



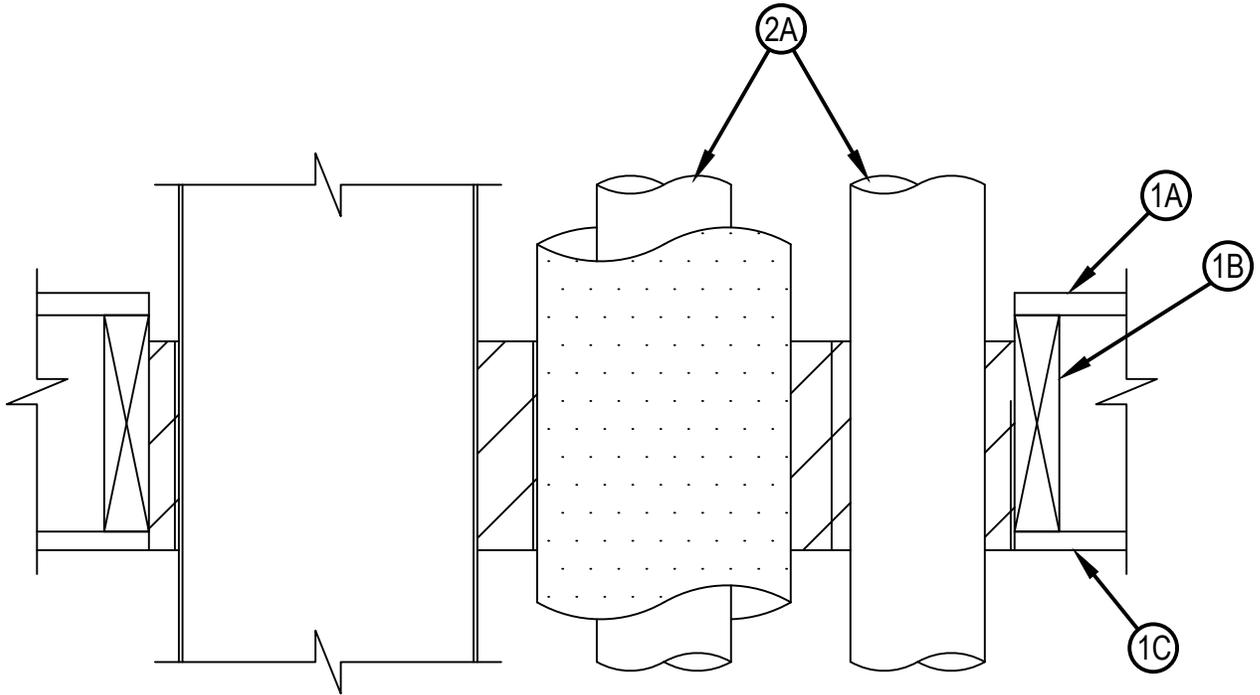
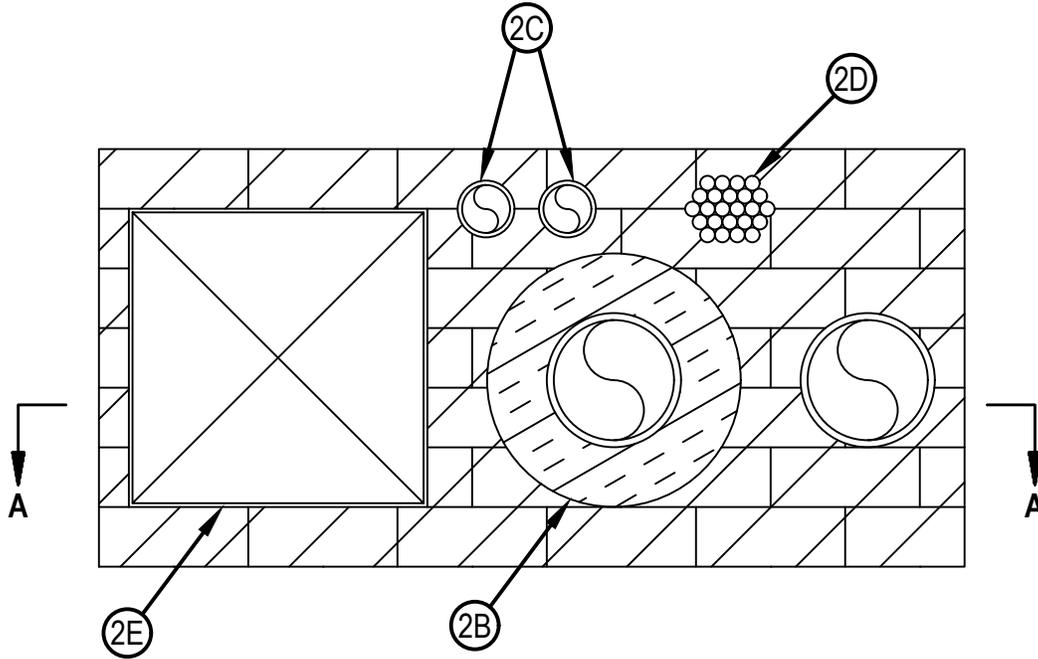
Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-8059

