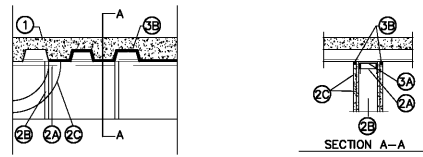


System No. HW-D-0024  
 Assembly Ratings-1&2 Hr.  
 Nominal Joint Width - 3/4 in.  
 Class II Movement Capabilities-33% Compression or Extension



1. Floor Assembly - The fluted steel deck/concrete 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-Max 3 in deep galv steel fluted units.  
 B. Concrete-Min 2-1/2 in. thick reinforced concrete, as measured from the top plane of the floor units.

1A. Roof Assembly-(Not Shown)-As an alternate to the floor assembly, a fire rated fluted steel deck roof assembly may be used. The roof described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly and shall include the following construction features.

A. Steel Roof Deck-Max 3 in. deep galv steel fluted roof deck.

B. Roof Insulation-Min.2-1/4 in. thick poured insulating concrete, as measured from the top plane of the floor units.  
 C. Roof Covering-Hot-mopped or cold-application materials compatible with insulating concrete.

2. 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 described in the individual U400-Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Ceiling Runners-Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). When U-shaped deflection channel (Item 3A) is used, ceiling runner installed within the deflection channel with 1 in. gap maintained between the top of ceiling runner and top of deflection channel. When deflection channel is not used, ceiling runner is secured to valleys of steel floor units (Item 1A) with steel fasteners or by welds spaced max 24in. OC.

A1. Light Gauge Framing - Slotted Ceiling Runner-As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

METAL-LITE INC-The System  
 SLIPTRACK SYSTEMS INC-SLPT-TR

A2. Light Gauge Framing-Clipped Ceiling Runner-As an alternate to the ceiling runner in Items 2A and 2A1, clipped runner to consist of galv steel channel with clips preformed in track flanges which positively engage the inside flange of the steel studs (Item 2B). Track sized to accommodate steel studs (Item 2B). Track flanges to be min 2-1/2 in. Clipped ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24in. OC. When clipped ceiling runner is used, deflection channel (Item 3A) shall not be used.

TOTAL STEEL SOLUTIONS L L C -Snap Trak

A3. Light Gauge Framing- Vertical Deflection Ceiling Runner-As an alternate to the ceiling runner in Items 2A, 2A1 or 2A2, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Vertical deflection ceiling runner installed perpendicular to direction of fluted steel floor or roof deck and secured to valleys with steel fasteners spaced max 24in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

THE STEEL NETWORK INC-VertiTrack VTD358, VTD400, VTD600 and VTD800

B. Studs-Steel studs to be min 3-5/8 in. wide. Studs cut 1/2 to 3/4 in. less in length than assembly height. Studs attached to ceiling runner with sheet metal screws a min of 1/2 in. below bottom of deflection channel, when deflection channel is used. When deflection channel is not used, studs shall not be secured to ceiling runner. When slotted ceiling runner (Item 2A) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at mid-height of slot on each side of wall. When vertical deflection ceiling runner (Item 2A3) is used, steel studs secured to slotted vertical deflection clips, through bushings, with steel screws at midheight of each slot. Stud spacing not to exceed 24in. OC.

C. Gypsum Board-Gypsum board sheets to be installed to a min total thickness of 5/8 or 1-1/4 in. on each side of the wall for a 1 or 2 hr fire rated wall, respectively. Wall to be constructed as specific in the individual wall and Partition Design in the UL Fire Resistance Directory, except that the gypsumboard is cut to fit the contour of the steel floor units with a nom 1/4 in. gap. The screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. below the bottom of the deflection channel, when deflection channel is used. When deflection channel is not used, the screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. below the bottom of the ceiling runner. The hourly fire rating of the joint system is dependent on the hourly fire rating of the wall.

3. Joint System-Max separation between bottom of floor and top of wall is 3/4 in. The joint system is designed to accommodate a max 33 percent compression or extension from the installed width. The joint system consists of a deflection channel and a fill material, as follows:

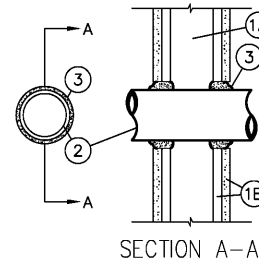
A. Deflection Channel-Optional A nom 3-5/8 in. wide by min 2in. deep max 24 gauge steel U-shaped channel deflection channel secured to valleys of steel floor units (Item 1A) with steel fasteners or by welds spaced max 24in. OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1 in. gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner is not fastened to the deflection channel.

B. Fill, Void or Cavity Material-Sealant-Min 3/4 in. thickness of fill material installed on each side of the wall between the top of the gypsumboard and all surfaces of the steel floor units, flush with each surface of gypsumboard.

System No. W-L-1001.

