



**Design No. P541
BXUV.P541
Fire-resistance Ratings - ANSI/UL 263**

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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

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

[See General Information for Fire-resistance Ratings - ANSI/UL 263](#)

[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada](#)

Design No. P541

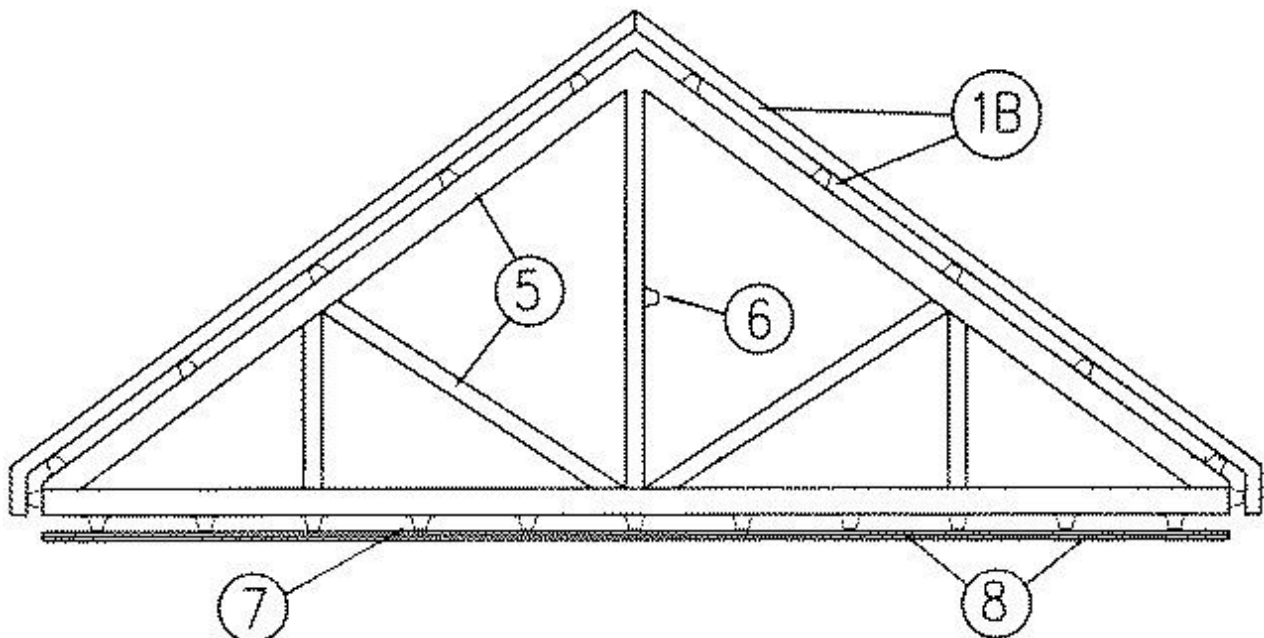
October 29, 2014

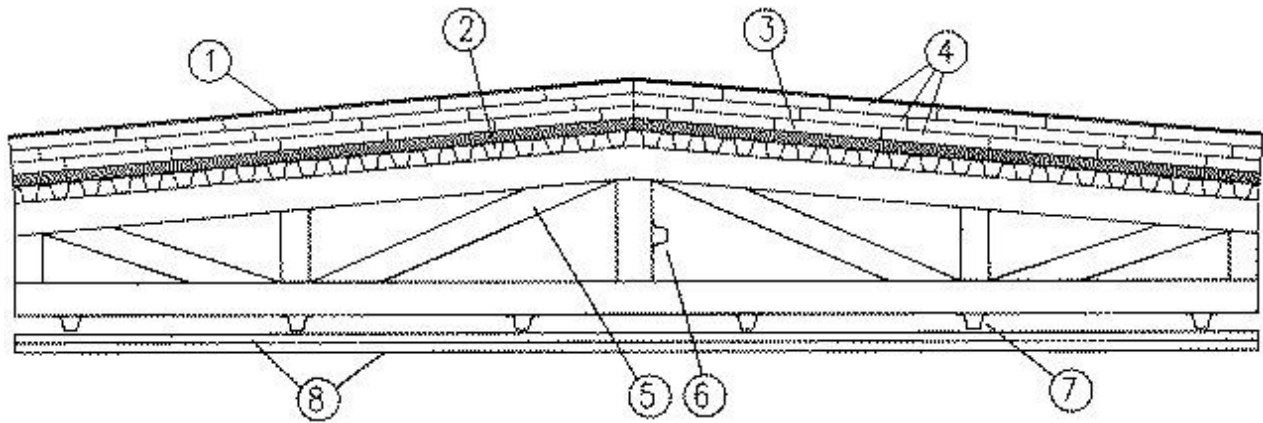
Restrained Assembly Rating - 1 Hr

Unrestrained Assembly Rating - 1 Hr

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. Roof Covering* — Consisting of hot-mopped or cold-application materials compatible with insulation(s) described herein which provide Class A, B or C coverings. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

1A. Roofing Membranes* — In lieu of Item 1, single-ply membrane that is either ballasted, adhered or mechanically attached to the insulation(s) described herein as permitted under the respective company's Classification. See Fire Resistance Directory-Roofing Membranes (CHCI) Category.

