



XHEZ.W-L-4053 Through-penetration Firestop Systems

Page Bottom

Through-penetration Firestop Systems

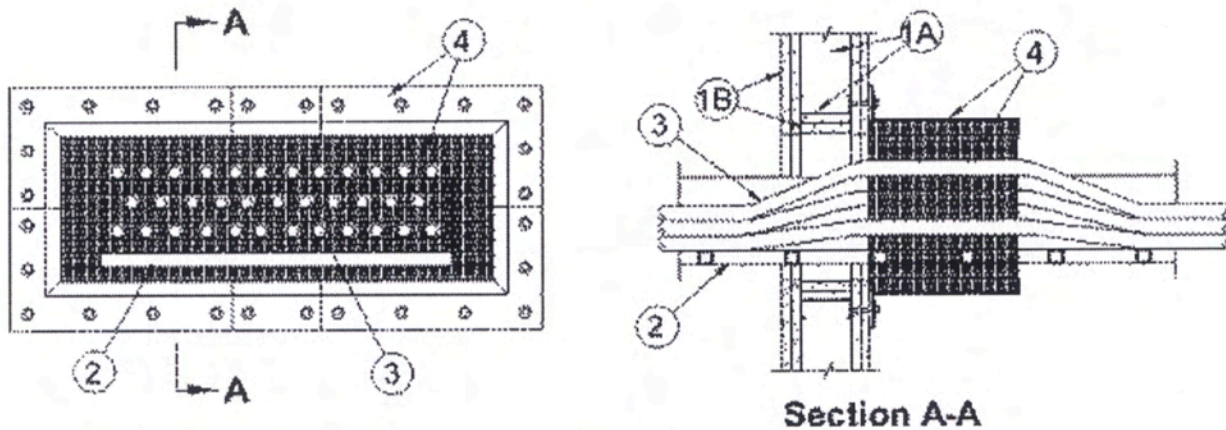
See General Information for Through-penetration Firestop Systems

System No. W-L-4053

June 15, 2004

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 1 Hr



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Studs — Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. The opening made in the wall assembly to accommodate the through penetrant shall be framed on all four sides. The on center spacing of the studs and horizontal members framing the opening shall align with the predrilled holes in the flanged steel casing of the fill material kit (Item 4).

B. Gypsum Board* — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition design. The opening cut in the gypsum board layers on each side of the wall shall be offset minimum 1-1/4 in. (32 mm) from the inside periphery of the steel framed opening. The inside face of the framed opening shall be lined with the same number of gypsum board layers used on each side of the wall assembly. Maximum area of cutout in gypsum board on each side of wall assembly is 480 sq in. (0.31 m²) with max dimension of 30 in. (762 mm).

The hourly F Rating is equal to the hourly fire rating of the wall assembly.

2. Cable Tray — Max 24 in. (610 mm) wide by max 6 in. (152 mm) deep open ladder cable tray formed of min 0.056 in. (min 1.4 mm) thick (16 gauge) galv steel and with rungs spaced 9 in. (229 mm) OC. Max one cable tray per opening. Separation between cable tray and periphery of opening to be minimum 1 in. (25 mm) to max 9 in. (229 mm). Cable tray to be rigidly supported on both sides of wall assembly. As an option, the cable tray may be terminated on each side of the wall assembly provided the cables are reliably supported on both sides of the wall assembly. The fill material kit (Item 5) is not designed to function as a cable support.

3. Cables — Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent based on a max 3 in. (76 mm) cable loading depth within the tray. Cables may also pass through opening individually outside of cable tray. Any combination of the following types and sizes of copper conductor cables may be used:

A. Max 300 kcmil single-conductor power cable; cross-linked polyethylene insulation.

B. Max 3/C-No. 2/0 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.

C. Max 7/C-No. 12 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.

D. Max 300 pair No. 24 AWG copper conductor telecommunication cables with polyvinyl chloride (PVC) insulation and jacket.

E. Max four twisted pair No. 24 AWG copper conductor Category 5 or Category 6 data cables with polyvinyl chloride (PVC) insulation and jacket.

Cables to be spaced min 1 in. (25 mm) apart in layers with a closed-cell foam rubber sheet (Item 6) between layers of cable. When diam of cables is less than 1/4 in. (6 mm), separation between cables in individual layers may be reduced to 0 in. (0 mm, point contact). When diam of cables is larger than 1/4 in. (6 mm), separation of cables in layers to be equal to diameter of cables. When diam of cables is equal to or larger than 1/2 in. (13 mm), strips of closed-cell foam rubber sheet equal in width and thickness to the cable diameter to be installed between individual cables in each layer of cables.

