

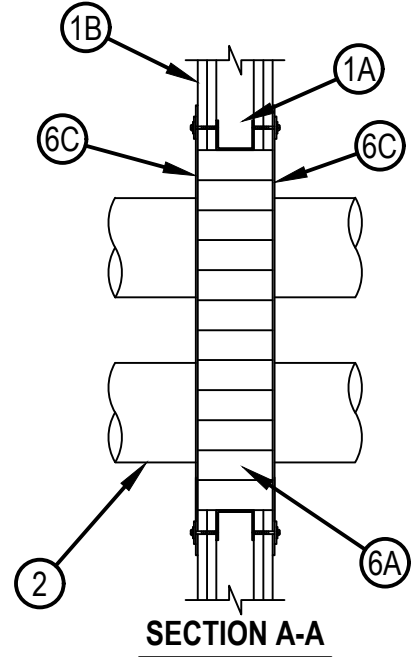
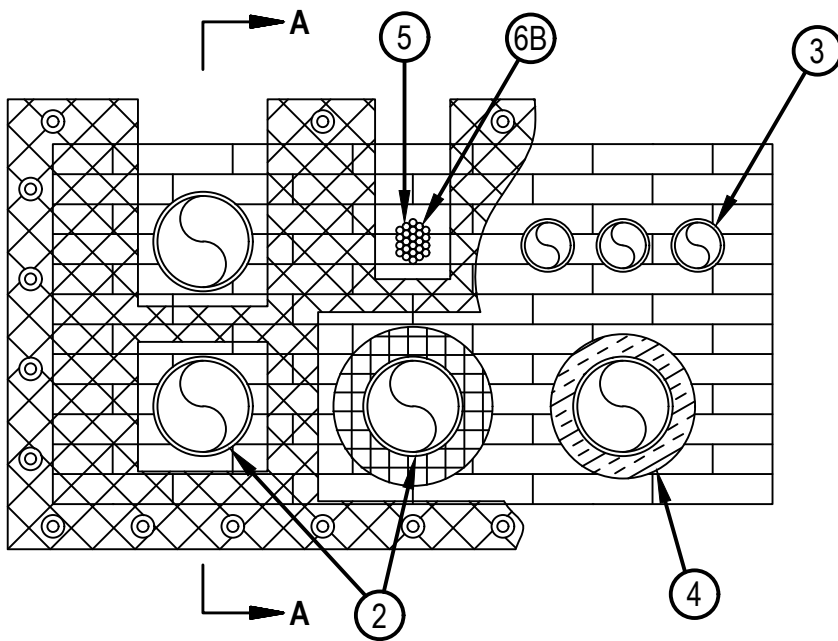


Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-8095

WL 8095

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 — 5 CFM/sq ft (See Item 6B)	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — 2 CFM/sq ft (See Item 6B)	FTH Rating — 0 Hr
	L Rating At Ambient — 5 CFM/sq ft (See Item 6B)
	L Rating At 400 F — 2 CFM/sq ft (See Item 6B)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

- Wall Assembly — The 1 or 2 hr fire rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
 - Studs — Steel studs to be min 2-1/2 in. (64 mm) wide and spaced 24 in. (610 mm) OC. Additional studs installed to completely frame the opening.
 - Gypsum Board* — Thickness, type, number of layers, orientation and fasteners shall be as specified in the individual Wall and Partition Design. Max area of opening is 1152 in² (7432 cm²) with a max dim of 48 in. (1219 mm).

The F and FH Ratings of the firestop system are equal to the rating of the wall assembly in which it is installed.



