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Underwriters Laboratories, Inc.
to CAN/ULC-S115

System No. C-AJ-8248

F Rating - 2 Hr

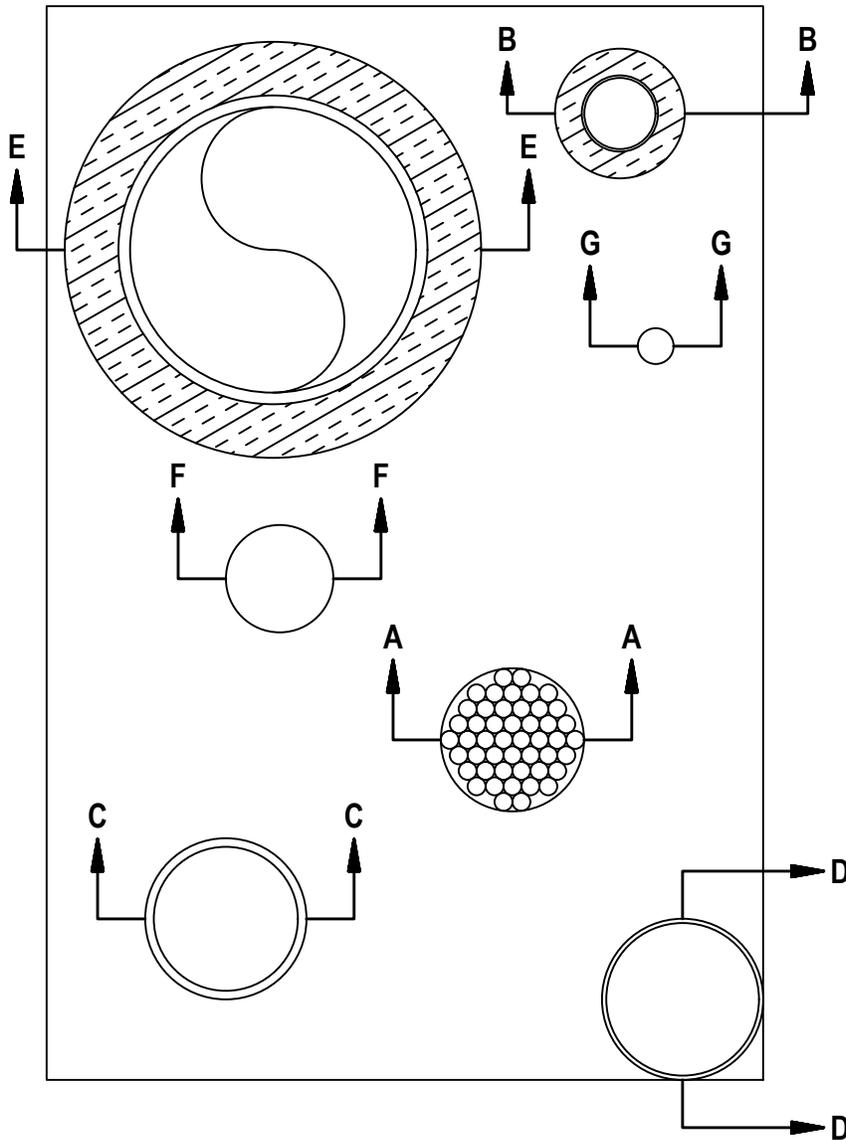
FT Rating - 0, 1/2 and 2 Hr (See Item 2)

