

UL

ONLINE CERTIFICATIONS DIRECTORY

System No. C-AJ-1473

XHEZ.C-AJ-1473

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 Classified products, equipment, systems, 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 Certified.

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XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. C-AJ-1473

July 09, 2018

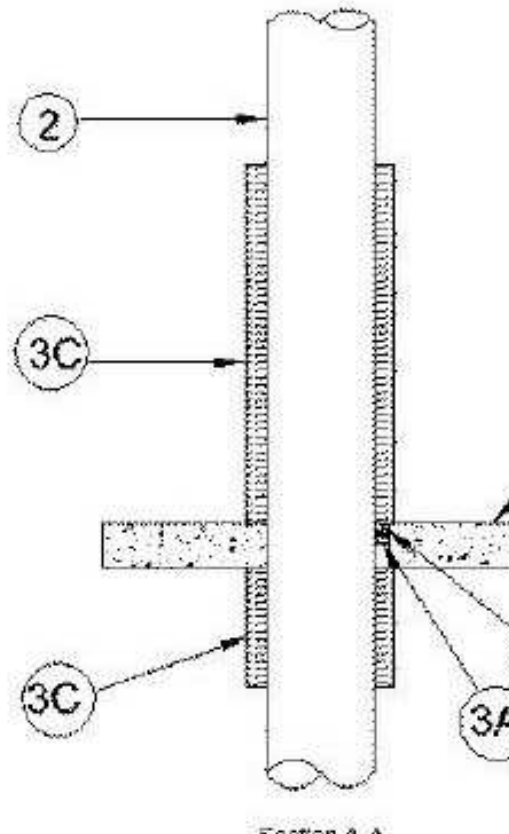
F Rating — 2 Hr

T Rating — 2 Hr

L Rating at Ambient — 2 CFM/sq ft

L Rating at 400°F — Less than 1 CFM/sq ft

W Rating — Class 1 (See Item 3B)



SECTION A-A

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/m³) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks** *. Max diam of opening 12-3/4 in. (324 mm).

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

1A. **Steel Sleeve** — (Optional, Not Shown) - Nom 12 in. (305 mm) diam (or smaller) sleeve fabricated from nom 0.019 in. (0.48 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces.

2. **Through-Penetrant** — Through-Penetrant: One metallic pipe or tubing installed concentrically or eccentrically within opening. Annular space between penetrant and periphery of opening shall be min 0 in. (0 mm) (point contact) to max 2 in. (51 mm). Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

A. **Steel Pipe** — Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 10 in. (254 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Tubing** — Nom 4 in. (102 mm) diam (or smaller) Type 1 (or heavier) copper tubing.

D. **Copper Pipe** — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

E. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

3. **Firestop System** — The details of the firestop system shall be as follows:

A. **Packing Material** — Min 1 in. (25 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt installed on every pencil into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material. When optional steel sleeve is used, packing material to extend through floor or wall thickness except for recesses needed to accommodate fill material (Item 3B).

B. **Fill, Void or Cavity Materials** * — **Caulk, Sealant or Putty** — Min 1 in. (25 mm) thickness of caulk or putty applied within the annulus. Flush with top surface of floor or with both surfaces of wall.

3M COMPANY — CP 25WB+ caulk, FB-3000 WT sealant or MP+ putty

The W Rating applies only when FB-3000 WT sealant is used.

C. **Duct Wrap Material** * — Nom 2 in. (51 mm) thick duct wrap tightly wrapped around penetrant to extend 12 in. (305 mm) below floor and 36 in. (914 mm) above floor or 36 in. (914 mm) beyond both surfaces of wall. Longitudinal seams sealed with full tape.

3M COMPANY — FireBarrier Duct Wrap 20A, 3M FireBarrier Duct Wrap 615, 3M FireBarrier Duct Wrap 615+.

* Indicates such products shall bear the UL or UL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated: on 2018-07-09

Questions?

