

Fire-resistance Ratings - ANSI/UL 263

Design No. S749

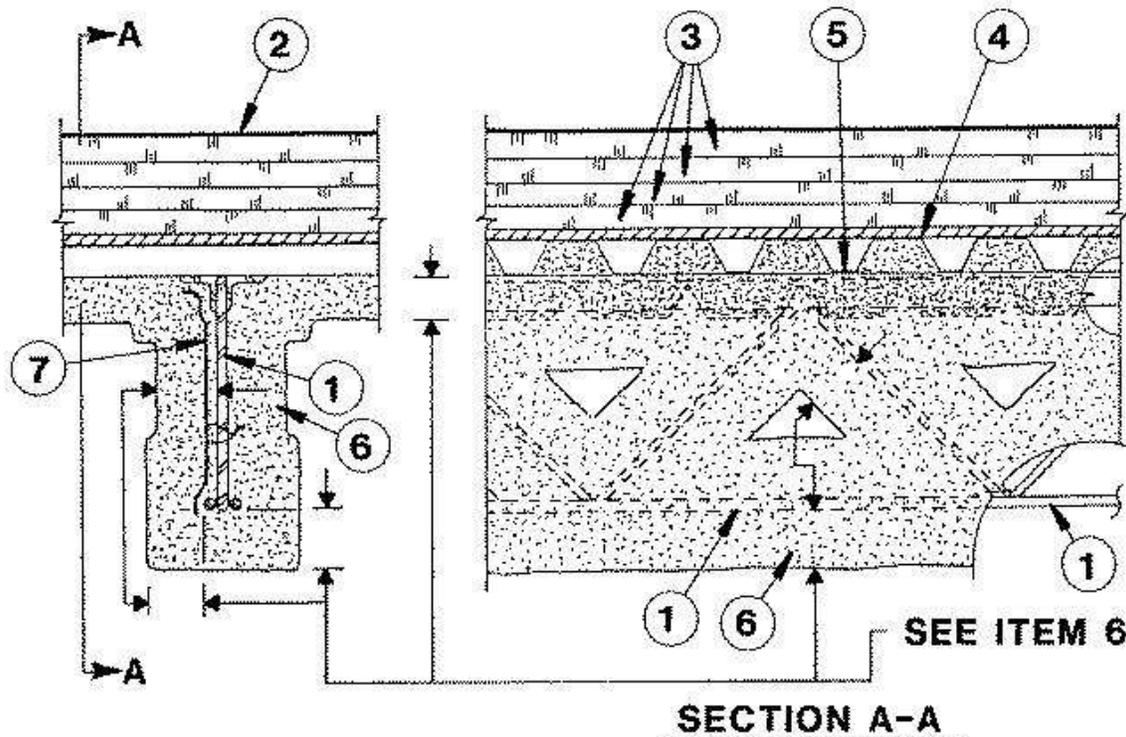
March 30, 2015

Restrained Beam Rating — 1, 1-1/2, 2 and 3 h (See Item 6)

Unrestrained Beam Rating — 1, 1-1/2, 2 and 3 h (See Item 6)

Loading Determined by Allowable Stress Design Method or Load and Resistance Factor Design Method published by the American Institute of Steel Construction, or in accordance with the relevant Limit State Design provisions of Part 4 of the National Building Code of Canada

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Steel Joist** — Min 10K1 welded or bolted to end supports. Designed per S.J.I specifications for a yield strength of 50,000 psi. Top chords shall consist of two angles measuring 1-1/2 by 1-1/2 by 0.169 in. thick, min. Bottom chords shall consist of two angles measuring 1 by 1 by 0.109 in. thick, min. The first diagonal web member at each end shall consist of a min 0.625 in. dia. round bar. All remaining web members shall consist of 0.50 in. dia. round bars, min. Bridging per S.J.I specifications.
2. **Roof Covering*** — Consisting of hot mopped cold application or single-ply materials compatible with the insulation(s) described herein which provide Class A, B, or C coverings. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).
3. **Roof Insulation*** — Polyisocyanurate foam insulation boards installed in one or more layer over the gypsum wallboard min thickness 1 in. with no max thickness. See Foamed Plastic* (CCVW) Category.
4. **Gypsum Board (Optional)** — Min 5/8 in. thick gypsum board supplied in 4 ft wide sheets. Installed perpendicular to the steel roof deck with joints staggered and occurring over the crests of the roof deck. Any UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. See **Gypsum Board** (CKNX) category for names of Classified companies.
5. **Steel Roof Deck (Unclassified)** — Fluted, 24 MSG, galv, 1-1/2 in. deep with crests approximately 3-1/2 in. wide space 6 in. OC. Ends butted at the supports and welded max 12 in. OC. Adjacent units welded, button punched, or screwed together 36 in. OC max.

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6. **Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying to the joist and deck surfaces in one or more coats to final min thickness shown below. Crest areas above the joist shall be filled with the Spray-Applied Fire Resistive Materials. Surfaces must be clean and free of dirt, oil and loose scale. Steel deck surfaces must be "spatter" coated with Type SK-III Spray-Applied Fire Resistive Materials prior to application of Spray-Applied Fire Resistive Materials. Type SK-III Spray-Applied Fire Resistive Materials applied in accordance with the manufacturer's application instructions. Thickness of the spattercoat is included in the total final thickness of the protection material. Min average and min ind density of 15/14 pcf respectively. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/HY, Z-106/G. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. For method of density determination, see Design Information Section.

Restrained and Unrestrained Thickness (in.)			
Beam Rating (Hr)	on Steel Deck	10K1 more than 4ft OC	10K1 4ft or less OC
1	7/8	1 1/8	1
1 1/2	1 3/8	1 5/8	1 7/16
2	1 5/8	2 3/16	1 7/8
3	1 5/8	3 1/4	2 13/16

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-10 HB, MK-10 HB Extended Set, MK-6s, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-146 investigated for exterior use.

GRACE KOREA INC — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-10 HB, MK-10 HB Extended Set, MK-6s, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-146 investigated for exterior use

W R GRACE & CO - CONN — Types MK-6/HY, MK-6/HB, MK-10 HB, MK-10 HB Extended Set, MK-6s, MK-1000/HB, MK-1000/HB Extended Set, RG, Z-106, Z-106/G, Z-146, investigated for exterior use

7. **Metal Lath** — (Not Shown) — (Required on both sides of joists with Z-146 series or Z-156 series, otherwise optional) — Metal lath is used facilitate the spray application of Spray-Applied Fire Resistive Materials on steel bar joists and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb per square yard, is secured to one side of joist web and bottom chord members, spaced 15 in. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive Materials with no min thickness requirements.

7A. **Non-Metallic Fabric Mesh (Optional)** — As an alternate metal lath, glass fiber fabric mesh, weighing approximately 2.5 oz per sq yd, polypropylene fabric mesh, weighing approximately 1.25 oz per sq yd or equivalent, is 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 Spray-Applied Fire Resistive Materials material in place during application until it has cured. As acceptable method to attach the mesh is by embedding the mesh in min 1/4 in. long bead of hot melted glue. The beads of glue shall be spaced a max of 12 in. OC 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.

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