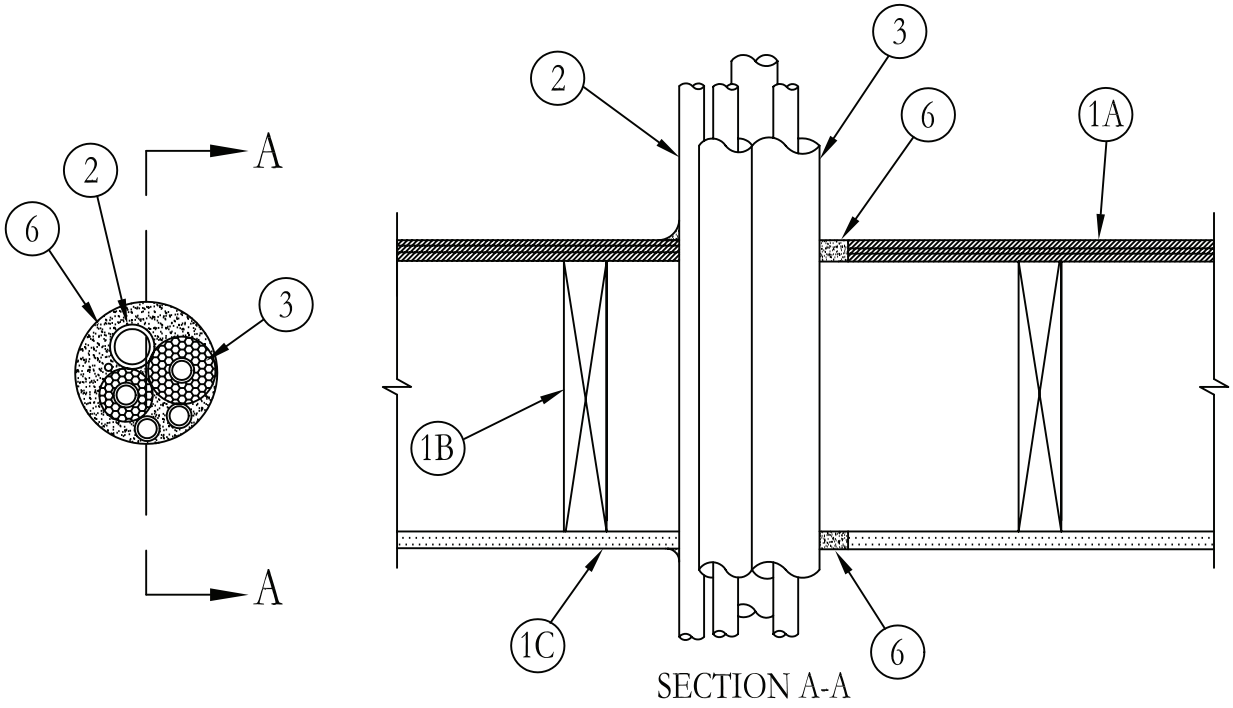
System No. F-C-8024

May 19, 2005
F Rating – 1 Hr
T Rating – 1/4 Hr



SECTION A-A

1. **Floor-Ceiling Assembly** – The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
   A. **Flooring System** – Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of opening is 5 in. (127 mm).
   B. **Wood Joists** – Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   C. **Gypsum Board*** – Nom 4 ft (122 mm) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Max diam of opening is 5 in. (127 mm).

1.1 **Chase Wall** (Optional, not. shown) – The through penetrants (Item No. 2) may be routed through a fire-rated single, double or staggered wood stud/gypsum board chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs** – Nom 2 in. by 6 in. (51 mm by 152 mm) or double nom 2 in. by 4 in. (51 mm by 102 mm) lumber studs.
   B. **Sole Plate** – Nom 2 in. by 6 in. (51 mm by 152 mm) or parallel 2 in. by 4 in. (51 mm by 102 mm) lumber plates, tightly butted. Max diam of opening is 5 in. (127 mm).
   C. **Top Plate** – The double top plate shall consist of two nom 2 in. by 6 in. (51 mm by 152 mm) or two sets of parallel 2 in. by 4 in. (51 mm by 102 mm) lumber plates, tightly butted. Max diam of opening is 5 in. (127 mm).
   D. **Gypsum Board*** – Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

2. **Through Penetrants** – One or more metallic pipes, conduits or tubing to be installed concentrically or eccentrically within opening. Pipes, conduits or tubing to be spaced min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm) apart. The space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm). Penetrants to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipe, conduits or tubing may be used:
   A. **Steel Pipe** – Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. **Conduit** – Nom 3/4 in. (19 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
   C. **Copper Tubing** – Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. **Copper Pipe** – Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Tube Insulation–Plastics+** – Nom 3/4 in. (19 mm) thick (or less) acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between the insulated penetrant and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (0 mm to max 25 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 94-5A may be used.

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4. **Nonmetallic Pipes** – One nonmetallic pipe or conduit to be installed within the firestop system. Pipe or conduit to be spaced min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm) from the insulated through penetrants and min 1/2 in. to max 1 in. (13 mm to max 25 mm) from non-insulated through penetrants. The space between the pipe or conduit and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm). Pipe or conduit to be rigidly supported on both sides of floor-ceiling assembly. One of the following types and sizes of nonmetallic through penetrants may be used:
   A. **Polyvinyl Chloride (PVC) Pipe** – Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 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 1-1/2 in. (38 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. **Rigid Nonmetallic Conduit**++ – Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid-core PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).
5. **Cables** – Max two 7/C (or less) No. 12 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket. Cables to be spaced min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm) from the insulated through penetrants and min 1/2 in. to max 1 in. (13 mm to max 25 mm) from non-insulated through penetrants. The space between the cables and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (0 mm to max 25 mm). Cables to be rigidly supported on both sides of the floor-ceiling assembly.
6. **Fill, Void or Cavity Materials*** – **Caulk or Sealant** – Min 3/4 in. (19 mm) thickness of caulk applied within annulus, flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. (6 mm) diam bead of caulk applied at point contact locations at penetrant/floor interface on top surface of floor or sole plate and at penetrant/ceiling or top plate interface.

   3M COMPANY – CP 25WB+, IC 15WB+ caulk or FB-3000 WT sealant
   (Note: CP 25WB+ not suitable for use with CPVC pipes.)

*Bearing the UL Classification Marking
+Bearing the UL Recognized Component Marking
++Bearing the UL Listing Mark

Note: This system was tested with a pressure differential of 50 Pa between the exposed and unexposed surfaces with the higher pressure on the exposed side.