ONLINE CERTIFICATIONS DIRECTORY

XHEZ.W-L-8072
Through-penetration Firestop Systems

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Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered as Classified, Listed, or Recognized.

Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-8072

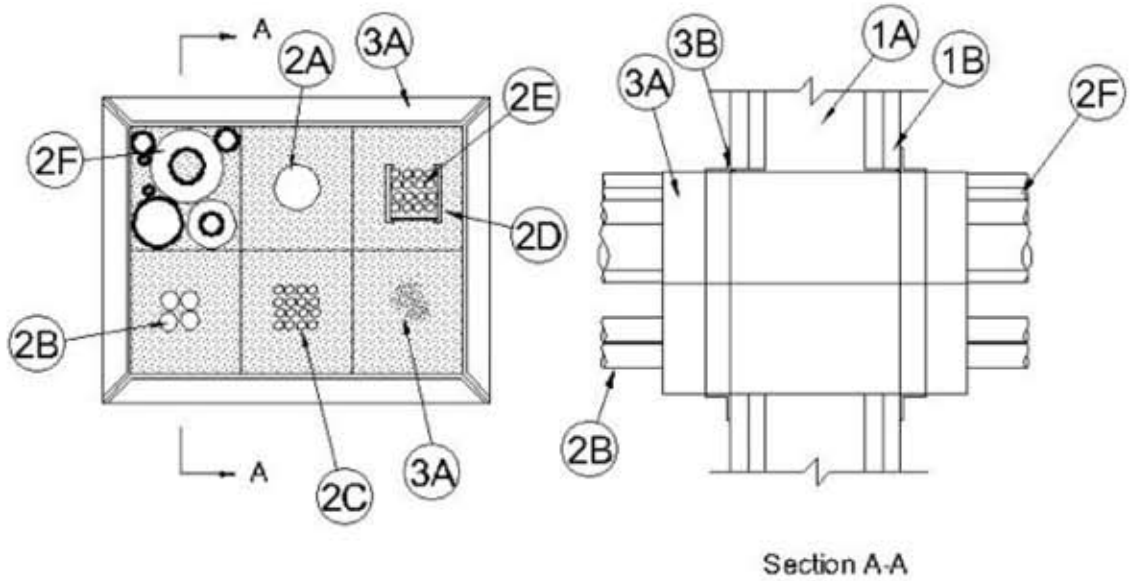
August 06, 2009

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr

L Rating At Ambient — 7 CFM

L Rating At 400 F — 7.3 CFM



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 described in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max area of opening is 98.5 in.2 (635 cm^2) with a max dimension of is 12 1/8 in. (308 mm) for square devices. Max diam of opening is 2-1/2 in. (64 mm) for 2 in. (51 mm) round devices. Max diam of opening is 4-1/2 in. (114 mm) for4 in. (102 mm) round devices.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through-Penetrants —** One or more metallic pipes, conduits or tubes, nonmetallic pipes, conduits or tubes, cables, cables within cable trays, and misc combinations of penetrants, as described below, may be installed within each firestop device (Item 3A) as further specified below. Through penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of through-penetrants may be used:

A. **Metallic Penetrants —** One or more metallic pipe, tubing or conduit may be installed concentrically or eccentrically within each firestop device (Item 3A). If multiple through penetrants are installed within the firestop device, a min 1/4 in. (6 mm) annular space is required between the through penetrants. Through penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of through penetrants may be used:

A1. **Steel Pipe —** Nom 3 in. (76 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

A2. **Iron Pipe —** Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.

A3. **Copper Tubing —** Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tube.

A4. **Copper Pipe —** Copper Pipe - Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe.

A5. **Conduit —** Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT) or rigid steel conduit.

A6. **Through-Penetrating Product* —** Flexible Metal Piping - Nom 1-1/4 in. (32 mm) diam (or smaller) steel flexible metal piping.

OMEGA FLEX INC — TracPipe Flexible Gas Piping

B. **Nonmetallic Penetrants —** One or more nonmetallic pipes, conduits or tubes, as described in a single line item below, may be installed within each firestop device (Item 3A):

B1. **Polyvinyl Chloride (PVC) Pipe —** One nom 2 in. (51 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.

B2. **Rigid Nonmetallic Conduit+ —** One nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 352 of the National Electrical Code (NFPA No. 70).

See **Rigid Nonmetallic, Schedule 40 and 80 PVC Conduit** (DZYR) category in the Electrical Construction Equipment Directory for names of manufacturers.

B3. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** One nom 2 in. (51 mm) diam (or smaller) SDR11 CPVC pipe for use in closed (process or supply) piping systems.

B4. **Crosslinked Polyethylene (PEX) Tubing —** One nom 2 in. (51 mm) diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems.