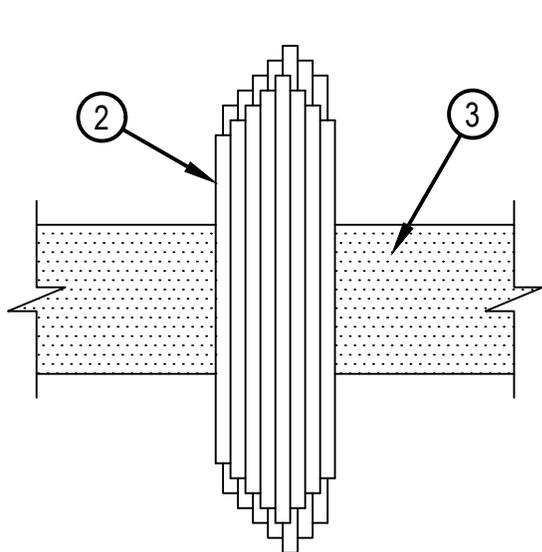
FH Rating - 0 Hr

FTH Rating - 0 Hr

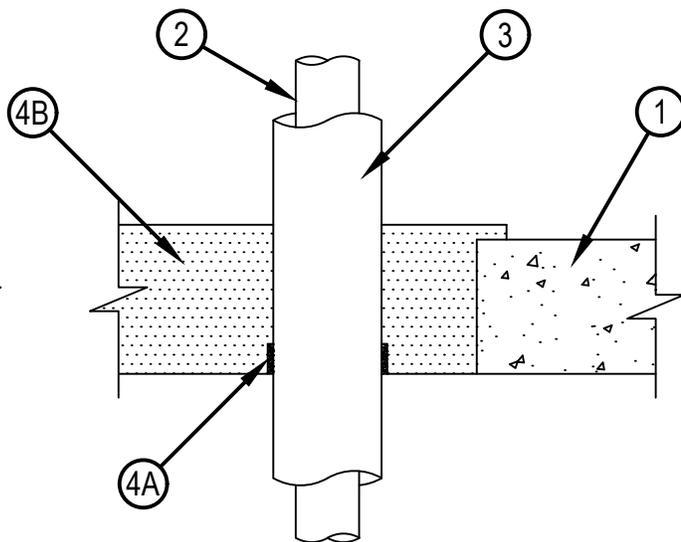


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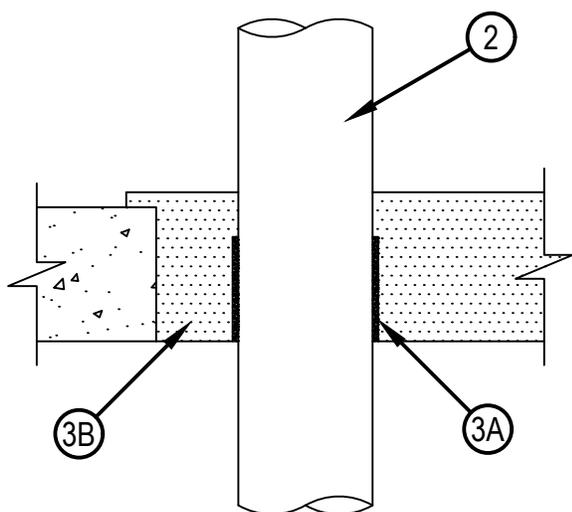




