

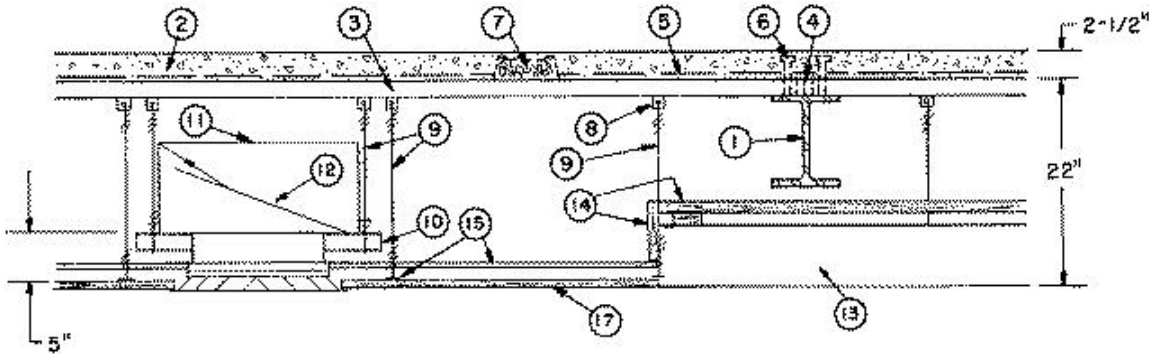
Design No. D502

October 20, 2003

Restrained Assembly Rating — 1-1/2 or 2 Hr.(See Items 15C, 17A)

Unrestrained Assembly Rating — 1-1/2 or 2 Hr.(See Items 15C, 17A)

Unrestrained Beam Rating — 1-1/2 or 2 Hr.(See Items 15C, 17A)



1. **Beam** — W8 x 28, min size. As alternate to steel beams, Joist girders — (Not shown) — 20 in. min depth and 20 lb per lin ft min weight. Type 12K1 min size steel joists or LH series steel joists of any size may be used as secondary support. Spacing of joists not limited. Lateral bracing required. A min clearance of 8 in. shall be maintained between bottom chord of joists and face of ceiling.

2. **Normal-Weight Concrete** — Carbonate or siliceous aggregate, 150 (+ or -) 3 pcf unit weight, 3000 psi compressive strength, vibrated.

3. **Steel Floor and Form Units*** — Composite 1-1/2, 2 or 3 in. deep, min 22 MSG galv fluted units and/or composite 1-1/2, 2 or 3 in. deep, min 20/20 MSG galv cellular units. When a blend of fluted and cellular units is used, the concrete topping thickness shall be measured from the top plane of the deepest units. Welded to supports 12 in. OC. Adjacent units button-punched or welded together 36 in. OC at side joints.

CONSOLIDATED SYSTEMS INC — 24 or 36 in. wide Types CFD-2, CFD-3; 24, 30 or 36 in. wide Type CFD-1.5. Units may be phos/ptd.

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

4. **Joint Cover** — 2 in. wide pressure-sensitive cloth tape. Where fluted and cellular floor units are installed end to end, galv steel angles shall be tack-welded to the cellular floor units in such a manner as to cover the cells.

5. **Welded Wire Fabric** — 6x6-W1.4xW1.4.

6. **Shear Connectors** — (Optional) — Studs, 3/4 in. diam with 1-1/4 in. diam by 1/2 in. thick head or equivalent per AISC specifications. 1/2-in. concrete cover required above top of shear connector.

7. **Electrical Inserts** — Preset and after set electrical inserts Classified as "**Outlet Boxes and Fittings Classified for Fire Resistance.**" * Unless specified otherwise for a particular preset electrical insert type, the spacing of the preset electrical inserts shall be not less than 24 in. O.C. along cellular steel floor units with not more than one preset electrical insert in each 4 sq ft of floor area.

H H ROBERTSON — Inserts.

Installed per accompanying installation instructions over factory-punched holes in QL-AKX or QL-WKX floor units. Inserts are used in the pre-active, active, or abandoned condition. The holes cut in the insert cover for passage of wires shall be no more than 1/8 in. larger diam than the wire. For abandonment of Tapmate inserts, see installation instructions. Abandonment requires use of KEB-PC insert cover with no holes in it (for all Tapmate inserts), or a KEB-PC2 or -PC2-A1 abandonment cover for Tapmate II-EAFN only.

