

STANDARD

BSR/ASHRAE/ASHE Addendum e to ANSI/ASHRAE/ASHE Standard 170-2017

Public Review Draft

Proposed Addendum e to Standard 170-2017, Ventilation of Health Care Facilities

First Public Review (April 2019)
(Draft shows Proposed Changes to Current Standard)

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FOREWORD

The following changes come from a critical review of Chapters 5 and 10. The addendum improves the flow of the Standard by moving the “planning” requirements from chapter 10 into chapter 5 Planning. The addendum also addresses the intent behind Change Proposal 170-16-12-0001/007, harmonizing the Chapter 10 Construction and Start-up requirements with those in ASHRAE Standard 62.1. The SSPC 170 feels the changes represent minimum current design practices and should not present additional economic burden to health care facility construction.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~striketthrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum e to 170-2017

Delete paragraph and reworded and reformatted Section 5 to be more consistent with other sections.

5. PLANNING

~~Owners/managers of health care facilities shall prepare a detailed program that shall include the clinical service expected in each space, the specific user equipment expected to be used in each space, and any special clinical needs for temperature, humidity, and pressure control. This program shall be prepared in the planning phase of design.~~

5.1 General. Space programming and planning details that impact the HVAC design shall be identified and addressed in the planning phase of design.

5.2 Owner Requirements. Owners/managers of health care facilities shall:

- a. **Space Program.** Prepare a space program including the clinical service expected in each space and specific user equipment to be used. Specify needs for temperature, humidity, air filtration, localized and general exhaust, and pressure control that are not covered or are different than the requirements in this standard.
- b. **Medical/Clinical Organizations.** Provide specific medical and clinical requirements that are different than the requirements in this standard.
- c. **Facility Operational Plan.** Provide an operational plan in event of extended power or fuel outage. See sections 6.1.2.1 and 6.1.2.2.

Moved Section 10.2 to 5.3. Revised wording, format, and dropped redundant requirements.

5.3 Planning for HVAC Services in a New Facility. Design documents for new construction shall meet the following requirements:

- a. **Mechanical Equipment.**

1. Locate mechanical rooms to avoid the intrusion of maintenance personnel into surgical, critical care patient, or other patient or medical staff sensitive areas.
2. Provide sufficient space to comply with HVAC equipment manufacturers' minimum required access for operation, maintenance, and replacement.
3. Provide safe and practical means of accessing equipment.
4. Floors in mechanical rooms shall be sealed, including sealing around all penetrations, when they are above surgical suites and critical care spaces.

b. **Space Allocation for HVAC Distribution Systems.**

1. HVAC Distribution Systems. Coordinate ceiling plenum height, under-floor, and other areas where HVAC distribution systems are intended to be installed to allow for installation, inspection, and maintenance.
2. Mechanical Shafts. Allow for needed access for damper installation (if required), inspection, and service. Access doors shall be sized to meet code minimum for service requirements.

Moved Section 10.3 to 5.4. Added cooling and heating equipment to the requirements.

10.3-5.4 Planning for HVAC Services in an Existing Facility. If any existing air-handling, cooling, or heating equipment is to be reused, the designer shall evaluate the capacity of the equipment to determine whether it will meet the requirements of this standard for the remodeled space.

Moved Section 10.4 to 5.5. Added "where required," since ICRA's are not always required.

10.4-5.5 Planning for Infection Control During Remodeling of an Existing Facility. Where required, prior to beginning modifications or remodeling of HVAC systems in an existing facility, an owner shall conduct an infection control risk assessment (ICRA). The ICRA shall establish those procedures required to minimize the disruption of facility operation and the distribution of dust, odors, and particulates.

New Section 5.6. Decisions are needed in Planning phases to support Construction requirements in 10.1.4.3.

5.6 Planning for HVAC Systems operating during construction. Owner and design team shall determine if and under what conditions the permanent HVAC systems can be used for providing for temporary heating, cooling, and/or dehumidifying during construction. Refer to Section 10.1.4.3 (b).

Section 10 heading change. All planning requirements are now found in Section 5.

10.—PLANNING, CONSTRUCTION, AND SYSTEM STARTUP

Delete Section 10.1. Section 10 applies to more than surgery and critical care and is more than an acceptance plan. Additions below support this change.

10.1—Overview. For HVAC systems serving surgery and critical care spaces, compliance with this standard requires preparation of an acceptance testing plan.

Moved Section 10.2 to 5.3 and modified.

10.2—Planning for the HVAC Services in a New Facility.

- a. **General Mechanical Equipment Rooms.** The access to mechanical rooms shall be planned to avoid intrusion of maintenance personnel into surgical and critical care patient spaces.
- b. **Mechanical Room Layout.** Mechanical room layout shall include sufficient space to provide

~~manufacturers' minimum required access to equipment for operation, maintenance, and replacement. Floors in mechanical rooms shall be sealed, including sealing around all penetrations, when they are above surgical suites and critical care spaces.~~

- ~~e. **Maintenance/Repair Personnel Access.** Safe and practical means of accessing equipment shall be provided. Clearance to mechanical equipment is required at all service points to allow personnel access and working space.~~

Add new Section 10.1. Consistent with Standard 62.1.

