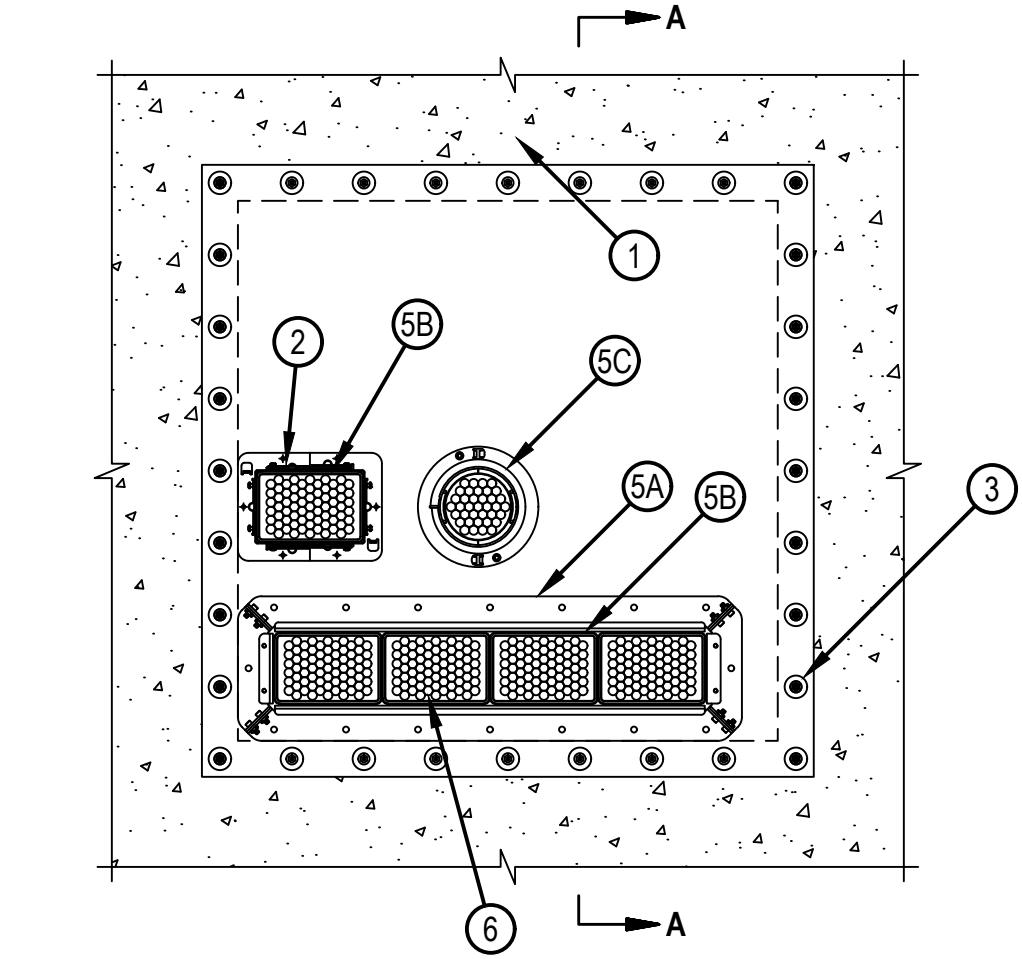
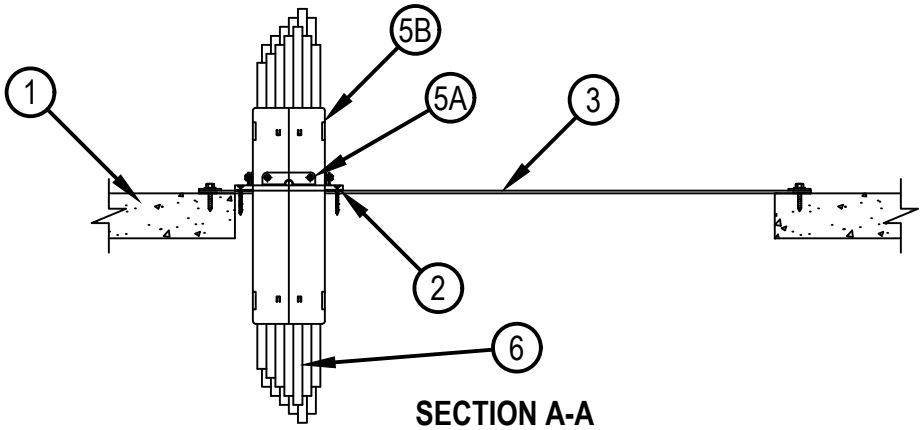
Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. F-A-3088

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

Hilti Firestop Systems

System No. F-A-3088

1. Floor Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Max area of opening 900 sq in. (5806 cm2) with max dimension 30 in. (762 mm).

   1A. Floor Assembly — (Not Shown) — As an alternate to Item 1, fire-rated protected or unprotected concrete and steel floor assembly may be used. Floor assembly to be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. Concrete — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete.

   B. Steel Floor and Form Units — Composite or non-composite max 3 in. (76 mm) deep fluted galv units as specified in the individual Floor-Ceiling design. Max area of opening 900 sq in. (5806 cm2) with max dimension 30 in. (762 mm).

2. Fill, Void or Cavity Materials* — Putty or Sealant — One layer of nom 1 by 1/8 in. (25 by 3 mm) thick putty strips or nom 1/2 in. (13 mm) diam bead of sealant positioned under composite sheet around entire perimeter of through opening and over each seam in the composite sheet.

