UL Product iQ™

BXUV.D501 - 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. D501

February 04, 2021

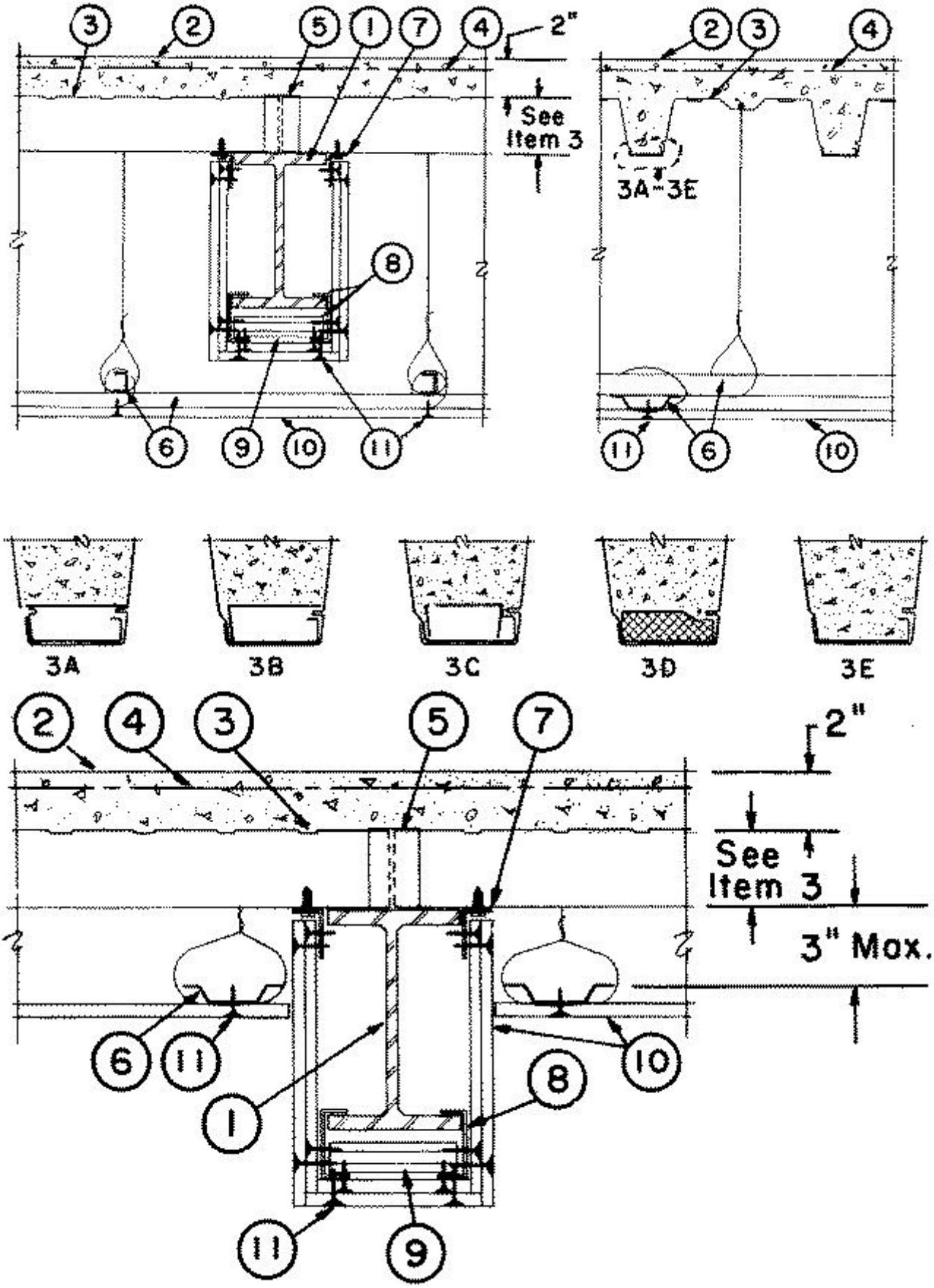
Restrained Assembly Rating — 2 Hr.

