



# XHBN.HW-D-0639 - 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

### XHBN7 - Joint Systems Certified for Canada

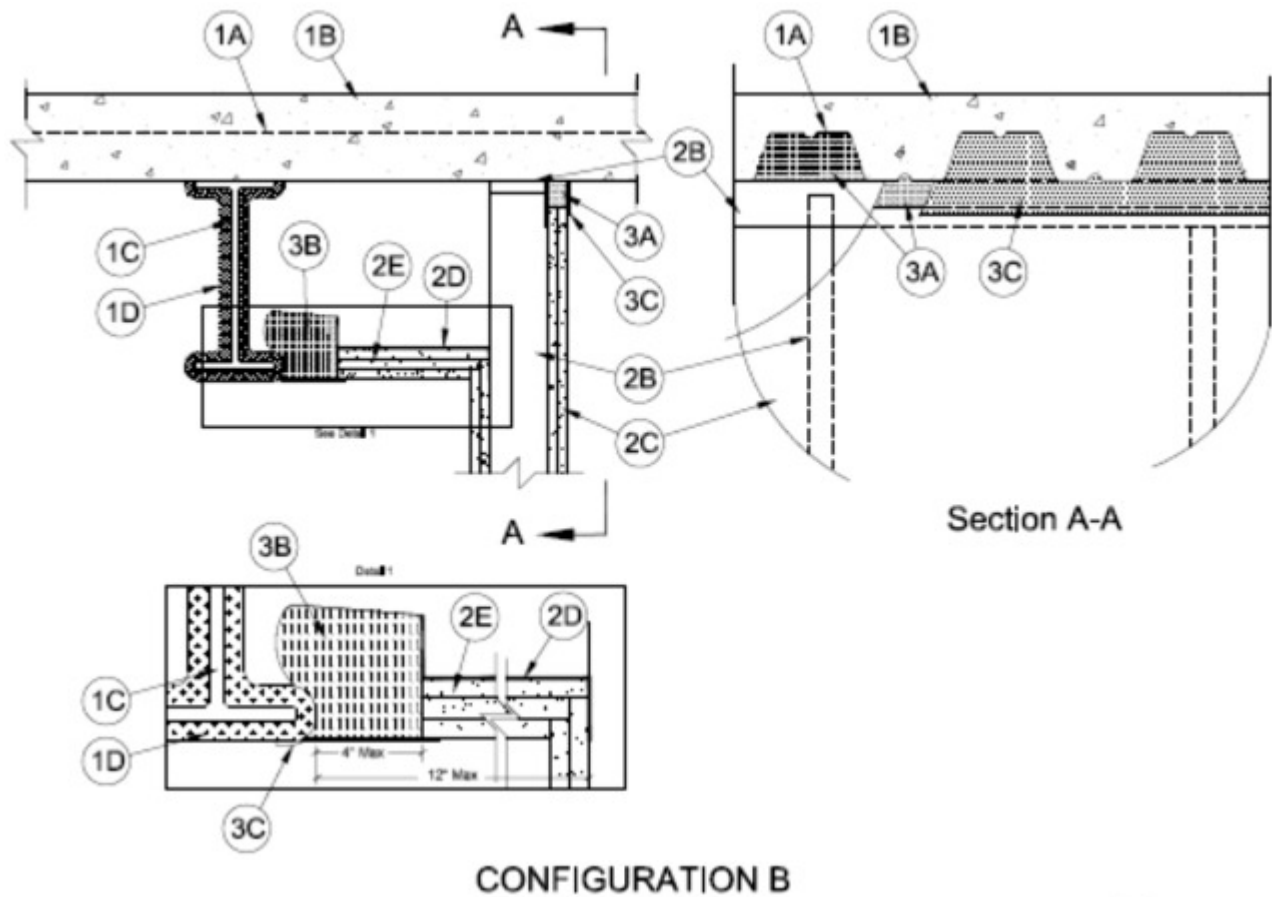
See General Information for Joint Systems

See General Information for Joint Systems Certified for Canada

### System No. HW-D-0639

September 01, 2016

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 1 and 2 Hr (See Item 2)	F Rating — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1-1/2 In.	FT Rating — 1 and 2 Hr (See Item 2)
Class II Movement Capabilities — 50% Compression or Extension	FH Rating — 1 and 2 Hr (See Item 2)
	FTH Rating — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 1-1/2 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 D700 or D900 Series 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.

