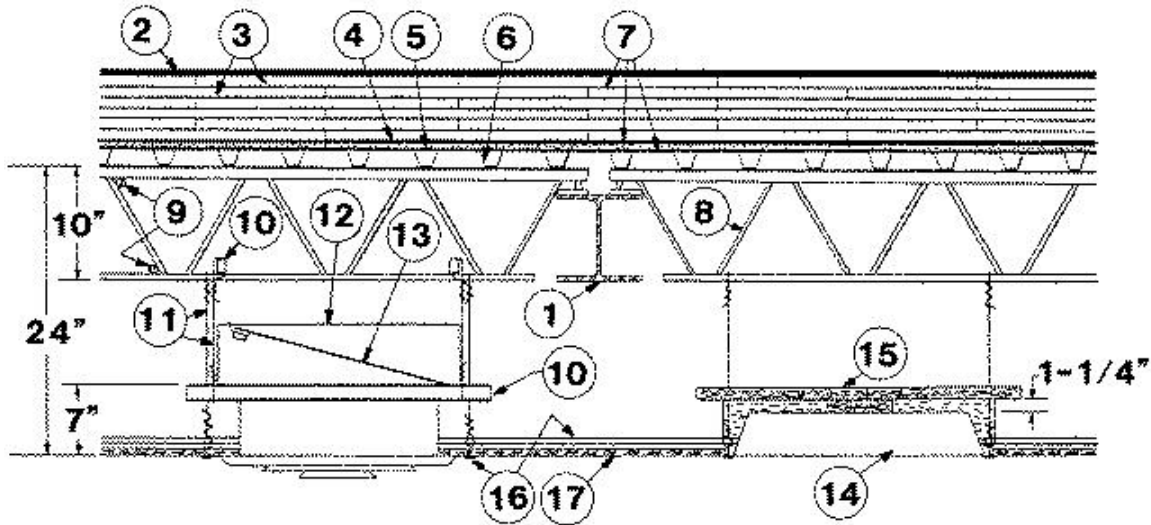


Design No. P230
September 26, 2003

Restrained Assembly Rating — 1 and 1-1/2 Hr. (See Items 5A, 8, 12, 17A and 17B).

Unrestrained Assembly Rating — 1 and 1-1/2 Hr. (See Items 5A, 8, 12, 17A and 17B).

Unrestrained Beam Rating — 1 and 1-1/2 Hr. (See Items 5A, 8, 12, 17A and 17B).



1. **Beam** — W6x12, min size. As alternate to steel beam, Joist girders -(not shown)- 20 in. min depth and 13 lb/lin ft. min weight.

2. **Roof Covering*** — Class A, B or C, consisting only of felt and asphalt (or coal tar pitch) in alternate layers. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

2A. **In lieu of Item 2, roof covering consisting of single-ply Roofing Membrane*** — that is either ballasted, adhered or mechanically attached as permitted under the respective Classified company's Classification. See Fire Resistance Directory — Roofing Membranes (CHCI).

2B. **Metal Roof Deck Panels*** — (Not Shown) — in addition to or in lieu of Item 2 or 2A, the roof covering may consist of a mechanically fastened metal roof deck panel assembly. See Fire Resistance Directory — Metal Roof Deck Panels* (CETW).

2C. **In lieu of Items 1 or 1A, for use only with foamed plastic insulation (Item 3B), Roofing Membrane*** — loosely laid over gypsum wallboard.

AMERICAN HYDROTECH INC

FIRESTONE BUILDING PRODUCTS CO, DIV OF BFS DIVERSIFIED PRODUCTS L L C

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV

3. **Mineral and Fiber Boards*** — 24 by 48 in. or larger. To be applied in one or more layers. Boards to be installed perpendicular to gypsum wallboard direction with end joints staggered 2 ft or more 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 is 1 in.

When Item 2A is used, the min thickness is 2 in. No limit on overall thickness. When only one layer is used it may be bonded to vapor barrier with adhesive (Item 7). When two or more layers are used the insulation may be fastened to steel roof deck (through gypsum wallboard) with mechanical fasteners (Item 7B) provided at least one layer of insulation is used over the mechanical fasteners. The individual layers may be bonded together with adhesive or hot asphalt (Item 7A).

