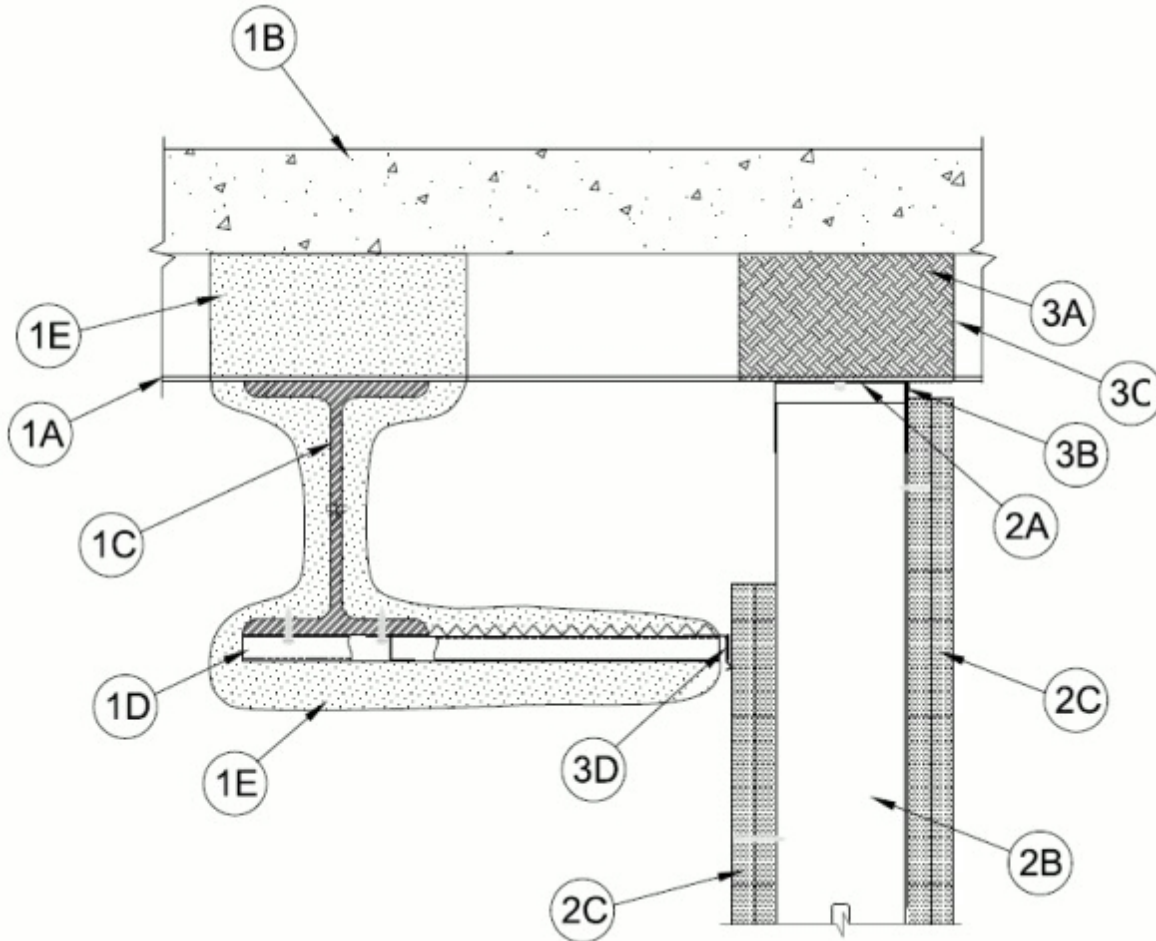




System No. HW-D-0718

October 24, 2013

| ANSI/UL2079 | CAN/ULC S115 |
|---|---|
| Assembly Rating — 1 and 2 Hr (See Item 2) | F Ratings — 1 and 2 Hr (See Item 2) |
| Nominal Joint Width - 1/2 in. and 1 in. | FT Ratings — 1 and 2 Hr (See Item 2) |
| Class II or III Movement Capabilities — 100% Compression or Extension for 1/2 in. Joint; 100% Compression or 0% Extension for 1 in. Joint | FH Ratings — 1 and 2 Hr (See Item 2) |
| L Rating at Ambient — Less than 1 CFM/Lin Ft | FTH Ratings — 1 and 2 Hr (See Item 2) |
| L Rating at 400°F — Less than 1 CFM/Lin Ft | Nominal Joint Width - 1/2 in. and 1 in. |
| | Class II or III Movement Capabilities — 100% Compression or Extension for 1/2 in. Joint; 100% Compression or 0% Extension for 1 in. Joint |
| | L Rating at Ambient — Less than 1 CFM/Lin Ft |
| | L Rating at 400°F — Less than 1 CFM/Lin Ft |



