FIRESTOP TECHNICAL PACK
FP200 Fire Rated
Expanding Foam

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XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. F-C-3088

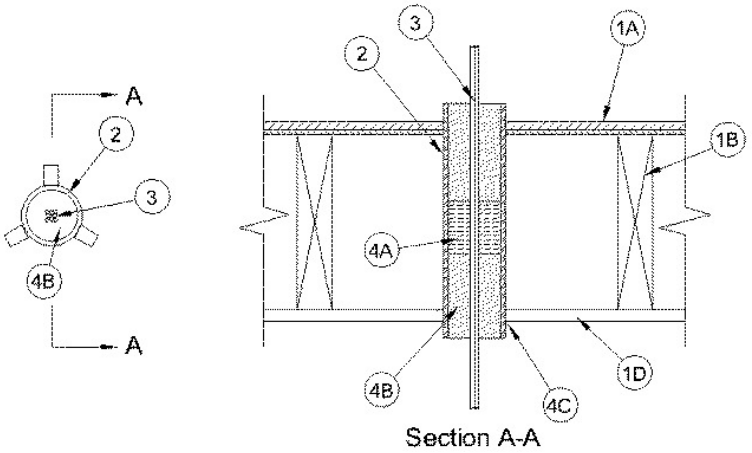
June 22, 2009

F Rating — 1 Hr

T Rating — 1 Hr

L Rating At Ambient — Less than 1 CFM

L Rating At 400 F — Less than 1 CFM



Section A-A

1. **Floor or Wall Assembly —** The 1 hr fire-rated wood joist, wood truss or combination wood and steel truss Floor-Ceiling assembly shall be constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Flooring System —** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 3 in. (76 mm).

B. **Joists —** Nom 2 by 10 in. (51 by 254 mm) deep (or deeper) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped or steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.

C. **Furring Channels —** (Not Shown) - Resilient galv steel furring channels installed perpendicular to wood joists (Item 1B) as required in the individual Floor-Ceiling Design.

D. **Gypsum Board* —** Nom 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Max diam of opening is 3 in. (76 mm).

1.1 **Chase Wall —** (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a 1 hr fire rated single, double or staggered wood stud/gypsum board chase wall constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Nom 2 by 6 in. (51 by 152 mm), or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. **Sole Plate —** Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 3 in. (76 mm).

C. **Top Plate —** The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 3 in. (76 mm).

D. **Gypsum Board* —** Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

2. **Steel Sleeve —** Cylindrical sleeve fabricated from min 0.030 in. (0.76 mm) thick galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of sleeve to be equal to thickness of floor-ceiling assembly plus 2 in. (51 mm) such that, when installed, the ends of the sleeve will project approx 1 in. (25 mm) above the top surface of floor and 1 in. (25 mm) below the bottom surface of ceiling or lower top plate of chase wall assembly. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the plywood floor and gypsum board ceiling or top plates of chase wall assembly. As a final step, three nom 1/2 in. (13 mm) wide by 1 in. (25 mm) long mounting tabs shall be formed bent at 90 °towards the surface of the floor.

3. **Cables —** Aggregate cross-sectional area of cables in opening to be max 5 percent of the aggregate cross-sectional area of the opening. Cable bundle to be centered within opening and rigidly supported on both sides of floor-ceiling assembly. Any combination of the following types and sizes of cables may be used:

A. Max 2 /C No. 18 AWG with polyvinyl chloride (PVC) insulation and jacket materials.

B. Max 4 pair No. 24 AWG telephone cable with PVC insulation and jacket materials.

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

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

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

A. **Packing Material —** Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Foam —** Min 4-1/2 in. (114 mm) thickness of fill material applied within the annulus on both top and bottom surfaces of mineral wool insulation. Foam installed flush with both ends of steel sleeve.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

C. **Fill, Void or Cavity Material* - Sealant —** Prior to the fabrication of the mounting tabs of the steel sleeve (Item 2), min 1/4 in. (6 mm) diam bead of fill material applied around the outer circumference of steel sleeve at on top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2009-06-22

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

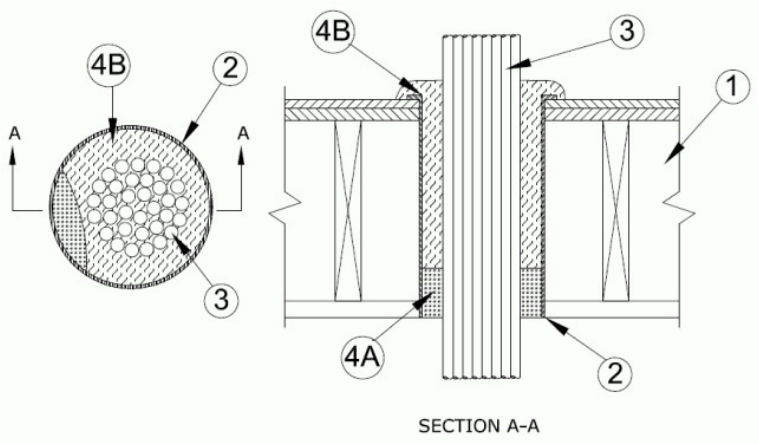
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. F-C-3118

September 27, 2017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 3/4 Hr	FT Rating — 3/4 Hr
	FH Rating — 1 Hr
	FTH Rating — 3/4 Hr



SECTION A-A

1. **Floor Assembly —** The 1 hr fire-rated wood joist Floor-Ceiling assembly shall be constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Flooring System —** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of opening is 4 in. (102 mm).