BMCA INSULATION PRODUCTS INC — Permalite.

FIBREX INSULATIONS INC — FBX Baseboard and FBX Capboard.

GAF MATERIALS CORP — GAFTEMP Perlite.

JOHNS MANVILLE INTERNATIONAL INC

OWENS CORNING HT INC, DIV OF OWENS CORNING

ROXUL INC — Toprock.

3A. Roof Insulation-Foamed Plastic* — Alternate to Item 3. Any thickness polystyrene foamed plastic insulation boards bearing the UL Classification Marking, having a density of 2.5 pcf max, may be installed on top of min 1 in. thick Mineral and Fiber Boards (Item 3) and covered with either the Built-Up Roof Covering (Item 2) or single-ply roofing membrane (Item 2A). See Foamed Plastic* (BRYX) category in the Building Materials Directory or Foamed Plastic* (CCVW) category in the Fire Resistance Directory for list of manufacturers.

3B. Roof Insulation-Foamed Plastic* — Alternate to Items 3 or 3A. Nominal 24 by 48 in. foamed plastic insulation boards to be placed on top of Roofing Membrane (Item 2C).

THE DOW CHEMICAL CO — 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.

T CLEAR CORP — 4-3/8 in. thick, concrete mortar faced extruded polystyrene Lightguard Boards.

OWENS CORNING SPECIALTY & FOAM PRODUCTS — Min thickness 2 in., max thickness 8 in., extruded polystyrene foamed plastic boards, to be placed on top of Roofing Membrane (Item 2C) and covered with crushed stone or concrete pavers at a rate of 10 psf, min.

3C. Foamed Plastic* — Alternate to Items 3 through 3B. Polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., to be applied in one or more layers. Min thickness is 1.3 in. 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, AC Foam III.

CARLISLE SYNTEC INC, DIV OF CARLISLE CORP — Types HP, HP-H, HP-N, HP-W.

BPB AMERICA INC — Types L, O.

FIRESTONE BUILDING PRODUCTS CO, DIV OF BFS DIVERSIFIED PRODUCTS L L C — "ISO 95+FK", "ISO 95+GL", "ISO 95+GRF", "ISO 95+GW", "ISO 300".

GAF MATERIALS CORP — Isotherm R.

HUNTER PANELS — H Shield.

JOHNS MANVILLE INTERNATIONAL INC — ENRGY 2, ENRGY 3, ISO-1, PSI 25.

LOADMASTER SYSTEMS INC — Loadmaster Polyisocyanurate Insulation.

RMAX INC — Multi-Max FA, Multi-Max FA-3.

STEVENS ROOFING SYSTEMS, DIV OF JPS ELASTOMERICS CORP — "Stevens ISO 2000", "Stevens ISO 3000" .

TREMCO INC — Trisotech G.

3D. Building Units* — As an alternate to Items 3 through 3C. Polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on underside (or both sides) with mineral and fiber boards. Min thickness of the polyisocyanurate core is 1.3 in. 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 wall board if vapor retarder is not used).

ATLAS ROOFING CORP

FIRESTONE BUILDING PRODUCTS CO, DIV OF BFS DIVERSIFIED PRODUCTS L L C — "ISO 95+ Composite"

JOHNS MANVILLE INTERNATIONAL INC — Fesco-Foam

TREMCO INC

3E. Building Units* — As an alternate to Items 3 through 3D. Polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with oriented strand board. Min thickness of the polyisocyanurate core is 1.3 in. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

ATLAS ROOFING CORP — AC Foam NailBase Insulation, Vented-R

FIRESTONE BUILDING PRODUCTS CO, DIV OF BFS DIVERSIFIED PRODUCTS L L C — Hailgard

JOHNS MANVILLE INTERNATIONAL INC — Nailboard

MARTIN FIREPROOFING GEORGIA INC — Perform-A-Deck Nailable Roof Insulation

3F. Building Units* — As an alternate to Items 3 through 3E, polyisocyanurate foamed plastic insulation boards faced on the underside with wood fiber board. Min thickness of the polyisocyanurate core is 1.3 in. 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, DIV OF BFS DIVERSIFIED PRODUCTS L L C — "ISO 95+ Wood Fiberboard Composite" .

