

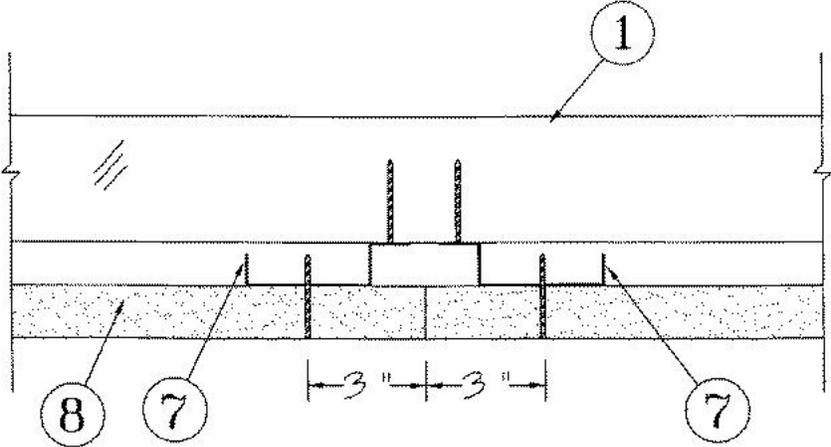
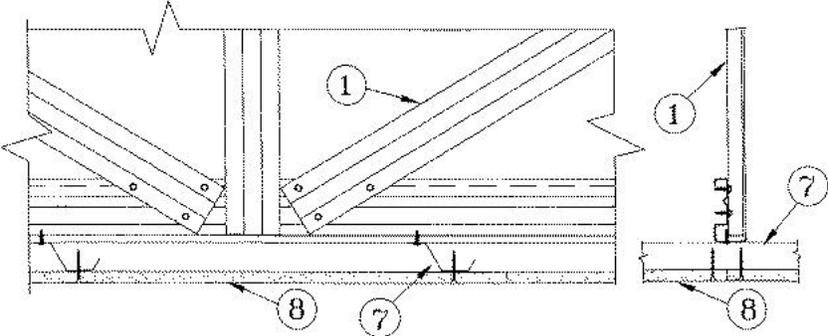
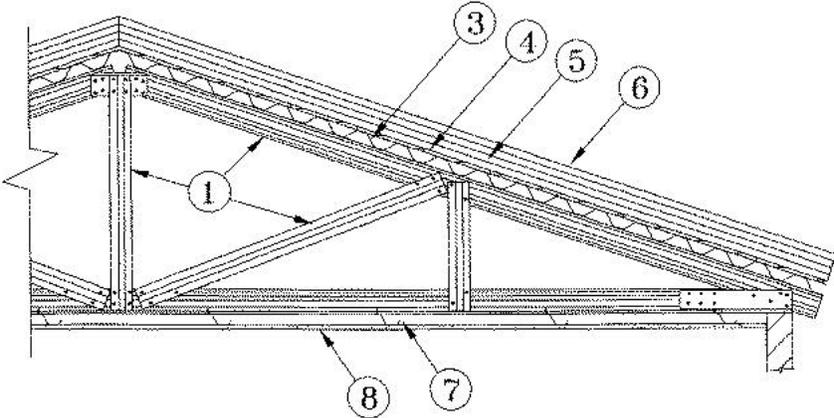
# Fire Resistance Ratings - ANSI/UL 263

Design No. P521

September 27, 2002

Restrained Assembly Rating — 1, 1-1/2 and 2 Hr. (See Items 3A , 5, 5A, 5B and 8 )

Unrestrained Assembly Rating — 1, 1-1/2 and 2 Hr. (See Items 3A , 5, 5A, 5B and 8 )



END JOINT DETAIL

1. **Structural Steel Members\*** — Pre-fabricated light gauge steel truss system consisting of cold-formed, galvanized steel chord and web sections. Trusses fabricated in various sizes, depths, and from various steel thickness. Trusses spaced a max of 48 in. OC.

**AEGIS METAL FRAMING L L C** — Ultra-Span, Pre-fabricated Light Gauge Steel Truss System

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

3. **Steel Floor and Form Units** — (Classified or Unclassified) — Corrugated or fluted steel form units, min 22 MSG painted or galv steel, welded or mechanically fastened max 12 in. OC to truss-top chords.

3A. **Steel Floor and Form Units\*** — As an alternate to Item 3 - min 25 MSG, 15/16 in. deep, painted or galv units welded or mechanically fastened max 12 in. OC to the top chord of trusses. When used, max hourly rating is reduced to 1 hr.

**LOADMASTER SYSTEMS INC** — Types HD, ED or PS.

4. **Cementitious Backer Units\*** — Nom 1/2 or 5/8 in. thick sheets. End-joists to occur over crests of steel roof deck with end-joints staggered in adjacent rows. Units loosely laid, adhered or mechanically attached to steel roof deck.

**UNITED STATES GYPSUM CO** — Durock Exterior Cement Board or Durock Cement Board.

4A. **Gypsum Board** — (Classified or Unclassified) — (Not Shown) — As an alternate to Item 4, Gypsum sheathing, min 1/2 in. thick, applied perpendicular to steel roof deck. End joints to occur over crests of steel roof deck. Sheathing loosely laid, adhered or mechanically attached to steel roof deck. See Gypsum Board (CKNX) category for names of Classified companies.

5. **Roof Insulation — Foamed Plastic\*** — Any polyisocyanurate foamed plastic insulation boards bearing the UL Classification Marking. Min thickness is 1 in. for the 1 hr assembly ratings, 2 in. for the 1-1/2 hr assembly ratings and 4 in. for the 2 hr ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the 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. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3). See Foamed Plastic (CCVW) Category in the Fire Resistance Directory.