B5. **Electrical Nonmetallic Tubing (ENT)+ —** Max four nom 1-1/4 in. (32 mm) diam (or smaller) ENT installed in accordance with Article 362 of the

National Electrical Code (NFPA No. 70).

See **Electrical Nonmetallic Tubing** (FKHU) category in the Electrical Construction Equipment Directory for names of manufacturers.

B6. **Optical Fiber/Communications/Signaling/Coaxial Cable Raceways+ —** Max four nom 1-1/4 in. (32 mm) diam (or smaller) plenum rated raceways installed in accordance with the National Electrical Code (NFPA No. 70).

See **Optical Fiber/Communications/Signaling/Coaxial Cable Raceway** (QAZM) category in the Electrical Construction Equipment Directory for names of manufacturers.

B7. **Acrylonitrile Butadiene Styrene (ABS) Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular core ABS for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. **Cables —** Cables installed in a bundle having a max bundle diam of 2-1/2 in. (64 mm). The min bundle diam shall be 1-1/2 in. (38 mm) if a single firestop device (Item 3A) is installed in opening. If multiple firestop devices are ganged together, there is no min bundle size. Any combination of the following types and sizes of cables may be used:

C1. Max 2/C No. 18 AWG copper conductor thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials.

C2. Max 4 pair No. 24 AWG copper conductor Cat5e or Cat 6 telephone cable with PVC insulation and jacket materials.

C3. . Max RG/U (or smaller) coaxial cable with foam high density polyethylene insulation and PVC jacket materials.

C4. Max 3/C (with ground) No. 14 AWG (or smaller) nonmetallic sheathed (Romex) cable with PVC insulation and jacket materials.

C5. Max 1/C No. 8 AWG copper conductor cable with PVC insulation and nylon jacket materials.

C6. Max 12 core No. 26 AWG shielded multi coax cable with foam high density polyethylene insulation and PVC jacket.

C7. Max 48MM62.5 micron fiber optic cables with having a min FT-6 rating.

C8. Max 62.5/125 micron micron fiber optic cables with having a min Riser rating.

C9. Max 1/C 3/0 AWG copper conductor cable with PVC insulation and jacket materials.

C10. Max three copper conductors (with ground) No. 12 AWG **Metal Clad Cable+.**

C11. Max four copper conductors No. 2 AWG **Metal Clad Cable+.**

C12. Max 1/C 2/0 AWG non halogen copper conductor cable.

C13. Max 300 pair No. 24 AWG copper conductor telephone cable with PVC insulation and jacket materials.

C14. Max 30 pair No. 22 copper conductor shielded switchboard cable with PVC insulation and jacket materials.

C15. Max RG/6 (or smaller) coaxial cable with fluorinated ethylene (FE) or PVC insulation and jacket materials.

C16. Max RG/U (or smaller) coaxial cable with fluorinated ethylene (FE) or PVC insulation and jacket materials.

C17. Max 7/C No. 12 AWG copper conductors with PVC insulation and jacket materials.

C18. Max 4 pair No. 23 AWG copper conductor Cat 6 telephone cable with PVC insulation and jacket materials.

C19. Max three copper conductors (with ground) No. 12 AWG steel Armored Cable+.

C20. Max 04-02 2 5M fiber optic cables having a max diameter of 0.450 in. (11.4 mm).

C21. Max 1/C No. 750 kcmil copper conductors with PVC insulation and fabric jacket materials.

C22. Max 3/C with ground No. 2/0 AWG aluminum conductor SER cable with cross linked polyethylene (XLPE) insulation and PVC jacket.

D. **Cable Tray* —** Nom 2 in. (51 mm) wide by 2 in. (51 mm) high (or smaller) welded wire basket cable tray formed from min 0.23 in. (5.8 mm) thick steel wires in the longitudinal direction and 0.19 in. (4.8 mm) wires in the transverse direction. Transverse wires shall be spaced max 4 in. (102 mm) OC. One cable tray may be installed within each firestop device (Item 4A). When installed within the 4 by 4 by 10 in. (64 by 64 by 254 mm) firestop device, the annular space between the cable tray and the periphery of the device shall be min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm). The cables described in Item E below may be installed within the cable tray.

E. **Cables —** Cable fill within cable tray shall be 100 % visual fill. Any combination of the following types and sizes of cables may be used within the cable tray:

E1. Max 4 pair No. 24 AWG copper conductor Cat5e or Cat 6 telephone cable with PVC insulation and jacket materials.

F. **Mixed Penetrants —** One of the following groupings of mixed penetrants may be installed within each firestop device:

F1. **Air Conditioning (AC) Line Set —** One or more AC line set, consisting of multiple metallic pipes, tube insulation, nonmetallic pipes and cables bundled within firestop device in any combination unless otherwise noted.