The Tapmate II-FN insert may use KEB-HP-1 outlet box fittings in lieu of the KEB-PC flush cover fittings.

H H ROBERTSON — Tapmate II-FN, II-EAFN; Series KEB.

(2) **Walker Systems Inc.** Inserts.

Installed per accompanying installation instructions over factory-punched holes in 3 in. deep K-Type cellular steel floor units. Either Type RAKM-II, FAKM-II, S36BB, S36BC or S36CC service fittings are installed with Type N-R-G Bloc IV Series preset inserts per accompanying installation instructions. Refer to installation instructions for Classified assemblies.

WALKER SYSTEMS INC — Type N-R-G Bloc IV Series inserts; Type RAKM-II, FAKM-II, S36BB, S36BC or S36CC service fittings.

8. **Hanger Clips** — Min 0.045 in. thick (18 gauge) galv steel, 2 in. wide, 3-1/2 in. long, hooked at one end for attachment over male leg of steel floor units and a hole at other end, spaced as required for hanger wire attachment.

9. **Hanger Wire** — No. 12 SWG galv steel, pigtailed in concrete through steel floor units, prior to concrete placement, or attached to hanger clips (Item No. 8). Hanger wires located 48 in. O.C. on main runners with additional hanger wires to occur at all four corners of light fixtures, at the midspan of cross tees adjacent to light fixtures, and at the cut end of cross tees longer than 23 in. which abut the walls.

10. **Cold Rolled Channels** — Min 0.053 in. thick (16 gauge) painted cold-rolled steel channels, 1-1/2 deep with 9/16 in. flanges used for support of air ducts. Support provision for hanger wires between hanger clip locations shall be provided by two channels tied back to back with 18 SWG galv steel wire 48 in. O.C. and suspended by No. 12 SWG hanger wires spaced not over 48 in. O.C.

11. **Air Duct** — Min 0.029 in. thick (22 gauge) galv steel. Total area of duct openings not to exceed 144 sq in. per 100 sq ft of ceiling area. Area of ind duct opening not to exceed 144 sq in. Max dimension of opening 12 in. Duct support channels located 6 in. from and on each side of duct drop and max 48 in. O.C. away from duct drop.

12. **Damper** — Min 0.070 in. thick (14 gauge) galv steel, sized to overlap duct opening 2 in. min. Protected on both sides with 1/32 in. thick ceramic fiber paper laminated to the steel 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, provided with detachable spring-loaded trim flange or with adjustable mounting brackets. 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.

The activating components, installed per accompanying installation instructions for use with the above inserts are furnished by:

14. **Fixture Protection — Gypsum Board** — * — 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 8 in. from and on both sides of each wallboard end joint and each recessed light fixture.

BPB AMERICA INC — Types PDWH, PDWS

CHICAGO METALLIC CORP — Types 650, 650C, 670, 670C.

15A. Alternate Steel Framing Members* (Not Shown) — 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.

b. **Cross Tees** — Nom 4 ft. long, 1-1/2 in. wide face or 15/16 in. wide face installed at sides of light fixtures, installed perpendicular to the main runners, spaced 24 in. OC. When Batts and Blankets* (Item 20) are used, cross tees spaced 16 in. OC. Additional cross tees or cross channels used at 8 in. from each side of butted wallboard 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 wallboard.

CGC INTERIORS, DIV OF CGC INC — Type DGL or RX.

USG INTERIORS INC — Type DGL or RX.

15B. Steel Framing Members* — (Not shown) — As an alternate to Items 15 and 15A. 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 wallboard end joint, 8 in. from and on each side of wallboard end joint and 8 in. from each side of light fixtures. Secondary cross tees (15/16 in. wide across flange), nom 4 ft long, installed at sides of light fixtures.

ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000.

15C. Steel Framing Members* — (Not shown) — As an alternate to Items 15, 15A and 15B. For use with 1/2 in. thick wallboard only. Main runners nom 12 ft long, spaced 48 in. O.C. Cross channels, 4 ft. long, installed perpendicular to main runners and spaced 24 in. O.C. Additional cross channels required 8 in. from and on each side of wallboard end joints, and 8 in. from each side of light fixtures. Cross tees, 4 ft long installed perpendicular to main runners to support the 4 ft sides of light fixtures. 2 ft cross tees installed perpendicular to 4 ft cross tees to form 2 ft by 2 ft modules when ceiling air diffusers are used. J-shaped metal trim molding, installed at perimeter of light fixtures and lay-in ceiling air diffusers to cover and support the exposed wallboard edges.

