

CHILLED WATER DISTRIBUTION SYSTEM

Campus Chilled Water System: Both UNL city and east campuses are served by central utility plants operated by the Utility and Energy Management (UEM) department. These plants produce variable flow chilled water which is distributed to the campus via an underground distribution system.

System Temperatures/Pressures: Chilled water temperatures / pressures available at each plant are as follows:

City Campus:

45 Deg F Supply Temperature
85-90 PSIG Supply Pressure
60 PSIG Return Pressure (fill pressure)

East Campus:

45 Deg F Supply Temperature
100 PSIG Supply Pressure
70 PSIG Return Pressure (fill pressure)

Note that these values are valid at the plants or in close proximity. Contact UNL FMP Engineering for specific conditions that may be encountered in remote locations.

See the *Cooling Systems* section within these *Design Guidelines* for specific Temperature and Pressure differential requirements for designing equipment and piping systems within buildings.

Distribution Piping: Typically, chilled water distribution piping is direct-buried with a cover depth of 5'. All distribution piping shall be sized and configured as appropriate to serve the ultimate future cooling loads in the geographical area being served. Isolation valves are required in mains adjacent to each major branch and in all branch piping. Branch valves shall be located as near the mains as possible but shall not be located beneath streets. A manual air vent shall be installed at each high point. A manual blow-off/drain shall be installed at each regional low point in main distribution piping but is not required at each and every low point in main and branch piping.

Service Entrance: The service entrance piping should be sized with appropriate consideration given to the building's potential future cooling load. For buildings with below-grade basements, piping shall be brought into the building through penetrations in the basement wall. For buildings that are built with slab-on-grade construction or with inadequate basement depths, a generously sized pit with a floor drain should be provided to facilitate an accessible pipe entrance. Provision for thermal expansion of system fluid is accomplished at the chiller plant(s) and therefore, chilled water expansion tanks should not be installed within connected buildings except as part of a hydraulically isolated chilled water system (e.g. on building side of plate-and-frame heat exchanger).

Chilled Water Energy Meters: These are required at all chilled water building service entrances. See *Utility Metering* within these *Design Guidelines* for details.

Building Pumps: The use of building pumps to "boost" pressures or somehow compensate for inadequacies in the building chilled water distribution system is strongly discouraged. The need for any such pumps and alternatives should be discussed with UEM and FPC Engineering.

Glycol: The campus system does not have any glycol content and in fact we have experienced bacterial growth problems when glycol has been unintentionally allowed into enter the system. Plans and Specifications should include warnings so that cross contamination between any closed, glycol cooling systems and the campus system is avoided.