   B. **Joists —** Nom 2 by 10 in. (51 by 254 mm) deep lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped.

   C. **Gypsum Board* —** Nom 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Max diam of opening is 4 in. (102 mm).

2. **Steel Sleeve —** Min 28 gauge galv steel sleeve provided min 1 in. (25 mm) flange overlapping the top surface of floor.

3. **Cables —** Max 3-1/2 in. (89 mm) diam cable bundle. Annular space between cable bundle and periphery of opening to be min 0 in. (point contact) to max 1/2 in. (13 mm) and rigidly supported on both sides of floor-ceiling assembly. Any combination of the following types and sizes of cables may be used:
   A. Max 2/C No. 18 AWG copper conductor cable with polyvinyl chloride (PVC) insulation and jacket materials.

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

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

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

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

F. Max 62.5/125 micron fiber optic cables.

G. Max 50 pair No. 22 copper conductor shielded switchboard cable with PVC insulation and jacket materials.

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

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

4. **Firestop System —** The firestop system shall consist of the following:
   A. **Packing Material —** Min 2 in. (51 mm) thickness of 4 pcf (64 kg/m3) mineral wool, tightly packed into annular space flush with bottom surface of the floor assembly.

   B. **Fill, Void or Cavity Material* - Foam —** Min 10-1/2 in. (267 mm) thickness of fill material within the annulus on top of packing material and extending a min 2 in. (13 mm) above the top service of floor.
   ABESCO FIRE LTD — FP 200 FR Expanding Foam

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

Last Updated on 2017-09-27

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-J-1192

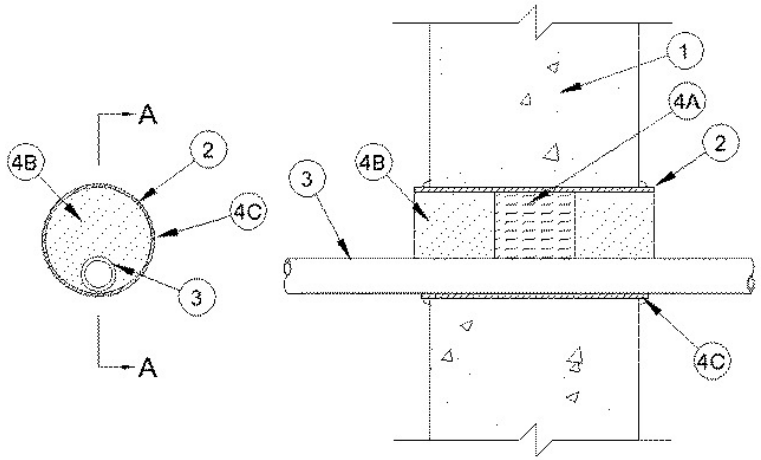
June 22, 2009

F Rating — 2 Hr

T Rating — 0 Hr

L Rating At Ambient — Less than 1 CFM

L Rating At 400 F — Less than 1 CFM



1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 3 in. (76 mm).
   See **Concrete Blocks** (CAZT) category in the UL Fire Resistance Directory for names of manufacturers.

2. **Metallic Sleeve —** Cylindrical sleeve fabricated from nom 0.034 in. (0.86 mm) thick (or lighter) galv sheet steel and having a min 1/2 in. (13 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1 in. (25 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular openings in the concrete.

3. **Through Penetrant —** One metallic pipe, tubing or conduit to be installed concentrically or eccentrically within opening. The annular space between the through penetrant and the periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Through penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:
   A. **Steel Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.

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

   D **Copper Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.

   E **Conduit —** Nom 3/4 in. (19 mm) diam (or smaller) electric metallic tubing (EMT) or rigid steel conduit.

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

A. **Packing Material —** Min 2 in. (52 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Foam —** Min 2-1/4 in. (57 mm) thickness of fill material applied within the annulus on both sides of mineral wool insulation. Foam installed flush with both ends of steel sleeve.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

C. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. (6 mm) diam bead of fill material applied at the steel sleeve/concrete interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2009-06-22

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

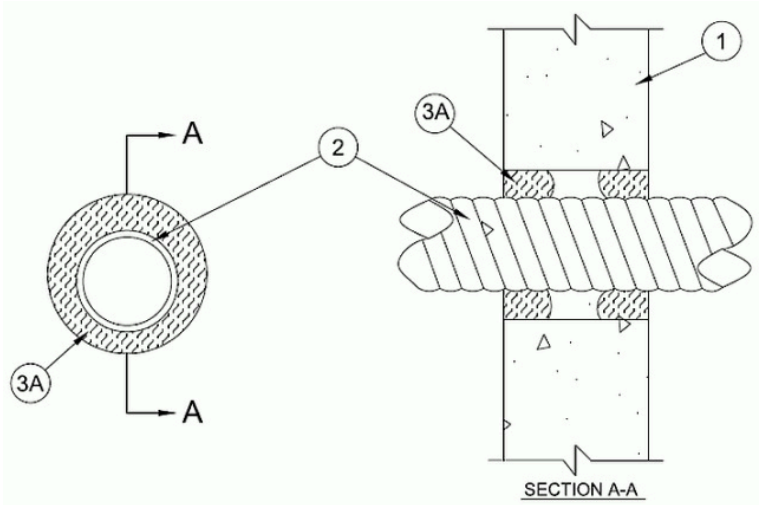
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-J-1233

June 19, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 Hr
	FTH Rating — 0 Hr



1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL **Classified Concrete Blocks***. Max diam of opening is 2 in. (51 mm).
   See **Concrete Blocks** (CAZT) category in the UL Fire Resistance Directory for names of manufacturers.

