Design No. P265

July 31, 2017

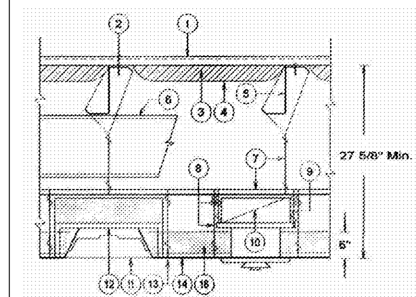
Restrained Assembly Rating — 1 and 1-1/2 Hr (See Item 3)

Unrestrained Assembly Rating — 1 and 1-1/2 Hr (See Item 3)

Unrestrained Beam Rating — 1-1/2 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. Metal Roof Deck Panels* — No. 26 MSG min galv or painted steel. Panels continuous over two or more spans. End laps to occur over purlins with panels overlapped a min of 6 in. A line of sealant or tape sealant may be used at panel side and end laps. See Roofing Materials and Systems Directory-Metal Roof Deck Panels (TPJV) category for names of manufacturers.

2. Panel Fasteners — As specified in the respective Classified Roof Deck Construction Number for the Metal Roof Deck Panel and the type of purlin.

3. Batts and Blankets* — For the 1 h ratings, faced compressible batts, max 4 in. thick glass fiber batt insulation, weighing between 0.6 [illegible] installed at the bottom side of the roof deck panels and supported by the steel mesh Item 4. For [illegible] Restrained and Unrestrained Assembly Ratings, the thickness of the glass fiber batt insulation shall [illegible] and the side edges of the batts must be overlapped a min 2 in. Any glass fiber batt material bearing the UL Classification marking. See Batts and Blankets* (BZJZ) Category in Fire Resistance Directory or Batts and Blankets* (BKNV) in Building Materials Directory for list of Classified companies.

4. Steel Mesh — Hexagonal shaped wire mesh, with 1 in. mesh openings, made from No. 20 ga galv steel wire. Draped over purlins under Insulation Item 3.

5. Steel Roof Purlins — C- or Z-shaped, min 8 in. deep, weighing min 2.9 lb per lineal ft made from min No. 16 MSG galv or painted steel. Spaced max 60 in. O.C. Purlins may be stiffened at the supports if required per structural design.

5A. (Not Shown) — As an alternate to Item 5, [illegible] min size joist may be used. Spaced max 60 in. O.C. Joist must be bridged in accordance with SJI specifications. Min cross sectional area of steel for top and bottom horizontal bridging is 0.5 in./sq. Min cross sectional area of steel for diagonal member bridging is 1.13 in./sq. Special bracing may be required if assembly is also Classified for Uplift Construction.

6. Beam — Steel beam sections min 8 in. deep, designed as structural supports to the roof purlins. Min weight of steel beam is 2.9 lb per lineal ft.

7. Cold Rolled Channels — No. 16 MSG cold-rolled steel channels, 1-1/2 in. deep min, with 9/16 in. flanges installed perpendicular to the purlins, spaced 24 in. O.C. and located as needed to support the ceiling. Cold-rolled channels supported by No. 12 SWG steel hanger wires; twist-tied to steel roof purlins. Hanger wire attachment to purlins not to exceed 60 in. O.C. along cold-rolled channel, and located at ends of cold-rolled channels at walls.

8. Hanger Wire — No. 12 SWG galv steel wire, twist-tied to cold-rolled channels. Hanger wires shall be spaced 48 in. O.C. along main runners adjacent to intersections with cross tees, with additional wires located adjacent to main runner splices. One hanger wire is required at first hole of main runner web outside of the fixture grid module at each corner of light fixture, and at midspan of all 4 ft cross tees.

9. Air Duct — Min 0.023 in. thick (24 gauge) galv steel. Total area of duct openings per 100 sq ft of ceiling area not to exceed 576 sq in. with area of ind. duct openings not to exceed 576 sq in. Max dimension of openings 30 in. Inside and outside faces of duct outlet throat protected with 1/16 in. thick ceramic fiber paper laminated to the metal. Duct supported by 1-1/2 in. deep, min 0.053 in. thick (16 gauge) cold-rolled steel channels spaced not over 48 in. O.C. suspended by 12 SWG galv steel wire.

10. Damper — Min 0.056 in. (16 gauge) galv steel, sized to overlap duct opening 2 in. min. Protected on both sides with 1/16 in. thick ceramic fiber paper laminated to the metal and held open with a Fusible Link (Bearing the UL Listing Mark). In lieu of the damper described above, Duct Outlet Protection System A, as described in the General Information Section may be used with steel ducts.

