

System No. F-C-1106 XHEZ.F-C-1106 Through-penetration Firestop Systems

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XHEZ - Through-penetration Firestop Systems

XHEZ7 - Through-penetration Firestop Systems Certified for Canada

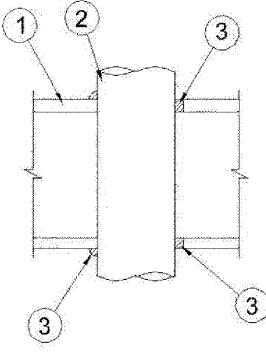
See General Information for Through-penetration Firestop Systems

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

System No. F-C-1106

January 25, 2015

Table with 2 columns: ANSI/UL 1478 (ASTM E814) and CAN/ULC S118. Rows include F Rating (1 hr), T Rating (1/4 hr), and FTI Rating (1 hr).



1. Floor-Ceiling Assembly - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual 300 Series Floor-Ceiling Design in the UL Fire Resistance Directory.

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 shall be 5 in. (127 mm).

B. Wood Joist\* - Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members\* with bridging as required and with ends fastened.

C. Gypsum Board\* - Min 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Max. diam. of opening shall be 3 in. (76 mm).

1.1. Chase Wall - (Optional, Not Shown) - The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud system chase wall. Depth of chase wall shall be min. 1/2 in. (12.7 mm) greater than diameter of opening cut in sole and top plate to accommodate the through penetrant (Item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual 300 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Stud - Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm), or 2 by 8 in. (51 by 203 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. Sole Plate - Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or 2 by 8 in. (51 by 203 mm) lumber plates or double nom 2 by 4 in. (51 by 102 mm) lumber plates tightly butted together. Circular opening to be centered in sole plate. Sole plate to be max 1 in. (25 mm) wider than diam. of opening. Max. diam. of opening in sole plate is 5 in. (140 mm).

C. Top Plate - The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or 2 by 8 in. (51 by 203 mm) lumber plates or double nom 2 by 4 in. (51 by 102 mm) lumber plates tightly butted together. Circular opening to be centered in top plate to be max 1 in. (25 mm) wider than diam. of opening. Max. diam. of opening in top plate is 5-1/2 in. (140 mm).

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

2. Through Penetrants - One metallic pipe, conduit or tubing, to be installed concentrically or eccentrically within the opening. The diam. of the opening shall be 1/8 in. larger than the nom diam. of the penetrant. The annular space between the pipe, conduit or tubing and the periphery of opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm). Pipe, conduit or tubing may be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Copper Tube - Nom 4 in. (102 mm) diam. (or smaller) Type A (or heavier) copper tube.

B. Copper Pipe - Nom 4 in. (102 mm) diam. (or smaller) Regular (or heavier) copper pipe.

C. Steel Pipe - Nom 4 in. (102 mm) diam. (or smaller) Schedule 10 (or heavier) steel pipe.

D. Iron Pipe - Nom 4 in. (102 mm) diam. (or smaller) cast or ductile iron pipe.

E. Conduit - Nom 4 in. (102 mm) diam. (or smaller) steel electrical metallic tubing (EMT) or conduit.

3. Fill, Void or Cavity Material\* - Sealant - Min 3/8 in. (9.5 mm) thick, 1/2 in. (12.7 mm) wide, non-shrink, non-sagging, fire-resistant sealant applied to the top surface of the floor or sole plate and min 3/8 in. (9.5 mm) thick, 1/2 in. (12.7 mm) wide, non-sagging, fire-resistant sealant applied to the bottom surface of gypsum board or lower top plate. A min 1/2 in. (12.7 mm) diameter hole shall be drilled in the sole plate or sole plate truss and the penetrant/gypsum board or top plate sealed.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - PS-ONE Sealant or PS-ONE MAX Intumescent Sealant

\* 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 2015-01-15

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System No. F-C-2128 XHEZ.F-C-2128 Through-penetration Firestop Systems

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XHEZ - Through-penetration Firestop Systems

