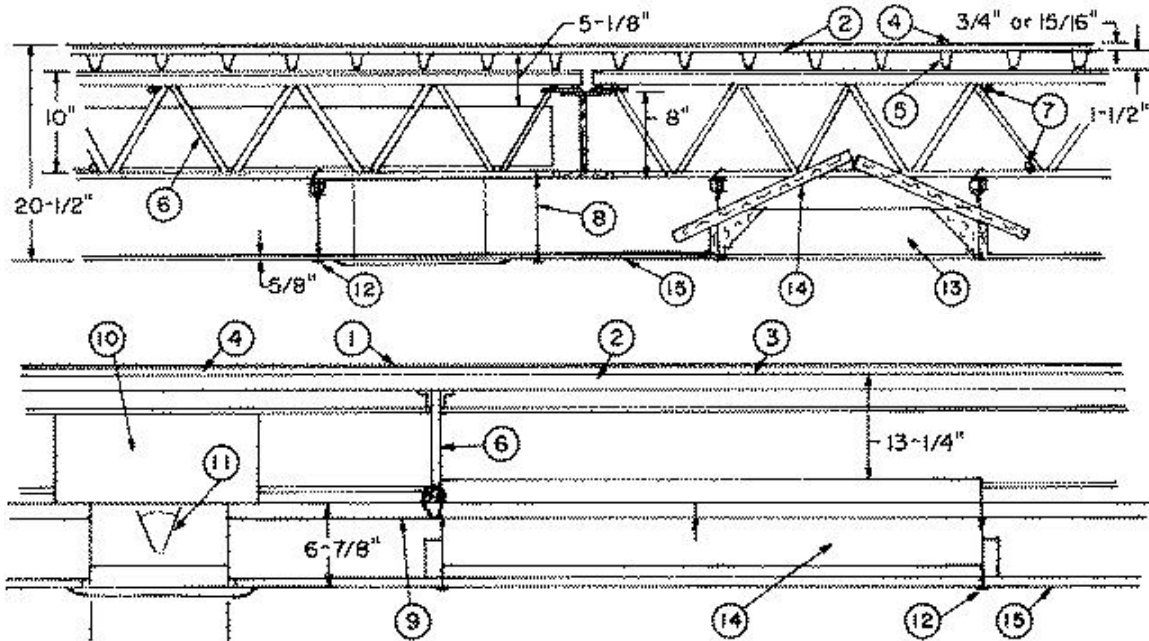


Restrained Assembly Rating — 1 Hr.

Unrestrained Assembly Rating — 1 Hr.

Unrestrained Beam Rating — 1 Hr.



Beam — W8 x 17, min size. Joist girders-(Not shown)-20 in. min depth and 13 lb/lin ft min 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 (TEVT).

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 Membranes (CHCI).

2. **Sheathing Material*** — Optional. Vinyl-film or paper scrim vapor barrier, applied with adhesive to steel roof deck, overlapped 6 in. on sides.

BMCA INSULATION PRODUCTS INC

FORTIFIBER CORP

3. **Adhesive*** — To be used beneath vapor barrier and roof insulation. Applied at 0.4 gal/100 sq ft in 1/2 in. wide ribbons, approx 6 in. OC.

BMCA INSULATION PRODUCTS INC

4. **Mineral and Fiber Boards*** — Nominal thickness of 3/4, 15/16, 1, 1-1/2 or 2 in., min size 3 by 4 ft, max size 4 by 8 ft. Applied in one layer.

FIBREX INSULATIONS INC — FBX Baseboard and FBX Capboard.

OWENS CORNING HT INC, DIV OF OWENS CORNING

ROXUL INC — Toprock.

SIPLAST INC

In lieu of Item 4, various types of insulating concrete prepared and applied in the thickness indicated below:

4A. **Vermiculite Concrete** — Thickness to be 2 in. min from the top plane of steel roof deck. Mix consists of 6 cu ft of Vermiculite Aggregate*, 94 lbs. of Portland cement and 9 oz. of air entraining agent.

SIPLAST INC

VERMICULITE PRODUCTS INC

4B. **Cellular Concrete — Roof Topping Mixture*** — Foam concentrate mixed with water and Portland cement per manufacturer's specifications. Cast dry density and 28-day min compressive strength of 190 psi as determined in accordance with ASTM C495-66. Thickness of cellular concrete topping to be 2 in. min from the top plane of steel roof deck.

