



SLOTTED STUD™
WIND-LOAD & NON-LOAD BEARING
DEFLECTION WALL SYSTEM
U.L. FIRE RATED
Head-of-Wall Joint Systems



1-800-275-2279

STEELER® INC.
SLOTTED STUD™
1-800-275-2279



The **STEELER® SLOTTED STUD™** is an innovative and economical light gauge steel framing Head-Of-Wall (HW) Joint System that is Classified by Underwriters Laboratories, Inc. for 500 successful cycles.

It is unlike any other head-of-wall assembly currently in the construction industry and can be used for both non-load bearing and wind load-bearing walls. The **STEELER® SLOTTED STUD™** has a slot of 2-1/4" which allows for up to a 1" deflection up or down, depending on which Head-Of-Wall Joint System is used. The Engineer of Record shall specify which Head-Of-Wall Joint System to use.

UL® Head of Wall Systems:

<u>System Number:</u>	<u>Fire Rating:</u>	<u>Movement Class & Capabilities:</u>
HW-D-0016	1 & 2 Hour Fire Rating	Classes II & III, 25% Compression
HW-D-0020	1 & 2 Hour Fire Rating	Class II, 25% Compression or Extension
HW-D-0021	1 & 2 Hour Fire Rating	Class II, 18.75% Compression and Extension
HW-D-0029	1 & 2 Hour Fire Rating	Class II, 25% Compression or Extension
HW-D-0032	2 Hour Fire Rating	Class II, 50% Compression or Extension
HW-D-0033	2 Hour Fire Rating	Class II 50% Compression or Extension
HW-D-0034	1 & 2 Hour Fire Rating	Class II, 25% Compression or Extension
HW-D-0037	2 Hour Fire Rating	Class II, 18.75% Compression or Extension
HW-D-0048	1 & 2 Hour Fire Rating	Class II, 33% Compression or Extension
HW-D-0049	1 & 2 Hour Fire Rating	Class II, 50% Compression or Extension



U.L Classified XHLI.R21503
 U.L Classified for Canada XHLI7.R21503

CALIFORNIA STATE



FIRE MARSHAL



ICC-ES ESR-2054

For questions, please contact your local Steeler or call our Marketing Department.

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U.S. Patent No. 6,854,237 B2



STEELER SLOTTED STUD™

MODERN, EFFICIENT HEAD-OF-WALL SYSTEMS

A cost-effective alternative to slotted track, the Steeler Slotted Stud is everything you need in a Head-of-Wall system. The Steeler Slotted Stud is innovative and economical, as it can be used in combination with track to form both non-load bearing and wind load-bearing walls. It includes a 2 1/4" slot which allows for up to a 2" vertical deflection and is UL fire rated. Substituting Steeler Slotted Stud in place of slotted track can save your project money while still offering the proper deflection your walls require.

Easier Install: Steeler Slotted Studs are lighter than conventional studs, meaning quicker installation. The 2-1/4" slot allows is designed for easy fastening.

Better Deflection: Steeler Slotted Stud is unlike any other head-of-wall assembly in the industry. Its 2-1/4" slot allows for up to 2" of deflection.

Superior Toughness: We use a full zinc coating to greatly minimize rust formation. What's more, the Steeler Slotted Stud is available in gauges from 21 to 12, meaning superior wind load capabilities.

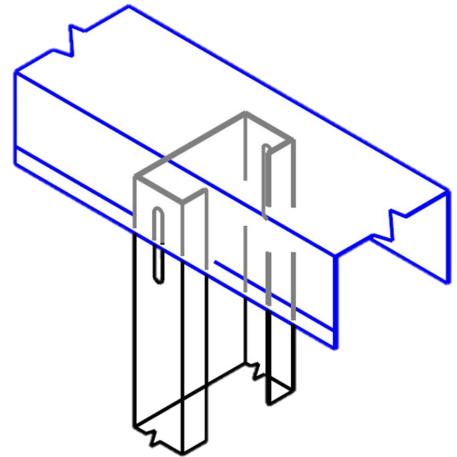
Designed for fire & smoke protection: Two slots in the head of each stud means less of a need for fire proofing.

The Steeler Slotted Stud offers an effective alternative to standard slotted track. Depending on the specifications of your project, Steeler Slotted Studs can save you big money.

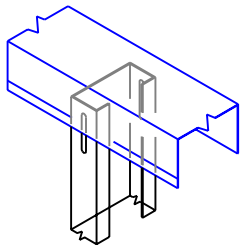
Steeler Slotted Studs meet or exceed ASTM A370, A1003, C754, C645, and C955. The Steeler Slotted Stud is UL rated for up to 2 hours. Members 33ES and thicker are engineered to be load bearing and thus structural.

Web Size Offerings: 1-5/8", 2", 2-1/2", 3-1/2", 3 5/8", 4", 5 1/2", 6", 8", 10", and 12".

Flange Offerings: 1-1/4", 1-7/16", 1-5/8", 2", 2-1/2", and 3".



For more information, including Limiting Heights and Section Properties, visit www.steeler.com



STEELER SLOTTED STUD



UL HEAD OF WALL SYSTEM:

<u>System Number</u>	<u>Fire Rating:</u>	<u>Joint Width</u>	<u>Movement Class & Capabilities:</u>
HW-D-0016	1 & 2 Hour	1 Inch	Class II & III, 25% Compression
HW-D-0020	1 & 2 Hour	1 Inch	Class II, 25% Compression or Extension
HW-D-0021	1 & 2 Hour	1 Inch	Class II, 18.75% Compression and Extension
HW-D-0029	1 & 2 Hour	1 Inch	Class II, 25% Compression and Extension
HW-D-0032	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0033	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0034	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0037	2 Hour	1 Inch	Class II, 18.75% Compression or Extension
HW-D-0048	2 Hour	0.75 Inch	Class II, 33% Compression
HW-D-0049	1 & 2 Hour	1 Inch	Class II, 50% Compression or Extension

STEELER (2") T200 TRACK, Design Gap=0.50 inches						
Lateral Partition Load, 5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
27	0.0283	33,000	29	11.53	8.65	5.76
30	0.0312	33,000	35	14.01	10.51	7.01
33	0.0346	33,000	43	17.23	12.92	8.52
43	0.0451	33,000	73	29.28	21.96	14.64
54	0.0566	50,000	175	69.86	52.40	34.93

STEELER (2.5") T250 TRACK, Design Gap=0.75 inches						
Lateral Partition Load, 5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
30	0.0312	33,000	27	10.82	8.12	5.41
33	0.0346	33,000	33	13.31	9.98	6.66
43	0.0451	33,000	57	22.62	16.96	11.31
54	0.0566	50,000	135	53.97	40.48	26.99

STEELER (3") T300 TRACK, Design Gap=1.00 inches						
Lateral Partition Load, 5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
33	0.0346	33,000	28	11.35	8.51	5.68
43	0.0451	33,000	48	19.29	14.47	9.64
54	0.0566	50,000	115	46.03	34.52	23.01
68	0.0713	50,000	183	73.04	54.78	36.52

5.0 PSF LATERAL LOAD

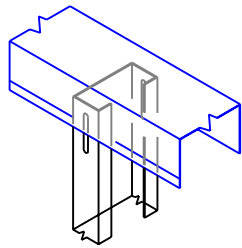
Reference:

Army Corps of Engineers ETL 1110-3-411 (NO STRESS INCREASE HAS BEEN USED IN CALCULATING ALLOWABLE WALL HEIGHTS)

STEELER SLOTTED STUD® WALL SYSTEM

DATE: 5 February 2007

SHEET: SS-1



STEELER SLOTTED STUD



UL HEAD OF WALL SYSTEM:

<u>System Number</u>	<u>Fire Rating:</u>	<u>Joint Width</u>	<u>Movement Class & Capabilities:</u>
HW-D-0016	1 & 2 Hour	1 Inch	Class II & III, 25% Compression
HW-D-0020	1 & 2 Hour	1 Inch	Class II, 25% Compression or Extension
HW-D-0021	1 & 2 Hour	1 Inch	Class II, 18.75% Compression and Extension
HW-D-0029	1 & 2 Hour	1 Inch	Class II, 25% Compression and Extension
HW-D-0032	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0033	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0034	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0037	2 Hour	1 Inch	Class II, 18.75% Compression or Extension
HW-D-0048	2 Hour	0.75 Inch	Class II, 33% Compression
HW-D-0049	1 & 2 Hour	1 Inch	Class II, 50% Compression or Extension

STEELER (2") T200 TRACK, Design Gap=0.50 inches						
Lateral Partition Load, 7.5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
33	0.0346	33,000	43	11.49	8.62	5.74
43	0.0451	33,000	73	19.52	14.64	9.76
54	0.0566	50,000	175	46.58	34.93	23.29
68	0.0713	50,000	277	73.91	55.43	36.96

STEELER (2.5") T250 TRACK, Design Gap=0.75 inches						
Lateral Partition Load, 7.5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
33	0.0346	33,000	33	8.87	6.66	4.44
43	0.0451	33,000	57	15.08	11.31	7.54
54	0.0566	50,000	135	35.98	26.99	17.99
68	0.0713	50,000	214	57.10	42.83	28.55

STEELER (3") T300 TRACK, Design Gap=1.00 inches						
Lateral Partition Load, 7.5 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
43	0.0451	33,000	48	12.86	9.64	6.43
54	0.0566	50,000	115	30.69	23.01	15.34
68	0.0713	50,000	183	48.70	36.52	24.35
97	0.1017	50,000	372	99.07	74.31	49.54

7.5 PSF LATERAL LOAD

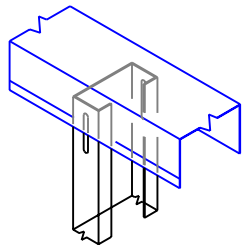
Reference:

Army Corps of Engineers ETL 1110-3-411 (NO STRESS INCREASE HAS BEEN USED IN CALCULATING ALLOWABLE WALL HEIGHTS)

STEELER SLOTTED STUD[®] WALL SYSTEM

DATE: 5 February 2007

SHEET: SS-2



STEELER SLOTTED STUD



UL HEAD OF WALL SYSTEM:

<u>System Number</u>	<u>Fire Rating:</u>	<u>Joint Width</u>	<u>Movement Class & Capabilities:</u>
HW-D-0016	1 & 2 Hour	1 Inch	Class II & III, 25% Compression
HW-D-0020	1 & 2 Hour	1 Inch	Class II, 25% Compression or Extension
HW-D-0021	1 & 2 Hour	1 Inch	Class II, 18.75% Compression and Extension
HW-D-0029	1 & 2 Hour	1 Inch	Class II, 25% Compression and Extension
HW-D-0032	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0033	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0034	2 Hour	1 Inch	Class II, 50% Compression or Extension
HW-D-0037	2 Hour	1 Inch	Class II, 18.75% Compression or Extension
HW-D-0048	2 Hour	0.75 Inch	Class II, 33% Compression
HW-D-0049	1 & 2 Hour	1 Inch	Class II, 50% Compression or Extension

STEELER (2") T200 TRACK, Design Gap=0.50 inches						
Lateral Partition Load, 10 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
43	0.0451	33,000	73	14.64	10.98	7.32
54	0.0566	50,000	175	34.93	26.20	17.47
68	0.0713	50,000	277	55.43	41.58	27.72
97	0.1017	50,000	564	112.78	84.59	56.39

