



**3. Through Penetrants** — A max of two pipes, conduits or tubes and a max of two cable lengths to be installed within the opening. Annular space between the penetrants and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. (51 mm) Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

**A. Metallic Pipes** — A max of two metallic pipes, conduits or tubing may be used. The following types and sizes may be used:

A1. **Steel Pipe** — Nom 2 in. (51 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

A2. **Conduit** — Nom 2 in. (51 mm) diam (or smaller) electrical metallic tubing or rigid steel conduit.

A3. **Copper Tubing** — Nom 2 in. (51 mm) diam (or smaller) Type L (or heavier) copper tubing.

A4. **Copper Pipe** — Nom 2 in. (51 mm) diam (or smaller) Regular (or heavier) copper pipe.

**B. Cables** — A max of two cables may be used. One length of max 8/C No. 12 AWG power and control cable; XLPE or PVC insulation with XLPE or PVC jacket. One length of max 1/C No. 12 AWG power and control cable; XLPE or PVC insulation with XLPE or PVC jacket.

**4. Tube Insulation - Plastics++** — Nom 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Required for copper tubes greater than 1 in. (25 mm) diam.

See **Plastics** (QMFZ2) category in the Plastics Recognized 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.

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

**A. Packing Material** — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation tightly packed into opening as a permanent form. Packing material to be recessed from top surface of floor/sleeve or from both surfaces of wall/sleeve as required to accommodate the required thickness of fill material.

**B. Fill, Void or Cavity Materials\* - Caulk** — Min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with both surfaces of floor or wall. Min 1/4 in. (6 mm) diam bead of caulk shall be applied to the penetrant / surface interface at the point contact location on top of floor or both sides of wall. . When sheet metal sleeve (Item 2 or 2A) is used, fill material to be installed flush with top surface of floor or with both surfaces of wall within the sleeve. When rigid steel sleeve (Item 2B) is used, fill material may be installed flush with top end of sleeve in floors or both ends of sleeve in walls.

**RECTORSEAL** — MC 150+

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

++ Bearing the UL Recognized Component Mark