



## XHBN.HW-D-0563 Joint Systems

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- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified 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 as Classified, Listed, or Recognized.

### Joint Systems

[See General Information for Joint Systems](#)

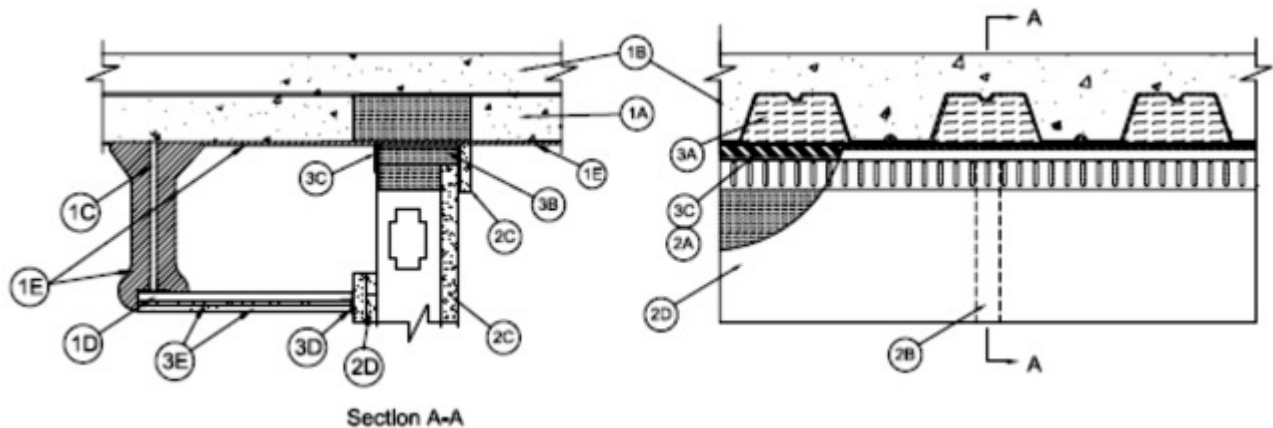
#### System No. HW-D-0563

May 21, 2009

Assembly Rating — 2 Hr

Nominal Joint Width — 1/2 in.

Class II and III Movement Capabilities — 100% 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 Series 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. (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, as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and 1 to 7 in. (25 to 178 mm) from wall assembly.
- D. **Steel Attachment Clips** — Z-shaped clips formed from 1 in. (25 mm) wide strips of min 20 ga galv

steel. Clips to be sized to extend through the thickness of the spray-applied fire-resistive material on the bottom flange of the steel beam with 1-1/2 in. (38 mm) long upper and lower legs. Legs of clips fastened to bottom of beam (prior to application of spray-applied fire-resistive materials) with steel fasteners or welds. Clips spaced max 16 in. (406 mm) OC and extend to within 1/4 to 3/4 in. (6 to 19 mm) from the surface of the wall.

**E. Spray-Applied Fire Resistive Material\*** — After installation of the steel attachment clips, structural steel support and the steel floor units to be sprayed with the min thickness of material specified in the individual D700 Series Design. The flutes of the steel floor units are to be filled with material across the entire top flange of the steel beam. In addition, the flutes of the steel floor units immediately above the wall are to be filled with material to the full thickness of the wall. The remainder of the steel floor units shall be sprayed as specified in the individual D700 design.

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**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 P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. 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 roof deck.

**C. Spray-Applied Fire Resistive Material\*** — After installation of the steel attachment clips, structural steel support and the steel deck to be sprayed with the min thickness of material specified in the individual P700 Series Design. The flutes of the steel deck are to be filled with material across the entire top flange of the steel beam. In addition, the flutes of the steel deck immediately above the wall are to be filled with material to the full thickness of the wall. The remainder of the steel floor units shall be sprayed when specified in the individual P700 design.

