

System No. F-A-1009

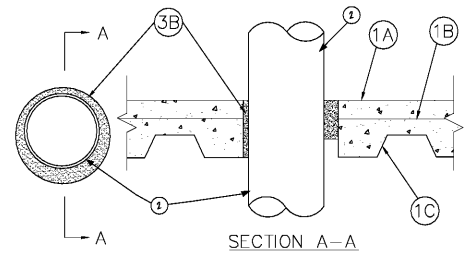
May 15, 2009

F Ratings - 2 & 3 Hr (See Item 1A)

T Rating - 0 Hr

L Rating At Ambient - Less Than 1 CFM/Sq Ft

L Rating At 400 F - Less Than 1 CFM/Sq Ft



- Floor-Ceiling Assembly** - The fire-rated unprotected steel floor-ceiling 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:
 - Normal Weight or Lightweight Concrete** - Concrete thickness above the crest of the deck shall be min 3-1/4 in. for 2 Hr F Rating and 4-1/4 in. for 3 Hr F Rating. Normal weight concrete with carbonate or siliceous aggregate; 145 to 155 pcf unit weight; min 3000 psi compressive strength. Lightweight concrete with expanded shale, clay or slate aggregate, 105 to 115 pcf unit weight, min 3000 psi compressive strength.
 - Welded Wire Fabric** - #6, W1.4xW1.4.
 - Steel Floor and Form Units*** - Composite or noncomposite 1-5/16 to 3 in. deep galv units as specified in the individual Floor-Ceiling designs. Max diam of opening is 41-1/4 in.
- Through Penetrants** - One metallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 1-1/2 in. to max 3-3/4 in. The following types of pipe, conduit or tubing may be used:
 - Steel Pipe** - Nom 36 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe** - Nom 36 in. diam (or smaller) cast or ductile iron pipe.
 - Conduit** - Nom 6 in. diam (or smaller) rigid steel conduit.
 - Conduit** - Nom 4 in. diam (or smaller) steel electrical metallic tubing.
 - Copper Tubing** - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
 - Copper Pipe** - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
- Firestop System** - The firestop system shall consist of the following:
 - Forms** - (Not shown) - Used as a form to prevent leakage of fill material during installation. Forms to be a rigid sheet material, cut to fit the contour of penetrating item and positioned as required to accommodate the required thickness of fill material. Forms may be removed after fill material has cured.
 - Fill, Void or Cavity Material*** - Mortar - Min 2-1/2 in. thickness of fill material applied within annulus, flush with top surface of floor. Mortar to be mixed with water at a rate of 1.9 to 2.4 gal (7-9 liters) per 25 lb bag in accordance with manufacturers installation instructions. **ISOLATEK INTERNATIONAL - GAFCO® TPS Mortar**

1 SYSTEM NO. F-A-1009
NO SCALE

System No. W-L-1001

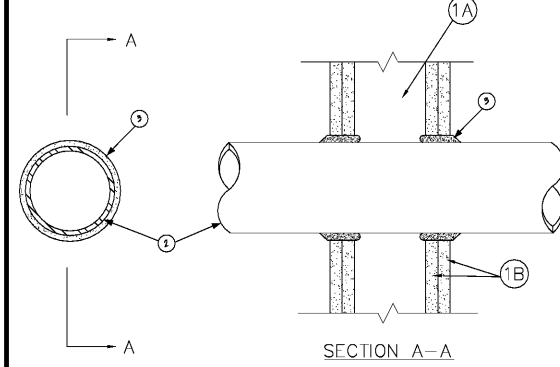
June 15, 2005

F Ratings - 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings - 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient - less than 1 CFM/sq ft

L Rating At 400 F - less than 1 CFM/sq ft



- Wall Assembly** - The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 - Studs** - Wall framing may consist of either wood studs (max 2 hr fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.
 - Gypsum Board*** - Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).
- Through Penetrants** - One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in. (0 mm), (point contact) to max 2 in. (51 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:
 - Steel Pipe** - Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe** - Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.
 - Conduit** - Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.
 - Copper Tubing** - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
 - Copper Pipe** - Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
- Through Penetrating Product*** - Flexible Metal Piping The following types of steel flexible metal gas piping may be used:
 - Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
 - Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
 - Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
- Fill, Void or Cavity Material*** - **Caulk or Sealant** - Min 5/8 in., 1-1/4, 1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with top surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

| Max Pipe or Conduit Diam In (mm) | F Rating Hr | T Rating Hr |
|----------------------------------|-------------|-------------|
| 1 (25) | 1 or 2 | 0+, 1 or 2 |
| 1 (25) | 3 or 4 | 3 or 4 |
| 4 (102) | 1 or 2 | 0 |
| 6 (152) | 3 or 4 | 0 |
| 12 (305) | 1 or 2 | 0 |

