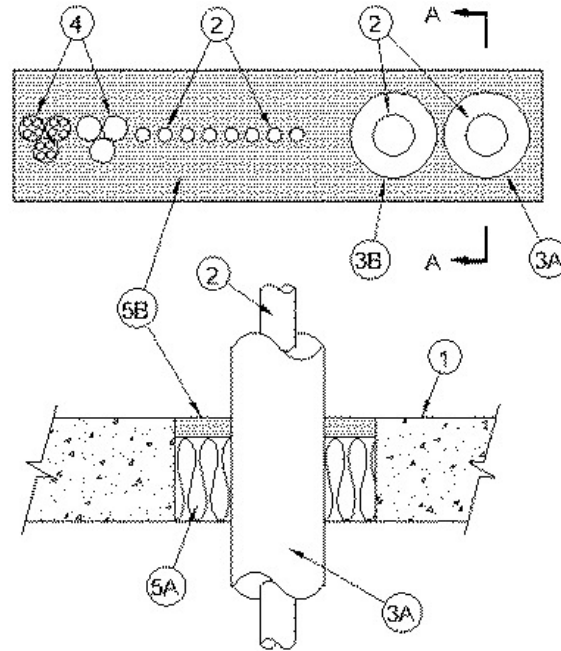


ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient — Less Than 1 CFM/ft ²	FH Rating - 2 Hr
L Rating At 400°F — Less Than 1 CFM/ft ²	FTH Rating - 0 Hr
W Rating - Class 1 (See Items 2, 3C and 4)	L Rating At Ambient - Less Than 5.1 L/s/m ²
	L Rating At 204°C - Less Than 5.1 L/s/m ²



SECTION 'A-A'

1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor, or min 3 in. (76 mm) thick reinforced lightweight or normal concrete wall. Wall may also be constructed of any UL classified **Concrete Blocks***. Max area of opening is 144 sq in. (929 cm²) with max dimension of 24 in. (610 mm).
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

1A. Steel Deck/Floor Assembly (not shown) — As an alternate to Item 1, the floor assembly may consist of a fluted steel deck/concrete floor assembly. The floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Form Units* — 1-1/2 to 3 in. (38 to 76 mm) deep galv fluted units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

2. Through-Penetrants — Max ten pipes, conduits or tubing to be installed within the opening. The space between pipes, conduits or tubing shall be a min 3/8 in. (10 mm) to max 1 in. (25 mm). The space between pipes, conduits or tubing and periphery of opening shall be min 1/2 in. to max 3 in. When W Rating applies, annular space is min 1/2 in. (13 mm) to max 1-3/4 in. (44 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of pipes, conduits or tubing may be used:

A. Max eight steel or iron or Type L copper pipe, tubing or conduit of nom 3/4 in. (19 mm) diam.

B. Max two steel or iron or Type L copper pipe, tubing or conduit of nom 2 in. (51 mm) diam (or smaller).

3. Either or both of the following types of pipe coverings may be used on two of the metallic pipes or tubing having a nom diam of 2 in. (51 mm) or less.

A. Tube Insulation - Plastics+ — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The insulated pipe or tubing shall be spaced a nom 1-1/4 in. (32 mm) from the other through-penetrants. The annular space between the insulated pipe or tubing and periphery of the opening shall be a min of 1/2 in.

(13 mm) to max 1-3/4 in. (44 mm).

See **Plastics+** (QMFZ2) category in the 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 94-5 VA may be used.

B. Pipe and Equipment Covering Materials — Nom 1 in. (25 mm) thick hollow cylindrical glass fiber units, nom 3.5 pcf (56 kg/m³), 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. The insulated pipe or tubing shall be spaced a nom 1-1/4 in. (32 mm) from the other through-penetrants. The annular space between the insulated pipe or tubing and periphery of the opening shall be a min of 1/2 in. (13 mm) to max 1-3/4 in. (44 mm). 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.

C. PVC Jacket+ — (Optional) An additional PVC jacketing, supplied in sheet form, shall be tightly wrapped around the all service jacket on the pipe covering, Item 3B, with the longitudinal seam continuously sealed using the adhesive supplied with the jacket. The jacket is to be nom 48 in. (1219 mm) wide by nom 20 or 30 mil (0.5 or 0.8 mm) thick. The jacket shall be installed at a point 36 in. (914 mm) to 40 in. (1016 mm) above the top surface of the floor assembly and shall extend downward into and/or through the opening.

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.

The PVC jacket is required for all fiberglass pipe coverings for the W Rating to apply.

4. Cables — Max two cable bundles to be installed within the opening. Each bundle to consist of 3 cable lengths of cables specified below. Cable to be tightly bundled and supported on both sides of floor or wall. The annular space between cable bundles and periphery of the opening shall be min 3/8 in. (10 mm) to max 2-5/8 in. (67 mm). **When W Rating applies, the min separation between the individual cables is equal to or greater than 1/8 in. (3 mm) and max of 1-3/4 in. (44 mm).**

A. Max 400 pair No. 24 AWG (or smaller) telephone cables with PVC insulation and jacket.

B. Max 3/C, No. 2/0 AWG (or smaller) copper conductor, PVC jacketed aluminum clad or steel clad cable.

5. Firestop System — The firestop system shall consist of the following:

A. Packing Material — Min 2 in. (51 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or both surfaces of wall to accommodate the required thickness of fill material.

B. Fill, Void or Cavity Material*—Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor and both surfaces of wall. Fill material to be forced into interstices of cable group to max extent possible.

RECTORSEAL — FlameSafe® FS900+, [Metacaulk MC 150+](#), Biostop BF [150+](#)

+Bearing the UL Recognized Component 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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