

Restrained Assembly Ratings — 1, 1-1/2, 2 and 3 Hr.

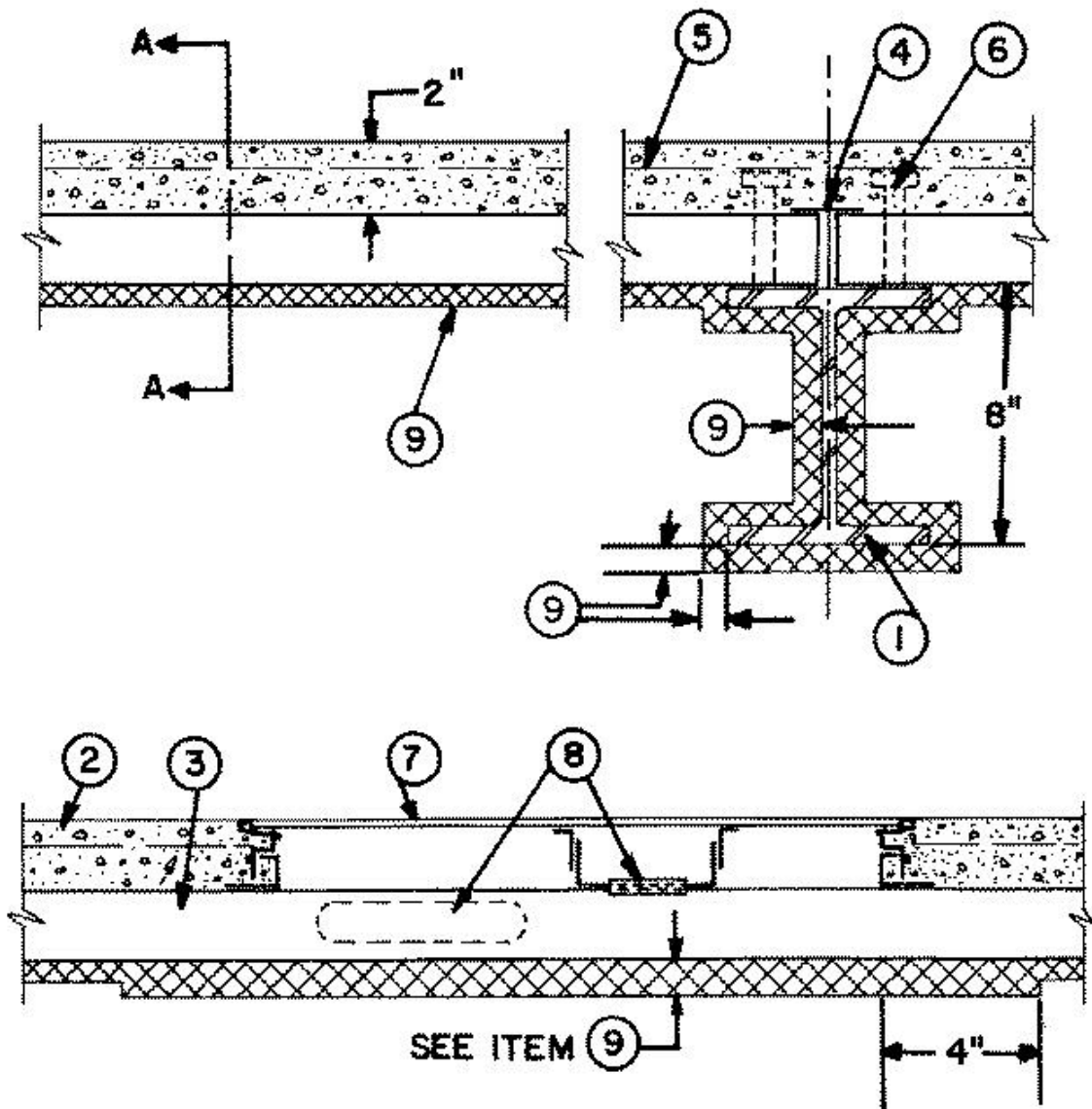
(See Item 9)

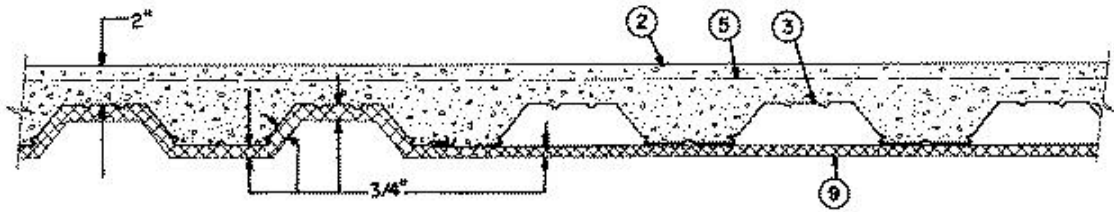
Unrestrained Assembly Ratings — 1, 1-1/2, 2, 3 Hr.