2. **Through Penetrant —** One penetrant to be installed concentrically within the firestop system. The annular space between the penetrant and the periphery of the opening shall be 1/2 in. (13 mm). Penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of penetrants may be used:

   A. **Conduit —** Nom 1 in. (25 mm) diam (or smaller) steel electric metallic tubing (EMT) or rigid steel conduit.

   B. **Through-Penetrating Product* —** Nom 1/2 in. (13 mm) diam (or smaller) steel **Flexible Metal Conduit**+ installed in accordance with the National Electrical Code (NFPA No. 70).
   INTERNATIONAL METAL HOSE CO

   C. **Through-Penetrating Product* —** Nom 1 in. (25 mm) diam (or smaller) steel **Flexible Metal Conduit**+ installed in accordance with the National Electrical Code (NFPA No. 70).
   AFC CABLE SYSTEMS INC

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

A. **Fill, Void or Cavity Materials* - Foam —** Min 1-1/4 in. (32 mm) thickness of fill material applied within the annulus between penetrant and concrete, on both sides of wall.

ABESCO FIRE LTD — FP 200 FR Expanding Foam

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

+Bearing the UL Listing Mark

Last Updated on 2013-06-19

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

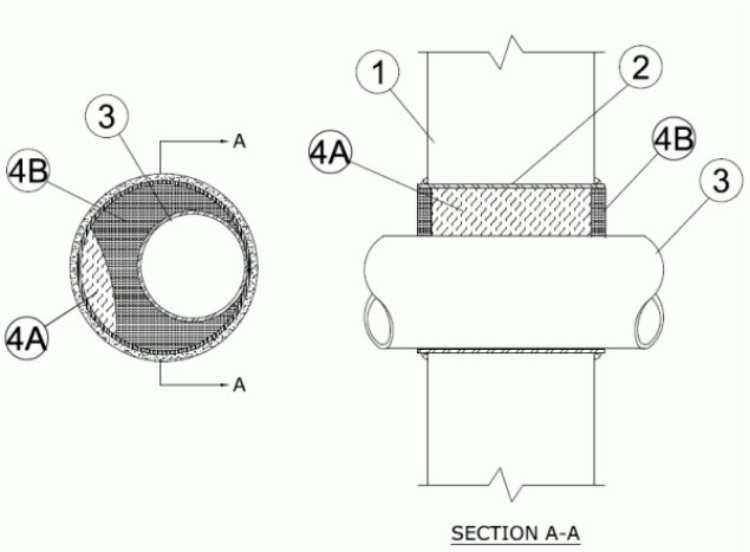
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-J-1320

May 15, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/4 Hr	FT Rating — 1/4 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft (See Item 1)	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft (See Item 1)	FTH Rating — 1/4 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft (See Item 1)
	L Rating At 400 F — Less Than 1 CFM/sq ft (See Item 1)



1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 10-3/4 in. (273 mm). **The L Ratings apply when the opening diam does not exceed 3 in. (76 mm).**

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

2. **Metallic Sleeve —** Max 10-3/4 in. (273 mm) diam cylindrical sleeve fabricated from min 28 gauge galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1/2 in. (13 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutout in the wall.

3. **Through Penetrant —** One metallic pipe, tubing or conduit to be installed concentrically or eccentrically within opening. The annular space between the through penetrant and the sleeve shall be min 0 in. (point contact) to max 1-3/4 in. (44 mm). Through penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:

A. **Steel Pipe —** Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.

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

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

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

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

A. **Fill, Void or Cavity Materials* — Foam —** Fill material applied to fill the annulus between penetrant and sleeve. Foam to be recessed from both ends of sleeve to accommodate the required thickness of caulk fill material (Item 4B).
ABESCO FIRE LTD — FP 200 FR Expanding Foam

B. **Fill, Void or Cavity Material* — Caulk —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with both ends of sleeve. Min 3/8 in. (9.5 mm) diam bead of fill material applied at the steel sleeve/wall interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2013-05-15

