibility of the primary chilled water system temperature varying (refer to D3013) designer to review coil sizing and coil row count and consider the use of minimum 6 row chilled water coils for use in air handling units.

11. Two-pipe reverse return systems are preferred for hot water heating, glycol and chilled water systems. A two-pipe direct return may only be used in consultation with the University and if proper care is taken to ensure all components have been incorporated to safeguard against imbalance flow to terminal equipment and coils.

12. Arrange piping layouts to minimize air locks. Provide air relief at potential air trap points. Automatic air vents are to be installed with ball valve shut-offs.

13. Design piping circuits so that the circulation pumps cannot be deadheaded.

14. Provide balancing valves at all coils and terminal units.

15. Consider using primary/secondary pumping and piping arrangements. This method has been found to reduce pumping energy costs and provide better hydronic control.

16. Water shall be utilized as the heating medium for radiation and reheat except where the potential for freeze up exists.

17. “Dead Head Service” shall be rated for full system working pressure.