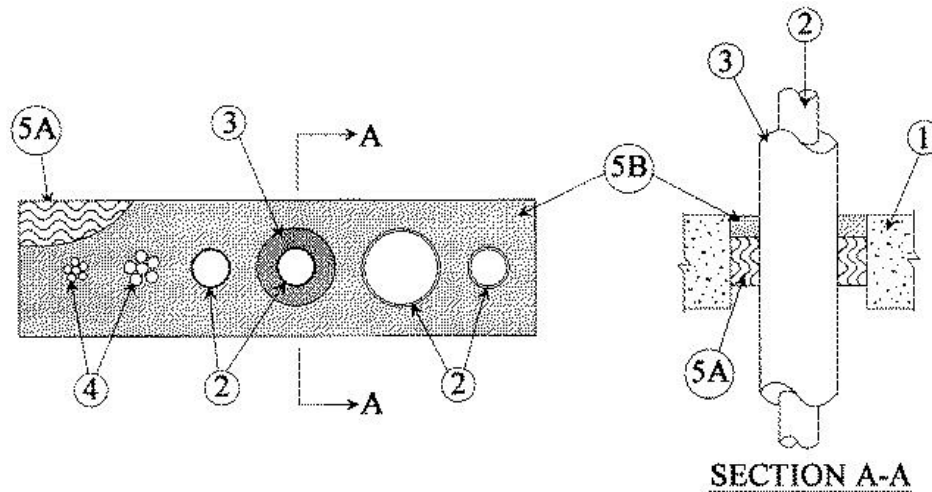


F Rating — 2 Hr  
T Rating — 0 Hr



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<sup>3</sup>) concrete floor or min 5 in. (1127 mm) thick reinforced lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max area of opening is 144 sq in. (929 cm<sup>2</sup>) with max dimension of 24 in. (610 mm).

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

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 in. (25 mm). The space between pipes, conduits or tubing and periphery of opening shall be min 1 in. (25 mm) to max 2 in. (51 mm). Of the four 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 floor or 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 4 in. (102 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 in. (25 mm) from the other through penetrants. The annular space between the insulated pipe or tubing and periphery of the opening shall be a nom 1 in. (25 mm).

See **Plastics+** (QMFZ2) category in the Plastic Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. **Cables** — Max 12 lengths of cables to be installed within the opening. 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 or spaced a nom 1/8 in. apart and rigidly supported on both surfaces of floor and wall.

A. Max 25 pair No. 24 AWG (or smaller) telephone cables with PVC insulation and jacket.

B. Max 62.5/125 UM fiber optic cables with thermoplastic insulation and jacket.

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

A. **Packing Material** — Min 2-1/2 in. (64 mm) thickness of min 6 pcf (96 kg/m<sup>3</sup>) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall 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, flush with top surface of floor and 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+

\*,+ 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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