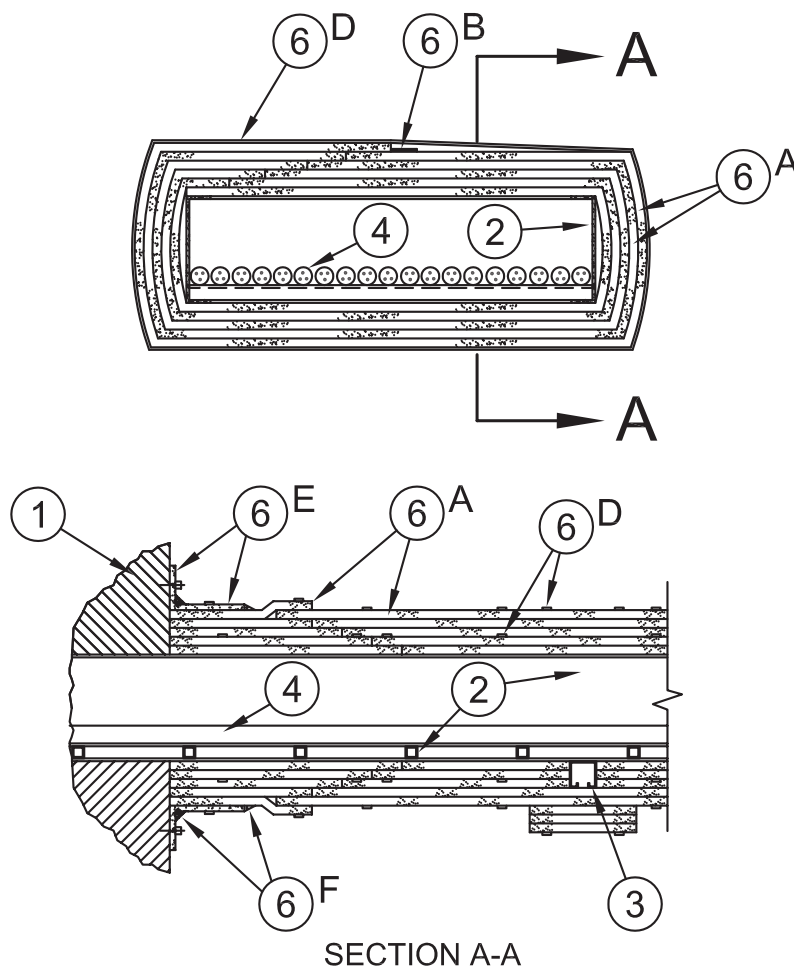


System No. 8
September 17, 2012
Fire Ratings – 1 and 3 Hr (See Item 6)