STEELER (2.5") T250 TRACK, Design Gap=0.75 inches						
Lateral Partition Load, 10 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
43	0.0451	33,000	57	11.31	8.48	5.65
54	0.0566	50,000	135	26.99	20.24	13.49
68	0.0713	50,000	214	42.83	32.12	21.41
97	0.1017	50,000	435	87.13	65.35	43.57

STEELER (3")T300 TRACK, Design Gap=1.00 inches						
Lateral Partition Load, 10 psf				Allowable Wall Heights, ft		
Thick.	Design	Yield Pt	Lateral	Stud Spacing, inches		
mils	Thick in	Stress,psi	Force, lbs	12	16	24
43	0.0451	33,000	48	9.64	7.23	4.82
54	0.0566	50,000	115	23.01	17.26	11.51
68	0.0713	50,000	183	36.52	27.39	18.26
97	0.1017	50,000	372	74.31	55.73	37.15

10.0 PSF LATERAL LOAD

Reference:

Army Corps of Engineers ETL 1110-3-411 (NO STRESS INCREASE HAS BEEN USED IN CALCULATING ALLOWABLE WALL HEIGHTS)

STEELER SLOTTED STUD® WALL SYSTEM

DATE: 5 February 2007

SHEET: SS-3

STEELER® INC.
SLOTTED STUD™
1-800-275-2279



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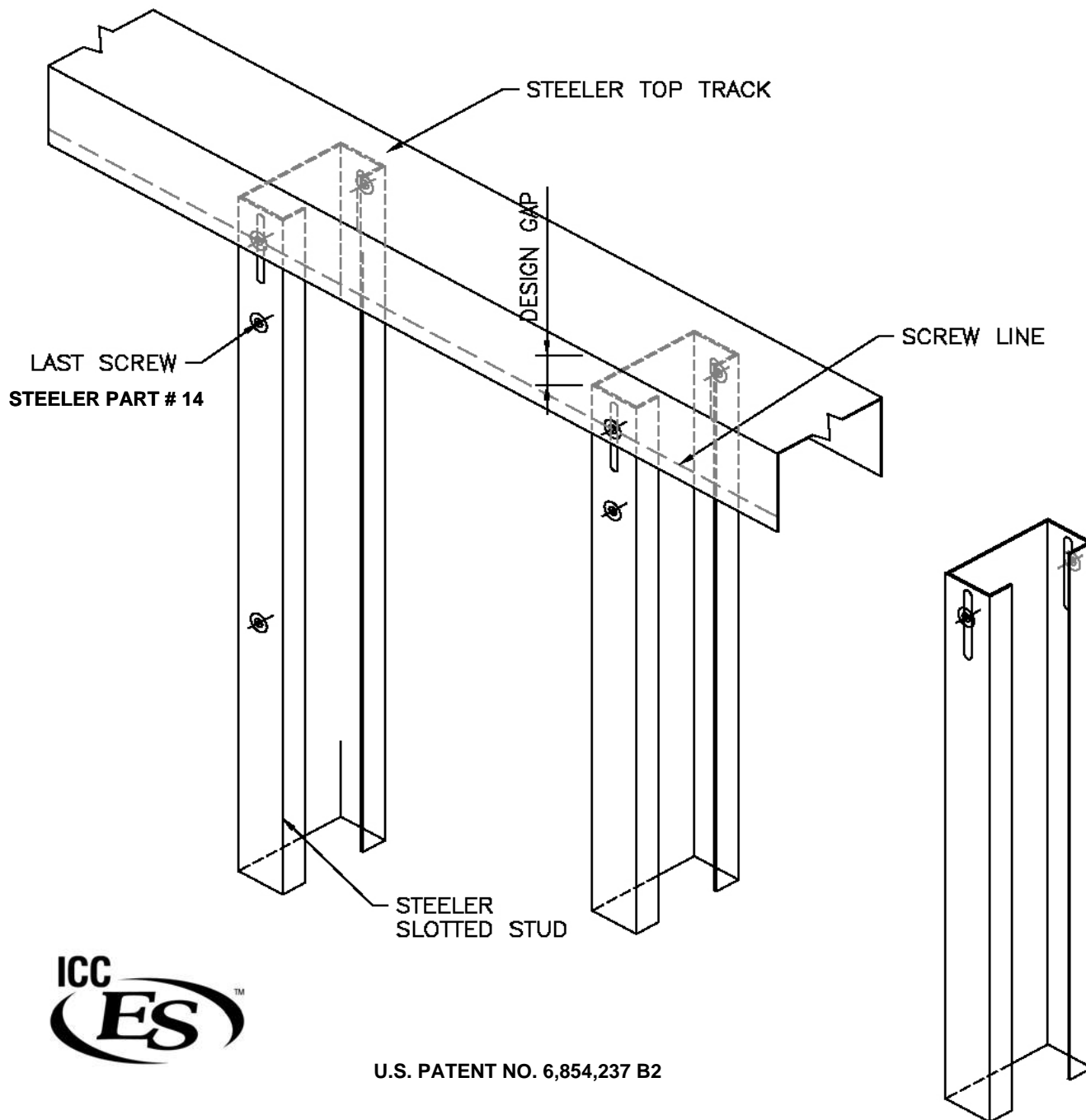
e-mail: marketing@steeler.com



STEELER® INC. SLOTTED STUD™



Wind Load & Non-Load Bearing Deflection Wall System

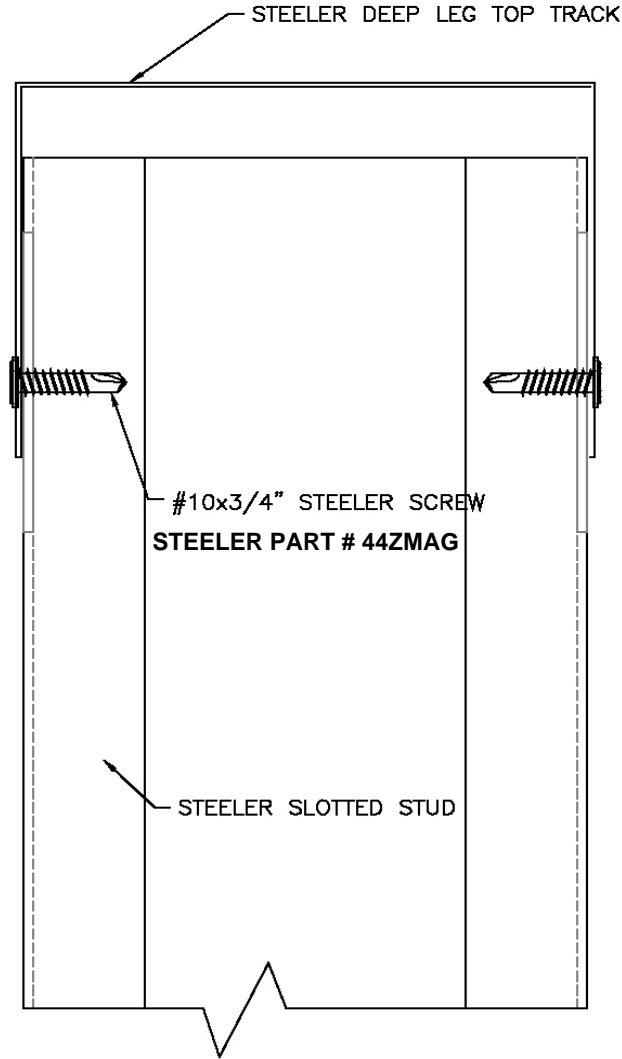


U.S. PATENT NO. 6,854,237 B2

STEELER[®] INC.
SLOTTED STUD[™]



**Wind Load & Non-Load Bearing
Deflection Wall System**



SECTION AT TOP TRACK

U.S. PATENT NO. 6,854,237 B2

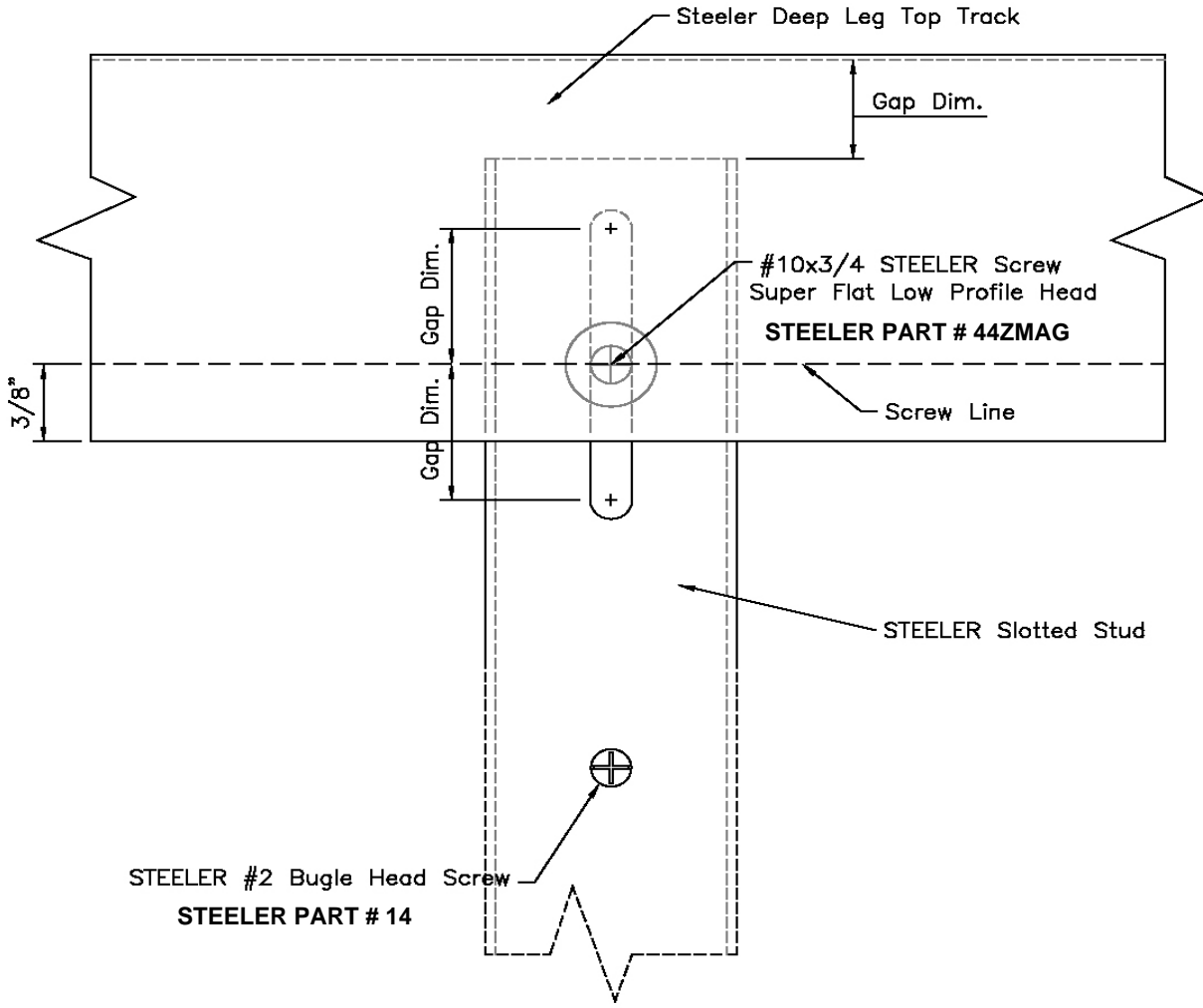


The Engineer of Record shall specify design vertical and lateral deflection requirements.

