

## Design No. G560

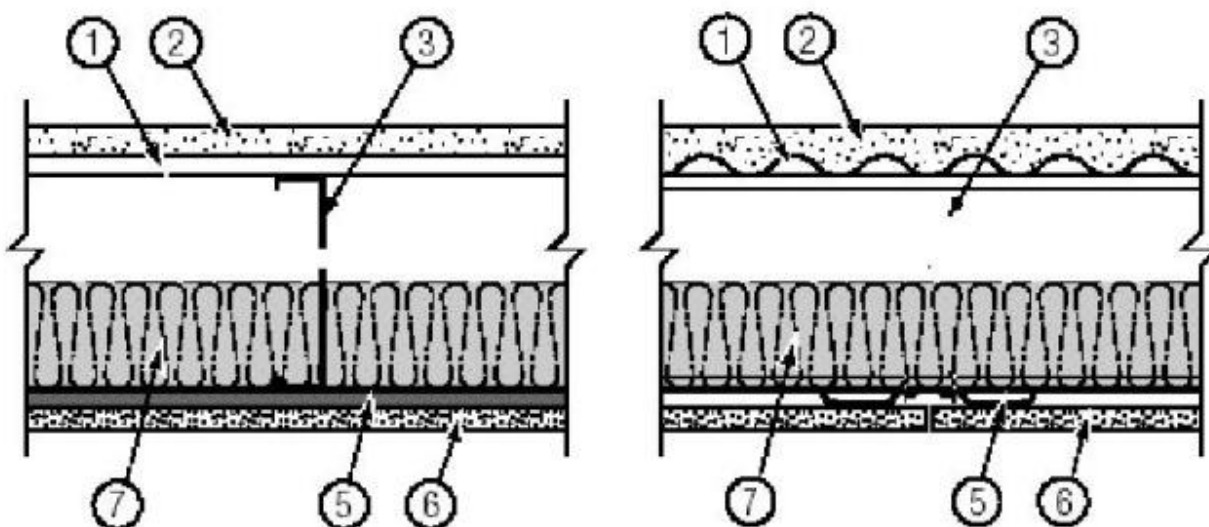
June 16, 2021

### Unrestrained Assembly Rating — 1 or 2 Hr. (See Item 5A)

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. **Steel Deck** — Min 9/16 in. deep, 22 MSG galv corrugated fluted steel deck. Overlapped one corrugation at each side and attached to each joist with 3/4 in. long #10-16 TEK screws 10 in OC max.

1A. **Structural Cement-Fiber Units\*** — Not Shown — (As an alternate to Item 1) — Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to joists with end joints staggered a min of 2 ft and centered over the joists. Panels secured to steel joists with 1-5/8 in. long No. 8 self-drilling, self-countersinking steel screws spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the side edges of the panel.

**UNITED STATES GYPSUM CO** — Types STRUCTO-CRETE, USGSP

1B. **Units, Partition Panel\*** — (As an alternate to Item 1 for a 1 hour rating only) — (For use with Item 7A) — Steel faced panels. Panels secured to top chord of steel joists with #8, 1-5/8 in. cement board Grabber screws spaced 6 in. OC.

**CALIFORNIA EXPANDED METAL PRODUCTS CO** — Sure-Board® Series 200S

2. **Floor Topping Mixture\*** — Compressive strength of 3000 psi min. Minimum thickness to be 1 in. as measured from the top plane of the deck or the top plane of the **Floor Mat Material\***. Refer to manufacturer's instructions accompanying the material for specific mix design. When a steel stud partition wall is installed on top of the floor, the floor topping mixture may be poured to the required thickness prior to the installation of floor runners to the floor, or the floor topping mixture may be poured to the specified thickness after the attachment of the floor runners to floor and placement of the steel studs into the floor runners provided there is sufficient height of the legs of the floor runners to accommodate attachment of the gypsum board wall.

**MAXXON CORP** — Types Maxxon Standard and Maxxon High Strength

2A. **Alternate Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 2000 psi, applied over Structural Cement Fiber Units (Item 1A). Refer to manufacturer's instructions accompanying the material for specific mix design. When a steel stud partition wall is installed on top of the floor, the floor topping mixture may be poured to the required thickness prior to the installation of floor runners to the floor, or the floor topping mixture may be poured to the specified thickness after the attachment of the floor runners to floor and placement of the steel studs into the floor runners provided there is sufficient height of the legs of the floor runners to accommodate attachment of the gypsum board wall.

