

Modify subsection .03 in Section 23 00 10 per the following (deletions are shown struck through and additions are double underlined). Remainder of section is unchanged.

23 00 10 Systems Selection and Application

.03 General Pressure Relationship and Ventilation Requirements for Certain Areas

- A. General: Ventilation systems shall be designed to achieve high indoor air quality by providing adequate amounts of fresh air to maintain adequate and safe breathing air, control odors, and associated exhaust to remove contaminants from occupied spaces for each application. Proper pressure relationships shall also be maintained where required with adequate differential airflow between adjacent spaces in the direction from most clean (positive) to most dirty (negative).
- B. Codes, Standards and Guidelines: In addition to minimum requirements of the Building Code, ventilation systems shall be designed in accordance with the following current editions of industry standards and design guidelines.
 - 1. ASHRAE 62.1- Ventilation for Acceptable Indoor Air Quality
 - 2. ASHRAE HVAC Applications Handbook: Follow the guidelines for the General, Comfort, and specialty Industrial/Process/Research Applications associated with the project scope.
 - 3. ANSI/AIHA Z9.5 - Laboratory Ventilation
 - a. The purpose of this standard is to establish minimum requirements and best practices for the design and operation of laboratory ventilation systems to protect personnel from overexposure to harmful or potentially harmful airborne contaminants generated within the laboratory. This standard:
 - 1. Sets forth ventilation requirements that will, combined with appropriate work practices, achieve acceptable concentrations of air contaminants;
 - 2. Informs the designer of the requirements and conflicts among various criteria relative to laboratory ventilation;
 - 3. Informs the User of information needed by designers.
 - b. This standard does not apply to the following types of laboratories or hoods except as it may relate to general laboratory ventilation:
 - 1. Explosives laboratories;

2. Radioisotope laboratories;
 3. Laminar flow hoods (e.g., a clean bench for product protection, not employee protection);
 4. Biological safety cabinets.
4. Standards used by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International for Accreditation of Animal Facilities:
 - a. Guide for the Care and Use of Laboratory Animals, Institute of Laboratory Animal Resources
 - b. Guide for the Care and Use of Agricultural Animals in Research and Teaching
- C. Special Requirements from Users: Determine any project-specific research or process ventilation or pressure relationship requirements with the University User's representative and review with Operations staff at OPP. Requirements may vary.
- D. Cooling of Utility Spaces: Use ambient/outside air for cooling of general mechanical and electrical distribution and elevator equipment rooms to the fullest practical extent.
1. The preferred typical temperature range for these spaces is 55°F minimum (heating) and 85°F maximum (cooling) to provide acceptable temperatures for equipment and service personnel yet balanced with goal of requiring minimal heating and cooling energy. Care must be taken in establishing a minimum temperature in order to avoid the risk of condensation in electrical equipment. It is permissible for seasonal, short-term (partial day) operation at a maximum of 10°F above the 99.6% Summer Outdoor Design DB temperature, but not to exceed the most stringent maximum ambient operating temperature ratings of any installed equipment.
 2. For applications that cannot otherwise maintain acceptable operating conditions per the above in a practical, cost-effective manner using either outside air or air transferred from adjacent conditioned spaces, provide mechanical cooling as required. Mechanical cooling systems shall be designed to operate only minimally as required to maintain recommended upper temperature limits for equipment expected to operate for extended periods at those conditions, in order to optimize service life. For spaces requiring continuous cooling, do not rely solely on central air systems serving multiple spaces with scheduled occupied/unoccupied periods. Design shall accommodate shutdown of central systems during unoccupied periods
 3. Centralized battery banks, equipment with large batteries such as centralized Uninterruptible Power Supplies and/or other similar battery applications shall be in spaces with temperature maintained for optimum battery capacity and service

life – generally between approximately 65 and 80°F (confirm with battery equipment manufacturer’s recommendations). Ventilation of centralized battery rooms must be designed to limit any hydrogen concentration to lowest levels specified by accepted industry standards.

4. Where fuel-fired equipment uses room air for combustion, do not use exhaust fans that will make the mechanical space negative and thus adversely affect proper combustion or venting of flue gases.
5. Openings to the outdoors shall be screened/ minimally filtered to keep out insects, dust, pollen, etc. Air for the main station switchgear and motor control center rooms should be relatively clean. Any makeup air supplied from outdoors shall be filtered with minimum 30% efficient air filters.

Area Description	Pressure Relationship to Adjacent Areas	Minimum Outdoor Air Requirements	All Air Exhausted to Outdoors	Recirculation Permitted
Animal Rooms	Note 5	Note 5	Note 5	Note 4
Auditoriums	E	Note 1	No	Yes
Classrooms	E	Note 1	No	Yes
Computer Rooms	P	Note 1	No	Yes
Copy Centers	N	Note 1	Yes	No
Darkrooms	N	Note 1	Yes	No
Dining Areas	P	Note 1	No	Yes
Janitor Closets	N	Note 3	Yes	No
Kitchens	N	Note 1	Yes	No
Laboratories	Note 4	Note 1	Note 4	Note 4
Laundry	N	Note 1	Yes	No
Libraries	E	Note 1	No	Yes
Locker Areas	N	Note 1	Yes	No
Lounges	N	Note 1	No	Yes
Mech/Elect Rooms	N	Note 2	Yes	No
Music Rooms	E	Note 1	No	Yes
Offices	E	Note 1	No	Yes
PC Labs	P	Note 3	No	Yes
Toilet Rooms	N	Note 1	Yes	No

P = Positive, E = Equal, N = Negative

Notes:

1. Conform to ASHRAE STANDARD 62 Ventilation For Acceptable Air Quality (Latest Edition).
2. Quantity required to maintain maximum of 10° above Summer Outdoor Design DB temperature.
3. Transfer from corridors permitted. Exhaust air quantity shall be greater of 2.5 cfm/ft² or 10 AC/HR or as required by ASHRAE STANDARD 62 Ventilation For Acceptable Air Quality (Latest Edition).
4. Discuss specific requirements with the University representative. Requirements may vary.

END of revision**Update Commentary:**

Section was updated primarily for the following reasons:

- 1) *To refer Design Professionals to current standards and guidelines and to delete old table to avoid providing duplicated, obsolete, or conflicting direction.*