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ONLINE CERTIFICATIONS DIRECTORY

XHEZ.W-L-5012

Through-penetration Firestop Systems

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Through-penetration Firestop Systems

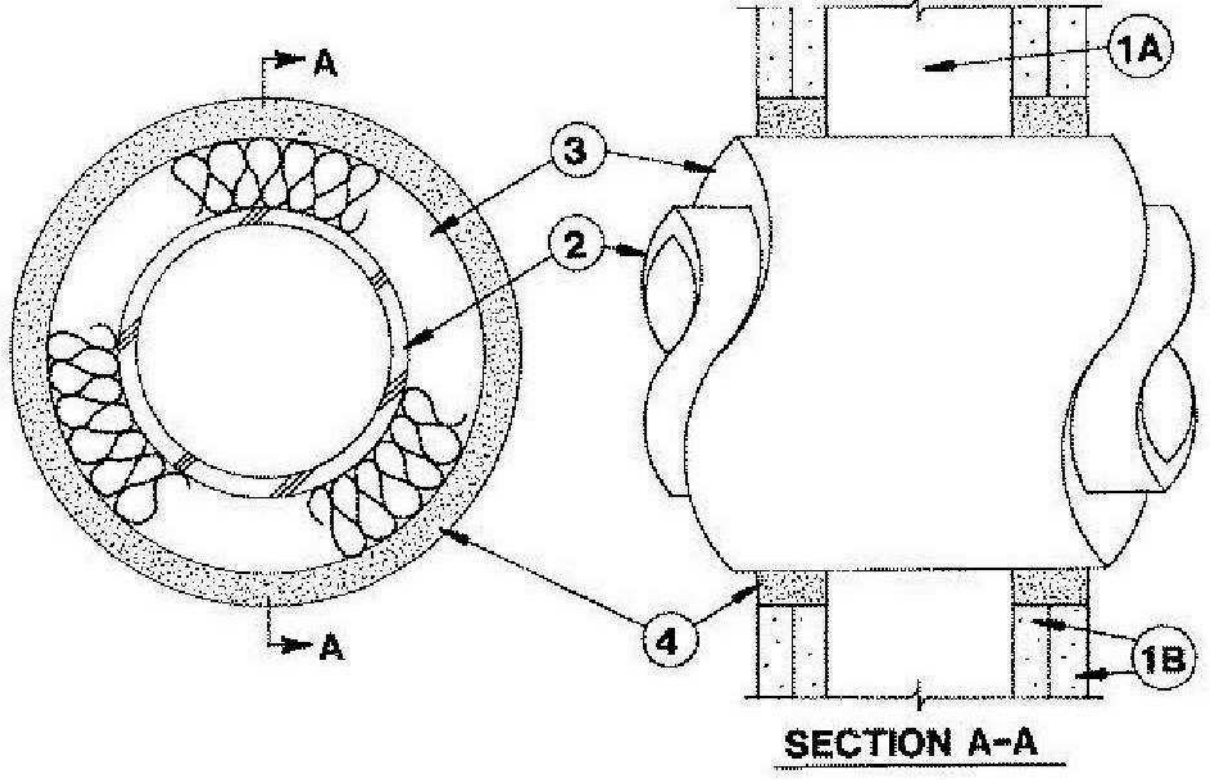
See General Information for Through-penetration Firestop Systems

System No. W-L-5012

January 08, 2010

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 1 and 1-1/2 Hr (See Item 1)



SECTION A-A

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

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

B. **Gypsum Board** * — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 7-1/2 in.

The hourly F and T Ratings of the firestop system are dependent on the hourly fire rating of the wall assembly in which it is installed as shown in the table below:

Rating of Wall Hr	F Rating Hr	T Rating Hr
2	2	1-1/2
1	1	1

2. **Through-Penetrants** — One metallic pipe or tube to be centered within the firestop system. Through-penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipe or tubing may be used:

A. **Copper Tubing** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.

B. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.

C. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.

2. **Pipe and Equipment Covering — Materials** * — Nom 1 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units (located on the outside with an in. service jacket. Longitudinal joints sealed with metal fasteners or with fast tape applied with the product. The annular space between the insulated through penetrant and periphery of opening shall be a nom 5/8 in.

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.

3A. **Pipe Covering Materials** * — (Not Shown) — As an alternate to Item 3, Nom 1 in. thick unfaced mineral fiber pipe insulation sealed to the outside diam of pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. OC. The annular space between the insulated through penetrant and periphery opening shall be a nom 5/8 in.

1IG MINWOOL L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation ThermaSeal

3B. **Sheathing Material** * — (Not shown) — Used in conjunction with Item 3A. Full-scrim-lam or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3A) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or full tape.

See **Sheathing Materials** (BRV) 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.