STEELER[®] INC. SLOTTED STUD[™]



Wind Load & Non-Load Bearing Deflection Wall System



ELEVATION DETAIL AT TOP TRACK



U.S. PATENT NO. 6,854,237 B2

The Engineer of Record shall specify design vertical and lateral deflection requirements.

Joint Systems

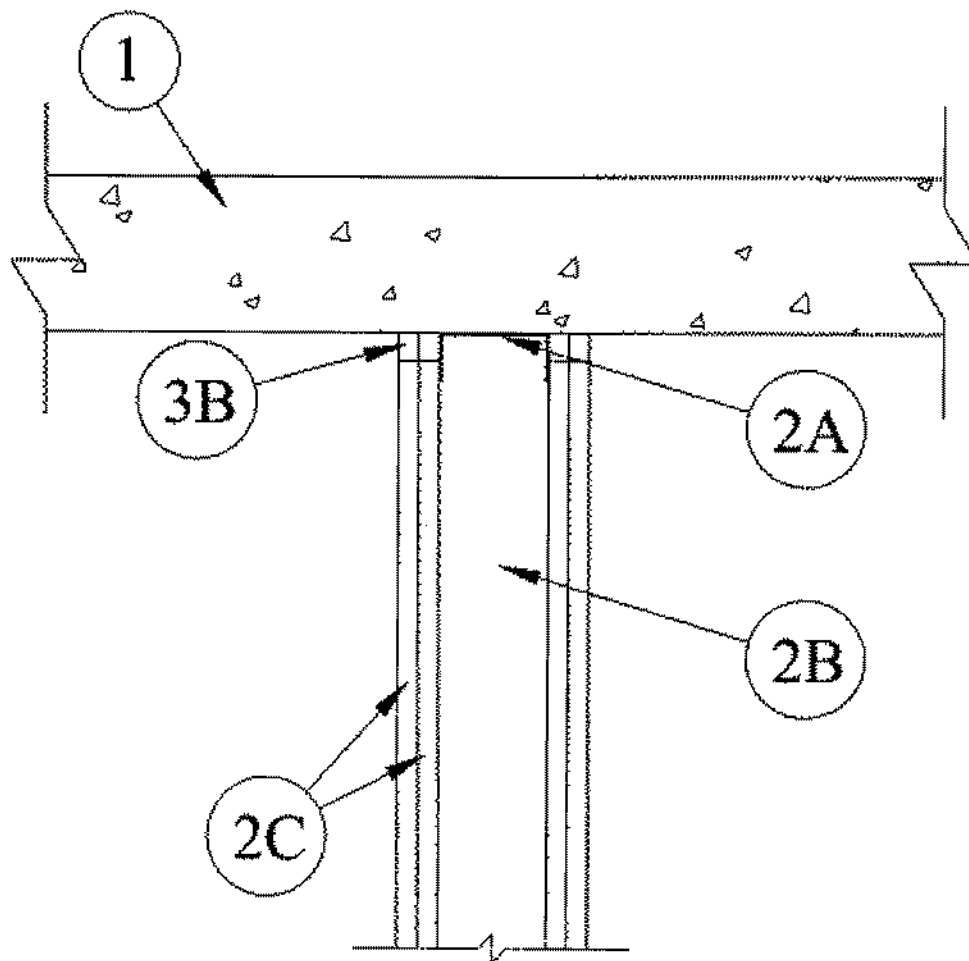
System No. HW-D-0016

August 21, 2002

Assembly Ratings — 1 and 2 Hr (See Item 2)

Nominal Joint Width — 1 In.

Class II and III Movement Capabilities — 25% Compression



1. **Floor Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) structural concrete.

2. **Wall Assembly** — The 1 or 2 h 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 and Partition

Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners —

Floor runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runners of wall assembly shall consist of min No. 26 gauge galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runners to be provided with 2 in. flanges. Ceiling runner secured to lower surface of floor with steel fasteners spaced max 7 in. OC.

A1. Light Gauge Framing — Clipped Ceiling Runner — As an alternate to the ceiling runner in Item 2A, 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 to concrete floor (Item 1) with steel fasteners spaced max 24 in. OC.*

**TOTAL STEEL SOLUTIONS L L C —
Snap Trak**

A2. Light Gauge Framing —Floor and Ceiling Runners
– As an alternate to the ceiling and floor runners in Item 2A and 2A1, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner secured to lower surface of floor with steel fasteners spaced max 12 in. OC.

STEELER INC. - Floor and Ceiling Runners

B. Studs — Steel studs to be min 2-1/2 in. wide. Studs cut 1 in. less in length than

assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A4). Slotted steel studs to be min 2-1/2 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan bead steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing —Floor and Ceiling Runners** (Item 2A2). Steel clips and studs to be min 2-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 or 1-1/4 in. on each side of wall for a 1 or 2 h fire rated wall, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1 in. gap shall be maintained between the top of the gypsum board and the lower surface of the floor. The top row of screws shall be installed into the studs 4 in. below the lower surface of the floor. The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of wall (at time of installation of joint system) is 1 in. The joint system is designed to accommodate a max 25 percent compression from its installed width. The joint system consists of a packing or forming material and a fill material between the top of the wallboard and the bottom of the floor, as follows:

A. Packing Material — (Optional, Not Shown)—For 2 h rated systems, two layers of nom 7/8 in. diam polyurethane backer rod friction-fitted on top of each other into the gap between the top of the gypsum board and the bottom of the concrete floor on both sides of the wall and recessed from each surface of wall to accommodate the required thickness of fill material.

A1. Forming Material* — (Optional, Not Shown)—For 2 h rated systems, min 3/4 in. width of 4 pcf mineral wool batt insulation compressed 50 percent in thickness and packed into the gap between the top of the gypsum board and bottom of the floor on both sides of the wall.

FIBREX INSULATIONS INC — FBX
Safing Insulation

IIG MINWOOL L L C — Safing
Insulation/MW

ROCK WOOL MANUFACTURING CO
— Delta Board or Delta-8

ROXUL INC — Type Safe

THERMAFIBER L L C — Type SAF

B. Fill, Void or Cavity Material* — A min
1/2 in. thickness of fill material installed on
each side of the wall between the top of the
gypsum board and bottom of the concrete
floor. For 1 hr systems and in 2 hr systems
where packing material (Item 3A) or
forming material (Item 3B) are not used,
bond breaker tape to be applied to ceiling
runner on each side of wall .

TREMCO INC — TREMstop Acrylic

*Bearing the UL Classification Mark

Joint Systems

System No. HW-D-0020

August 21, 2002

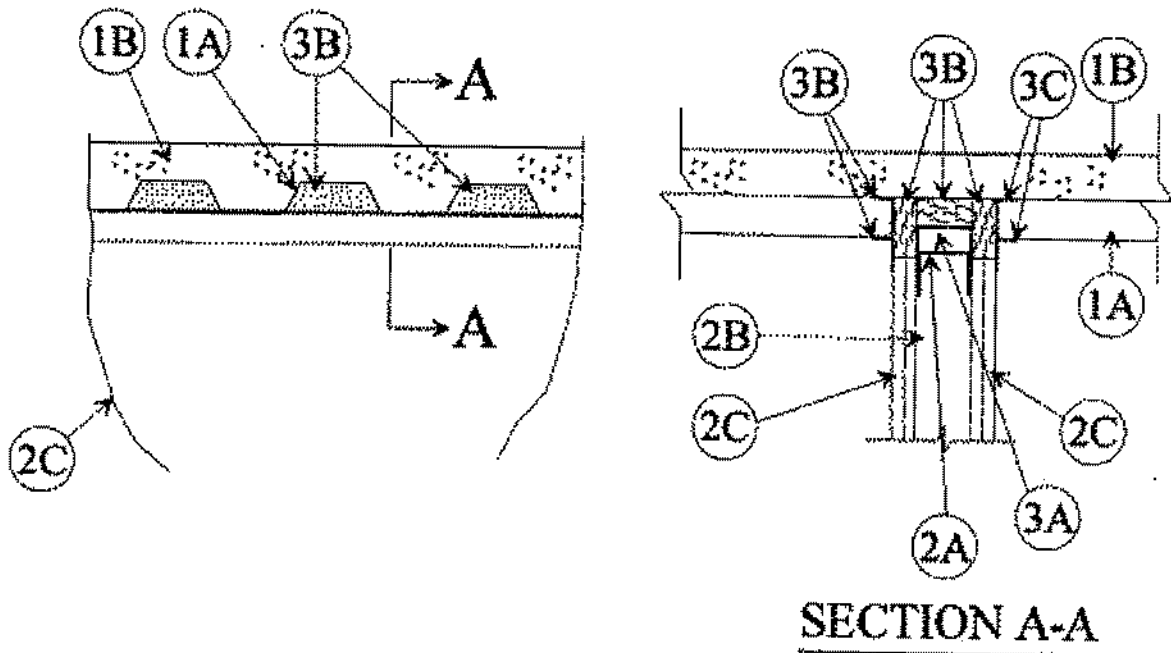
Assembly Ratings — 1 & 2 Hr (See Items 2 & 3B)

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly** — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series 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 floor deck.

A1. Spray Applied Fire Resistive Material* — (Optional, not shown) — Prior to the installation of the Deflective Channel, Forming Material and Fill, Void or Cavity Material (Items 3A, 3B, 3C), the steel floor units may be sprayed with a min 5/16 in. thickness to max 11/16 in. thickness of fire resistive material

WR Grace & Co. Conn Construction Products Div. — Type MK-6/HY.

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 assembly shall be constructed of the materials and in the manner 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.** The roof assembly shall include the following construction features:

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

B. Roof Insulation — Max 2-1/4 in. thick poured insulating concrete, as measured from the top plane of the floor units.

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 deflection channel (Item 3A) is used, ceiling

runner to be provided with 3 in. flanges. 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, flange height of ceiling runner shall be min 3/4 in. greater than nom joint width. Ceiling runner is installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners or by welds spaced max 24 in. OC. When optional spray-applied material is used on the steel floor deck and when deflection channel is not used, ceiling runner is secured over the spray-applied material to each valley of floor deck with min 3/16 in. diam steel masonry anchors spaced max 12 in. 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 or roof deck and secured to valleys with steel fasteners spaced max 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used. When optional spray-applied material is used on the steel floor deck, ceiling runner is secured over the spray-applied material to each valley of floor deck with min 3/16 in. diam steel masonry anchors spaced max 12 in. OC.

METAL-LITE INC — The System

SLIPTRACK SYSTEMS INC — SLP-TRK

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 24 in. OC. When optional spray-applied material is used on steel floor deck, clipped ceiling runner is secured over spray-applied fire resistive material (Item 1C) to each valley of floor deck with steel fasteners spaced max 12 in. 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 —Floor and Ceiling Runners
— As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used. When optional spray-applied material is used on the steel floor deck, ceiling runner is secured over the spray-applied material to each valley of floor deck with min 3/16 in. diam steel masonry anchors spaced max 12 in. OC.