11. Fixtures, Recessed Light — (Bearing the UL Listing Mark). Recessed light fixture with steel housing, nom 2 by 4 ft size. Fixtures spaced so their area does not exceed 24 sq ft per 100 sq ft of ceiling area. Wired in conformance with the National Electric Code.

12. Fixture Protection — Acoustical Material* — Cut to form a five sided enclosure, trapezoidal in cross-section. The fixture protection consists of 23-3/4 by 47-3/4 in. by 5/8 or 3/4 in. thick top piece; two 8-7/8 by 47-3/4 in. by 5/8 or 3/4 in. thick side pieces, and two 5-7/8 by 23-3/4 in. by 5/8 or 3/4 in. thick end pieces. The side pieces and top pieces are laid in place and each end piece attached to the top piece with three 8d nails spaced 8 in. O.C.

ARMSTRONG WORLD INDUSTRIES INC — 5/8 in. Type PC; 5/8 in. or 3/4 in. Type P

13. Steel Framing Members* — Main runners nom 12 ft long spaced 4 ft OC. Cross tees nom 4 ft long installed perpendicular to main runners and spaced 2 ft OC. For nom 24 by 24 in. panels, cross tees nom 2 ft long installed perpendicular to 4 ft cross tees and spaced 4 ft OC.
ARMSTRONG WORLD INDUSTRIES INC — Type AFG

13A. Steel Framing Members* — For use with nom 600 by 600 or 1200 mm metric size panels described under Item 14 main runners nom 3600 mm long spaced 1200 mm OC. Cross tees nom 1200 mm long installed perpendicular to main runners and spaced 600 mm OC. For nom 600 by 600 mm panels, cross tees nom 600 mm long installed perpendicular to 1200 mm cross tees and spaced 1200 mm OC.
ARMSTRONG WORLD INDUSTRIES INC — Type AFG

14. Acoustical Material* — Nom 24 by 24 or 48 in. by 5/8 or 3/4 in. thick lay-in panels. Border panels supported at walls by min 0.016 in. thick (26 gauge) painted steel angles with 7/8 in. legs. (S) = Surface perforations.
ARMSTRONG WORLD INDUSTRIES INC — 3/4 in. Type P (S) or 5/8 in. Type PC(S).

Nom 600 by 600 or 1200 mm by 19 mm thick Type P (S) or 15 mm thick Type PC (S). These metric size panels may only be used with metric size grid described under Item 13A.

14A. Acoustical Materials* - Antenna Panel — (Optional, Not Shown) - Nom 24 by 24 in. lay-in panel with integral high frequency antennae. Thickness, type and edge detail of antenna panel to match surrounding acoustical ceiling panels. Antenna panel to be installed in accordance with accompanying instructions. A max of one antenna panel may be used per each 100 sq ft of ceiling area.
ARMSTRONG WORLD INDUSTRIES INC

15. Hold Down Clips — (Not shown) — No. 24 MSG spring steel, placed over cross tees 2 ft O.C.

16. Batts and Blankets* — Nom 24 in. wide by 6 in. thick batts or rolls of glass fiber insulation placed directly on the back of ceiling panels and steel framing members (grid system) so as to cover both the ceiling panels and the grid with end joints staggered with respect to the grid, where possible. Nom 24 in. wide by 48 in. long by 6 in. thick piece placed over top piece of light fixture protection. Density of glass fiber insulation to be between 0.58 and 0.78 pcf. Batts and Blankets to be Classified with respect to Surface Burning Characteristics, with Flame Spread value of 25 or less. See Batts and Blankets* (BZJZ) Category in Fire Resistance Directory or Batts and Blankets* (BKNV) Category in Building Materials Directory for list of Classified companies.

17. Speaker Assemblies For Fire Resistance* — (Optional, Not Shown) — Nom 24 by 24 in. metal-framed lay-in speaker panels installed in accordance with the accompanying installation instructions. Hanger wires are required on the main runners and on the nom 4 ft long cross tees at all four corners of the speaker panel. Each speaker panel to be covered with a nom 24 by 24 in. panel of the same acoustical material used in the ceiling (Item 14) and with glass fiber insulation (Item 16). Acoustical material panel to be centered over and supported by the metal "bridge" of the speaker panel. A max of one speaker panel is allowed per 100 sq ft of ceiling area with a min center-to-center spacing of 10 ft between speaker panels.