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-J-3151

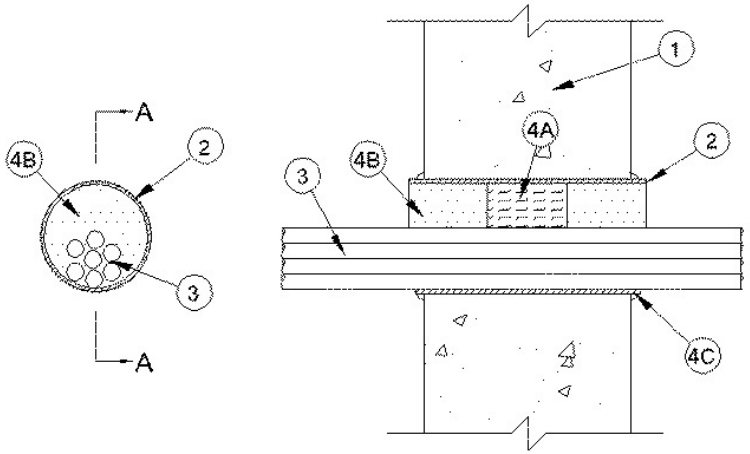
June 22, 2009

F Rating — 2 Hr

T Rating — 0 Hr

L Rating At Ambient — Less than 1 CFM

L Rating At 400 F — Less than 1 CFM



Section A-A

1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL **Classified Concrete Blocks***. Max diam of opening is 3 in. (76 mm).
   See **Concrete Blocks** (CAZT) category in the UL Fire Resistance Directory for names of manufacturers.

2. **Metallic Sleeve —** Cylindrical sleeve fabricated from min 0.034 in. (0.86 mm) thick galv sheet steel and having a min 1/2 in. (13 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1 in. (25 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular openings in the concrete.

3. **Cables —** Aggregate cross-sectional area of cables in opening to be max 34 percent of the aggregate cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1-1/4 in. (32 mm). Cables to be rigidly supported on both surfaces of the wall assembly. Any combination of the following types and sizes of cables may be used:

   A. Max 4 pair No. 24 AWG copper conductor Cat5e or Cat 6 telephone cable with polyvinyl chloride (PVC) insulation and jacket materials.

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

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

   D. Max 100 pair No. 24 AWG copper conductor telephone cable with PVC insulation and jacket materials.

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

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

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

A. **Packing Material —** Min 2 in. (52 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Foam —** Min 2-1/4 in. (57 mm) thickness of fill material applied within the annulus on both sides of mineral wool insulation. Foam installed flush with both ends of steel sleeve.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

C. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. (6 mm) diam bead of fill material applied at the steel sleeve/concrete interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2009-06-22

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

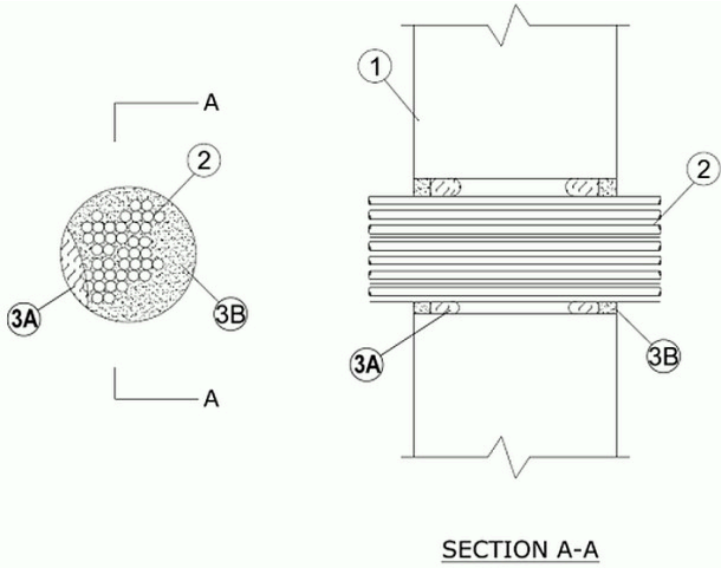
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-J-3201

May 15, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/2 Hr	FT Rating — 1/2 Hr
	FH Rating — 2 Hr
	FTH Rating — 1/2 Hr



1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 4 in. (102 mm).
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Cables —** Cables installed in a tight bundle having a max bundle diam of 2-1/2 in. (64 mm). The aggregate cross-sectional area of cables in opening to be max 40 percent of the cross-sectional area of the opening. The annular space between cable bundle and the periphery of the opening shall be min 1/2 in. (13 mm) to max 1 in. (25 mm). Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of cables may be used:

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

B. Max 4 pair No. 24 AWG Cat5e or No. 22 AWG Cat 3 and Cat 6e copper conductor telephone cable with PVC insulation and jacket materials.

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

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

E. Max 60 pair No. 22 AWG copper conductor telephone cable with PVC insulation and jacket.

F. Max 30 pair No. 24 copper conductor shielded switchboard cable with PVC insulation and jacket materials.

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

H. Max 1/C, No. 14 AWG (or smaller) Type MTW or THHN or THWN or gas & oil res II 600V (UL) or AWM VW-1 power cable.

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

A. **Fill, Void or Cavity Materials* — Foam —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus between concrete and cable bundle and recessed from both surfaces of wall to accommodate the required thickness of caulk fill material (Item 3B).
ABESCO FIRE LTD — FP 200 FR Expanding Foam

A1. **Packing Material —** As an alternate to Item 3A, min 5/8 in. (16 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. **Fill, Void or Cavity Material* — Caulk —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2013-05-15