(See Item 9)

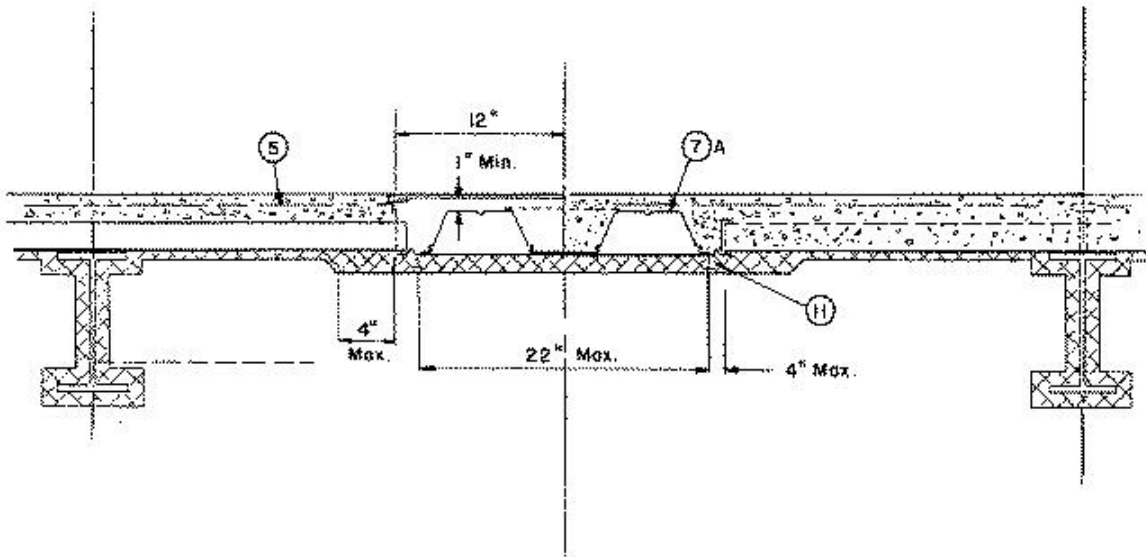
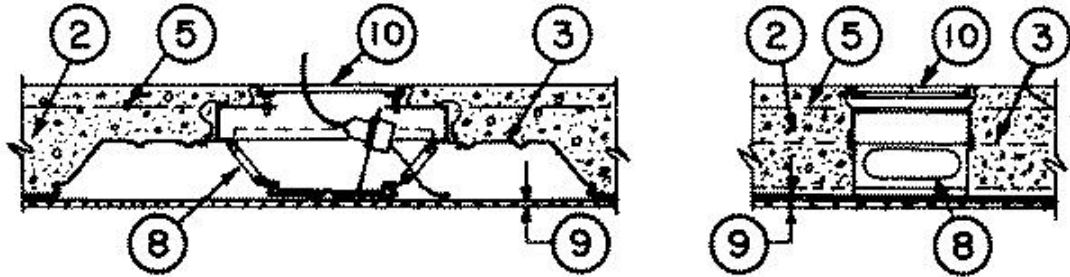
Unrestrained Beam Ratings — 1, 1-1/2, 2, 3 Hr.

(See Item 9)





SECTION A-A



1. **Beam** — W8X20, min size.

2. **Normal Weight or Lightweight Aggregate Concrete** — Normal weight concrete, carbonate or siliceous aggregate, 145 (+ or -) 3 pcf unit weight, 3000 psi compressive strength, 4 to 7 percent entrained air, vibrated. Lightweight concrete, expanded shale or slate aggregate by rotary-kiln method; or expanded clay aggregate by rotary-kiln or sintered-grate method, 113 (+2, -5) pcf unit weight, 3000 psi compressive strength, 4 to 7 percent entrained air, vibrated.

