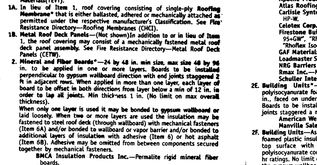
FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

Design No. P225
Restrained Assembly Ratings—1 and 1-1/2 Hr.
(See Items 21, 11, 12, 15, 15A, 15E, 15F and 16)
Unrestrained Assembly Ratings—1 and 1-1/2 Hr.
(See Items 21, 11, 12, 15, 15A, 15E, 15F and 16)
Unrestrained Beam Ratings—1 and 1-1/2 Hr.
(See Items 21, 11, 12, 15, 15A, 15E, 15F and 16)



Beam—(Not Shown)—Min12, min size. As alternate to steel beam, joist girder—(Not Shown)—20 in. min depth and 13 lb/ft flat mass per unit weight.

1. **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(TFVT).
1A. In lieu of Item 1, roof covering consisting of single-ply Roofing Membrane* that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification. See Fire Resistance Directory–Roofing Membrane (CHCI).
1B. **Metal Roof Deck Panels**—(Not shown)In addition to or in lieu of Item 1, the roof covering may consist of a mechanically fastened metal roof deck panel assembly. See Fire Resistance Directory—Metal Roof Deck Panels(CERW).
2. **Mineral and Fiber Boards***—24 by 48 in. min size; max size 48 by 96 in. to be applied in one or more layers. Boards to be installed perpendicular to gypsum wallboard direction with end joints staggered 2 ft in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below a min of 12 in. in order to lap all joints. Min thickness 1 in. (No limit on max overall thickness).
When only one layer is used it may be bonded to gypsum wallboard or laid loosely. When two or more layers are used the insulation may be fastened to steel roof deck (through wallboard) with mechanical fasteners (Item 6A) and/or bonded to wallboard or vapor barrier and/or bonded to additional layers of insulation with adhesive (Item 6) or hot asphalt (Item 6B). Adhesive may be omitted from between components secured together by mechanical fasteners.
BMCA Insulation Products Inc.—Permalite rigid mineral fiber boards.
Fiberglas Canada, Inc.—Rigid glass fiber boards.
GAF Materials Corp.—GAFTEMP Perlite rigid mineral fiber boards.
Owens-Corning Fiberglas Corp.—Rigid glass fiber boards.
Schuller International Inc.—Rigid mineral fiber boards.
2A. In lieu of Item 2, for use with Roofing Membrane* (Item 1B), insulation consisting of:
Foamed Plastic*—Nominal 24 by 48 in. foamed plastic insulation boards to be placed on top of sheathing material Item 1B.
Celotex, Div. of Celtech Construction Materials Inc.—Min. thickness 2 in. max. thickness 8 in., extruded polystyrene foamed plastic boards, to be placed on top of sheathing material Item 1B. Joints to be covered with crushed stone or concrete pavers at a rate of 10 psf. min.
Dow Chemical USA—Min. thickness 2 in., Max. thickness 8 in., extruded polystyrene foamed plastic boards. The unfaced boards shall be covered with crushed stone or concrete pavers, at a rate of 10 psf. min.
Owens Corning Specialty and Foam Products Div.—Min. thickness 2 in., max. thickness 8 in., extruded polystyrene foamed plastic

FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

boards, to be placed on top of sheathing material (Item 1B) and covered with crushed stone or concrete pavers at a rate of 10 psf. min.
Vermico Inc.—1/8 in thick, concrete mortar faced extruded polystyrene, PMI Insulation Board.
T. Clear Corp.—1/8 in. thick, concrete mortar faced extruded polystyrene Lightguard Boards.
2B. **Roof Insulation—Mineral and Fiber Boards*** **and/or Building Units***—As an alternate to Items 2 and 2A, the roof insulation may consist of one layer of Type PK Building Units* (composite mineral board and urethane foam) with the mineral board facing down, or Type PK Plus Building Units* bonded to gypsum board (Item 4) or vapor barrier (Item 3) with adhesive (Item 6) or hot asphalt (Item 6B), or fastened to steel roof deck (through wallboard) with mechanical fasteners (Item 6A). As an option, additional layers of any thickness Mineral and Fiber Boards* and/or Building Units* fastened with hot asphalt, adhesive, or mechanical fasteners may be used.
BMCA Insulation Products Inc.—Mineral and Fiber Boards*, Building Units*—Type PK or PK Plus.
2C. **Roof Insulation—Foamed Plastic***—As an alternate to Items 2 through 2B, any thickness polystyrene foamed plastic insulation boards bearing the UL Classification Marking, having a density of 2.5 pcf max, shall be installed on top of min 1 in. thick Mineral and Fiber Boards* (Item 2) and covered with either the Built-Up Roof Covering (Item 1) or single-ply roofing membrane (Item 1A). The 1 in. thick Mineral and Fiber Boards to be installed over the gypsum wallboard (Item 4). See Foamed Plastic* (BRYS) category in the Building Materials Directory or Foamed Plastic* (CCVW) category in the Fire Resistance Directory for list of manufacturers.
20. **Foamed Plastic***—As an alternate to Items 2 through 2C, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., to be applied in one or more layers over the gypsum wallboard (Item 4). Min thickness is 1.3 in. for the 1 hr ratings and 2.0 in. for the 1-1/2 hr ratings. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. When applied in more than one layer, each layer to be offset in both directions from layer below a min of 6 in. in order to lap all joints.
Apache Products Co.—Pyrox
Atlas Roofing Corp.—AC Foam II
Carlisle Syntec Systems, Div. of Carlisle Corp.—Types HF, HP-W, HP-W.
Celotex Corp.—Type L, O
Firestone Building Products Co.—"ISO 95+ Composite", "Rhoflex Isocyanurate GL", "Rhoflex Isocyanurate FR".
GAF Materials Corp.—Isotherm R.
Laminated Systems Inc.—Laminated Polyisocyanurate Insulation
NRG Barriers, Inc.—Type DGL, DGLR
USG Interiors, Inc.—Type RX main runner and cross channel. Type DXL or DXLG cross tee.
20A. **Steel Framing Members***—(Not shown)—as an alternate to Items 15 and 15A. Main runners nom 12 ft long, spaced 48 in. OC. Primary cross tees, measuring 1-1/2 in. across the flange and nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Secondary cross tees required at each wallboard end joint, and 8 in. OC in side of light fixtures. Secondary cross tees, measuring 15/16 in. across the flange, and nominally 4 ft long, installed 8 in. OC in front of light fixtures.
Armstrong World Industries, Inc.—Type FSL, max size 48 by 96 in.
21. **Wall Heating***—(Not shown)—Min 0.019 in. thick (26 gauge) painted or galv steel channels, 1-1/2 in. deep with 15/16 in. flanges, called to walls along perimeter of ceiling with 8d nails spaced 16 in. O.C.
22. **Wallboard, Gypsum***—5/8 in. thick, 4 ft wide; installed with long dimension perpendicular to cross tees with end joints centered along cross tees and with side joints centered along main runners. Wallboard fastened to each cross tee with five wallboard screws (Item 18) with one screw located at the midspan of the cross tee, one screw located 12 in. from and on each side of the cross tee midspan and one screw located 1-1/2 in. from each wallboard end 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 (24 in. O.C.). End joints of adjacent wallboard sheets shall be staggered not less than 4 ft O.C. Wallboard sheets screw-attached to flange of wall channel with wallboard screws spaced 12 in. O.C.
Bestal Gypsum Inc.—Type BG-C or DDDG3.
Celotex Corp.—Type C, FRP or SF3.
Continental Gypsum Company—Type CG-3 or CG-C.
Eagle-Gypsum Products—Type EG-C.
G-P Gypsum Corp.—Types S, C, GPT53, GPFS-C.
National Gypsum Co., Charlotte, NC—Types FSW-4, FSW-G.
Pabco Gypsum Co.—Type C, PG-1 or PG-C.
Republic Gypsum Co.—Type RG-3 or RG-C.
Standard Gypsum Corp.—Type SG-C or SGC-G.
Temple-Inland Forest Products Corp.—Type TP-S.
28. **Screw, Wallboard**—No. 6 Phillips-type, Type S self-drilling and

FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

Dow Chemical USA.
Celotex Corp.
21. **Building Units***—As an alternate to Items 2 through 2H. Polyisocyanurate foamed plastic insulation boards faced on the underside (or both sides) with mineral fiber board. Min thickness of the polyisocyanurate core is 1.3 in. for the 1 hr ratings and 2.0 in. for the 1-1/2 hr ratings. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. Adhesive (Item 3) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).
NRG Barriers, Inc.—ENRGY 2 Composite, Barrier Board Plus, ISO-HOC.
Firestone Building Products Co.—"ISO 95+ Composite", "Rhoflex Isocyanurate GL".
22. **Building Units***—As an alternate to Items 2 through 21, polyisocyanurate foamed plastic insulation boards faced on the underside (or both sides) with mineral fiber board. Min thickness of the polyisocyanurate core is 1.3 in. for the 1 hr ratings and 2.0 in. for the 1-1/2 hr ratings. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.
Firestone Building Products Co.—ISO 95+ Wood Fiberboard Composite.
NRG Barriers, Inc.—ENRGY 2 Plus.
2K. **Foamed Plastic***—Not Shown—As an alternate to Items 2 through 22, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., with formed channels on the top side and a flat bottom face, to be applied in one layer over gypsum wallboard (Item 4). Min thickness is 1.3 in. for the 1 hr ratings and 2.0 in. for the 1-1/2 hr ratings. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. When applied in more than one layer, each layer to be offset in both directions from layer below a min of 6 in. in order to lap all joints. Min thick-ness 1 in. (No limit on max overall thickness).
When only one layer is used it may be bonded to gypsum wallboard or laid loosely. When two or more layers are used the insulation may be fastened to steel roof deck (through wallboard) with mechanical fasteners (Item 6A) and/or bonded to wallboard or vapor barrier and/or bonded to additional layers of insulation with adhesive (Item 6) or hot asphalt (Item 6B). Adhesive may be omitted from between components secured together by mechanical fasteners.
BMCA Insulation Products Inc.—Permalite rigid mineral fiber boards.
Fiberglas Canada, Inc.—Rigid glass fiber boards.
GAF Materials Corp.—GAFTEMP Perlite rigid mineral fiber boards.
Owens-Corning Fiberglas Corp.—Rigid glass fiber boards.
Schuller International Inc.—Rigid mineral fiber boards.
2A. In lieu of Item 2, for use with Roofing Membrane* (Item 1B), insulation consisting of:
Foamed Plastic*—Nominal 24 by 48 in. foamed plastic insulation boards to be placed on top of sheathing material Item 1B.
Celfortec, Div. of Celfort Construction Materials Inc.—Min. thickness 2 in. max. thickness 8 in., extruded polystyrene foamed plastic boards, to be placed on top of sheathing material Item 1B. Joints to be covered with crushed stone or concrete pavers at a rate of 10 psf. min.
Dow Chemical USA—Min. thickness 2 in., Max. thickness 8 in., extruded polystyrene foamed plastic. The unfaced boards shall be covered with crushed stone or concrete pavers, at a rate of 10 psf. min.
Owens Corning Specialty and Foam Products Div.—Min. thickness 2 in., max. thickness 8 in., extruded polystyrene foamed plastic

FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

welded together 36 in. O.C. along side joints.
Bowman Metal Deck Div., Aymes Inc.—Type B.
Consolidated Systems, Inc.—Types A, B, BI, F.
Epicor Inc.—Type B.
Laminated Systems Inc.—Types EB, HB, PS, SS-200. Type PS units may be pickled.
Marlyle Steel Decks, Inc.—Types B, F.
Roof Deck, Inc.—Types A, B-1, B-2, EHD Multi-Rib or F.
Unclad Steel Deck, Inc.—Type B.
Verco Mfg., Inc.—Types B or N.
Vulcraft, Div. of Nucor Corp.—Types 1.5A, 1.5B, 1.5BI, 1.5F.
Wheeling Corrugating Co., Div. of Wheeling-Pittsburgh Steel Corp.—Types B, BW, C, T, TF-75, -125, -200. Type 1.5A, 1.5B, 1.5BI, 1.5F. B, BW, C, T units may be galv or phosphated.
6. **Adhesive***—Optional—May be applied between crests of steel roof deck and gypsum wallboard in 1/2 in. wide ribbons 8 in. OC at 0.4 gal per 100 sq ft. May also be applied in 1/2 in. wide ribbons 6 in. OC at 0.4 gal per 100 sq ft, between gypsum wallboard and vapor barrier, and between vapor barrier and mineral and fiber boards, or directly between mineral fiber boards and roof insulation when vapor barrier is omitted. May also be applied at the same rate between layers of roof insulation.
BMCA Insulation Products Inc.
6A. **Mechanical Fasteners***—(Not shown)—Any steel nail or steel clip type fastener designed for the purpose may be used to attach one or more layers of insulation to steel roof deck (through gypsum board). As an alternate, the gypsum wallboard may be attached directly to the steel roof deck with mechanical fasteners.
6B. **Hot Asphalt or Coal Tar Pitch**—(Not Shown)—May be used as an alternate to adhesive between layers of roof insulation at a rate not to exceed 35 lb per 100 sq ft.
7. **Steel Joists**—Type 1024 or 1261 min size. 10K1 size may be used for a limited span of 12 ft-0 in. max. As alternate, any LH-Series steel joist spanning no greater than 60 ft may be used. For spans greater than 60 ft, LH-Series joists may be used provided that their vertical deflection under published total load shall not be greater than 1/264 of the joist span. Joist may be spaced a max 7 ft. OC and welded to end supports.
7A. **Structural Steel Members***—(Not shown)—As alternate structural support, Castelite steel beams may be used for 1 hr. Restrained and Unrestrained Assembly and 1 hr. Unrestrained Beam ratings. Beams may be spaced max 72 in. OC and welded to end supports. Beams shall have lateral bracing in accordance with Item 8A. Cold rolled channels used in conjunction with Castelite beams are specified in Item 9B.
Castelite Steel Products, Inc.—CB12A6.5, min size.
8. **Bridging**—Steel bars, 1/2 in. diam welded to top and bottom chords of each joist.
8A. **Lateral Bracing**—(Not shown)—Castelite beams shall be braced top and bottom with min 1-1/4L1-1/4L1/8 in. angles, approximately located at third points of the span.
9. **Cold Rolled Channels***—Min. 16 MSG cold-rolled steel channels, 1-1/2 in. deep with 7/8 in. flanges. Placed on lower chord of joists and secured with 18 SWG galv steel wire. Installed perpendicular to joists. Located as required to provide hanger wire attachment points.
American Rollstock Co., Inc.—Type Hydro-Seal.
Carlisle Syntec Systems.
Firestone Building Products Co.
W. R. Grace & Co., Construction Prods. Div.—Type GRM350.
9A. **Sheathing Material***—(Optional)—In lieu of Item 3, a self-adhered rubberized asphalt roofing underlayment membrane which may be placed on top of the gypsum wallboard (Item 4) or on the roof insulation (Item 2 or any nonpolystyrene foamed plastic insulation covered as an alternate for Item 2).
W. R. Grace & Co., Conn Construction Products Div.—Grace Ice & Water Shield.
9B. **Sheathing Material***—(Optional)—In lieu of Items 3, 3A and 3B, a self-adhered rubberized asphalt roofing underlayment membrane which may be placed on top of gypsum wallboard or on the roof insulation.
Carlisle Coatings & Waterproofing Inc.—CCW-705.
Firestone Building Products Co.—Multibase
NRG Barriers, Inc.—Type MB.
10. **Building Units***—As an alternate to Items 2 through 2F, phenolic foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on underside (or both sides) with mineral and fiber boards (Min phenolic core thickness is 1.2 in. for the 1 hr ratings, 2.0 in. for the 1-1/2 hr ratings. No limit on max thickness). Boards to be installed over the gypsum wallboard (Item 4) with end joints staggered a min of 6 in. in adjacent rows.
Manville Sales Corp.
29. **Foamed Plastic***—As an alternate to Items 2 through 2G (for 1 hr. ratings only). Extruded polystyrene foamed plastic boards to be installed in one or more layers over gypsum wallboard (Item 4). Joints of gypsum wallboard to be covered with 4 in. wide foil tape. Min thickness is 1 in. when applied in one layer. Max thickness of mineral and fiber board (Item 2) to be installed on top of the foamed plastic. Min thickness is 3 in. when the mineral and fiber board (Item 2) is omitted. No limit on max thickness. All joints between layers offset min 6 in.