18. Discrete Products Installed in Air-handling Spaces* — Automatic Balancing Valve/Damper (Not Shown - Optional) — For use with item 10. Valve/Damper to be provided with ducted installation with steel duct per damper manufacturer's instructions. Automatic Balancing Valve/Damper shall be installed within duct such that it is not directly above the ceiling radiation damper.
METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

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

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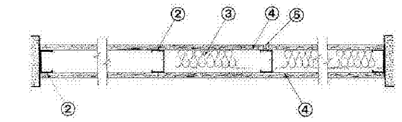
Design No. U465

Nonbearing Wall Rating — 1 HR.



1. Floor and Ceiling Runners — (not shown) — Channel shaped runners, 3-5/8 in. wide (min), 1-1/4 in. legs, formed from min No. 25 MSG galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

2. Steel Studs — Channel shaped, 3-5/8 in. wide (min), 1-1/4 in. legs, 3/8 in. folded back returns, formed from min No. 25 MSG galv steel spaced 24 in. OC max.

3. Batts and Blankets* — (Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity.
See Batts and Blankets (BZJZ) category for names of Classified companies.

3A. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 3.[illegible] application method: The fiber is applied with [illegible] fiber LLC Type AD100 [illegible] adhesive at a nominal ratio of one part adhesive to 6 parts fiber to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft3.

U S GREENFIBER L L C — Cocoon2 Stabilized or Cocoon FRM (Fire Rated Material)

3B. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) and Item 3A - Spray applied cellulose insulation material. The fiber is applied [illegible] to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC — Cellulose Insulation

4. Gypsum Board* — [illegible] thick, 4 ft wide, attached to steel studs and floor and ceiling runners with 1 in. long Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When attached to item 6 (resilient channels) or 6A (furring channels), wallboard is screw attached to furring channels with 1 in. long Type S steel screws spaced 12 in. OC.

AMERICAN GYPSUM CO — Types AG-C, AGX-1
BEIJING NEW BUILDING MATERIALS PUBLIC
LTD CO — Type DBX-1.
BPB AMERICA INC — Types 1, EGRG, ProRoc Type X, ProRoc Type C.
BPB CANADA INC — ProRoc Type C, ProRoc Type X or ProRoc Type Abuse-Resistant.
CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.
G-P GYPSUM CORP, SUB OF
GEORGIA-PACIFIC CORP — Types 5, 9, C, DAP, DD, DA, DGG, DS, GPFS6.
LAFARGE NORTH AMERICA INC — Types LGFC2, LGFC2A, LGFC6, LGFC6A, LGFC-C, LGFC-C/A.
NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3 , FSW-5.
PABCO BUILDING PRODUCTS L L C, DBA
PABCO GYPSUM — Type PG-C or PG-9 .
PANEL REY S A — Type PRX.
SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1
TEMPLE-INLAND FOREST PRODUCTS CORP — Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, TG-C.
UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.
USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4A. Gypsum Board* — (As alternate to Item 4) - Nom 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed. Panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.
UNITED STATES GYPSUM CO — T ype AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.
USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4B. Gypsum Board* — (As an alternate to Items 4 or 4A) — Nom 3/4 in. thick, 4 ft wide, installed as described in Item 4A with screw length increased to 1-1/4 in.

CANADIAN GYPSUM COMPANY — Types AR, IP-AR.
UNITED STATES GYPSUM CO — Types AR, IP-AR.
USG MEXICO S A DE C V — Types AR, IP-AR.

5. Joint Tape and Compound — 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, nominal 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

6. Resilient Channel — (Optional-Not Shown) — 25 MSG galv steel resilient channels spaced vertically max 24 in. OC, flange portion attached to each intersecting stud with 1/2 in. long type S-12 panhead steel screws.

6A. Steel Framing Members (Not Shown)* — As an alternate to Item 3, furring channels and resilient sound isolation clip as described below:
a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.
b. Steel Framing Members* — Used to attach furring channels (Item a) to studs (Item 1). Clips spaced 48 in. OC., and secured to studs with 1-5/8 in. wafer or hex head Type S steel screw through the center grommet. Furring channels are friction fitted into clips.

PAC INTERNATIONAL INC — Type RSIC-1.

*Bearing the UL Classification Mark
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REVISIONS:

No.	Description	Date

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DATE: 1/2/18
DRAWN BY: ZSS
CHECKED BY: WSB

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G-003

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