*When copper pipe is used, T Rating is 0 hr.
3M COMPANY - CP 25WB+ or FB-3000 WTS

*Bearing the UL Classification Mark

2 SYSTEM NO. W-L-1001
NO SCALE

System No. W-L-2003

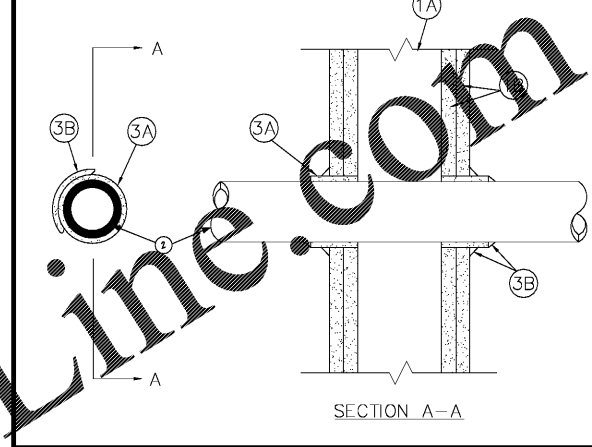
November 20, 2009

F Ratings - 1 and 2 Hr (See Item 3)

T Ratings - 1 and 2 Hr (See Item 3)

L Rating At Ambient - 7 CFM/sq ft (See Item 3B)

L Rating At 400 F - less than 1 CFM/sq ft (See Item 3B)



- Wall Assembly** - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
 - Studs** - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.
 - Gypsum Board*** - 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3-1/8 in. (79 mm).
- Through Penetrants** - One nonmetallic pipe or conduit to be centered in the through opening. The annular space between pipe or conduit and periphery of opening shall be min 1/4 in. (6 mm) and max 3/8 in. (10 mm). Pipe or conduit to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
 - Polyvinyl Chloride (PVC) Pipe** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
 - Rigid Nonmetallic Conduit** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 or 80 PVC conduit installed in accordance with the National Electric Code (NECA No. 70).
 - Chlorinated Polyvinyl Chloride (CPVC) Pipe** - Nom 2 in. (51 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - Cellular Core Polyvinyl Chloride (ccPVC) Pipe** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
 - Acrylonitrile Butadiene Styrene (ABS) Pipe** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - Cellular Core Acrylonitrile Butadiene Styrene (ccABS) Pipe** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- Firestop System** - Installed symmetrically on both sides of wall assembly. The hourly F and T Ratings for the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The details of the firestop system shall be as follows:
 - Fill, Void or Cavity Materials* - Wrap Strip** - Nom 1/4 in. (6 mm) thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. (51 mm) wide strips. Nom 2 in. (51 mm) wide strip tightly wrapped around nonmetallic pipe (foil side out) with seam butted. Wrap strip layer securely bound with steel wire or aluminum foil tape and slid into annular space approx 1-1/4 in. (32 mm) such that approx 3/4 in. (19 mm) of the wrap strip protrudes from the wall surface.
 - Fill, Void or Cavity Materials* - Caulk, Sealant or Putty** - Min 5/8 in. (16 mm) thickness of caulk or putty applied to annular space between wrap strip and periphery of opening. A Nom 1/4 in. (6 mm) diam bead of caulk or putty to be applied to the wrap strip/wall interface and to the exposed edge of the wrap strip, approx 3/4 in. (19 mm) from the wall surface.
 - 3M COMPANY - FS-1054** - Six part, IC 15WB+ caulk, FireDam 150+ caulk or FB-3000 WTS sealant. (Note: L Rating is not applicable when Type CP 25WB+ caulk or FB-3000 WTS sealant is used. CP 25WB+ and FireDam 150+ not suitable for use with CPVC pipe.)
 - Coil Tape** - (not shown) - Nom 4 in. (102 mm) wide, 3 mil thick aluminum tape wrapped around pipe prior to the installation of the wrap strip (Item 3A). Min of one wrap, flush with both sides of wall and proceeding outward. Tape is not required for pipes shown in Items 2A, 2B and 2C.