SECTION A-A

1. **Wall or Floor Assembly** – Concrete or masonry wall or concrete floor having a fire rating equal to or greater than the fire rating of the electrical circuit protective system. Opening in wall or floor through which cable tray passes is to be sized to closely follow the contour of the cable tray. Through opening in wall or floor to be firestopped prior to installation of the electrical circuit protective system using a compatible firestop system. The perimeter of the firestopped through opening shall be within the outer bounds of the electrical circuit protective system. See **Through Penetration Firestop Systems** (Guide XHEZ) for presently Classified firestop systems.
2. **Cable Tray** – 24 in. (610 mm) wide, min 4 in. (102 mm) deep, solid bottom or open ladder cable trays. Solid bottom cable trays to be formed of min 0.056 in. (1.4 mm) thick galvanized steel. Open ladder cable trays to consist of channel-shaped side-rails formed of min 0.056 in. (1.4 mm) thick galvanized steel with nom 3/4 in. (19 mm) wide by 1 in. (25 mm) deep boxed channel rungs formed of min 0.029 in. (0.74 mm) thick galvanized steel and spaced 6 in. (152 mm) OC. Cable trays shall be installed as a complete system in accordance with all provisions of the current National Electrical Code.
3. **Cable Tray Supports** – The cable trays shall be supported by U-shaped welded hangers formed of min 0.093 in. (2.4 mm) thick painted or galvanized steel channels, 1-5/8 in. (41 mm) wide by min 1-5/8 in. (41 mm) deep with the flange edges hemmed for stiffness.
4. **Cables** – Min No. 16 AWG jacketed multi-conductor cables and/or min 250 kcmil jacketed single-conductor copper power cables. Cable insulation to be cross-linked polyethylene. Cable jacket to be cross-linked polyethylene or polyvinyl chloride. When fillers are used in the cable construction, fillers to be hemp, polyvinyl chloride or cross-linked polyethylene. Cables to be installed in cable trays in accordance with all provisions of the current National Electrical Code.
5. **Strapping** – (Not Shown) – Nom 1/2 to 1 in. (13 to 25 mm) wide plastic strapping or filament strapping tape. Strapping applied around circumference of cable tray on maximum 12 in. (305 mm) centers to prevent sag of mat wrap layers (Item 6A) into trough of cable tray.
6. **Electrical Circuit Protective System** – The electrical circuit protective system consists of a mat wrap, foil tape, woven stainless steel wire mesh, stainless steel banding straps, intumescent sheet and caulk. The system shall be installed in accordance with the detailed installation instruction manual supplied by the manufacturer of the **Electrical Circuit Protective Materials***. The details of the electrical circuit protective system are summarized below:
 - A. **Electrical Circuit Protective Material* – Mat Wrap** – Nom 0.4 in. (10 mm) flexible sheet material supplied in 24 in. (610 mm) wide rolls. Installed by cutting to size and wrapping around the cable tray system with each circumferential wrap lapping itself 2 to 4 in. (51 to 102 mm) over the top of the cable tray. With the exception of the final layer of mat wrap, adjacent lengths of mat wrap in each layer to be installed with tightly-butted end seams. Successive layers of mat wrap installed in same manner with butted end seams offset min 2 in. (51 mm) from butted end seams of preceding layer. For final layer of mat wrap, adjacent lengths of mat wrap to overlap the preceding length a min of 2 in. (51 mm). All seams in each layer of mat wrap to be sealed with aluminum foil tape (Item 6B). Mat wrap layers secured in place with steel banding straps (Item 6D). A min of three layers of mat wrap are required for the 1 Hr fire rating. A min of five layers of mat wrap are required for the 3 hr fire rating.

3M COMPANY – Types E-5A-4, E-54A, E-54C.

- B. **Foil Tape** – Nom 4 in. (102 mm) wide min 3 mil (0.08 mm) thick pressure-sensitive aluminum foil tape or nom 4 in. (102 mm) wide min 3 mil (0.08 mm) thick pressure-sensitive stainless steel foil tape, supplied in rolls. Used to secure seams of mat wrap (Item 6A).
- C. **Stainless Steel Mesh** – (Optional, Not Shown) – Woven stainless steel wire mesh, supplied in 42 in. (1.1 m) wide rolls. Stainless steel mesh tightly wrapped around outermost layer of mat material and secured in place with stainless steel banding straps (Item 6D) spaced maximum 8 in. (203 mm) O.C.
- D. **Steel Banding Strap** – Min 5/8 in. (16 mm) wide by 0.020 in. (0.51 mm) thick stainless steel straps used in conjunction with stainless steel crimp clips. Banding straps spaced max 8 in. (203 mm) O.C. to secure stainless steel mesh and mat wrap layers. For 3 hr rated system, steel banding straps required to be installed after second mat wrap layer in addition to steel banding straps securing stainless steel mesh. Steel banding straps to be installed 1 in. (25 mm) from each side of final layer mat seams.
- E. **Electrical Circuit Protective Materials* – Intumescent Sheet** – Rigid aluminum foil-faced sheets with galvanized sheet steel backer. Nom 4 in. (102 mm) wide piece of sheet formed into collar around mat wrapped cable tray and mat wrapped cable air drop (Item 7) with seam butted and with steel backer exposed (foil facing against mat wrap). Collar butted against wall or floor surface and secured to mat wrapped cable tray or cable air drop with stainless steel banding strap (Item 6D). A two-piece plate cut from intumescent sheet to be installed on wall or floor surface around intumescent sheet collar. Plate pieces cut to tightly follow the contours of the intumescent sheet collar with seams between pieces tightly butted. Plate to lap min 2 in. (51 mm) on the wall or floor surface with the steel backer exposed (foil face against wall or floor surface). Plate secured to wall or floor surface with steel anchor bolts, or equivalent, in conjunction with min 1-1/4 in. (32 mm) diameter steel fender washers. Anchor bolts located max 2 in. (51 mm) from both sides of butted seams and max 4 in. (102 mm) O.C. around perimeter of plate, 1 in. (25 mm) in from plate edges. When butted seams of two-piece plate are not completely backed by concrete, seams to be covered with min 2 in. (51 mm) wide strips of min 0.016 in. (0.41 mm) thick galvanized steel secured with steel screws or rivets spaced max 2 in. (51 mm) O.C. on both sides of seam.

