DESIGN GUIDELINE 230052
COOLING TOWERS

General

This section covers requirements for forced draft and induced draft cooling towers, and related system and component requirements.

Related Sections

U-M Design Guideline Sections:
230050 – Chilled Water Systems

U-M Master Specification Sections:
232513 – Chemical Water Treatment-Closed Loop
232516 – Chemical Water Treatment-Open Loop
236416 – Centrifugal Water Chillers
236500 – Cooling Towers

Design Requirements

Unless directed otherwise, utilize the following U-M specifications as the basis for cooling tower specifications on projects. The A/E shall edit the specifications to make them project specific. Turn on hidden text and read all spec. editor's notes when editing specifications.

232513 – Chemical Water Treatment-Closed Loop

232516 – Chemical Water Treatment-Open Loop

236500 – Cooling Towers

Use 78^{o}F for design entering wet bulb conditions.

Cross-flow induced draft towers are preferred over forced-draft type towers due to energy consumption and ease of maintenance.

If a job requires a forced draft tower, provide adequate space for fan shaft removal.

Make provisions to protect the fill from higher temperatures on absorption chiller applications. Indicate in control sequences to shut the chillers and condenser water pumps.

Fan drive(s) should be through drive shafts and gear reducers, with motor mounted outside of the air stream. Include external oil lines and dip stick. The University discourages the use of V-belt drive cooling towers. If V-Belt drives are used, provide non-ferrous sleeves.

Cooling tower fans shall be driven by a variable speed drive.

Refer to “Editor:” notes in the Master Specifications for access platforms and handrails.

Designer shall review need for vibration isolators with the University Project Coordinator.

For winter operation, a remote, indoor sump or tank is preferred (dry cooling tower sump). Where wet cooling tower sump is used for winter operation, provide basin heater and heat tracing for all outdoor piping. Direct steam injection basin heaters are preferred. Used electric sump heater if steam is not available. Heat tracing may be steam or electric.

Cooling tower located on roof shall be supported on roof steel to provide a minimum clearance of 3 feet to the bottom of steel, to enable roof maintenance and replacement.

Acoustic testing and analysis is typically required for all cooling tower installations. Consult Project Coordinator.

Provide accessible basket strainer at inlet to cooling tower.

Designer shall account for derating factors associated with screenwalls, and reentrainment.

Pipe cooling tower overflow/ drain to sanitary waste. Discharge directly to roof is not acceptable.