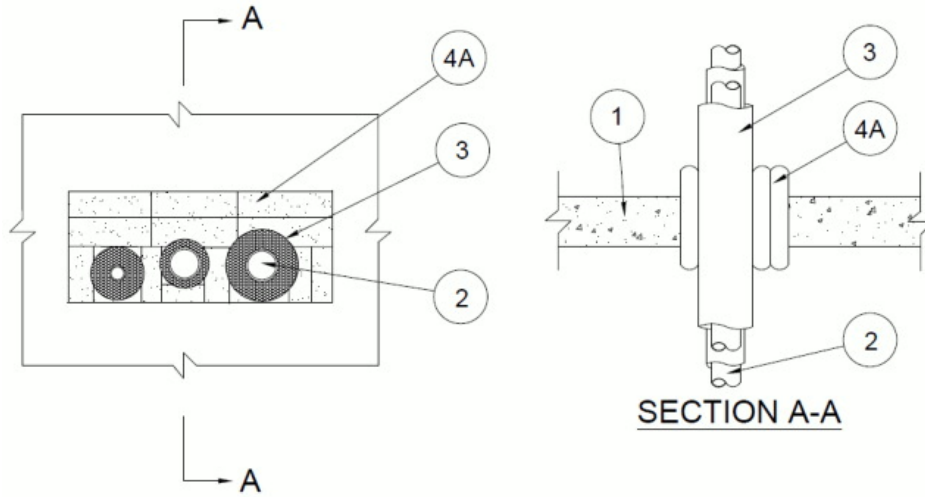


F Rating — 2 Hr  
T Rating — 1/2 Hr



**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 wall. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max size of opening is 144 in<sup>2</sup> (929 cm<sup>2</sup>) with a max dimension of 18 in. (457 mm).

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

**2. Through Penetrant** — Max three tubes installed eccentrically or concentrically within opening. Tubes to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic tubing may be used:

A. **Aluminum Tubing** — Reflok 6061-T4 ASTM B210 seamless aluminum tubing for use in closed (process or supply) piping systems. Tubing sizes shall be maximum 2-1/8 in. (54 mm) to minimum 3/4 in. (19 mm) outer diameter (OD) having wall thickness ranging from 0.080 in. (2 mm) to 0.030 in. (0.8 mm) respectively.

**3. Pipe Covering** — The following pipe covering shall be used with each Through Penetrant (Item 2).

A. **Tube Insulation-Plastics+** — Min 1/2 in. (13 mm) thick to max 1-1/2 in. (38 mm) thick Aerocel Ethylene Propylene Diene Terpolymer (EPDM) pipe insulation furnished in the form of tubing. The annular space between the insulated penetrants and the edge of the opening shall be min 1 in. (25 mm) to max 4 in. (102 mm). The annular space between insulated penetrants shall be min 1 in. (25 mm) to max 4 in. (102 mm).

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

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

A. **Fill, Void or Cavity Material\* — Pillows** — Max 6 in. (152 mm) long by 9 in. (229 mm) wide by 2 in. (51 mm) thick plastic covered intumescent pillows tightly packed into opening filling annular space between and around penetrants and between penetrants and periphery. Pillows installed with 9 in. (229 mm) dimension projecting through wall and centered within opening.

**RECTORSEAL** — [Metacaulk Pillows](#), Biostop Pillows, FlameSafe Pillows

B. **Fill, Void or Cavity Material\* — Caulk** — (Optional) — After installation of pillows, min 1/4 in. (6 mm) depth of fill material applied to seal any voids between pillows and periphery of opening, between pillows and through penetrants and between pillows on finished side of wall.

**RECTORSEAL** — [Metacaulk 150+](#), [Metacaulk 1000](#), Biostop BF [150+](#), Biostop 500+, FlameSafe FS1900

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