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18 in. Inside and outside faces of duct throat protected with 1/16 in. thick ceramic fiber paper laminated to the metal. For the 1 hr Assembly and Beam Ratings only the ceramic fiber paper needed on the inside and outside faces of the duct throat may be omitted. For the 1 hr Assembly and Beam Ratings only, the total area of duct openings per 100 sq ft of ceiling area may be increased to 576 sq in., with the area of ind duct opening not to exceed 576 sq in. Max dimension of opening 30 in. Duct supported by 1-1/2 in. deep, min 0.053 in. thick (16 gauge) cold-rolled steel channels spaced not over 48 in. OC suspended by 12 SWG galv steel wire.
As an alternate to the galv steel duct, air ducts fabricated from rigid Air Duct Materials* may be used in lieu of steel ducts. Total area of duct openings not to exceed 57 sq in. per 100 sq ft of ceiling area. Area of individual duct opening not to exceed 113 sq in. Max dimension of opening 12 in. The sheet steel duct drop or outlet is positioned at the center of a 24 in. long min 0.029 in. thick (22 gauge) sheet steel duct liner. The sheet steel duct drop is insulated with a nom 1 in. thick, 3 pcf density rigid glass fiber material. The ducts are supported by min 0.053 in. thick (16 gauge) 1 in. cold-rolled steel channel suspended from the joists with 12 SWG galv hanger wire. Channels are located directly below the duct throat and parallel to the joists. The duct drop and outlet are spaced between duct drops at 72 in. OC for ducts up to 36 in. wide and 48 in. OC for ducts between 36 and 60 in. wide.
Certain Rectangular Ceiling Diffusers, Class I.
Kaufmann Metals Corp.—Rigid, Class I.
12. **Damper***—Min 0.056 in. thick (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. Damper to be supported by a fusible link (Bearing the UL Listing Mark). For the 1 hr Assembly and Beam Ratings only, Duct Outlet Protection Section A, as described in the Design Information Section, may be used in lieu of the damper described above.
12A. **Air Terminal Units***—Optional—Air terminal units as an alternate to air duct outlets with surface mounted diffusers (Item 11) for the 1 hr. Assembly Ratings only. A max of 24 in. of diffuser slot is allowed for each 100 sq ft of ceiling area. Units must be supported from the structural steel or from cold-rolled steel channels tied to the structural steel and installed in accordance with accompanying installation instructions.
13. **Fixtures, Recessed Light**—(Bearing the UL Listing Mark). Fluorescent lamp type, steel housing, nom 2 by 4 ft or 2 by 2 ft or 20 by 60 in. 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 Electrical Code.
14. **Fixture Protection—Wallboard, Gypsum***—5/8 in. thick, cut from the same gypsum wallboard used in the remainder of the ceiling membrane (See Item 17). The five sided enclosure consists of a 24 by 48 in. top piece, two 4-1/2 (or wider) by 48 in. side pieces, two 6 (or wider) by 24 in. end pieces; and two 6 by 6 in. spacers to maintain a 5/8 in. clearance between the light fixture housing and the top piece. The spacers are placed on top of the fixture housing, with care taken not to locate the spacers over the light fixture ballasts. The top and side pieces are laid in place, and the end pieces are secured to the edges of the side and end pieces with 6d nails at each corner. When fixtures are installed end to end, no end pieces are used where the fixtures abut. Instead, a 6 by 24 in. piece is placed on top of and centered over the gap between the top pieces.