CHICAGO METALLIC CORP — Type 630. When Type 630 Steel Framing Members are used, assembly and beam ratings are limited to 1-1/2 hr. when inserts (Item 7) are employed. Assembly and beam ratings are 2 hr. when inserts are omitted.

16. Wall Molding — (Not shown) — Min 0.019 in. thick (26 gauge) painted or galv steel channel, 1-11/16 in. deep with 15/16 in. flanges, nailed to walls along perimeter of ceiling with 8d nails spaced 16 in. O.C.

17. **Gypsum Board** — * — 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 side 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, 3/8 to 1/2 in. from side joints, midway between intersections with cross tees (24 in. OC). End joints of adjacent wallboard sheets shall be staggered not less than 4 ft OC. Wallboard sheets screw-attached to flange of wall channel with wallboard screws spaced 12 in. OC.

CANADIAN GYPSUM COMPANY — Types C, IP-X2, IPC-AR, WRC.

BPB AMERICA INC — Type FRPC, SF3 or ProRoc Type C .

G-P GYPSUM CORP, SUB OF GEORGIA-PACIFIC CORP — Types 5, C.

LAFARGE NORTH AMERICA INC — Types LGFC3, LGFC-C, LGFC-C/A.

NATIONAL GYPSUM CO — Types FSK-C, FSW-C, FSW-G.

PABCO GYPSUM, DIV OF PACIFIC COAST BUILDING PRODUCTS INC — Type C.

STANDARD GYPSUM L L C — Type SGC-G.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, WRC.

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC.

17A. **Gypsum Board*** — (For use with steel framing members described in Item 15C) — 1/2 in. thick, 4 ft wide. Installed with long dimension (side joints) perpendicular to the cross channels and 4 ft cross tees, and with the side joints centered along the main runners. Wallboard fastened to cross channels with 1 in. long Type S wallboard screws (Item 18) located 1/2 in. from butted end joints, with one screw located at the midspan of the cross channel, one screw located 12 in. from and on each side of the channel midspan, and one screw located 2-3/4 in. from each side joint.

AMERICAN GYPSUM CO — Type AGX-6.

CANADIAN GYPSUM COMPANY — Types C, IP-X2, IPC-AR, WRC.

G-P GYPSUM CORP, SUB OF GEORGIA-PACIFIC CORP — Type C, DAP, DA.

LAFARGE NORTH AMERICA INC — Types LGFC3, LGFC-C, LGFC-C/A .

NATIONAL GYPSUM CO — Type FSW-C.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, WRC.

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC.

For use with steel framing members described in Item 15C. Assembly and beam ratings are limited to 1-1/2 hr when inserts (Item 7) are employed. Assembly and beam ratings are 2 hr when inserts are omitted.

17B. **Gypsum Board *** — For use when **Batts and Blankets*** (Item 20) and **Steel Framing Members*** (Item 15A) are used - 5/8 in. thick, 4 ft wide; 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 wallboard screws spaced 8 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long wallboard 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.

CANADIAN GYPSUM COMPANY — Types C, IP-X2, IPC-AR, WRC.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, WRC.

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC.

18. **Screw, Wallboard** — No. 6 Phillips-type, Type S self-drilling and self-tapping, 1 in. long. Screw heads may be either exposed or covered with joint cement.

19. **Alternate Finishing System** — (Not shown) — Wallboard joints may be either exposed or covered with paper tape and joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of the Classified gypsum wallboard.

19A. **Alternate Finishing System — Acoustical Material *** — (Not shown) — Optional, acoustical tile may be laminated to the entire surface of the Classified gypsum wallboard.

Any Manufacturer — Any UL Classified acoustical material and adhesive with a flame spread of 25 or less (See Building Materials Directory).

20. **Batts and Blankets*** — Optional - Not Shown - When used the Ratings are limited to 1 Hr. - For use with **Steel Framing Members*** (specifically Item 15A) and **Gypsum Board*** (specifically Item 17B) - 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 wallboard ceiling membrane.

*Bearing the UL Classification Mark

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