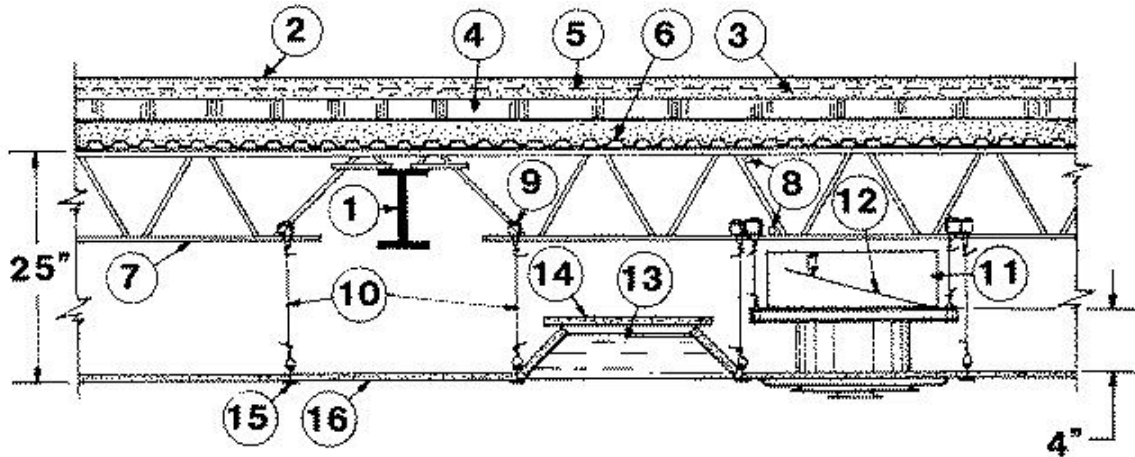


**Restrained Assembly Rating — 1 Hr.**

**Unrestrained Assembly Rating — 1 Hr.**

**Unrestrained Beam Rating — 1 Hr.**



1. **Beam** — W8X15, min size.

2. **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).

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 manufacturer's Classification. See Fire Resistance Directory-Roofing Membranes (CHCI).

3. **Insulating Concrete** — Various types of insulating concrete prepared as specified below. A slurry coat of min 1/8 in. thickness is required between top of steel deck and bottom of foamed plastic. Min thickness above foamed plastic shall be 2 in. No limit for max thickness.

A. **Vermiculite Concrete** — 6 cu ft of Vermiculite Aggregate\* to 94 lb of Portland cement and 0.11 lb of air entraining agent.

**ELASTIZELL CORP OF AMERICA**

**SIPLAST INC**

**VERMICULITE PRODUCTS INC**

B. **Cellular Concrete — Roof Topping Mixture\*** — Concentrate mixed with water and Portland cement per manufacturers specifications. Cast dry density and 28-day compressive strength of min 190 psi as determined in accordance with ASTM C495-66.

**CELLULAR CONCRETE L L C** — Cast dry density of 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.

**LITE-CRETE INC** — Cast dry density of 29 (+ or -) 3.0 pcf.

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

**C. 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.

**CELLULAR CONCRETE L L C** — Mix #3.

**SIPLAST INC** — Mix #3.

**4. Foamed Plastic\*** — Optional — Nom 24 by 48 in. polystyrene insulation boards with or without holes and slots. When nom 24 by 24 in. acoustical panels are used the maximum thickness of insulation is 2 in.; otherwise the insulation thickness may be increased to 3 in. As an alternate, the foamed plastic insulation may be omitted provided that a min vermiculite concrete topping thickness of 2 in. is maintained, as measured from the surface of the vermiculite concrete to the top of the steel form unit corrugations.

See **Foamed Plastic\*** (BRYX) category in Building Materials Directory or **Foamed Plastic\*** (CCVW) category in Fire Resistance Directory for list of manufacturers. Any polystyrene foamed plastic insulation boards meeting the above specifications and bearing the UL Classification Marking with a Flame Spread value of 10 or less and a Smoke Developed value of 130 or less may be used.

**5. Wire Mesh** — (Optional) — No. 19 SWG galv steel twisted to form 2 in. hexagons. In addition, straight 16 SWG galv steel woven into mesh and spaced 3 in. apart for stiffness. Mesh installed without attachment perpendicular to supports and overlapped 6 in. at the sides.

**5A. Fiber Reinforcement\*** — (Optional) - For use only with Roof-Topping Mixtures\* manufactured by Cellular Concrete LLC. In lieu of Wire Mesh (Item 5), Fiber Reinforcement may be added to roof topping mixtures (Items 3B or 3C). See Fiber Reinforcement (CBXQ) Category for rate that fibers are added to roof topping mixture.