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2. **Metallic Penetrants** — One or more metal pipes, conduits or tubing may be installed within the through opening. The space between pipes, conduits or tubing shall be min 1 in. (25 mm) to max 26 in. (660 mm). The space between pipes, conduits or tubing and periphery of opening shall be min 0 in. (point contact) to max 26 in. (660 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
- A. Steel Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
 - B. Iron Pipe — Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
 - C. Conduit — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit, nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing (EMT) or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
 - D. Copper Pipe or Tube — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.
 - E. Aluminum Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) aluminum pipe for use in closed (process or supply) systems.
 - F. Aluminum Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid aluminum conduit for use in closed (process or supply) systems.
 - G. Aluminum Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 10 (or heavier) aluminum pipe for use in closed (process or supply) systems or vented (drain, waste or vent) systems.
 - H. Aluminum Conduit — Nom 2 in. (51 mm) diam (or smaller) or rigid aluminum conduit.
3. **Nonmetallic Penetrants** — One or more non-metallic penetrants may be installed within the through opening. Penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of non-metallic penetrants may be used:
- A. Polyvinyl Chloride (CPVC) Pipe — Max 2 or 4 in. (51 or 102 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). For penetrants larger than 2 in. items must be installed with Item 6D or 6E and 6F.
 - B. Rigid Nonmetallic Conduit (RNC)+ — Nom 2 or 4 in. (51 or 102 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). For penetrants larger than 2 in. items must be installed with Items 6D or 6E and 6F.
 - C. Optical Fiber/Communication Cable Raceways+ — Nom 2 in. (51 mm) diam (or smaller) optical fiber raceway, formed from polyvinyl chloride (PVC). Raceway to be installed in accordance with the National Electrical Code (NFPA No. 70). The annular space between the raceway and the periphery of the opening shall be minimum 2 in. (51 mm) to max 26 in. (660 mm). The minimum space between adjacent penetrants shall be 3-1/2 in. (89 mm) to max 26 in. (660 mm).
See Optical Fiber/Communication Cable Raceways (QAZM) category in the Electrical Construction Materials Directory for names of manufacturers.
 - D. Fire Retardant Polypropylene (FRPP) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) piping systems. The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Must be installed with items 6d or 6E and 6F.
 - E. Polyvinyl Chloride (PVC) Pipe — Max 4 in. (102 mm) diam (or smaller) pipe for use in closed (process or supply). The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Must be installed with item 6D or 6E and 6F.
 - F. 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. The space between pipes or conduits shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). The space between pipes or conduits and periphery of opening shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Must be installed with items 6D or 6E and 6F.



4. Pipe Insulation — (Optional) - Pipe insulation may be installed on one or more of the metallic pipes or tubes (Items 2A, 2B and 2D). When pipe insulation is used, min space between insulated metallic penetrant and bare metallic pipes, conduits and tubing shall be min 1-1/2 in. (38 mm) and min space to periphery of opening shall be 1 in. (25 mm). The following types of pipe insulations may be used:
- A. Pipe and Equipment Covering Materials* — Max 1-1/2 in. (38 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. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap 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 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.
 - B. Pipe and Equipment Covering Materials* — Max 1-1/2 or 2 in. (38 or 51 mm) thick hollow cylindrical calcium silicate, min 10 or 14 pcf (160 or 224 kg/m³) respectively, units sized to the outside diam of the pipe or tube. Pipe insulation secured with stainless steel bands or with min No. 18 SWG stainless steel wire spaced max 6 in. (152 mm) from each face of wall and spaced max 12 in. (305 mm) OC.
 - C. Tube Insulation-Plastics+++ — Max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. This pipe insulation may be installed on metallic pipes or tubes (Items 2A, 2B and 2D) not exceeding nom 2 in. (51 mm) diam. See Plastics+++ (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. Cables (Optional) — Max eight 3 in. (76 mm) diam (or smaller) tight bundles of cables installed within the opening and rigidly supported on both surfaces of wall. The space between the cables and periphery of the opening shall be min 1-3/16 in. (30 mm) to 26 in. (660 mm). The space between cables bundles and/or other penetrants shall be min 1-1/2 in. (38 mm) to max 26 in. (660 mm). Any combination of the following types and sizes of cables may be used:
- A. 1/C 750 kcmil (or smaller) power cable with EPR polyvinyl chloride (PVC) insulation and jacket.
 - B. 300 pair - No. 24 AWG telephone cable with PVC insulation and jacket.
 - C. 24 fiber optic cable with PVC outer and subunit jacket.
 - D. 3/C No. 12 AWG copper conductor Metal Clad+ cable with PVC insulation.
 - E. 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
 - F. Type R GU/59 coaxial cable with PVC outer jacket.
 - G. 4 pair 22 AWG Cat 5 or Cat 6 data cable.
6. Firestop System — The firestop system shall consist of the following:
- A. Fill, Void or Cavity Material*-Fire Blocks — For walls incorporating max 3-5/8 in. (92 mm) steel studs, fire block installed with 5 in. (127 mm) dimension projecting through and centered in opening. For walls constructed of larger steel studs, fire block installed with 8 in. (203 mm) dimension passing through and centered in opening. Blocks to be firmly packed to fill opening and they may or may not be cut flush with both surfaces of wall. When multiple layers of gypsum board are used, blocks may be recessed max 1/2 in. (13 mm) from surface of wall. When annular space exceeds 12 in. and item 6C is not used, the orientation of the firestop block shall be with the 8 in. (203 mm) or 5 in (127 mm) dimension extending in the direction of the max annular space, depending on the depth of fire block required through the opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-BL Firestop Block
 - B. Fill, Void or Cavity Material* — Fill material to be forced into interstices of cables, and in any voids/openings between blocks, around penetrants, and between blocks and periphery of opening to the maximum extent possible on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant, CP618 Firestop Putty Stick, CP 660 Firestop Foam or CP 620 Fire Foam. Note: CP 618, CP 620, and CP 660 not suitable for use with CPVC (Item 3A).
(Note: L Ratings apply only when FS-ONE MAX Intumescent Sealant is used.)



