1. **Floor or Wall Assembly** - Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3^) concrete floor or wall assembly. Wall may also be constructed of any UL Classified **Concrete Block**. Max area of opening is 1920 in.² (0.59 m²) with a max dimension of 48 in. (1.2 m). See **Concrete Blocks** category (CAZT) in the Fire Resistance Directory for names of manufacturers.

2. **Steel Ducts** - One or more max 30 in. by 18 in. (762 mm by 457 mm) galv steel ducts. Steel gauge of duct shall conform with SMACNA requirements. Annular space between steel ducts to be min 4 in. (102 mm) to max 12 in. (305 mm). Annular space between ducts and periphery of opening to be min 1 in. (25 mm) to max 12 in. (305 mm). Steel ducts rigidly supported on both sides of floor or wall assembly.

2A. **Coated Ducts** - As an alternate to Item 2, one or more max 30 in. by 18 in. (762 mm by 457 mm) steel ducts coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Annular space between ducts to be min 4 in. (102 mm) to max 12 in. (305 mm). Annular space between ducts and periphery of opening to be min 1 in. (25 mm) to max 12 in. (305 mm). Ducts rigidly supported on both sides of floor or wall assembly.

**FIRESPRAY INTERNATIONAL LTD** - FLAMEBAR BW11 fire rated ductwork
3. **Firestop System** - The firestop system shall consist of the following:

   A. **Forming Material** - (Not Shown) - Rigid form boards installed to prevent leakage of fill material (Item 3C) during installation. Temporary form boards to be removed after fill material dries fully.

   B. **Fill, Void or Cavity Material*** - **Putty Pad** - Nom 3/16 in. (4.8 mm) thick by 3-1/2 in. (89 mm) or 4-1/2 in. (114 mm) wide putty pads, dependent on thickness of mortar (Item 3C), installed around entire perimeter of steel duct, flush with top surface of floor or both surfaces of wall.

      **SPECIFIED TECHNOLOGIES INC** - SpecSeal Putty Pad

   C. **Fill, Void or Cavity Material*** - **Mortar** - Min 3-1/2 in. (89 mm) or 4-1/2 in. (114 mm) thickness of mortar applied within opening. Mortar mixed and installed in accordance with instructions provided with material.

      **SPECIFIED TECHNOLOGIES INC** - SpecSeal Mortar

      F Rating of assembly is 2 and 3 Hr for 3-1/2 in. (89 mm) and 4-1/2 in. (114 mm) thicknesses of mortar, respectively.

   D. **Retaining Angles** - Nom 2 by 2 in. (51 by 51 mm) No. 16 gauge (or heavier) steel retaining angles secured to each side of steel duct on top surface of floor or both sides of wall. Steel angles secured to steel duct by means of No. 10 steel screws spaced 1 in. (25 mm) from each end and max 6 in. (152 mm) OC.

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