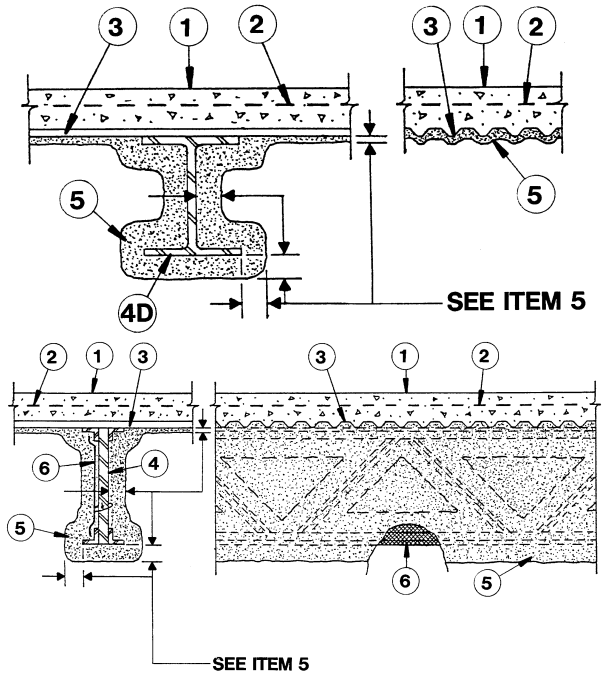
Design No. G705

Restrained Assembly Ratings — 1, 1-1/2, 2 or 3 Hr.
Unrestrained Assembly Ratings — 1, 1-1/2, 2 or 3 Hr. (See Item 2 and 5)
Unrestrained Beam Ratings — 1, 1-1/2, 2 or 3 Hr. (See Items 2 and 5)
Load Restricted for Canadian Applications — See Guide BXUV7



1. **Normal Weight or Lightweight Concrete —** Normal weight concrete: carbonate or siliceous aggregate concrete, 147 to 150 pcf unit weight, 3500 psi compressive strength, vibrated. Lightweight concrete: expanded shale, clay, or slate aggregate by rotary-kiln method, 110 to 118 pcf unit weight, 3000 psi compressive strength, vibrated, 2 oz air entrainment per bag of cement. For 1, 1-1/2 and 2 h assembly ratings, the 2-3/4 in. concrete topping thickness may be reduced to 2-1/2 in. when noncomposite joists are used. The Unrestrained Assembly Rating depends on the type of concrete aggregate and joist spacing as shown below.

Unrestrained Assembly Rating

	Max Joist Spacing 3 ft, 6 in.	Joist Spacing Greater Than 3 ft, 6 in. O.C.
Lightweight Aggregate	1-1/2 h	1-1/2 h
Normal Weight Aggregate	2 h	1-1/2 h

2. **Welded Wire Fabric —** 6x6-8/8 SWG.
3. **Steel Floor and Form Units —** No. 28 MSG galv corrugated sheet steel min, 2-1/2 in. pitch and 1/2 in. depth of corrugations. Units welded to each joist, 36 welds per 100 sq ft of form units, with at least one weld at each joint or **Classified Steel Floor and Form Units*** — min 9/16 in. deep, 28 MSG galv or ptd/ptd corrugated deck. Units welded to each beam or joist with 36 welds per 100 sq ft of unis, with min one weld at each side joint of units.

VULCRAFT, DIV OF NUCOR CORP —Types 0.6 C, 1.0 C or 1.3 C

3A. **Steel Floor and Form Units —** (Not shown) As an alternate to Item 4, Composite 1-1/2 in. deep, 30, 35 or 36 in. wide, galv steel units. Min gauge is 22 MSG. Welded to supports 12 in. OC. Adjacent units button-punched, welded or screwed together 36 in. OC max along side joints. The concrete thickness shall be measured to the top plane of the steel deck.

VULCRAFT, DIV OF NUCOR CORP —Types 1.5VL, 1.5VLI.

4. **Steel Joists —** Min 16K6 or min depth and weight shall be 16 in. and 8.1 lb/ft, respectively. May be either uncoated or provided with a shop coat of paint. Min 3/4 in. diam or large cross sectional area for web members with horizontal bridging, Item 7. As an alternate, any LH Series steel joists spanning no greater than 60 ft may be used. For spans greater than 60 ft, LH Series joists may be used provided that the deflection under their published total load shall not be greater than 1/277 of the joist span.

4A. **Steel Joist —** As an alternate to Item 4 — Composite or noncomposite min 12k5 or min depth and weight shall be 12 in. and 7.1 lb/ft respectively. May be uncoated or provided with a shop coat of paint. Designed per S.J.I. specifications for a max design stress of 30, 000 psi (30 ksi). Welded or bolted to end supports. Top chords shall consist of two angles measuring 1-1/2 by 1-1/2 by 0.156 in. thick. Bottom chord shall consist of two round bars measuring 0.675 in. in diam. or two angles measuring 1 by 1 0.125 in. thick. The second web member at each end shall consist of a 0.654 in. diam round bar. Primary web members, including the end web members, shall consist of 0.774 in. diam round bars. All remaining non-primary web members shall consist of 0.5 in. diam round bars. Horizontal bridging (Item 7) per S.J.I. specifications is required when noncomposite joists are used.