JOHNS MANVILLE INTERNATIONAL INC — ENRGY-2 Plus.

3G. Building Units* — As an alternate to Items 3 through 3F, composite polyisocyanurate foamed plastic insulation board with an adhered nailing surface, nom 48 by 48 or 96 in. may be used with the following limitations. These composite building units have ventilation slots internal

to the panels. The thickness of the panel depends upon the thinnest portion of the polyisocyanurate insulation. The following dimensions apply to the polyisocyanurate insulation, min 1.3 in. thick. There is no limit on the max thickness.

GAF MATERIALS CORP — Type INSUL-AIR.

JOHNS MANVILLE INTERNATIONAL INC — Type ISO-VENT.

3H. Building Units* — As an alternate to Items 3 through 3G, polyisocyanurate foamed plastic insulation boards, nom 48 by 96 in., faced on the top surface with gypsum board. Min thickness of the polyisocyanurate core is 1.3 in. No limit on overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

JOHNS MANVILLE INTERNATIONAL INC — ENRGY 2 Gypsum Composite.

4. Sheathing Material* — (Optional) — Vinyl film or paper scrim vapor barrier, applied with adhesive to gypsum wallboard. Adjacent sheets overlapped 2 in. See Sheathing Material (CHIZ) category for names of Classified companies.

4A. Sheathing Material* — (Optional) — In lieu of Item 4, a self-adhered rubberized asphalt roofing underlayment membrane which may be placed on top of the gypsum wallboard (Item 5 or an alternate to Item 5) or on roof covered as an alternate to Item 3).

W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV — Grace Ice and Water Shield, Grace Select, Grace Ultra, and Grace Basik

4B. Sheathing Material* — (Optional) — In lieu of Items 4 and 4A, 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-707.

5. Gypsum Board — (Classified or unclassified) — Supplied in sheets nom 2 by 4 ft to 4 by 12 ft by nom 5/8 in. thick. Min weight 2.0 psf. Applied perpendicular to steel roof deck direction with adhesive. End joints to occur over crests of steel roof deck with end joints staggered in adjacent rows. See Gypsum Board (CKNX) category for names of Classified companies.

5A. Cementitious Backer Units* — Alternate to Item 5, for 1 Hr Ratings only. Supplied in nom. 32 in. by 48 in. (or larger) by nom. 1/2 or 5/8 in. thick sheets. Applied perpendicular to steel roof deck direction with adhesive. End joints to occur over crests of steel roof deck with end joints staggered in adjacent rows.

UNITED STATES GYPSUM CO — Durock Exterior Cement Board or Durock Brand Cement Board.

6. Steel Roof Deck — Fluted steel deck, min 1-1/2 in. deep, nom 24 in. wide, galv or painted. Min 0.019 in. thick (26 gauge). Flutes approx 4 in. OC, crests approx 2-1/8 in. wide. Welded to supports using welding washers 12 in. OC.

Classified Steel Floor and Form Units* — Noncomposite, corrugated or fluted. No. 26 MSG, min 27 to 36 in. wide, 1-5/16 or 1-1/2 in. deep galv steel units. Spacing of welds attaching units to supports shall not exceed 12 in. OC. Side joints of adjacent units may be button punched or welded together midway between joists.

CONSOLIDATED SYSTEMS INC — Types B, BI, F.

7. **Adhesive*** — Applied to crests of steel roof deck in 1/2 in. wide ribbons 8 in. OC, at 0.4 gal per 100 sq ft. Applied in 1/2 in. wide ribbons 6 in. OC, at 0.4 gal per 100 sq ft, between gypsum wallboard and vapor barrier, between vapor barrier and mineral and fiber boards, and between layers of mineral and fiber boards. See Adhesives (BYWR) category for names of manufacturers.