3. **Steel Floor and Form Units*** — Composite 2 or 3 in. deep galv units. Min gauges are 22 MSG for fluted and 20/20 MSG for cellular. For spans with trench headers the allowable loading shall be based on noncomposite design. The following combination of units may be used: (1) All fluted; (2) All 24, 30 or 36 in. wide cellular; (3) Any blend of fluted and 24, 30 or 36 in. wide cellular. Spacing of welds attaching units to supports shall not exceed 12 in. OC. Unless noted otherwise, adjacent units welded together 60 in. max along side joints.

CONSOLIDATED SYSTEMS INC — 24 or 36 in. wide Types CFD-2, CFD-3 may be phos/painted for the 1, 1-1/2 and 2 hr ratings.

4. **Joint Cover** — 2 in. wide pressure-sensitive cloth tape applied following the contour of the steel floor units.

5. **Welded Wire Fabric** — 6 x 6 — W1.4 x W1.4.

6. **Shear Connector Studs — Optional** — Studs, 3/4 in. diam, headed type or equivalent per AISC Specifications. Welded to the top flange of beam through the steel floor units. Min 1/2 in. concrete cover over studs.

7. **Trench Header** — (Bearing the UL Listing Mark). Constructed of steel and provided with metal edge screeds. When the trench header is located near a support the load carrying capacity of the span may be based on the allowable moment or shear stress of the floor units at the edge of the trench header away from the support, or on the allowable composite moment or shear capacity of the slab at the center of the span, whichever governs.

As an alternate, trench headers (Bearing the UL Listing Mark) without the bottom pan may be used. The allowable superimposed load for spans with a bottomless trench header shall be based on noncomposite design. The bottomless trench header, with a max width of 36 in., consists of two cell closers which conform to the contour of the floor units, placed along the sides of the desired trench header location and welded to the floor units. The side rails, consisting of extruded aluminum screeds secured to galv steel channels (min 18 MSG), are positioned over the cell closers, aligned, and welded or riveted to the cell closers and floor units. A separate U-shaped galv steel channel (min 18 MSG), serving as the power compartment, is welded or riveted to the floor units. Steel cover plates, 1/4 in. thick, shall be adequately secured to the side rails. In bottomless trench headers wider than 18 in., each side joint of the steel floor units shall be welded with a 1 in. long weld near the trench header centerline. For QL-GKX-24 or -30 cellular floor units only, a separate KED-PTS (UL Listed) power transition sleeve is secured to power compartment with one rivet or screw. The use of the bottomless trench header requires additional protection underneath the trench header. (See Item 9).

7A. **Feeder Duct System** — (As an alternate to Item 7). Consists of 3 in. deep, nom 24 in. wide, 20/18 MSG Type QL-WKM or WL-WKM-E cellular steel floor unit (Feeder duct) and nom 24 by 24 in. junction boxes. The valley between the two cells of the feeder duct may or may not be covered by a steel plate to form a third cell. Feeder duct installed at the same elevation and perpendicular to 2 or 3 in. deep fluted and/or cellular steel floor units which are cantilevered from support beams on one or both sides of the feeder duct.

The junction boxes consisting of extruded aluminum screeds, 18 galv steel compartment divider and 0.21 in. thick steel cover plate are used at intersections of 2 or 3 in. cellular units and the feeder duct, where desired, bottom tabs of the flute closures are fastened to the valleys of the 2 or 3 in. units and to the feeder duct with self-drilling tek fasteners, while the cover plate is retained in position by four latch clips, one near each corner of the plate. The height and the level of the aluminum screed are adjusted by four adjustment screws, two each on opposite sides. In between the junction boxes the ends of the 2 or 3 in. fluted and/or cellular units are covered with steel end closure angles tack-welded to the top of the units.

8. **Access Openings** — As required, with grommets.

9. **Spray-Applied Fire Resistive Materials*** — Applied by spraying with water, in several coats, to final untamped thicknesses shown on design sketch and in tables below, to steel surfaces which are free of dirt, oil or scale. Use of adhesive is required under bottomless trenches and on cellular units, optional on other conditions. Min avg untamped density is 13 pcf on beam and steel form units with min ind untamped density of 11 pcf for Types II or DC/F. Min avg and min ind densities of 22 and 19 pcf, respectively, for Type HP. For method of density determination refer to Design Information Section.

or

Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in one or more coats to the thicknesses shown below, to steel surfaces which are clean and free of dirt, loose scale and oil. When metal lath is not required, Type PC Pre-coat is required on all cellular units when Types 300, 300ES, 300N or SB are used. The Type PC Pre-coat shall be applied to cover approximately 70 percent of the flat plate surface. Thickness of the Type PC Pre-coat is included in the total thickness of the protection material. Min average and min individual density of 17.5 and 16 pcf, respectively for Types 300, 300ES, 300N and SB. Min average and min individual density of 22 and 19 pcf, respectively for Type 400. For method of density determination, see Design Information Section, Sprayed Material. When Type 400 is used on cellular units, metal lath (Item 12) must be used.