CELCORE INC — Cast dry density of 31 (+ or -) 3.0 pcf.

CELLULAR CONCRETE L L C — Cast dry density 37 (+ or -) 3.0 pcf.

ELASTIZELL CORP OF AMERICA — Type II. Mix #1 of cast dry density 39 (+ or -) 3.0 pcf, Mix #2 of cast dry density 40 (+ or -) 3.0 pcf, Mix #3 of cast dry density 47 (+ or -) 3.0 pcf.

SIPLAST INC — Mix #2. Cast dry density of 36 (+ or -) 3.0 pcf.

4C. **Perlite Concrete** — Mix consists of 6 cu ft of Perlite Aggregate* to 94 lb of Portland cement and 1-1/2 pints of air entraining agent. Thickness of perlite concrete topping to be 2 in. min from the top plane of steel roof deck.

4D. **Cellular Concrete — Roof Topping Mixture*** — Foam Concentrate mixed with water, Portland Cement and UL Classified Vermiculite Aggregate per manufacturer's application instructions. Cast dry density of 33 (+ or -) 3.0 pcf and 28-day compressive strength of min 250 psi as determined in accordance with ASTM C495-86. Thickness of cellular concrete topping to be 2 in. min from the top plane of steel roof deck.

CELLULAR CONCRETE L L C — Mix #3.

SIPLAST INC — Mix #3.

See **Perlite Aggregate** (CFFX) category in Fire Resistance Directory for names of Classified companies.

5. **Steel Roof Deck** — (Unclassified) — Min 1-1/2 in. deep and 31-3/4 in. wide, galv, fluted steel deck. Min gauge is 22 MSG. Flutes approx 6 in. O.C., crests approx 5-1/4 in. wide, valleys approx 3/4 in. wide. Welded to each joist 10 in. O.C. or,

5A. **Corrugated Steel Deck** — (Unclassified) — Min 9/16 in. deep and 31-3/4 in. wide, galv steel deck. Min gauge is 28 MSG. Corrugations 2-3/8 in. O.C. Attached to each joist with welds 14 in. O.C. Adjacent units overlapped one corrugation at sides and 2 in. at ends or,

5B. **Classified Steel Floor and Form Units*** — Noncomposite 1-1/2 in. deep, 30 or 36 in. wide, galv units. Min gauge is 22 MSG. Spacing of welds attaching units to supports shall not exceed 12 in. O.C. Adjacent units button-punched or welded together 36 in. O.C. along side joints.

CONSOLIDATED SYSTEMS INC — Types B, BI, F

6. **Steel Joists** — Type 10J4 or 12K3 min size, welded to end supports. For steel roof deck and steel floor and form units (Items 5 and 5B), joists are spaced 72 in. O.C. For corrugated steel deck (Item 5A), joists are spaced 48 in. O.C.

7. **Bridging** — Steel bars, 1/2 in. diam welded to top and bottom chords of each joist.

8. **Hanger Wire** — No. 12 SWG galv steel wire spaced 4 ft O.C. along main runners and to occur additionally at splices of main runners, at all four corners of light fixtures, at centers of cross tees immediately adjacent to the long dimension of the light fixtures and at centers of cross tees adjacent to air duct outlets. The hanger wires are attached to the lower chord of bar joists or to the cold-rolled channels attached to the bar joists.

9. **Cold Rolled Channels** — No. 18 MSG cold-rolled steel, 1 1/2 in. deep channels placed under air duct and supported by hanger wires at each end, spaced not over 48 in. OC and at air outlets. To provide attachment for hanger wire between steel joists, two cold-rolled channels placed back to back and tied together.

10. **Air-Duct** — No. 25 MSG min, galv steel. Total area of duct openings not to exceed 57 sq in. per each 100 sq ft of ceiling area. Area of individual duct opening not to exceed 113 sq in. Max dimension of opening 12 in. As an alternate to the galv steel duct, air ducts fabricated from rigid **Air Duct Materials*** may be used in lieu of steel ducts. The total area of duct openings not to exceed 57 sq in. per each 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, 5 pcf density rigid round 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.

CERTAINTED 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.

