UL Product iQ™

BXUV.D505 - Fire-resistance Ratings - ANSI/UL 263

PANEL REY®
Drywall Solutions

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. D505

February 04, 2021

Restrained Assembly Rating — 2 Hr

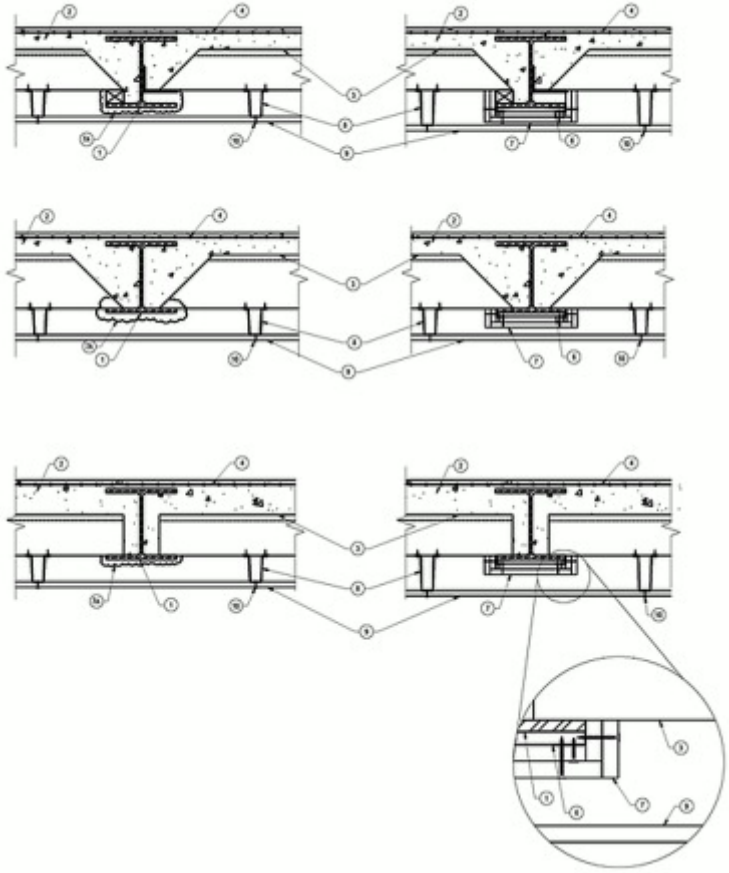
Unrestrained Assembly Rating — 1-1/2 Hr

Unrestrained Beam Rating — 2 Hr

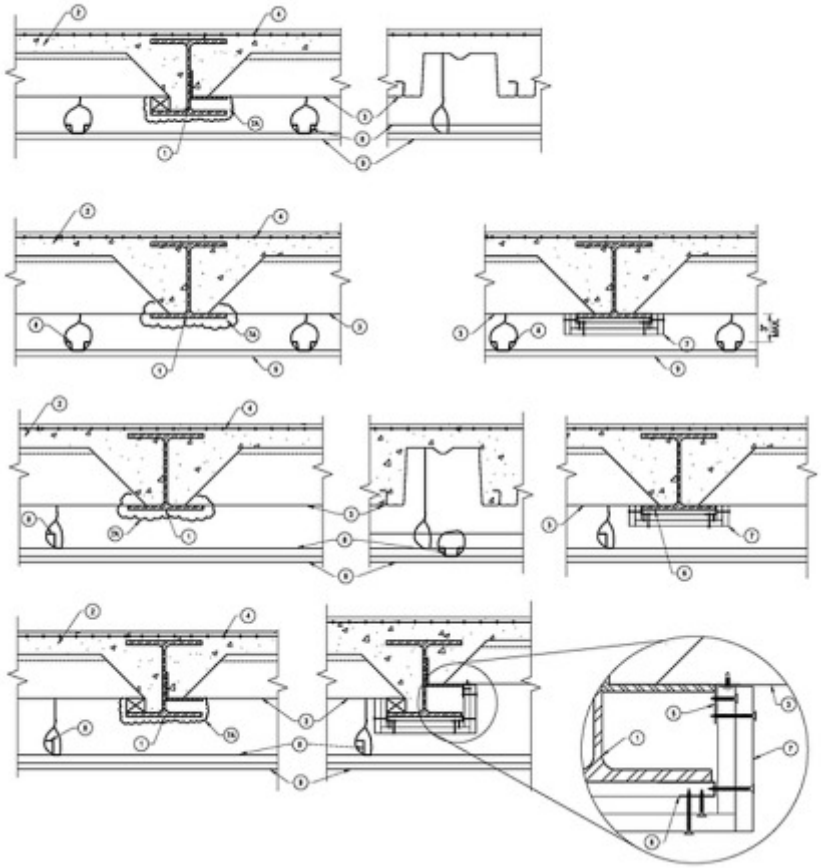
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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