C. **Structural Steel Support** — Steel beam or open-web steel joist as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to wall assembly at a distance specified in Item D below. When structural steel support (Item 1C) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m<sup>2</sup>) shall be installed to completely cover one side of each joist. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

D. **Spray-Applied Fire Resistive Material\*** — Structural steel supports to be sprayed with the thickness of material specified in the individual D700 or D900 Series Design. The flutes of the steel floor units above the structural steel supports shall be filled with spray-applied fire resistive material. The distance from the lowest elevation of the sprayed structural steel support to the face of the steel wall studs shall not exceed 12 in. (305 mm).

**ISOLATEK INTERNATIONAL** — Type 300

**GCP APPLIED TECHNOLOGIES INC** — Types MK-6/HY, MK-6/HY ES, MK-6s, MK-10HB, RG

E. **Spray-Applied Fire Resistive Material\*** — (Not Shown) - For D700 Series Floor-Ceiling Design, before or after installation of the ceiling runner (Item 2A), steel floor units to be sprayed with the thickness of material as specified in the individual D700 Series Design. The flutes of the steel floor units above the ceiling runner (Item 2A) shall be filled with spray-applied fire resistive material. As an alternate, the spray-applied fire resistive material in the flutes above the ceiling runner may be applied to follow the contour of the steel floor units. Excess material shall be removed from the flanges of the ceiling runner beyond the required thickness of spray-applied fire resistive material on the steel floor units.

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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 P700 or 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** — Mineral and Fiber Board\* — Min 3/4 in. (19 mm) thick boards applied in one or more layers directly over steel roof deck or over gypsum board sheathing laid atop steel roof deck.

C. **Roof Covering\*** — Hot-mopped or cold-application materials compatible with mineral and fiber board insulation.

D. **Structural Steel Support** — Steel beam or open-web steel joist as specified in the individual P700 or P900 Series Roof-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to wall assembly at a distance specified in Item E below. When structural steel support (Item 1C) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m<sup>2</sup>) shall be installed to completely cover one side of each joist. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

E. **Spray-Applied Fire Resistive Material\*** — Structural steel supports to be sprayed with the thickness of material specified in the individual P700 or P900 Series Design. The flutes of the steel roof deck above the structural steel

supports shall be filled with spray-applied fire resistive material. The distance from the lowest elevation of the sprayed structural steel support to the face of the steel wall studs shall not exceed 12 in. (305 mm).

**ISOLATEK INTERNATIONAL** — Type 300

**GCP APPLIED TECHNOLOGIES INC** — Type MK-6/HY, MK-6/HY ES, MK-6s, MK-10HB, RG

**F. Spray-Applied Fire Resistive Material\*** — For P700 Series Roof-Ceiling Design, before or after installation of the ceiling runner (Item 2A), steel roof deck to be sprayed with a thickness of spray applied fire resistive material as specified in the individual P700 Series Roof-Ceiling design. The flutes of the steel deck above the ceiling runner (Item 2A) shall be filled with spray-applied fire resistive material. As an alternate, the spray-applied fire resistive material in the flutes above the ceiling runner may be applied to follow the contour of the steel roof deck. Excess material shall be removed from the flanges of the ceiling runner beyond the required thickness of spray-applied fire resistive material on the steel roof deck.