1B. Metal Roof Deck Panels* — In lieu of or in addition to Items 1 and 1A, the roof covering may consist of mechanically fastened 24 MSG galv or painted steel roof deck panels. Panels may be installed above a steel purlin assembly per metal roof deck manufacturer's specifications. Steel purlin assembly to be installed transverse to steel roof trusses (Item 5). A line of sealant or tape may be used at panel side and end laps. See Metal Roof Deck Panels Category in the Roofing Materials and Systems Directory (TJPV) or Fire Resistance Directory (CETW) for names of manufacturers.

2. Steel Roof Deck — Corrugated or fluted steel form units, min 28 MSG painted or galv steel, mechanically fastened at 12 in. OC max with No. 10 by 16 self-drilling steel screws to truss-top chords.

3. Gypsum Board — (Optional-Classified or Unclassified) - Gypsum sheathing, supplied in sheets 4 ft wide by 8 to 12 ft long by min 1/2 in. thick, applied perpendicular to steel roof deck. End joints to occur over crests of steel roof deck, with end-joints staggered in adjacent rows. Sheathing adhered or mechanically attached to steel roof deck. See Gypsum Board (CKNX) category for names of Classified companies.

4. Roof Insulation — Mineral and Fiber Boards* - Mineral wool, glass fiber or perlite insulation boards, 24 by 48 in. min size, 48 by 96 max size, applied in one or more layers. Boards installed directly over the roof deck (Item 2), perpendicular to the deck flutes, or over the gypsum sheathing (Item 3), with end-joints staggered in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below in order to lap all joints. Min thickness 1 in. (no limit on max overall thickness). Boards loosely laid, adhered or mechanically fastened to gypsum sheathing and to steel roof deck (Item 2). See Mineral and Fiber Boards (BQXR) Category in the Building Materials Directory.

4A. Roof Insulation — Foamed Plastic* Any polyisocyanurate foamed plastic insulation boards bearing the UL Classification Marking. Roof insulation loosely laid, adhered or mechanically fastened to gypsum sheathing (Item 3) and/or steel roof deck (Item 2). See Foamed Plastic (CCVW) Category in the Fire Resistance Directory.

4B. Roof Insulation — Foamed Plastic* Any polystyrene foamed plastic insulation boards bearing the UL Classification Marking. Roof insulation loosely laid, adhered or mechanically fastened, placed over gypsum sheathing (Item 3). See Foamed Plastic (BRYX) category in the Building Materials Directory or Foamed Plastic (CCVW) category in the Fire Resistance Directory.

5. Steel Roof Trusses — Cold-formed galv 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 or 48 in. OC, refer to Item 8. Where the truss intersects with the interior face of the exterior walls, the min truss depth shall be 11-7/8 in. or 5 in. with a min roof slope of 3/12 and a min area in the plane of the truss of 20 sq/ft.

6. Bridging — Size, thickness, shape, number of connections and location of permanent bracing for truss chord and web sections to be determined by truss manufacturer.

7. Furring Channels — Resilient Channels, Min 25 MSG galv steel (or heavier as required by design), 2-5/8 in. wide by 7/8 in. deep, spaced 24 in. OC, perpendicular to trusses. Two courses of furring channel positioned 6 in. OC, 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.

7A. As an alternate to Item 7, Resilient Channels — formed of 25 MSG galv steel, 2-1/2 in. wide by 1/2 in. deep, spaced 24 in. OC, perpendicular to steel trusses. 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 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.

7B. As an alternate to Item 7 and 7A, Resilient Channels, — 3/8 in. deep by 2-3/8 in. wide at the base and 1-3/8 in. wide at the face, formed from 0.020 in. thick galv steel, spaced 24 in. OC, perpendicular to steel trusses. 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 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.

8. Gypsum Board* — 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 furring channels using 1-1/8 in. long Type S bugle-head screws spaced 8 in. OC along butted end-joints and 12 in. OC in the field. End-joints of base layer fastened to additional pieces of furring channel to extend a min of 3 in. beyond ends of butted end-joints. Butted end-joints staggered min 12 in. in adjacent rows. Face layer of gypsum wallboard secured to furring channels with 1-3/4 in. long Type S bugle-head steel screws spaced 8 in. OC at the side-joints and in the field. Face layer side- and end-joints offset min 16 in. from base layer side- and end-joints. When roof trusses are spaced max 24 in. OC, the wallboard may be attached directly (and perpendicular) to the trusses. When attached to trusses, inner layer of wallboard attached to bottom chord of trusses with 1 in. long Type S12 bugle-head steel screws spaced 8 in. OC at end-joints and 12 in. OC in the field. Face layer of gypsum wallboard secured to bottom chord of trusses with 1-5/8 in. long Type S12 bugle-head steel screws spaced 8 in. OC at end-joints and 12 in. OC in the field. End-joints of wallboard to occur under trusses. Screws located 1 in. from board side-edges and 1/2 in. from butted ends. Face layer side- and end-joints offset min 16 in. from base layer side- and end-joints.

NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSL, FSMR-C, FSW, FSW-C, FSW-3, FSW-G, FSW-6, FSW-8.

9. Batts and Blankets — (Not Shown) - Optional - 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 above the gypsum wallboard ceiling membrane.

10. Finishing System — (Not Shown) - Vinyl, dry of 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.

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