7A. **Hot Asphalt or Coal Tar Pitch** — (Not Shown) — May be used as an alternate to adhesive between layers of roof insulation when applied at a rate not exceeding 35 lb per 100 sq ft.

7B. **Mechanical Fasteners** — (Not Shown) — Alternate to Items 7 and 7A. 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 wallboard) provided at least one layer of insulation is used over the fasteners.

8. **Steel Joists** — Type 10J4 or 12K3 min size. 10K1 size may be used for a limited span of 12 ft-0 in max. Joists spaced 72 in. OC max for 1 Hr Ratings and 48 in. OC max for the 1-1/2 Hr Ratings, welded to end supports.

9. **Bridging** — 1 by 1 by 1/8 in. thick steel angles or 1/2 in. diam steel bars, welded to top and bottom chords of each joist.

10. **Cold Rolled Channels** — Min 0.053 in. thick (16 gauge) cold-rolled steel channels, 1-1/2 in. deep with 9/16 in. flanges. Placed on lower chord of joists and secured with 18 SWG galv steel wire. Located as required to provide hanger wire attachment points. When steel joists are spaced more than 4 ft OC, two cold-rolled channels placed back to back and tied together with double strand of 18 SWG galv steel wire at 24 in. OC. The double channels installed perpendicular to the joists and spaced a max of 60 in. OC, may be placed on top of the joists' bottom chord and tied to each joist with a double strand of 18 SWG galv steel wire or suspended below the joists with 12 SWG galv steel wire wrapped around the cold-rolled channels and with the other end wrapped around the bottom chord of the joists. Double cold-rolled channels required for support of lighting fixtures and air boots if a vertical wire cannot be attached directly to the joist.

11. **Hanger Wire** — All hanger wires to be installed vertically. No. 12 SWG galv steel wire, twist-tied to lower chord of joists or cold-rolled channels. Hanger wires twist-tied to main runners at cross tee intersections and spaced 48 in. OC. Hanger wires are required at the four corners of light fixtures, at midspan of cross tees adjacent to light fixtures and to air duct outlets, at cross tees nearest and parallel with walls on cut cross tees over 2 ft long at walls and adjacent to main runner splices.

12. **Air Duct** — Min. 0.023 in. thick (24 gauge) galv steel. Total area of duct openings not to exceed 576 sq in. per each 100 sq ft of ceiling area. Area of individual duct opening not to exceed 576 sq in. Max dimension of opening 30 in. Total area of duct openings reduced to 255 sq in. per 100 sq ft of ceiling area with area of individual duct opening not to exceed 255 sq in. (max dimension of opening is 18 in.) for the 1-1/2 Hr Ratings. Inside and outside faces of duct throat protected with 1/16 in. thick ceramic fiber paper laminated to the metal. The ceramic fiber paper laminated to the inside and outside faces of the duct throat may be omitted. When the ceramic fiber paper is omitted, the ceiling shall be composed of nom 24 by 48 in. lay-in panels (Item 17). Duct supported by 1-1/2 in. deep, 16 MSG 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 for the 1 Hr Ratings. The total area of duct openings shall not exceed 57 sq in. per each 100 sq ft of ceiling area. Area of individual duct opening shall not 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) galv sheet steel duct liner. The sheet steel duct drop is insulated with a nom 1 in. thick, 5 pcf density rigid glass fiber material. The ducts are supported by min 0.053 in. thick (16 gauge), 1-1/2 in. cold-rolled steel channels suspended from the joists with 12 SWG galv hanger wire. Channels are located directly below the sheet steel duct liner, one on each side of the duct drop and 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.

CERTAINTEED CORP — Rigid, Class I.

JOHNS MANVILLE INTERNATIONAL INC — Rigid, Class I.

KNAUF FIBER GLASS GMBH — Rigid, Class I.

OWENS-CORNING FIBERGLAS CORP — Rigid, Class I.

13. **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 and held open with a Fusible Link (Bearing the UL Listing Mark).

14. **Fixtures, Recessed Light** — (Bearing the UL Listing Mark) Fluorescent lamp type, steel housing, nom 24 by 48 in.

