

## 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](#)

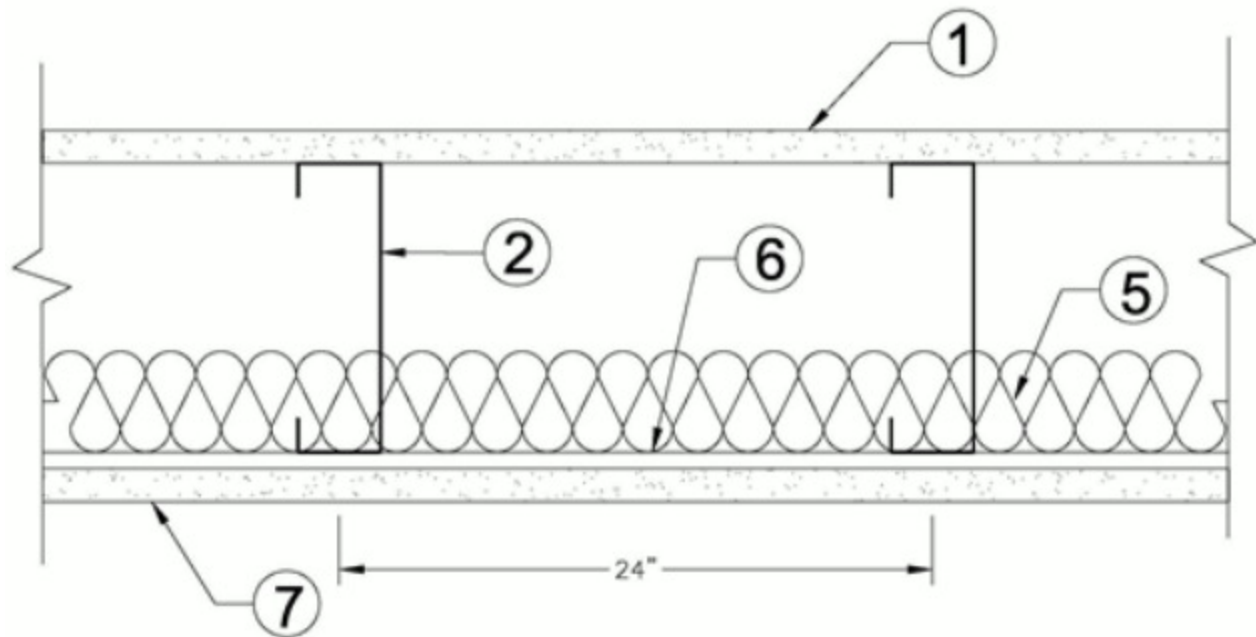
### Design No. H509

January 26, 2021

#### **Unrestrained Assembly Rating — 1, 1-1/2 and 2 Hr. (See Item 7)**

**Loading 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 State Design Provisions of Part 4 of the National Building Code of Canada.**

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



**1. Flooring System - Building Units\*** — Nom 3/4 in. thick, tongue and grooved boards. Long dimension of boards to be perpendicular to joists with end joints staggered a min of 4 ft. and centered over the joists. Boards secured to steel joists with 1-1/4 in. long self-drilling, self-countersinking, bugle head steel screws spaced a max of 12 in. OC in the field with screws located 1 in. from long edge, and max 8 in. OC along the end joints with screws located 1/2 in. from end joint.

**ECTEK INTERNATIONAL INC** — Type MegaBoard

**2. Structural Steel Members** — C-shaped, galvanized steel section, min 10 in. deep with min 1-5/8 in. flanges and min 1/2 in. returns. Joists fabricated from min No. 16 MSG galv steel with Yield Strength of 50,000 psi. Joists spaced max 24 in. OC. At joist rim splices bearing on supports, joists rims are connected using an overlapping section of a 12 in. long splice plate (a joist piece), with four 3/4 in. long No. 10 self-drilling steel TEK screws to each rim piece.

**Alternates to Item 2:**

**2A. Structural Steel Members** — Cold-formed, Min 16 MSG galvanized steel truss chord and web sections manufactured from steel conforming to ASTM A653 Grade 33 or higher yield strength. Steel thickness of truss chord and web sections as required by design to meet governing code requirements. Truss members connected together with No. 10-16 (min size) self-drilling screws or equivalent. Truss chord and web members to be designed in accordance with the American Iron and Steel Institute's Specification for the Design of Cold-Formed Steel Structural Members, 1996 Edition. Trusses spaced a max of 24 in. OC. Minimum truss depth 12.

**2B. Structural Steel Members\*** — Pre-fabricated steel truss system consisting of chord and web sections fabricated from min 16 MSG cold-formed, galvanized steel. Min. depth 12 in. Trusses spaced a max of 24 in. OC.

**KEYMARK ENTERPRISES L L C** — KeyTruss system

**2C. Structural Steel Members\*** — Pre-fabricated light gauge steel truss system consisting of cold-formed, galv steel chord and web sections. Minimum truss depth 12. Min 16 MSG. Trusses spaced a maximum of 24 in. OC.

**AEGIS METAL FRAMING, DIV OF MITEK** — Ultra-Span, Pre-fabricated Light Gauge Steel Truss System

**TRUSSTEEL, DIV OF ITW BUILDING COMPONENTS INC** — TrusSteel

**2D. Structural Steel Members\*** — Pre-fabricated light gauge steel truss system consisting of cold-formed, galvanized steel cord and web sections. Trusses fabricated from min 16 MSG steel. Trusses minimum 12 in. deep, spaced a max of 24 in. OC.

