

BXUV.E702 - FIRE-RESISTANCE RATINGS - ANSI/UL 263

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.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. E702

January 22, 2019

Restrained Assembly Ratings — 1, 1-1/2, 2, 3 and 4 Hr.

(See Items 4A and 8)

Unrestrained Assembly Ratings — 1, 1-1/2, 2, 3 and 4 Hr.

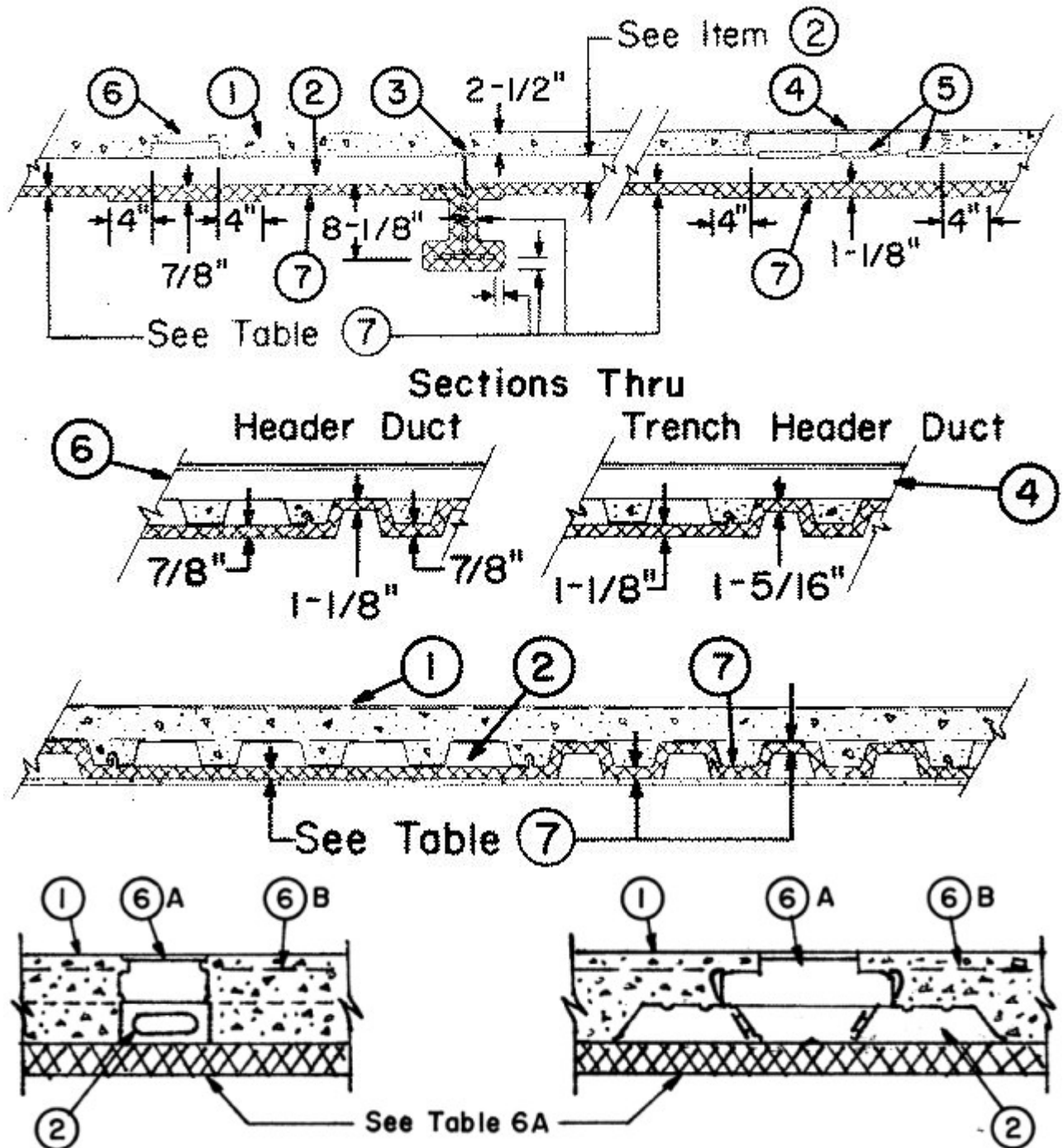
(See Items 4A and 8)

Unrestrained Beam Ratings — 1, 1-1/2, 2, 3 and 4 Hr.

(See Items 4A and 8)

Load Determined by Allowable Stress Design Method or Load and Resistance Factor Design Method published by the American Institute of Steel Construction, or in accordance with the relevant Limit States Design provisions of Part 4 of the National Building Code of Canada — See Guide BXUV or BXUV7

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



Beam — W8X28 min size. For 3 Hr or less Restrained and Unrestrained Assembly and Unrestrained Beam Ratings, as alternate to steel beams, cast in place reinforced concrete beams or girders designed in accordance with the provisions of the Building Code Requirements for Reinforced Concrete (ACI 318-89), may be used as supports for the 3 in. deep floor units. (See Item 2A). Min width and depth of concrete beams shall be 12 and 23-1/2 in., respectively. Fluted units shall be embedded in the concrete beams a min of 0.0139 times the clear span or 1-1/2 in., whichever is greater. The cellular units may be continuous or with a butted end joint centered over the concrete beams. For continuous floor spans, negative moment reinforcement for the slabs is required over the supporting beams.