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.**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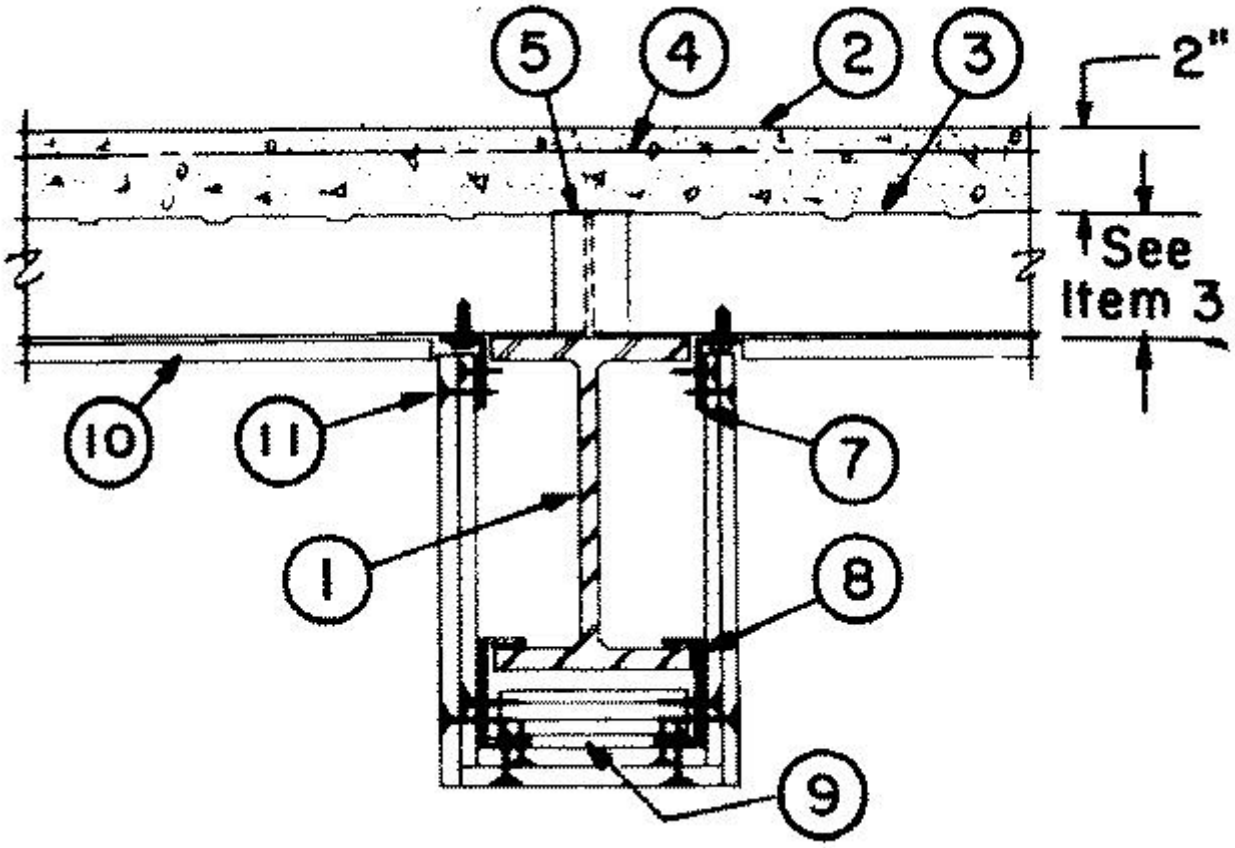