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

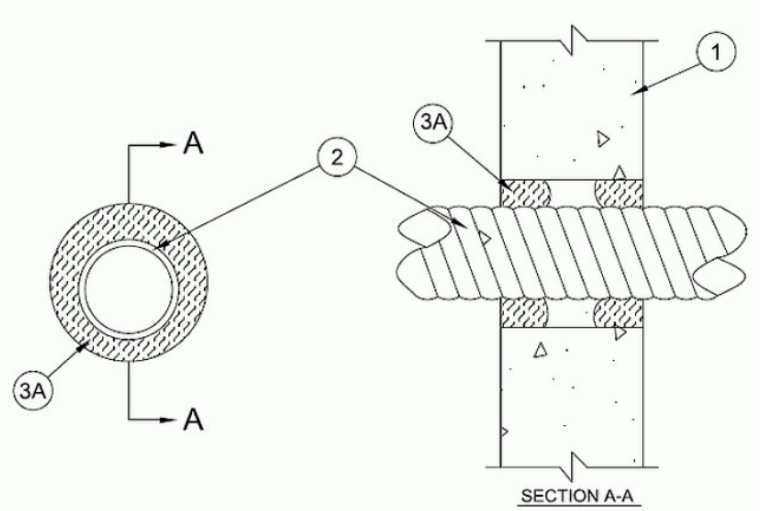
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-J-3202

May 15, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 1/2 and 2 Hr (See Items 2 and 2A)	FT Ratings — 1/2 and 2 Hr (See Items 2 and 2A)
	FH Rating — 2 Hr
	FTH Ratings — 1/2 and 2 Hr (See Items 2 and 2A)



1. **Wall Assembly —** Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 2 in. (51 mm) when penetrating Item 2 is used. Max diam of opening is 1/2 in. (13 mm) when penetrating Item 2A is used.

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

2. **Through Penetrating Product* —** Nom 1 in. (25 mm) diam (or smaller) unjacketed steel Metal Clad (Type MC) cable with max four 750 kcmil (or smaller) copper Type THHN or XHHW conductors. Max one metal clad cable to be installed concentrically within the circular opening in wall. The annular space between the cable and the periphery of the opening shall be 1/2 in. (13 mm). Penetrant to be rigidly supported on both sides of wall assembly. **The T, FT and FTH Ratings of the firestop system are 1/2 hr when this penetrant is used.**

See **Through-Penetrating Products** (XHLY) category in the Fire Resistance Directory for names of manufacturers.

2A. **Cables —** As an alternate to Item 2, one cable bundle consisting of max three of the following types and sizes of cables may be used. Cables are tightly bundled and installed within the opening. The annular space between cable bundle and the periphery of the opening shall be min 0 in. (point contact) to max 1/4 in. (6 mm). Cables to be rigidly supported on both sides of wall assembly. **The T, FT and FTH Ratings of the firestop system are 2 hr when this penetrant is used.**

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

B. Max 4 pair No. 24 AWG Cat 5e or No. 23 AWG Cat 6e copper conductor telephone cable with PVC insulation and jacket materials.

3. **Firestop System —** The firestop system shall consist of the following:
   A. **Fill, Void or Cavity Materials* — Foam —** Min 1-1/4 in. (32 mm) thickness of fill material applied within the annulus between penetrant and concrete, on both sides of wall.
   ABESCO FIRE LTD — FP 200 FR Expanding Foam

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

Last Updated on 2013-05-15

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-1390

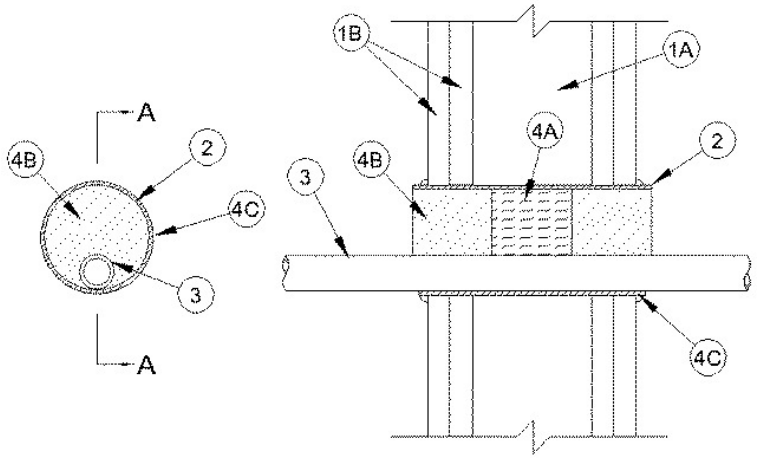
June 22, 2009

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr

L Rating At Ambient — Less than 1 CFM

L Rating At 400 F — Less than 1 CFM



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall consist of 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 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. Max diam of opening shall be 3 in. (76 mm).

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. **Metallic Sleeve —** Cylindrical sleeve fabricated from nom 0.034 in. (0.86 mm) thick (or lighter) galv sheet steel and having a min 1/2 in. (13 mm) lap along the longitudinal seam. In 2 hr wall assemblies, length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1 in. (25 mm) beyond each surface of the wall. In 1 hr wall assemblies, length of steel sleeve to be equal to the thickness of the wall plus a nom 2 in. (51 mm), such that when installed, the ends of the steel sleeve extend a nom 1 in. (22 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers.

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

A. **Steel Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.

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

D **Copper Pipe —** Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.

E **Conduit —** Nom 3/4 in. (19 mm) diam (or smaller) electric metallic tubing (EMT) or rigid steel conduit.