1. Normal Weight or Lightweight Aggregate Concrete — Normal weight concrete, carbonate or siliceous aggregate, 150 ± 3 pcf unit weight, 3,000 psi compressive strength, vibrated. Lightweight concrete, expanded shale, clay or slate aggregate by rotary kiln method; 113 (+2, -5) pcf unit weight, 3,000 psi compressive strength, 4 to 7 percent entrained air.

2. Steel Floor and Form Units* — Composite 1-1/2, 2 or 3 in. deep galv units. Fluted units may be uncoated. Min gauges are 22 MSG for fluted and 20/20 MSG for cellular. For spans with trench headers the allowable loading shall be based on noncomposite design. The following combination of units may be used: (1) All fluted; (2) All 24, 30 or 36 in. wide cellular; (3) Any blend of fluted and 24, 30 or 36 in. wide cellular; (4) One or two 12 in. wide cellular alternating with fluted or 24 and 36 in. wide cellular; (5) One 12 in. wide cellular to one or more 24 or 36 in. wide fluted; (6) One 12 in. wide cellular to two or more 12 in. wide fluted.

ASC STEEL DECK, DIV OF ASC PROFILES L L C — 32 in wide Types NH-32, NHN-32, NHF-32; 36 in. wide Types BH-36, BHN-36, BHN-35-1/4, BHF-36, BHF-36A, 2WH-36, 2WHS-36, 3WH-36, 3W-36, DG3W-36, DG3WF-36. All units may be galvanized or Prime Shield. Non-cellular units may be vented designated with a "V" suffix to the product name.

CANAM STEEL CORP — 36 in. wide Types P-3623, P-3606, P-3615; 24 in wide Type P-2432 composite; 36 in. wide Types P-3606 and P-3615 non-composite; 24 in. wide Types P-2436, P-2404, P-2403, and P-2438 non-composite.

CANAM STEEL CORP — 24 in. wide Types LF1.5 and NL, 24, 30 or 36 in. wide Type BL, 24 or 36 in. wide Types LF2 and LF3 fluted units; 24 in. wide Types AWC2, AWC3, LFC1.5, and NLC, 24, 30 or 36 in. wide Type BLC, and 24 or 36 in. wide Types LFC2 or LFC3 cellular units. Types BL, LF2, LF3, and NL units may be phos/painted.

CHIA TEH CONSTRUCTION MATERIAL CO LTD — 24 or 36 in. wide Mac-Lok 3; 24 in. wide CFD-3.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 12, 24 or 36 in. wide Types Mack-Loc 2 or 3 fluted; 12 in. wide Types Mac-Way 2- or 3-633 MTWA. Adjacent fluted and cellular units welded or screwed together 30 in. OC along side joints. Screws shall be 3/4 in. long, No. 14 self-tapping, self-drilling steel screws. Types Mack-Loc 2 and Mack-Loc 3 units may be phos/ptd for the 1, 1-1/2 and 2 hr ratings.

DECK WEST INC — 36 in. wide Type 2-DW or 3-DW. Adjacent Type 3-DW units welded together 60 in. OC max along side joints, Adjacent Type 2-DW or 3-DW units may be screwed together 48 in. OC max along side joints (in lieu of welds 60 in. OC max) with 1 in. long, No. 10 self-tapping, self-drilling steel screws (except as noted under Item 8).

DESIGN ASSISTANCE CONSTRUCTION SYSTEMS INC — 24 in. wide Types DACS2.0CD or DACS3.0CD.

EPIC METALS CORP — 36 in. wide Type EC266; 24 in. wide Type EC366; 24 or 30 in. wide Types EPC2, EPC3.

KAM INDUSTRIES LTD, DBA CORDECK — Hi-Bond Types 24 in. wide 3KA1F24; 30 in. wide 3KF30, 3P30. Type 3P30 unit may be phos/painted and 24 in. wide WDR2, WDR2-2, WDR3, WDR3-2. Types WDR2, WDR2-2, WDR3, WDR3-2 cellular units. For Types WDR2, WDR2-2 floor units, min overall concrete thickness to be 4-1/2 in. For Types WDR3, WDR3-2 floor units, min overall concrete thickness to be 5-1/2 in. Overall concrete thickness to be measured from valleys of steel floor units.

MARLYN STEEL DECKS INC — Types 1.5 CF, 2.0 CF or 3.0 CF.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 24, 30 or 36 in. wide Types 1.5CD, 1.5CFD ; 24 or 36 in. wide Types 2.0CD, 3.0CD, 3.0CFDES. Fluted units may be uncoated, phos/painted or galvanized.