Fixtures spaced so their area does not exceed 24 sq ft per 100 sq ft of ceiling area. Aggregate of fixtures not to exceed four per 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

14A. **Fixture Stabilizer** — (Not Shown) — When the Type 1650 metal pans are used (Item 16B), one min 0.047 in. thick (16 MSG) galv steel channel yoke per each light fixture, secured to the web at midspan of cross tee on each side of fixture.

14B. **Fixture Stabilizer** — (Not Shown) — As an alternate to Item 14A. Min 0.020 in. thick (25 MSG) painted steel spacer bar formed as an angle with 1 in. legs and hemmed edges and slots perpendicular to and near the ends of the spacer bar for engaging over the bulb of the tees. Engaged over the bulb at midspan of the cross tee on each side of the light fixture and over the bulb of the adjacent cross tee.

14C. **Alternate Recessed Light Fixture** — (Not Shown) — As an alternate to the fluorescent lamp light fixture. High Intensity Discharge (HID) lighting fixture may be used on a 1 for 1 substitution basis. These fixtures are used in conjunction with the nom 24 by 24 in. acoustical panels. The fixture consists of 20 MSG or heavier steel mounting pan having 23-3/4 by 23-3/4 in. outside dimensions and a 13-1/2 in. diam opening at its center, with a 5/8 in. high stiffening return flange at all four sides. The reflector and reflector top are made of spun aluminum. The total weight of the fixture with lamp and ballast shall not exceed 40 lb. The 24 x 24 in. suspension system module containing the HID fixture shall be supported at each corner by a hanger wire. Electrical wiring of the fixture shall conform with the National Electrical Code.

14D. **Fixtures, Recessed Light** — (Bearing the UL Listing Mark) — (Not Shown) — As an alternate to Item 14, incandescent lamp type, steel housing, nom 6-1/2 in. diam by 7-1/2 in. high. Each fixture provided with a nom 7-3/4 in. by 12-1/2 in. base plate screw-attached to the "high hat" fixture with three steel screws. Base plate to be provided with steel bar hangers designed to span across nom 24 in. spacing of cross tees for fixture support. Fixture secured to cross tees with steel clips provided at the end of the steel bar hangers. A max of two "high hat" fixtures may be substituted for each nom 24 in. by 48 in. fixture permitted in the ceiling (max six "high hat" fixtures per 100 sq ft of ceiling area). For use with USG Interiors, Inc. steel framing members and acoustical materials only. Wired in accordance with National Electrical Code.

15. **Fixtures Protection — Batts and Blankets*** — 1-1/4 in. thick. Fixture protection for each flat light fixture consists of a top piece resting on spacers and two end pieces. The top piece length shall equal the long dimension of the fixture. The top piece width shall equal the top width of the fixture plus twice the width of the inclined or vertical fixture side. The top piece shall be centered over the fixture with its two sides cantilevered and allowed to drape over the fixture sides. The edges of the top piece shall be slit as necessary to accommodate hanger wires. End pieces equal to the width of the fixture by 6-1/2 in. high are held in place by slipping them between the fixture housing and the hanger wire at each corner of the fixture. In addition, the top piece shall be secured to each end piece with 18 SWG galv steel wire threaded through the pieces and twist-tied. The spacers shall consist of scrap pieces of suspension system tees located as required to maintain a min 1-1/2 in. clearance between the top of the light fixture and the fixture protection top piece.

ROXUL INC — Type FR.

15A. Alternate Fixture Protection — Acoustical Material* — Five sided enclosure constructed from the acoustical material (Item 17). Top panel whose width and length are equal to the width and length of the fixture, is centered over and spaced 1-1/2 in. from the top of the fixture housing by scrap pieces of steel framing member tees. A piece of acoustical material of a length and width equal to the length and height of the fixture, respectively, is placed at each side of the fixture. The top edge of each fixture protection side piece may be provided with a 1 in. deep by 6 in. long notch near its midpoint. Ends of fixture are protected by pieces of acoustical material covering the height from the top of main runners to the top of protection top panel by the width of the fixture. End pieces attached to the top panel with 8d nails spaced approximately 12 in. OC. Where fixtures are butted end to end, the end pieces, at the butting ends, are omitted and the gap between the adjacent top pieces is covered by one of the end pieces.