**ISOLATEK INTERNATIONAL** — Type 300

**GCP APPLIED TECHNOLOGIES INC** — Type MK-6/HY, MK-6/HY ES, MK-6s, Mk-10HB, RG

**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 or V400 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 min 2-1/2 in. (64 mm) flanges. Ceiling runner is to be installed perpendicular or parallel to direction of fluted steel deck and parallel with structural steel support and secured to steel floor units (Item 1A) with steel masonry anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

**A1. 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 (Item 2B). Track flanges to be min 2-1/2 in. (64 mm). Ceiling runner installed perpendicular or parallel to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

**BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS** — SLP-TRK, SLPTRK325

**CALIFORNIA EXPANDED METAL PRODUCTS CO** — CST

**METAL-LITE INC** — The System

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

**THE STEEL NETWORK INC** — VertiTrack VT series, 250VT, 362VT, 400VT, 600VT and 800VT

**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. (64 mm). Clipped ceiling runner installed perpendicular or parallel to direction of fluted steel deck and secured with steel masonry anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC before or after optional spray-applied

fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

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

**A3. Light Gauge Framing\*- Notched Ceiling Runner** — As an alternate to the ceiling runners in Items 2A through 2A2, 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 or parallel to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

**OLMAR SUPPLY INC** — Type SCR

**A4. Light Gauge Framing\* — Slotted Ceiling Runner** — As an alternate to the ceiling runner in Item 2A through 2A3, ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Flange height of slotted ceiling runner shall be 3-1/4 in. (83 mm) with 2 in. (51 mm) deep slots. Slotted ceiling runner installed perpendicular or parallel to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

**SCAFCO STEEL STUD MANUFACTURING CO** — Slotted Track-Type SDLT

**B. Studs** — Steel studs to be min 2-1/2 in. (64 mm) wide. Studs cut 1 in. to 1-1/2 in. (25 to 38 mm) less in length than assembly height with bottom nesting in and secured to floor runner. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with min No. 8 by 1/2 (13 mm) long wafer head steel screws at midheight of slot on each side of wall. Studs to nest in ceiling runner without attachment. When slotted ceiling runner (Item 2A4) is used, steel studs cut in lengths 3/4 to 1-3/4 in. (19 to 44 mm) less than floor to ceiling height and secured to slotted ceiling runner with No. 8 by 1/2 (13 mm) long wafer head steel screws at +/- 3/16 in. (5 mm) of the mid-height of slot on each side of wall.

**C. Gypsum Board\*** — Gypsum board sheets installed to a min total 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory except that a max 1-1/2 in. (38 mm) gap shall be maintained between the top of gypsum board and the steel floor units, or the spray applied fire resistive material on the steel deck when D700 or P700 series assembly is used, on side of wall opposite the structural member. The screws attaching the gypsum board to the studs along the top of the wall on side opposite the structural member shall be located 1 to 1-1/4 in. (25 to 32 mm) below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner. On the structural beam side of wall, the gypsum board shall extend to a height nominally flush with the lower elevation of the structural steel support, with the top edge of the layers staggered as shown in the detail and such that the gypsum board attachment screws at top edge of board penetrate into Z-furring (Item D).

**D. Z-Furring** — Min 2 x 4 x 2 in. (51 by 102 by 51 mm) to max 2 x 8 x 2 in. (51 by 203 by 51 mm) by min 20 ga steel Z-furring shelf continuous along length of joint on structural member side of wall. Located nominally 1-1/4 in. (32 mm) (1 hr fire rated assembly) or 1-7/8 in. (48 mm) (2 hr fire rated assembly) above lowest elevation of sprayed structural member. The horizontal gap between edge of Z furring shelf and sprayed structural member at lowest elevation shall be min. 1/2 in. (13 mm) to max 4 in. (102 mm). Z furring secured to each wall stud on structural member side of wall with one min No. 8 sheet metal screw located nom 1/2 in. (13 mm) from top of furring leg. At splices, adjoining sections of Z furring shall overlap nom 4 in. (102 mm) and be secured at approx center of lap with two min No. 8 sheet metal screws located max 2 in. (51 mm) from each lip of the furring shelf.