VERCO DECKING INC - A NUCOR CO — FORMLOK™ deck types PLB, B, BR, PLN3, N3, PLN, N, PLW2, W2, PLW3, W3. Units are min 24 in. wide and may be galvanized or phos./ptd. Units may be cellular with the suffix "CD" added to the product name. All non-cellular deck may be vented or non-vented.

VULCRAFT, DIV OF NUCOR CORP — 24 or 36 in. wide Types 2VLI, 2.0PLVLI, 2VLJ, 2VLP, 2.0PLVLP, 3VLI, 3.0PLVLI, 3VLJ, 3VLP, 3.0PLVLP. Types 2VLI, 2.0PLVLI, 2VLJ, 3VLI, 3.0PLVLI, 3VLJ units may be phos/ptd. 24 or 36 in. wide Types 2VLJ, 3VLJ may be used for max 2 hr Restrained Assembly Rating. Side joints of Types 2VLJ or 3VLJ units may be fastened together with No. 8-3/4 in. long self-drilling Tek screws (as an alternate to welding together), driven diagonally from the top side through the joint of the units at 36 in. OC max. Types 2VLI, 2.0PLVLI, 3VLI, 3.0PLVLI units may be phos/ptd. 24 or 36 in wide Types 2.0 SB, 3.0 SB; may be phos/ptd.

Units may be welded or fastened together with min 1 in. long, No. 10 self-drilling, self-tapping steel screws 36 in. OC.

Spacing of welds attaching units to supports shall not exceed 12 in. OC. Unless specified otherwise for specific unit types, adjacent units button-punched or welded together 36 in. OC along side joints.

Alternate Construction — Noncomposite units of the same type listed above may be used provided allowable loading is calculated on the basis of noncomposite design.

2A. Steel Floor and Form Units* — (For use with alternate cast in place concrete beams) — Composite 3 in. deep galv units. Fluted units may be uncoated. Min gauges are 20 MSG for fluted and 20/20 MSG for cellular. The ratio of blended units shall not exceed one 24 in. wide cellular unit to 36 in. wide fluted unit for the cast in place concrete frame buildings.

DECK WEST INC — 36 in. wide Types 2-DW or 3-DW; units may be welded or fastened together with No. 10 self-drilling, self-tapping steel screws penetrate adjacent floor units.

3. **Joint Cover** — 2 in. wide pressure-sensitive cloth tape applied following the contour of the steel floor units.

4. **Welded Wire Fabric** — 6 by 6 — W1.4 x W1.4.

4A. **Reinforcement** — Deformed bars of grade 60 steel, for use in floors supported by reinforced concrete beams or girders. Min size No. 3 bars for use as negative reinforcement or vertical stirrups for beams, girders or slabs. Min No. 5 bars for use as positive reinforcement for beams or girders. Min net concrete cover on the beam or girder bottom reinforcements, shall be 1-1/2 in. for Restrained Assembly Ratings up to 3 Hr and Unrestrained Assembly and Beam Ratings up to 2 Hr. For 3 Hr Unrestrained Assembly and Beam Ratings, 1-3/4 in. cover is required. When continuous cellular units intersect the supporting concrete beams (interrupting the beam stirrups), short pieces of additional stirrups shall be placed in the top part of the beam above the units.

5. **Header Duct and Fittings** — (Bearing the UL Listing Mark). 1-1/2 in. deep by 6-3/4 in. wide. Housing constructed of steel (See Item 8).

6. **Trench Header** — (Bearing the UL Listing Mark). Constructed of steel and provided with metal edge screeds. When the trench header is located near a support the load carrying capacity of the span may be based on the allowable moment or shear stress of the floor units at the edge of the trench header away from the support, or on the allowable composite moment or shear capacity of the slab at the center of the span, whichever governs. The space between the bottom of the trench and the top of the floor unit shall be filled with concrete. The use of the trench header requires additional protection underneath the trench header (See Item 8). The additional protection shall extend a min of 4 in. beyond the sides of the trench header.

6A. **Trench Header** — (Bearing the UL Listing Mark) — As an alternate to Item 6, a trench header without the bottom pan may be used. The allowable superimposed load for spans with a bottomless trench header shall be based on noncomposite design. The bottomless trench header, with a max width of 36 in., consists of two cell closers which conform to the contour of the floor units, placed along the sides of the desired trench header location and welded to the floor units. The side rails, consisting of extruded aluminum screeds secured to galv steel channels (min 18 MSG), are positioned over the cell closers, aligned, and welded or riveted to the cell closers and floor units. A separate U-shaped galv steel channel (min 18 MSG), serving as the power compartment, is welded or riveted to the floor units. Steel cover plates, 1/4 in. thick, shall be secured to the side rails. In bottomless trench headers wider than 18 in., each side joint of the steel floor units shall be welded with a 1 in. long weld near the trench header centerline. For QL-GKX-24 or -30 cellular floor units only, a separate KED-PTS (UL Listed) power transition sleeve is secured to power compartment with one rivet or screw. The use of the bottomless trench header requires additional protection underneath the trench header (See Item 8). The additional protection shall extend a min of 4 in. beyond the sides of the bottomless trench header.

