

DUCTWORK

General

General compliance to SMACNA HVAC Duct Construction Standards, Metal and Flexible, is expected.

The A/E shall identify the pressure class of all ductwork on the drawings.

Design Requirements

Leakage Quality

Ductwork should be sealed as specified below. The seal classes correspond to the seal classes specified in Table 1-2 of SMACNA HVAC Duct Construction Standards, Metal and Flexible. Ducts should be considered "sealed" when field pressure tests at maximum design operating pressure demonstrate a leakage rate of 10 percent of design cfm or less. Sealing procedures should be repeated as necessary until field tests verify a "sealed" duct system.

All supply air ductwork (round, oval or rectangular) from the air handling unit to terminal boxes (VAV) or diffuser (constant volume) should be sealed in accordance with Seal Class A requirements regardless of the operating pressure specified.

All supply air ductwork from the terminal box (VAV) to the air supply device should be sealed in accordance with Seal Class B requirements regardless of operating pressure specified.

All return and general exhaust duct from the room devices to the return and/or exhaust fan should be sealed in accordance with Seal Class A or B requirements.

All return, relief and outside air ductwork located upstream of the air handling unit or between the return fan and the AHU should be sealed in accordance with Seal Class A or B, depending on the operating pressure specified.

Ductwork should be laid out to allow for tight joints. Special attention should be paid to ductwork either routed through shafts or otherwise inaccessible after construction.

Note that Class C sealing methods are not allowed.

Fibrous ductboard is not acceptable.

Sizing

For renovation projects which require expansion/modification of existing duct runs, the A/E should size the new ductwork to be compatible with existing. This will require that the designer select pressure and noise criteria equal to existing.

The A/E should select the tie-point into existing branch ducts at a point sufficiently upstream to assure volume to both new and unrenovated areas. This may require a new duct run from the high pressure main at the air handling unit.

Low Pressure Ductwork

Flexible duct - Flexible duct should not connect directly to VAV terminal box inlet, but should be separated by a 2 foot minimum section of rigid metal duct. Duct shall be a U.L.181 Class 1 air duct with a tear-resistant (e.g. polyethylene) vapor barrier. The duct shall comply with NFPA90A and have a flame spread rating less than 25 and smoke developed rating less than 50. The pressure rating shall be at least +4"/-3/4"s for duct in constant volume systems or downstream of VAV boxes.

Maximum length of flexible duct sections in any usage should not be greater than 72 inches. Field cut to minimize restriction to air flow.

Metal Duct - Rectangular ducts should consider cross-breaking or reinforcing with angle stock to prevent "oil canning" which can cause seam separation.

Round duct elbows should be constructed with centerline radius equal to or greater than duct diameter. Otherwise, square elbows with turning vanes should be specified. Amplify with note and standard detail.

All rectangular duct elbows in excess of 45 degrees should contain factory-built turning vanes.

Slopes for transitions or other changes in dimension should be 1:3, minimum.

Fume Exhaust Duct - See Laboratory Exhaust Standard #15940.

Installation Requirements

Access panels should be installed wherever ducts contain devices requiring maintenance or calibration, such as air flow stations, humidifiers, etc. Cam-type latches are preferred.

Ducts should be run parallel to building column lines, and should be located below other trades (pipes, conduit, etc.) above suspended ceilings. CLEAR ACCESS FROM THE OCCUPIED SPACE SHOULD BE ALLOWED TO APPARATUS WITHIN DUCTS (DAMPERS, SENSORS, VAV BOXES, ETC.), WITHOUT REQUIRING PERSONNEL TO STEP ON DUCTWORK.

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