**E. Gypsum Board\*** — Gypsum board sheets of the same type and thickness as used on the wall shall be cut to size and installed to a min total 1-1/4 in. (32 mm) or 1-7/8 in. (48 mm) thickness to fully cover exposed bottom of steel furring

shelf (Item D) for 1 and 2 hr fire rated assemblies, respectively. The mating edges of the gypsum board on the wall and furring shelf shall be cut to fit as shown in the detail. Joints in the layers of gypsum board shall be staggered. The inner two layers of gypsum are secured with two rows of drywall screws located 12 in. (305 mm) on center. The outer layer of gypsum board is secured with two rows of drywall screws located 8 in. (203 mm) on center. All fasteners are staggered between layers and are of sufficient length to penetrate into the furring shelf.

**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 the steel floor units (or bottom of the spray applied fire resistive material on the steel floor units) and top of gypsum board (at time of installation of joint system) is 1-1/2 in. (38 mm). Max horizontal separation between spray applied fire resistive material on structural support member and Z-furring shelf is 4 in. (102 mm).** The joint system is designed to accommodate a max 50 percent compression or extension from its installed width as measured between the bottom plane of the steel floor units or spray-applied fire resistive material on the steel floor units and the top of the gypsum board. The joint system shall consist of forming and fill materials, as follows:

A. **Forming Material\*** — Nom 5/8 or 1-1/4 in. (16 or 32 mm) thick strips of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation, for 1 and 2 hr rated assemblies, respectively. On side of wall opposite structural member, strips of mineral wool cut to width, compressed 50 percent in thickness and inserted cut-edge first into gap between top of the gypsum board and bottom of the floor assembly, flush with one wall surface. Adjoining lengths of batt to be tightly butted with butted seams spaced min 36 in. (914 mm) apart along the length of the joint. In addition, in D900 or P900 Series assemblies, and in D700 and P700 assemblies when the spray-applied fire resistive material in the flutes above the wall follows the contour of the steel deck, sections of mineral wool batt sized to attain a min compression rate of 50 percent in the thickness direction are firmly packed to completely fill the flutes of the steel floor or roof deck between the top of the ceiling runner and the steel deck or spray-applied fire resistive material. The mineral wool batt insulation in the flutes is to be installed flush with the gypsum board surface on the side of the wall opposite the structural steel support, and flush with the flange of the ceiling runner on the opposite side 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** — Type SAF

A1. **Forming Material\* — Plugs** — As an alternate to Item 3A for the fluted area of steel floor or deck above wall, preformed mineral wool plugs, formed to the shape of the flutes, are friction fit to completely fill the flutes above the ceiling runner. The plugs shall be installed flush with wall surface on side of wall opposite the structural member, and flush with leg of ceiling runner on structural member side of wall. Additional forming material, described in Item 3A2, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and the bottom of plug.

**HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC** — CP777 Speed Plugs

A2. **Forming Material\* - Strips** — Nom 5/8 in. (16 mm) and 1-1/4 in. (32 mm) wide precut mineral wool strips for 1 and 2 hr rated assemblies, respectively. The strips are cut to appropriate thickness, compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the plug or steel floor or roof deck on side of wall opposite structural member.

**HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC** — CP 767 Speed Strips

B. **Forming Material\*** — On structural member side of wall, pieces of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation cut to a width of 4 in. (102 mm), compressed 50 percent in thickness and inserted cut-edge first into gap between Z-furring/gypsum board shelf and lower elevation of sprayed beam, to be nominally flush with the bottom surface of this joint. Adjoining lengths of batt to be tightly butted with butted seams spaced min 36 in. (914 mm) apart along the length of the joint.

**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** — Type SAF

C. **Fill, Void or Cavity Material\* — Sealant** — Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material spray or brush applied over the forming material on each side of the wall. Fill material to overlap a min of 1/2 in. (13 mm) onto the gypsum board and steel floor or roof deck and a min 2 in. (51 mm) onto the spray-applied fire resistive material on the steel floor units and structural steel support member.

**HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC** — CP672 Firestop Spray or CFS-SP WB Firestop Joint 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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