6B. **Trench Header** — (Bearing the UL Listing Mark) — As an alternate to Items 6 or 6A, a trench header with an intermittent bottom may be used for 2 Hr (or less) Restrained Assembly Rating. The allowable superimposed load for spans with an intermittent bottom trench header shall be based on noncomposite design. The intermittent bottom trench header, with a max width of 24 in., consists of a horizontal closure plate (min. No. 22 MSG), over the fluted deck sections at the desired trench header location and affixed to the floor units by welding or screws (No. 14 by 3/4 in. long self-tapping, self-drilling). At the trench header where horizontal plates cover the fluted units, concrete is to be vibrated into the voids formed by the plate and fluted units. The side rails consist of extruded aluminum screeds secured to the galv steel channels (min. No. 18 MSG), positioned over the edge of the horizontal closure plates, aligned and welded to the cells and fluted floor units. A separate U-shaped galv steel channel (min No. 18 MSG), serving as the power compartment is welded to the horizontal closure plates and floor units. Steel cover plates 1/4 in. thick, shall be screw attached to the side rails. The use of the intermittent trench header requires additional protection underneath the trench header (See Item 8). The additional protection shall extend a min of 4 in. beyond the sides of the intermittent bottom trench header.

6C. **Trench Header** — (Bearing the UL Listing Mark) — As an alternate to Items 6, 6A, or 6B, a trench header with an intermittent bottom may be used. The allowable superimposed load for spans with an intermittent bottom trench header shall be based on noncomposite design. The intermittent bottom trench header, with a max width of 36 in., consists of horizontal closure plates (min. No. 16 MSG) with 4 threaded studs pre-welded on the top side of each plate near its corners. The plates to be placed over the fluted areas of the floor units and affixed to the floor units by welds at each corner. Concrete is to be vibrated into the voids formed by the plates and the fluted areas of the units beneath the trench header. The upper side rail is extruded aluminum attached to the lower steel side rail clip with an adjusting screw. The lower side rail positioned over the edge of the horizontal closure plates, snapped-on the pre-welded threaded studs on top of the plates. Void closures above the cellular areas of the units to be welded to the ribs of the units on both sides of the trench header adjacent to the outer sides of the side rails to prevent the concrete from flowing into the raceway inside the trench header area. A separate U-shaped galvanized steel channel (min. No. 14. MSG) serving as the power compartment welded on both sides to the horizontal closure plates and to the floor units. Support post strips, 2-1/4 in. wide, with vertical posts pre-welded at 7 in. OC, welded to the horizontal closure plates and the steel deck parallel to and on both sides of the U-channel, with 1 in. long welds at 24 in. OC and at the ends of the strips. Steel cover plates 1/4 in. thick, shall be screw attached to the side rails. For 2 h Restrained and Unrestrained Assembly

Ratings, the required fireproofing thickness shall be applied in conjunction with stud pins with discs below the trench header (See Item 8). The additional protection shall extend a min of 4 in. beyond the sides of the intermittent trench header.

6D. Trench Header — (Bearing the UL Listing Mark) — As an alternate to Items 6, 6A, 6B, or 6C, a trench header without a bottom pan may be used. The allowable superimposed load for span with a bottomless trench header shall be based on noncomposite design. Bottomless trench header with a max width of 36 in., consists of "L" shaped closure plates (min No. 16 MSG) support strips with 4 threaded studs, side rails, power channel and cover plates. The closure plates are cell closures which conform to the contour of the floor units and are affixed to the floor units by welds along both sides of the trench. The upper side rail is extruded aluminum attached to the lower steel side rail clip with an adjusting screw. The lower side rail positioned over the edge of the horizontal closure plates, snapped on the pre-welded threaded stud on top of the plates. Void closures above the cellular areas of the units to be welded to the ribs of the units on both sides of the trench header adjacent to the outer sides of the side rails to prevent the concrete from flowing into the raceway inside the trench header and on top of the cellular units. A separate U-shaped galvanized steel channel, min No. 14 MSG serving as the power compartment welded on both sides to the horizontal closure plates and the floor units.

Support posts strips, 2-1/4 in. wide, with vertical posts pre-welded at 7 in OC, welded to the horizontal closure plates and the steel deck parallel to and on both sides of the U-channel, with 1 in. long welds at 24 in. OC and at the ends of the strips. Steel cover plates, 1/4 in. thick, shall be screw attached to the side rails. The use of trench header requires additional protection underneath the trench header (See Item 8). The additional protection shall extend a min of 4 in. beyond the sides of the trench header.