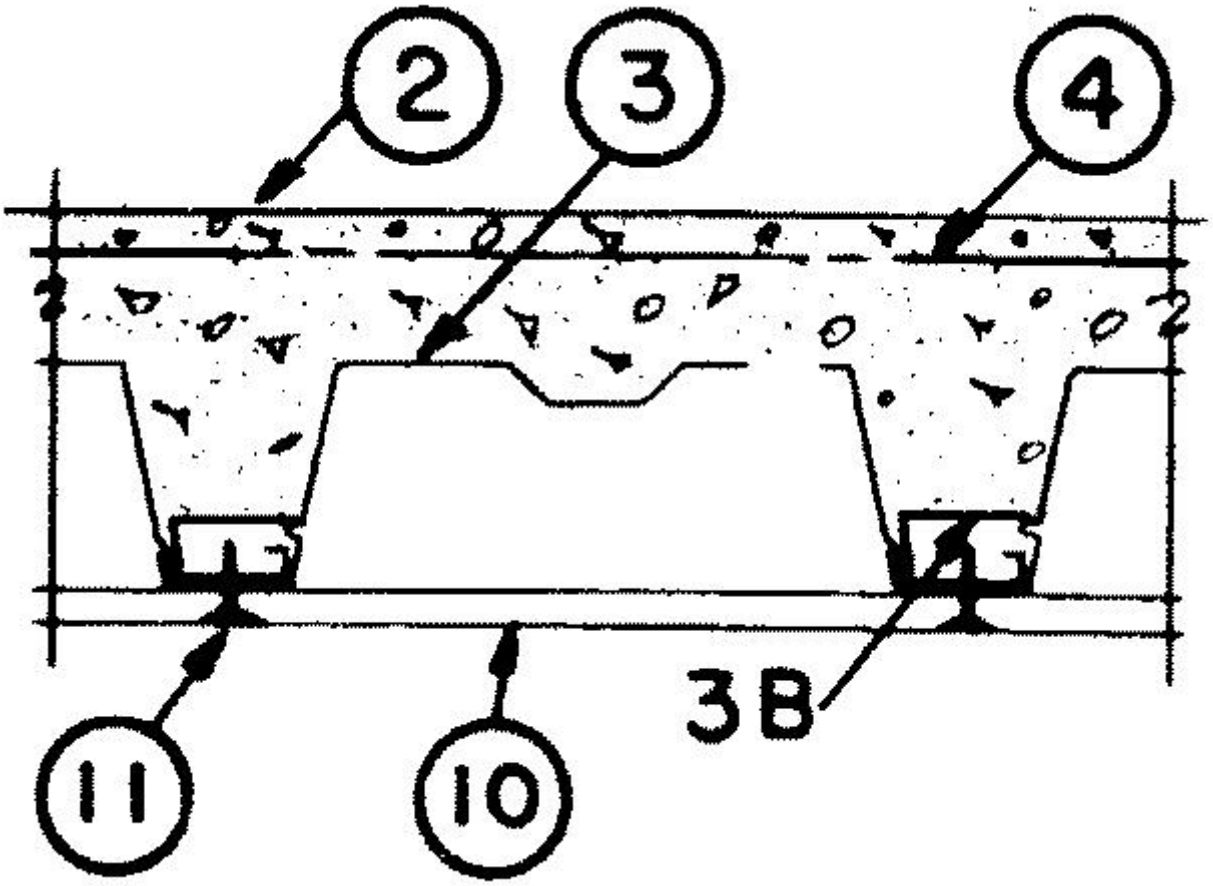

1. **Beam —** W8x17. min size.

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.

2A. **Normal Weight Concrete —** Min 2-1/2 in. carbonate or siliceous aggregate, 150 + or -3 pcf unit weight, 3500 psi compressive strength, vibrated.

3. **Steel Floor and Form Units* —** Composite 3, 4-1/2, 6, or 7-1/2 in. deep, 12 in. wide, phos/ptd or galv fluted units. Welded to supports 12 in. OC.

