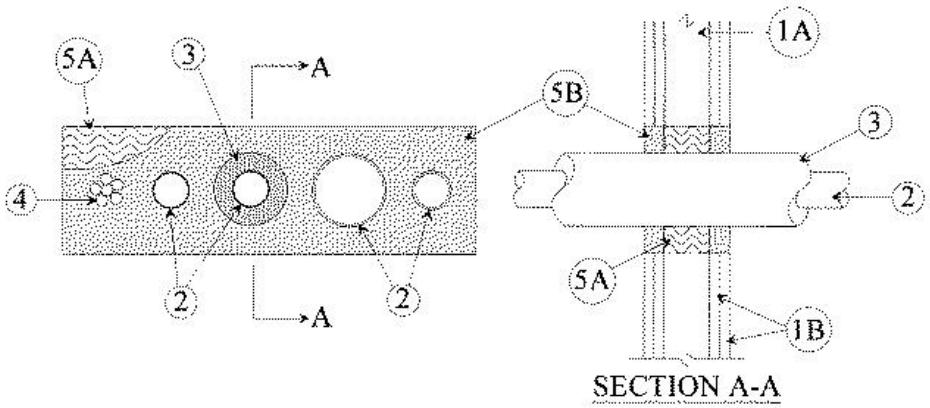
F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr



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 specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. OC. (406 mm). In 1 and 2 hr fire-rated wood stud/gypsum board assemblies, additional framing members to be installed within the stud cavity in such a manner to form a rectangular box with max dimensions of 14-1/2 in. (368 mm) wide by 6 in. (152 mm) high. In 2 hr fire-rated assemblies, steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. In 1 hr fire-rated assemblies, steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC. In 1 and 2 hr fire-rated wood stud/gypsum wallboard assemblies, additional steel studs to be installed horizontally in such a manner to form a nom 22-3/4 in. (578 mm) wide by 6 in. (152 mm) high opening.

B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. If the through penetrants are installed in a steel stud/gypsum board assembly, the max area of opening is 136.5 sq in. (881 cm^2)with max dimension of 22-3/4 in. (578 mm) If the through penetrants are installed in a wood stud/gypsum board assembly, the max area of opening is 87 sq in. (561 cm^2) with max dimension of 14-1/2 in. (368 mm). **The hourly F and FH ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.**

2. **Through Penetrants —** Four pipes, conduits or tubing to be installed within the opening. The space between pipes, conduits or tubing shall be a nom 1-7/16 in. (37 mm) The space between pipes, conduits or tubing and periphery of opening shall be min 7/8 in. (22 mm) to max 2 in. (51 mm) Of the four through penetrants, only one through penetrant shall have a nom diam greater than 2 in. (51 mm) Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 2 in. (51 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.

D. **Copper Tubing —** Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping systems.

3. **Tube Insulation — Plastics+ —** Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The pipe covering may be installed on one of the metallic pipes or tubing having a nom diam of 2 in. (51 mm) or less. The insulated pipe or tubing shall be spaced a nom 1-7/16 in. (37 mm) from the other through-penetrants. The annular space between the insulated through penetrant and periphery of opening shall be a nom 7/8 in. (22 mm).
See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

3A. **Pipe Covering Materials* —** (Not Shown) — As an alternate to Item 3, nom 3/4 in. (19 mm) thick unfaced mineral fiber pipe

insulation sized to the outside diam of pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. (305 mm) OC. The insulated pipe or tubing shall be spaced a nom 1-7/16 in. (37 mm) from the other through-penetrants. The annular space between the insulated through penetrant and periphery of opening shall be a nom 7/8 in. (22 mm).
INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc

3B. **Sheathing Material* —** (Not Shown) — Used in conjunction with Item 3A. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3A) with the kraft side exposed. Longitudinal joints 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.

4. **Cables —** Six, 25 pair No. 24 AWG (or smaller) telephone cables with PVC insulation and jacket. Cables to be spaced 1-7/16 in. (37 mm) from the through-penetrants. The space between the cables and periphery of opening shall range from a min 1-7/16 in. (37 mm) to a max 2-5/8 in. (67 mm) Cables to be tightly bundled together and rigidly supported on both surfaces of wall assembly.

5. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** In 2 hr fire-rated assemblies, min 2-1/2 in. (64 mm) thickness of min 4 pcf (64 kg/m^3) mineral woo batt insulation firmly packed into opening as a permanent form. In 1 hr fire-rated assemblies, min 2-3/8 in. (60 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** Min 1-1/4 in. (32 mm) thickness of fill material applied within the annulus on both surfaces of wall. Fill material to be forced into interstices of cable group to max extent possible.
RECTORSEAL — FlameSafe FS 1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+

Bearing the UL Recognized Component Mark

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

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