4. Fill, Void or Cavity Materials* — Fill Material Kit — Fill material kit consists of a nom 10 in. (254 mm) deep modular flanged steel casing with elastomeric gasket strips and with multiple closed-cell foam rubber sheets in thicknesses ranging from nom 3/8 in. to 1 in. (10 to 25 mm) thick. The length and width of the steel casing body, excluding the mounting flanges, shall be sufficient to lap a min of 1-3/4 in. (44 mm) beyond all four sides of the rectangular cutout in the wall. The fill material kit is to be installed in accordance with the accompanying instructions. The fasteners used to secure the flanged steel casing to the steel stud framing of the wall shall be min 1-3/4 in. (44 mm) long self-drilling, self-tapping steel screws in conjunction with steel fender washers. All voids within the lined steel casing to be tightly-filled with closed-cell foam rubber sheets. The closed-cell foam rubber sheets shall also be installed between the cable tray rungs and the cables as well as between layers of cables in the cable tray.

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XHEZ.C-AJ-4069 Through-penetration Firestop Systems

Page Bottom

Through-penetration Firestop Systems

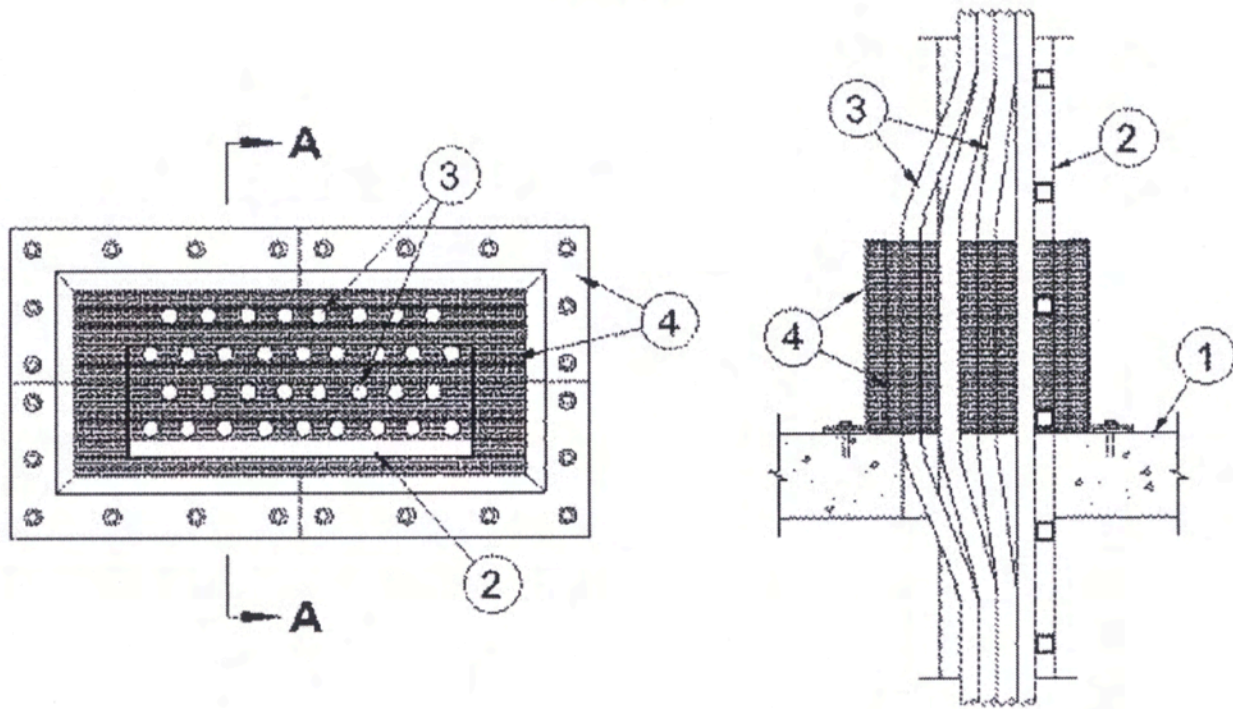
See General Information for Through-penetration Firestop Systems

System No. C-AJ-4069

September 23, 2003

F Ratings — 2 and 3 Hr (See Items 1 and 4)

T Rating — 2Hr



Section A-A

1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. For 2 hr F Rating, max area of opening not to exceed 392 sq in. with max dimension of 28 in. For 3 hr F Rating, max area of opening not to exceed 176 sq in. with a max dimension of 22 in.

