

STATE UNIVERSITY CONSTRUCTION FUND

PROGRAM DIRECTIVES

DIRECTIVE 15H-5

Issue date: October 2015

REFRIGERATION SYSTEMS

1. Existing central systems are the preferred source of chilled water. Existing systems' available capacity shall be investigated prior to inclusion in the design. Decentralized satellite systems are the second preference.
2. The choice of water-cooled versus air-cooled systems should be evaluated using life cycle costs (see Directive 15H-1, "General HVAC Requirements"). When dedicated outdoor air systems are incorporated into a project for ventilation air, air-cooled systems are preferred because of their operational characteristics.
3. Chiller systems shall be designed using a 12°F to 16°F temperature differential across the chiller and the coils.
4. DX systems that use refrigerant coils in the air stream shall only be used with approval of the Fund.
5. Variable refrigerant flow (VRF) systems that are proposed for both heating and cooling shall require a means to keep the building conditioned on a design winter day should the VRF system be non-functional for any reason. Use of VRF systems requires approval of the Fund.
6. Chiller systems shall be designed to provide maximum efficiency and to provide turndown to 15% of full capacity by use of multiple compressors, variable speed compressors, and circuits. Compressor anti-short cycling control shall be provided. Hot gas bypass should not be used to achieve the 15% turndown of full capacity.
7. The preferred method for air-cooled systems is to use air-cooled condensers with indoor compressors and evaporators for maintenance ease, longevity and to avoid glycol use. Systems that have water components installed outdoors must use glycol. Draining of chiller systems and heat tracing piping should not be counted on as freeze protection. Propylene glycol mixture shall be used as the freeze protection fluid.
8. Water cooling tower and air-cooled condenser location shall consider noise, appearance and exposure to mist plume. Noise level shall be minimized by sound reduction enclosure.

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9. Water cooling towers, evaporative condensers or fluid coolers shall have their drains, overflows, and blowdown piping indirectly connected to the buildings sanitary drainage system. Indirect connections to the sanitary within the building shall be in a room that also has a floor drain installed. Using the storm drainage system and/or roof drain system shall be prohibited.
10. Mechanical room shall be designed to reduce sound and vibration transmission to any other space in the building to levels specified in Directive 15H-1, "General HVAC Requirements."
11. Refrigerant piping shall be fully designed and shown on the plans, including size, routing, and number of lines, installation and trap details. Refrigerant piping lengths shown on the plans need to be verified with all manufacturers listed in the specification for the project.
12. Refrigerant equipment room design per Mechanical Code of New York State.

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