   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 619T Firestop Putty Roll, FS-ONE MAX Intumescent Firestop Sealant

   2A. Fill, Void or Cavity Materials* — Putty — (Required when Item 4A or 4B is used) For 4A, Two rows of nom 1 by 1/8 in. (25 by 3 mm) thick putty strips positioned side by side under perimeter of Floor Grid (Item 4A) and immediately adjacent to the ganged devices. For Item 4B, one layer of nom 1 by 1/8 in (25 by 3 mm) thick putty strip positioned under perimeter of Modular Sleeve Frame and adjacent to the device.

   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 619T Firestop Putty Roll

3. Fill, Void or Cavity Materials* — Composite Sheet — Rigid aluminum foil-faced intumescent sheet with steel backer. Sheets cut to lap a min of 2 in. (51 mm) onto floor or wall surfaces. Sheet installed on top surface of floor or both surfaces of wall. Sheet to be installed with the steel backer exposed (aluminum foil facing against floor or wall surface) and secured to floor or wall surface with min 3/16 in. (4.8 mm) diam by 1-1/4 in. (32 mm) long steel anchor screws in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers. As an alternative to concrete anchors, when composite sheet overlaps a min of 3 in. (76 mm) onto floor surfaces, nom 1-1/16 in. (27 mm) long Hilti X-GN 27 MX nails in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers. Fasteners to be installed at each corner with max spacing between fasteners not to exceed 4 in. (102 mm). Opening size in composite sheet is dependent upon the size of the device or combination of devices (Items 5A, 5B and 5C). The annular space between the devices (Items 5B or 5C) and the composite sheet is min 0 in. (point contact) to max 1/2 in.(13 mm).

Device	Max Opening Size Per Device
	in. (mm)
CFS-MSL Modular Firestop Sleeves with CFS-MSL FGR Floor Grid(Item 4A)	24-1/4 (616) by 4-1/4 (108)
CFS-MSL L	6-1/4 (159) by 4-1/4 (108)
CFS-MSL M	4-1/4 (108) by 3-1/4 (83)
CFS-MSL 2	3-1/4 (83) by 2-1/4 (57)
CP 653 4”	4-1/2 (114)
CP 653 2”	2-1/2 (64)

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — Hilti CFS-COS Firestop Composite Sheet

4. Steel Cover Strip — (Not Shown) Min 24 ga. by min 2 in. (51 mm) wide stainless steel strip centered over entire length of butt seam or slit in composite sheet and secured to composite sheet with No. 10 by 3/4 in. (19 mm) steel sheet metal screws and min 3/4 in. (19 mm) diam steel washers spaced a max of 6 in.(152 mm) OC alternating on each side of seam or slit.

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5. Firestop System – The firestop system shall consist of one or more of the following:

A. Firestop Device - Floor Grid*– Max one Floor Grid fabricated from four steel rails fastened together to form a rectangle. Putty (Item 2A) to be installed under floor grid around entire perimeter of device(s). Floor grid is secured to composite sheet on top side of floor with No. 10 by 1 in. (25 mm) long steel sheet metal screws with min 3/4 in. (19 mm) diam steel washers at each pre-drilled hole in rail.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-MSL FGR 24x4" FGR Floor Grid

B. Firestop Device* — Firestop devices each consist of a rectangular outer steel sleeve formed with two half housings, connected and secured together with metal tabs and metal hooks, and installed in accordance with accompanying installation instructions. Multiple firestop devices are connected together with ganging clips and bolted to a floor grid (Item 4A) with provided support brackets. Firestop devices to completely fill across the entire width of the floor grid. When single devices are installed, the use of the Modular Sleeve Frames and putty (Item 2A) are secured to composite sheet on top side of floor with min 1 in (25mm) long steel sheet metal screws with min ¾ in (19mm) diam steel washers at each pre-drilled hole in plate. The annular space between the device and the periphery of the opening shall be min 1-7/8 in. (48 mm). Annular space between other devices is min 2 in. (51 mm),

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-MSL L 6 in. x 4 in., CFS-MSL M 3 in. x 4 in., CFS-MSL S 3 in. x 2 in. Modular Sleeve CFS-MSL P S 3" x 2", CFS-MSL P M 3" x 4", CFS-MSL P L 6" x 4

C. Firestop Device — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings, twisted inner fabric smoke seal, flanges and gasketing material. Device slid into opening within the composite sheet such that the top of the device projects 4 in. (102 mm) from top of composite sheet. Firestop device installed such that both gaskets provided by manufacturer are located between device flange and composite sheet. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in.(13 mm). Device provided with flange(s) that are spun clockwise onto the device threads, over gasketing material and tightly butted to the top side of composite sheet. Device flange secured to composite sheet on top side of floor with two No. 10 by 3/4 in. long sheet metal screws through pre-made holes in device flange. The inner fabric seal shall be twisted to completely close off any unused opening within the device. Annular space between other devices is min 2 in. (51 mm)

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 653 BA 2" Speed Sleeve, CP 653 2" BA ILS, CP 653 BA 4" Speed Sleeve, CP 653 4" BA ILS CP, and CFS-SL GA L ILS Speed Sleeve

6. Cables — Within the loading area for each firestop device (Item 4), the cables may represent min 0 to max 100 percent visual fill. Cables to be rigidly supported on both sides of floor assembly. Any combination of the following types of cables may be used:

A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.

B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.

C. Max 4/0 AWG Type RHH ground cable.

D. Max 4 pr No. 22 AWG Cat 6 computer cables.

E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.

F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).

G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.

H. Through-Penetrating Product* — Two copper conductors No. 18 AWG (or smaller) Power or Non Power Limited Fire Alarm Cable with or without a jacket under a metal armor.

AFC CABLE SYSTEMS INC

I. Max 1/4 in. (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC jacket.

J. Through Penetrating Product* — Any Cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.

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

K. Max 3/C No 12 AWG MC Cable.

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