EPIC METALS CORP — Types E324, E450, E600, E750, EC324, EC450, EC600, EC750, EDC324, EDC450, EDC600, EDC750, WC450, WC600 and WC750. min gauge is 22 MSG

KAM INDUSTRIES LTD, DBA CORDECK — Composite Type 5, 5-L. Min gauge is 22 MSG

NEW MILLENNIUM BUILDING SYSTEMS L L C — Types Deep-Dek 4.5D, 6.0D, 7.5D, 4.5CD, 6.0CD, 7.5CD. Units may be phos/painted or galvanized.

VULCRAFT, DIV OF NUCOR CORP — Types 3VLI, 3.0PLVLI, 3V P and 3.0PLVLP min gauge is 22 msg

Alternate Construction — Noncomposite units of the same type listed above may be used provided allowable loading is based on noncomposite design.

Adjacent Type 5 and 5-L units button-punched or welded together 36 in. O.C. along side joints. The following conditions shall be used, where appropriate, in the valleys of the steel floor units:

A. Flat plate void closure, 2-5/8 in. wide, for Type EC and 2-7/8 in. wide for Type 5-L units, made of 26 MSG galv steel; to be used between supports up to 3 in. away from the edge of support, and supported by a step or ridge on each side of valley of steel deck.

B. Angular shape void closure, 2-5/8 in. wide, 1-1/16 in. high, made of 26 MSG galv steel, to be used with Type EC units between supports up to 3 in. away from the edge of support, or over and between supports when allowable loading is not governed by bearing stresses.

C. Channel-shaped void closure, 1-7/8 in. wide and 3/4 in. high 26 MSG galv steel for Type Deep-Dek, 2 in. wide, for Type EC and 2-7/8 in. wide for Type 5 units, 1-1/16 in. high, made of 22 MSG galv steel and extending 3 in. min away from each edge of support.

D. **Mineral Wool Batt* — Batts and Blankets —** 1 in. thick, 2-1/2 in. wide, 6 + or - 2 pcf density, UL Classified batts with flame spread rating of 25 or less. 3/4 in. thick and 1-7/8 in. wide for Type Deep-Dek.

E. Concrete, (see Item 2), may be used in lieu of void closures or mineral wool batts where gypsum board screws are not penetrating steel deck.

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

5. **Joint Cover —** 2 in. wide pressure-sensitive adhesive cloth tape following the contour of the units.

6. **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 6A) may be used.

6A. **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

6B. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6 and 6A. 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

6C. **Steel Framing Members* —** As an alternate to Items 6, 6A and 6B. 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 12) 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 12) 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

6D. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A, 6B and 6C. 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

6E. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A, 6B, 6C and 6D. 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

6F. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A, 6B, 6C, 6D and 6E. 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

6G. **Alternate Furring Channel —** No. 25 MSG galv sheet, 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 directly with #10 screws or power actuated fasteners at 24 in. O.C.

6H. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to Items 6 through 6F — Main runners nom 12 ft long, spaced 48 in. OC. Cross tees, nom 4 ft. long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft. long cross tees required at 6 in. from each side of butted gypsum board end joints. When **Batts and Blankets*** (Item 12A) are used, cross tees spaced 16 in. OC with additional cross tees 8 in. away from each side of butted gypsum board end joints. The cross tees shall be riveted with 1/8 in. dia. rivets to the wall angle and to the main tee where the cross tee does not align with slot in the main tee. Galvanized steel wall angle with 1-1/2 in. legs attached to walls at perimeter of ceiling with fasteners at 16 in. OC. to support steel framing member ends and for screw-attachment of the gypsum board.
CERTAINTEED CORP — Types DWS12-13-20, DWS4.16-13-20, DWS4-13-20, DWS2-13-20, DWS2.16-13-20 and DWA1.5-1.5

6I. **Alternate Framing Members* —** (Not Shown) — As an alternate to Items 6 through 6H. 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

7. **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 top beam flange with 1/2 in. long sheet metal screws spaced 24 in. OC.

