

**System No. W-J-7021**  
**F Ratings — 1 and 2 Hr (See Item 3)**  
**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**

**SECTION A-A**

1. Wall Assembly — Min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max area of opening is 1300 in. with a max dimension of 50 in.  
 See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.  
 2. Steel Duct — Nom 24 in. by 48 in. (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed within the firestop system. The annular space shall be min 0 (point contact) in. to a max 2 in. Duct to be rigidly supported on both sides of the wall assembly.  
 3. Firestop System — The firestop system shall consist of the following:  
 A. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. thickness of fill material applied within annulus flush with both surfaces of wall. At point contact location, a min 1/2 in. diam bead of fill material shall be applied to the wall/duct interface on both surfaces of wall.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, CP601S Elastomeric Firestop Sealant or CP606 Flexible Sealant.  
 B. Steel Retaining Angle — Min No. 18 MSG (0.048 in.) galv steel angles cut to fit contour of duct with a 2 in. overlap on the duct and a min 1 in. overlap on the gypsum board assembly on both surfaces of wall. 2 in. leg of angle secured to duct with min No. 8 by 3/4 in. long sheet metal screws, spaced a max of 6 in. OC.  
 \*Bearing the UL Classification Mark

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**System No. W-L-1054**  
**F Ratings — 1 and 2 Hr (See Items 1 and 3)**  
**T Rating — 0 Hr**  
**L Rating At Ambient — Less Than 1 CFM/Sq Ft**  
**L Rating At 400 F — 4 CFM/Sq Ft**

**SECTION A-A**

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:  
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.  
 B. Gypsum Board\* — 5/8 in. thick, 4 ft 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 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.  
 The F Rating of the firestop system is equal to the fire rating of the wall assembly.

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**System No. W-L-2098**  
**F Ratings — 1 and 2 Hr (See Item 1)**  
**T Ratings — 1 and 2 Hr (see Item 1)**  
**L Rating At Ambient — Less Than 1 CFM/Sq Ft**  
**L Rating At 400 F — 4 CFM/Sq Ft**

**SECTION A-A**

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:  
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.  
 B. Gypsum Board\* — 5/8 in. thick, 4 ft 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 Wall and Partition Design. Max diam of opening is 4-3/8 in.  
 The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.  
 2. Through Penetrants — One nonmetallic pipe installed within the firestop system. Pipe to be rigidly supported on both sides of floor or wall assembly. The space between pipe and periphery of opening shall be min 3/4 in. to max 1-1/4 in. Pipe to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes may be used:  
 A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping system.  
 B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.  
 3. Fill, Void or Cavity Materials\* — Sealant — Installed to completely fill the annular space between the pipe and gypsum wallboard on both sides of wall.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant  
 \*Bearing the UL Classification Mark

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**UL**

**System No. W-L-1054**  
**F Ratings — 1 and 2 Hr (See Items 1 and 3)**  
**T Rating — 0 Hr**  
**L Rating At Ambient — Less Than 1 CFM/Sq Ft**  
**L Rating At 400 F — 4 CFM/Sq Ft**

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. 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 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.  
 B. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.  
 C. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.  
 D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.  
 E. Copper Pipe — Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.  
 3. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant  
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**NOTE:**  
 THESE DETAILS ARE INCLUDED FOR REFERENCE PURPOSES AND DO NOT INCLUDE ALL APPLICABLE UL SYSTEM TESTED DETAILING TO BE UTILIZED THROUGH OUT THE PROJECT. PROVIDE APPLICABLE UL SYSTEM TESTED DETAILING FOR ALL FIRE RATED AND SMOKE PARTITION PENETRATIONS, WHETHER INDICATED WITHIN THESE DRAWINGS OR NOT.

**REVISIONS**
