1. **Floor or Wall Assembly** - Min 4-1/2 in. (114 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. The opening shall be sized to be min 1 in. (25 mm) to max 3 in. (76 mm) wider, longer and/or higher than the width and depth of the duct. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrant** - Max 12 by 14 in. (305 by 356 mm) No. 24 gauge (or heavier) galv steel duct, to be installed within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

2A. **Coated Ducts** - As an alternate to Item 2, max 12 by 14 in. (305 by 356 mm) No. 24 gauge (or heavier) galv steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Coated duct to be 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. **Fill, Void or Cavity Materials**\(^*\) - **Composite Sheet** - Rigid aluminum foil-faced intumescent sheet with steel mesh and galv steel sheet backer. Sheets may be installed as one solid sheet, cut in two pieces or split on one side of the penetrant. Sheets cut to tightly follow the contour of the duct with an annular space equal to or less than 3/16 in. (5 mm). Sheets cut to lap a min of 2 in. (51 mm) on the floor or wall surfaces. Sheets to be installed on top surface of the floor or each side of wall with foil facing against floor or wall surface and secured with min 3/16 in. (5 mm) diam by 1-1/4 in. (32 mm) long steel concrete screws in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers. Spacing of fasteners not to exceed 6 in. (152 mm) OC with additional fasteners located on each side of butted seams or slits made to permit installation or the sheet around the duct.

   SPECIFIED TECHNOLOGIES INC - SpecSeal CS Composite Sheet

   B. **Fill, Void or Cavity Materials**\(^*\) - **Putty or Sealant** - Apply putty or sealant into annular space between the duct and the edge of the opening in composite sheet. Nom 3/16 in. (5 mm) cove bead of putty or sealant applied around base of duct at its egress from the intumescent sheet on top surface of floor or both sides of the wall prior to installing retaining angles (Item 3D). Nom 3/16 in. (5 mm) wide by 3/16 in. (5 mm) thick putty strips or 1/4 in. (6 mm) diam bead of sealant applied beneath composite sheet around entire perimeter of through opening on top surface of floor or on both sides of the wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Putty, SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

   C. **Steel Cover Strip** - Min 2 in. (51 mm) wide strip of min 0.020 in. (0.51 mm) thick (26 gauge) galv steel centered over entire length of each butted seam or slit made in the composite sheet (Item 3B). Prior to installation of the steel strip, the seam or slit in the sheet shall be covered with a nom 1/8 by 1/2 in. (3.2 mm by 13 mm) ribbon of putty or a nom 1/4 in. (6 mm) diam bead of sealant (Item 3A). Steel cover strip secured to galv steel sheet backer of intumescent sheet with steel sheet metal screws or rivets spaced max 3 in. (76 mm) OC on each side of seam or slit.

   D. **Retaining Angles** - Min 2 by 2 in. No. 16 gauge (or heavier) galv steel angles installed on all four sides of duct on top surface of floor or on both surfaces of wall. Angles on two opposing sides of duct to extend the full length of composite sheet such that the ends extend over the floor or wall surface. Angles attached to duct with min 1/4 in. (6 mm) long, No. 10 (or larger) steel sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC. In floors, angles additionally attached to intumescent sheet with min 1/4 in. (6 mm) long, No. 10 (or larger) steel sheet metal screws spaced a max of 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.