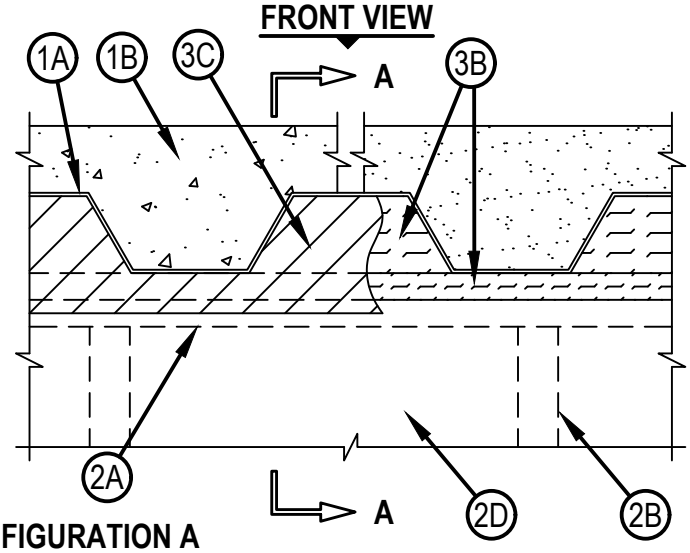
Classified by
Underwriters Laboratories, Inc.
to UL 2079 and CAN/ULC-S115

System No. HW-D-0981

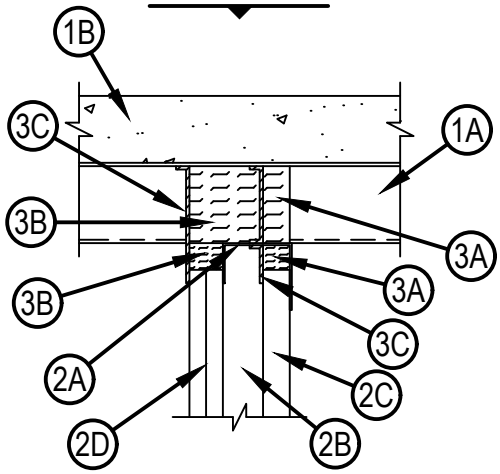
ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Items 2 and 3A)	F Ratings — 1 and 2 Hr (See Items 2 and 3A)
Nominal Joint Width — 1 In.	FT Ratings — 1 and 2 Hr (See Items 2 and 3A)
Class II Movement Capabilities — 50% Compression or Extension	FH Ratings — 1 and 2 Hr (See Items 2 and 3A)
L Rating At Ambient — Less Than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Items 2 and 3A)
L Rating At 400°F — Less Than 1 CFM/Lin Ft	Nominal Joint Width — 38 mm
	Class II Movement Capabilities — 50% Compression or Extension
	L Rating At Ambient — Less Than 1.55 L/s/m
	L Rating At 204°C — Less Than 1.55 L/s/m

FRONT VIEW



CONFIGURATION A

SECTION A-A



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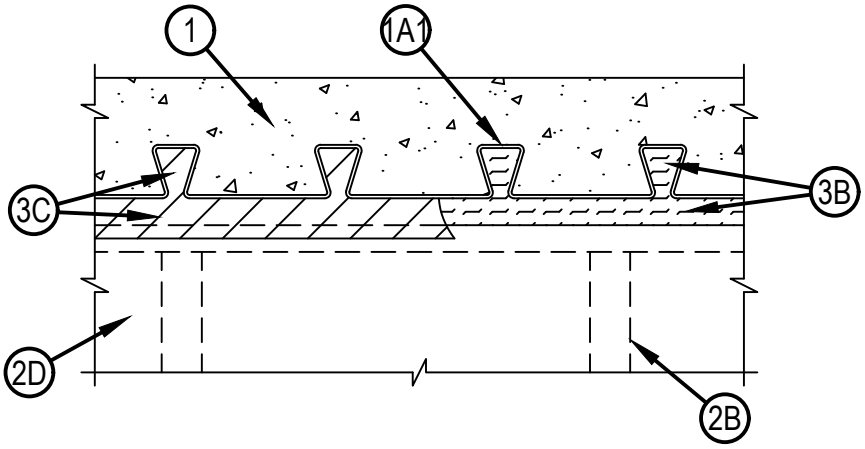