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

2. Cable Tray — Max 24 in. wide by max 6 in. deep open ladder cable tray formed of min 0.022 in. thick (No. 26 gauge) galv steel and with rungs spaced 6 in. OC. Max one cable tray per opening. Cable tray to be rigidly supported on both sides of floor or wall assembly. As an option, the cable tray may be terminated on each side of the floor or wall assembly provided the cables are reliably supported on both sides of the assembly. The fill material kit (Item 4) is not designed to function as a cable support.

3. **Cables** — Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent based on a max 3 in. cable loading depth within the tray. Any combination of the following types and sizes of copper conductor cables may be used:

- A. Max 300 kcmil single-conductor power cable; cross-linked polyethylene insulation.
- B. Max 3/C-No. 2 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.
- C. Max 7/C-No. 12 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.
- D. Max 200 pair No. 24 AWG copper conductor telecommunication cables with polyvinyl chloride (PVC) insulation and jacket.
- E. Max four twisted pair No. 24 AWG copper conductor Category 5 or Category 6 data cables with polyvinyl chloride (PVC) insulation and jacket.

Cables to be spaced min 1 in. apart in layers with a closed-cell foam rubber sheet (Item 4) between layers of cable. When diam of cables is less than 1/4 in., separation between cables in individual layers may be reduced to 0 in. (point contact). When diam of cables is larger than 9/16 in., min 1 in. wide strips of closed-cell foam rubber sheet to be installed between individual cables in each layer of cables.

4. **Fill, Void or Cavity Materials*** — **Fill Material Kit** — Fill material kit consists of a nom 10 in. high modular flanged steel casing with elastomeric gasket strips and with multiple nom 1 in. thick closed-cell foam rubber sheets. The length and width of the steel casing body, excluding the mounting flanges, shall be sufficient to lap a min of 1-3/4 in. beyond all four sides of the rectangular opening in the floor or wall. The fill material kit is to be installed in accordance with the accompanying instructions. The fasteners used to secure the flanged steel casing to the floor or wall surface shall be nom 1/4 in. diam by min 1-1/4 in. long steel anchor bolts with nuts and washers. All voids within the lined steel casing to be tightly-filled with closed-cell foam rubber sheets. The closed-cell foam rubber sheets shall also be installed between the cable tray rungs and the cables as well as between layers of cables in the cable tray. **When firestop system is installed on top surface of floor or on both sides of wall, F Rating is 3 hr. When firestop system is installed on bottom surface of floor or on only one side of wall assembly, F Rating is 2 hr.**

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Through-penetration Firestop Systems

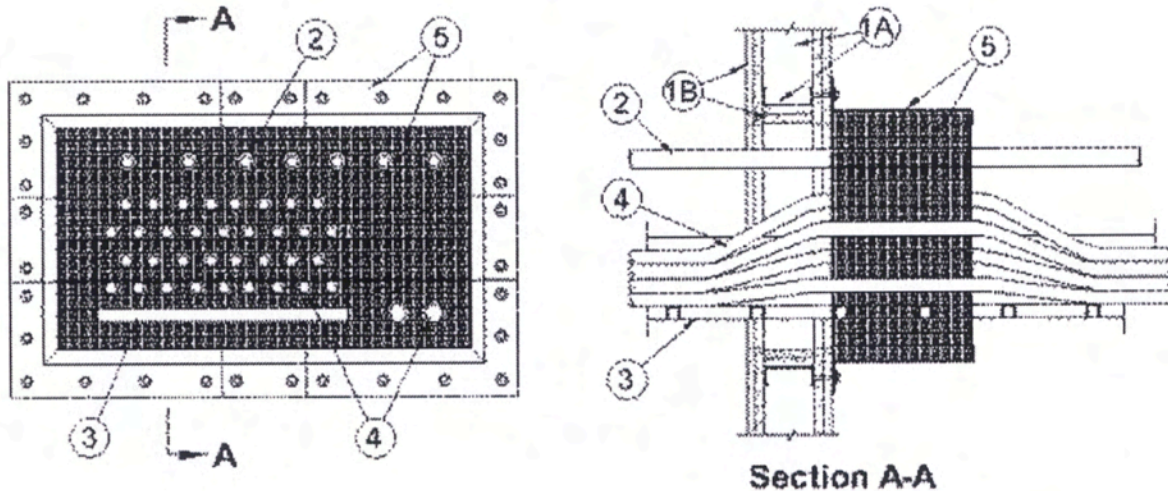
See General Information for Through-penetration Firestop Systems

System No. W-L-8057

June 15, 2004

F Ratings – 1 and 2 Hr (See Item 1)

T Rating – 1 Hr



1. Wall Assembly – The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Studs – Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. The opening made in the wall assembly to accommodate the through penetrants shall be framed on all four sides. The on center spacing of the studs and horizontal members framing the opening shall align with the predrilled holes in the flanged steel casing of the fill material kit (Item 5).