STEELER INC. - Floor and Ceiling Runners

B. Studs — Steel studs to be min 3-1/2 in. wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in OC.

B1. Light Gauge Framing* — Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* — Floor and Ceiling Runners** (Item 2A3). Slotted studs to be min 3-1/2 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* — Slider C-Clip System — As an alternate to the **Light Gauge Framing* — Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 3-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum

board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the gypsum board and the bottom of the steel floor or roof deck and the top row of screws shall be installed into the studs 3-1/2 in. below the lower surface the floor or roof deck. **The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.**

3. Joint System — Max separation between bottom of floor or roof and top of wall is 1 in. The joint system is designed to accommodate a max 25 percent compression or extension from its installed width. — The joint system consists of a deflection channel, forming material and a fill material, as follows:

A. Deflection Channel (Optional) — A nom 3-5/8 in. wide by 3 in. deep min 24 ga steel U-shaped channel. Deflection channel installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners or by welds spaced max 24 in. OC. When optional spray applied material is used on the steel floor deck, deflection channel shall be secured over the spray applied material to each valley of floor deck with min 1-1/2 in. long by min 3/16 diam steel masonry anchors spaced max 12 in. 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. Forming Material* — Min 4 in. thickness of min 4 pcf density mineral wool hatt insulation cut to the shape of the fluted deck, approx 20 percent larger than the area of the flutes and compressed into flutes of the steel floor or roof deck between the top of the deflection channel or ceiling runner and the steel deck. Additional pieces of min 4 pcf mineral wool hatt insulation are to be cut to the contour of the flutes with an additional 1-3/8 in. high section at the bottom of the shapes to fill the 1 in. gap between the top of the gypsum board and bottom of the steel floor or roof deck. The additional pieces of mineral wool are compressed and firmly packed into the flutes and the gap between the top of the wallboard and bottom of the steel floor units on both sides of the wall and shall be a min 3/4 in. thick for 1 hr Rated Design and a min 1-1/2 in. thick for 2 hr Rated Design.

FIBREX INSULATIONS INC — FBX
Safing Insulation

IIG MINWOOL L L C — Safing
Insulation/MW

ROCK WOOL MANUFACTURING CO
— Delta Board or Delta-8

ROXUL INC — Type Safe

THFRMAFIBER L L C — Type SAF

C. Fill, Void or Cavity Material* — Min 1/16 in. dry (1/8 in. wet) thickness of fill material sprayed or brushed on each side of the wall in the flutes of the steel floor or roof deck units and between the top of the gypsum board and the bottom of the steel floor or roof deck units to completely cover mineral wool and overlap a min of 1/2 in. into gypsum board and steel floor deck on both sides of wall. When the steel floor deck is coated with spray-applied material (Item A1), the fill material shall overlap min 2 in. onto the spray-applied material.

3M COMPANY — FireDam™ Spray 100, FireBarrier Spray 100.

*Bearing the UL Classification Mark

Joint Systems

System No. HW-D-0021

August 21, 2002

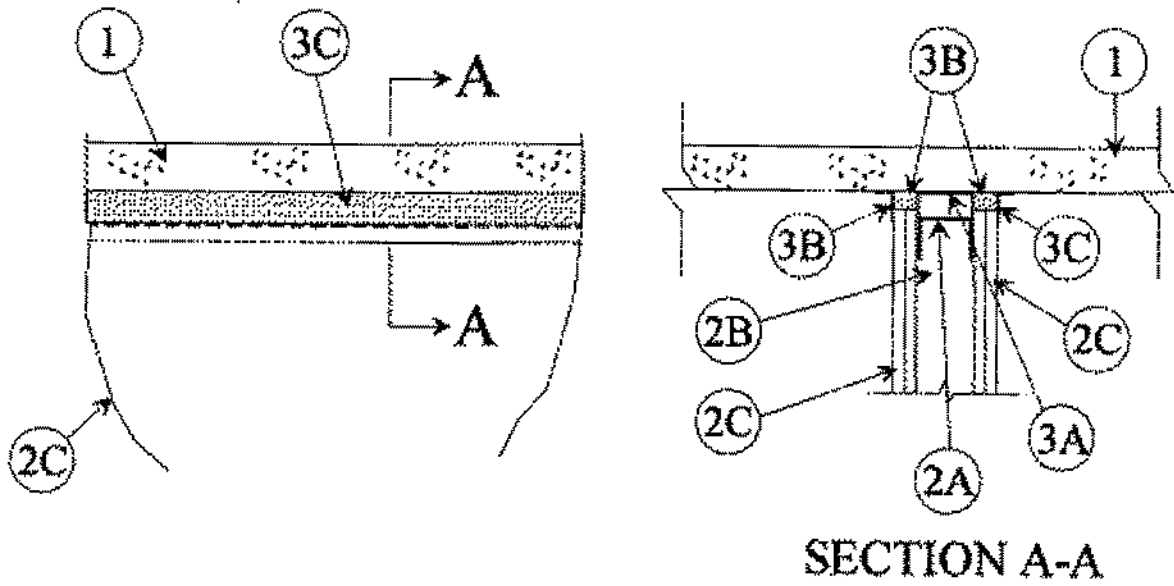
Assembly Ratings — 1 & 2 Hr (See Items 2 & 3A)

L Rating at Ambient — Less than 1 CFM/Lin Ft.

L Rating at 400 F — Less than 1 CFM/Lin Ft.

Nominal Joint Width — 1 in.

Class II Movement Capabilities — 18.75% Compression & Extension.



1. **Floor Assembly** — Min 4-1/2 in thick steel-reinforced lightweight or normal weight (100-150 pcf) structural concrete.

2. **Wall Assembly** — The 1 or 2 hr fire rated gypsum wallboard/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). Ceiling runner to be provided with 3 in. flanges. 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 24 in. 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 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

METAL-LITE INC — The System

SLIPTRACK SYSTEMS INC — SLP-TRK

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 24 in. 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 —Floor and Ceiling Runners
— As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud (Item 2B1) or Light Gauge Framing* Slider C-Clip System (Item 2B2)**. Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used.

STEELER INC. - Floor and Ceiling Runners

B. Studs — Steel studs to be min 3-1/2 in. wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners (Item 2A3)**. Slotted steel studs to be min 3-1/2 in. wide. Slotted steel

studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by ¾ in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by ½ in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 3-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. — Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a

nom 1 in. gap shall be maintained between the top of the gypsum board and the lower surface of the floor and the top row of screws shall be installed into the studs 3-1/2 in. below the lower surface of the floor. **The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.**

3. Joint System — Max separation between bottom of floor and top of wall is 1 in. The joint system is designed to accommodate a max 18.75 percent compression or extension from its installed width. The joint system consists of a deflection channel, forming material and a fill material, as follows:

A. Deflection Channel (Optional) — A nom 4 in. wide by 3 in. deep min 24 ga steel U-shaped channel. Deflection channel secured to concrete floor with steel masonry anchors spaced max 24 in. 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. Forming Material* — Min 1-3/8 in. width of 4 pcf mineral wool batt insulation compressed and firmly packed into the gap between the top of the gypsum board and bottom of the floor on both sides of the wall and shall be a min 3/4 in. thick for 1 hr Rated Design and a min 1-1/2 in. thick for 2 hr Rated Design.

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — Safing Insulation/MW

ROCK WOOL MANUFACTURING CO
— Delta Board or Delta -8

ROXUL INC — Type Safe

THERMAFIBER L L C — Type SAF

C. Fill, Void or Cavity Material* — Min 1/16 in. (dry, 1/8 in. wet) thickness of fill material sprayed or brushed on each side of the wall between the top of the gypsum board and the bottom of the floor to completely cover mineral wool and overlap a min of 1/2 in. onto gypsum board and floor on both sides of wall.

3M COMPANY — Firedam™ Spray 100,
FireBarrier Spray 100

*Bearing the UL Classification Mark

Joint Systems

System No. HW-D-0029

August 21, 2002

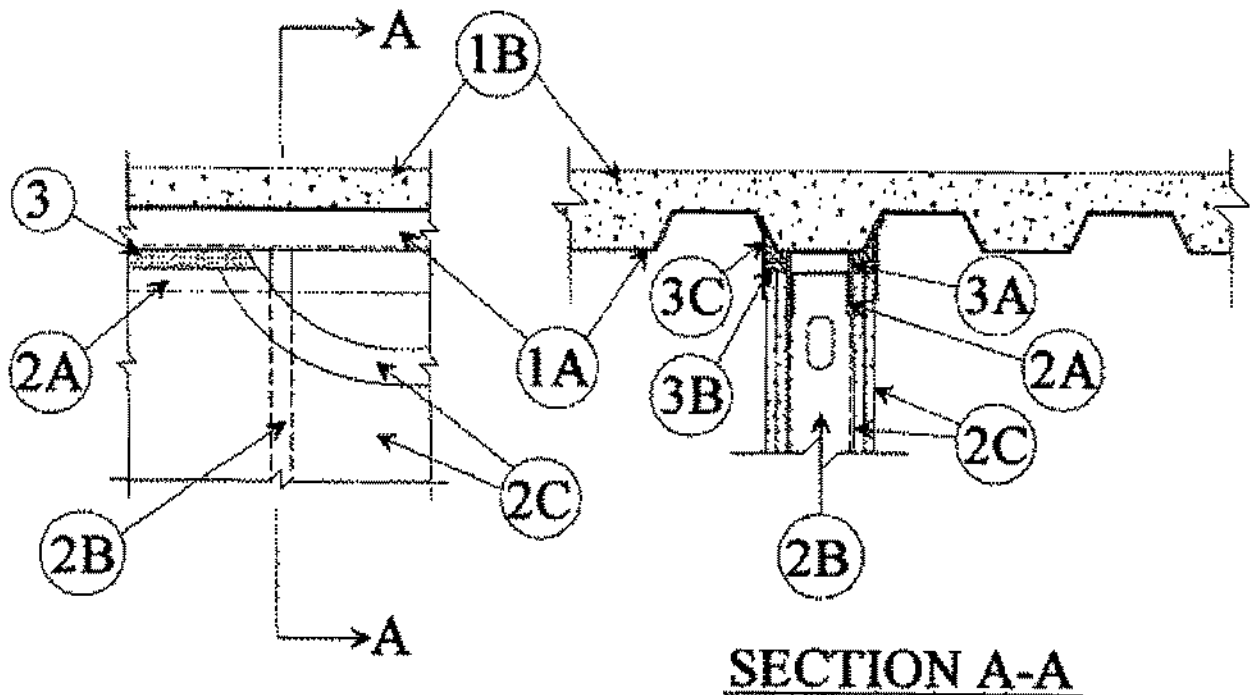
Assembly Ratings — 1 & 2 Hr (See Items 2 & 3B)

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly** — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series 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 floor deck .

A1. Spray Applied Fire Resistive Material* — (Optional, not shown) — Prior to the installation of the Deflective Channel, Forming Material and Fill, Void or Cavity Materials (Items 3A and 3B), the steel floor units may be sprayed with a min 5/16 in. thickness to max 11/16 in. thickness of fire resistive material.