4B. **Composite Joists —** (Not Shown) — As an alternate to Item 4 and 4A, steel joists designed for full composite action with the concrete slab. Min overall depth 13 in. Min area of joist members shall be 0.708 sq in. for top and bottom chord angles and 0.442 sq in for web. Designated in accordance with SJI Specifications for K-Series joists as revised in November 15, 1989.

4C. **Structural Steel Members* —** (Not Shown) As an alternate to 4, 4A and 4B-(not shown) — Composite joists with top chord embedded in concrete slab. Welded to end supports. Min area of joist members shall be 0.708 sq in. for top and bottom chord angles and 0.442 sq in. for web.

VESCOM STRUCTURAL SYSTEMS INC —Type V

4D. **Steel Joists —** As an alternate to Items 4, 4A, 4B or 4C — Composite or noncomposite min 8k1 or min depth and weight shall be 8 in. and 4.9 lb/ft respectively. May be uncoated or provided with a shop coat of paint. Designed per S.J.I. specifications for a max design stress of 30, 000 psi (30 ksi). Welded or bolted to end supports. The top chords shall consist of two angles measuring 1-1/4 by 1-1/4 by 0.127 in. thick. Bottom chords shall consist of two round bars measuring 0.566 in. in diam. or two angles measuring 1 by 1 by 0.125 in. thick. Bearing plates shall consist of two angles measuring 1-1/2 by 2 by 0.188 in. thick and 5-1/16 in. long. Web members shall consist of 0.565 in. diam bars.

4E. **Steel Beam —** As an alternate to steel joists (Items 4-4D), W8x28 min size.

5. **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. Use of Type PC Pre-coat is required on steel floor and form units. Type PC Pre-coat shall be applied to cover approx 70 percent of the surface. Thickness of Type PC Pre-coat is included in the total thickness of the protection material. Min average and min individual density of 15 and 14 pcf, respectively. For method of density determination, see Design Information Section, Sprayed Material.

Restrained Assembly Rating, Hr	Unrestrained Assembly & Beam Rating, Hr	Min Thkns, In. Deck	Min Thkns, In. Joist (Item 4, 4B, 4C)	Min Thkns, In. Joist (Item 4A)	Min Thkns, In. Joist (Item 4D) Normal Weight Concrete	Min Thkns, In. Joist (Item D) Lightweight Concrete	Min Thkns, In. Beam (Item E)
1	1	1/2	1-1/2	9/16+	1+	1-1/8+	5/16
1-1/2	1	1/2	1-1/2	1	1-9/16	1-3/4	5/16
2	1	1/2	1-1/2	1-3/8	2-1/16	2-1/4	5/16
2	1-1/2	1/2	1-1/2	1-3/8	2-1/16	2-1/4	1/2
2	2	1/2	1-1/2	1-3/8	2-1/16	2-1/4	11/16
3	2	1/2	1-1/2	2-1/4	—	—	11/16
3	3	1	2-1/4	2-1/4	—	—	1-1/16

BERLIN CO LTD —Types 300, 300ES, 300N or SB.
ISOLATEK INTERNATIONAL —Types 300, 300AC, 300ES, 300HS, 300N, or SB and Type PC.
LUCKY CORE INSULATING MATERIALS MANUFACTURING L L C —Types 300, 300ES, 300N, or SB.
NEWKEM PRODUCTS CORP —Types 300, 300ES, 300N, or SB.

+ - When bottom chords consist of 1 by 1 by 0.125 in. thick steel angles. the thickness of spray-applied fire resistive material shall be increased by 1/4 in. on the bottom chord only.

5A. **Spray-Applied Fire Resistive Materials* — (As an alternate to Item 5) —** 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. Use of Type PC Pre-coat is required on steel floor and form units. Type PC Pre-coat shall be applied to cover approx 70 percent of the surface. Thickness of 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 Type 300TW. 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.

ISOLATEK INTERNATIONAL — Types 300TW or Type 400.
LUCKY CORE INSULATING MATERIALS MANUFACTURING L L C —Type 400.
NEWKEM PRODUCTS CORP —Type 400.

6. **Metal Lath —** (Optional) — Metal lath may be used to facilitate the spray application of spray-applied resistive material on steel bar joists and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb/sq yd is secured to one side of each steel joist with No. 18 SWG galv steel wire at joist web and bottom chord members, spaced 15 in. O.C. max. When used, the metal lath is to be fully covered with spray-applied resistive material with no min thickness requirements.

6A. **Nonmetallic fabric mesh —** (Optional, Not Shown) — As an alternate to metal lath, glass fiber mesh, weighing approx 2.5 oz/sq yd, polypropylene fabric mesh, weighing approx 1.25 oz/sq yd or equivalent, may be used to facilitate the spray application. The mesh is secured to one side of each joist web member. The method of attaching the mesh must be sufficient to hold the mesh and the spray-applied resistive material in place during application until it has cured. An acceptable method to attach the mesh is by embedding the mesh in min 1/4 in. long beads of hot melted glue. The beads of glue shall be spaced a max of 12 in. O.C. along the top chord of the bar joist. Another method to secure the mesh is by 1-1/4 in. long by 1/2 in. wide hairpin clips formed from No. 18 SWG or heavier steel wire

7. **Horizontal Bridging —** (Not Shown) — Min 1-1/4x1-1/4x1/8 in. thick steel angles for use with noncomposite joists (Item 4 and 4A). Number and spacing per Steel Joist Institute specifications. Welded to top and bottom chord of the joists. Min thickness of spray-applied resistive material on bridging angles is min thickness on steel joist.

*Bearing the UL Classification Mark