Restrained Assembly Rating Hr	Concrete (Type) NW or LW	Min Required Unrestrained Beam Rating Hr	Min Mtl Thkns on Beam In.
1		1	1/2
1-1/2	NW or LW	1	1/2
2	NW or LW	1	1/2
3	NW or LW	1-1/2	7/8
—	NW or LW	2	1-1/16
—	LW	3	1-1/2
—	NW	3	1-3/8

Form Unit Type	Concrete Type	Min Mtl Thkns In.		Flat Plate	Restrained & Unrestrained Assembly Rating Hr
		Crests	Valley		
(GENERAL FLOOR AREA)					
CFD-2 & CFD-3	NW or LW	9/16	9/16	9/16	1
CFD-2 & CFD-3	NW or LW	5/8	5/8	5/8	1-1/2
CFD-2 & CFD-3	NW or LW	3/4	3/4	3/4	2
CFD-3	NW or LW	7/8++	3/4++	3/4++	2
CFD-2	NW or LW	1- 1/8++	7/8++	7/8++	2
CFD-2 & CFD-3	NW or LW	1-3/16	1	1+	1
CFD-2 & CFD-3	NW or LW	1- 3/4++	1- 3/8++	1-5/8++	2
(Under Robertson, H. H. — Tapmate II or II-EA Electrical Inserts)					
QL-AKX, -WKX;	NW	—	—	3/8	1
Metric Units-					
QLC-78-600,					
-78-900					
QL-AKX, -WKX;	NW	—	—	15/16	1-1/2

Metric Units-					
QLC-78-600,					
-78-900					
QL-AKX, -WKX;	NW	—	—	13/16	2
Metric Units-					
QLC-78-600,					
-78-900					
QL-AKX, -WKX;	NW	—	—	1- 13/16++	3#
Metric Units-					
QLC-78-600,					
-78-900					
(Under Robertson, H. H. — Tapmate II-FN or II-EAFN Electrical Inserts)					
QL-WKX; Metric	NW	—	—	5/8	1
Units-QLC-78-600,					
-78-900					
QL-AKX	NW	—	—	9/16	1
QL-AKX, -WKX;	NW	—	—	5/8	1-1/2
Metric Units-					
QLC-78-600,					
-78-900					
QL-AKX, -WKX;	NW	—	—	3/4	2
Metric Units-					
QLC-78-600,					
-78-900					
QL-AKX, -WKX;	NW	—	—	1-1/8	3#
Metric Units-					
QLC-78-600,					
-78-900					
(Under Robertson, H. H. — Tapmate III FN or III EAFN Electrical Inserts)					
QL-WKD; Metric	NW	—	—	7/16	1
Units-QLC-78-600,					
-78-900, -78-A-					
600, -78-B-600,					
-78-C-900, -78-					

E-900, -78-F-900					
QL-AKD	NW	—	—	9/16	1
QL-AKD, -WKD;	NW	—	—	5/8	1-1/2
Metric Units-QLC-					
78-600, -78-900,					
78-A-600, -78-B-					
600, -78-C-900,					
-78-E-900, -78-					
F-900					
QL-AKD, -WKD;	NW	—	—	3/4	2
Metric Units-QLC-					
78-600, -78-900,					
78-A-600, -78-B-					
600, -78-C-900,					
-78-E-900, -78-					
F-900					
QL-AKD, -WKD;	NW	—	—	1-1/8	3
Metric Units-QLC-					
78-600, -78-900,					
78-A-600, -78-B-					
600, -78-C-900,					
-78-E-900,					
-78-F-900					

CIL GROUP LTD — Types D-C/F, Type II or 300. Type EBS or Type X adhesive for use with Types D-C/F or II.