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV —
Type MK-6/HY.

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 assembly shall be constructed of the materials and in the manner 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.** The roof assembly 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.

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 and 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 deflection channel (Item 3A) is used, ceiling runner to be provided with 3 in. flanges. 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, flange height of ceiling runner shall be min 3/4 in. greater than nom joint width. Ceiling runner installed parallel with steel floor or roof deck, centered on steel deck valley, and secured with steel fasteners or by welds spaced max 24 in. OC. When optional spray-applied material is used on the steel floor deck and when deflection channel is not used, ceiling runner is secured to valley of floor deck over the spray-applied material with min 3/16 in. diam steel masonry anchors spaced max 12 in. 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 parallel with steel floor or roof deck, centered on valley, and secured with steel fasteners spaced max 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used. When optional spray-applied material is used on the steel floor deck, ceiling runner is secured over the spray-applied material to each valley of floor deck with min 3/16 in. diam steel masonry anchors spaced max 12 in. OC.

METAL-LITE INC — The System

**SLIPTRACK SYSTEMS INC — SLP-
TRK**

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 parallel to direction of fluted steel floor units, centered on valley, and secured to with steel fasteners spaced 24 in. OC. When optional spray-applied material is used on steel floor deck, clipped ceiling runner secured to valleys of the steel floor units (Item 1A) through spray-applied fire resistive material (Item 1C) with steel fasteners spaced max 12 in. 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 — Floor and Ceiling Runners — *As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed parallel with steel floor or roof deck, centered on steel deck valley, and secured with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used. When optional spray-applied material is used on the steel floor deck, ceiling runner is secured over the spray-applied material to each valley of floor deck with min 3/16 in. diam steel masonry anchors spaced max 12 in. OC.*

STEELER INC. - Floor and Ceiling Runners

B. Studs — Steel studs to be min 3-1/2 in. wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A3). Slotted steel studs to be min 3-1/2 in. wide. Slotted studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing —Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 3-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head

steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the gypsum board and the bottom of the steel floor or roof deck and the top row of screws shall be installed into the studs 3-1/2 in. below the lower surface of the floor. **The hourly rating of the joint system is equal to the hourly fire rating of the wall.**

3. Joint System — Max separation between bottom of floor or roof and top of wall is 1 in. The joint system is designed to accommodate a max 25 percent compression or extension from its installed width. The joint system consists of a deflection channel, forming material and a fill material, as follows:

A. Deflection Channel (Optional) — A nom 3-5/8 in. wide by 3 in. deep min 24 ga steel U-shaped channel. Deflection channel centered on valley of fluted steel floor or roof deck and secured with steel fasteners or by welds spaced max 24 in. OC. When optional spray applied material is used on the steel floor units, deflection channel shall be secured over the spray applied material to each valley of floor unit with min 1-1/2 in. long by min 3/16 diam steel masonry

anchors spaced a max 5/24 in. 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. Forming Material* — Min 4 pcf mineral wool batt insulation to be cut a min of 20 percent wider than the gap between the top of the gypsum board and bottom of the steel floor or roof deck . The mineral wool is to be compressed and firmly packed into the gap between the top of the gypsum board and bottom of the steel floor or roof deck on both sides of the wall and shall be a min 3/4 in. thick for 1 hr Rated Design and a min 1-1/2 in. thick for 2 hr Rated Design.

FIBREX INSULATIONS INC — FBX
Safing Insulation

IIG MINWOOL L L C — Safing
Insulation/MW

ROCK WOOL MANUFACTURING CO
— Delta Board or Delta-8

ROXUL INC — Type Safe

THERMAFIBER L L C — Type SAF

C. Fill, Void or Cavity Material* — Min 1/16 in. thickness, dry, (1/8 in. wet) of fill material sprayed or brushed on each side of

the wall between the top of the gypsum board and the bottom of the steel floor or roof deck to completely cover mineral wool and overlap a min of 1/2 in. onto gypsum board and steel deck on both sides of wall. When the steel deck is coated with spray applied Material (Item A1), the fill material shall overlap min 2 in. onto the spray applied material.

3M COMPANY — Fire Dam™ Spray 100,
Fire Barrier Spray 100

*Bearing the UL Classification Mark

Joint Systems

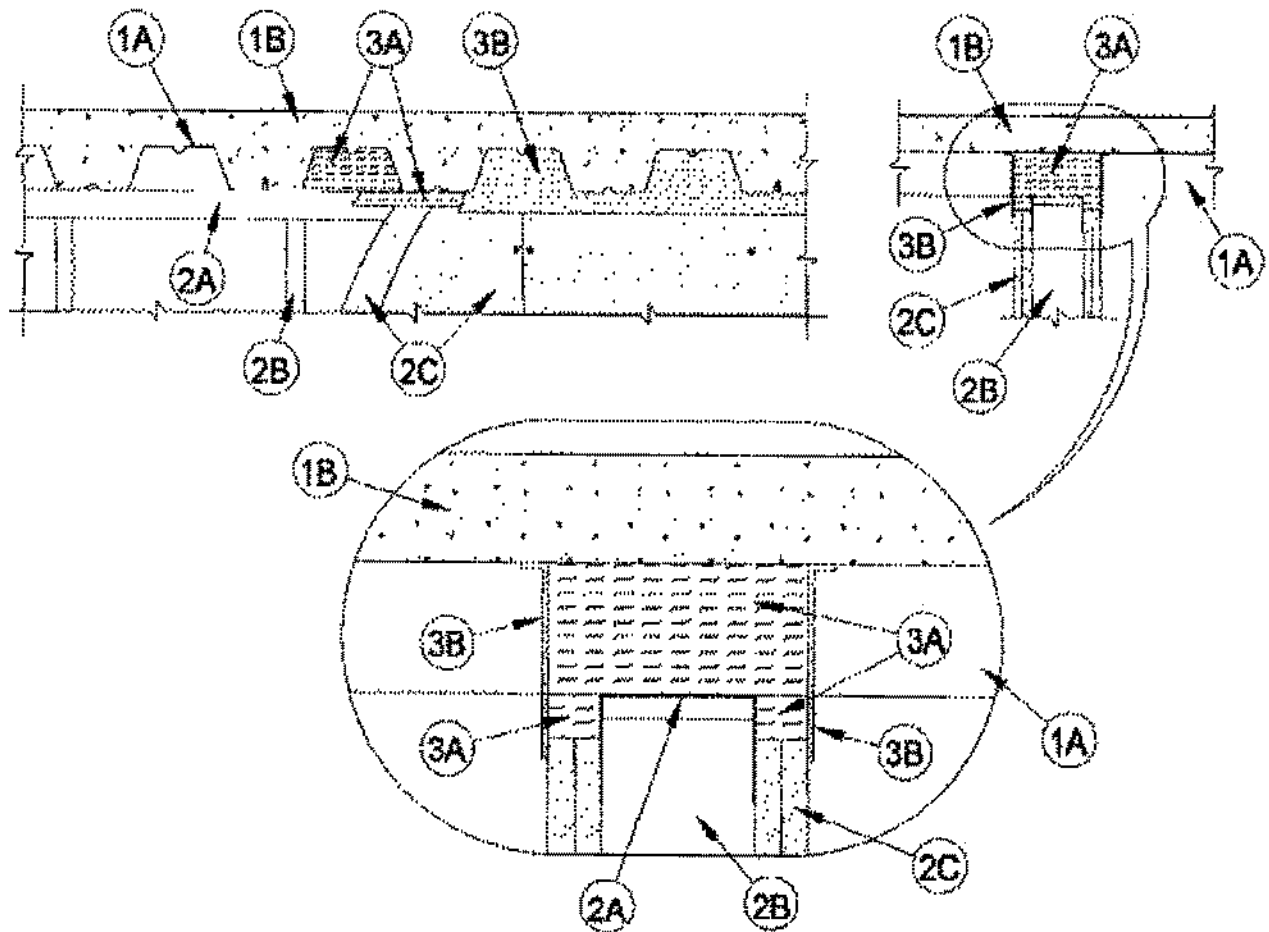
System No. HW-D-0032

August 21, 2002

Assembly Rating — 2 Hr

Joint Width — 1 In. Maximum

Class II Movement Capabilities — 50 Percent Compression or Extension



1. **Floor Assembly** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series 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.

2. Wall Assembly The 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). Ceiling runner to be provided with 2 in. flanges. Ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners or welds spaced max 12 in. OC.

A1. Light Gauge Framing* — Slotted Ceiling Runner - As an alternative 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 spaces max 24 in. OC

SLIPTRACK SYSTEMS INC — SLP-TRK

A2. Light Gauge Framing* — *Clipped Ceiling Runner* As an alternate to the ceiling runner in Item 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 24 in. OC.

TOTAL STEEL SOLUTIONS L L C —
Snap Trak

A3. Light Gauge Framing —Floor and Ceiling Runners

– As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud (Item 2B1)** or **Light Gauge Framing* Slider C-Clip System (Item 2B2)**. Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular with steel floor or roof deck, centered on steel deck valley, and secured with steel fasteners spaced max 12 in. OC.

STEELER INC. - Floor and Ceiling Runners

B. Studs Steel studs to be min 2-1/2 in. wide. Studs cut 5/8 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 x 1/2 in. long water head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners (Item 2A3)**. Slotted steel studs to be min 2-1/2 in. wide. Slotted studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud

by means of No. 10 by ¾ in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by ½ in. long pan head steel screw. Slotted stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 2-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. — Slider C Clip System

C. Gypsum Board* Gypsum board sheets installed to a min total thickness of 1-1/4 in. on each side of wall. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the gypsum board and the bottom of the steel floor units and the top row of screws shall

be installed into the studs 3-1/2 to 4 in.
below the lower surface of the floor.

3. Joint System Max separation between bottom of floor and top of wall at time of installation of joint system is 1 in. The joint system is designed to accommodate a max 50 percent compression or extension from its installed width. The joint system consists of forming material and a fill material, as follows:

A. Forming Material* Min 8 pcf density mineral wool batt insulation cut approx 25 percent wider than the flutes and with a length approx equal to the overall thickness of the wall. Pieces stacked to height of 6 in. and then compressed 50 percent in thickness and inserted into the flutes of the steel floor units above the top of the ceiling runner. The mineral wool batt insulation is to project beyond each side of the ceiling runner, flush with wall surfaces. Nom 1-1/4 in. wide by 1-1/2 in. high strips of min 8 pcf mineral wool batt insulation are to be cut to fill the 1 in. gap between the top of the gypsum board and bottom of the steel floor units. The strips of mineral wool are compressed and firmly packed, cut edge first, into the gap between the top of the gypsum board and bottom of the steel floor units on both sides of the wall.

ROCK WOOL MANUFACTURING CO
— Delta-8A

B. Fill, Void or Cavity Material* Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto gypsum board and steel deck on both sides of wall.

