

## 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.
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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](#)

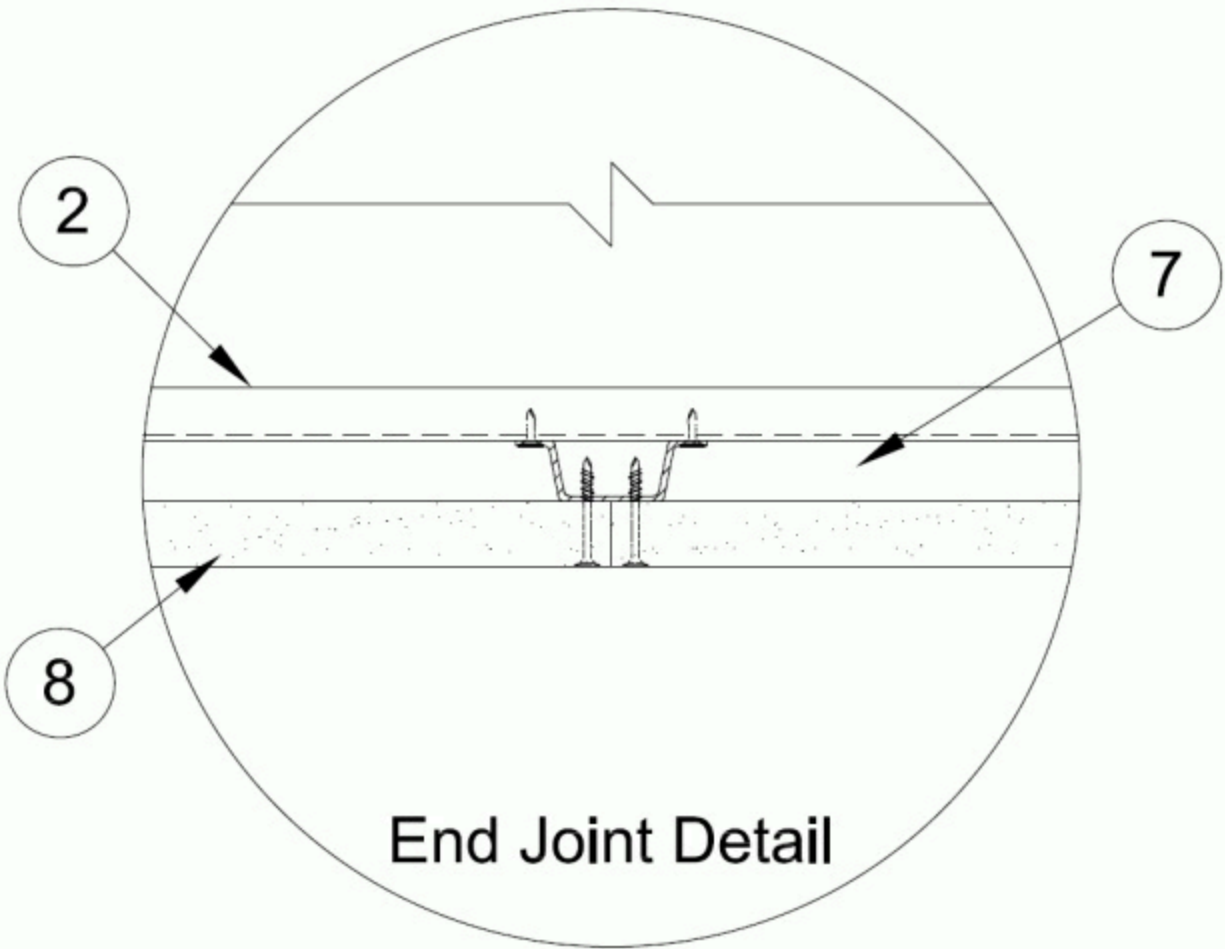