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

A. **Packing Material —** Min 2-1/8 in. (54 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Foam —** Min 2-1/4 in. (57 mm) thickness of fill material applied within the annulus on both sides of mineral wool insulation. Foam installed flush with both ends of steel sleeve.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

C. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. (6 mm) diam bead of fill material applied at the steel sleeve/gypsum board interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2009-06-22

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

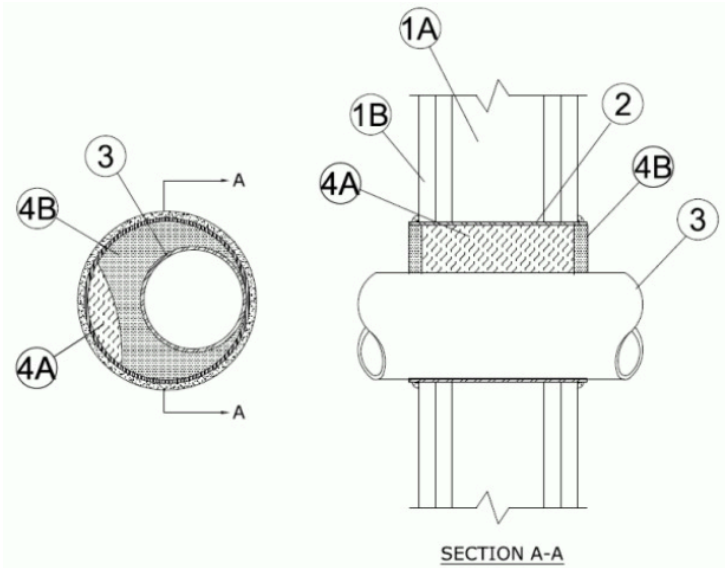
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-1476

September 26, 2017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 and 1/4 Hr (See Item 1)	FT Rating — 0 and 1/4 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft (See Item 1B)	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft (See Item 1B)	FTH Rating — 0 and 1/4 Hr (See Item 1)
	L Rating At Ambient — Less Than 1 CFM/sq ft (See Item 1B)
	L Rating At 400 F — Less Than 1 CFM/sq ft (See Item 1B)



SECTION A-A

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 U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall 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 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. The gypsum board type, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 10-3/4 in. (273 mm). The L Ratings apply when the opening diam does not exceed 3 in. (76 mm).

The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed. The hourly T, FT and FTH Ratings of the firestop system are 0 and 1/4 for 1 and 2 hr rated assemblies, respectively.

2. **Metallic Sleeve —** Max 10-3/4 in. (273 mm) diam cylindrical sleeve fabricated from min 28 gauge galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1/2 in. (13 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers.

3. **Through Penetrant —** One metallic pipe, tubing or conduit to be installed concentrically or eccentrically within opening. The annular space between the through penetrant and the sleeve shall be min 0 in. (point contact) to max 1-3/4 in. (44 mm). Through penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:

A. **Steel Pipe —** Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.

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

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

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

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

A. **Fill, Void or Cavity Materials* — Foam —** Fill material applied to fill the annulus between penetrant and sleeve. Foam to be recessed from both ends of sleeve to accommodate the required thickness of caulk fill material (Item 4B).
ABESCO FIRE LTD — FP 200 FR Expanding Foam

B. **Fill, Void or Cavity Material* — Caulk —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with both ends of sleeve. Min 3/8 in. (9.5 mm) diam bead of fill material applied at the steel sleeve/gypsum board interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2017-09-26

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

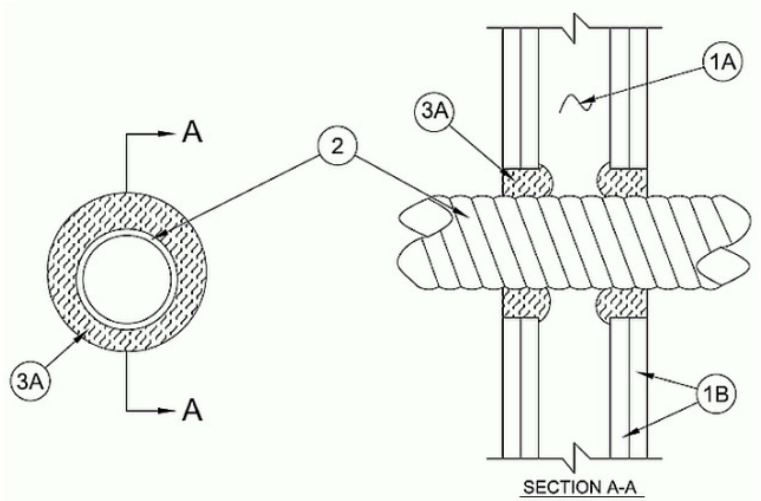
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-1482

June 19, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 Hr
	FTH Rating — 0 Hr



SECTION A-A

1. **Wall Assembly —** The 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall 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 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. The gypsum board type, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 2 in. (51 mm).