RECTORSEAL — Metacaulk 1200 Spray,
Metacaulk 1200 Caulk Grade

*Bearing the UL Classification Mark

Joint Systems

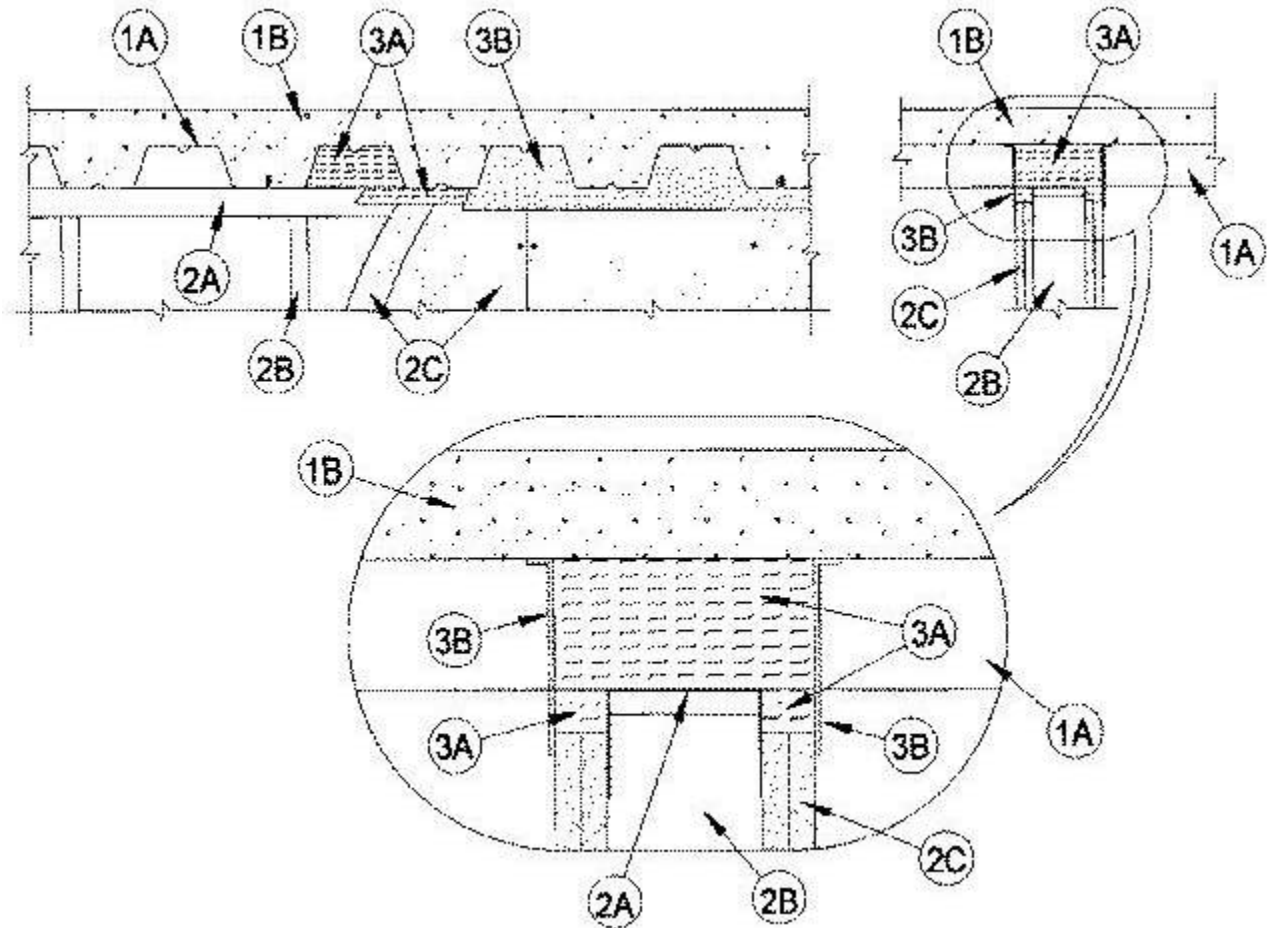
System No. HW-D-0033

November 12, 2003

Assembly Rating — 2 Hr

Joint Width — 1 In. Maximum

Class II Movement Capabilities — 50 Percent Compression or Extension



1. **Floor Assembly** — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series 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.

2. Wall Assembly — The 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). Ceiling runner to be provided with 2 in. flanges. Ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners or welds spaced max 12 in. OC.

A1. Light Gauge Framing* — — Slotted Ceiling Runner - As an alternative 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 spaces max 24 in. OC

SLIPTRACK SYSTEMS INC — SLP-TRK

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 24 in. OC.

TOTAL STEEL SOLUTIONS L L C —
Snap Trak

A3. Light Gauge Framing —Floor and Ceiling Runners — As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 12 in. OC.

STEELER INC — Floor and Ceiling Runners

B. Studs — Steel studs to be min 2-1/2 in. wide. Studs cut 5/8 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 x 1/2 in. long water head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A3). Slotted steel studs to be min 2-1/2 in. wide. Slotted steel studs cut 1 in. less in length

than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC — Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System — As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 2-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC — Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 1-1/4 in. on each side of wall. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1 in.

gap shall be maintained between the top of the Gypsum board and the bottom of the steel floor units and the top row of screws shall be installed into the studs 3-1/2 to 4 in. below the lower surface of the floor.

3. Joint System — Max separation between bottom of floor and top of wall at time of installation of joint system is 1 in. The joint system is designed to accommodate a max 50 percent compression or extension from its installed width. The joint system consists of forming material and a fill material, as follows:

A. Forming Material* — Min 8 pcf density mineral wool batt insulation cut approx 25 percent wider than the flutes and with a length approx equal to the overall thickness of the wall. Pieces stacked to height of 6 in. and then compressed 50 percent in thickness and inserted into the flutes of the steel floor units above the top of the ceiling runner. The mineral wool batt insulation is to project beyond each side of the ceiling runner, flush with wall surfaces. Nom 1-1/4 in. wide by 1-1/2 in. high strips of min 8 pcf mineral wool batt insulation are to be cut to fill the 1 in. gap between the top of the Gypsum board and bottom of the steel floor units. The strips of mineral wool are compressed and firmly packed, cut edge first, into the gap between the top of the Gypsum board and bottom of the steel floor units on both sides of the wall.

ROCK WOOL MANUFACTURING CO
— Delta-8A

B. Fill, Void or Cavity Material* — Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto gypsum board and steel deck on both sides of wall.

RECTORSEAL — Biostop 750 Spray,
Biostop 750 Caulk Grade

*Bearing the UL Classification Mark

Joint Systems

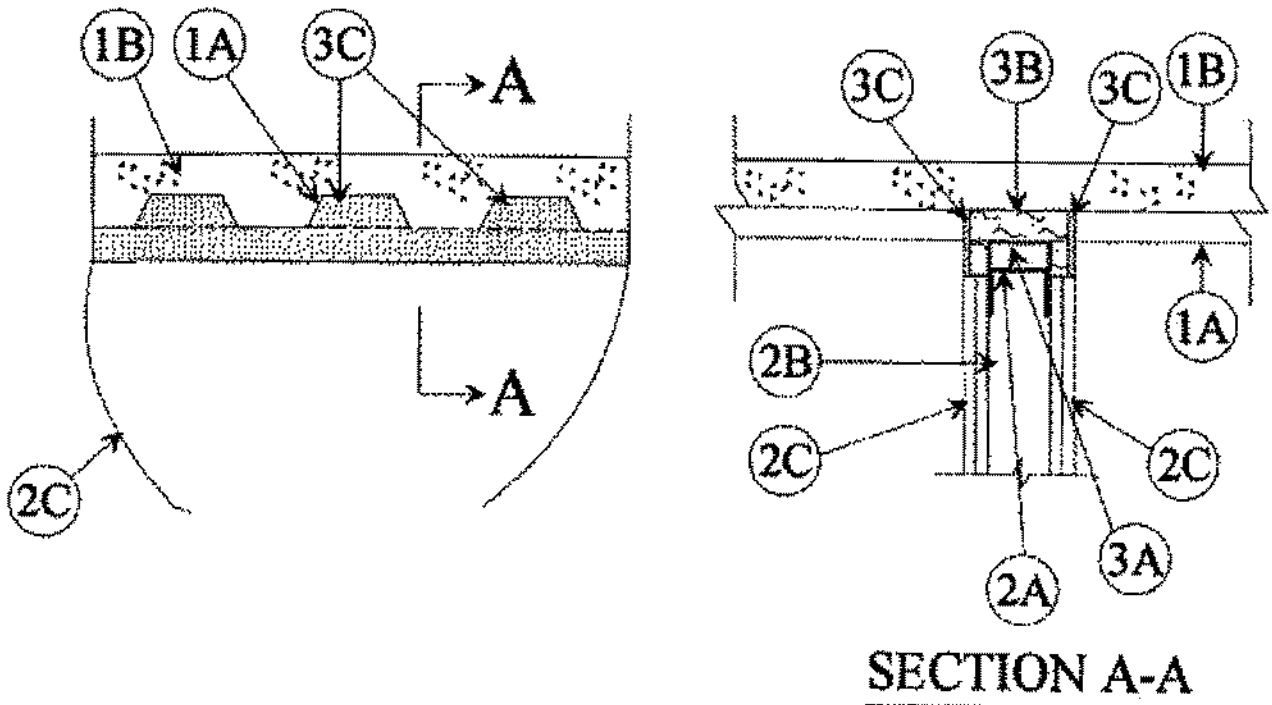
System No. HW-D-0034

February 27, 2003

Assembly Ratings - 1 and 2 Hr (See Item 2)

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly** — The fire-rated 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 2-1/2 in. deep galv steel fluted floor units.

B. Concrete — Min 3 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 (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The roof assembly 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 steel roof deck.

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/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. Ceiling runner to be provided with min 1-1/4 in. to max 2 in. flanges. When deflection channel (Item 3A) is used, flange height of ceiling runner is to be equal to or greater than flange height of deflection channel and the ceiling runner is to nest within the deflection channel with a 1/2 to 3/4 in. gap maintained between the top of the ceiling runner and the top of the deflection channel. When deflection channel is not used, ceiling runner to be provided with min. 1-1/2 in. flanges. Ceiling runner is

secured to valleys of steel deck with steel fasteners or welds spaced max 24 in. OC.

A1. Light Gauge Framing* — Clipped Ceiling Runner — As an alternate to the ceiling runner in Item 2A, 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 deck and secured to valleys with steel fasteners spaced max 12 in. OC. When clipped ceiling runner is used, deflection channel (Item 3A) shall not be used.

TOTAL STEEL SOLUTIONS L L C — Snap Trak

A2. Light Gauge Framing - Slotted Ceiling Runner* — *As an alternate to the ceiling runner in Item 2A, ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Items 2B). Ceiling runner secured to bottom of concrete floor with steel fasteners spaced max 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.*

SLIPTRACK SYSTEMS INC — SLP-TRK

METAL-LITE INC — The System

A3. Light Gauge Framing — Floor and Ceiling Runners — As an alternate to the ceiling and floor runners in Item 2A, 2A1 and 2A2, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge**

Framing* Slider C-Clip System (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used.