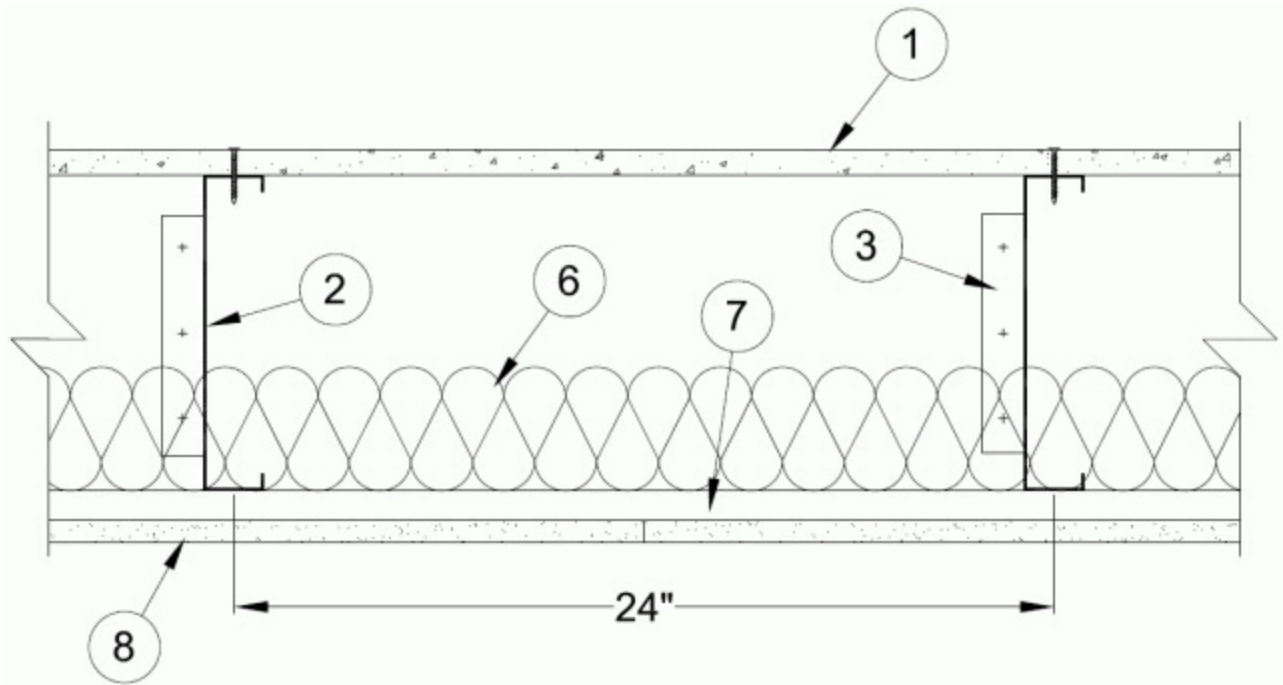
[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada  
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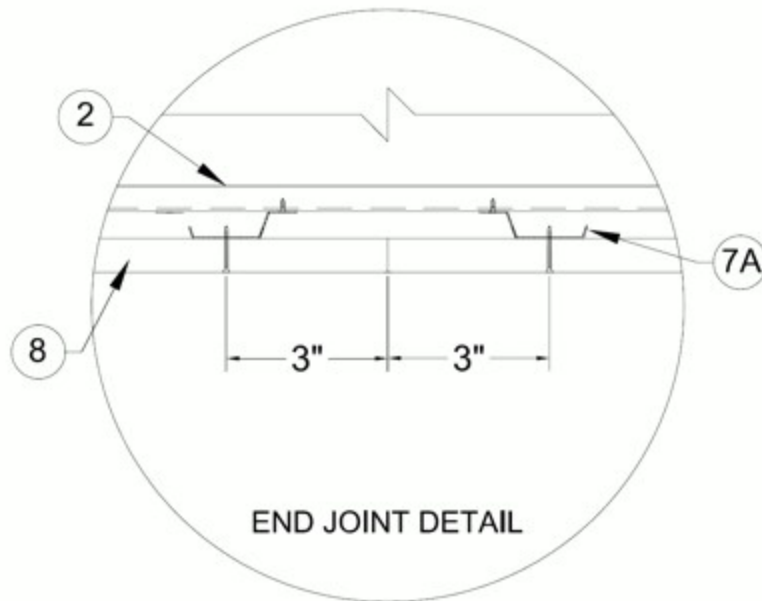
## Design No. H504

