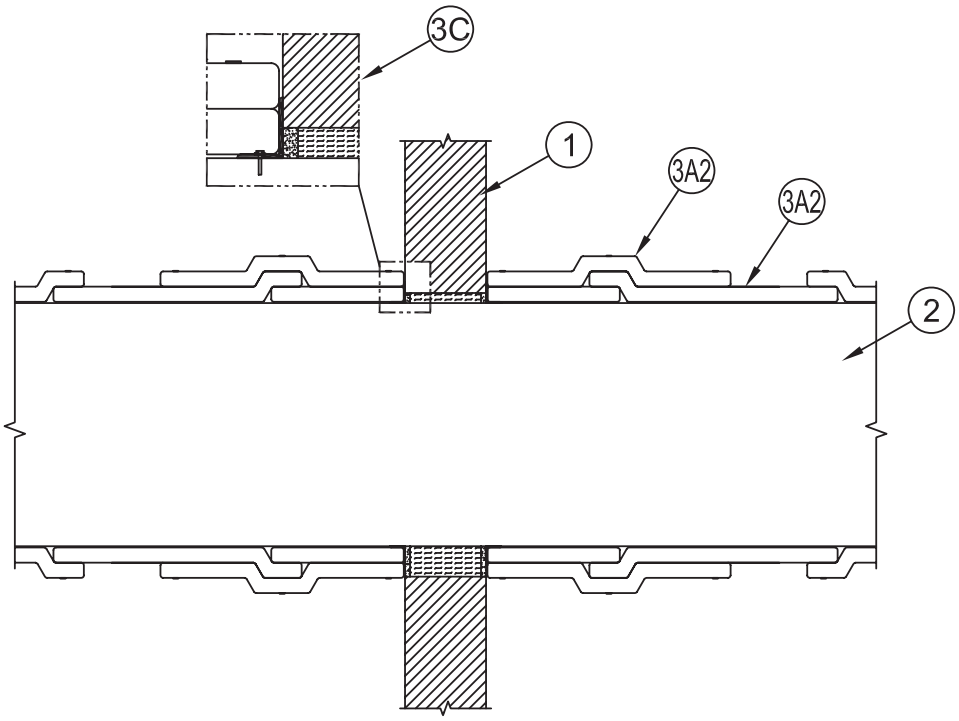
# Assembly No. V-27

February 16, 2010
Duct A
Fire Resistance Rating – 1 or 2 Hr
(Ratings applicable for Ventilation Ducts installed with or without branches)




1. **Wall or Floor Assembly** –

   A. **Masonry Wall** – Min 7-1/2 in. (190 mm) thick reinforced lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified **Concrete Blocks.**

   **OR**

   B. **Gypsum Board Wall Assembly** – The 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   B1. **Studs** – Wall framing shall consist of steel "C" studs min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC. Additional framing members shall be used to completely frame around opening.

   B2. **Gypsum Board*** – Min 5/8 in. (15.9 mm) thick, 4 ft (1220 mm) wide with square or tapered edges as specified in the individual U400 or V400 Wall and Partition Design.

   See **Gypsum Board** (CKNX) category in the Fire Resistance Directory for names of manufacturers.

   **OR**

   C. **Floor-Ceiling Assembly** – The 1 hr fire-rated solid wood joist floor-ceiling assembly shall be constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:

   C1. **Flooring System** – Lumber or plywood subfloor with finish floor as specified in the individual Floor-Ceiling Design.

   C2. **Wood Joists** – Nom 10 in. (240 mm) deep (or deeper) wood joists with bridging as required and with ends firestopped. Opening to be framed on all 4 sides with sections of solid wood joist.

   C3. **Gypsum Board*** – Thickness, type, number of layers and fasteners shall be as specified in individual Floor-Ceiling Design.