STEELER INC. - Floor and Ceiling Runners

B. Studs — Steel studs to be min 3-1/2 in wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and secured to floor runner. When deflection channel (Item 3A) is used, steel studs attached to ceiling runner with sheet metal screws located 1/2 in. below the bottom to the deflection channel. When deflection channel is not used, studs to nest in ceiling runner without attachment. *When slotted ceiling runner (Item 2A2) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC.*

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A3). Slotted steel studs to be min 3-1/2 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System

consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A3). Steel clips and studs to be min 3-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. or 1-1/4 in. on each side of wall for 1 hr or 2 hr fire rated wall, respectively. Wall to be constructed in the individual U400 Series Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the wallboard and the bottom surface of the steel floor or roof deck. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner or into the optional deflection channel

The hourly fire rating of the joint system is dependent upon the hourly fire rating of the wall assembly in which it is installed.

3. Joint System — Max separation between bottom of floor or roof deck and top of wall (at time of installation of joint system) is 1 in. The joint system is designed to accommodate a max 25 percent compression or extension from its' installed width. The joint system shall consist of forming and fill materials, with or without a deflection channel (Item 3A), as follows:

A. Deflection Channel — (optional)—Max 2 in. deep min 24 gauge galv steel channel sized to accommodate ceiling runner (Item 2A). Deflection channel secured to valleys of steel floor or roof deck with steel fasteners or welds spaced max 24 in. OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1/2 to 3/4 in. gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner nests inside the deflection channel without attachment.

B. Forming Material* — Min 4-1/4 in. or 5-5/8 in. depth, for 1 hr or 2 hr fire rated wall, respectively, of 4 pcf mineral wool batt insulation cut to the shape of the fluted deck, approx 20 percent larger than the area of the flutes and compressed into the flutes of the steel floor or roof deck between the top of the deflection channel and the steel floor or roof deck. Additional 2 in. thick by 1 in. wide sections of mineral wool batt insulation are compressed 50 percent and installed cut edge first to fill the 1 in. gap between the top of the wall and bottom of the steel floor or roof deck. The forming material shall be recessed from each surface of wall to accommodate the required thickness of fill material.

FIBREX INSULATIONS INC — FBX
Safing Insulation

THERMAFIBER L L C — Type SAF

OWENS CORNING — Safing

**ROCK WOOL MANUFACTURING CO
— Delta Safing**

ROXUL INC — Safe

**B. Fill, Void or Cavity Material* —
Sealant** — Min 1/4 in. thickness of fill
material installed on each side of the wall in
the flutes of the steel floor or roof deck and
between the top of the wall and the bottom
of the steel floor or roof deck, flush with
each surface of wall.

**SPECIFIED TECHNOLOGIES INC —
SpecSeal ES Sealant**

*Bearing the UL Classification Mark

Joint Systems

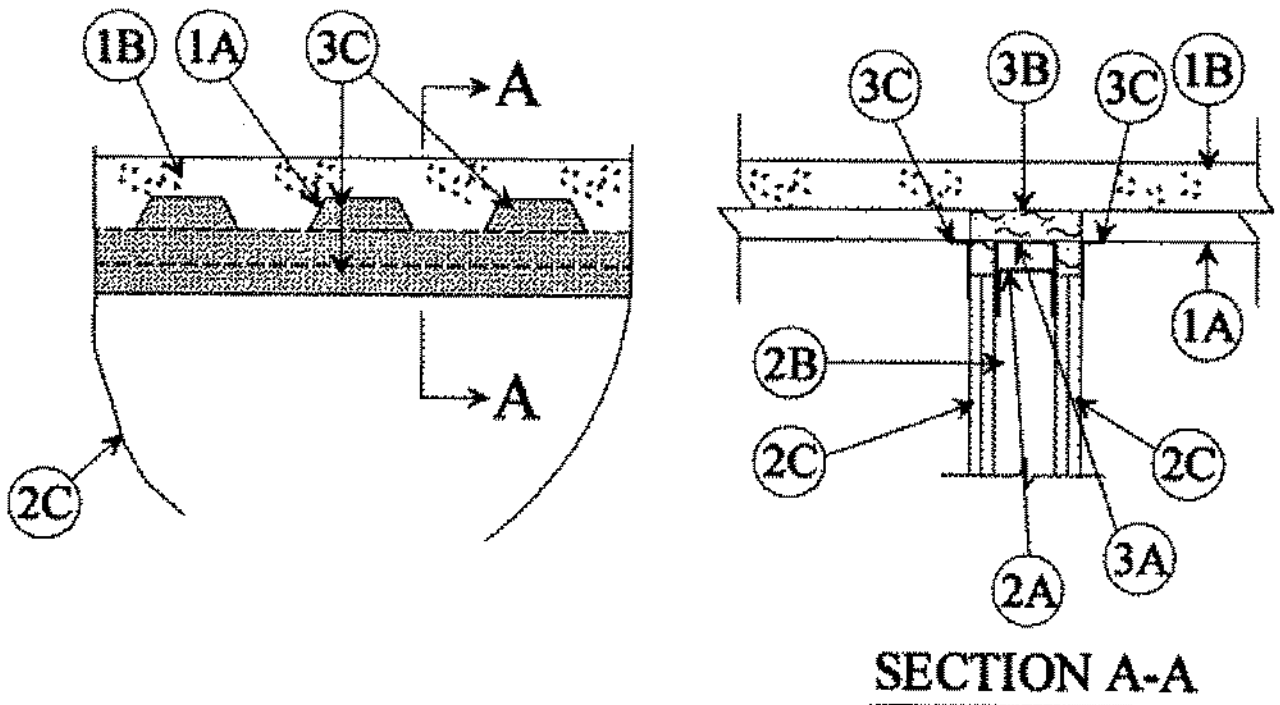
System No. HW-D-0037

August 21, 2002

Assembly Rating — 2 Hr

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 18.75% Compression or Extension



1. **Floor or Wall Assembly** The fire-rated 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 Floor Units*** Max 3 in. deep galv steel fluted floor units.

B. **Concrete** Min 3 in. thick reinforced concrete, as measured from the top plane of the floor units.

2. **Wall Assembly** The 2 hr fire-rated gypsum board/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 min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with 1-1/4 in. flanges. Ceiling runner installed within the U-shaped deflection plate (Item 3B) with 1 in. gap maintained between the top of ceiling runner and top of deflection plate.

*A1. **Light Gauge Framing*** — **Clipped Ceiling Runner** As an alternate to the ceiling runner in Item 2A, 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 12 in. OC. When clipped ceiling runner is used, deflection channel (Item 3A) shall not be used.*

**TOTAL STEEL SOLUTIONS L L C —
Snap Trak**

A2. **Light Gauge Framing —Floor and Ceiling Runners** – As an alternate to the ceiling and floor runners in Item 2A and 2A1, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively.

Ceiling runner installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used.

STEELER INC. - Floor and Ceiling Runners

B. Studs Steel studs to be min 3-5/8 in. wide. Studs cut 5/8 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runners. Steel studs secured to runners. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A2). Slotted steel studs to be min 3-5/8 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing —Floor and Ceiling Runners** (Item 2A2). Steel clips and studs to be min 3-5/8 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by

means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* Gypsum board sheets installed to a min total 1-1/4 in. thickness on each side of wall. Wall to be constructed as specified in the individual U400 Series Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the gypsum board and the bottom surface of the steel floor units and the top row of screws shall be installed into the studs 3 in. below the valleys of the steel floor units.

3. Joint System Max separation between bottom of floor and top of wall (at time of installation of joint system) is 1 in. The joint system is designed to accommodate a max 18.75 percent compression or extension from it's installed width. The joint system shall consist of a deflection plate, and forming and fill materials in the flutes of the steel floor units and between the top of the wallboard and bottom of the steel floor units, as follows:

A. Deflection Channel A nom 3-3/4 in. wide by 2 in. deep min 25 gauge steel U-shaped channel. Deflection channel secured to valleys of steel floor units (Item 1A) with steel fasteners or by welds spaced max 12 in. 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. Forming Material* Min 6-1/8 in. depth of 4 pcf mineral wool batt insulation cut to the shape of the fluted deck, approx 20 percent larger than the area of the flutes and compressed into the flutes of the steel floor units between the top of the deflection channel and the steel deck. Additional 2 in. thick by 1 in. wide sections of mineral wool batt insulation are compressed 50 percent and installed cut edge first to fill the 1 in. gap between the top of the wall and bottom of the steel floor units. The forming material shall be installed flush with both surfaces of wall.

FIBREX INSULATIONS INC — FBX
Safing Insulation

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV —
FlameSafe Mineral Wool

C. Fill, Void or Cavity Material* —
Sealant Min 1/8 in. wet thickness of fill material spray or brush applied on each side of the wall in the flutes of the steel floor units and between the top of the wall and the bottom of the steel floor units, and overlap a min 1 in. onto wallboard on both sides of wall. Additional 3/16 in. wet thickness of fill material shall overlap a min 1 in. onto the steel deck on both sides of wall.

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV —
FS2900, FS2901, FS2905 and FS2955
Coating

*Bearing the UL Classification Mark

Joint Systems

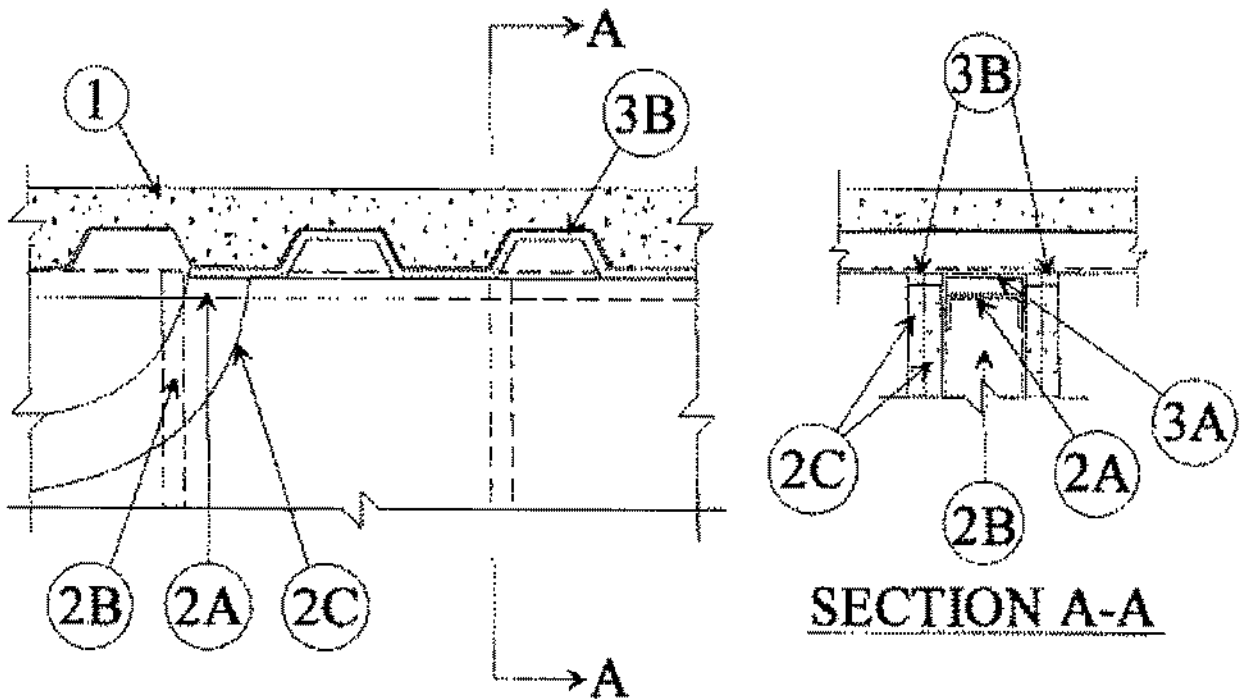
System No. HW-D-0048

October 07, 2003

Assembly Ratings 1 & 2 Hr (See Item 2)

Nominal Joint Width — 3/4 in.

