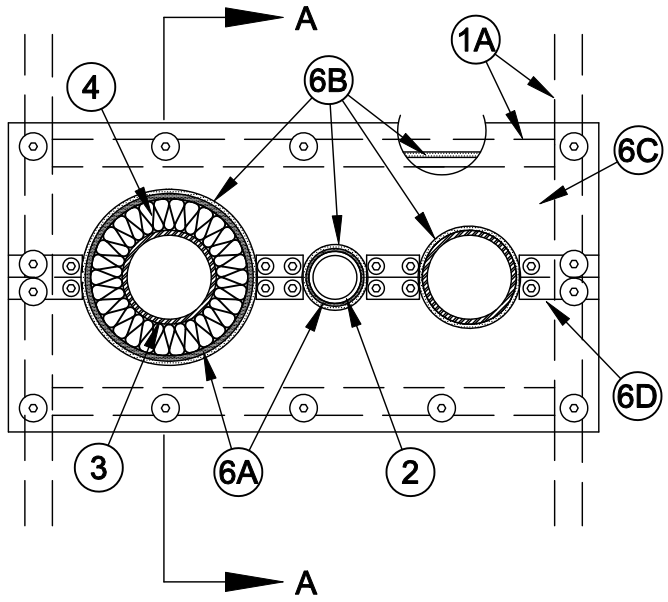
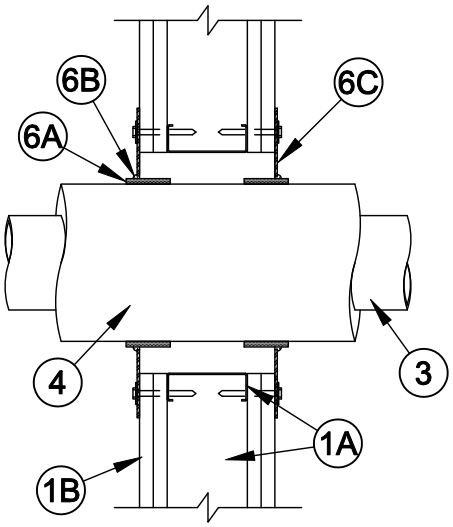
System No. W-L-8067

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 0, 1/2 and 3/4 Hr (See Items 3 and 5)





Section A-A

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 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel 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 penetrants (Item 2).
   B. **Gypsum Board* -** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max area of opening is 416 sq in. (0.27 m2) with max dimension of 22-3/4 in. (578 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall in which it is installed.
2. **Through Penetrants -** One or more nonmetallic pipes or conduits to be installed within the firestop system. A min separation of 3 in. (76 mm) shall be maintained between pipes and between pipes and the periphery of the opening. Pipes or conduits to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
   A. **Polyvinyl Chloride (PVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. **Rigid Nonmetallic Conduit+ -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70).
   D. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   E. **Flame Retardant Polypropylene (FRPP) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   F. **Polypropylene (PP) Pipe -** Nom 1 in. (25 mm) diam (or smaller) Schedule 80 PP pipe for use in closed (process or supply) piping systems.

3. **Metallic Penetrants -** One or more metal pipes, conduits or tubing installed within the through opening. The space between pipes, conduits or tubing shall be min 3 in. (76 mm). The space between pipes, conduits or tubing and periphery of opening shall be min 1 in. (25 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. **Steel Pipe -** Nom 12 in. (305 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Iron Pipe -** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit, electrical metallic tubing (EMT) or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.

   D. **Copper Pipe or Tube -** Nom 3 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.

   When metallic penetrant without insulation (Item 4) is used, T Rating is 0 Hr.

4. **Pipe Insulation -** (Optional) - Pipe insulation may be installed on one or more of the metallic pipes or tubes. When pipe insulation is used, min space between insulated metallic pipes and tubes and bare metallic pipes, conduits and tubing shall be min 3 in. (76 mm). The following types of pipe insulations may be used:

   A. **Pipe and Equipment Covering Materials* -** Nom 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.

   See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   B. **Pipe Covering Materials* -** Nom 2 in. (51 mm) thick unfaced mineral fiber pipe insulation having a min density of 3.5 pcf (56 kg/m3) and sized to the outside diam of the pipe or tube. Pipe insulation secured with min 18 AWG steel wire spaced max 12 in. (305 mm) OC.