**MAXXON CORP** — Types Maxxon Standard and Maxxon High Strength

2B. **Floor Mat Materials\*** — (Optional) - Floor mat material loose laid over the crests of the steel deck. Flutes of the steel deck to be filled with **Floor Topping Mixture (item 2)** prior to the application of the **Floor Mat Materials\***. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

**MAXXON CORP** — Type Encapsulated Sound Mat.

2C. **Floor Mat Reinforcement\*** — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement. **Metal Lath** — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material. **Fiber Glass Reinforcement** — (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

3. **Steel Joists** — C-shaped, galvanized steel sections, 9-1/4 in. min depth with 1-7/8 in. min. flanges and 1/2 in. min. stiffening flanges. The web of each joist may be provided with maximum 6-1/4 in. high by 9 in. long oval knockouts at the joist mid-depth. Knockouts spaced 48 in. OC minimum. The minimum coated steel thickness shall be 0.055 in. The minimum yield strength of the steel shall be 50 ksi. Joists spaced max 24 in. OC. Joists attached to joist rim with three 3/4 in. long self-drilling #10-16 TEK screws through tab to the outside of the web. 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 self-drilling #10-16 TEK screws to each rim piece.

4. **Joist Bridging** — Not Shown — Installed immediately after joists are erected and before construction loads are applied. The bridging consists of min 1-1/4 in. deep, 2-3/4 in. wide and 21-3/4 in. long, formed galvanized steel installed in a staggered formation a maximum of every 8' along the joist span. Bridging secured to joist bottom flange with one 3/4 in. long self-drilling #10-16 TEK screw at each end tab. Minimum coated steel thickness for bridging is 0.048 in. Solid blocking must be provided in the two end joist bays and a maximum of 8 ft. OC (every 4 joist spaces). Solid blocking consisting of cut to length joist sections secured to the joists with clips. Clips are min 4 in.

by 1-1/2 in. by 7 in. long, 0.054 in. thick, 50 ksi yield strength and secured with two 3/4 in. long self-drilling #10-16 TEK screws per leg.

5. **Resilient Channels** — 1/2 in. deep, 2-1/4 in. wide formed of 26 MSG galv steel with a 1 in. fastening surface, spaced 12 in. OC perpendicular to joists. Channel splices overlapped 5 in. beneath steel joists. Channels secured to each joist with 1/2 in. Type S-12 pan head screws. Channels oriented opposite at wallboard butt joints (spaced 6 in. OC) as shown in the above illustration.

5A. **Alternate Steel Framing Members** — (Not Shown) — **For 1 Hr Rating Only.** — As an alternate to Item 5, main runners, cross tees, cross channels and wall angle as listed below:

a. **Main Runners** — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires inserted through holes drilled through web of joists and twist-tied.

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

c. **Cross Channels** — Nom 4 or 12 ft long, installed perpendicular to main runners, spaced 16 in. OC.

d. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

**CGC INC** — Type DGL or RX

**USG INTERIORS LLC** — Type DGL or RX

5B. **Alternate Steel Framing Members** — (Not Shown) — As an alternate to Item 5, main runners, cross tees, and wall angle as listed below. Steel framing members shall be suspended min 5 in. below bottom of structural steel members:

a. **Main Runners** — Nom 12 ft long, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC for 1 Hr and 2 Hr Rating. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires inserted through holes drilled through web of joists and twist-tied. The main runners may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

b. **Cross Tees** — Nom 4 ft long, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tee required at each gypsum board end joint with butted end joint centered between cross tees spaced 8 in. OC. The cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

**ARMSTRONG WORLD INDUSTRIES INC** — Type DFR-8000

5C. **Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Item 5 — Furring channels and Steel Framing Members as described below:

a. **Furring channels** — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 12 in. OC, perpendicular to joists. Channel 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. Additional channels shall be positioned so that the distance from the end of the board to the center of the first channel is 3 in. and from the board end to the center of the next channel is 12 in.

b. **Steel Framing Members\*** — Used to attach furring channels (Item a) to joists (Item 3). Clips spaced 48 in. OC and secured to the bottom chord of joists with min 1-5/8 in. long No. 8 self-drilling, self-tapping, bugle, flat or hex head screw through the center grommet. Furring channels are friction fitted into clips. Additional clips required to hold furring channel that supports the gypsum board butt joints.

**PLITEQ INC** — Type Genie Clip

5D. **Alternate Steel Framing Members\*** — (Optional, Not Shown) — As an alternate to Items 5 to 5C, furring channels and Steel Framing Members as described below.

a. **Furring channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 12 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 3). Clips spaced a max of 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall 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. RSIC-1 (2.75) clips for use with 2-23/32 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. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 6.