CEILING DETAILS



ALTERNATE CEILING DETAILS



1. **Steel Beam —** Min W8x18 or min. 8 in. deep asymmetric beam with minimum W/D ratio of 1.16.

2. **Lightweight Concrete —** Expanded shale, clay or slate aggregate by rotary-kiln method, 112 pcf unit weight, 3700 psi compressive strength, 2 to 5 percent entrained air. Min. depth of concrete over deck flutes is 2 in.

2A. **Normal Weight Concrete —** Carbonate or siliceous aggregate, 150 + or -3 pcf unit weight, 3500 psi compressive strength. Min. depth of concrete over deck flutes is 2-1/2 in.

3. **Steel Floor and Form Units* —** Composite or Non-composite, 4-1/2, 6, or 7-1/2 in. deep fluted units, welded to supports with minimum 2 in. bearing. Support may be either the bottom flange of the beam or min. 2 in. wide, continuous, solid steel bolster welded on top the bottom flange of the beam or min. 1/4 in. thick hot-rolled steel angle welded or bolted to the web of the beam. Overlap between adjacent units crimped together. Crimps are approximately 1-1/2 in. long and located a maximum of 18 in. O.C.
NEW MILLENNIUM BUILDING SYSTEMS L L C — Types Deep-Dek 4.5D, 6.0D, 7.5D, 4.5CD, 6.0CD, 7.5CD.

4. **Welded-Wire Fabric —** 6X6 — W1.4XW1.4.

5. **L-Shaped Runners —** No. 25 MSG galv steel, 1-3/8 and 7/8 in. legs, secured to valleys of steel floor units adjacent to bottom beam flange or support angle with 1/2 in. long sheet metal screws spaced 24 in. OC. Required only when distance from top of bottom flange of steel beam to valley of steel form unit exceeds 2 in.

6. **Metal Runners —** No. 23 MSG sheet steel, channel-shaped, min 1/2 in. deep, with 1 in. legs, welded or fastened with powder actuated pins at 12 in. OC. to lower beam flange.

7. **Gypsum Board* —** (Same material as Item 10 in Alternate Ceiling Details) — 5/8 in. thick. First layer fastened with 1 in. long, drywall screws to metal runner channels spaced 16 in. O.C. and to L-shaped runners at max 12 in. OC. Second layer attached to metal runner channels and to L-shaped runners with 1-5/8 in. long, drywall screws spaced 8 in. O.C. All voids between steel deck and top of bottom flange of beam or all voids above and below support angle shall be completely filled with 4 pcf mineral wool insulation.

7A. **Spray-Applied Fire Resistive Material* —** As an alternate to Items 5 through 7, the bottom flange of the steel beam and the flange tips may be protected with a spray applied fire resistive material. Applied in one coat to a final untamped thickness of 1/2 in. to steel surfaces which are free of dirt, oil or scale. Min avg and min ind density of 15/14 pcf respectively. All voids between steel deck and top of bottom flange of beam or all voids above and below support angle shall be completely filled with the spray material. For method of density determination, see Design Information Section.
GCP APPLIED TECHNOLOGIES INC — Type MK-5

Ceiling Details

8. **Furring Channel —** Min. 25 MSG galv steel, min. overall width of 2-5/8 in. and min. 1-1/4 in. wide back, spaced 24 in. O.C., running perpendicular to the deck flutes. Depth of channel to be selected such that a min. clearance of 1/2 in. is created between the top of the gypsum board (Item 9) and the beam protection (Item 7 or 7A). At gypsum board end joints one row of furring channels used on each side and spaced 3 in. from the end joint. Channels fixed to underside of deck flutes, prior to concrete placement (Items 2 or 2A), with No. 10 self-drilling screws. Channels shall be fixed to the steel floor units at each flute with 2 screws, one on each brim of the channel and staggered by at least 1/4 in. from the opposite side.