   IIG MINWOOL L L C - High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc

   C. **Sheathing Material* -** Use in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal and transverse joints sealed with metal fasteners or butt tape.

   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

5. **Cables -** (Not Shown) - One or more max 4 in. (102 mm) diam tight bundles of cables. The space between cable bundles shall be min 3 in. (76 mm). The space between cable bundles and periphery of opening shall be min 1 in. (25 mm). Cable bundles rigidly supported on both sides of the wall. Any combination of the following types and sizes of cables may be used:

   A. Max 750 MCM power cables; THHN or THWN jacketed.

   B. Max 7/C No.12 AWG multiconductor power and control cables with polyvinyl chloride insulation and jacket material.

   C. Max 300 pair No. 24 AWG copper conductor communication cable with polyvinyl chloride insulation and jacket material.

   D. Multiple fiber optical communication cable jacketed with polyvinyl chloride.

   E. Max 25 pair No. 24 AWG telephone cable with polyethylene insulation and polyvinyl chloride jacket.

   When cable is used, T Rating is 1/2 Hr.

6. **Firestop System -** The firestop shall consist of the following:

   A. **Fill, Void or Cavity Material* - Wrap Strip -** Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material supplied in 2 in. (51 mm) wide strips or nom 1/4 in. (6 mm) thick intumescent material supplied in 1-1/2 in. (38 mm) wide strips faced on both sides with a plastic film,. Wrap strip tightly-wrapped around each insulated metallic pipe, nonmetallic pipe or nonmetallic conduit and secured in place with one layer of aluminum foil tape. Nom 1/4 in. (6 mm) thick intumescent material to be used around insulated pipes only. Wrap strips to protrude approx 1/2 in. (13 mm) beyond surface of the composite sheet (Item 6C) on each side of the wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal RED Wrap Strip, SpecSeal BLU Wrap Strip or SpecSeal BLU2 Wrap Strip

   B. **Fill, Void or Cavity Materials* - Putty or Sealant -** Min 3/16 in. (5 mm) thick by 2 in. (51 mm) wide band of putty or sealant required on non-insulated metal pipe or conduit and cable bundle on both sides of wall assembly. Putty band installed to project approx 1 in. (25 mm) beyond each face of the composite sheet (Item 6C) on both sides of wall assembly. Additional thin layer of putty or sealant to be applied over wrap strip material (Item 6A) on both sides of the wall. Nom 3/16 in. (5 mm) cove bead of caulk or putty applied around base of through penetrants at their egress from the intumescent sheet on both sides of the wall. Nom 3/16 in. (5 mm) wide by 3/16 in. (5 mm) thick putty strips or nom 1/4 in. (6 mm) diam bead of sealant applied beneath composite sheet around entire perimeter of through opening on both sides of the wall.

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

   C. **Fill, Void or Cavity Materials*- Composite Sheet -** Foil-faced sheet with galv steel sheet backer. Sheets may be installed as one solid sheet, cut in two pieces (top and bottom) or slit on one side of the penetrant(s). Opening in intumescent sheet to be max 1/4 in. (6 mm) larger than diam of through penetrant(s). Sheets cut to lap min of 2 in. (51 mm) on the wall on all sides of the opening. Sheets to be installed on each side of wall with foil facing against wall surface and secured to framing, through gypsum board layers, with min 2 in. (51 mm) long steel drywall 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.

   SPECIFIED TECHNOLOGIES INC - SpecSeal CS Composite Sheet

   D. **Steel Cover Strip -** Min 2 in. (51 mm) wide strip of min 0.020 in. (.51 mm) thick (26 gauge) galv steel centered over entire length of each butted seam or slit made in the composite sheet (Item6C). Prior to installation of the steel strip, the seam or slit in the intumescent sheet shall be covered with a nom 1/8 by 1/2 in. (3.2 by 13 mm) ribbon of putty or a nom 1/4 in. (6 mm) diam bead of sealant (Item 6B). 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.

   *Bearing the UL Classification Mark