3M COMPANY – Type CS-195+

- F. **Electrical Circuit Protective Materials* – Caulk** – Thick bead of caulk to be applied around the base of the intumescent sheet collar (Item 6E) at its interface with the intumescent sheet plate. Thick bead of caulk applied around perimeter of mat wrap at interface with intumescent sheet collar. Top edges of mat wrap layers on cable tray supports covered with min 1/8 in. (3.2 mm) thickness of caulk.

3M COMPANY – CP 25WB+

- 7. **Cable Air Drop** – (Not Shown) – Cable passing from one fire rated cable tray protective system to another fire rated cable tray protective system, through the air, to be protected with a fire rated electrical circuit protective system consisting of a mat wrap, foil tape, stainless steel banding straps or ceramic cord and caulk or putty. The system shall be installed in accordance with the detailed installation instruction manual supplied by the manufacturer of the **Electrical Circuit Protective Materials***. The details of the electrical circuit protective system are summarized below:

- A. **Electrical Circuit Protective Materials* – Mat Wrap** – Nom 0.4 in. (10 mm) flexible sheet material supplied in 24 in. (610 mm) wide rolls. Mat wrap installed by cutting to size and wrapping around cable bundle with each circumferential wrap lapping itself min 2 in. (51 mm). With the exception of the final layer of mat wrap, adjacent lengths of mat wrap in each layer to be installed with tightly-butted end seams. Successive layers of mat wrap installed in same manner with butted end seams offset min 2 in. (51 mm) from butted end seams of preceding layer. For final layer of mat wrap, adjacent lengths of mat wrap to overlap the preceding length a min of 2 in. (51 mm). All seams in each layer of mat wrap to be sealed with foil tape (Item 7B). Mat wrap layers secured in place with stainless steel banding straps (Item 7C). A min of three layers of mat material is required for a 1 hr fire rating. A min of five layers of mat material is required for a 3 hr fire rating.

3M COMPANY – Types E-5A-4, E-54A, E-54C.

- B. **Foil Tape** – Nom 4 in. (102 mm) wide min 3 mil (0.08 mm) thick pressure-sensitive aluminum foil tape or min 3 mil (0.08 mm) thick stainless steel foil tape, supplied in rolls. Used to secure seams of mat wrap (Item 7A).
- C. **Steel Banding Straps** – Min 5/8 in. (16 mm) wide by 0.020 in. (0.51 mm) thick stainless steel straps used in conjunction with stainless steel crimp clips. Banding straps spaced max 8 in. (203 mm) OC to secure mat wrap layers. For 1 hr fire rated system, steel banding straps required to be installed on outermost mat wrap layer. For 3 hr fire rated system, steel banding straps required to be installed after second mat wrap layer in addition to steel banding straps securing outermost mat wrap layer.
- D. **Stainless Steel Wire** – As an alternate to the steel banding straps (Item 7C) for the 1 hr fire rated system only, min 0.046 in. (1.12 mm) diam (18 ga) stainless steel wire spiral-wrapped around outermost layer of mat wrap at a maximum spacing of 2 in. (51 mm) OC. Wire covered with aluminum foil tape (Item 7B).
- E. **Electrical Circuit Protective Materials* – Caulk** – Thick bead of caulk to be applied around the perimeter of the mat wrap on the cable air drop at each interface with the cable tray protective system.

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*Bearing the UL Classification Mark

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