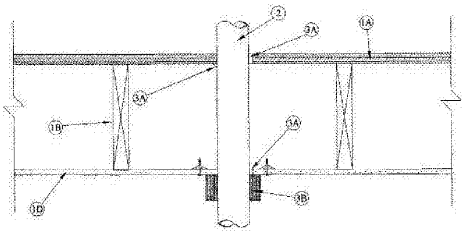
See General Information for Through-penetration Firestop Systems

System No. F-C-2128

January 20, 2015

F Rating - 1 Hr and 2 Hr

T Rating - 1 Hr and 2 Hr



1. Floor-Ceiling Assembly - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual 300 Series Floor-Ceiling Design in the UL Fire Resistance Directory.

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 3 in. (76 mm).

B. Wood Joist\* - For 1 hr fire-rated floor-ceiling assemblies, nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members\* with bridging as required and with ends fastened. For 2 hr fire-rated floor-ceiling assemblies, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 in. by 3 in. (25 by 76 mm) lumber bridging and with ends fastened.

C. Furring Channels - (Not Shown) - Fastener gal. steel furring installed perpendicular to wood joists (Item B). Lumber or plywood subfloor (Item A) and wood joists (Item B) shall be specified in the individual Floor-Ceiling Design. Max. diam. of opening shall be 2 in. (51 mm).

D. Gypsum Board\* - Nom 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Max. diam. of opening shall be 2 in. (51 mm).

1.1. Chase Wall - (Optional, Not Shown) - The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud system chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual 300 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Stud - Nom 2 by 4 in. (51 by 102 mm) lumber studs.

B. Sole Plate - Nom 2 by 4 in. (51 by 102 mm) lumber studs. Max. diam. of opening is 3 in. (76 mm).

C. Top Plate - The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm) lumber plates. Max. diam. of opening is 3 in. (76 mm).

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

2. Through Penetrants - One nonmetallic pipe or conduit to be installed concentrically or eccentrically within the opening. One metallic pipe or conduit to be installed concentrically or eccentrically within the opening. The diam. of the opening shall be 1/8 in. (point contact) to a max of 7/8 in. (22 mm). Pipe to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

A. Polyvinyl Chloride (PVC) Pipe - Nom 2 in. (51 mm) diam. (or smaller) Schedule 40 cellular or solid core PVC pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

B. Acrylonitrile Butadiene Styrene (ABS) Pipe - Nom 2 in. (51 mm) diam. (or smaller) Schedule 40 cellular or solid core ABS pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

C. Chlorinated Polyethylene (CPVC) Pipe - Nom 2 in. (51 mm) diam. (or smaller) SDR17 CPVC pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

D. Fiberglass Reinforced Plastic (FRP) Pipe - Nom 2 in. (51 mm) diam. (or smaller) FRP pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

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

A. Void or Cavity Material\* - Sealant - Min 3/8 in. (9.5 mm) thickness of fill material applied within the annular space between the pipe or sole plate. Additional fill material to be installed such that a 1/2 in. (12.7 mm) gap is formed around the penetrating item on the underside of the flooring system at point contact. Min 5/8 in. (16 mm) thickness of fill material applied within annular space on underside of floor-ceiling or lower top plate.

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Last Updated on 2015-01-20

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System No. F-C-2160 XHEZ.F-C-2160 Through-penetration Firestop Systems

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XHEZ - Through-penetration Firestop Systems

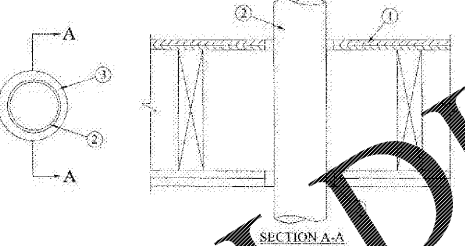
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System No. F-C-2160

January 15, 2015

F Rating - 1 and 2 Hr

T Rating - 1 and 2 Hr



1. Floor-Ceiling Assembly - The 1 and 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual 300 Series Floor-Ceiling Design in the UL Fire Resistance Directory.

