1. **Wall Assembly** - Min 5 in. (127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 19-1/2 in. (495 mm). See **Concrete Blocks (CAZT)** category in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrants** - One nonmetallic pipe to be installed within the opening. Pipe to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipe may be used:
   A. **Polypropylene (PP-R) Pipe** - Nom 12 in. diam - 315 mm OD (or smaller) SDR 11 Aquatherm Blue Pipe MF for use in closed (process or supply) piping systems.
   B. **Polypropylene (PP-R) Pipe** - Nom 12 in. diam - 315 mm OD (or smaller) SDR 11 Aquatherm Green Pipe S for use in closed (process or supply) piping systems.

3. **Pipe Covering Materials** - **Cellular Glass Insulation** - Nom 2 in. (51 mm) thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. (610 mm) long half sections or nom 18 in. (457 mm) long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. Transverse joints located within 36 in. (914 mm) of wall surfaces secured using min 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel hose clamps offset 1 in. (25 mm) from joint on each side of joint. A nom annular space of 1-9/16 in. (40 mm) is required within the firestop system.

4. **Firestop System** - The firestop system shall consist of the following:
   A. **Steel Sleeve** - Cylindrical sleeve fabricated from min 0.016 in. (0.4 mm) thick (30 gauge) galv sheet steel and having a 2 in. (51 mm) lap along the longitudinal seam. Length of steel sleeve to be 4 in. (102 mm) greater than the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular opening within the wall assembly. The ends of the sleeve shall extend 2 in. (51 mm) beyond each surface of the wall.
   B. **Fill, Void or Cavity Material - Sealant or Putty** - (Not Shown) Min 3/8 in. (10 mm) diam bead of fill material applied around circumference of steel sleeve at its egress from the concrete wall on each side of the wall.

**SPECIFIED TECHNOLOGIES INC** - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant or SpecSeal Putty
C. Fill, Void or Cavity Materials* - Wrap Strip - Nom 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips. Two stacks (4 in. (102 mm) stack height) of wrap strips are individually or continuously wrapped around the through penetrant. Each stack shall consist of seven layers of wrap strip. When wrap strips are individually wrapped, ends of wrap strips shall be butted and held in place with tape. Butted ends in successive layers may be aligned or offset. The first stack of wrap strips shall be slid along the through penetrant into the sleeve such that the outside edges of the wrap strip layers are flush with the end of the sleeve. The second stack of wrap strips shall be installed such that the edges of the wrap strip layers abut the first stack. Two stacks of wrap strips are required on each side of the wall.

SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip

D. Steel Collar - Collar fabricated from coils of precut 0.029 in. (0.7 mm) thick (No. 22 MSG) galv sheet steel available from wrap strip manufacturer. Collar shall be nom 4 in. (102 mm) deep with a min of six 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs for securement to the wall. Retainer tabs, 3/4 in. (19 mm) wide tapering down to 3/8 in. (10 mm) wide and located opposite the anchor tabs, are folded 90 degrees toward through penetrant surface to maintain the annular space around wrap strips and through penetrant and to retain the wrap strips. Two steel collars wrapped around wrap strips and through penetrant with a min 1 in. (25 mm) wide overlap at the end of each collar along its perimeter joint with the adjacent steel collar. Steel collars tightened around wrap strips and through penetrant using min 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel hose clamps located 1 in. (25 mm) and 3 in. (76 mm) from wall surface. Collars to be secured to wall surfaces with 1/4 in. (6 mm) diam by min 1-1/4 in. (32 mm) long steel concrete screws in conjunction with min 1 in. (25 mm) diam steel fender washers through each of a min of twelve symmetrically-located anchor tabs. As an alternate to the steel concrete screws, steel collars secured to steel sleeve with twelve No. 8 by 3/8 in. (10 mm) long sheet metal screws, symmetrically located around the perimeter of the steel collar. Steel collars installed on both sides of the wall assembly.

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