15B. Fixture Protection for Alternate Recessed Fixture (Item 14C) — (Not Shown) — Five sided box enclosure with 1 in. high opening at top of two opposite sides. Pieces cut from acoustical panels (Item 17). Top piece is 23-3/4 by 23-3/4 in. size; two opposite side pieces each is 23-3/4 in. long by the height of the fixture plus 1 in.; remaining two opposite side pieces each is 22-1/2 in. long by the height of the fixture. Pieces assembled with 8d nails spaced 6 in. OC.

15C. Fixture Protection — Acoustical Material* — For use with "high hat" light fixtures (Item 14D). Five sided enclosure, rectangular in cross section, cut from the same acoustical material used in the ceiling assembly. Two side pieces measuring 8 in. high by 23-3/4 in. long resting upon ceiling tile, two end pieces measuring 6-3/4 in. high by 16 in. long resting upon steel bar hangers and one top piece measuring 14 in. by 18 in. resting upon side and end pieces with 18 in. dimension parallel with end pieces. Enclosure secured with four 8d nails installed through side pieces into end pieces near the top of the assembly.

16. Steel Framing Members* — Main runners 10 or 12 ft long, spaced 4 ft OC. Cross tees nom 4 ft long, installed perpendicular to main runners and spaced 2 ft OC. When nom 2 by 2 ft lay-in panels are used, nom 2 ft cross tees installed perpendicular to 4 ft cross tees at midspan, spaced 4 ft OC

CGC INTERIORS, DIV OF CGC INC — Types DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZXLA.

USG INTERIORS INC — Type DXL, DXLA, DXLP, DXLZ, DXLZA, SDXL, SDXLA or ZXLA.

16A. Steel Framing Members* — Main Runners, nom 10 or 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 at midspan, spaced 4 ft OC. Border panels supported at walls by steel wall angle with 7/8 in. legs or channel with a 1 by 1-9/16 by 1/2 in. profile. When Type DXLT or DXLTZ steel framing members are used, the assembly ratings are 1 hr.

CGC INTERIORS, DIV OF CGC INC — Types DXLT, DXLTZ.

USG INTERIORS INC — Types DXLT, DXLTZ.

16B. Steel Framing Members* — Main runners 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 2 by 2 ft lay-in panels. Nom 2 ft long cross tees installed perpendicular to 4 ft cross tees, spaced 4 ft OC.

ARMSTRONG WORLD INDUSTRIES CANADA LTD — Types AFG, AFG A, Type GLBP (consisting of main runners, 4 ft cross tees and steel straps) for use with 2 by 4 ft Type FR-83 or GR-1 lay-in panels.

BPB AMERICA INC — Types PAC, PCH, PCS. When Types PAC, PCH, PCS steel framing members are used, the main runner ends may be riveted to the wall moulding along one wall and

the cross tee ends may be riveted to the wall moulding along one adjacent wall. The rivets are intended to facilitate the ceiling installation, not to replace hanger wires.

CHICAGO METALLIC CORP — Types 250, 260, 1250, 1260, 1850, 1860. When Types 250, 260, 1250, 1260, 1850, 1860 steel framing members are used, the main runner ends may be riveted to the wall moulding along one wall and the cross tee ends may be riveted to the wall moulding along one adjacent wall. The rivets are intended to facilitate the ceiling installation, not to replace hanger wires.

16C. Steel Framing Members* — Metal pans — (Not shown) (Optional) — Channel-shaped metal pans in various colors and finishes, installed perpendicular to cross tees or main runners and spaced 4 or 6 in. OC. 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. OC. (See Item 16C). 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 1650.

16D. Steel Framing Members* — Grid adapter — (Not shown) (Optional) — For use with Type 1650 metal pans (See Item 16B). Angle shaped adapter with a looped return flange, installed parallel to cross tees or main runners by 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.