8. **Metal Runners —** No. 23 MSG sheet steel, channel-shaped, 2-1/2 in. wide with 1 in. legs, supported by lower beam flange.

9. **Metal Studs —** No. 28 MSG sheet steel, C-shaped channels, 1-5/8 in. deep, 1-7/16 in. wide with 1/4 in. stiffening flanges, spaced 24 in. OC between metal runners and crimped to bottom leg of runners.

10. **Gypsum Board* —** 5/8 in. thick, installed with long dimension perpendicular to steel floor units or to furring channels. Gypsum board fastened to floor units or 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 gypsum board is attached directly to underside of floor units, care must be taken not to drive the drywall screws into the side joint of Types 5 and 5-L units.

When **Steel Framing Members*** (Item 6A, 6B or 6C) 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.

When alternate **Steel Framing Members*** (Item 6D) 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 6E) 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*** (Items 6F and 6I) 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.

First layer of gypsum board beam protection fastened to runners with drywall screws spaced 16 in. OC along the bottom and 12 in. OC along the sides of beam protection. Second layer of gypsum board fastened to runners with drywall screws spaced 8 in. OC along bottom and 12 in. OC along sides of beam protection.

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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — 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

10A. **Gypsum Board* —** For use when **Batts and Blankets*** (Item 12) and **Steel Framing Members*** (Item 6C) 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. First layer of gypsum board beam protection fastened to runners with drywall screws spaced 16 in. OC along the bottom and 12 in. OC along the sides of beam protection. Second layer of gypsum board fastened to runners with drywall screws spaced 8 in. OC along bottom and 12 in. OC along sides of beam protection.
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

10B. **Gypsum Board* —** For use when alternate **Steel Framing Members*** (Item 6H) are used - 1/2 in. thick, 4 ft. wide; installed with long dimension parallel to main runners and perpendicular to the 4 ft. long cross tees with the end joints centered between cross tees which are spaced 6 in. OC. Sheets are attached to cross tees with screws spaced 8 in. OC on the ends and 12 in. OC in the field with additional screws located 1-1/2 in, from the side edges. Sheets are attached to the main tees with screws spaced 8 in. OC with additional screws located 4 in. OC from the edges. Screws on the sides are located 1/2 in. from the side edge of the gypsum board. When **Batts and Blankets*** (Item 12A) are used - 5/8 in. thick, 4 ft wide; installed with long dimension parallel to main runners and perpendicular to cross tees and attached with screws spaced 8 in. OC on the ends and 8 in. OC in the field with additional screws located 1-1/2 in. from the side edges. Sheets are attached to main tees with screws spaced 8 in. OC with additional screws located 4 in. OC from the side edges. Screws on the sides located 3/4 in. from the side edge of the gypsum board, and screws at the end of the gypsum board located 1/2 in. from the board ends. Joints to be covered with paper tape and joint compound.
CERTAINTEED GYPSUM INC — Type C

11. **Screw, Drywall —** Case hardened steel, Phillips-Type (Flathead), 9/64 in. diam shank, self-drilling and self-tapping, 1 in. long for ceiling gypsum board and first layer of beam protection, 1-5/8 in. long for second layer of beam protection. Screw heads may be either exposed or covered with joint cement.

12. **Batts and Blankets* —** Optional — Not Shown — When used the ratings are limited to 1 Hr. - For use with **Steel Framing Members*** (specifically Item 6C) and **Gypsum Board*** (specifically Item 10A) - 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.

12A. **Batts and Blankets* —** Optional — Not Shown — For use with **Steel Framing Members*** (specifically Item 6H) and **Gypsum Board*** (specifically Item 10B) - min. 3-1/2 in. thick, min. density 0.9 lb/ft^3 unfaced fiberglass batt 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 and light fixture protection.

* 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