

BXUV.G542 -

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. G542

November 12, 2019

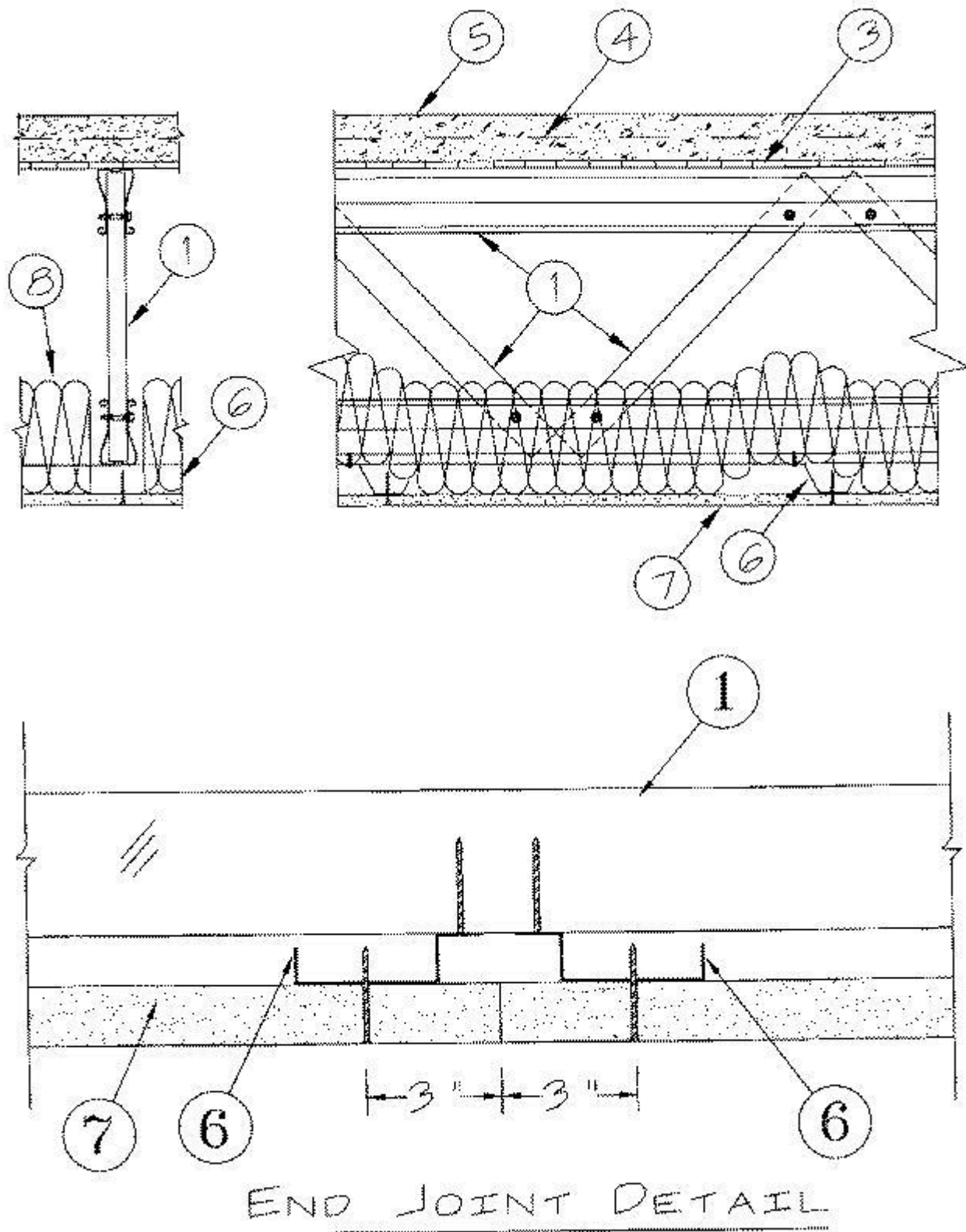
Restrained Assembly Rating - 1 and 2 Hr. (See Items 7 and 8)

Unrestrained Assembly Rating - 1 and 2 Hr. (See Items 7 and 8)

Unrestrained Beam Rating - 1 and 2 Hr. (See Items 7 and 8)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — 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.**



1. **Structural Steel Members*** — Pre-fabricated light gauge steel truss system consisting of cold-formed, galv steel chord and web sections. Trusses fabricated in various sizes, depths and from various steel thickness. Trusses spaced a max of 48 in. OC.
TRUSSTEEL, DIV OF ITW BUILDING COMPONENTS INC — TrusSteel

2. **Bridging** — (Not Shown)—Location of lateral bracing for truss chord and web sections to be specified on truss engineering.

3. **Metal Lath** — 3/8 in. rib, 3.4 lb/sq yd expanded steel lath tied to each truss at every other rib and midway between trusses at side laps with 18 SWG galv steel wire. As an alternate, the form material for the concrete may be corrugated steel deck, min 9/16 in. deep, 28 MSG galv steel, mechanically fastened to trusses 15 in. OC. The concrete topping thickness shall be measured to the top plane of the steel deck.

4. **Welded Wire Fabric** — 6 by 6 in., 10/10 SWG.

5. **Normal or Lightweight Concrete** — Carbonate or siliceous aggregate, 150 ± 3 pcf unit weight, 3000 psi compressive strength. Lightweight concrete, expanded shale, clay or slate aggregate by rotary kiln method, 117 ± 3 pcf unit weight, 3000 psi compressive strength. Min. thickness is 2 in.