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**2. Shaft 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 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 runner U-shaped, sized to accommodate steel studs (Item 2B), fabricated from 24 ga galv steel. Ceiling runner positioned with slotted leg toward finished side of wall. Runners attached to floor through spray-applied fire resistive material with steel masonry fasteners located not greater than 2 in. (51 mm) from ends and not greater than 12 in (205 mm) OC. The ceiling runners are provided with a fill, void or cavity material and are described in Item 3.

**B. Studs** — "C-T", "I", or "C-H" shaped steel studs to be min 2 1/2 in. (64 mm) wide and formed of min 24 ga galv steel. Studs cut 1 to 1-1/4 in (25 to 32 mm) less in length than assembly height with bottom nesting in and secured to floor runner. Steel studs secured to slotted leg of ceiling runner on finished side with No. 8 by 1/2 (13 mm) long wafer head steel screws at mid-height of exposed slot. Studs spaced max 24 in. (610 mm) OC.

**C. Gypsum Board\*** — 1 in. (25 mm) thick by max 24 in. (610 mm) wide gypsum board liner panels. Panels cut 1 in. (25 mm) less in length than floor to ceiling height. Vertical edges inserted into "T" shaped section of "C-T" studs, into holding tabs of "I" studs or into "H"-shaped section of "C-H" studs. A nominal 3-5/8 in. (92 mm) wide strip of gypsum board covering the leg of the ceiling runner attached a max of 3/8 in. (10 mm) below the track web and a max of 8 in. (203 mm) O.C. to ceiling runner on the non-finished side of wall.

**D. Gypsum Board\*** — Gypsum board 1/2 or 5/8 in. (13 or 16 mm) thick, applied on finished side of wall as specified in the individual Wall and Partition Design. The boards cut a max 1/2 in. (13 mm) less in length than the floor to ceiling height. The screws attaching the gypsum board layer(s) to the "C-T", "I", or "C-H" studs shall be located 4 to 5 in. (102 to 127 mm) down from deck at time of installation. Board to extend a min of 3 in. (76 mm) above top surface of Z clips.

**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 spray-applied fire resistive material on steel floor or roof unit and top of wall (at time of installation of joint system) is 1/2 in. (13 mm). The joint system is designed to accommodate a max 100 percent compression or extension from its installed width.

A. **Forming Material\*** — Min 4 pcf (64 kg/m<sup>3</sup>) mineral wool insulation cut to the shape of the fluted steel floor units, approx 33% larger than the area of the flutes. Pieces compressed and inserted into the flutes above the top ceiling runner flush with the finished wall surface. As an option, the spray-applied fire resistive material described in Item 1 can be used in place of the packing material.

B. **Forming Material\*** — Min 4-1/2 in. (114 mm) thick strips of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation cut to the width of the ceiling runner, compressed 33 percent in thickness and installed into ceiling runner between leg of track and gypsum liner board to completely fill cavity within ceiling runner..

C. **Fill, Void or Cavity Material\*** — Nom 20 ga U-shaped track having 3 in (76 mm) legs with a nom 1-1/4 in. (32 mm) wide intumescent strip affixed to the top of the leg overlapping on to top surface a min of 1/4 in. (6 mm) facing the finished side of wall. Track to be secured through spray-applied fire resistive material to bottom side of floor assembly with min 2 in. (51 mm) steel masonry fasteners spaced at a max of 24 in. (610 mm) OC.

**CALIFORNIA EXPANDED METAL PRODUCTS CO** — FAS SHAFT Track

D. **Fill, Void or Cavity Material\*** — A nom 20 gauge steel angle provided with a nom 1 in. (25 mm) wide intumescent strip on one leg. Angle to be secured to the steel attachment clips (Item 1D) with min No. 8 steel sheet metal screws such that the intumescent strip is flat against the outer surface of the wall.

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E. **Gypsum Board\*** — Gypsum board sheets installed on underside of steel attachment clips (Item 1D) to a min total 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness for 1 and 2 hr fire rated assemblies, respectively. Gypsum boards installed to completely cover the gap between steel beam and wall and secured to each steel attachment clips with a minimum of two steel drywall screws approximately 1 to 2 in. (25 to 51 mm) from each end of the clip.

\*Bearing the UL Classification Mark

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