B. Gypsum Board* – Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition design. The opening cut in the gypsum board layers on each side of the wall shall be offset minimum 1-1/4 in. (32 mm) from the inside periphery of the steel framed opening. The inside face of the framed opening shall be lined with the same number of gypsum board layers used on each side of the wall assembly. Maximum area of cutout in gypsum board on each side of wall assembly is 480 sq in. (0.31 m²) with max dimension of 30 in. (762 mm).

The hourly F Rating is equal to the hourly fire rating of the wall assembly.

2. Metallic Penetrants – One or more metallic pipes, conduits or tubing installed concentrically or eccentrically within the opening. Annular space between metallic penetrants and periphery of opening to be min 2 in. (51 mm) to max 9 in. (229 mm). Annular space between metallic penetrants and other metallic penetrants or cables to be min 2 in. (51 mm) to max 9 in. (229 mm). Metallic pipes, conduits or tubing to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of metallic pipes, conduits or tubing may be installed within the opening:

A. Steel Pipe – Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. Iron Pipe – Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.

C. Conduit – Nom 1 in. (25 mm) diam (or smaller) rigid steel conduit, electrical metallic tubing (EMT) or flexible steel conduit.

3. Cable Tray – Max 18 in. (457 mm) wide by max 6 in. (152 mm) deep open ladder cable tray formed of min 0.056 in. (1.4 mm) thick (16 gauge) galv steel and with rungs spaced 9 in. (229 mm) OC. Max one cable tray per opening. Separation between cable tray and periphery of opening to be minimum 1 in. (25 mm) to max 9 in. (229 mm). Cable tray to be rigidly supported on both sides of wall assembly. As an option, the cable tray may be terminated on each side of the wall assembly provided the cables are reliably supported on both sides of the wall assembly. The fill material kit (Item 5) is not designed to function as a cable support.

4. **Cables** — Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent based on a max 3 in. (76 mm) cable loading depth within the tray. Cables may also pass through opening individually outside of cable tray. Any combination of the following types and sizes of copper conductor cables may be used:

- A. Max 300 kcmil single-conductor power cable; cross-linked polyethylene insulation.
- B. Max 3/C-No. 2/0 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.
- C. Max 7/C-No. 12 AWG multiconductor power and control cables; cross-linked polyethylene insulation, polyvinyl chloride jacket.
- D. Max 300 pair No. 24 AWG copper conductor telecommunication cables with polyvinyl chloride (PVC) insulation and jacket.
- E. Max four twisted pair No. 24 AWG copper conductor Category 5 or Category 6 data cables with polyvinyl chloride (PVC) insulation and jacket.

Cables to be spaced min 1 in. (25 mm) apart in layers with a closed-cell foam rubber sheet (Item 6) between layers of cable. When diam of cables is less than 1/4 in. (6 mm), separation between cables in individual layers may be reduced to 0 in. (0 mm, point contact). When diam of cables is larger than 1/4 in. (6 mm), separation of cables in layers to be equal to diameter of cables. When diam of cables is equal to or larger than 1/2 in. (13 mm), strips of closed-cell foam rubber sheet equal in width and thickness to the cable diameter to be installed between individual cables in each layer of cables.

5. **Fill, Void or Cavity Materials* — Fill Material Kit** — Fill material kit consists of a nom 10 in. (254 mm) deep modular flanged steel casing with elastomeric gasket strips and with multiple nom 1 in. (25 mm) thick closed-cell foam rubber sheets. The length and width of the steel casing body, excluding the mounting flanges, shall be sufficient to lap a min of 1-3/4 in. (44 mm) beyond all four sides of the rectangular cutout in the wall. The fill material kit is to be installed in accordance with the accompanying instructions. The fasteners used to secure the flanged steel casing to the steel stud framing of the wall shall be min 1-3/4 in. (44 mm) long self-drilling, self-tapping steel screws in conjunction with steel fender washers. All voids within the lined steel casing to be tightly-filled with closed-cell foam rubber sheets. The closed-cell foam rubber sheets shall also be installed between the cable tray rungs and the cables as well as between layers of cables in the cable tray.

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