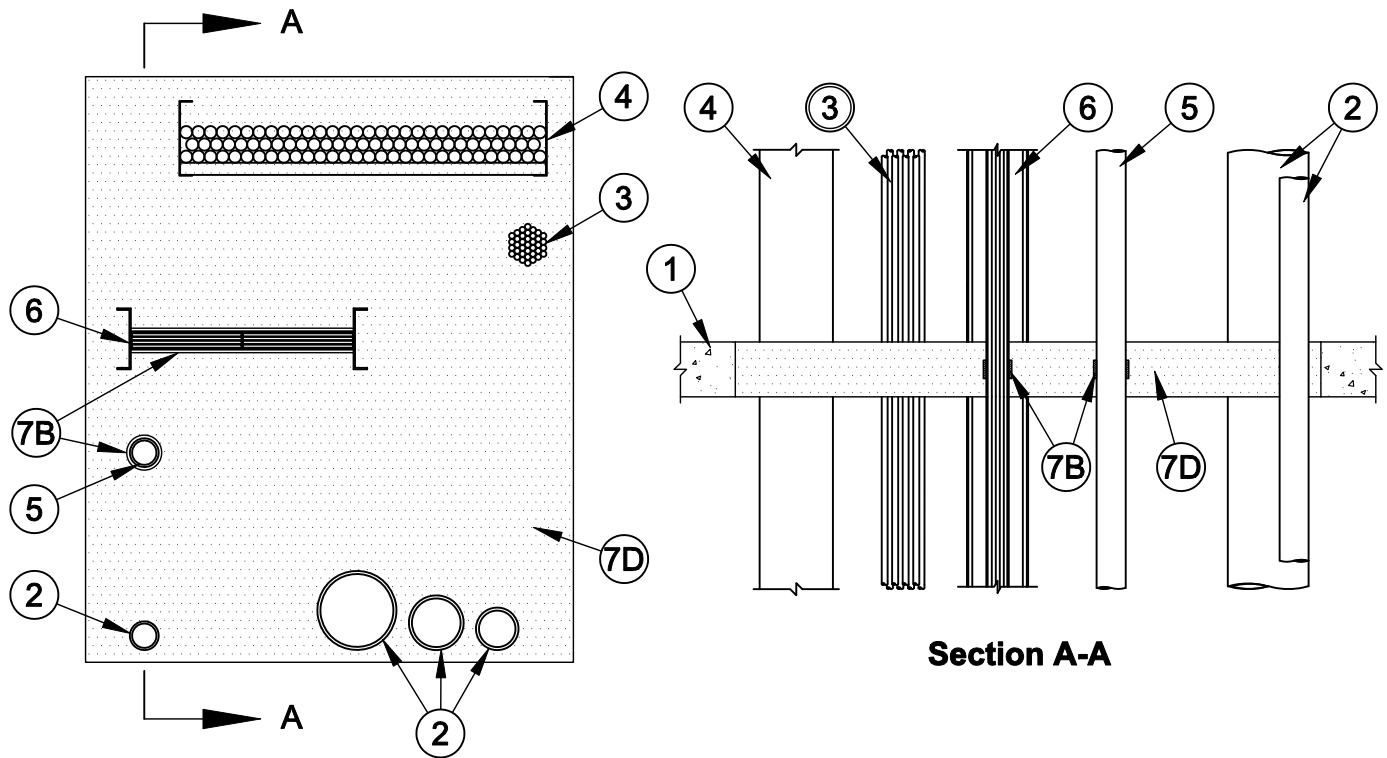


## System No. C-AJ-8114

F Rating - 2 Hr

T Ratings - 0, 1/2, and 2 Hr (See Items 2 through 6)



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. Wall may also be constructed of any UL Classified **Concrete Blocks**\*. Max area of opening is 1920 sq in. (1.2 m<sup>2</sup>) with a max dim of 48 in. (1.2 m).

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

2. **Metallic Conduits** - One or more nom 6 in. (152 mm) diam (or smaller) rigid steel conduits, nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or nom 1 in. (25 mm) diam (or smaller) flexible steel conduits installed within the opening. Min space between conduits and periphery of opening is 1 in. (25 mm). Min space between conduits is 1 in. (25 mm). Conduit to be rigidly supported on both sides of floor or wall assembly. When metallic conduit is used, the T Rating is 1/2 hr.
- 2A. **Firestop Device**\* - (Optional, Not Shown) - When used in conjunction with Item 2, single layer of coolant wrap provided with collar to be continuously wrapped around the outer circumference of each penetrant and temporarily held in place with tape. Edge of coolant wrap to be offset from the surface of floor or both sides of the wall in order to allow for installation of restraining collar. Restraining collar to be installed such that an edge is flush with top surface of the floor or both surfaces of wall and coolant wrap is nominally centered within pocket of restraining collar. Restraining collar to overlap itself by min 1/8 in. (3 mm) and secured in place around penetrant with nom 1/2 in. (13 mm) wide stainless steel hose clamps nominally centered on both flanges. Min clearance between pipes to be 2-1/2 in. (64 mm). **When Item 2A1 is used, the maximum hourly T Rating is 2 Hr for penetrants 4 in. (102 mm) diam (or smaller).**

**SPECIFIED TECHNOLOGIES INC** - SpecSeal T-Collar



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3. **Cables** - Nom 4 in. (102 mm) diam (or smaller) tight bundle of cables. Cable bundle spaced min 6 in. (152 mm) from metallic conduits. Clearance between cable bundle and periphery of opening is min 2 in. (51 mm). Cable bundle rigidly supported on both sides of floor or wall assembly. The following types and sizes of cables may be used:
  - A. Max 1/C - 350 kcmil cable with polyvinyl chloride (PVC) or cross-linked polyethylene (XLPE) insulation and jacket.
  - B. Max 7/C - No. 12 AWG cable with PVC-nylon insulation and PVC jacket.
  - C. Max 200 pair No. 24 AWG copper conductor cable with PVC insulation and jacket.
  - D. Max RG/U coaxial cables with fluorinated ethylene jacket and insulation.
  - E. Multiple fiber optic cables with PVC insulation.
  - F. **Through Penetrating Products\*** - Max 3/C with ground No. 12 AWG Metal-Clad Cable+.

