DIRECTIVE 15H-7 Issue date: November 2012

SPECIAL AIR CONDITIONING AND VENTILATION

1. General Requirements

   a. Facilities containing special or unique spaces such as Arts, Health Care, Computer Rooms, Libraries, Kitchens, Greenhouses, Gymnasiums, Locker Rooms, Paint Spray Booths, etc. that have special heating, air conditioning and ventilation needs shall be designed in accordance with the BCNYS and its referenced standards. Early in design process the engineer must recommend to the Fund the additional codes and standards they propose be used in the HVAC design of the facility.

   b. Spaces in which odors, chemical fumes, dusts, heat or other nuisance or potentially hazardous products are generated shall be kept at negative pressure with respect to the corridors and other spaces they adjoin.

   c. Many campuses shut down the central chilled water and heating water or steam plants in the off seasons. In these cases, spaces that require year round cooling that cannot be met by economizer cycle and require chilled water, or that require heating water during the cooling season will have to be served by stand alone equipment.

   d. Diffusers that admit large air volumes at low velocities (for example laminar flow diffusers) shall be used where required to minimize air turbulence in rooms.

   e. If exhausts are connected to standby power, the means for providing supply air for the exhausts during power failure must be addressed.

2. Laboratories

   a. See Directive 15H-8 “Laboratory Design” for requirements for laboratories.

3. Arts Facility Design

   a. To properly design effective ventilation the engineer must understand the specific nature of the work that will occur in the spaces. Each process and the materials used in that process must be understood. Material handling

(storage, use, disposal) shall be considered. The engineer shall tour the existing facility, and others of the same type if necessary, interview the users, and review applicable literature prior to proposing local exhausts and room ventilation strategies.

b. Local exhausts such as snorkels and canopy hoods should be employed wherever possible to prevent potentially hazardous and nuisance fumes, vapors, dusts, etc. from lingering in the space and to reduce energy consumption.

c. Some generally accepted standards: American Conference of Governmental Industrial Hygienists, *Industrial Ventilation.* ASHRAE HVAC Applications, Industrial Applications chapter.

4. Health Care Facility Design

a. Designs proposed must take into consideration infection source and control measures, supply air quality, air movement between spaces, room pressurization, unique temperature and humidity requirements, and smoke control if required.

b. Isolation rooms, and other rooms with pressure control requirements relative to surrounding spaces, require special attention to the envelope construction and sealing of all penetrations through the envelope to assure airtight construction.

c. Health Care Facilities shall meet the requirements of the NYS Hospital Code.

d. Some generally accepted standards are: American Institute of Architects, *Guidelines for Design and Construction of Hospital and Health Care Facilities.* ASHRAE HVAC Applications - Health Care Facilities chapter.

5. Computer Room Design

Computer rooms with high cooling loads that cannot be satisfied at all times by the building system shall be served by dedicated air conditioning units. Reheat shall be by hot water. Liquid sensors shall be installed below raised floors.

6. Kitchen Design

a. Exhaust hood and make-up air systems shall be designed for maximum efficiency and minimum energy usage.

b. Exhaust hoods with integral make-up air supplied under the hood are not to be used.

c. For kitchens with multiple exhaust hoods, multiple exhaust and make-up air systems shall be utilized to provide operating flexibility for varying food preparation operations and schedules.

7. Document Storage, Library Archive and Art Storage Design

a. Document storage, library archives and art storage spaces require tight temperature and humidity control. Separate equipment dedicated and selected for these applications shall be used. Year round humidity control must be incorporated. Economizer cycle designs shall not be used.

b. Space design temperature and humidity set points for both summer and winter are to be established with approval of the Fund and the Campus.

c. Provide temperature and humidity sensors of sufficient accuracy and located as required, to measure and control to the desired space levels. The sensors shall be part of a control system that allows the current room temperature and humidity to be read and provides a record of past room conditions. The control system shall alarm when room temperature or humidity fall outside of the acceptable range (adjustable).

d. Humidification shall be provided by a separate “clean steam” system, isolated from any chemical treatment. Supply air ductwork shall be stainless steel downstream of the humidifier for the distance recommended by the manufacturer.

e. If chilled water is available, chilled water cooling coils shall be used to the maximum extent possible to provide dehumidification. If additional dehumidification is necessary, use other technologies as necessary for additional dehumidification. The engineer shall provide design information to demonstrate the design will result in control of space humidity.

f. The engineer shall work with the Architect during Concept Design phase to ensure walls, floors, and roofs, of rooms that require humidity control are designed to include a vapor barrier to prevent the passage of moisture. Doors and windows in rooms with humidity control are to be provided with thermally broken and gasketed frames.

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