6. **Furring Channels** — Resilient channels formed of 25 MSG galv steel, installed perpendicular to the steel trusses, (Item 1) when trusses are spaced a max 24 in. OC. Resilient channels spaced a max of 16 in. OC when no insulation (Item 8 or 8A) is fitted in the concealed spaced, or a max of 12 in. OC when insulation (Item 8 or 8A) is fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane. Two courses of resilient channel positioned 6 in. OC at wallboard butt-joints (3 in. from each end of wallboard). Channels oriented opposite at wallboard butt-joints. Channel splices overlapped 4 in. beneath steel trusses. Channels secured to each truss with Type S12 by 1/2 in. long screws.

6A. **Furring Channels** — (Not Shown) — As an alternate to Item 6 — Hat channels min 20 MSG galv steel, min 2-5/8 in. wide by min 7/8 in. deep, installed perpendicular to the trusses (Item 1) spaced a max of 16 in. OC. Two courses of channel positioned 6 in. OC, 3 in. from each end of wallboard. Channel splices overlapped 6 in. beneath steel trusses. Channels secured to each truss with No. 18 SWG steel wire double strand saddle ties. Channels tied together with double strand of No. 18 SWG steel wire at each end overlap.

6B. **Furring Channels** — As an alternate to Item 6 or 6A, resilient channels, double legged formed of 25 MSG galv steel, 2-7/8 in. wide by 1/2 in. deep, installed perpendicular to the trusses (Item 1) spaced max 16 in. OC when no insulation (Item 8 or 8A) is fitted in the concealed space, or a max of 12 in. OC when insulation (Item 8 or 8A) is fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane. Two courses of resilient channel positioned 6 in. OC at wallboard butt-joints (3 in. from each end of wallboard). Channel splices overlapped 4 in. beneath steel trusses. Channels secured to each truss with Type S12 by 1/2 in. long screws or with No. 18 SWG galv steel wire double strand saddle ties. Channels tied together with double strand of No. 18 SWG galv steel wire at each end of overlap .

6C. **Framing Members*** — (Not Shown) As an alternate to Item 6, 6A or 6B.

a. **Main Runners** — Installed perpendicular to Structural Steel Members (Item 1) — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft OC. Main runners hung a min of 2 in. from bottom chord of Structural Steel Members with 12 SWG galv steel wire. Wires located a max of 48 in. OC.

b. **Cross tees or channels** — Nom 4 ft long, 15/16 in. or 1-1/2 in. wide face, or cross channels, nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or channels used at 8 in. from each side of butted wallboard end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall angles or channels** — Used to support steel framing member ends and for screw-attachment of the gypsum wallboard — Min 0.016 in. thick painted or galvanized steel angle with 1 in. legs or min. 0.016 in. thick painted or galvanized steel channel with a 1 by 1-1/2 by 1 in. profile, attached to walls at perimeter of ceiling with fasteners 16 in. OC.

USG INTERIORS LLC — Type DGL or RX

7. **Gypsum Board*** — For the 1 Hr. Ratings - One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Attached to the resilient channels using 1 in. long Type S bugle-head screws. Screws spaced a max of 12 in. OC along butted end-joints and in the field when no insulation (Item 8 or 8A) is fitted in the concealed spaced, or a max of 8 in. OC along butted end-joints and in the field when insulation (Item 8 or 8A) is fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane. For the 2 Hr. Ratings - Two layers of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Base layer attached to the resilient channels using 1 in.

long Type S bugle-head screws. Screws spaced a max of 12 in. OC along butted end-joints and in the field. Face layer attached to the resilient channels using 1-5/8 in. long Type S bugle-head screws spaced 12 in. OC along butted end-joints and 12 in. OC in the field. Screws staggered from base layer screws. Face layer side and end joints offset a minimum 16 in. from base layer side and end joints.

CGC INC — Types C, IP-X2, IPC-AR.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR.

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR.

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 — ULIX

UNITED STATES GYPSUM CO — ULIX

7B. **Gypsum Board*** — For use with Steel Framing Members Item 6C — For the 1 hr ratings - One layer of 5/8 in. thick, 4 ft wide board; installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Fastened to cross tees with 1 in. long steel wallboard screws spaced 8 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long wallboard screws spaced midway between cross tees. Screws along sides and ends of boards spaced 3/8 to 1/2 in. from board edge. End joints of the sheets shall be staggered with spacing between joints on adjacent boards not less than 4 ft OC. Joints treated as described in Item 9.

For the 2 hr rating - Two layers of nominal 5/8 in. thick by 48 in. wide boards. Inner layer installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Inner layer fastened to cross tees with 1-1/4 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. End joints of adjacent wallboard sheets shall be staggered not less than 4 ft OC. Outer layer attached to the cross tees through inner layer using 1-7/8 in. long Type S bugle-head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints to be centered along cross tees and be offset a min of 32 in. from end joints of inner layer. Rows of screws on both sides of butted end joints of each layer shall be located 3/8 to 1/2 in. from end joints. Butted side joints of outer layer to be offset a min of 18 in. from butted side joints of inner layer. Joints treated as described in Item 9.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

8. **Batts and Blankets*** — Optional for the 1 Hr Ratings only - Not to be used for the 2 Hr Ratings. Any thickness mineral wool or glass fiber insulation bearing the UL Classification Marking for Surface Burning Characteristics, having a flame spread value of 25 or less and a smoke value of 50 or less. Insulation fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane.

8A. **Loose Fill Material*** — As an alternate to Item 8 — Any thickness of loose fill material bearing the UL Classification Marking for Surface Burning Characteristics, having a flame spread value of 25 or less and a smoke spread value of 50 or less. Loose fill material fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane.

9. **Finishing System** — (Not Shown)—Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads; paper tape, 2 in. wide, 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 wallboard.

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