**AFC CABLE SYSTEMS INC**

**When cables are used, the T Rating is 0 hr.**

4. **Cable Tray** - Max 30 in. (762 mm) wide by 6 in. (152 mm) deep open ladder cable tray with channel-shaped side rails formed from min 0.060 in. (1.5 mm) thick (No. 16 GA) galv steel or min 0.060 in. (1.5 mm) thick aluminum with rungs spaced max 9 in. (227 mm) OC. A max of three cable trays may be installed within the opening with a min separation of 6 in. (152 mm) between cable trays and with a min separation distance of 6 in. (152 mm) from metallic conduits. The min space between the cable tray and the periphery of the opening is 2 in. (51 mm). Cable trays rigidly supported on both sides of floor or wall assembly. Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent of the cross-sectional area of the cable tray based on a max 3 in. (76 mm) cable loading depth within the tray. Any combination of the cable types specified in Item 3 may be used. **When cable tray is used, the T Rating is 0 hr.**
5. **Nonmetallic Conduits** - One or more nonmetallic conduits spaced min 1 in. (25 mm) apart and 1 in. from periphery of opening. Min clearance between nonmetallic conduits and metallic conduits is 6 in. (152 mm). Penetrants rigidly supported on both sides of floor or wall assembly. Any of the following types and sizes may be used.
  - A. **Rigid Nonmetallic Conduit+** - Nom 2 in. (51 mm) diam (or smaller) PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - B. **Optical Fiber Raceway (OFR)+** - Nom 2 in. (51 mm) diam (or smaller) OFR formed of either polyvinyl chloride (PVC) or polyvinylidene fluoride (PVDF) installed in accordance with Article 770 of the National Electrical Code (NFPA 70).

See **Optical Fiber Raceway** (QAZM) category in the Electrical Constructions Materials Directory for names of manufacturers.

**When nonmetallic conduit is used, the T Rating is 0 hr.**

6. **Busway+** - Nom 19 in. (483 mm) wide (or smaller) by 5 in. (127 mm) deep "I" shaped aluminum enclosure containing factory-mounted copper bars rated for 600 V, 5000 A or aluminum bars rated for 600 V, 4000 A. A max of two busways may be installed within the opening. The min space between the busway and the periphery of the opening is 2 in. Busways spaced min 6 in. (152 mm) from all other penetrants. Busway to be rigidly supported on both sides of floor or wall assembly. The busway shall bear the UL Listing Mark and shall be installed in accordance with all provisions of Article 364 of the National Electrical Code, NFPA 70. **When busway is used, the T Rating is 0 hr.**
7. **Firestop System** - The firestop system consists of the following items:
  - A. **Fill, Void or Cavity Material\* - Putty or Sealant - (Not Shown)** - Fill material forced into grouped cable interstices to max extent possible.

**SPECIFIED TECHNOLOGIES INC** - SpecSeal Putty or SpecSeal 100, 101, 105, 120 or 129 Sealant



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- B. **Fill, Void or Cavity Material\* - Wrap Strip** - Nom 1/8 in. (3.2 mm) thick by 1-1/2 in. (38 mm) wide (RED2), nom 1/4 in. (6 mm) thick by 1-1/2 in. (38 mm) wide (RED), 3/16 in. (4.8 mm) by 2 in. (51 mm) wide (BLU) or 1/8 in. (3.2 mm) by 2 in. (51 mm) wide (BLU2) intumescent strips faced on both sides with a plastic film.. One layer of wrap strip installed in web sections of busway and wrapped around outer circumference of nonmetallic conduit. Wrap strip ends butted and held in place with aluminum foil tape. In floors, the bottom edge of wrap strip shall be recessed 1-1/2 in. from the bottom surface of the floor. In walls having a thickness of 5 in. or less, the wrap strip shall be centered at mid-depth of wall assembly. In walls having a thickness of greater than 5 in., the wrap strip shall be installed on both sides of the wall such that the exposed edge of wrap strip is recessed 1-1/4 in. from each side of wall.

**SPECIFIED TECHNOLOGIES INC** - SpecSeal BLU or BLU2 Wrap Strip or SpecSeal RED or RED2 Wrap Strip

- C. **Forms - (Not Shown)** - Used as a form to prevent leakage of fill material. Forms to be rigid sheet material cut to fit the contours of the penetrants and positioned on the bottom surface of floor or both sides of wall to accommodate the required thickness of fill material. Forms to be removed after fill material has cured.
- D. **Fill, Void or Cavity Material\* - Mortar** - Min 3-1/2 in. (89 mm) thickness of fill material applied within annulus. Mortar to be mixed with water in accordance with the installation instructions provided with the product. When cable tray or cables are used, min thickness of mortar is 4-1/2 in. (114 mm).

**SPECIFIED TECHNOLOGIES INC** - SpecSeal Mortar

\*Bearing the UL Classification Mark

#Bearing the UL Recognized Components Mark

+Bearing the UL Listing Mark



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