7. Access Openings — As required, with grommets.

8. Spray-Applied Fire Resistive Materials* — Applied by spraying with water to the final thicknesses shown below. Crest areas shall be filled with Spray-Applied Fire Resistive Materials above the beam. Beam surfaces must be clean and free of dirt, loose scale and oil. Use of adhesive is required under bottomless trenches and cellular units, optional on other conditions. Min average density of 13 pcf with min. ind density of 11 pcf for Types DC/F, II, or II HS. Min avg and min ind densities of 22 and 19 pcf, respectively, for Type HP. For method of density determination, see Design Information Section, Sprayed Material. The thickness of the Spray-Applied Fire Resistive Material on the Structural Members shall be as follows:

Restrained Assembly Rating, Hr	Unrestrained Assembly Rating, Hr	Min Required Unrestrained Beam Rating, Hr	Concrete Type	Min Mtl Thkns on Beam, In.	
				W8x28 Beam (a)	W8x28 Beam (b)
1	1	1	NW	3/8	1/2
1-1/2	1	1	NW	3/8	1/2
1-1/2	1-1/2	1-1/2	NW	5/8	13/16
2	1	1	NW	3/8	1/2
2	2	2	NW	13/16	1-1/16
3	1-1/2	1-1/2	NW	5/8	13/16
3	3	3	NW	1-5/16	1-11/16
4	2	2	NW	13/16	1-1/16
4	3	3	NW	1-5/16	1-11/16
4	4	4	NW	1-3/4	2-5/16
1	1	1	LW	1/2	5/8
1-1/2	1	1	LW	1/2	5/8
1-1/2	1-1/2	1-1/2	LW	13/16	1
2	1	1	LW	1/2	5/8
2	2	2	LW	1-1/8	1-7/16
3	1-1/2	1-1/2	LW	13/16	1

3	3	3	LW	1-3/4	2-1/4
4	2	2	LW	1-1/8	1-7/16
4	3	3	LW	1-3/4	2-1/4
4	4	4	LW	2-7/16	3-3/16

(a) Thickness applies when beam supports fluted units only.

(b) Thickness applies when beam supports cellular or blended units.

General Floor Area (Without Header Duct, Trench Header, or Electrical Inserts)

Restrained Assembly Rating, Hr	Unrestrained Assembly Rating, Hr	Steel Floor Unit Depth, In.	Concrete Type	Min Mtl Thkns, In		
				Crests	Valley	Flat Plate
1	0##	2 or 3	LW	0	0	0
1	1	1-1/2	LW or NW	3/8	3/8	3/8
1, 1-1/2 or 2	1, 1-1/2 or 2	2 or 3	LW or NW	3/8	3/8	3/8
3	1-1/2, 2 or 3	3	LW	5/8	5/8	1/2
3	1-1/2, 2 or 3	2	LW	13/16	1/2	1/2
3	1-1/2, 2 or 3	3	NW	13/16	13/16	5/8
3	1-1/2, 2 or 3	2	NW	7/8	5/8	5/8
4	2, 3 or 4	3	LW or NW	1-7/16	13/16	13/16
4	2, 3 or 4	2	LW or NW	1-1/2	1-1/8	1-1/8
Under Header Duct (Item 5)						
1	1 or 0###	3	LW or NW	7/16	3/8	3/8
1	1 or 0###	2	LW or NW	9/16	3/8	3/8
1-1/2	1 or 1-1/2	3	LW or NW	5/8	3/8	3/8
1-1/2	1 or 1-1/2	2	LW or NW	3/4	1/2	1/2
2	1, 1-1/2 or 2	3	LW or NW	3/4	1/2	1/2
2	1, 1-1/2 or 2	2	LW or NW	7/8	5/8	5/8
3	1-1/2, 2 or 3	3	LW or NW	1	3/4	3/4
3	1-1/2, 2 or 3	2	LW or NW	1-1/8	7/8	7/8
Under Trench Header (Item 6)						
1	1 or 0###	3	LW or NW	9/16	3/8	3/8
1	1 or 0###	2	LW or NW	11/16	1/2	1/2
1-1/2	1 or 1-1/2	3	LW or NW	3/4	1/2	1/2