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 Form 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 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 may be filled with material to the full thickness of the wall as an alternate to Items 3A and 3C.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — 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 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 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 may be filled with material to the full thickness of the wall as an alternate to Items 3A and 3C.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY

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, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Channel shaped ceiling runner with width to accommodate studs, legs of min 2 in. (51 mm), and fabricated from min 24 MSG galv steel. Ceiling runner installed perpendicular to steel deck direction. Floor runners of wall assembly shall consist of min No. 25 ga galv steel channels sized to accommodate the steel studs. Floor runner to be provided with min 1-1/4 in. (32mm) flanges. Ceiling runner to be attached to steel deck with steel fasteners spaced a max of 24 in. (610 mm) O.C.

B. Studs — Steel studs to be min 3-5/8 in. (92 mm) wide. Studs cut 1-1/4 to 1-1/2 in. (32 to 38 mm) less in length than assembly height with bottom nesting in and secured to floor runner. Steel studs nested in ceiling runner without attachment. Studs spaced max 24 in. (610 mm) OC.

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. Gypsum board to extend min 3 in. (76 mm) above the bottom of Z clips on side of wall adjacent

to beam. Wall to be constructed as specified in the individual Design in the UL Fire Resistance Directory except that a max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom of the steel floor or roof assembly on the full height wall side. The screws attaching the gypsum board to the studs along the top of the wall shall be located 3 to 3-1/2 in. (76 to 89 mm) below the bottom of the steel deck at time of installation. No gypsum board attachment screws shall be driven into the ceiling runner. The screws attaching the gypsum board to the studs at the beam side of the wall shall be located max 2 in. (51 mm) below the bottom of the Z clips.

The hourly rating of the joint system is equal to the lesser of the hourly ratings of the floor/roof-ceiling assembly and the wall assembly.

3. Joint System — Max separation between bottom of steel floor or roof unit and top of wall (at time of installation of joint system) is 1 in. (25 mm). The joint system is designed to accommodate a max 100 percent compression or extension from its installed width when joint width is nom 1/2 in. The joint system is designed to accommodate a max 100 percent compression or 0% extension from its installed width when joint width is nom 1 in. The joint system shall consist of the following:

A. Forming Material* — Min 4 pcf (64 kg/m³) 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 gypsum board on both sides of wall. As an option, the spray-applied fire resistive material described in Item 1 can be used in place of the packing material.

See **Forming Material** (XHKU) category in the Fire Resistance Directory for names of manufacturers.

A1. Forming Material* - Plugs — (Not Shown) As an alternate to the forming material Item 3A, mineral wool plugs preformed to the shape of the fluted floor units may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces.

ROCK WOOL MANUFACTURING CO — Deck Plugs

B. Fill, Void or Cavity Material* — Min 25 ga composite steel angle with one 5/8 in. (16 mm) leg and one 1-1/2 in (38 mm) leg with an intumescent strip affixed along the inside 1-1/2 in (38 mm) leg. The 5/8 in. leg of steel angle is friction fit between the top web of the ceiling runner and the steel deck. Steel angle is required on full height gypsum board side of wall only.

RECTORSEAL — Track Safe

C. Fill, Void or Cavity Material* — Min 1/8 in. (3 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material spray applied over the forming material in flutes (Item 3A) on one side of wall (either side). Fill material to overlap min 1/2 in. (13 mm) onto steel floor or roof deck and ceiling runner or steel angle (Item 3B).

RECTORSEAL — Metacaulk 1200 Spray, Metacaulk 1500 Spray, Biostop 750 Spray, Biostop 800 Spray, FS 3000 Spray

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.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Firestik FS1

E. Spray-Applied Fire Resistive Material* — Nom 3/8 in. (10 mm) diamond mesh expanded steel rib lath having a nom weight of 3.4 lb/yd² (1.8 kg/m²) shall be installed over and attached to the steel attachment clip bars or channels (Item 1D) to completely cover the exposed area from the flange tip of the steel beam to the end of the bar/channel framing extending beyond the wall surface, to the minimum thickness of material required on the flanges of the steel beam. The lath shall be secured with steel fasteners or tie wire, and the attachment clips, lath and space between clips shall be fully covered with spray applied fire resistive material (Item 1E).

*Bearing the UL Classification Mark