

UL SYSTEM NO. C-AJ-8147

F Rating — 3 hr., T Rating — 0 hr.

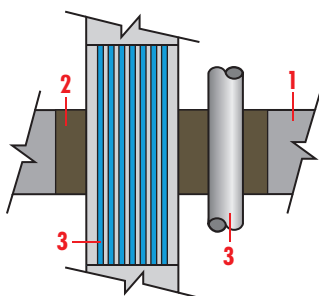
- Floor or wall assembly** — Minimum 4½ in. thick reinforced normal weight concrete. Wall may also be constructed of any UL Classified concrete blocks. Maximum area of opening is 312 sq. in. with maximum dimension of 26 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
- Cable Tray** — Maximum 24 in. wide by maximum 4 in. deep open-ladder cable tray with channel-shaped side rails formed of minimum 0.065 in. thick steel with 3 in. wide by ½ in. deep rungs spaced 14½ in. oc. One cable tray to be installed in the opening. The annular space between the cable tray and the periphery of opening shall be a minimum of 1 in. to a maximum of 6 in. Cable tray to be rigidly supported on both sides of floor or wall assembly.
- Cables** — Aggregate cross-sectional area of cables in cable tray to be maximum 40% of the cross-sectional area of the cable tray based on a maximum 3 in. cable loading depth within the cable tray. Any combination of the following types of copper conductor cables may be used:
 - Maximum of 1/C-500 kcmil (or smaller) cable with cross-linked polyethylene insulation and jacket
 - Maximum 100 pair No. 24 AWG (or smaller) telephone cable with polyvinyl chloride (PVC) insulation and jacket
 - Maximum RG 11/U coaxial cable (or smaller) with fluorinated ethylene propylene insulation and jacket

In addition, a maximum of two cable lengths may be installed within the opening. The cables shall be spaced a nom. 2 in. apart and a nom. 2 in. from the periphery of the opening. Cables to be rigidly supported on both sides of floor or wall assembly.

- Through Penetrants** — Two pipes, conduits or tubes to be installed within the opening. The space between pipes, conduits or tubes shall be a nom. 6¾ in. The space between pipes, conduits or tubes and the periphery of opening shall be a minimum of 1½ in. to a maximum of 6½ in. Pipes, conduits or tubes 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:
 - Steel pipe — Nom. 3 in. diameter (or smaller) Schedule 40 (or heavier) steel pipe
 - Iron pipe — Nom. 3 in. diameter (or smaller) cast or ductile iron pipe
 - Conduit — Nom. 3 in. diameter (or smaller) electrical metallic tubing or steel conduit
 - Copper Tubing — Nom. 3 in. diameter (or smaller) Type M (or heavier) copper tubing
 - Copper Pipe — Nom. 3 in. diameter (or smaller) Regular (or heavier) copper pipe.

In addition, one nom. 2 in. diameter (or smaller) electrical metallic tubing or steel conduit may be installed within the cable tray. The conduit or tubing shall be spaced a nom. 1 in. from the side rail of the cable tray and a minimum 1 in. from the cable bundles.

- Pipe Covering** — The following types of pipe coverings may be used on the steel pipe (Item 4a):
 - Pipe and Equipment Covering — Materials** — Nom. 1 in. thick hollow cylindrical heavy density (min. 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering 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
 - Pipe Covering Materials** — Nom. 1 in. thick unfaced mineral fiber pipe insulation having a nom. density of 3.5 pcf (or heavier) and sized to the outside diameter of pipe or tube. Pipe insulation secured with minimum 8 AWG steel wire spaced maximum 12 in. oc. IIG MINWOOL L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc
 - Sheathing Material (not shown)** — Used in conjunction with Item 5b. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 5b) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or with 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. The space between the insulated pipe and the periphery of the opening shall be a minimum 1½ in. to a maximum 6½ in. The insulated pipe shall be minimum 2 in. to a maximum 6¾ in. from the other through penetrants (Item numbers 2, 3 and 4).
- Firestop System** — The firestop system shall consist of the following:
 - Forms (not shown)** — Used as a form to prevent leakage of fill material during installation. Forms to be a rigid sheet material, cut to fit the contour of the penetration item and friction fitted into the opening. Forms to be recessed from top surface of floor or both surfaces of wall as required to accommodate the required thickness of fill material. Forms to be removed after fill material has cured
 - Fill, void or cavity material — Mortar** — NSi FireStop Mortar. Minimum 3 in. thickness of fill material installed flush with top surface of floor and both surfaces of wall. Mortar to be mixed at a rate of 2.7 parts dry mixture to one part water by weight in accordance with the installation instructions supplied with the product.



ITS DESIGN NO. AD/PHV 180-01

Horizontal or Vertical (floor or wall)

F Rating – 3 hr., T Rating – No penetrations - 3 hr., 3a, b, c, d - 15 minutes, 3e - 0 minutes

1. **Floor or wall assembly** – Minimum 3 in. (75 mm) thick normal or lightweight concrete. Maximum size of opening is 57½ in. x 60 in. (1460 mm x 1525 mm).
2. **Fill, void or cavity material** – Mortar – NSi FireStop Mortar mixed with water in accordance with the manufacturer's instructions and trowelled in place to fill the opening to a minimum depth of 3 in. (75 mm).
3. **Through Penetrants**
 - a) Nom. 3½ in. (90 mm) x 24 in. (620 mm) steel ladder type cable tray. Maximum cable and conduit loading not to exceed 32% by area of cable tray
 - b) Type 500 MCM CORFLEX II RA90 XLPE or #6 AWG/4 90 XLPE TECK HL FT4 cables installed individually or ½ in. (13 mm) apart in cable tray
 - c) 2 in. (50 mm) OD and 1¾ in. (5 mm) wall thickness steel conduit, spaced a minimum of 2 in. (50 mm) from the cables in the tray
 - d) Schedule 40 steel pipe, nom. 3½ in. (90 mm) OD
 - e) Nom. 3¼ in. (82 mm) OD copper pipe.

The T Rating is dependent upon the type of penetrant as tabulated below:

PENETRANT TYPE	T-RATING (HR.)
No penetrant	3
3a, b, c, d	15 min.
3e	0