(Formerly system No. 147)

F Ratings - 1,2,3 and 4Hr (see Items 2 and 3)  
 T Ratings - 0,1,2,3 and 4Hr (see Item 3)  
 L Ratings At Ambient - less than 1 CFM/sq ft  
 L Ratings At 400F - less than 1 CFM/sq ft



1. 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 Design in the UL Fire Resistance Directory and shall include the following construction features:

a. Studs - Wall framing may consist of either wood studs (Max 2hr. fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 in. x 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross bracing. Steel studs to be min 3-5/8 in. wide by 1/8 in. deep channels spaced max 24 in. OC.

b. Gypsum Board - Nom 1/2 or 5/8 in. thick, 4ft. 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 13-1/2 in.

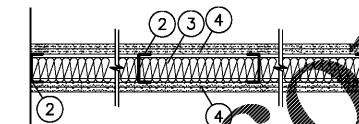
2. Pipe or Conduit - Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) Type L or (or heavier) copper tubing or 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of fire stop system (Item 3) is 2h. Steel pipes or conduits larger than nom 4in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the fire stop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.

3. Fill, Void or Cavity Material\* - Caulk - Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on the both side of wall assembly. The hourly F Rating of the fire stop 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 fire stop 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.	Annular Space In.	F Rating Hr	T Rating Hr
1	0 to 3/16	1 or 2	0 +, 1 or 2
1	1/4 to 1/2	3 or 4	3 or 4
4	0 to 1-1/2	1 or 2	0
6	1/4 to 1/2	3 or 4	0
12	3/16 to 3/8	1 or 2	0

+ when copper pipe is used, T Rating is 0 h.  
 3M Company - CP 25WB+.  
 \* Bearing the UL Classification Mark.

Design No. U412  
 Nonbearing Wall Rating - 2HR



1. Floor and Ceiling Runners (not shown) 25 MSG (min) galv steel, high return legs 1-5/8 in. wide (min), attached to floor and ceiling with fasteners 24 in. OC max.

2. Slotted Studs - 1-5/8 in. wide (min), 1-1/4 in. high, 1/2 in. deep, preformed of 25 MSG (min) galv steel, max stud spacing 24 in. OC. Studs to be cut 1/4 in. less than assembly height.

3. Batts and Blankets - (Optional) - Mineral wool or glass fiber Batts partially or completely filling stud cavity. Fasten each batt to wallboard base layer with a min 9/16 in. long staple. Use five staples for each 4 ft long piece. Drive one staple in the center of each piece and a staple at each corner, approx. 3 in. from edges. See batts and blankets (BZJZ) category for names of manufacturers.

4. Wallboard, Gypsum\* - 1/2in. thick, Wallboard applied vertically in two layers. (Laminated System) Inner layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC. along vertical edges and 24 in. OC in the field. Outer layer laminated to inner layer with joint compound, applied with a notched spreader producing continuous beads of compound about 3/8 in. diameter, spaced not greater than 2 in. OC. Joints of laminated outer layer offset 12 in. from inner layer joints. Outer layer wallboard attached to inner layer with 1-1/2 in. long type G steel crews spaced 24 in. OC. along edges and center line of each sheet.

Optional, (direct attached System) wallboard applied vertically in two layers. Inner layer attached to studs with 1 in. long Type S steel crews spaced 24 in. OC. in the field and along the vertical edges. Outer layer attached to the studs over the inner layer with 1-5/8 in. long Type S steel crews spaced 12 in. OC in the field, along the vertical edges, and to the floor and ceiling runners. Joints of screw-attached outer layer offset from inner layer joints.

Optional (Direct attached System) Inner layer wallboard applied vertically outer layer wallboard applied horizontally. Inner lay attached to studs with 1 in. Type S steel crews spaced 24 in. OC. along vertical edges and in the field. Outer layer attached to the studs over the inner layer with 1-5/8 in. long Type S steel crews spaced 12 in. OC. in the field, along the vertical edges, and to the floor and ceiling runners. Outer layer secured to inner layer wallboard with 1-1/2 in. along Type G steel screws located midway between studs and 1 in. from the horizontal joint. Outer layer wallboard joints covered with joint tape and min two coats of joint compound, and screw heads covered with min two coats of joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may applied to the entire surface of classified veneer baseboard joints reinforced.

AMERICAN GYPSUM CO - Type AG-C  
 CANADIAN GYPSUM COMPANY - Type C, IP-X2, or WRX.  
 CELOTEX CORP - Type FRP or J.  
 CONTINETAL GYPSUM COMPANY - Types CG-C, CGS-5, CGTC-C  
 G-P GYPSUM CORP, - Types 5, C.  
 JAMES HARDIE GYPSUM INC - Type Max "C".  
 LAFARGE GYPSUM, DIV OF LAFARGE CORP - Types LGFC-C  
 NATIONAL GYPSUM CO - Types FSW-G.  
 PABCO GYPSUM CO - Types PG-C.  
 REPUBLIC GYPSUM CO - Type RG-C.  
 STANDARD GYPSUM LLC - Type SG-C.  
 TEMPLE-INLAND FOREST PRODUCTS CORP - Type TG-C.  
 UNITED STATES GYPSUM CO - Type C, IP-X2 OR WRX.  
 YESO PANAMERICANO S A DE C V - Type C, IP-X2, or WRC.

HAI AN PAGODA

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RATED WALL DETAILS

REVISION	BY

DRAWN BY:

SCALE: AS NOTED

PROJECT NO:

DATE: 08/20/17  
 SHEET

A0.3

OF SHEETS

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