   See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Steel Air Duct** – Min 0.030 in. (0.76 mm) thick (or heavier) steel duct having a max perimeter of 218 in. (5.54 m) with max individual dimension of 85 in. (2.16 m) and constructed in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. The sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Duct to be rigidly supported in accordance with SMACNA requirement and as specified in Item 4.

3. **Fire Resistive System** – The fire resistive system shall consist of the following:

   A1. **Batts and Blankets*** – Min 1-1/2 in. (38 mm) thick, totally encapsulated within foil-scrim facers. The steel duct shall be wrapped with one layer of duct wrap installed in a telescope, checkerboard or butt-joint-and-collar pattern with 3 in. (76 mm) transverse and longitudinal overlaps, in accordance with the manufacturer's installation instructions. All cut edges and ends shall be sealed with 3 in. (76 mm) wide pressure sensitive aluminum foil tape.

   **3M COMPANY**
   **3M FIRE PROTECTION PRODUCTS** – 3M FireBarrier Duct Wrap 615 or 3M FireBarrier Duct Wrap 615+

## Assembly No. V-27 *continued*

A2. **Batts and Blankets*** – **Collars** – Min 1-1/2 in. (38 mm) thick, 6 in. (152 mm) wide collars, totally encapsulated within foil-scrim facers. The transverse butt joints shall be wrapped using a collar.. The collar shall be centered over each butt joint with a 3 in. (76 mm) longitudinal overlap.

**3M COMPANY**
**3M FIRE PROTECTION PRODUCTS** – 3M FireBarrier Duct Wrap 615 Collars or 3M FireBarrier Duct Wrap 615+Collars

B1. **Steel Banding Straps** (Not shown) – Min 1/2 in. (13 mm) wide by 0.015 in. (0.4 mm) thick stainless steel banding straps used in conjunction with min 1 in. (25 mm) long stainless steel crimp clips. Banding straps spaced a max 12 in. (305 mm) OC and 1-1/2 in. (38 mm) from edges of collars.

B2. **Steel Pins** (Not shown) – Min 0.118 in. (3 mm) thick, 6 in. (150 mm) long copper coated steel insulation pins used in conjunction with 2-1/2 by 2-1/2 in. (63 by 63 mm) square 0.020 in. (0.5 mm) thick, galvanized steel speed clips. Pins spaced 12 in. max transversely and 10-1/2 in. (267 mm) max lengthwise along the ends and bottom of the duct and secured to the duct wrap in accordance with the manufacturers installation instructions.

C. **Firestop System** – When the ventilation duct passes through a fire separation, the through openings shall be firestopped in accordance with Through-Penetration System No. W-J-7104 (masonry wall), W-L-7180 (gypsum board wall) or F-C-7054 (combustible floor-ceiling). See Through–Penetration Firestop Systems in Vol. 2 of the Fire Resistance Directory.

4. **Support Rod** – Steel threaded rod, nominal minimum diameter as shown in the table below, mounted to concrete floor by passing through pre-drilled hole and bolting with nut and washer on top of floor, or or with steel drop-in or wedge expansion type concrete anchors sized as follows:

| Load carried by each rod | Minimum rod diameter | Minimum embedment, drop-in anchor | Minimum embedment, wedge anchor |
|---|---|---|---|
| 55 lb or less | 3/8 in. | 1-5/8 in. | 1-1/2 in. |
| Over 55 lb to 95 lb | 1/2 in. | 2 in. | 2-1/4 in. |

5. **Cradle** – Steel angle, 75 mm by 75 mm by 6.3 mm, used to support wrapped duct at 1500 mm OC maximum. Hung from concrete floor with Support Rods (Item 4).

For ducts not exceeding 1525 mm in width, steel angle 51 mm by 51 mm by 4.8 mm or Unistrut P5500 channel can be used.

*Bearing the UL Classification Mark

Reprinted from the Online Certifications Directory with permission from Underwriters Laboratories Inc.
Copyright © 2010 Underwriters Laboratories Inc.®