*Bearing the UL Classification Mark

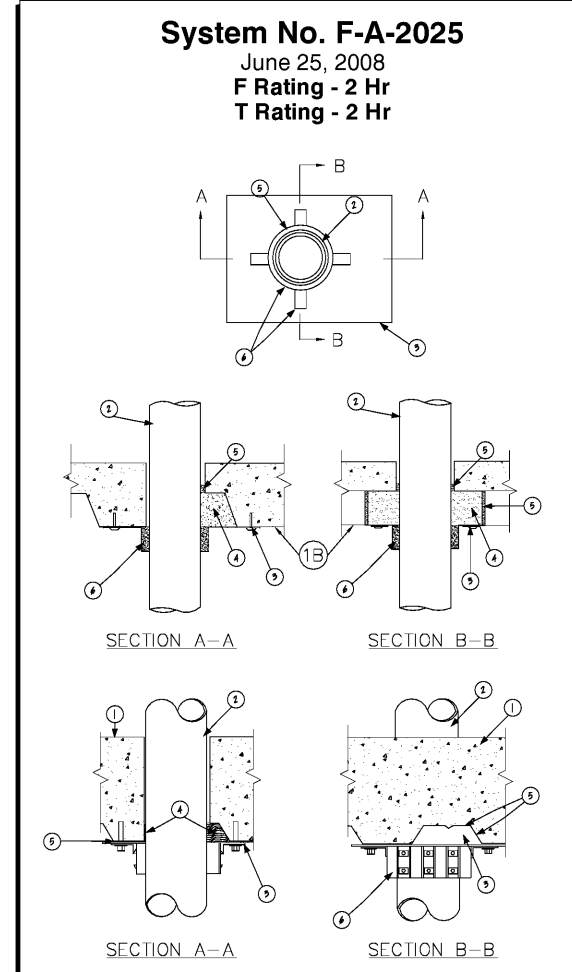
3 System No. W-L-2003
NO SCALE

System No. F-A-2025

June 25, 2008

F Rating - 2 Hr

T Rating - 2 Hr



- Floor Assembly** - The fire-rated protected 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:
 - Lightweight Concrete** - Min 2-1/2 in. (64 mm) thickness of lightweight or normal weight (100-150 pcf, 1600-2000 kg/m³) concrete topping as measured over the crests of the steel floor units.
 - 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 shall be 203 mm.
- 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). Pipe to be rigidly supported on both sides of floor assembly. The following types and sizes of nonmetallic pipes may be used:
 - Polyvinyl Chloride (PVC) Pipe** - Nom 6 in. (152 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 systems.
 - Chlorinated Polyvinyl Chloride (CPVC) Pipe** - Nom 6 in. (152 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - Acrylonitrile Butadiene Styrene (ABS) Pipe** - Nom 6 in. (152 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.
 - Flame Retardant Polypropylene (FRPP) Pipe** - Nom 6 in. (152 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- Metal Plate Enclosure** - Min 18 ga 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. Silt 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 anchors, 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 515 powder actuated fastener 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 silt made to permit installation around nonmetallic pipe. Spacing of fasteners not to exceed 10 in. (254 mm) OC.
- 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.
- 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**
- Firestop Device* - Firestop Collar** - Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to the valley of the steel deck and to the metal plate enclosure using the anchor hooks provided with the collar. Min of two anchor hooks required for 1-1/2 and 2 in. (38 and 51 mm) diam pipes, min of three anchor hooks required for 3 and 4 in. (76 and 102 mm) diam pipes, and min of four anchor hooks required for 6 in. (152 mm) diam pipes. Where the anchor hooks 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 at each anchor hook. Where the anchor hooks are beneath the crest of the steel deck, the anchor hooks are to be secured to the metal enclosure with No. 10 by min 1/2 in. (13 mm) long self-drilling, self-tapping steel screws and min 3/4 in. (19 mm) diam steel washers. **HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - CP 643 50/1.5"N, CP 643 63/2"N, CP643 90/3"N, CP 643 110/4"N or CP 643 160/6"N Firestop Collar**

*Bearing the UL Classification Mark

4 System No. F-A-2025
NO SCALE

Order Plans @ WWW.LDLINE.COM



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| REVISIONS | |
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PROJECT: RENEWED MEDICAL BUILDING CORE & SHELL ONLY
SOUTH FULTON, GEORGIA
PROJECT #19-2983



SEAL
MARCH 27, 2020
PERMIT SET
RELEASE DATE
FIRE PROTECTION-PENETRATIONS
DRAWING TITLE
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Checked By: R.G. AB
PROJECT # 19-2983
SHEET 35 OF 37

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