ISOLATEK INTERNATIONAL — Types D-C/F, HP, II, 300, 300ES, 300N, SB, 400 and PC. Type EBS or Type X adhesive for use with Types D-C/F, HP or II.

#Unrestrained Assembly Rating is 2 Hr.

+ = Steel studs and discs (Item 11A) required for Types 300, 300ES, 300N, or SB. When Type 400 is used on cellular deck, metal lath (Item 12) is required.

++ = Metal lath (Item 11A) required for Types 300, 300ES, 300N, SB, or 400.

10. **Electrical Inserts** — Classified as "**Outlet Boxes and Fittings Classified for Fire Resistance.**" *

Robertson, H. H. Inserts.

(Tapmate II, -II-EA, -II-FN, -II,EAFN; Series KEB)

Installed per accompanying installation instructions over factory-punched holes in 24 or 36 in. wide QL Types AKX, WKX, and Metric Units QLC Types steel floor units. Spacing shall be not more than one insert in each 7-1/2 sq ft of floor area with not less than 25-1/2 in. between edges of adjacent inserts. Required material thickness (see Item 9) on floor units with inserts shall be sprayed the entire length and width of units between supports and extended beyond the edge of inserts onto adjacent floor units for a horizontal width of 12 in. The holes cut in insert cover for passage of wires shall be no more than 1/8 in. layer diam than the wire. For abandonment of Tapmate inserts, see installation instructions. Abandonment requires use of KEB-PC or -PCL insert cover with no holes in it (for all Tapmate inserts), or an abandonment plate for Tapmate II only, or a KEB-PC2 or -PC2-A1 abandonment cover for Tapmate II-EA and 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.

Tapmate III, FN, III, EAFN; Series KEC.

Installed per accompanying installation instructions over factory-punched holes in 24 or 36 in. wide QL Types AKD, WKD and Metric Units-QLC Types steel floor units. Spacing shall be not more than one insert in each 7-1/2 sq ft of floor area with not less than 25-1/2 in. between edges of adjacent inserts. Required Material thickness (see Item 9) on floor units with inserts shall be sprayed the entire length and width of units between supports and extended beyond the edge of inserts onto adjacent floor units for a horizontal width of 12 in. The holes cut in 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.

The Tapmate III insert may use KEB-HP-1; Series KEC outlet box fittings with the same hourly rating, insert spacing and fireproofing thicknesses as specified for the Tapmate III-EAFN electrical inserts.

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

11. Steel Studs With Discs — The stud consists of No. 12 SWG galv steel wire, 5/8, 7/8 or 1-1/4 in. long for 1, 1-1/2 and 2 hr. protection thicknesses, respectively, with one end welded to 1-3/16 in. diam, No. 28 MSG galv steel disc. The ends of the studs opposite the discs shall be welded to the feeder duct in rows running parallel with the feeder duct. The distance between the outer rows of the studs and the edge of the feeder duct shall not exceed 4 in. The spacing between the rows shall not exceed 22 in. The spacing between studs in each row shall not exceed 24 in.

11A. Steel Studs With Discs — (Not Shown) — For use on cellular steel floor and form units under the trench headers with Types 300, 300ES, 300N, or SB. The stud consists of No. 12 SWG galvanized steel wire, 1-1/4 in. long with one end welded to 1-1/2 in. diam, No. 28 MSG galvanized steel disc. The total number of studs shall average at least one stud per 250 sq in. The ends of the studs opposite the discs shall be welded to the cellular units in rows parallel with the trench header. The distance between the outer rows of the studs and the edge of the trench header shall not exceed 8-1/2 in. The spacing between the rows shall not exceed 9-1/2 in. The spacing between studs in each row shall not exceed 12 in.

12. Metal Lath — (Not shown) — For use with Types 300, 300ES, 300N or SB on fluted and cellular steel floor and form units under the trench-headers where thicknesses in the tables are noted by "++". Also requires on cellular units when inserts are used and thicknesses in the tables are noted by "++". Also required on all cellular units when Type 400 is used — 3/8 in. diamond, expanded steel weighing 3.4 lb per sq yd, secured to the underside of the trench-header. The width of the lath shall extend a min of 1-1/2 in. on either side of the trench-header. The lath is to be placed with the ribs upward and secured with S-12 by 3/8 in. long panhead, self-drilling, self-tapping steel screws spaced max 12 in. O.C. Steel screws to be fitted with 1/2 in. diam steel washers.

*Bearing the UL Classification Mark

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