9. **Gypsum Board* —** (Same material as Item 9 in Alternate Ceiling Details) — 5/8 in. thick, installed with long dimension perpendicular to furring channels. Gypsum board fastened to furring channels with drywall screws spaced 8 in. OC adjacent to end joints, 24 in. OC adjacent to long dimension and 12 in. OC in the field of each board. Screws along side edges of board spaced 1 in. from the edge. 2-3/4 in. wide strips of gypsum board placed between the channels on top of gypsum board end joints. End joints may be staggered or in-line. Joints covered with joint tape and compound.

10. **Screw, Drywall —** Case hardened steel, Phillips-Type (Flathead), 9/64 in. dia. shank, self-drilling and self-tapping, 1 in. long. Screw heads covered with joint compound.

Alternate Ceiling Detals

8. **Furring Channel —** No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in. deep, spaced 24 in. O.C. At gypsum board end joints one row of furring channels used on each side and spaced 3 in. from the end joint. Secured to steel floor units with a double strand of 18 SWG galv steel wire, spaced 24 in. O.C., inserted through two 1/8 in. diam holes drilled through crests or valleys of steel floor units prior to concrete pour. Adjoining lengths of channels lapped 6 in. and tied at both ends of lap with double strand of 18 SWG galv steel wire. When no cold-rolled channels are used, max depth between top of furring channel and bottom of floor units to be 3 in. Where a larger plenum depth is desired, furring channels wire tied with a double strand of 18 SWG galv steel tie wire to 1-1/2 in. cold-rolled channels formed from 16 MSG painted steel and suspended from floor units with 12 SWG galv steel wire. No. 12 SWG wires pigtailed through floor units and embedded in concrete. Spacing of 1-1/2 in. cold-rolled channels not to exceed 24 in. O.C. Spacing of hanger wires supporting cold-rolled channels not to exceed 48 in. O.C. As an alternate to the resilient furring channels, **Steel Framing Members*** (Item 8A) may be used.

8A. **Alternate Steel Framing Members* —** (Not Shown) — Main runners nom 12 ft long spaced 48 in. OC. Cross tees nom 4 ft long installed perpendicular to main runners and spaced 16 in OC. Additional cross tees located 8 in from and on each side of gypsum board end joints. 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. No. 12 SWG wires pigtailed through floor units and embedded in concrete.
ROXUL USA INC. D/B/A ROCKFON — Types 650, 650C, 670, 670C

8B. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 8 and 8A. Main runners nom 12 ft long, spaced 48 in OC. Ends of main runners at walls to rest on wall angle, without attachment, with 1/2 to 3/4 in. end clearance. Primary cross tees (1-1/2 in. wide across flange) or cross channels, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional primary cross tees or cross channels required at each gypsum board end joint and 8 in. from and on each side of gypsum board end joint.
ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000

8C. **Steel Framing Members* —** As an alternate to Items 8, 8A and 8B. 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. No. 12 SWG wires pigtailed through floor units and embedded in concrete.

b. **Cross Tees —** Nom 4 ft. long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 24 in. OC. When Batts and Blankets* (Item 11) are used, cross tees spaced 16 in. OC. Additional cross tees or cross channels used at 8 in. from each side of butted gypsum board 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 ft. long installed perpendicular to main runners spaced 24 in. OC. When Batts and Blankets* (Item 11) are used, cross channels 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 board.
CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