10.1 Construction Phase

10.1.1 Application. The requirements of this section apply to ventilation systems and the spaces they serve in new buildings and additions to or alterations in existing buildings during the construction phase of the project.

10.1.2 Protection of Materials. When recommended by the manufacturer, building materials shall be protected from rain and other sources of moisture by appropriate in-transit and on-site procedures. Porous materials with visible microbial growth shall not be installed. Nonporous materials with visible microbial growth shall be decontaminated.

Moved from Section 10.6. The change to level C is common practice to aid in reducing duct contamination since dirt and dust contamination is easier to prevent than to clean.

~~10.6~~ **10.1.3 Duct Cleanliness.** The duct supply system shall meet the following requirements for cleanliness:

- a. The duct system shall be free of construction debris. New supply duct system installations shall comply with level "~~B~~ C," the Advanced Level of SMACNA Duct Cleanliness for New Construction Guidelines 12.
- b. The supply diffusers in ORs, delivery rooms (Caesarean), trauma rooms (crisis or shock), wound intensive care rooms, PEs, and critical and intensive care rooms shall be opened and cleaned before the space is initially used and at regular intervals thereafter.
- c. The permanent HVAC systems shall not be operated unless protection from contamination of the air distribution system is provided.

Add new Section 10.1.4. Consistent with Standard 62.1 and previous Section 10.5.

10.1.4 Protection of Occupied Areas

10.1.4.1 Application. The requirements of Section 10.1.4 apply when construction entails sanding, cutting, grinding, or other activities that generate significant amounts of airborne particles or procedures that generate significant amounts of gaseous contaminants.

10.1.4.2 Protective Measures. Measures shall be employed to reduce the migration of construction-generated contaminants to occupied areas. When required, follow the ICRA established procedures from section 5.5 to minimize the disruption of facility operation and the distribution of dust, odors, and particulates.

Add new Section 10.1.4.3 to aid in preventing dust and dirt contamination of the HVAC systems. It supports Section 10.1.4.2 even when ICRA is not required.

10.1.4.3 HVAC During Construction.

- a. Provide conditions to aid in preventing microbial growth on materials that are or will be installed in the new, remodeled, or addition.

- b. As determined from Section 5.6, if the permanent HVAC equipment is to be used during construction for temperature and/or humidity control, then prior to its use take the following minimum steps:
 1. Supply 100% outside air – no return air; blank off return duct openings with solid material
 2. Provide a method for pressure relief (such as open window(s) or door(s))
 3. Provide final level of filtration in air handling units
 4. Cover supply duct openings when air handler(s) are “off”
 5. Provide prefilters over outside air intakes as needed during site construction activities
 6. Clean air handling components prior to occupancy
 7. Operate air handling unit(s) only if safety devices and sequences are in place and operational
- c. Prior to starting and operating any ventilation systems from the time the Testing, Adjusting and Balancing work is taking place to the completion of the project, isolate expected construction activities that produce dust and debris from the ventilation systems.

Add new Section 10.2. Consistent with Standard 62.1.

10.2 System Startup

10.2.1 Application. This section applies to HVAC equipment and systems designed and installed to meet the requirements of this standard.

10.2.2 Testing, Adjusting, and Balancing (TAB). HVAC systems shall be balanced in accordance with one of the following national standards: ASHRAE Standard 111, AABC, NEBB, or TABB for airflows, water flows, and relative room air pressurization.

10.2.3 Testing of Drain Pans. To minimize conditions of water stagnation that may result in microbial growth, drain pans shall be field tested under operating conditions that are the most restrictive to condensate flow to demonstrate proper drainage.

Informative Note: Above conditions usually occur at full fan airflow for draw-through fans and minimum fan airflow for blow through fans.

Exception: Field testing of drain pans is not required if units with factory-installed drain pans have been certified (attested in writing) by the manufacturer for proper drainage when installed as recommended.

10.2.4 Manufactured Equipment Startup. For all manufactured HVAC equipment components, follow manufacturer’s startup recommendations and requirements. All equipment and air distribution systems shall be clean of dirt and debris.

Moved Section 10.3 to 5.4.

~~**10.3 Planning for the HVAC Services in an Existing Facility.** If any existing air handling equipment is reused, the designer shall evaluate the capacity of the equipment to determine whether it will meet the requirements of this standard for the remodeled space.~~

Moved Section 10.4 to 5.5 and renumber Section 10.5.

~~**10.4 Planning for Infection Control During Remodeling of an Existing Facility.** Prior to beginning modifications or remodeling of HVAC systems in an existing facility, an owner shall conduct an infection control risk assessment (ICRA). The ICRA shall establish those procedures required to minimize the disruption of facility operation and the distribution of dust, odors, and particulates.~~

10.5 10.2.5 Documentation of New or Remodeled HVAC Systems. Owners shall retain an acceptance testing report for their files. In addition, the design shall include requirements for operations and maintenance (O&M) staff training that is sufficient for the staff to keep all HVAC equipment in a condition that will maintain the original design intent for ventilation. Training of operating staff shall include an explanation of the design intent. The training materials shall include, at a minimum, the following:

- a. O&M procedures
- b. Temperature and pressure control operation in all modes
- c. Acceptable tolerances for system temperatures and pressures
- d. Procedures for operations under emergency power or other abnormal conditions that have been considered in the facility design