**DOUGLASS COLONY GROUP INC** — Type FRAMECAD

3. **Joist Bridging** — Not Shown — Installed at the center of the joist span immediately after joists are erected and before construction loads are applied. Bridging consisting of cut-to-length joist sections (Item 2) placed between the joists with a max spacing of 8 ft. OC.

4. **Angle Clips** — Not Shown — 1-1/2 x 4 x 9-1/4 in. long, No 16 ga clips used to fasten joists to joist rim track. 4 in. side of clip placed against outside web of joists and 1-1/2 in. side placed against joist rim track. Each side secured with three #10-3/4 in. TEK screws. 1-1/2 x 4 x 8 in., No. 16 ga clips used to fasten joist bridging with clip located on the web/flange side of the joist. Clip fastened with two #10-3/4 in. TEK screws per leg per clip. 1-1/2 x 1-1/2 x 8 in, No 16 ga clips used to fasten joist bridging with clip located on the web/non-flange side of the joist. Clip fastened with two #10-3/4 in. TEK screws per leg per clip.

4A. **Web Stiffeners** — Not shown — Web stiffeners, min 3-5/8 in. wide with min 9/16 in. flange and min 1-1/4 in. flange, having the same depth as the joists. Fabricated from min 16 MSG galv steel. Secured to each joist at support ends with four #10 by 3/4 in. long self-drilling screws

5. **Batts and Blankets\*** — 3-1/2 in. thick glass fiber batt insulation of nominal 0.5 pcf density, draped over the resilient channels (Item 6). Any glass fiber batt insulation bearing the UL Classification Marking for Surface Burning Characteristics having a flame spread index of 25 or less and a smoke developed index of 50 or less may be used. See **Batts and Blankets** (BKNV) category in the Building Materials Directory for names of manufacturers.

6. **Resilient Channels** — Formed of No. 25 MSG galv steel, 1/2 in. deep, spaced max 12 in. OC, perpendicular to joists. Channel splices located beneath joists and overlapped 4 in. Channels secured to each joist with one 1/2 in. long Type S-12 low profile steel screw. Two additional channels spaced 6 in. OC, oriented opposite each gypsum board end joint. The additional channels shall extend min 12 in. beyond each side edge of board.

6A. **Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 6.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 12 in. OC, perpendicular to joists. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 7), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels** — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to joists, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Ac) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Steel Framing Members\*** — Spaced 48 in. OC. max along joist, and secured to the joist on alternating joists with two, No. 10-16 TEK screws through mounting holes on the hanger bracket.

**PAC INTERNATIONAL L L C** — Type RSIC-SI-CRC EZ Clip

6B. **Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 6.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 12 in. OC perpendicular to joists and friction fit into Steel Framing Members (Item 6Bb). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 7). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be

minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Steel Framing Members\*** — Used to attach furring channels (Item 6Ba) to joists. Clips spaced 48 in. OC and secured along joist webs at each furring channel intersection with min. 3/4 in. long self-drilling No. 10-16 TEK screws through each of the provided hole locations. Furring channels are friction fitted into clips.

**PAC INTERNATIONAL L L C** — Type RSIC-S1-1 Ultra

7. **Gypsum Board\*** — (For 1 and 1-1/2 hour ratings - one layer of board). Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. End joints centered on resilient channels. Gypsum panels secured with 1 in. long Type S bugle-head screws spaced 12 in. OC in the field and 8 in. OC at the end joints. Screws located 1-1/4 in. and 4 in. from the end joints and 1-1/2 in. from side edges of the panels.

(For 2 hour rating - two layers of board). Base Layer : Nom 5/8 in. thick, 48 in. wide gypsum panels. Base layer installed with long dimension perpendicular to resilient channels, secured with 1 in. long Type S bugle-head screws spaced 12 in. OC, with screws located 6 in. from and on each side of the gypsum panel, in both the field and the perimeter, and 1-1/2 in. from side edges of the panels. Face Layer : Nom 1/2 in. thick, 48 in. wide gypsum panels. Face layer installed with long dimension perpendicular to resilient channels with joints offset 24 in. from base layer, secured with 1-5/8 in. long Type S bugle-head screws spaced 8 in. OC, with screws located 4 in. from and on each side of the gypsum panel, in both the field and the perimeter, and 1-1/2 in. from side edges of the panel. Butt joints of face layer panels secured to base layer with 1-5/8 in. long Type S screws spaced 8 in. OC and 1-1/2 in. from side edges of the panels, with butt joints centered over resilient channels. Butt joints of face panels staggered a minimum of 12 in. from butt joints of base layer.

When **Steel Framing Members** (Item 6A) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7 as per hourly ratings. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 6B) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7 as per hourly ratings. Butt joints staggered minimum 24 in. OC.

**NATIONAL GYPSUM CO** — Type FSW-C

**CGC INC** — Type C

**UNITED STATES GYPSUM CO** — Type C

7A. **Gypsum Board\* (As an alternative to Item 7)** — Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Item 7 with max screw spacing 8 in. OC.

**CGC INC** — Type ULIX

**UNITED STATES GYPSUM CO** — ULIX

8. **Finishing System - (Not Shown)** — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints.

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

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