- C. Wire Mesh — When the annular space exceeds 22-3/4 in. (577 mm) between penetrants and/or to the periphery of the opening, max 2 by 2 in. (51 by 51 mm) wire fencing shall be used to keep the blocks in place. The wire fencing shall be fabricated from min No. 16 SWG (0.060 in. or 1.5 mm) galv steel wire. The wire is cut to fit within max 2 in. (51 mm) of the penetrating item with a min 3 in. (76 mm) lap beyond the periphery of the opening. Wire fencing secured to both surfaces of the wall assembly by means of 1/4 in. (6 mm) diam steel hollow wall anchors and 1/4 in. (6 mm) by 1-1/2 in. (38 mm) diam fender washers spaced max 8 in. (203 mm) OC, or attached to steel studs with steel screws and 1-7/16 in. (36 mm) diam steel washers spaced max 6 in. (152 mm) OC. The joints within the wire mesh shall overlap a min of 2 in. (51 mm) and be secured together by means of No. 16 AWG steel wire spaced 8 in. (203 mm) OC.
- C1. Wire Mesh — (Not Shown, Alternate to Item 6C) - When the annular space exceeds 22-3/4 in. (577 mm) between penetrants and/or to the periphery of the opening, max 1 in. (25 mm) hexagonal wire fencing shall be used to keep the blocks in place. The wire fencing shall be fabricated No 20 SWG (0.036 in. or 0.9 mm) or heavier galv steel wire. The wire is cut to fit within max 2 in. (51 mm) of the penetrating item with a min 3 in. (76 mm) lap beyond the periphery of the opening. Wire fencing secured to both surfaces of the wall assembly by means of 1/4 in. (6 mm) diam steel hollow wall anchors and 1/4 in. (6 mm) by 1-1/2 in. (38 mm) diam fender washers spaced max 8 in. (203 mm) OC, or attached to steel studs with steel screws and 1-7/16 in. (36 mm) diam steel washers spaced max 6 in. (152 mm) OC. The joints within the wire mesh shall overlap a min of 2 in. (51 mm) and be secured together by means of No. 16 AWG steel wire spaced 8 in. (203 mm) OC.
- D. Firestop Device* - Firestop Collar — (Not Shown) - Firestop collar sized to diam of penetrant shall be wrapped around the outer circumference of the pipe and installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured on both sides of the wall using the anchor hooks provided with the collar. The collars are to be secured together through the opening with 1/4 in. (6 mm) diam threaded steel rod and washers and bolts.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643N
- E. Fill, Void or Cavity Material* — Wrap Strip — (Not Shown) - Nom 3/16 in. (4.8 mm) thick by 1-3/4 in. (45 mm) wide intumescent wrap strip. Two layers of wrap strip are continuously wrapped around the pipe and held in place with tape. The wrap strip is to be installed flush with both ends of steel sleeve.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — Hilti CP 648E/1-3/4 Wrap Strip
- F. Steel Sleeve — (Not Shown) - Cylindrical sleeve fabricated from min 30 ga 0.016 in. (0.41 mm) thick galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Sleeve to extend 2 in. beyond each surface of wall. The sleeve shall be compressed around the pipe (Item 3) and wrap strip (Item 6E) and secured together with 2 No 8 sheet metal screws on each end of sleeve.

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

+ Bearing the UL Listing Mark

+++ Bearing the UL Recognized Component Mark