8D. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 8, 8A, 8B and 8C. For use in corridors or rooms having a maximum width dimension of 14 ft. Steel framing members consist of grid runners, locking angle wall molding and hanger bars. Locking angle wall molding secured to walls with steel nails or screws spaced max 24 in. OC. Slots

of locking angle wall molding parallel with hanger bars to be aligned with tabbed cutouts in bottom edge of hanger bars. Hanger bars spaced max 50 in. OC and suspended with No. 12 AWG steel hanger wires spaced max 48 in. OC. Adjoining lengths of hanger bar to overlap 12 in. and to be secured together and suspended by a shared hanger wire. A min clearance of 1/4 in. shall be maintained between the ends of the hanger bars and the walls. Grid runners cut-to-length and installed perpendicular to hanger bars and spaced max 24 in. OC with additional grid runners installed 8 in. OC at gypsum board end joints. Grid runners parallel with walls to be spaced max 16 in. from wall. Ends of grid runners to rest on and engage slots of locking angle wall molding with a clearance of 3/8 in. to 1/2 in. maintained between each end of the grid runner and the wall. Bulb of grid runner to be captured by tabbed cutouts in bottom edge of hanger bars.
ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000-SS

8E. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 8, 8A, 8B, 9C and 8D. Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000

8F. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 8 through 8E - Main runners nom 12 ft long, spaced 72 in. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DGL or RX

8G. **Alternate Framing Members* —** (Not Shown) — As an alternate to Items 8 through 8F. Main runners nom 12 ft long, spaced 72 in. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ROXUL USA INC. D/B/A ROCKFON — Type 670C

9. **Gypsum Board* —** 5/8 in. thick, installed with long dimension perpendicular to furring channels. Gypsum board fastened to furring channels with drywall screws spaced 8 in. OC adjacent to end joints, 12 in. OC perpendicular to and 24 in. OC parallel to long dimension in the field of each board. Screws along side edges of board spaced 1 in. from the edge, 2-3/4 in. wide strips of gypsum board placed between the channels on top of gypsum board end joints. End joints may be staggered or in-line. Joints may be covered with joint tape and compound or left uncovered.
When **Steel Framing Members*** (Items 8A, 8B or 8C) are used, gypsum 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 drywall screws spaced 12 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long drywall 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 to be covered with paper tape and joint compound.

When alternate **Steel Framing Members*** (Item 8D) are used, gypsum board sheets installed with long dimension (side joints) perpendicular to the grid runners with the end joints staggered min 4 ft and centered between grid runners which are spaced 8 in. OC. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide by 48 in. long pieces of gypsum board are to be laid atop the grid runner flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the grid runners 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 grid runners 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. Joints to be covered with paper tape and joint compound.

When alternate **Steel Framing Members*** (Item 8E) are used, gypsum board sheets installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with the end joints staggered min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board side joints may occur beneath or between main runners. 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. Joints to be covered with paper tape and joint compound.

When alternate **Steel Framing Members*** (Item 8F and 8G) are used, gypsum board sheets installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with the end joints staggered min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board side joints may occur beneath or between main runners. 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 with hold down clips to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with 1 in. 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. Joints to be covered with paper tape and joint compound.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C, Type LGFC-C/A

CGC INC — Types C, IP-X2, ULIX

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

NATIONAL GYPSUM CO — Types FSW-C, FSW-G

PABCO BUILDING PRODUCTS L L C, DBA PABCO ROOFING PRODUCTS — Type C

PANEL REY S A — Type PRC

THAI GYPSUM PRODUCTS PCL — Type C

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

USG BORAL DRYWALL SFZ LLC — Type C

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

9A. **Gypsum Board* —** For use when **Batts and Blankets*** (Item 11) and **Steel Framing Members*** (Item 8C) are used, 5/8 in. thick gypsum 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 drywall screws spaced 8 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long drywall 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.
CGC INC — Types C, IP-X2, ULIX

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

USG BORAL DRYWALL SFZ LLC — Type C

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

10. **Screw, Drywall —** Case hardened steel, Phillips-Type (Flathead), 9/64 in. diam shank, self-drilling and self-tapping, 1 in. long for ceiling gypsum .Screw heads may be either exposed or covered with joint cement.

11. **Batts and Blankets* —** Optional — Not Shown — When used the ratings are limited to 1 Hr. - For use with **Steel Framing Members*** (specifically Item 8C) and **Gypsum Board*** (specifically Item 9A) - 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 spread value of 50 or less. Insulation fitted in the concealed space, draped over steel framing members/gypsum board ceiling membrane.

* 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 2021-02-04