

## XHBN.HW-D-0102 - Joint Systems

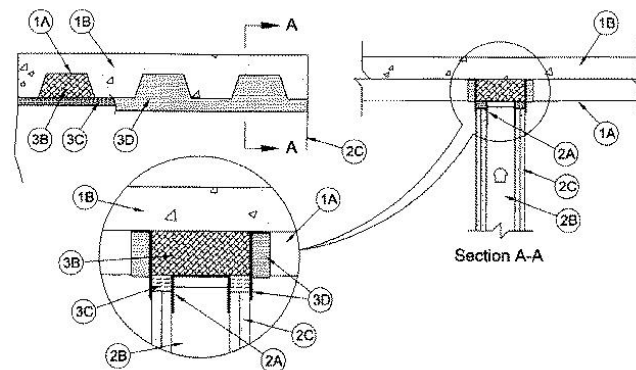
Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

## XHBN - Joint Systems

## System No. HW-D-0102

September 01, 2016

**Assembly Ratings — 1, 2, 3 and 4 Hr (See Item 2)****Nominal Joint Widths - 1 and 2 in. (See Item 3)****L Rating At Ambient — Less Than 1 CFM/Lin Ft****L Rating At 400°F — Less Than 1 CFM/Lin Ft****Class II Movement Capabilities — 19 and 25% Compression and Extension (See Item 3)**

**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. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:

**A. Steel Floor and Floor Units\*** — Max 3 in. (76 mm) deep galv steel fluted floor units.

**B. Concrete** — Min 2-1/2 in. (64 mm) 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. (76 mm) deep galv steel fluted roof deck.

**B. Roof Insulation** — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the steel roof deck.

**2. Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 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. Ceiling runner to be provided with min 1-1/4 in. (32 mm) to max 3 in. (76 mm) flanges. When deflection channel (Item 2A) 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 3/4 in. to 1 in. (19 to 25 mm) gap maintained between the top of the ceiling runner and the top of the deflection channel. When deflection channel is not used, flange height of ceiling runner shall be min 3/4 in. (19 mm) greater than nom joint width. Ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors or welds spaced max 24 in. (610 mm) OC.

**A1. Light Gauge Framing\* - Slotted Ceiling Runner** — When nom joint width is less than or equal to 1-3/4 in. (44 mm), slotted ceiling runner may be used 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 deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

**BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS** — SLP-TRK

**CALIFORNIA EXPANDED METAL PRODUCTS CO** — CST

**CLARKDIETRICH BUILDING SYSTEMS** — Type SLT, SLT-H

**MARINO/WARE, DIV OF WARE INDUSTRIES INC** — Type SLT

**METAL-LITE INC** — The System

**QUAIL RUN BUILDING MATERIALS INC** — Slotted Deflection Track

**RAM SALES L L C** — RAM Slotted Track

**SCAFCO STEEL STUD MANUFACTURING CO**

**STEELER INC** — Steeler Slotted Ceiling Runner

**TELLING INDUSTRIES L L C** — True-Action Deflection Track

**A2. Light Gauge Framing\* — Vertical Deflection Ceiling Runner** — When nom joint width is less than or equal to 1 in. (25 mm), vertical deflection ceiling runner may be used as an alternate to the ceiling runner 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. Vertical deflection ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When vertical deflection ceiling runner is used, deflection channel (Item 3A) shall not be used.

**THE STEEL NETWORK INC** — VertTrack VTD362, VTD400, VTD600 and VTD800

**A3. Light Gauge Framing\* - Notched Ceiling Runner** — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 2B). Notched ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When notched ceiling runner is used, deflection channel (Item 3A) shall not be used.

**OLMAR SUPPLY INC** — Type SCR

**B. Studs** — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) 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 3/4 in. (19 mm) below the bottom of the deflection channel. When deflection channel is not used, studs to nest 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. (13 mm) long wafers head steel screws at midheight of slot on each side of wall. 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. (610 mm) OC.