F-RATING - 1-HR

T-RATING - 0-HR

FC 8059



SECTION A-A



Hilti Firestop Systems

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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 area of rectangular opening shall be 464 in.2 (2994 cm2) with max dimension of 32 in. (813 mm). Periphery of opening to be framed with nom 10 in. (254 mm) lumber.
 - 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 (1.2 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 area of rectangular opening shall be 464 in.2 (2994 cm2) with max dimension of 32 in. (813 mm).
2. Through-Penetrants — One or more metallic or nonmetallic pipes, conduits, tubing, cables or metallic duct, in any combination, to be installed either concentrically or eccentrically within the opening. Separation between penetrants to be min 1 in. (25 mm) to max 8 in. (203 mm). Annular space between the penetrants and the periphery of the opening shall be min 1 in. (25 mm) to max 8 in. (203 mm). Penetrants to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of through penetrants may be used:
 - A. Metallic Penetrants — The following types and sizes of metallic pipes, conduits or tubes may be used.
 - A1. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
 - A2. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
 - A3. Copper Pipe or Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tube or Regular (or heavier) copper pipe.
 - A4. Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit or steel electrical metallic tubing (EMT).
 - A5. Flexible Metal Conduit+ — Nom 2 in. (51 mm) diam (or smaller) aluminum or steel flexible conduit.See Flexible Metal Conduit (DXUZ) category in the Electrical Construction Materials Directory for names of manufacturers.
 - B. Pipe Covering* — Any of the following types of pipe coverings may be used in conjunction with one or more max 4 in. (102 mm) diam metallic pipes in Item 2A.
 - B1. Pipe Covering* — Maximum 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units, jacketed on the outside with an all service jacket. joints sealed with metal fasteners or factory-applied SSL tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.See Pipe and Equipment Covering-Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
 - B2. Pipe Covering Materials* — Max 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (56 kg/m3) (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 18 AWG steel wire spaced max 12 in. (305 mm) OC.
INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc
 - B3. Sheathing Material* — Used in conjunction with Item B2. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.See Sheathing Materials (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
- C. Nonmetallic Penetrants — The following types and sizes of non-metallic pipes, conduits or tubes may be used.
 - C1. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.



- C2. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
- C3. Rigid Nonmetallic Conduit — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit.
- C4. Electrical Nonmetallic Tubing — Nom 2 in. (51 mm) diam (or smaller) corrugated-wall electrical nonmetallic tubing constructed of polyvinyl chloride (formed of PVC or high-density polyethylene, HDPE).
- D. Cables — Max 3 in. (76 mm) diameter cable bundle. Cables to be rigidly supported on both sides of floor assembly. Any combination of the following types and sizes of copper conductors may be used:
 - A. RG 59 coaxial cable with single copper conductor, cellular polyethylene cellular foam insulation and polyvinyl chloride (PVC) jacket.
 - B. Max 8/C No. 22 AWG telephone cable with polyvinyl chloride (PVC) jacketing.
 - C. Max 2/C No. 12 AWG cable with polyvinyl chloride (PVC) insulation and jacketing.
 - D. Max 3/C with ground No. 2/0 AWG aluminum or copper Type SER cable with polyvinyl chloride (PVC) insulation.
 - E. Max 3/C with ground No. 2/0 AWG Type NM cable with polyvinyl chloride (PVC) insulation.
 - F. Max 3/C No. 12 AWG MC (BX) cable with polyvinyl chloride (PVC) insulation.
 - G. Max 1 in. (25 mm) diam metal clad TEK cable with PVC jacket.
 - H. Max 4/C with ground No. 300 kcmil (or smaller) aluminum SER cable with PVC insulation and jacket.
- I. 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 or names of manufacturers.
- E. Steel Duct — One of the following types of steel duct:
 - E1. Steel Duct — Square or rectangular duct formed from No. 24 gauge (or heavier) galvanized steel. Max cross-sectional area of duct to be 144 in.2 (929 cm2) with a maximum dimension of 12 in. (305 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly.
 - E2. Steel Duct — Nom 10 in. (305 mm) diam round steel duct formed from No. 28 (or heavier) galvanized steel. Steel duct to be rigidly supported on both sides of floor-ceiling assembly.
- 3. Fill, Void or Cavity Material* — Fire blocks installed with long dimension passed through the opening and flush with bottom of ceiling. Fire blocks firmly packed to fill entire area of opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-BL Firestop Block
- 4. Fill, Void or Cavity Material* - Putty or Sealant — (Not Shown, Optional) — Firestop putty or sealant applied to voids between fire blocks and penetrating items, or opening. Putty or sealant may be applied from the top or bottom of assembly.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant or CP618 Firestop Putty Stick
Note: CP 618 is not suitable for use with CPVC (Item 2C2).

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