1-1/2	1 or 1-1/2	2	LW or NW	7/8	11/16	11/16
2	1, 1-1/2 or 2	3	LW or NW	7/8	5/8	5/8
2	1, 1-1/2 or 2	2	LW or NW	1-1/8	7/8	7/8
3	1-1/2, 2 or 3	3	LW or NW	1-3/16	15/16	15/16
3	1-1/2, 2 or 3	2	LW or NW	1-3/8	1-3/16	1-3/16
4	2, 3 or 4	3	NW	1-5/8	1-5/8	1-1/2
4	2, 3 or 4	2	NW	1-11/16	1-11/16	1-9/16
Under Trench Header (Item 6A)						
Or Feeder Duct System (Item 6B)						
1	1 or 0###	2 or 3	LW or NW	1-3/16	1	1
1-1/2	1 or 1-1/2	2 or 3	LW or NW	1-1/2	1-1/4	1-1/4
2	1, 1-1/2 or 2	2 or 3	LW or NW	1-3/4	1-5/8	1-5/8
3	1-1/2, 2 or 3	2 or 3	LW or NW	2-1/4	2-1/8	2-1/8
Under Trench Header (Item 6C)						
2	1, 1-1/2 or 2	2 or 3	LW or NW	1-1/8	1-1/8	1-1/8
Under Trench Header (Item 6D)						
1	1 or 0	2 or 3	NW	1	1	1
1-1/2	1 or 1-1/2	2 or 3	NW	1-1/4	1-1/4	1-1/4
2	1, 1-1/2 or 2	2 or 3	NW	1-5/8	1-5/8	1-5/8
Under Trench Header (Item 6E)						
1-1/2	1 or 1-1/2	2 or 3	LW or NW	1-3/4	1-5/8	1-5/8

Unrestrained Assembly Rating cannot exceed Unrestrained Beam Rating.

Use of screwed side joints is not acceptable. When floor span between supports contains a blend of fluted and cellular floor units with electrical inserts (Item 10), the entire surface of fluted units must be sprayed with material to a minimum thickness of 3/8 in.

Entire span with header duct, trench header or feeder duct must be protected. Unrestrained Assembly Rating is 1 Hr for spans with header duct, trench header or feeder duct. If lightweight concrete is used and spans without headers are unprotected, the Unrestrained Assembly Rating becomes 0 Hr.

ISOLATEK INTERNATIONAL — Types D-C/F, II, II HS, or HP. Investigated for exterior use. Type EBS or Type X adhesive/surface sealer optional.

9. **Shear-Connector Studs** — (Optional — Not Shown) — Studs, 3/4 in. diam, headed type or equivalent per AISC specifications. Welded to the top flange of beam through the steel floor units. Min 1/2 in. concrete cover over studs.

10. **Electrical Inserts** — Preset and after set electrical inserts Classified as **Outlet Boxes and Fittings Classified for Fire Resistance***. Unless specified otherwise for a particular preset electrical insert type, the spacing of the preset electrical inserts shall be not less than 24 in. on center along cellular steel floor units with not more than one preset electrical insert in each 4 sq ft of floor area. The required thickness of Spray-Applied Fire Resistive Materials on the steel floor units with inserts shall be sprayed the entire length and width of the units between supports and shall extend beyond the edge of inserts onto adjacent floor units for a min horizontal width of 12 in.

(1) **United Steel Deck Inc.**, Inserts.

(Type 325 preset insert - with Activation Fittings Types I, III, V, VI or VII).

(Type 325-M1 and Type 325-M2 Preset Inserts with Activation Fitting Type X).

Installed per accompanying installation instructions over factory punched holes in Types AWC2 or AWC3 floor units. May be used for max 2 hr Restrained Assembly Rating only. For use with 12 or 24 in. wide AWC2 or AWC3 units. For 1 or 1-1/2 hr Restrained Assembly Ratings, the min thickness of Spray-Applied Fire Resistive Materials on cellular units with inserts shall be 1/2 in. For the 2 hr Restrained Assembly Rating, the min thickness of material shall be 7/8 in. The holes cut in the insert cover for passage of wires shall be no more than 1/8 in. larger diam than the wire. For abandonment of insert see installation instructions.

(Type 325 preset insert with Activation Fittings Type I, III, V, VI or VII).

Installed per accompanying installation instructions over factory punched holes in Types AWC2 or AWC3 floor units. May be used for 3 hr Restrained Assembly Rating only. For use with 12 or 24 in. AWC2 or AWC3 units. The min thickness of Spray-Applied Fire Resistive Materials on cellular units with inserts shall be 1-5/8 in.

(Type 351 — After set Insert).

Installed per accompanying installation instructions in 4-1/4 in. diam hole core-drilled thru concrete topping, centered over top of cell of Types AWC2 or AWC3 cellular floor unit. May be used for max 2 hr Restrained Assembly Rating. Spacing of inserts shall be not more than one insert in each 4 sq. ft. of floor area with not less than 2 ft. OC spacing of adjacent inserts. Required Spray-Applied Fire Resistive Materials thickness of 1/2 in. on cellular floor units with inserts.

CANAM STEEL CORP — After set Insert Type 351.

(2) **Wiremold Co.** and **Kam Industries LTD d/b/a Cordeck**, Inserts.

(PK Series Preset Inserts: FAKM-II, RAKM, RAKM-II, RAKM-II-R, FPF, RPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38BB, S38CC, S39BB, S39CC, S38PP, S39PP, FPBTC, FPCTC, FPBT, FPCT, FPFFTC, FPFFT Service Fittings or Type S3AXBP abandonment plate).