CONFIGURATION A

System No. HW-D-0981

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 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 shall include the following construction features:
   A. Steel Floor and Form Units* — Max 3 in. (76 mm) deep galv steel fluted units.
   A1. Steel Floor And Form Units* (Configuration B) — Composite max 2.5 in. (64 mm) deep galv steel fluted units.
   EPIC METALS CORP — Types "EC" or "Toris C"
   A2. Steel Floor And Form Units* (Configuration B) — Composite max 2 in. (51 mm) deep galv steel fluted units.
   NEW MILLENNIUM BUILDING SYSTEMS L L C — Versa-Dek
   A3. Steel Floor And Form Units* (Configuration B) – Composite max 2 in. (51 mm) deep galv steel fluted units.
   Verco Decking Inc – A Nucor Co – Type 2.0D FORMLOK
   A4. Steel Floor And Form Units* (Configuration B) – Composite max 2 in. (51 mm) deep galv steel fluted units.
   VULCRAFT, DIV OF NUCOR CORP – Type 2.0D FORMLOK
   B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.
   C. Spray-Applied Fire Resistive Materials* —(Optional, Not Shown) — Prior to or after the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B, respectively) the steel floor units may be sprayed with a min 5/16 in. (8 mm) to max 1-3/4 in. (45 mm) thickness of fire resistive material.
   GCP APPLIED TECHNOLOGIES INC — Types MK-6-HY or MK-10HB
   ISOLATEK INTERNATIONAL — Type 300

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 or 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 as applicable:
   A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.
   A1. Steel Floor And Form Units* (Configuration B) — Composite max 2.5 in. (64 mm) deep galv steel fluted units.
   EPIC METALS CORP — Types "Toris C" or "ER2R"
   A2. Steel Floor And Form Units* (Configuration B) — Composite max 2 in. (51 mm) deep galv steel fluted units.
   NEW MILLENNIUM BUILDING SYSTEMS L L C — Versa-Dek
   A3. Steel Floor And Form Units* (Configuration B) – Composite max 2 in. (51 mm) deep galv steel fluted units.
   Verco Decking Inc – A Nucor Co – Type 2.0D FORMLOK
   A4. Steel Floor And Form Units* (Configuration B) – Composite max 2 in. (51 mm) deep galv steel fluted units.
   VULCRAFT, DIV OF NUCOR CORP – Type 2.0D FORMLOK
   B. Roof Insulation — Min 2-1/4 in. (57 mm) 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. (76 mm) deep galv steel fluted roof deck.
   A1. Steel Floor And Form Units* (Configuration B) — Composite max 2.5 in. (64 mm) deep galv steel fluted units.
   EPIC METALS CORP — Type "Toris C"
   B. Spray Applied Fire Resistive Materials* —(Not Shown) — Prior to or after 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.
   GCP APPLIED TECHNOLOGIES INC — Types MK-6-HY or MK-10HB
   ISOLATEK INTERNATIONAL — Type 300

2. Shaft Wall Assembly — The 1 or 2 hr fire rated shaft wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Floor and Ceiling Runners — Min 2-1/2 in. (64 mm) wide, and equal in width to the steel wall studs, with legs of min 2-1/2 in. (64 mm), fabricated from min 25 MSG galv steel. Floor runner may also be J-shaped runner, equal in width to steel wall studs, with unequal legs of 1 in. (25 mm) and 2 in. (51 mm), fabricated from min 25 MSG galv steel; runners positioned with short leg toward finished side of wall. Runners attached to floor with steel fasteners spaced max 24 in. (610 mm) OC. Ceiling runner installed parallel with or perpendicular to direction of fluted steel deck and secured to steel deck valley with steel fasteners or welds spaced max 24 in. (610 mm) OC.

A1. Light Gauge Framing* - Slotted Ceiling Track — 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 2C). Flange height of slotted ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width. Slotted ceiling runner installed perpendicular to direction of fluted steel deck and secured to steel deck valleys before or after optional spray-applied fire resistive material is used with steel masonry anchors spaced max 12 in. (305 mm) OC. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.

CEMCO, LLC — CST, CST325
CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT
RAM SALES L L C — RAM Slotted Track
SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track
TELLING INDUSTRIES L L C — True-Action Deflection Track

A2. 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, sized to accommodate steel studs (Item 2C). 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 to direction of fluted steel deck and secured to steel deck valleys as described in Item A1.

SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track-Type SDLT

B. Steel Studs — "C-H"-shaped steel studs to be min 2-1/2 in. (64 mm) wide and formed of min 25 MSG 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 resting on floor runner and with top nesting in ceiling runner or slotted ceiling track. Studs spaced 24 in. (610 mm) OC. After installation of gypsum board liner panels (Item 2C), studs secured to flange of floor runner on finished side of wall with No. 6 by 1/2 in. (13 mm) long self-drilling, self-tapping steel screws. Studs secured to flange of slotted ceiling track on finished side of wall only with No. 8 by 1/2 in. (13 mm) long self-drilling, self-tapping wafer head steel screws at slot midheight.

C. Gypsum Board* — 1 in. (25 mm) thick by 24 in. (610 mm) wide gypsum board liner panels. Panels cut 1 to 1-1/2 in. (25 to 38 mm) less in length than floor to ceiling height. Vertical edges inserted in "H"-shaped section of "C-H" studs. Free edge of end panels attached to long leg of "J" runner (Item 2A) with 1-5/8 in. (41 mm) long Type S steel screws spaced max 12 in. (305 mm) OC.