1. **Copper Tubing** - Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tube.

2. **Tube Insulation - Plastic++** - Nom 1/2 in. (13 mm) thick or smaller) acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing with skin may be used on the copper tubes. If multiple insulated through penetrants are installed within the firestop device, the insulated through penetrants may be bundled together.

See **Plastics+** (QMFZ2) category in the Plastics 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 94-5VA may be used.

3. **Polyvinyl Chloride (PVC) Pipe** - One nom 1 in. (25 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.

4. **Thermostat Cable** - Max 2/C No. 18 AWG copper conductor thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials.

F2. **Mixed Grouping —** One or more metallic pipes, nonmetallic pipes and cables bundled within firestop device in any combination unless otherwise noted.

1. **Copper Tubing** - Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tube.

2. **Electrical Nonmetallic Tubing (ENT)+** - One nom 1-1/4 in. (32 mm) diam (or smaller) ENT installed in accordance with Article 362 of the National Electrical Code (NFPA No. 70).

See **Electrical Nonmetallic Tubing** (FKHU) category in the Electrical Construction Equipment Directory for names of manufacturers.

3. **Optical Fiber/Communications/Signaling/Coaxial Cable Raceways+** - One nom 1-1/4 in. (32 mm) diam (or smaller) plenum rated

raceway installed in accordance with the National Electrical Code (NFPA No. 70).

See **Optical Fiber/Communications/Signaling/Coaxial Cable Raceway** (QAZM) category in the Electrical Construction Equipment Directory for names of manufacturers.

4. **Power Cable** - Max 1/C No. 750 kcmil copper conductors with PVC insulation and fabric jacket materials.

5. **Thermostat Cable** - Max 2/C No. 18 AWG copper conductor thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials.

F3. **Mixed Grouping —** One or more flexible metal pipes and a max of two nonmetallic tubes or raceways bundled within firestop device in any combination.

1. **Through-Penetrating Product* - Flexible Metal Piping** - Nom 1-1/4 in. (32 mm) diam (or smaller) steel flexible metal piping.

OMEGA FLEX INC — TracPipe Flexible Gas Piping

2. **Electrical Nonmetallic Tubing (ENT)+** - Two nom 1-1/4 in. (32 mm) diam (or smaller) ENT installed in accordance with Article 362 of the National Electrical Code (NFPA No. 70).

See **Electrical Nonmetallic Tubing** (FKHU) category in the Electrical Construction Equipment Directory for names of manufacturers.

3. **Optical Fiber/Communications/Signaling/Coaxial Cable Raceways+** - Two nom 1-1/4 in. (32 mm) diam (or smaller) plenum rated raceway installed in accordance with the National Electrical Code (NFPA No. 70).

See **Optical Fiber/Communications/Signaling/Coaxial Cable Raceway** (QAZM) category in the Electrical Construction Equipment Directory for names of manufacturers.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Firestop Device* —** A max of six square firestop devices may be ganged together. As an alternate, one round device may be centered within a round opening. Each device consists of a nom 2-1/2 by 2-1/2 by 10 in. (64 by 64 by 254 mm), a nom 4 by 4 by 10 in. (102 by 102 by 254 mm), a nom 2- in. (51mm) diam 10 in. (254 mm), or a nom 4 in. (102 mm) diam by 10 in. (254 mm) powder coated steel transit incorporating internal intumescent material, foam plugs and mounting flanges. Firestop device(s) to be installed within opening with ends projecting an equal distance beyond each surface of wall assembly in accordance with the accompanying installation instructions. The annular space between device(s) and periphery of opening shall be min 0 in. (0 mm, point contact) to max 1/8 in. (3 mm). Firestop device(s) secured in place by means of fill material (Item 3B) and steel split mounting flanges sized to accommodate the firestop device. Steel split mounting flanges installed on both sides of wall after installation of fill material, and secured together with supplied steel set screws. Nom 1-1/2 in. (38 mm) thick pre-cut foam plugs sized to accommodate the through penetrant(s) and installed flush with each end of device on both sides of wall assembly.

ABESCO LTD — CT120 Cable Transit

B. **Fill, Void or Cavity Materials* - Caulk —** Min 1/8 in. (3 mm) bead of fill material shall be applied at interface of gypsum board and firestop devices immediately prior to the installation of the mounting flanges. An additional bead of caulk shall be placed between ganged devices on both sides of wall when multiple devices are used.

ABESCO LTD — CP310 FR Acrylic Intumescent Caulk

*Bearing the UL Classification Mark

+ Bearing the UL Listing Mark

Bearing the UL Recognized Component Marking

Last Updated on 2009-08-06

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