Installed per accompanying installation instructions over factory pre-punched knockouts in Types WDR2 or WDR3 cellular steel floor units. Inserts shall be located no closer than 3 ft. from exterior walls of building when installed on an all cellular blend or 1 to 1 blend of fluted and cellular floor units. The holes cut in insert cover for passage of wires shall be no more than 1/8 in. larger diam. than the wire. When Types FPF, RPF, S36PB, S36PP, S37PB, S37PP, S38PP, S39PP, FPFFTC, FPFFT service fittings are used, furniture whip for power feed from service fitting cover to be liquid-tight steel conduit with cast steel 90 degree elbow connector. Refer to installation instructions for Classified assemblies. The required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are tabulated below:

Restrained Assembly Rating, Hr	Floor Unit Depth, In.	Concrete Type	Min Mtl Thkns, In.
(Types RAKM, S37BB, S37CC, S39BB, S39CC, FPBT, FPCT)			
1	2 or 3	LW or NW	9/16
1-1/2	2 or 3	LW or NW	11/16
2	2 or 3	NW	3/4
2	2 or 3	LW	1
(Type FAKM-II)			
1	1-1/2, 2 or 3	LW or NW	3/8
1-1/2	2 or 3	NW	7/16
1-1/2	2 or 3	LW	1/2
1-1/2	1-1/2	LW or NW	1/2
2	2 or 3	NW	5/8
2	2 or 3	LW	11/16
2	1-1/2	LW or NW	3/4

3	2 or 3	NW	1
3	2 or 3	LW	1-1/8
(Types RAKM-II, S36BB, S36CC, S38BB, S38CC, FPBTC, FPCTC, S3AXBP)			
1	2 or 3	NW	3/8
1	2 or 3	LW	7/16
1	1-1/2	LW or NW	7/16
1-1/2	2 or 3	NW	7/16
1-1/2	2 or 3	LW	5/8
1-1/2	1-1/2	LW or NW	5/8
2	2 or 3	NW	5/8
2	2 or 3	LW	13/16
2	1-1/2	LW or NW	7/8
3	2 or 3	NW	15/16
3	2 or 3	LW	1-1/4
(Type RAKM-II-R)			
1	1-1/2	LW or NW	7/16
1-1/2	1-1/2	LW or NW	11/16
2	1-1/2	LW or NW	15/16
(Types FPF, S36PB, S36PP, S38PP, FPFFTC)			
1, 1-1/2	2 or 3	LW or NW	3/8
2	2 or 3	LW or NW	9/16
3	2 or 3	LW or NW	15/16
(Types RPF, S37PB, S37PP, S39PP, FPFFT)			
1	2 or 3	NW	3/8
1	2 or 3	LW	1/2
1-1/2	2 or 3	NW	7/16
1-1/2	2 or 3	LW	5/8
2	2 or 3	NW	11/16
2	2 or 3	LW	7/8
3	2 or 3	NW	1-1/8

(NRG Bloc IV Preset Inserts: FAKM-II, RAKM-II, FPF, RAKM, RPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38BB, S38CC, S39CC, S38PP, S39PP, FPBTC, FPCTC, FPBT, FPCT, FPFFTC, FPFFT Service Fittings or Type S3AXBP abandonment plate).

The NRG Bloc IV preset insert is furnished by **KAM INDUSTRIES LTD d/b/a CORDECK**. The service fitting components are furnished by **WIREMOLD CO**. Installed per accompanying installation instructions over factory-punched holes in 3 in. deep K-Type cellular steel floor units (furnished by KAM INDUSTRIES LTD d/b/a CORDECK). Openings made in two-part access hatch of the Types RAKM, S37BB, S39BB, FPBT service fitting for passage of wires shall be no greater than 1/8 in. larger than diameter of wire. When Types FPF, RPF, S36PB, S36PP, S37PB, S37PP, S38PP, S39PP, FPFFTC, FPFFT service fittings are used, furniture whip for power feed from service fitting cover to be liquid-tight steel conduit with cast steel 90 degree elbow connector. Refer to installation instructions for Classified assemblies. The required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are tabulated below:

Restrained Assembly Rating, Hr	Concrete Type	Min Mtl Thkns, In.
(Type FAKM-II)		
1, 1-1/2	LW or NW	3/8
2	LW or NW	7/16
3	LW or NW	13/16
(Types RAKM-II, S36BB, S36CC, S38BB, S38CC, FPBTC, FPCTC, S3AXBP)		
1	LW or NW	3/8
1-1/2	LW or NW	7/16
2	LW or NW	11/16
3	LW or NW	1
(Types FPF, S36PB, S36PP, S38PP, FPFFTC)		
1, 1-1/2	LW or NW	3/8
2	LW or NW	7/16
3	LW or NW	13/16
(Types RAKM, S37BB, S37CC, S39CC, FPBT, FPCT)		
1, 1-1/2	LW or NW	3/8
2	LW or NW	11/16
(Types RPF, S37PB, S37PP, S39PP, FPFFT)		
1	LW or NW	3/8
1-1/2	NW	3/8
1-1/2	LW	1/2
2	NW	9/16
2	LW	3/4
3	NW	1
(Type FAKM-II)		
1, 1-1/2	LW or NW	3/8
2	LW or NW	7/16
3	LW or NW	13/16