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

A. **Fill, Void or Cavity Material** * — **Putty** — In 2 hr fire-rated assemblies, min 1-1/4 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. In 1 hr fire-rated assemblies, min 5/8 in. thickness of fill material applied within the annulus on both surfaces of wall. Additional fill material to be installed such that a min 5/8 in. thick crown is formed around the penetrating item and lapsing a min 1/2 in. beyond the periphery of the opening.

RECTORSEAL — FSP 1100 Putty

*Bearing the UL Classification Mark

Last Updated on 2010-01-08

Questions?

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XHEZ.W-L-1001

Through-penetration Firestop Systems

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Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-1001

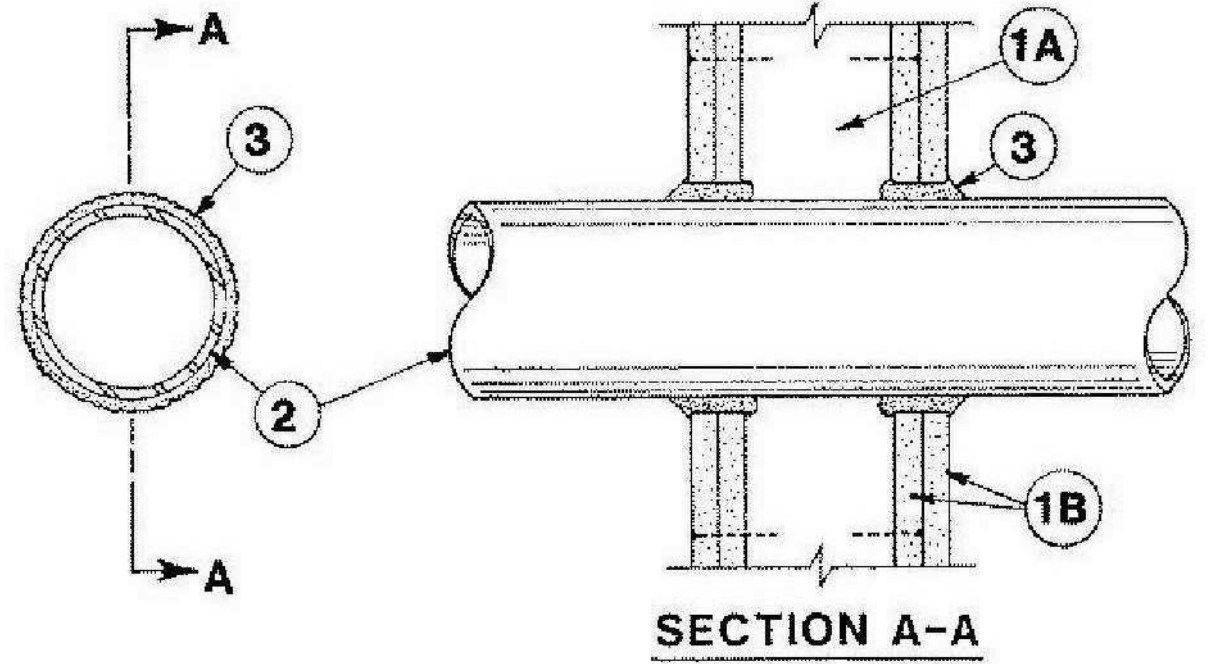
June 15, 2005

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

T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient — less than 1 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Wall framing may consist of either wood studs (max 2 hr fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (405 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber and plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board** * — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipes** — Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipes.

B. **Iron Pipe** — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipes.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product** * — Flexible Metal Filing The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC.

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

GASTITE, DIV OF TITFLEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG INC.

3. **Fill, Void or Cavity Material** * — **Caulk or Sealant** — Min 5/8 in. 1-1/4 1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In (mm)	F Rating Hr	T Rating Hr
1 (25)	1 or 2	0 1, or 2
1 (25)	3 or 4	3 or 4
4 (102)	1 or 2	0
6 (152)	3 or 4	0
12 (305)	1 or 2	0

+When copper pipe is used, T Rating is 0 hr.

3M COMPANY — CP 25WB+ or FB-3000 WT.

*Bearing the UL Classification Mark

Last Updated on 2005-06-15

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Dobo Hall Renovation - Package A

SCO PROJECT NO. 18-19798-01A

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PROJECT NO	DATE
580999	MARCH 27, 2019
REVISIONS	
DATE	DESCRIPTION

DETAILS

M5.4