

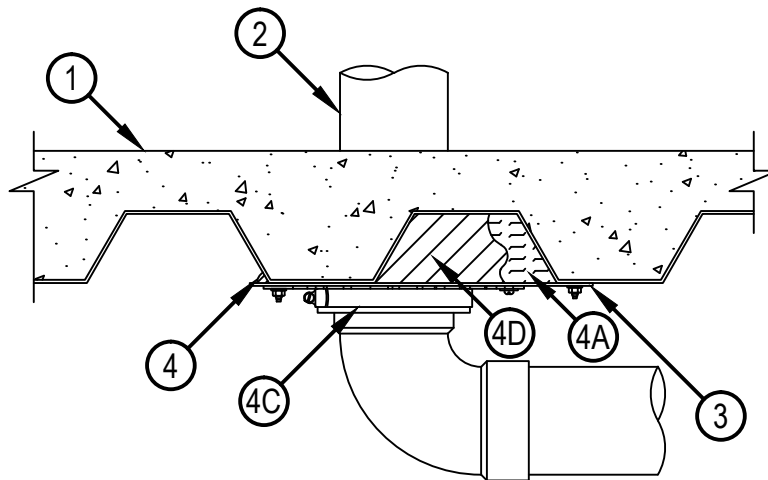
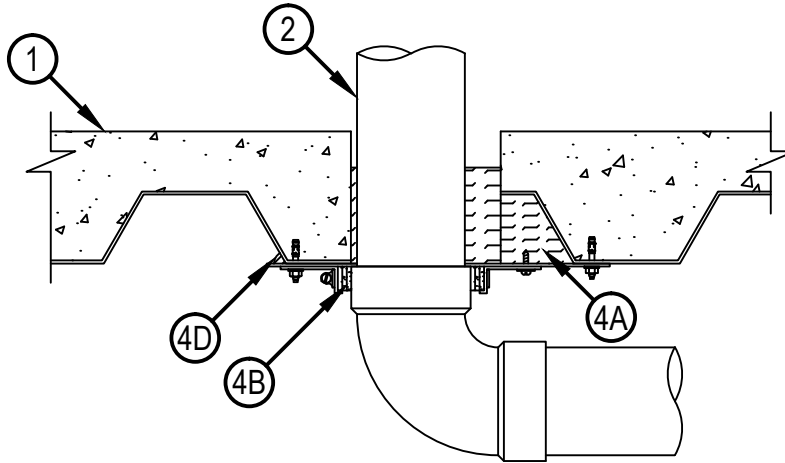
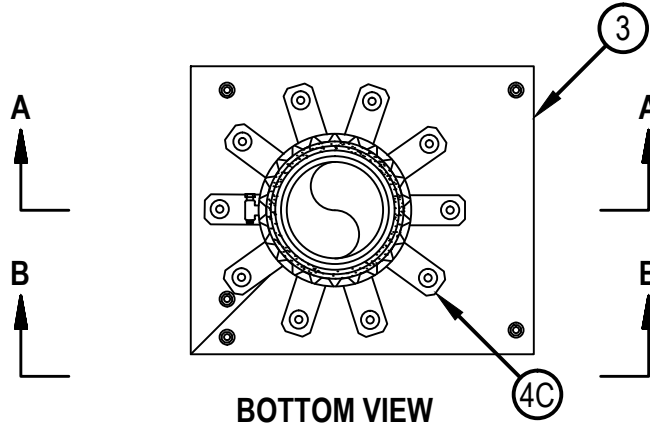


Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-A-2143

F Rating - 2 Hr
T Rating - 3/4 Hr

FA 2143



Hilti Firestop Systems

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1. Floor Assembly — The fire-rated unprotected concrete and steel floor assembly shall be constructed of the materials and in the manner specified in the individual D900 Series designs in the UL Fire Resistance Directory and as summarized below:
 - A. Normal Weight Concrete — Min 2-1/2 in. (64 mm) thickness of normal weight concrete with carbonate siliceous aggregate, 145 to 155 pcf (2300 to 2500 kg/m³) unit weight, min 3000 psi (211 kg/m²) compressive strength.
 - B. Welded Wire Fabric — 6x6-W1.4xW1.4.
 - C. Steel Floor and Form Units* — Composite or noncomposite 3 in. (76 mm) deep fluted galv units as specified in the individual Floor-Ceiling design. Max diam of opening core-drilled through floor assembly is 6 in. (152 mm).
2. Through Penetrants — One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and periphery of opening shall be min 0 in. (0 mm, point contact) to max 1-1/2 in. (38 mm). On bottom surface of floor, drain piping cemented to through penetrant and installed such that top of coupling butted against bottom of floor assembly. Pipe to be rigidly supported on both sides of floor assembly. The following types and sizes of nonmetallic pipes may be used:
 - A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
 - B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
3. Metal Plate Enclosure — Min 18 gauge steel. Width of plate to be min 12 in. (305 mm). Length of plate (transverse to steel floor unit direction) to extend to steel floor unit valley beyond each side of core-drilled hole with a min lap of 1-1/2 in. (38 mm) on the floor unit valley at each end. Both ends of plate perpendicular to floor unit valleys to be cut to permit the ends to be bent upwards 90° to follow the contour of the floor unit, enclosing the packing material (Item 4) within the areas of the flutes. The contoured plate ends shall be such that the gap between the floor unit and the plate ends is no greater than 1/4 in. (6 mm). As an alternate to bending up ends of plate, min 1/4 in. (6 mm) thickness of fill material (Item 5) shall be applied to completely cover the surface of the mineral wool packing material within the flutes of the steel floor units, between the two ends of the metal enclosure plate and the steel floor units. Circular cutout in plate to tightly follow circumference of nonmetallic pipe with side edges of plate at least 3 in. (76 mm) from circular cutout on all sides. Slit made in plate to permit installation around the nonmetallic pipe to be located at end of plate beneath floor unit valley nearest to the circular cutout. Plate secured to valleys of floor unit using min 1/4 in. (6 mm) diam by 1-3/4 in. (45 mm) long steel expansion bolts, or equivalent, in conjunction with min 3/4 in. (19 mm) diam steel washers or min 0.145 in. (4 mm) diam by 1-1/4 in. (32 mm) long powder actuated fasteners utilizing a 1-7/16 in. (36 mm) diam by 1/16 in. (2 mm) thick steel washer. As alternates to the anchors specified above, Hilti 1/4 in. (6 mm) diam by 1-1/4 in. (32 mm) long KWIK-CON II+ concrete screw anchor, Hilti 1/4 in. (6 mm) diam by 1-3/4 in. (44 mm) long KWIK-BOLT 3 steel expansion anchor or Hilti X-DNI 27 P8 S15 powder actuated floor pin with integral nom 9/16 in. (15 mm) diam washer may be used. Fasteners to be located approx 1 in. (25 mm) from edges of plate at each corner, at each plate/valley intersection and at both sides of slit made to permit installation around nonmetallic pipe. Spacing of fasteners no to exceed 10 in. (254 mm) OC.
4. Firestop System — The firestop system shall consist of the following:
 - A. Packing Material — Mineral wool batt insulation having min density of 4 pcf (64 kg/m³), firmly packed into flutes of steel floor units above metal plate enclosure (Item 3) to completely fill cavities. When ends of metal plate enclosure perpendicular to floor unit valleys are not bent up to enclose packing material within flutes (see Item 3), packing material to be recessed from ends of plate to accommodate the required thickness of the fill material. Additional min 4 in. (102 mm) thickness of mineral wool insulation firmly packed within the annular space between penetrant and the periphery of the opening, flush with bottom surface of floor.
 - B. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. thick by min 1 in. (25 mm) wide intumescent wrap strip continuously wrapped around the through penetrant with end held in place with integrated fastening tape. Wrap strip butted tightly against bottom surface of metal enclosure. Size of wrap strip and number of layers for a given size penetrant are shown in table below:



Product Designation	Nom Pipe Size in. (mm)	Number of Layers	Nom. Wrap Strip Width in. (mm)
CP648-E W25/1"	3 (76)	2	1 (25)
CP648-E W45/1-3/4"	3 (76)	1	1-3/4 (44)
CP648-E W25/1"	4 (102)	3	1 (25)
CP648-E W45/1-3/4"	4 (102)	2	1-3/4 (44)

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — HILTI CP 64-E W25/1" or CP648-E W45/1-3/4" Firestop Wrap Strip

C. Steel Collar — Steel collar fabricated from coils of precut min 0.016 in. (0.4 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be nom 1 in. (25 mm) (for 1 in. (25 mm) wide wrap strip) or 1-3/4 in. (44 mm) (for 1-3/4 in. (44 mm) wide wrap strip) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to bottom surface of floor. In addition, collars contain retainer tabs 1/2 in. (13 mm) wide by 3/4 in. (19 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel band at collar mid-height. The retainer tabs are folded 90° towards the pipe to retain the wrap strip. Where the anchor tabs are beneath the valley of the steel floor unit, the anchor tabs are to be secured with 1/4 in. (6 mm) diam by min 1-1/2 in. (38 mm) long steel expansion bolts, or equivalent, in conjunction with steel nuts and min 3/4 in. (19 mm) diam steel washers with one anchor bolt in each anchor tab. Where the anchor tabs are beneath the crest of the steel deck, every other anchor tab secured to surface with No. 10 by min 1/2 in. (13 mm) long self-drilling, self-tapping steel screws.

D. Fill, Void or Cavity Material* — Sealant — Nom 1/2 in. (13 mm) bead of fill material applied around the perimeter of the metal plate enclosure at the interface of the enclosure and steel deck. When ends of metal plate enclosure (Item 3) are not bent up to enclose packing material within flutes, min 1/4 in. (6 mm) thickness of fill material shall be applied to completely cover the surface of the mineral wool packing material within the flutes of the steel floor units, between the two ends of the metal enclosure plate and the steel floor units.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-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.