D. Gypsum Board* — Gypsum board sheets, 5/8 in. (16 mm) thick Type C, applied vertically or horizontally in one or two layers for 1 or 2 hr rated walls, respectively, on finished side of wall as specified in the individual U400, V400 or W400 Series Wall and Partition Design. A max 1-1/2 in. (38 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the floor. The screws attaching the gypsum board layers to the C-H studs shall be located 1 in. (25 mm) below the bottom of the slotted ceiling track (Item 2C). No gypsum board attachment screws are to penetrate the slotted ceiling track.

The hourly rating of the joint system is dependent on the hourly rating of the wall.

3. Joint System — Max separation between bottom of floor or roof and top of wall at time of installation of joint system is 1 in. (13 mm). 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:

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A. Forming Material* — Min 1 in. (25 mm) thickness of 4 pcf (64 kg/m3) density mineral wool batt insulation sized to attain a min compression rate of 25 percent in the thickness direction and firmly packed to completely fill the flutes of the steel floor units or roof deck above the ceiling runner (configuration A) as a permanent form. When Composite Steel Form and Floor Units (Items 1A1, 1A2, 1A3, 1A4) are used, the mineral wool is to be tightly packed into the inverted flutes. In addition, for the Epic Metals "Toris C" deck, the mineral wool is to be packed to min 25% compression within the recessed indentations immediately above the ceiling runners. For the New Millennium Versa-Dek, pieces of mineral wool shall be packed to the maximum depth possible to fill any embossments within the valleys of the fluted deck. Additional min 1 in. (25 mm) thickness of 4 pcf (64 kg/m3) density mineral wool batt insulation sized to attain a min compression rate of 50 percent in the thickness direction and firmly packed to completely fill the space within ceiling runner directly above the gypsum liner board as a permanent form.

JOHNS MANVILLE INTERNATIONAL INC — MinWool-1200 Safing

ROCKWOOL MALAYSIA SDN BHD — SAFE

THERMAFIBER/OWENS CORNING — Type SAF

B. Forming Material* — Min 4 pcf (64 kg/m3) density mineral wool batt insulation sized to fill the remainder of the fluted areas above the wall (configuration A) to attain a min compression rate of 25 percent in the thickness direction and firmly packed to completely fill the remainder of the fluted area of the steel floor units or roof deck above the ceiling runner, flush with finished side of wall. When Composite Steel Form and Floor Units (Items 1A1, 1A2, 1A3, 1A4) are used, the mineral wool is to be tightly packed into the inverted flutes to fill the remainder of the fluted area. In addition, for the Epic Metals "Toris C" deck, the mineral wool is to be packed to min 25% compression within the recessed indentations immediately above the ceiling runners. For the New Millennium Versa-Dek, pieces of mineral wool shall be packed to the maximum depth possible to fill any embossments within the valleys of the fluted deck. Additional 5/8 in. and 1-1/4 in. (16 and 32 mm) wide strips for 1 and 2 hr rated assemblies, respectively, of nom 4 pcf (64 kg/m3) mineral wool batt insulation are to be cut to fill the gap between the top of the gypsum board and bottom of the steel deck. The strips of mineral wool are compressed 50 percent and tightly packed, cut edge first, into the gap between the top of the gypsum board and bottom of the steel deck.

ROCK WOOL MANUFACTURING CO — Delta- Board

ROCKWOOL — SAFE

THERMAFIBER/OWENS CORNING — Type SAF

B1. Forming Material* — Plugs — (Optional, Not Shown) — As an alternate to the mineral wool in flutes described in Items 3A and 3B, preformed mineral wool plugs, formed to the shape of the fluted floor units or roof deck, cut to the necessary width (1 in. or 25 mm for Item 3A) and friction fit to completely fill the flutes above the ceiling runner. The plugs shall project beyond the finished side of the ceiling runner, flush with wall surface.

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

B2. Forming Material* — Strips — (Optional) — As an alternate to the mineral wool packed within joint above shaft liner board and finished side gypsum board as described in Items 3B and 3A, the strips are stacked to a height twice larger than gap, compressed 50%, and tightly packed within the space between the top of the gypsum board and the bottom of the ceiling runner, floor or bottom of mineral wool within flutes of steel floor unit or roof deck, flush with finished side of wall. In addition, strips are compressed 50 percent and installed within ceiling runner above top of gypsum liner panel flush with the inside surface of the panel.

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

C. Fill, Void or Cavity Material* —Min 1/16 in. (1.6 mm) dry thickness (1/8 in. or 3.2 mm wet thickness) of fill material sprayed or troweled on within stud cavity and on finished side of the shaft wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) 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. (13 mm) and the Spray-Applied Fire Resistive Material a min of 2 in. (51 mm) on both sides of wall. When spray-applied fire resistive materials are used, the firestop joint spray shall overlap the wall a min 1/2 in. (13 mm) and overlap the spray-applied fire resistive material a min of 2 in. (51 mm). Fill material to overlap a min of 1/2 in. (13 mm) onto gypsum board and ceiling runner within stud cavity.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — 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.