

Description:

The purpose of the section is to highlight related UMD design standards and clarify issues which may be alleged to cause cost premiums resulting from these standards. Generally, the baseline standard is that of institutional design, not commercial design.

Related Sections:

- TBD

Effective Date:

January 1, 2023

Applicable Standards:

- TBD

General Requirements:

HVAC Design Conditions

The prohibition of control schemes which vary the cooling coil temperature rules out using the more common, low cost control schemes; but these have generally been discredited as institutions seek to avoid litigation related to Indoor Air Quality (IAQ).

Related issues:

- Ventilation - Granted, the University's adherence to ASHRAE Standard 62 is beyond the requirements of typical local codes.
 - For example, the ASHRAE standard rules out using windows for ventilation of remodeled campus buildings unless the ventilation can be demonstrated (a defacto prohibition of this typical low-cost approach).
 - Local codes atypically do not incorporate this demonstration provision.
 - However, in litigating IAQ issues, liability has been assessed in cases where local codes allowed less stringent ventilation practices, but the professional
 - HVAC designers were aware of the more stringent provisions of the ASHRAE standard.
 - (Note that "decoupled ventilation" is promulgated as the University's preferred method. The first cost implications of this are worth noting:
 - If designed simply, i.e. not incorporating heat-reclaim and other costly enhancements, the decoupled (stand-alone) ventilation unit is typically a small portion of the total HVAC system first cost. Most of the total HVAC system first cost relates to the other, heating/cooling functions.
 - To quantify: If the sheet metal ventilation duct system is taken to be the element which would not otherwise have been installed, the first cost premium is around \$0.60/ s.f. (1999 dollars); less than 2 of 1% of the total cost to construct a typical campus building.
 - And there are compensating savings which approach, and may exceed, the premium cost. Using this (relatively high cost) approach to ventilation allows the use of simple, low cost, easy to maintain heating/cooling components elsewhere throughout the HVAC system (including fan-coil units).

To illustrate, in the case of a fan-coil unit system, the avoided costs include:

- The cost to create openings in the outside wall for ventilation air.
- The cost of the associated louvers
- The cost to upsize all the air side terminals to handle the ventilation cooling, dehumidification and heating load
- The cost of more sophisticated fan-coil unit controls (decoupling the ventilation allows fan cycling (no automatic control valve) for space temperature control.

Further, the University, at a later date, can solicit proposals

From performance contractors to replace/augment the decoupled ventilation units in order to reduce the operating energy cost.

- Typically, performance contractors receive their payment from the savings, which can be demonstrated by measurements before and after.
- The first cost premium situation and the offsetting savings-varies with each application. Generally, our position is that no first cost premium is involved. In addition, the litigation cost avoidance is a benefit.