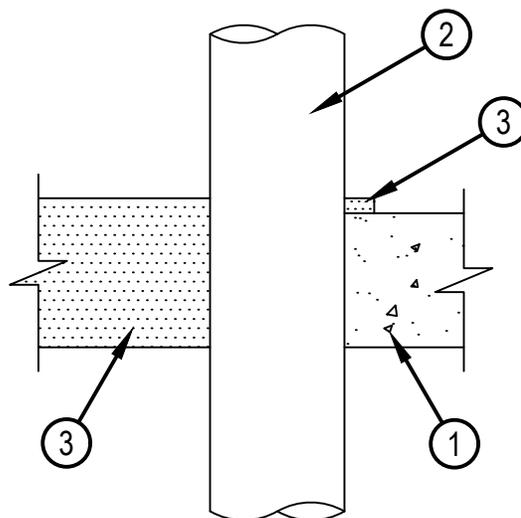
SECTION A-A
FIRESTOP CONFIGURATION A



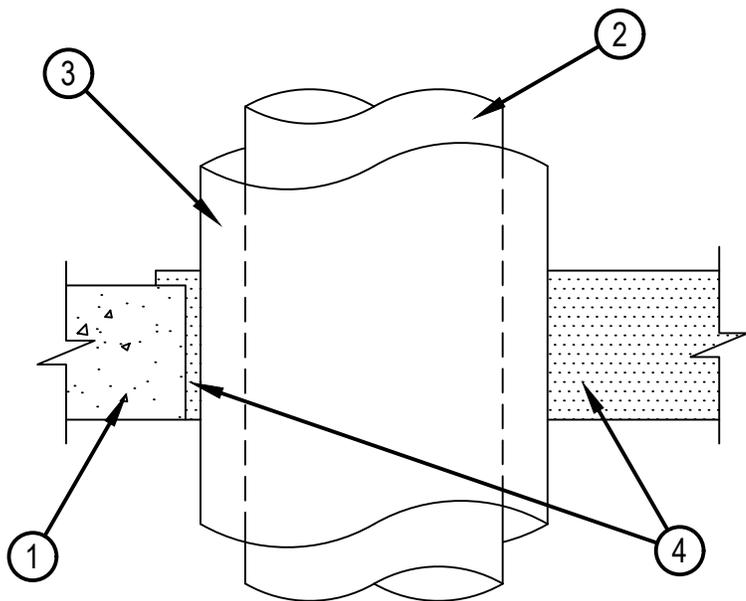
SECTION B-B
FIRESTOP CONFIGURATION B



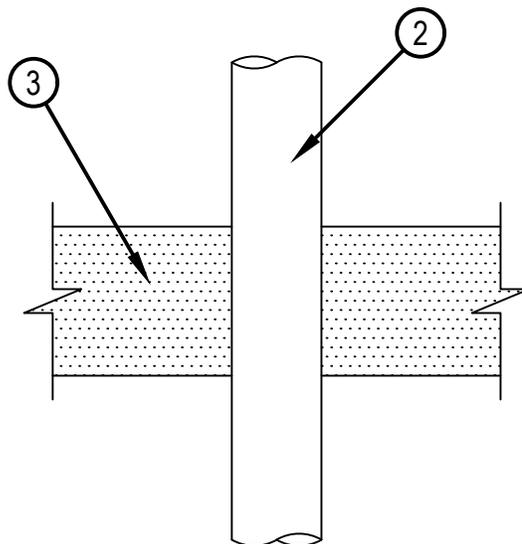
SECTION C-C
FIRESTOP CONFIGURATION C



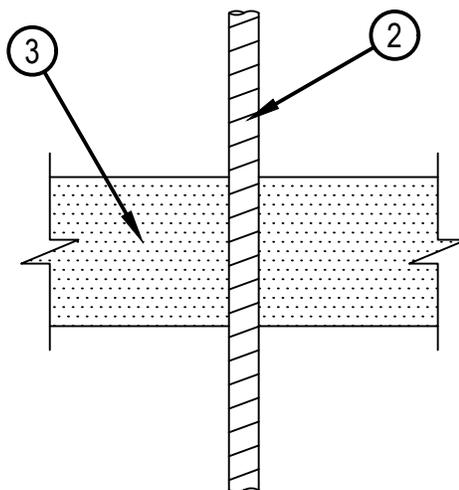
SECTION D-D
FIRESTOP CONFIGURATION D



SECTION E-E
FIRESTOP CONFIGURATION E



SECTION F-F
FIRESTOP CONFIGURATION F



SECTION G-G
FIRESTOP CONFIGURATION G

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1. Floor or Wall Assembly — Min 114 mm (4-1/2 in.) thick reinforced lightweight or normal weight (1600-2400 kg/m³ or 100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max area of 3871 cm² (600 in²) with max dimension of 762 mm (30 in.). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — A max of seven firestop configurations may be installed within the opening. The space between firestop configurations shall be as specified in the individual configurations. Unless otherwise indicated, the space between firestop configurations and periphery of opening shall be min 13 mm (1/2 in.) to max 140 mm (5-1/2 in.). Pipe, conduit, tubing or cables to be rigidly supported on both sides of floor or wall assembly. The T Rating of the system is dependent on the firestop configurations, as shown in the table below. Any combination of the following firestop configurations detailed herein may be used:

Firestop Configuration	T Rating Hr
A	1/2
B	1/2
C	0
D	0
E	2
F	1/2
G	0

Firestop Configuration A

2. Cables — Max 102 mm (4 in.) diam of tightly bundled cables. The min annular space between adjacent penetrants shall be 102 mm (4 in.). Cable bundle may be any combination of the following types and sizes of cables:
 - A. Max 300 pair No. 24 AWG copper telephone cables with polyvinyl chloride (PVC) insulation and jacket materials.
 - B. Max 500 kcmil single conductor copper power cable with PVC jacket material.
 - C. Max 7/C No. 12 AWG cable with polyvinyl PVC insulation and jacket materials.
 - D. Multiple fiber optical communication cables with PVC jacket material and having a max outside diameter of 3/8 in.
 - E. Max 3/C No. 12 AWG steel clad cables with PVC insulation materials.
 - F. Max 3/C No. 10 AWG cables with ground with PVC insulation and jacket materials.
3. Fill, Void or Cavity Materials* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 660 Firestop Foam