**PAC INTERNATIONAL L L C** — Types RSIC-1 or RSIC-1 (2.75)

6. **Gypsum Board\*** — Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient/furring channels and side joints centered between joints. Gypsum panels secured with 1 in. long Type S bugle-head screws. Screws provided 1-1/2 and 4 in. and from side edges of the board 8 in. OC in the field. When **Steel Framing Members** (Item 5C or 5D) are used, the butt joints in the gypsum board shall be supported by two furring channels. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one RSIC-1, RSIC-1 (2.75) or Genie clip at each end of the channel.

**AMERICAN GYPSUM CO** — Type AG-C

**CGC INC** — Types C, IP-X2, IPC-AR, ULIX

**GEORGIA-PACIFIC GYPSUM L L C** — Types 5, DAPC, TG-C

**NATIONAL GYPSUM CO** — Type FSW-C, FSK-C

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

**USG BORAL DRYWALL SFZ LLC** — Type C

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

6A. **Gypsum Board\*** — When Steel Framing Members (Item 5A) are used. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Panels fastened to cross tees with 1 in long Type S bugle-head screws spaced 8 in. OC in the field and along end joints. Panels fastened to main runners with 1 in. long Type S bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 2 ft OC.

**AMERICAN GYPSUM CO** — Type AG-C

**CGC INC** — Types C, IP-X2, IPC-AR, ULIX

**GEORGIA-PACIFIC GYPSUM L L C** — Types 5, DAPC, TG-C

**NATIONAL GYPSUM CO** — Type FSW-C, FSK-C

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

**USG BORAL DRYWALL SFZ LLC** — Type C

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

6B. **Gypsum Board\*** — When Steel Framing Members (Item 5B) are used. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered between cross tees spaced 8 in. OC. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide pieces of gypsum board are to be laid atop the cross tee flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the cross tees at opposite corners of the backer strip to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with drywall screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The butted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G laminating screws located 1 in. from each side of the butted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board.

**AMERICAN GYPSUM CO** — Type AG-C

**CGC INC** — Types C, IP-X2, IPC-AR, ULIX

**GEORGIA-PACIFIC GYPSUM L L C** — Types 5, DAPC, TG-C

**NATIONAL GYPSUM CO** — Type FSW-C, FSK-C

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

**USG BORAL DRYWALL SFZ LLC** — Type C

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

7. **Batts and Blankets\*** — Mineral wool or glass fiber insulation, min 3-1/2 in. thick, bearing the UL Classification Marking for Surface Burning Characteristics. Insulation fitted in the concealed space, draped over the resilient channels.

7A. **Batts and Blankets\*** — (As an alternate to Item 7 for a 1 hour rating only) — (Required with Item 1B) — Mineral wool or glass fiber insulation, min 6 in. thick, bearing the UL Classification Marking for Surface Burning Characteristics. Insulation fitted in the concealed space, draped over the resilient channels.

8. **Joint 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.

### **Alternate Construction**

3A. **Steel Joists** — As an alternate to Item 3 — C shaped galvanized steel sections with min 8 in. deep, min 1-9/16 in. flanges and min 3/8 in. min. stiffening flanges, fabricated from min No. 16 MSG galv steel with a min yield strength of 33 ksi. When the clear span is a max of 8 ft and when fabricated from min No. 18 MSG, the min depth is 6 in. The web of each joist may be provided with circular or oval knockouts at the joist mid-depth. Knockouts spaced min 48 in. OC. Joists spaced max 24 in. OC. Joists attached to joist rim with three 3/4 in. long self-drilling #10-16 TEK screws through tab to the outside of the web. 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 self-drilling #10-16 TEK screws to each rim piece.

### **Alternate Construction**

3B. **Structural Steel Members\*** — As an alternate Item 3 - Pre-fabricated steel truss system consisting of cold-formed, galvanized steel chord and web sections. Truss top and bottom chords min. 4 in. high by 1-11/16 in. wide by 18 ga. Truss webs min. 1-1/2 in. by 1-1/2 in. by 20 ga. square tube bent and triangulated as shown. Chords and web connected by fillet welds. Overall truss depth min. 12 in. Trusses spaced a max of 24 in. OC. Truss ends placed over and secured to Bearing Seats (Item 3C) with two min. #10 by 3/4 in. long screws on each side of Bearing Seats. Allowable loading must be calculated so as to stress the steel trusses to a maximum of 98% of the stress calculated in accordance with the allowable stress design approach outlined in the manufacturer's load tables.