2. **Through Penetrant —** One penetrant to be installed concentrically within the firestop system. The annular space between the penetrant and the periphery of the opening shall be 1/2 in. (13 mm). Penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of penetrants may be used:

A. **Conduit —** Nom 1 in. (25 mm) diam (or smaller) steel electric metallic tubing (EMT) or rigid steel conduit.

B. **Through-Penetrating Product* —** Nom 1/2 in. (13 mm) diam (or smaller) steel **Flexible Metal Conduit**+ installed in accordance with the National Electrical Code (NFPA No. 70).
INTERNATIONAL METAL HOSE CO

C. **Through Penetrating Product* —** Nom 1 in. (25 mm) diam (or smaller) steel Flexible Metal Conduit+ installed in accordance with the National Electrical Code (NFPA No. 70).
AFC CABLE SYSTEMS INC

3. **Firestop System —** The firestop system shall consist of the following:
A. **Fill, Void or Cavity Materials* - Foam —** Min 1-1/4 in. (32 mm) thickness of fill material applied to completely fill the annulus between gypsum board and penetrant on both sides of wall. During installation, foam will mushroom into wall cavity.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

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

+Bearing the UL Listing Mark

Last Updated on 2013-06-19

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-3291

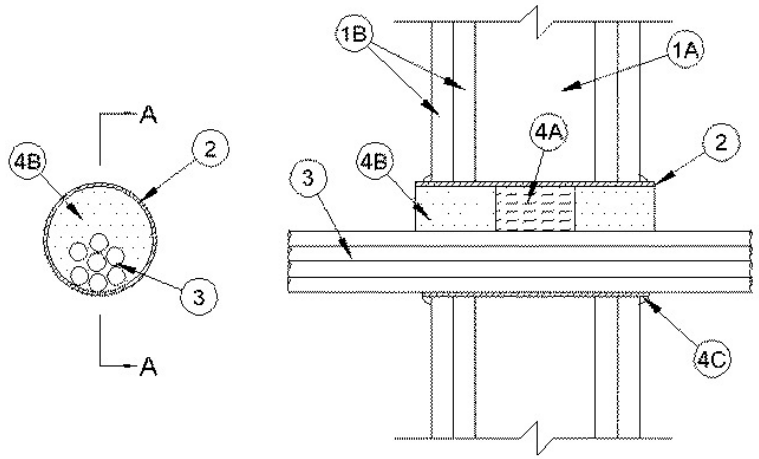
June 22, 2009

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr

L Rating At Ambient — Less than 1 CFM

L Rating At 400 F — Less than 1 CFM



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall consist of 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 3-5/8 in. (92 mm) wide and spaced 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. Max diam of opening shall be 3 in. (76 mm).
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. **Metallic Sleeve —** Cylindrical sleeve fabricated from min 0.034 in. (0.86 mm) thick galv sheet steel and having a min 1/2 in. (13 mm) lap along the longitudinal seam. In 2 hr wall assemblies, length of steel sleeve to be equal to the thickness of the wall plus a min 1/2 in. (13 mm), such that when installed, the ends of the steel sleeve extend a min 1/4 in. (6 mm) to a max 1 in. (25 mm) beyond each surface of the wall. In 1 hr wall assemblies, length of steel sleeve to be equal to the thickness of the wall plus a nom 2 in. (51 mm), such that when installed, the ends of the steel sleeve extend a nom 1 in. (25 mm) beyond each surface of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers.

3. **Cables —** Aggregate cross-sectional area of cables in opening to be max 34 percent of the aggregate cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1-1/4 in. (32 mm). Cables to be rigidly supported on both surfaces of the wall assembly. Any combination of the following types and sizes of cables may be used:

A. Max 4 pair No. 24 AWG copper conductor Cat5e or Cat 6 telephone cable with polyvinyl chloride (PVC) insulation and jacket materials.

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

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

D. Max 100 pair No. 24 AWG copper conductor telephone cable with PVC insulation and jacket materials.

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

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

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

A. **Packing Material —** Min 2-1/8 in. (54 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Foam —** Min 2-1/4 in. (57 mm) thickness of fill material applied within the annulus on both sides of mineral wool insulation. Foam installed flush with both ends of steel sleeve.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

C. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. (6 mm) diam bead of fill material applied at the steel sleeve/gypsum board interface on both sides of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2009-06-22

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

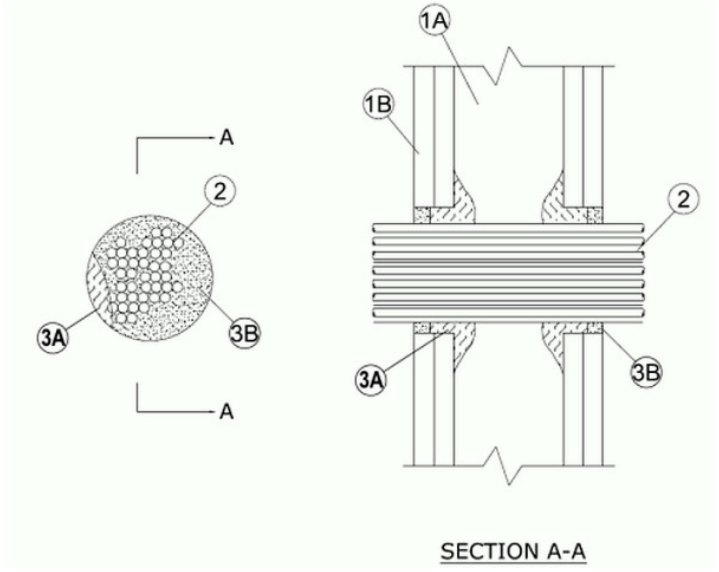
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-3397

May 15, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/2 Hr	FT Rating — 1/2 Hr
	FH Rating — 2 Hr
	FTH Rating — 1/2 Hr



1. **Wall Assembly —** The 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall 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 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. The gypsum board type, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 4 in. (102 mm).