December 26, 2023

**Unrestrained Assembly Rating — 3/4 or 1 Hr (See Items 1 and 6)**

**\* 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\* — Mineral and Fiber Boards** — Nom 20 mm thick. Long dimension of panels to be perpendicular to joists with end joints centered over the joists. Bead of construction adhesive applied to edges of panels. Panels secured to joists with 1-5/8 in. long No. 8 self-drilling, self-countersinking steel screws spaced a max of 8 in. OC with a screw located 2 in. from each edge at end joints, and a screw located 1 in. from the edge in the field. For 3/4 Hr Rating, panel side joints may be tongue-and-groove or square edge. For 1 Hr Rating, panel side joints required to be tongue-and-groove.

**THE PLYCEM COMPANY INC** — Types Plycem Flooring, Plyrock Flooring, Plycem SX 20/20 Structural Flooring, Plystone Flooring, Entrepiso Plystone, Entrepiso Plyrock, Entrepiso Plycem, Plycem Entrepiso Alto Desempeño, Plycem High Performance Subfloor

2. **Steel Joists — Non-Composite Design** — Channel-shaped, min 8 in. deep with min 2 in. wide flanges and 5/8 in. long stiffening flanges. Fabricated from min No. 16 MSG galv steel. Min yield strength of 50,000 psi. Joists spaced max 24 in. OC. Supplied with appropriate rim tracks of same size and gauge.

3. **Support Clip** — Angle-shaped, 7 in. high with 1-1/2 in. and 4 in. long leg. Clips fabricated from No. 16 MSG galv steel. Clips used to fasten steel joists to joist rim track. The clip section is connected using a min of four #10 by 1/2 in. low profile head, self-drilling screw in each leg of clip at each connection.

4. **Blocking** — (Not Shown) — Channel-shaped 6 in. deep with min 1-3/8 in. flanges and 3/8 in. long stiffening flanges. Blocking fabricated from min No. 16 MSG galv steel. Min yield strength of steel is 50,000 psi. Blocking to span two joists cavities, spaced max 12 ft OC perpendicular to the joists. Nom 4 by 4 by 4 in. long angle clips shall be used to connect web of steel joists to blocking with a min of four #10 by 1/2 in. low profile head, self-drilling screw at each connection.

5. **Bridging** — (Not Shown) — Flat steel strap 4 in. wide fabricated from No. 20 MSG galv steel located between rows of blocking (Item 4). The flat strap is connected to the bottom flange of the steel joist with a min of one 3/4 in. self-tapping screw.

6. **Batts and Blankets\*** — Mineral wool batt insulation, 3-1/2 in. thick, minimum density 2.6 pcf, bearing the UL Classification Marking for Surface Burning Characteristics and/or Fire Resistance. Insulation fitted in the concealed space, draped over the furring or resilient channels (Item 7 or 7A). For 1 Hr Rating, butted end joints of insulation batts to be centered over furring or resilient channels. See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

7. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-5/8 in. wide at top and 1-3/16 in. wide at bottom by 7/8 in. deep, spaced max 16 in. OC, perpendicular to joists. Channel splices located beneath joists and overlapped 4 in. Channels secured to each joist with one #10 by 1/2 in. low profile head, self-drilling screw in each leg of each channel.

7A. **Resilient Channels** — (As an alternate to Item 7) — 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 #10 by 1/2 in. low profile head, self-drilling screw. Two channels, spaced 3 in. from gypsum board end joints as shown in the above illustration. Additional channels shall extend min 6 in. beyond each side edge of panel.

**7B. Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 7.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to the 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. Gypsum board (Item 8) butted end joints centered on the furring channels, 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 7Bc) 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

**7C. Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 7.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to joists and friction fit into Steel Framing Members (Item 7Cb). 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. Gypsum board (Item 8) butted end joints centered on the furring channels. 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 7Ca) 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

**7D. Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 7.

a. **Furring channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to joists. Channels secured to joists as described in Item b. 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.

b. **Steel Framing Members\*** — Used to attach furring channels (Item a) to the steel joists (Item 2). Clips spaced a max of 48 in. OC. RSIC-1 clips secured to alternating joists with No. 8 x 1-5/8 in. fine thread screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clips for use with 2-9/16 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.

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

8. **Gypsum Board\*** — One layer of nom 5/8 in. thick by 48 in. wide gypsum panels installed with long dimension perpendicular to furring or resilient channels. Butted end joints shall be staggered a minimum of 2 ft. When furring channels (Item 7) are used, gypsum panels secured to furring channels with 1-1/4 in. long Type S bugle-head screws spaced 12 in. OC, with screws located 1 in. from side edges of the board. End joints secured to furring channels as shown in end joint detail. Side joints centered between joists. When resilient channels (Item 7A) are used, gypsum panels secured with 1 in. long Type S bugle-head screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints.

**CGC INC** — Type ULIX

**UNITED STATES GYPSUM CO** — Type C, ULIX

When **Steel Framing Members** (Item 7B) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 8. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 7C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 8. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 7D) are used, gypsum panels installed with long dimensions perpendicular to furring channels. Panels attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and in the field of the panel. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. Each end of each gypsum panel shall be supported by a single length of furring channel equal to the width of the gypsum panel plus 6 in. on each end. The two support furring channels shall be spaced approximately 3-1/2 in. OC, and be attached with one clip at each end of the channel.

9. **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. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum panels.

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