10A. **Air Terminal Units*** — (Not shown)-As an alternate to the air duct openings in the ceiling (Item 10), nom 4 ft long **Air Terminal Units*** may be used. A max of 8 lin ft of diffuser slot is allowed for each 100 sq ft of ceiling area. The lin ft of diffuser slot is determined by multiplying the number of diffuser slots by the nom length of the unit. The units must be installed in accordance with the accompanying installation instructions.

TEMPMASTER CORP — Types FRD, FRD-CD, -CDR, -CDS, -CDX, -HK.

11. **Damper** — Min 0.053 in. thick (16 gauge) painted steel, 12 in. diam, 6-3/4 in. high with two 11-1/2 in. diam semicircular flaps. The flaps are held open by a **Fusible Link**.

In lieu of the dampers described above, Duct Outlet Protection System A as described in the Design Information Section may be used with steel ducts.

11A. **Damper** — (Not Shown)-Alternate to Item 11.-No. 14 or 16 MSG galv steel. Sized to overlap duct opening 1 in. min. Protected on both surfaces with 1/16 in. thick ceramic fiber paper laminated to the metal and held open with a Fusible Link (Bearing the UL Listing Mark).

12. **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, spaced 2 ft OC. Cross tees nom 2 ft long, installed perpendicular to 4 ft cross tee at midspan, spaced 4 ft OC.

CGC INTERIORS, DIV OF CGC INC — Types DXL, DXLZ, SDXL.

USG INTERIORS INC — Types DXL, DXLZ, SDXL.

12A. **Steel Framing Members*** — Main runners 12 ft long, spaced 48 in. OC. Cross tees, nom 48 in. long, installed perpendicular to main runners, spaced 24 in. OC. Cross tees, nom 2 ft long, installed perpendicular to 4 ft cross tee and spaced 4 ft OC.

ARMSTRONG WORLD INDUSTRIES INC — Types AFG, AFG A. Type GLBP (consisting of main runners, 4 ft cross tees and steel straps) for use with 24 by 48 in. Type FR-83 lay-in panels.

BPB AMERICA INC — Types PAC, PCH, PCS.

CHICAGO METALLIC CORP — Types 250, 260, 1250, 1260, 1850, 1860.

13. **Fixtures, Recessed Light** — (Bearing the UL Listing Mark)- Fluorescent lamp type, steel housing, 2 by 4 ft size. Fixtures spaced so their area does not exceed 16 sq ft per 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

13A. **Fixtures, Recessed Light** — (Bearing the UL Listing Mark) — (Not Shown) — As an alternate to Item 13, 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 four "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.

14. **Fixture Protection — Batts and Blankets*** — 1-1/4 in. thick cut into pieces to form a four sided enclosure, triangular in cross-section, approx 1/2 in. longer and wider than the fixture with sufficient depth to provide at least 1/2 in. clearance between the fixture and the enclosure. The pieces are held together by 18 SWG galv steel wire at corners. Gap at top of enclosure is 1/2 in. Overlap on adjacent lay-in panels is 4 in.

ROXUL INC — Type FR.

14A. **Alternate Fixture Protection Acoustical Materials*** — Cut from same material as Item 15, cut to form a five sided enclosure, trapezoidal in cross-section. 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 fixture housing by scrap pieces of steel framing members (Item 12). Pieces of the acoustical material, sized to equal the length and height of the fixture, are placed at each side of the fixture. Ends of fixture are protected by acoustical material cut to protect the height and width of the fixture at its ends and attached to side pieces with 8d nails. End pieces are omitted when fixtures and top panels are butted end to end.

14B. **Fixture Protection — Acoustical Material*** — For use with "high hat" light fixtures (Item 13A). 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.

15. **Acoustical Material*** — Nom 24 by 48 by 3/4 or 24 by 24 by 3/4 in. lay-in panels. Border panels supported 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 — Type FR-81 or Type FR-83 . See **Acoustical Materials** (BYIT), EMCO Ltd., for specific tile details.

USG INTERIORS INC — Type FR-81 or Type FR-83. See **Acoustical Materials** (BYIT), USG Interiors, Inc., for specific tile details.

16. **Hold-Down Clips** — (Not Illustrated) — No. 24 MSG spring steel, 1-7/16 in. deep, 7/8 in. wide, placed over cross tees, symmetrically, 2 ft OC.

17. **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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