Class II Movement Capabilities — 33 Percent 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 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 assembly shall be constructed of the materials and in the manner 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 plate. 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 24 in. 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 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

METAL-LITE INC — The System

SLIPTRACK SYSTEMS INC — SLP-TRK

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 24 in. 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 24 in. 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

A4. Light Gauge Framing —Floor and Ceiling Runners
– As an alternate to the ceiling and floor runners in Item 2A, 2A1, 2A2 and 2A3, floor and ceiling runners to consist of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud (Item 2B1)** or **Light Gauge Framing* Slider C-Clip System (Item 2B2)**. Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed perpendicular to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When ceiling runner is used, deflection channel (Item 3A) shall not be used.

STEELER INC. - Floor and Ceiling Runners

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 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight 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 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A4). Slotted steel studs to be min 3-5/8 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing —Floor and Ceiling Runners** (Item 2A4). Steel clips and studs to be min 3-5/8 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

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 specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that the gypsum board is cut to fit the contour of the steel floor units with a nom 3/4 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 its 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 2 in. deep, min 24 ga steel U-shaped channel. Deflection channel secured to valleys of steel floor units (Item 1A) with steel fasteners or by welds spaced max 24 in. 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 5/8 in. thickness of fill material installed on each side of the wall between the top of the gypsum board and all surfaces of the steel floor units, flush with each surface of gypsum board.

**JOHNS MANVILLE INTERNATIONAL
INC — Firetemp(TM) CI, *Firetemp*TMCE**

*Bearing the UL Classification Mark

Joint Systems

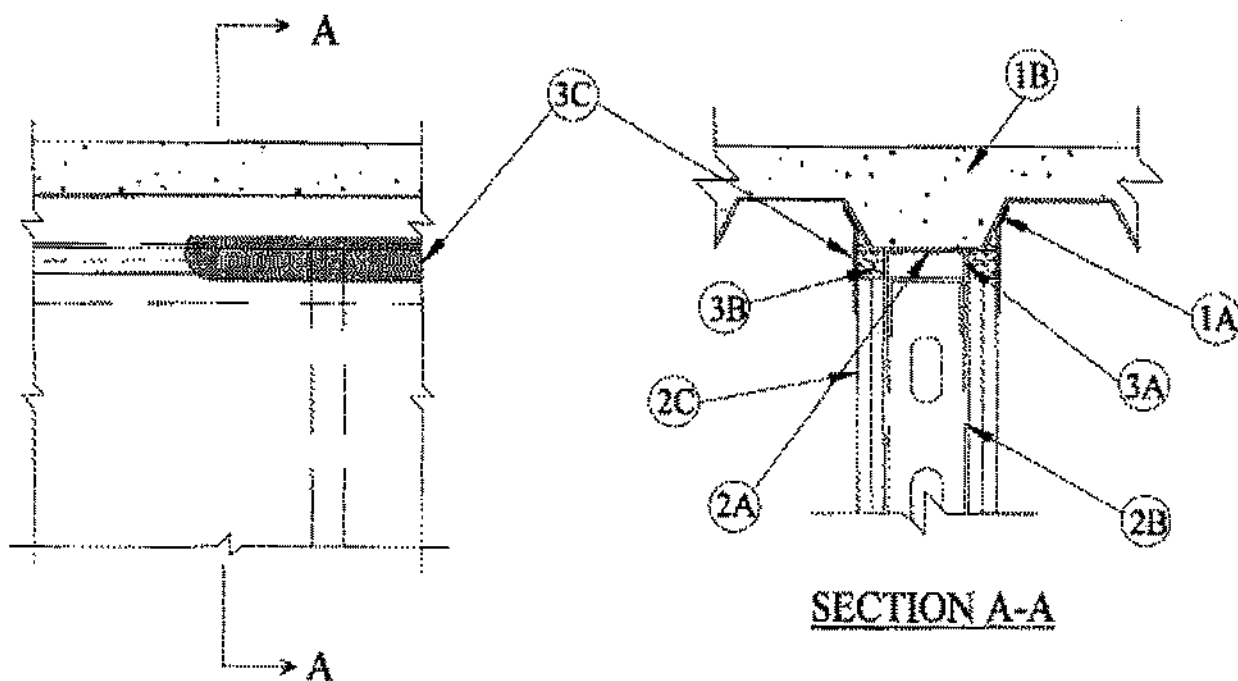
System No. HW-D-0049

August 21, 2002

Assembly Ratings 1 & 2 Hr (See Items 2 and 3B)

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 50% Compression Or Extension



1. **Floor Assembly** The fire-rated 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.

C. Spray-Applied Fire Resistive

Materials* (Optional)—(Not Shown)—

Prior to the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B) the steel floor units may be sprayed with a min 5/16 in. to max 1-3/4 in. thickness of fire resistive material.

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV —

Type MK-6-HY

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 assembly shall be constructed of the materials and in the manner 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. The roof assembly 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.

1B. Roof Assembly As an alternate to Items 1 and 1A, a fire rated protected fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 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. The roof assembly shall include the following construction features:

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

B. Spray—Applied Fire Resistive Materials* (Not Shown)—Prior to the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.

2. Wall Assembly The 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 min 25 ga galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with 2 in. flanges. Ceiling runner secured to valleys of steel floor units (Item 1A) through fire resistive material with steel fasteners or welds spaced max 12 in. OC. When optional spray applied material is used on the steel floor units, steel ceiling runner shall be secured through the spray applied material to each valley of floor unit with min 3/16 in. diam steel masonry anchors.

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 parallel to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. OC.

METAL-LITE INC — The System

**SLIPTRACK SYSTEMS INC — SLP-
TRK**

A2. Light Gauge Framing*-Vertical Deflection Ceiling Runner As an alternate to the ceiling runners in Items 2A and 2A1, 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. Flanges sized to accommodate steel studs (Item 2B). Vertical deflection ceiling runner installed parallel to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. OC.

THE STEEL NETWORK INC —
VertiTrack VTD250, VTD358, VTD400,
VTD600 and VTD800

A3. Light Gauge Framing* — Clipped Ceiling Runner As an alternate to the ceiling runner in Items 2A, 2A1 and 2A2, 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 parallel to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. OC.

TOTAL STEEL SOLUTIONS L L C —
Snap Trak

A4. Light Gauge Framing —Floor and Ceiling Runners
– As an alternate to the ceiling and floor runners in Item 2A, 2A1, 2A2 and 2A3, floor and ceiling runners to consist

of galv steel channel sized to accommodate the **Light Gauge Framing* Slotted Stud** (Item 2B1) or **Light Gauge Framing* Slider C-Clip System** (Item 2B2). Floor and ceiling runners to be provided with min 1-1/4 in. and 3 in. flanges, respectively. Ceiling runner installed parallel to direction of fluted steel floor units or roof deck and secured to valleys with steel fasteners spaced max 12 in. OC. When optional spray applied material is used on the steel floor units, steel ceiling runner shall be secured through the spray applied material to each valley of steel floor unit or roof deck with min 3/16 in. diam steel masonry anchors.

STEELER INC. - Floor and Ceiling Runners

B. Studs Steel studs to be min 2-1/2 in. wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC. When vertical deflection ceiling runner (Item 2A2) is used, steel studs secured to slotted vertical deflection clips, through the bushings, with steel screws at midheight of each slot. Stud spacing not to exceed 24 in. OC.

B1. Light Gauge Framing* —Slotted Studs — Slotted steel stud to be used in conjunction with **Light Gauge Framing* —Floor and Ceiling Runners** (Item 2A4). Slotted steel studs to be min 2-1/2 in. wide. Slotted steel studs cut 1 in. less in length than assembly height with bottom nesting in and secured to both ceiling and floor runners. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 3/4 in. long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. OC.

STEELER INC. - Slotted Stud

B2. Light Gauge Framing* —Slider C-Clip System —As an alternate to the **Light Gauge Framing* —Slotted Steel Studs** (Item 2B1), a Slider C-Clip System consisting of a C shaped steel clip with a slotted opening and a steel stud to be used in conjunction with **Light Gauge Framing — Floor and Ceiling Runners** (Item 2A4). Steel clips and studs to be min 2-1/2 in. wide. Steel clip inserted into inside flange of steel stud without attachment. Total length of steel stud cut 1 in. less than assembly height with bottom of steel stud nesting in and secured to floor runner. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. long pan head steel screw. Ceiling runner secured to steel C-Clip by means of No. 10 by 3/4 in. long pan head steel screw located 3/8 in. below top of ceiling runner. Top row of gypsum board screws shall be centered within the preformed slot of the C-Clip. Steel stud and steel clips spacing not to exceed 24 in. OC.

STEELER INC. – Slider C Clip System

C. Gypsum Board* Gypsum board installed to a min total thickness of 5/8 in. and 1-1/4 in. on each side of wall for 1 and 2 Hr rated assemblies respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1 in. gap shall be maintained between the top of the gypsum board and the bottom of the steel floor units and the top row of screws shall be installed into the studs 3-1/2 to 4 in. below the lower surface of the floor. The hourly rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System Max separation between bottom of floor and top of wall at time of installation of joint system is 1 in. The joint system is designed to accommodate a max 50 percent compression or extension from its installed width. The joint system consists of forming material and a fill material, as follows:

A. Forming Material* Nom 5/8 in. and 1-1/4 in. wide strips of min 4 pcf mineral wool batt insulation for 1 and 2 hr rated assemblies respectively, cut to thickness, compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the steel floor units on both sides of the wall. Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in. apart along the length of the joint.

ROCK WOOL MANUFACTURING CO
— Delta- Board

THERMAFIBER L L C — Type SAF

A1. Forming Material* - Strips (Optional)
- Nom 5/8 in. and 1-1/4 in. wide precut mineral wool strips for 1 and 2 hr rated assemblies respectively. The strips are compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the steel floor units on both sides of the wall. Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in. apart along the length of the joint.

HILTI CONSTRUCTION CHEMICALS,
DIV OF

HILTI INC — CP 767 Speed Strips

B. Fill, Void or Cavity Material* Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto gypsum board and steel deck on both sides of wall. When spray-applied fire resistive material* is applied to the steel floor and form units*, the fill material is to overlap the gypsum board a min of 1/2 in. and the spray-applied fire resistive material a min of 2 in. on both sides of wall. When spray-applied fire resistive materials are used, the CP672 firestop spray shall overlap the wall a min 1/2 in. and overlap the spray-applied fire resistive material a min of 2 in. on both sides of the wall.

**HILTI CONSTRUCTION CHEMICALS,
DIV OF**

HILTI INC — CP672 Firestop Spray

*Bearing the UL Classification Mark

STEELER

CONSTRUCTION SUPPLY



STEELER® ICC-ES REPORT ESR-2054



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