B1. **Light Gauge Framing\*** — **Slotted Studs** — Slotted steel stud to be used in conjunction with **Light Gauge Framing\*** — **Floor and Ceiling Runners** (Item 2A1). Slotted steel studs to be min 3-1/2 in. (89 mm) wide. Slotted steel studs cut 1/2 in. to 3/4 in. (13 to 19 mm) 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. (19 mm) long low profile head steel screw. Floor runner attached to bottom of steel stud by means of No. 8 by 1/2 in. (13 mm) long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. (610 mm) OC.  
**STEELER INC** — Steeler Slotted Stud

C. **Gypsum Board\*** — Gypsum board sheets installed to a min total thickness of 5/8 in., 1-1/4 in., 1-1/2 in. or 2 in. (16, 32, 38 or 51 mm) on each side of wall for 1, 2, 3 and 4 hr fire-rated assemblies, respectively. Wall to be constructed as described in the individual U400 Series Design in the UL Fire Resistance Directory, except that a max 1 or 2 in. (25 or 51 mm) gap (See Item 3) shall be maintained between the top of the gypsum board and the bottom plane of the steel floor units. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. (25 mm) 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 equal to the hourly fire-rating of the wall.**

3. **Joint System** — **Max separation between bottom of floor or roof deck and top of gypsum board (at time of installation of joint system) is 2 in. (51 mm) for 1 and 2 hr fire ratings and 1 in. (25 mm) for 3 and 4 hr ratings. The joint system is designed to accommodate a max 25 percent compression or extension from its installed width for 1 and 2 hr ratings and a max 19 percent compression or extension from its installed width for 3 and 4 hr ratings.** The joint system shall consist of spray applied fire resistive material, forming and fill materials, with or without a deflection channel (Item 3A) as follows:

A. **Deflection Channel** — Max 3 in. (76 mm) deep min 24 gauge galv steel channel sized to accommodate ceiling runner (Item 2A) and steel studs. Deflection channel installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors or welds spaced max 24 in. (610 mm) OC. The ceiling runner is installed within the deflection channel to maintain a 1/2 to 1 in. gap (13 to 25 mm) 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. **Spray Applied Fire Resistive Material\*** — Min 4-7/8 in., 6-1/8 in., 6-5/8 in. or 7-5/8 in. (124, 156, 168 or 194 mm) depth of spray applied fire resistive material for 1, 2, 3 and 4 hr fire-rated assemblies, respectively, installed into the flutes of the steel floor or roof deck between the top of the deflection channel and the steel deck. Prior to the installation of the spray applied fire resistive material in the flutes of the steel floor or roof deck temporary forms with a thickness equal to the overall thickness of the gypsum board shall be installed to cover the vertical legs of the ceiling runner channel (Item 2A) or deflection channel (Item 3A). The spray applied fire resistive material is mixed with water in accordance with the mixing instructions on the bag and is sprayed and/or troweled to fill the flute above the channel and temporary forms.

**ISOLATEK INTERNATIONAL** — Type 300, Type II

When Type 300 material is used, the minimum average density of the material shall be 17.5 pcf (280 kg/m<sup>3</sup>) with a minimum individual density of 16 pcf (256 kg/m<sup>3</sup>). When Type II material is used, the minimum average density of the material shall be 13 pcf (208 kg/m<sup>3</sup>) with a minimum individual density of 11 pcf (176 kg/m<sup>3</sup>). See Design Information Section in Volume 1 of the Fire Resistance Directory for method of density determination.

**GCP APPLIED TECHNOLOGIES INC** — Type MK-6/HY

When MK-6/HY material is used, the minimum average density of the material shall be 15 pcf (240 kg/m<sup>3</sup>) with a minimum individual density of 14 pcf (224 kg/m<sup>3</sup>). See Design Information Section in Volume 1 of the Fire Resistance Directory for method of density determination.

C. **Forming Material\*** — Strips of nominal 4 pcf (64 kg/m<sup>3</sup>) density mineral wool batt insulation are to be compressed 50 percent in thickness and installed cut edge first to completely fill the gap between the spray applied fire resistive material and the top of the gypsum board. The forming material shall be installed flush with both surfaces of wall.

**INDUSTRIAL INSULATION GROUP L L C** — MinWool-1200 Safing

**JOHNS MANVILLE** — Safing

**ROCK WOOL MANUFACTURING CO** — Delta Board

**ROCKWOOL MALAYSIA SDN BHD** — Safe

**ROCKWOOL** — Safe

**THERMAFIBER INC** — SAF

D. **Fill, Void or Cavity Material\*** — **Sealant** — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material spray applied to cover the spray applied fire resistive material and the forming material on each side of the wall. The material shall be installed to overlap a min of 1/2 in. (13 mm) onto the gypsum board and a min of 1 in. (25 mm) on the steel floor or roof deck on both sides of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal AS200 Elastomeric Spray

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

**Last Updated** on 2016-09-01

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