



DESIGN GUIDELINE 4.6 **UNIVERSITY PROVIDED UTILITIES**

Revised to indicate -50 compressed air dew point and that tunnel domestic hot water is no longer softened: 7-10-13 by D. Karle.

General

This section describes building utilities associated with U-M facilities.

Related Sections

Special Building Areas:

[SBA-5.9 Tunnels](#)

U-M Design Guideline Technical Requirements:

[DG 230050 – Chilled Water Systems](#)

[DG 230051 – Water Chillers](#)

Utility Distribution Overview

The University distributes electricity to the Central, Medical, and North Campuses and parts of the Athletic/ South Campuses.

Central Campus Utilities provided by the University's Central Power Plant include:

- Electricity
- Low pressure Steam (minimum of 6 psig)
- Medium pressure steam (60 psig, 350°F)
- Steam Condensate
- Compressed Air (90 psig, maximum of minus (-) 50°F pressure dewpoint)
- Domestic hot water (50 psig, 125°F, un-softened)

Pressures specified are at the utility building entrance.

In parts of the Athletic and South Campus, medium pressure (60 psig) steam with condensate return is provided from the University's Hoover Street Power Plant.

Other facilities may have regional or local steam systems capable of providing adequate capacities. Steam pressures may vary for these systems. Where these capacities exist, the proposed facility shall utilize them. Coordinate facility loads and intent with the U-M Project Coordinator. Utilities and Plant Engineering, through the Project Coordinator, will determine and provide the locations and capacities of existing systems.

University Provided Utilities Applications

Central Campus Steam

Low pressure steam should be used for building heating and humidification loads and for some absorption chiller cooling, because of the economy of generation and cogeneration in the Central Power Plant. Refer to Design Guideline 230050 and consult with U-M Project Coordinator before deciding on chiller type (absorption or electric).

Because of power plant economy, Central Campus Medium Pressure (60 psig) steam use is generally limited to the following applications:

- For critical buildings such as research labs and medical clinics, where sufficient 60 psig steam capacity is available, 60 psig steam via a pressure regulating valve should be used to provide redundancy to the building low pressure steam supply during interruptions.
- Special equipment, such as sterilizers.
- Multi-zoned application of “clean steam” humidifiers. “Clean steam” is defined as the steam generated from campus steam via a heat exchanger, using high purity water for makeup. Single zone clean steam shall be generated from 6 psig steam, but where multiple and separately controlled building zones must be fed from a single steam generator, 60 psig steam may be used.

60 psig steam shall not be used to boost existing nominal 6 psig steam pressure to higher pressures.

Steam Condensate

Central Campus condensate from low pressure and medium pressure steam shall be vented to atmosphere and pumped to the campus distribution system at minimum 30 psig pump pressure. South/ Athletic Campus condensate shall be similarly returned to the Hoover Boiler Plant.

Domestic Hot Water – Central Campus

New domestic hot water (DHW) connections on Central Campus should not make use of the central campus domestic hot water return (DHWR) system. Provide DHWR and return water re-heating system internal to the building, typically using low pressure steam and a shell and tube heat exchanger. Refer to Special Building Areas SBA-5.9 Tunnels. Provide RPZ backflow preventer on DHW as it enters the building.

Chilled Water - Regional Plants

Chilled water from regional chilled water plants is available at some locations on North Campus and Central Campus. Where it is available, it should be utilized. A connection fee/ Capacity Reserve Charge is required. Contact the U-M Utilities and Plant Engineering Department through the Project Design Coordinator for direction. Refer to Design Guideline Sections 230050 and 230051.

Metering

The following utilities shall be metered in accordance with methods and means specified in other sections of the Design Guidelines:

- Electricity
- Central Campus Steam Condensate
- Steam, where humidification loads are greater than 500 pounds of steam per hour.
- Chilled water from regional plants – flow and BTU metering.

Where a regional chilled plant is part of a facility, metering or sub-metering shall be provided to measure the utilities consumed by the plant separately from the building metering.

Domestic Cold Water, cooling tower make-up water and cooling tower blow down, and irrigation water shall be metered separately in accordance with the City of Ann Arbor standards.

Domestic Hot Water (from Central Campus system) does not require metering as it enters the building.