5A. **Roof Insulation — Foamed Plastic\*** — (Not Shown) — As an alternate to Item 5 — For 1 and 1-1/2 hr ratings only — Any polystyrene foamed plastic insulation boards bearing the UL Classification Marking. Min thickness is 1 in. for

the 1 hr assembly ratings, and 2 in. for the 1-1/2 hr assembly ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the end-joints staggered in adjacent rows. When applied in more than one layer, each layer or board to be offset in both directions from layer below in order to lap all joints. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3). See Foamed Plastic (BRYX) category in the Building Materials Directory or Foamed Plastic (CCVW) category in the Fire Resistance Directory.

**5B. Roof Insulation — Mineral and Fiber Boards\* — (Not Shown) —** As an alternate to Item 5 — Mineral wool, glass fiber or perlite insulation boards, 24 by 48 in. min size, applied in one or more layers. Min thickness is 1 in. for the 1 hr assembly ratings, 2 in. for the 1-1/2 hr assembly rating and 4 in. for the 2 hr ratings, with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the 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. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing, and to steel roof deck (Item 3).

See Mineral and Fiber Boards (BQXR) Category in the Building Materials Directory or Mineral and Fiber Boards (CERZ) Category in the Fire Resistance Directory.

**5C. Roof Insulation —Building Units\* (Not Shown) —** As an alternate to Item 5—Any polyisocyanurate foamed plastic insulation faced on the top surface with oriented strand board or faced on the underside or both sides with wood fiber board, bearing the UL Classification Marking for Fire Resistance. No min thickness of the polyisocyanurate foamed plastic core required for the 1 hr assembly ratings, min 2 in. polyisocyanurate foamed plastic core for the 1-1/2 hr assembly ratings and min 4 in. polyisocyanurate foamed plastic core for the 2 hr rating with no limit on max overall thickness. Boards installed over the cementitious backer units (Item 4) or gypsum sheathing (Item 4A), with the 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. Boards loosely laid, adhered or mechanically fastened to cementitious backer units or gypsum sheathing and to steel roof deck (Item 3). See Building Units (BZXX) category in the Fire Resistance Directory.

**6. 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).

**6A. Roofing Membrane\*** — (Not Shown) — In lieu of Item 6, 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.

**6B. Metal Roof Deck Panels\*** — In Lieu of or in addition to Items 6 and 6A, the roof covering may consist of mechanically fastened 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 1). 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.

**6C. Roof Covering\*** — In Lieu of Item 6 — Any UL Class A, B or C Prepared Roof Covering (TFWZ) acceptable for use over plywood sheathing or nonveneer APA Rated Series Sheathing. Sheathing mechanically fastened through roof insulation to top chord of steel trusses with fasteners spaced a max of 12 in. OC. As an alternate to the plywood sheathing or nonveneer APA Rated Series Sheathing, the Prepared Roof Covering (TFWZ) may be applied directly to the Building Units\* (Item 5C) if the building units also carry the UL Classification Marking for Prepared Roofing Accessories (TGDY).

**7. Furring Channels** — Resilient channels formed of 25 MSG galv steel, installed perpendicular to the trusses (Item 1), spaced a max of 16 in. OC. Channels oriented opposite at wallboard butt-joints. Channel splices overlapped 4 in. beneath steel trusses. Channels secured to each truss with Type S-12 by 1/2 in. long screws.

**7A. Furring Channels** — (Not Shown) — As an alternate to Item 7 — 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.

**7B. Furring Channels** — As an alternate to Items 7 and 7A, resilient channels, double legged formed of 25 MSG galv steel, 2-7/8 in. wide by 1/2 in. deep, spaced max 16 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). 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\*** — For all ratings except the 2 Hr Assembly 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 spaced 12 in. OC along butted end-joints and 12 in. OC in the field. 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 as described above. 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.

**CANADIAN GYPSUM COMPANY** — Types C, IP-X2, IPC-AR.

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

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

9. **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.

**Alternate Ceiling Membrane** — Not shown.

10. **Steel Framing Members** —

a. **Main runners** — Installed perpendicular to Structural Steel Members, - Nom 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 - Painted or galvanized steel angles with 1 in. legs or channels with 1 in. legs and 1-9/16 in. deep, attached to walls at perimeter of ceiling with fasteners 16 in. OC.

11. **Gypsum Board\*** — For use with Steel Framing Members (Item 10) - For the 1 and 1-1/2 hr ratings - One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to the main runners. Wallboard fastened to each cross tee or channel with five wallboard screws, with one screw located at the midspan of the cross tee or channel, one screw located 12 in. from and on each side of the cross tee or channel mid span and one screw located 1-1/2 in. from each wallboard side joint. Except at wallboard end joints, wallboard screws shall be located on alternating sides of cross tee flange. At wallboard end joints, wallboard screws shall be located 1/2 in. from the joint. Wallboard fastened to main runners with wallboard screws 1/2 in. from side joints, midway between intersections with cross tees or channels (16 in. OC). End joints of adjacent wallboard sheets shall be staggered not less than 32 in. Wallboard sheets screw attached to leg of wall angle with wallboard screws spaced 12 in. OC. Joints treated as described in Item 8. 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 outler layer to be offset a min of 18 in. from butted side joints of inner layer. Joints treated as described in Item 8.

**CANADIAN GYPSUM COMPANY** — Type C or IP-X2

**UNITED STATES GYPSUM CO** — Type C or IP-X2

**USG MEXICO S A DE C V** — Type C or IP-X2

\*Bearing the UL Classification Mark