16E. Steel Framing Members* — Filler strips — (Not shown) (Optional) — For use with Type 1650 metal pans. Filler strips are 0.018 to 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.

17. Acoustical Material* — Square or rectangular shapes. Nom 24 by 24 in. square, 24 by 48 or 20 by 60 in. rectangular lay-in panels. Border panels supported at walls by min. 0.016 in. thick painted steel angle with 7/8 in. legs or min. 0.016 in. thick painted steel channel with a 1 by 1-9/16 by 1/2 in. profile.

EMCO LTD — 5/8 in. Types FR-4, FR-83; 3/4 in. Types FR-83, FR-X1. See **Acoustical Materials** (BYIT), EMCO Ltd., for specific tile details.

USG INTERIORS INC — 5/8 in. Types FR-4, FR-83. 3/4 in. Types AP, FR-83, FR-X1. See **Acoustical Materials** (BYIT), USG Interiors, Inc., for specific tile details.

17A. Acoustical Material* — As an alternate to Item 17, for use with Types DXL, DXLZ, SDXL steel framing members for 1 hr assembly rating only-Nom 24 by 24 by 3/4 in. thick lay-in panels. Border panels supported at walls by min. 0.016 in. thick painted steel angle with 7/8 in. legs or min. 0.016 in. thick painted steel channel with a 1 by 1-9/16 by 1/2 in. profile.

USG INTERIORS INC — Types AP or AP-3 . See **Acoustical Materials** (BYIT), USG Interiors, Inc. for specific tile details.

EMCO LTD — Types AP or AP-3 . See **Acoustical Materials** (BYIT), EMCO LTD for specific details.

17B. Acoustical Material* — As an alternate to Item 17, for use with Types DXL, DXLZ, SDXL steel framing members for 1 hr assembly rating only-Nom 24 by 24 by 3/4 in. thick lay-in panels. Border panels supported at walls by min. 0.016 in. thick painted steel angle with 7/8 in. legs or min. 0.016 in. thick painted steel channel with a 1 by 1-9/16 by 1/2 in. profile.

USG INTERIORS INC — Type ASTRO-FR . See Acoustical Materials (BYIT), USG Interiors, Inc. for specific tile details.

EMCO LTD — Type ASTRO-FR . See Acoustical Materials (BYIT), EMCO LTD for specific details.

18. Steel Framing Members* — Metal Pans — Channel shaped metal pans, plain or perforated, installed perpendicular to main runners over acoustical material and spaced 4 ft. OC. The flange edges of the metal pans engage and interlock with the vertical (as installed) tabs protruding beneath the flange of the Type DXLP main runners. End lap joints of the metal pans shall occur adjacent to the main runners with end lap joints in adjacent courses staggered. The metal pans shall each be supported by at least two main runners. If a partial pan is supported by only one main runner near a wall, an additional support point shall be provided by attaching a nom 23 in. long section of main runner to the wall channel. The short section of main runner shall be secured to the 1 in. flange of the wall channel (top of main runner flange in contact with bottom of wall channel flange) using two No. 8 by 1/2 in. long self-drilling, self tapping screws, with one screw located near each end of the main runner section.

USG INTERIORS INC — Types PAR, PARP, PAS, PASP, PSR, PSRP, PSS, PSSP.

19. Speaker Assemblies* — (Not Shown) Optional. The speaker assemblies consist of speakers, speaker enclosures and their accessories. The ceiling penetration for the speaker enclosure shall not exceed 11-7/8 by 11-7/8 in. for the square speaker enclosures and 12 in. in diam for the round speaker enclosures. The speaker assemblies are installed in accordance with the installation instructions provided. A maximum of two 144 sq. in. speaker assemblies per 100 sq ft of ceiling area is allowed.

ATLAS/SOUNDOLIER, DIV OF AMERICAN TRADING & PRODUCTION CORP

See **Speaker Assemblies For Fire Resistance (CHML)**, Atlas/Soundolier, Div of American Trading & Production Corp. for specific Types.

*Bearing the UL Classification Mark

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