(437 Series Preset/After set Inserts; S125R, S126R, S165B, S166B Fittings)

Single-service preset or after set inserts installed per accompanying installation instructions over Types WDR2 or WDR3 cellular steel floor units. When used as a preset insert, attaching ring with mud cap installed over 2-1/2 in. diameter factory-punched or field-drilled hole in top of cell prior to concrete placement. When used as an after set insert, a 4 in. diameter hole is core-drilled to, but not through, top of cell and attaching ring is installed over 2-1/2 in. diameter hole drilled in top of cell concentric with core-drilled hole. Inserts may be installed individually or in clusters of two or three inserts at each location. When installed in clusters of two or three inserts, minimum center to center spacing of inserts in cluster is 7-3/4 in. Spacing of inserts (or clusters of inserts) shall be not less than 4 ft transverse to steel floor unit direction and not less than 5 ft along length of steel floor unit. When inserts are installed in clusters of two or three, the required thickness of Spray-Applied Fire Resistive Materials on the cellular floor unit beneath the cluster shall be the greater of thicknesses specified for the individual activation fittings in the cluster. The required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are tabulated below:

Restrained Assembly Rating, Hr	Floor Unit Depth, In.	Concrete Type	Min Mtl Thkns, In.
(S125R Fittings)			
1	2 or 3	LW or NW	3/8
1-1/2	2 or 3	LW or NW	1/2
2	2 or 3	LW or NW	5/8
3	2 or 3	LW or NW	1-1/4
(S126R Fittings)			
1	2 or 3	NW	1/2
1	2 or 3	LW	9/16
1-1/2	2 or 3	NW	11/16
1-1/2	2 or 3	LW	3/4
2	2 or 3	NW	13/16
2	2 or 3	LW	15/16
3	2 or 3	LW or NW	1-1/4
(S165B Fittings)			
1	2 or 3	LW or NW	3/8
1-1/2	2 or 3	LW or NW	3/8
2	2 or 3	LW or NW	1/2
3	2 or 3	LW or NW	1-1/8
(S166B Fittings)			
1	2 or 3	LW or NW	1/2
1-1/2	2 or 3	LW or NW	11/16
2	2 or 3	NW	13/16
2	2 or 3	LW	15/16
3	2 or 3	LW or NW	1-3/8

(TSACR, TSAR, After set Inserts)

Installed per accompanying installation instructions in 7 in. diam hole core-drilled through concrete topping into center of top of cell of Types WDR2 or WDR3 cellular steel floor units. Spacing shall be not more than one insert in each 8 sq ft of floor area with not less than 2 ft center to center of adjacent inserts. The required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are tabulated below:

Restrained Assembly Rating, Hr	Floor Unit Depth, In.	Concrete Type	Min Mtl Thkns, In.
(Types TSACR, TSAR)			
1	2 or 3	LW or NW	1/2
1-1/2	2 or 3	LW or NW	3/4
2	2 or 3	LW or NW	1-1/4

WIREMOLD CO — Type PK Series Inserts; Types FAKM-II, RAKM, RAKM-II, RAKM-II-R, FPF, RPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38BB, S38CC, S39BB, S39CC, S38PP, S39PP, FPBTC, FPCTC, FPBT, FPCT, FPFFTC, FPFFT service fittings or Type S3AXB abandonment plate. Type NRG Bloc IV Inserts; Types FAKM-II, RAKM-II, FPF, RAKM, RPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38BB, S38CC, S39CC, S38PP, S39PP, FPBTC, FPCTC, FPBT, FPCT, FPFFTC, FPFFT service fittings or Type S3AXB abandonment plate. Type 437 Series Inserts; Types S125R, S126R, S165B or S166B activation fittings. Types TSACR, TSAR after set inserts.

11. Steel Studs with Discs — The stud consists of No. 12 SWG steel wire, 5/8, 7/8, 1-1/4 or 1-3/4 in. long for 1, 1-1/2, 2 or 3 hr protection thicknesses, respectively. One end of studs welded to 1-3/16 in. diam. No. 28 MSG galv steel disc. The ends of studs opposite the discs shall be welded to the feeder duct in rows running parallel with the feeder duct. The distance between the outer rows of studs and the edge of the feeder duct shall not exceed 4 in. The spacing between the rows shall not exceed 22 in. The spacing between studs in each row shall not exceed 24 in. For WDR2 and 3 cellular units the stud length shall be 3/8 in. shorter than the thickness of protection material. The total number of studs shall average at least on stud per 236 sq. in. of cellular floor unit beneath the trench header.

*** 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 2019-01-22

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from UL" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "© 2019 UL LLC"