15. **Steel Framing Members***—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 cross tees located at each end and on both sides of each wallboard end joint, and 8 in. OC in front of light fixtures.
Chicago Metallic Corp.—Types 650, 670. When Type 650 steel channel runners are used, the main runner end splices may be riveted to the wall molding along both adjacent walls. The rivets are intended to facilitate the ceiling installation, not to replace hanger wires.
15A. **Alternate Steel Framing Members***—(Not shown)—Main runners 12 ft long spaced 4 ft OC. Cross channels, nom. 4 ft long installed perpendicular to the main runners, spaced 24 in. OC. Additional channels used at 8 in. from each side of light fixtures and from butted end joints. Channels clipped into main runner slots. At walls channels secured to wall angle with 1/2 in. long self-drilling and self-tapping screws having a thread diam of 0.138 in. and 5/16 in. diam heads. Nom 4 ft long cross tees installed perpendicular to main runners to support 4 ft sides of recessed light fixtures. When the alternate steel framing members are used, only non-air handling recessed light fixtures may be used.
CGC Interiors—Type RX main runner and cross channel. Types DXL or DXLG cross tee.
USG Interiors, Inc.—Type RX main runner and cross channel. Type DXL or DXLG cross tee.
15B. **Steel Framing Members***—(Not shown)—as an alternate to Items 15 and 15A. Main runners nom 12 ft long, spaced 48 in. OC. Primary cross tees, measuring 1-1/2 in. across the flange and nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Secondary cross tees required at each wallboard end joint, and 8 in. OC in side of light fixtures. Secondary cross tees, measuring 15/16 in. across the flange, and nominally 4 ft long, installed 8 in. OC in front of light fixtures.
Armstrong World Industries, Inc.—Type FSL, max size 48 by 96 in.
16. **Wall Heating***—(Not shown)—Min 0.019 in. thick (26 gauge) painted or galv steel channels, 1-1/2 in. deep with 15/16 in. flanges, called to walls along perimeter of ceiling with 8d nails spaced 16 in. O.C.
17. **Wallboard, Gypsum***—5/8 in. thick, 4 ft wide; installed with long dimension perpendicular to cross tees with end joints centered along cross tees and with side joints centered along main runners. Wallboard fastened to each cross tee with five wallboard screws (Item 18) with one screw located at the midspan of the cross tee, one screw located 12 in. from and on each side of the cross tee midspan and one screw located 1-1/2 in. from each wallboard end 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 (24 in. O.C.). End joints of adjacent wallboard sheets shall be staggered not less than 4 ft O.C. Wallboard sheets screw-attached to flange of wall channel with wallboard screws spaced 12 in. O.C.
Bestal Gypsum Inc.—Type BG-C or DDDG3.
Celotex Corp.—Type C, FRP or SF3.
Continental Gypsum Company—Type CG-3 or CG-C.
Eagle-Gypsum Products—Type EG-C.
G-P Gypsum Corp.—Types S, C, GPT53, GPFS-C.
National Gypsum Co., Charlotte, NC—Types FSW-4, FSW-G.
Pabco Gypsum Co.—Type C, PG-1 or PG-C.
Republic Gypsum Co.—Type RG-3 or RG-C.
Standard Gypsum Corp.—Type SG-C or SGC-G.
Temple-Inland Forest Products Corp.—Type TP-S.
18. **Screw, Wallboard**—No. 6 Phillips-type, Type S self-drilling and