**EISEN PANEL SYSTEMS L L C** — Type Gateway Panel pre-fabricated steel truss system

3B1. **Bearing Seats\*** — (Not Shown) — For use with Item 3B. Galvanized steel tube, min. 1 in. by 2-1/2 in. by 13 ga., oriented vertically and welded to min. 4 in. by 4 in. by 10 ga., galvanized steel plate. Bearing seats spaced 24 in. OC and attached to bearing supports by welding or screw attaching the steel plate to the bearing supports.

**EISEN PANEL SYSTEMS L L C** — Type Gateway Panel bearing seat

### **Alternate Construction**

3C. **Structural Steel Members\*** — As an alternate to Items 3 — 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 24 in. OC.

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

3C1. **Bridging** — (Not Shown) — For use with Item 3C — Location of lateral bracing for truss chord and web sections to be specified on truss engineering. 682030001 TRUSSTEEL, DIV OF ITW BUILDING COMPONENTS INC

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

### **Alternate Construction**

3D. **Structural Steel Members\*** — As an alternate to Item 3. The proprietary joists are channel-shaped, 9-1/4 in. min depth. Joists are fabricated from min No. 16 MSG galv steel. Joists spaced max 24 in. OC. Joists attached to rim joist with a minimum of three #10 3/4 in. long self-drilling screws at the rim track clip to the outside of the web joist, and a #10 1/2 in. long screw through the top and bottom flange of the joists to the top and bottom flange of the rim track. At rim joist splices bearing on supports, rim joists are connected using an overlapping section of a 12 in. long splice plate (a joist piece), with a minimum of six 3/4 in. long self-drilling #10 screws to each rim piece.

**CALIFORNIA EXPANDED METAL PRODUCTS CO** — Type SSCJ floor joists, SSRT rim joists or Type SSTT rim joists. When Type SSTT rim joists are used, secured to preformed clip tabs in accordance with manufacturers installation instructions.

3D1. **Joist Bridging** — Not Shown — For use with Item 3D. Installed immediately after joists are erected and before construction loads are applied. The structural bridging, Type CEMCO Sure Bridging, consisting of No. 18 MSG galv steel, 2-1/2 in. wide by 25-1/2 in. long with 1-5/16 in. long legs structural bridging staggered between the steel joists and attached to the bottom joist flange with two #10 1/2 in. long self-drilling screws at each end tab of bridging. Solid bridging consisting of cut to length joist sections placed between outer joists and at center joist with 8 ft OC max spacing. Solid bridging is seated in the structural bridging and is screw-attached at joist web using Type CEMCO Sure-Support Clips (1-1/2 in. by 1-1/2 in. by 7 in. long, 16 MSG, min 50 ksi support clip) with three #10 3/4 in. long self-drilling screws per leg on one side and the other side with Type CEMCO Sure-Support Clips (4 in. by 1-1/2 in. by 7 in. long, 16 MSG, min 50 ksi support clip) with three #10 3/4 in. long self-drilling screws per leg.

#### **Alternate Construction**

3E. **Structural Steel Members\*** — As an alternate to Item 3 - JoistRite channel-shaped joists, min 9-1/4 in. deep with min 2 in. wide flanges and 3/4 in. long stiffening flanges. The web of each joist is provided with 3/4 in. deep lip-reinforced trapezoidal cutouts as shown in the illustration. JoistRite rim track, min 9-3/8 in. deep with min 1-1/2 in. top flange and min 2-5/16 in. bottom flange. The joists and rim tracks are fabricated from min 16 MSG galv steel. Joists spaced max 24 in. OC. Floor joists attached to rim track using channel-shaped steel web stiffeners. At rim track splices bearing on supports, rim tracks are connected using an overlapping section of a 12 in. long splice plate, with four 3/4 in. long self-drilling #10 screws to each rim piece.

**MARINO/WARE, DIV OF WARE INDUSTRIES INC** — Type JR JoistRite floor joists, Type JT JoistRite rim track

3E1. **Blocking & Bridging** — Not Shown — For use with Item 3E. Installed before construction loads are applied. The blocking consists of JoistRite solid blocking placed between each joist. Blocking attached to the top and bottom joist flanges with one #10 3/4 in. long self-drilling screw at each end tab of blocking. Blocking is fabricated from min 18 MSG galv steel, min 1-15/16 in. flanges, having the same depth as the joists.

3E2. **Web Stiffeners** — Not Shown — For use with Item 3E — JoistRite 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 and track with #10 3/4 in. long self-drilling screws.

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

Last Updated on 2021-06-16