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 shall be 3 in. (76 mm).

B. Wood Joist\* - For 1 hr fire-rated floor-ceiling assemblies, nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members\* with bridging as required and with ends fastened. For 2 hr fire-rated floor-ceiling assemblies, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 in. by 3 in. (25 by 76 mm) lumber bridging and with ends fastened.

C. Furring Channels - (Not Shown) - Fastener gal. steel furring installed perpendicular to wood joists (Item B). Lumber or plywood subfloor (Item A) and wood joists (Item B) shall be specified in the individual Floor-Ceiling Design. Max. diam. of opening shall be 2 in. (51 mm).

D. Gypsum Board\* - Nom 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Max. diam. of opening shall be 2 in. (51 mm).

1.1. Chase Wall - (Optional, Not Shown) - The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud system chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual 300 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Stud - Nom 2 by 4 in. (51 by 102 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 nom 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max. diam. of opening shall be 2 in. (51 mm) larger than the nom diam. of through penetrant (Item 2).

C. Top Plate - The double top plate shall consist of two nom 2 by 4 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 shall be 2 in. (51 mm) larger than the nom diam. of through penetrant (Item 2).

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

2. Through Penetrants - One nonmetallic pipe or conduit to be installed concentrically or eccentrically within the opening. One metallic pipe or conduit to be installed concentrically or eccentrically within the opening. The diam. of the opening shall be 1/8 in. (point contact) to a max of 7/8 in. (22 mm). Pipe to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

A. Polyvinyl Chloride (PVC) Pipe - Nom 2 in. (51 mm) diam. (or smaller) Schedule 40 solid or cellular core PVC pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

B. Chlorinated Polyethylene (CPVC) Pipe - Nom 2 in. (51 mm) diam. (or smaller) SDR17.5 CPVC pipe for use in chase (conduit or duct) or rigid (conduit, waste or vent) piping systems.

3. Fill, Void or Cavity Material\* - Sealant - Min 3/8 in. (9.5 mm) thickness of fill material applied within the annular space between the pipe or sole plate and bottom surface of ceiling or lower top plate.

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System No. F-C-2203 XHEZ.F-C-2203 Through-penetration Firestop Systems

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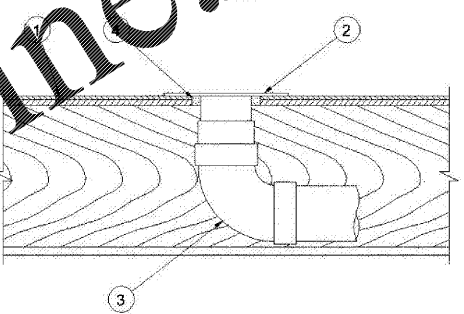
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System No. F-C-2203

January 15, 2015

F Rating

T Rating - 1 Hr



1. Floor-Ceiling Assembly - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual 300 Series Floor-Ceiling Design in the UL Fire Resistance Directory.

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 shall be 5 in. (127 mm).

B. Wood Joist\* - Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members\* with bridging as required and with ends fastened.

C. Gypsum Board\* - Nom 5/8 in. (16 mm) thick, 4 R (1.2 m) wide as specified in the individual Floor-Ceiling Design.

2. Chase Wall - Acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) chase wall sized to accommodate drain pipe. Chase wall installed over drain pipe within floor opening with hinge secured to plywood floor with steel screws. Diam. of circular opening through floor (Item 1) to be max 1/2 in. (12.7 mm) larger than outside diam. of chase wall.

3. Drain Pipe - Nom 4 in. (102 mm) diam. (or smaller) Schedule 40 acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) drain pipe and 90 degree elbow for use in vent (drain, waste or vent) piping systems. Pipe installed concentrically within firestop system.

4. Fill, Void or Cavity Material\* - Sealant - Min 3/8 in. (9.5 mm) thickness of fill material applied within the annular space between the pipe and bottom surface of floor.

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5. Water Closet - (Not Shown) - Floor mounted vitreous china water closet.

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PENETRATION DETAILS P503