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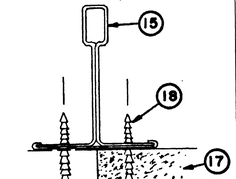
Type 6d nails. Use one of the fixture protection enclosure may be cut 1 in. shorter than the height of the enclosure such that a 1 in. high clearance is maintained between its top and the top of the enclosure.
15. **Steel Framing Members***—Main runners and cross tees in combinations listed below:
A. 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. Cross tees nom 2 ft OC. Fixtures installed perpendicular to the ft cross tees and spaced 4 ft OC. Fixtures spaced 2 ft OC in the 4 ft span.
Armstrong World Industries, Inc.—Types ATG, ATG-A, FG, FST-6000, 8000. For use with the Assembly and Beam Ratings only. Type ATG-A, FST-6000A or -8000A may be used. Type CLIP (Consisting of main runners, 4 ft cross tees and steel straps) for use with 24 by 48 in. Type F or FC lay-in panels.
CGC Interiors—Type DSL.
Chicago Metallic Corp.—Types 250, 260, 1250, 1260, 1850, 1860. When Types 260, 1250, 1260, 1860 steel framing members are used, the Assembly and Beam Ratings are 1 hr.
USG Interiors, Inc.—Type DXL.
B. Main runners nom 10 ft long spaced 60 in. OC. Cross tees nom 5 ft long, installed perpendicular to main runners and spaced 20 in. OC. Fixtures nom 20x60 in panels.
Chicago Metallic Corp.—Types 250, 260, 1250, 1260, 1850, 1860.
15A. **Steel Framing Members***—For use with metric size panels described under Item 16. 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. Cross tees nom 600 mm long, installed perpendicular to 1200 mm cross tees (midway between main runners) spaced 1200 mm OC. For 600 by 600 or 1200 mm lay-in panels.
CGC Interiors—Type DXL.
USG Interiors, Inc.—Type DXL.
15B. **Steel Framing Members***—Metal saves—(Not shown) (Optional)—Channel-shaped metal pans in various colors and finishes, installed perpendicular to main runners and spaced 4 or 6 in. O.C. The flange edges of the metal pans engage and interlock with the vertical tabs of the corresponding grid adapters with tabs 4 or 6 in. O.C. (See Item 15C). End laps joints of the metal pans shall occur adjacent to main runners or cross tees. The metal pans shall each be supported by at least two main runners or cross tees.
Chicago Metallic Corp.—Type 1690.
15C. **Steel Framing Members***—Grid adapter—(Not shown) (Optional)—For use with Type 1690 metal pans (See Item 15B). Angle shaped adapter with a looped return flange; installed parallel to cross tees or main runners to engaging return flange of adapter to the flange of the cross tee or main runner. The 48 or 24 in. long adapters are intended for use with cross tees or main runners, respectively.
Chicago Metallic Corp.—Type 1650.
15D. **Steel Framing Members***—Fixture strips—(Not shown) (Optional)—For use with Type 1650 metal pans. Filler strips are 0.018 in. 0.024 in. thick steel or aluminum, 13/32 or 5/8 in. deep by 3/4 in. wide, placed between the metal pans.
Chicago Metallic Corp.—Type 1650.
15E. **Steel Framing Members***—5/16 in. wide narrow flange grid may be used as an alternate to 15/16 in. wide flange grid systems. 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. Cross tees, nom 2 ft long installed perpendicular to a 4 ft cross tee and spaced 4 ft OC. Type FSLK for use with Type F, nom 24 by 24 in. square edge or tegular edge lay-in panels. Type FSL for use with Type F, nom 24 by 24 in. tegular edge lay-in panels. Grid modules containing light fixtures must employ a fixture centering clip at each corner. The 24 gauge electrogalvanized steel clip is nested on the flange of the intersecting grid tees, has two 1-7/16 in. high legs with their sides perpendicular to each other and a U-shaped return at the top of each leg for engaging over the bulb of the intersecting grid tee. When 5/16 in. wide flange grid is used, see Assembly and Beam Ratings are 1 hr.
Armstrong World Industries, Inc.—Types FSL, FSLK for 1 hr assembly and beam ratings only.
15F. **Steel Framing Members***—15/16 in. wide narrow flange grid may be used as an alternate to 15/16 in. wide flange grid systems. 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. Cross tees, nom 2 ft long, installed perpendicular to 4 ft cross tees and spaced 4 ft OC. For use with Type F, nom 24 by 24 in. square edge lay-in panels.
Chicago Metallic Corp.—Type 4050 for 1 hr assembly and beam ratings only.
16. **Acoustical Material***—Nom 24 by 24 or 48 in. lay-in panels. Border panels supported at walls by min 0.016 in. thick (26 gauge) painted steel angle with 7/8 in. legs; or, min 0.016 in. thick (26 gauge) painted steel channel, 1-5/8 in. deep with 7/8 in. flanges. (5)—Surface perforations.

FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

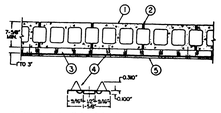
Design No. P524
Restrained Assembly Rating—1 Hr.
Unrestrained Assembly Rating—1 Hr.



1. **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(TFVT).
1A. In lieu of Item 1, roof covering consisting of single-ply Roofing Membrane* that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification. See Fire Resistance Directory—Roofing Membrane (CHCI).
2. **Mineral and Fiber Boards***—24 by 48 in. min size; max size 48 by 96 in. to be applied in one or more layers. Boards to be installed perpendicular to gypsum wallboard direction with end joints staggered 2 ft in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below a min of 12 in. in order to lap all joints. Min thickness 1 in. (No limit on max overall thickness).
When only one layer is used, it may be bonded to gypsum wallboard or laid loosely. When two or more layers are used, the insulation may be fastened to steel roof deck (through wallboard) with mechanical fasteners (Item 2) and/or bonded to wallboard or vapor barrier and/or bonded to additional layers of insulation with adhesive (Item 6) or hot asphalt (Item 6A). Adhesive may be omitted from between components secured together by mechanical fasteners.
BMCA Insulation Products Inc.—Permalite rigid mineral fiber boards.
Fiberglas Canada, Inc.—Rigid glass fiber boards.
GAF Materials Corp.—Ruberoid Perlite rigid mineral fiber boards.
Owens-Corning Fiberglas Corp.—Rigid glass fiber boards.
Schuller International Inc.—Rigid mineral fiber boards.
2A. In lieu of Item 2, for use with Roofing Membrane* (Item 1B), insulation consisting of:
Foamed Plastic*—Nominal 24 by 48 in. foamed plastic insulation boards to be placed on top of sheathing material Item 1B.
Celfortec, Div. of Celfort Construction Materials Inc.—Min. thickness 2 in. max. thickness 8 in., extruded polystyrene foamed plastic boards, to be placed on top of sheathing material Item 1B. Joints to be covered with crushed stone or concrete pavers at a rate of 10 psf. min.
Dow Chemical USA—Min. thickness 2 in., Max. thickness 8 in., extruded polystyrene foamed plastic. The unfaced boards shall be covered with crushed stone or concrete pavers, at a rate of 10 psf. min.
Owens Corning Specialty and Foam Products Div.—Min. thickness 2 in., max. thickness 8 in., extruded polystyrene foamed plastic

FIRE RESISTANCE RATINGS - ANSI/UL263 (BRJV)—*Continued*

Design No. U912
Bearing Wall Rating—3 HR.
Nonbearing Wall Rating—3 HR.



1. **Concrete Blocks**—Various designs Classification D-2 (2 h). See Concrete Blocks category for list of manufacturers.
2. **Mortar**—Portland cement lime mortar. Proportions not specified.
3. **Fasteners***—For use between Items 1 and 5. Rigid foamed plastic insulation, 1 to 4 in. thick.
Celfortec, Div. of Celfort Construction Materials Inc.
Dow Chemical USA.
Owens Corning Specialty and Foam Products Div.—Type 150 or Type 250.
4. **Furring Strip**—Min 0.020 in. thick (24 gauge) galv steel, 1-5/8 in. wide, 0.1 in. deep spaced 24 in. OC. Fastened to concrete blocks (Item 1) through foamed plastic (Item 3) using only steel screws penetrating concrete blocks (Item 1) only of 1 in. and one. Spaced 24 in. OC.
5. **Wallboard Gypsum***—Nom 1/2 in. thick wallboard with beveled, square or tapered edges. One layer of wallboard to be used. Applied vertically with joint centered over furring strips (Item 4). Fastened to strips with 1-1/4 in. long, Type S self-tapping, self-drilling, wallboard screws spaced 8 in. OC at the joints, 12 in. OC in the field and penetrating furring strip.
Bestal Gypsum Inc.—Type BG-C
Canadian Gypsum Company—Type C
Continental Gypsum Company—Type CG-C
Eagle-Gypsum Products—Type EG-C
G-P Gypsum Corp.—Types S, GPTS-C
Pabco Gypsum Co.—Type PG-C
Republic Gypsum Co.—Type RG-C
Standard Gypsum Corp.—Type SG-C
Temple-Inland Forest Products Corp.—Type TP-S.
United States Gypsum Co.—Type C
Yeso Panamericano SA de CV—Type C
6. **Joint Tape and Compound** (not shown)—Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layer paper tape, nominal 2 in. wide, embedded in first layer of compound over joints of gypsum panels.
7. **Siding, Brick or Stone**—(Optional, not shown)—Aluminum, vinyl steel siding, brick veneer or stucco, meeting the requirements of the code agencies. Installed over gypsum panels. Brick veneer attached studs with corrugated metal wall ties attached to each stud with six screws, not more than each sixth course of brick.
8. **Caulking and Sealants***—(Optional, not shown)—A bead of acoustic sealant applied around the partition perimeter for sound control.
United States Gypsum Co.—Type AS
*Bearing the UL Classification Marking