**FORTA CORP** — Types Econo-Mono, Mighty-Mono, Stucco-Bond, Econo-Net, Cast-Master, Super-Net, Ultra-Net.

**6. Steel Floor and Form Units\*** — Noncomposite design, 9/16, 15/16 or 1-5/16 in. deep, nom 30 in. wide corrugated units, min 0.016 in. thick (28 gauge) galv steel. Welded to supports with 5/16 in. puddle welds through welding washers; welds located at each side lap with an additional weld midway between side laps (15 in. O.C.). End laps to occur over joists.

**CONSOLIDATED SYSTEMS INC** — Consoliform and Comvent Types EHD, HD, S, SD.

**7. Steel Joists** — Type 8H3 or 10K1, min size; spaced max 6 ft O.C. and welded to end supports.

Note: Design load shall stress the H-Series joists to a max bending stress of 22,000 psi.

**8. Bridging** — Steel bars, 5/8 in. diam, welded to top and bottom chord of each joist.

**9. Cold Rolled Channels** — Min 0.053 in. thick (No. 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. Installed perpendicular to joists, located as required to provide hanger wire attachment points. When steel joists are spaced more than 4 ft. O.C., two cold-rolled channels placed back to back and tied together with double strand of 18 SWG galv steel wire at 24 in. O.C. The double channels installed perpendicular to the joists and spaced a max of 48 in. O.C., 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 boats if a vertical wire cannot be attached directly to the joist.

**10. 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. Spaced 48 in. O.C. max on main runners; hanger wires to occur at all four corners of light fixtures, at all four corners of grid modules containing an air duct opening, at midpoint of cross tees adjacent to light fixtures and duct outlets, and adjacent to main runner splices.

**11. Air Duct** — Min. 0.023 in. thick (No. 24 gauge) galv steel. Total area of duct opening not to exceed 57 sq in. per each 100 sq ft. of ceiling area. Area of ind duct opening not to exceed 113 sq in. Max dimension of opening 12 in. Duct throat protected with ceramic fiber paper laminated to the metal. Duct supported by 1-1/2 in. deep, 16 MSG cold-rolled steel channels spaced not over 48 in. O.C. suspended by 12 SWG galv steel wires.

**12. Damper** — Min. 0.034 in. thick (No. 20 gauge) galv steel, sized to overlap duct opening 2 in. min. Protected on bottom surface with ceramic fiber paper laminated to the metal and held open with a Fusible Link (bearing the UL Listing Mark).

**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 24 sq ft per 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code. Fixtures and ballasts must be considered for these ambient temperature conditions before installation.

**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 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.

**14. Fixture Protection — Acoustical Material\*** — Cut from the same material as Item 16, cut to form a five sided enclosure, trapezoidal in cross-section. The fixture protection consists of an 18 to 23-3/4 by 47-3/4 in. top piece, two 7 to 8 by 47-3/4 in. side pieces and two 6 to 8 by 23-3/4 in. end pieces. The top piece must clear the top of fixture housing a min of 1 in. Scrap pieces of suspension system tees may be placed on top of the fixture as spacers for the top protection board. The top edge of each side piece may be provided with a 1 in. deep by 6 in. long notch near its midpoint for venting of heat. The side and top pieces are laid in place and the end pieces are held in place with three 8d nails inserted into the top piece at each end.

**14A. 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. 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 long installed perpendicular to 4 ft cross tees and spaced 4 ft OC. For nom 24x24 and 24x48 in. panels.

**ARMSTRONG WORLD INDUSTRIES INC** — Types AFG, AFG-A.

**BPB AMERICA INC** — Types PAC, PCH, PCS

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

B. Main runners nom. 10 or 12 ft long, spaced 4 ft OC. Cross tees nom 4 ft long, installed perpendicular to main runners, spaced 2 ft OC. When nom 2 by 2 ft lay-in panels are used, nom 2 ft long 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** — Types DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZXLA.

16. **Acoustical Material\*** — Nom 24 by 24 or 48 in. 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 ½ in. profile.

<b>Panel Dimensions Nom, in.</b>	<b>Types</b>
24 by 24 by 5/8 or 3/4	FR-83
24 by 48 by 5/8 or 3/4	FR-83
24 by 24 by 3/4	FR-X1
24 by 48 by 3/4	FR-X1

**EMCO LTD** — Types FR-83, FR-X1 . See **Acoustical Materials** (BYIT), EMCO Ltd., for specific tile details.

**USG INTERIORS INC** — Types FR-83, FR-X1. See **Acoustical Materials** (BYIT), USG Interiors, Inc., for specific tile details.

17. **Hold-Down Clips** — (Not Shown) — Min 0.020 in. thick (No. 24 gauge) spring steel, placed over cross tees 2 ft OC.

18. **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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