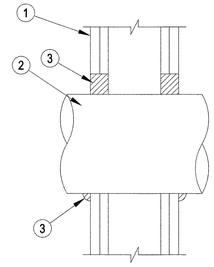
System No. W-L-1297

F Ratings -- 1 and 2 Hr (See Item 1)
T Rating -- 0 Hr
L Rating at Ambient -- Less than 1 CFM/Sq Ft
L Rating at 400° F -- Less than 1 CFM/Sq Ft

WL 1297



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 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 studs 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 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* -- Nom 5/8 in. (16 mm) thick, 4 ft (1.22 m) 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, U400 or V400 Series Design in the Fire Resistance Directory. Max diam of opening is 32 in. (813 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. Through Penetrant -- One metallic pipe, conduit or tubing installed concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tube to be rigidly supported on both sides of wall assembly. The annular space between the pipe, conduit or tube and periphery of the opening shall be min 0 in (0 mm, point contact) to max 2 in. (51 mm) In 2 hr fire rated walls and min 0 in (0 mm, point contact) to max 1 in. (25 mm) in 1 hr fire rated walls. The following types and sizes of metallic pipes, conduit or tube may be used:
   A. Steel Pipe -- Nom 30 in. (762 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe.
   B. Iron Pipe -- Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit -- Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or 6 in. diam steel conduit.
   D. Copper Tube -- Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.
   E. Copper Pipe -- Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material*-Sealant -- Min 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall, for 1 hr and 2 hr fire rated wall assemblies, respectively. A min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/wall interface at the point contact location.
   HILTI CONSTRUCTION CHEMCIALS, DIV OF HILTI INC -- CP606 Flexible Firestop Sealant

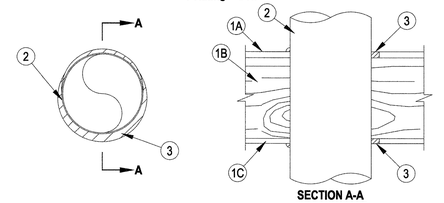
*Bearing the UL Classification Mark

Hilti Firestop Systems

System No. F-C-7025

F Rating -- 1 Hr
T Rating -- 0 Hr

FC 7025



SECTION A-A

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 L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   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 11 in. (279 mm).
   B. Wood Joists* -- 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 firestopped.
   C. Gypsum Board* -- Nom 4 ft (1.22 m) wide by 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 11 in. (279 mm).

1A. 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/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. (13 mm) greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (Item 2). The chase wall shall be 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 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm), 2 by 10 in. (51 by 254 mm) or 2 by 12 in. (51 by 305 mm) lumber studs or double min 2 by 4 in. lumber studs.
   B. Sole Plate -- Nom 2 by 4 in. (51 by102 mm), 2 by 6 in. (51 by152 mm) 2 by 10 in. (51 by 254 mm) or 2 by 12 in. (51 by 305 mm) lumber plates or parallel min 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 11 in. (279 mm).
   C. Top Plate -- The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), two nom 2 by 6 in. (51 by 152 mm), two nom 2 by 10 in. (51 by 254 mm) or two nom 2 by 12 in. (51 by 305 mm) lumber plates or two sets of parallel min 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 11 in. (279 mm).
   D. Gypsum Board* -- Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.
2. Steel Duct -- One steel duct to be installed concentrically or eccentrically within the opening. The annular space between the steel duct and the periphery of opening shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly. The following sizes of steel ducts may be used:
   A. Max 10 in. (254 mm) diam by min 0.019 in. (0.50 mm) thick steel duct.
   B. Max 4 in. (102 mm) diam by min 0.016 in. (0.40 mm) thick steel duct.
3. Fill, Void or Cavity Materials*-Sealant -- Min 3/4 in. (19 mm) thickness of sealant applied within the annulus flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of sealant applied within the annulus flush with the bottom surface of gypsum board or lower top plate. A min 1/2 in. (13 mm) diam bead of sealant to be applied at the duct/subflooring or sole plate interface and the duct/gypsum board or top plate interface.
   HILTI CONSTRUCTION CHEMCIALS, DIV OF HILTI INC -- CP 606 Flexible Firestop Sealant

*Bearing the UL Classification Mark

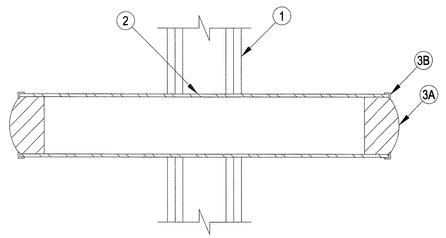
FIRESTOP SYSTEMS

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. August 10, 2005

System No. W-L-0013

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

WL 0013



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 if the individual U300, U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of either wood studs or channel shaped steel studs. Wood studs to consist of 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, fabricated from min 25 MSG galvanized steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, number of layers and sheet orientation shall be as specified in the individual Wall and Partition Design Number. Diam of opening is nom 1-1/2, 2, 3 or 4 in. (38, 51, 76 or 102 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Metallic Sleeve — Nom 1-1/2, 2, 3 or 4 in. (38, 51, 76 or 102 mm) diam steel conduit with threaded ends. Sleeve friction fit into wall and extending min 12 in. (305 mm) beyond wall surfaces. Sleeve rigidly supported on both sides of the wall assembly.

Hilti Firestop Systems

System No. W-L-0013

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

WL 0013

3. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Materials* - Plug — Nom 2, 2.5 or 4 in. (51, 63 or 102 mm) plug sized for the steel sleeve friction fit within the sleeve flush with the end of the sleeve on both sides of the wall assembly.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — CP 658T Firestop Plug or CFS-PL Firestop Plug

Sleeve/Opening Diam	Nom Plug Size, In. (mm)	
in. (mm)	CP 658T	CFS-PL
1-1/2 (38)	2.5 (63) **	2 (51) **
2 (51)	2.5 (63) **	2 (51)
3 (76)	4 (102) **	4 (102) **
4 (102)	4 (102)	4 (102)

** Cut wedge from plug to fit sleeve/opening size. See Hilti Installation Instructions for specific size of wedge cuts required.

   B. Bushing — Nom 4 in. (102 mm) diameter (or smaller) plastic or metal bushing threaded onto conduit to retain plug.
   C. Fill, Void or Cavity Material* — Sealant — (Not Shown) — At point contact, a min 1/2 in. (13 mm) bead of fill material shall be applied at sleeve/wall interface when sleeve extends beyond surface of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 13, 2012

PROFESSIONAL ARCHITECT DANIEL ROACH No. 3526 STATE OF MAINE

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 W lenityarchitecture.com

COLSON AND COLSON GENERAL CONTRACTOR, INC.
2260 McGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

FIRE STOPPING AT PENETRATION

DATE 8/28/2015

REVISED DATE . . . .

SHEET A7.8