1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Studs** - Wall framing shall consist of steel channel studs. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional studs shall be installed horizontally to form a rectangular box around the through penetrant.
   B. **Gypsum Board** - Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Min separation between penetrants to be 1 in. (25 mm). Max area of opening 17.8 sq ft (1.65 m²) with one dimension of opening being 64 in. (1.6 m) or less.

   The hourly F and FH Ratings of the firestop system are dependent upon the hourly rating of the wall in which it is installed.

2. Steel Duct - One max 60 by 36 in. (1524 by 914 mm) steel duct passing through opening. Steel gauge of duct shall conform with SMACNA requirements. The annular space between steel duct and edges of opening shall be min 0 in. (point contact) to max 2-1/2 in. (64 mm). Two sections of duct may be connected together on one side of the wall. Duct connection to be located max 4 in. (102 mm) from one surface of the wall. Nom 2 in. (51 mm) flanges formed on the end of both duct sections. Min 6 in. (152 mm) long by 2 in. (51 mm) wide by 16 gauge (min 0.056 in. or 1.42 mm thick) "L" shaped steel corner pieces installed at each corner of the flanges on both sides of the connection. Corner pieces attached together with 3/8 in. (10 mm) steel nuts and bolts at each corner. Min 22 gauge (min 0.029 in. or 0.74 mm thick) by 6 in. (152 mm) long steel clips attached to duct flanges at connection max 15 in. (381 mm) OC. Steel duct to be rigidly supported on both sides of wall assembly.

   **Coated Ducts** - As an alternate to Item 2, max 60 by 36 in. (1524 by 914 mm) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Annular space between duct and periphery of opening shall be shall be min 0 in. (point contact) to max 2-1/2 in. (64 mm). Duct to be rigidly supported on both sides of wall assembly.

   **FIRESPRAY INTERNATIONAL LTD** - FLAMEBAR BW11 fire rated ductwork
3. **Batts and Blankets** - (Optional, Not shown) - Nom 2 in. (51 mm) thick light density (min 3/4 pcf or 12 kg/m3) glass fiber blanket insulation jacketed on the outside with a foil-scrim-kraft facing. Longitudinal and transverse joints sealed with foil-scrim-kraft tape. Nom annular space between insulated steel duct and periphery of opening to be point contact to max 1/2 in. (13 mm) prior to installation of packing material (Item 4A).

See Batts and Blankets (BKNV) category in the Building Materials Directory for names of manufacturers. Any batt or blanket meeting the above specifications and bearing the UL Classification Marking with a Flame Spread value of 25 or less and a Smoke Developed value of 50 or less may be used.

4. **Firestop System** - The firestop system shall consist of the following:
   A. **Packing Material** - Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into annular space such that glass fiber blanket insulation on steel duct is compressed to a maximum overall thickness of 1/2 in. (13 mm). Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.
   B. **Fill, Void or Cavity Material** - Sealant - Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall.
   C. **Retaining Angles** - Min 16 gauge (min 0.056 in. or 1.42 mm thick) galv steel angles sized to lap duct a min of 2 in. (51 mm) and to lap periphery of opening a min of 1 in. (25 mm). Angles attached to all four sides of steel duct on both sides of wall with No. 10 (or larger) steel sheet metal screws spaced 1 in. (25 mm) from each end and max 4 in. (102 mm) OC. When steel duct connection (Item 2) is located within 4 in. (102 mm) of wall surface, steel retaining angle only required on side of wall opposite steel duct connection. When optional insulation is present, angles attached to all four sides through glass fiber blanket insulation.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.