2. **Cables —** Cables installed in a tight bundle having a max bundle diam of 2-1/2 in. (64 mm). The aggregate cross-sectional area of cables in opening to be max 40 percent of the cross-sectional area of the opening. The annular space between cable bundle and the periphery of the opening shall be min 1/2 in. (13 mm) to max 1 in. (25 mm). Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of cables may be used:

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

B. Max 4 pair No. 24 AWG Cat5e or No. 22 AWG Cat 3 and Cat 6e copper conductor telephone cable with PVC insulation and jacket materials.

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

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

E. Max 60 pair No. 22 AWG copper conductor telephone cable with PVC insulation and jacket.

F. Max 30 pair No. 24 copper conductor shielded switchboard cable with PVC insulation and jacket materials.

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

H. Max 1/C, No. 14 AWG (or smaller) Type MTW or THHN or THWN or gas & oil res II 600V (UL) or AWM VW-1 power cable.

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

A. **Fill, Void or Cavity Materials* — Foam —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus between gypsum board and cable bundle and recessed from both surfaces of wall to accommodate the required thickness of caulk fill material (Item 3B). During installation, foam will mushroom into wall cavity.
ABESCO FIRE LTD — FP 200 FR Expanding Foam

A1. **Packing Material —** As an alternate to Item 3A, min 5/8 in. (16 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. **Fill, Void or Cavity Material* — Caulk —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall.
ABESCO FIRE LTD — CP 310 FR Acrylic Intumescent Caulk

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

Last Updated on 2013-05-15

XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

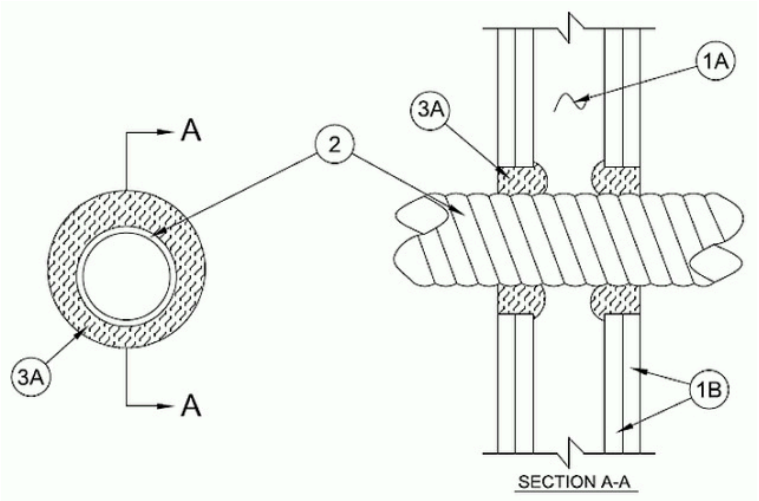
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-3398

May 15, 2013

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 1/2 and 2 Hr (See Items 2 and 2A)	FT Ratings — 1/2 and 2 Hr (See Items 2 and 2A)
	FH Rating — 2 Hr
	FTH Ratings — 1/2 and 2 Hr (See Items 2 and 2A)



1. **Wall Assembly —** The 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing shall 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 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick gypsum board. The gypsum board type, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 2 in. (51 mm) when penetrating Item 2 is used. Max diam of opening is 1/2 in. (13 mm) when penetrating Item 2A is used.

2. **Through Penetrating Product* —** Nom 1 in. (25 mm) diam (or smaller) unjacketed steel Metal Clad (Type MC) cable with max four 750 kcmil (or smaller) copper Type THHN or XHHW conductors. Max one metal clad cable to be installed concentrically within the circular opening in gypsum board layers. The annular space between the cable and the periphery of the opening shall be 1/2 in. (13 mm). Penetrant to be rigidly supported on both sides of wall assembly. **The T, FT and FTH Ratings of the firestop system are 1/2 hr when this penetrant is used.**

See **Through-Penetrating Products** (XHLY) category in the Fire Resistance Directory for names of manufacturers.

2A. **Cables —** As an alternate to Item 2, one cable bundle consisting of max three of the following types and sizes of cables may be used . Cables are tightly bundled and installed within the opening. The annular space between cable bundle and the periphery of the opening shall be min 0 in. (point contact) to max 1/4 in. (6 mm). Cables to be rigidly supported on both sides of wall assembly. **The T, FT and FTH Ratings of the firestop system are 2 hr when this penetrant is used.**

A. Max 2/C No. 18 AWG copper conductor thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. B. Max 4 pair No. 24 AWG Cat 5e or No. 23 AWG Cat 6e copper conductor telephone cable with PVC insulation and jacket materials.

3. **Firestop System —** The firestop system shall consist of the following:
   A. **Fill, Void or Cavity Materials* - Foam —** Min 1-1/4 in. (32 mm) thickness of fill material applied to completely fill the annulus between gypsum board and penetrant on both sides of wall. During installation, foam will mushroom into wall cavity.
   ABESCO FIRE LTD — FP 200 FR Expanding Foam

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

Last Updated on 2013-05-15