

GENERAL:

1. To provide minimum standards for design and installation of air terminal units.

DESIGN GUIDELINES:

A. General

1. Air Terminal Units shall be VAV type. Use of other types of terminal units, such as fan-powered boxes require approval of the Project Manager.
2. Air terminals shall be equipped with 10" x 10" minimum low leakage, gasketed access door between the air damper and reheat coil for access and cleaning.
3. When internal liner is provided, provide liner which is resistant to mechanical damage, resistant to mold, and shall not shed fibers.
4. Location of all boxes shall be accessible for maintenance. Access areas shall be shown on the drawings.
5. A detail shall be included in the drawing that calls for a minimum of 3 duct diameters of straight duct before the VAV box inlet that is the same size as the duct where the airflow station is located. Some box manufacturers do not have an airflow station with a diameter less than 6-inches so a 6-to-4 inch reducer is added to the inlet of the box, but this abrupt transition causes inaccurate readings.
6. Ductwork elbows and size transitions should be avoided within 5 duct diameters of a VAV or dual duct box inlet if possible.
7. Flexible ductwork before VAV boxes is not allowed.

B. Schedules

1. The VAV box schedule shall include: box identifier; manufacturer; model number; inlet size; maximum and minimum design cfm for cooling; design heating cfm; minimum heating and cooling cfm for unoccupied mode; reheat coil EAT, LAT, EWT, LWT, GPM, MBH rating, maximum water pressure drop, and maximum air pressure drop; and maximum NC level.
2. The VAV box schedule shall include total airflows for all boxes connected to an AHU. The total airflows shall be calculated for the maximum cooling, minimum cooling, and unoccupied minimum airflows.

C. Box Identifiers

1. VAV box identifier numbering shall be coordinated with University personnel so duplicate numbering from previous projects does not occur.
2. Supply VAV box identifiers shall not include letters.
3. Return and exhaust boxes that are paired/controlled by a supply box shall use the same supply VAV box identifier along with a letter, such as VAV-202E or VEV-202.
4. The first digit of the VAV box identifier shall be the floor that the VAV box serves. The last two or three numbers shall be for further identification.

SPECIFICATION REQUIREMENTS:

1. VAV terminal units shall be ARI certified. The casing shall be a minimum of 22 gauge galvanized steel. The damper shall be heavy gauge steel with solid metal shaft and self lubricating bearing. Unit shall be factory leaked tested and sealed.
2. Terminal units shall use an "X" style of averaging velocity grid airflow sensor on the unit inlet. Single point type sensors are not acceptable.
3. When design maximum cooling airflow calculations are within 10% of the maximum cfm rating limit of a VAV terminal unit, the next larger inlet size unit shall be selected and installed.
4. The design maximum cooling airflow for interior spaces shall be based on 60°F entering air temperature in lieu of typical 55°F temperature.
5. If dual duct boxes are used for a retrofit application, both the hot deck and cold deck shall have an airflow station.
6. VAV boxes shall be supplied without the manufacturer's controller. The controller/actuator will be supplied by the BAS vendor.