Firestop Configuration B

2. Copper Tube or Pipe — Nom 51 mm (2 in.) diam (or smaller) Type L copper tube or nom 51 mm (2 in) diam (or smaller) Regular (or heavier) copper pipe. Min space between adjacent penetrants shall be 76 mm (3 in.).
3. Tube Insulation-Plastics+ — Nom 19 mm (3/4 in.) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The min space between adjacent penetrants shall be 76 mm (3 in.). 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.
4. Firestop System — The firestop system shall consist of the following:
 - A. Fill, Void or Cavity Material* — Wrap Strip — Min 25 mm (1 in.) wide wrap strip applied in a single wrap installed flush with bottom surface of floor or extending 1/2 in. beyond both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 648E Wrap Strip
 - B. Fill, Void or Cavity Materials* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 1/2 in. on all sides of the opening.
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Firestop Configuration C

2. Polyvinyl Chloride (PVC) Pipe — Nom 102 mm (4 in.) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for used in closed (process or supply) or vented (drain, waste or vent) piping systems. The min space between adjacent penetrants shall be 114 mm (4-1/2 in.).
3. Firestop System — The firestop system shall consist of the following:
 - A. Fill, Void or Cavity Material* — Wrap Strip — Two stacks of min 44 mm (1-3/4 in.) wide wrap strips, each applied in a single wrap and tightly butted, installed flush with bottom surface of floor or both surfaces of wall or extending 13 mm (1/2 in.) beyond both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 648E Wrap Strip
 - B. Fill, Void or Cavity Materials* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus flush with bottom surface and extending 13 mm (1/2 in.) above the top surface of the floor or extending 13 mm (1/2 in.) beyond both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 660 Firestop Foam

Firestop Configuration D

2. Through Penetrant — One metallic pipe, conduit or tube to be installed either concentrically or eccentrically within the firestop system. The min annular space between the pipe, conduit or tube and periphery of opening shall be 0 mm (point contact). The min space between adjacent penetrants shall be 102 mm (4 in.). Pipe, conduit or tube to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubes may be used:
 - A. Nom 102 mm (4 in.) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - B. Nom 102 mm (4 in.) diam (or smaller) cast or ductile iron pipe.
 - C. Nom 102 mm (4 in.) diam (or smaller) rigid steel conduit.
 - D. Nom 102 mm (4 in.) diam (or smaller) steel electrical metallic conduit.
 - E. Nom 102 mm (4 in.) diam (or smaller) Type L (or heavier) copper tubing.
 - F. Nom 102 mm (4 in.) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
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Firestop Configuration E

2. Steel Pipe — Nom 203 mm (8 in.) diam (or smaller) Schedule 40 (or heavier) steel pipe.
3. Pipe Covering Materials* — Nom 38 mm (1-1/2 in.) thick hollow cylindrical heavy density (min 3.5 pcf) 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 product. The min space between adjacent penetrants shall be 76 mm (3 in.).
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.
4. Fill, Void or Cavity Materials* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 660 Firestop Foam

Firestop Configuration F

2. Cable — Nom 51 mm (2 in.) diam (or smaller) TEK cable with cross-linked polyethylene insulation. The min space between adjacent penetrants shall be 76 mm (3 in.).
3. Fill, Void or Cavity Material* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
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Firestop Configuration G

2. Flexible Conduit — Nom 25 mm (1 in.) diam (or smaller) flexible aluminum conduit. The min space between adjacent penetrants shall be 127 mm (5 in.).
3. Fill, Void or Cavity Material* — Foam — Min 127 mm (5 in.) thickness of fill material applied within the annulus, extending 13 mm (1/2 in.) above the top surface of the floor or both surfaces of wall and overlapping the concrete 13 mm (1/2 in.) on all sides of the opening.
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+ Bearing the UL Listing Mark

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



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