

230021-H: SUPPLEMENTAL TERMINAL AIR FLOW UNITS

Related Sections

Basis Guideline: [230021](#) - "Terminal Air Flow Units"

For an explanation of the use of these guidelines, see ["Design Guidelines for UMHHC Facilities"](#)

Included as part of this UMHHC guideline section are the details described within the following UM Master Specification sections:

[MS15896](#) "Terminal Air Flow Units"

The UM Master Specifications may be used as a reference and/or basis, but the A/E is completely responsible for contract specifications (meeting the intent of the UMHHC Guidelines and Preferred Manufacturers List) that are used in UMHHC projects.

UMH Standard Details:

[D233600H-1](#) "Typical Terminal Box Installation Detail"

[D 15830 101](#) "Duct-Mounted Reheat Coil - Hot Water Heating Piping Connections"

General

All supply air terminal units (except dual duct type) shall be provided with a hot-water reheat coil. Reheat coil shall be sized to be able to operate the terminal unit as a constant volume (i.e. sized to reheat maximum CFM) unit, regardless if the terminal unit is designed as a variable volume unit. Very often this requirement drives the need for a 2-row coil, *even though the variable volume design would only required a 1-row coil*. Coils shall have copper tubes and aluminum fins.

All VAV/ CAV boxes utilizing a reheat coil shall be provided with an insulated access panel for access to the upstream face of the reheat coil for cleaning.

NEC requires and the UM Electrical Inspection group enforces a 36" working clearance in front of an electrically powered terminal equipment controller (TEC). A/E shall clearly indicate this required clearance on construction drawings, through the use of a "hatched" or dashed area in front of TEC.

All new construction facilities utilizing VAV/ CAV terminal boxes shall be provided with DDC TEC's. All work in existing UMHHC facilities shall utilize DDC TEC's. For renovation work that reuses/ refurbishes existing VAV/CAV boxes see FPD website for standard VAV/ CAV control diagrams/ details in existing facilities.

All supply air terminal units shall utilize a double wall construction consisting of an inner and outer galvanized sheet metal liner sandwiching the insulation. In lieu of double wall construction, the use of hospital grade fiber-free liner (i.e. Titus "Steri-Loc") is allowed in non-patient care areas (i.e. medical offices) where warranted by sound attenuation performance.

A/E shall detail the need for 4 duct diameters of straight, hard duct on the inlet of all VAV/ CAV boxes. Installations that provide a flex duct connected directly to the inlet collar of the VAV/ CAV box shall not be allowed.

Variable Volume vs. Constant Volume Terminal Units

In general, as a means of energy conservation and thermal comfort, UMHHC prefers the use of variable volume terminal air units. However, in uses where there is a need to maintain a room pressurization, an minimum air change rate or a minimum ventilation requirement, the A/E shall consider the use of a constant volume terminal air unit. Examples of these spaces are:

- Surgical Procedure/Infection Control Rooms - Type 1 thru 6

- Protective Environment Rooms
- Airborne Infection Isolation Rooms
- Trauma Rooms
- Labor/ Delivery Rooms
- Toilet Rooms
- Janitor's closets
- Clean and Soiled Linen Rooms
- Loading Docks

For all pressurized rooms, the A/E shall clearly indicate infiltration or exfiltration CFMs across all doorways and/or openings into the room on the design drawings. The quantity of CFM offset shall comply with HFES Minimum Design Standards (MDS) pressurization requirements.

As an alternate to the use of constant volume terminal air units, the A/E is encouraged to explore the benefits of a variable volume, quick-response Air Control Valve (ACV) system that actively controls to maintain the room's thermal comfort and pressurization. For all critical environment rooms required by HFES MDS to maintain a pressurization offset (i.e. minimum 0.01"wg, ideally 0.03"-0.1"wg)) like Surgical Procedure Rooms and Airborne Infection Isolation Rooms, etc, the A/E shall clearly state the pressurization requirement on the design drawings and indicate a means of achieving pressurization (throttling supply and/or return/ exhaust airflows in and out of space). All areas required by HFES to maintain a pressurization differential shall be specified to use an active pressurization control via a differential pressure monitor interlocked with dedicated SA & RA/ EA Air Control Valves (ACV's).

The A/E shall pay special attention to the use of variable volume systems in areas immediately adjacent to sensitive pressurized spaces like Surgical Procedure Infection Control Room Types 1 thru 3s, as a wide variance in airflow in adjacent spaces can create an operational difficulty in maintaining these rooms under their respective pressurization. In these cases, consider the use of constant volume airflow for areas immediately adjacent to these spaces.