

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. N736

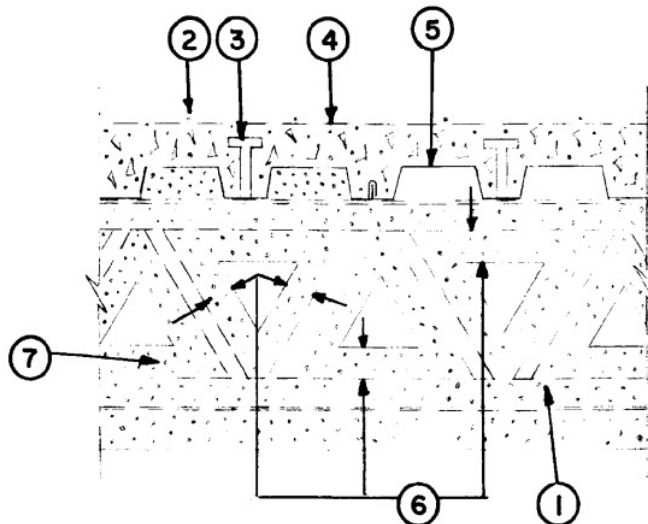
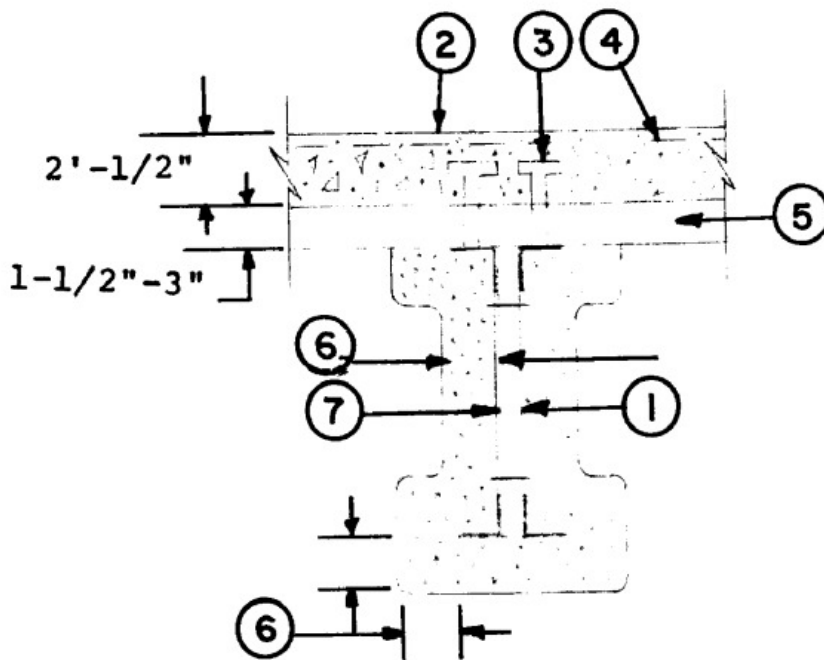
October 17, 2017

Restrained Beam Rating — 1, 1-1/2, 2, 3 or 4 Hr (See Items 1, 6 and 7).

Unrestrained Beam Rating — 1, 1-1/2, 2, 3 or 4 Hr (See Items 1, 6 and 7).

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



Specifications for a max tensile stress of 30 ksi. May be either uncoated or provided with a shop coat of paint. The top and bottom chords shall consist of two angles. Sizes of joist members shall be as follows:

COMPOSITE JOISTS

Restrained or Unrestrained Beam Rating Hr	Min Steel Area of Top Chord Sq In.	Min Steel Area of Bottom Chord Sq In.	Min Steel Area of Web Sq In.
2 h or less	0.96	0.77	End diagonal web 0.444. First six interior webs 0.406. All other interior webs 0.196.
3 h, 4h*	1.74	1.74	First five webs 0.886. All other interior webs 0.441.

NON-COMPOSITE JOISTS

Restrained or Unrestrained Beam Rating Hr	Min Steel Area of Top Chord Sq In.	Min Steel Area of Bottom Chord Sq In.	Min Steel Area of Web Sq In.
2 h or less	1.556	1.25	End diagonal web 0.444. First six interior webs 0.406. All other interior webs 0.196.
3 h, 4h*	1.74	1.74	First five webs 0.886. All other interior webs 0.441

* For the 4 h composite or noncomposite joists, compression web numbers with a slenderness ratio greater than 60, shall be limited to a maximum of 80 percent of their allowable design load. For noncomposite joists, bridging per SJI specifications is required.

As alternate to double angles, (not shown) structural tee sections may be used for top and bottom chords as follows:

Restrained or Unrestrained Beam Rating Hr	Min Size Section	
	Top Chord	Bottom Chord
1, 1-1/2 or 2	ST1.5X3.75	ST1.5X2.85
3 or 4	ST3X6.25	ST3X6.25

2. **Normal Weight or Lightweight Concrete** — Min compressive strength of 3000 psi. For normal weight concrete, either carbonate or siliceous aggregate may be used. Unit weight, 145 +/- 3 pcf. For lightweight concrete, unit weight may range from 104 to 120 pcf.

3. **Shear Connector** — (Optional) — Studs, min 3/8 in. diam headed type or equivalent per A.I.S.C. specifications. Welded to the top chord of joist through the steel floor units. Stud welding, as recommended by the stud manufacturer, should be followed.

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

5. **Steel Floor and Form Units** — 1-1/2 to 3 in. deep fluted or cellular units, welded to joist.

6. **Spray-Applied Fire Resistive Materials*** — Applied by mixing and spraying in more than one coat to joist surfaces which must be clean and free of dirt, loose scale and oil. When fluted steel floor units are used, crest areas shall be filled with Spray-Applied Fire Resistive Materials above the joist. Thickness of protection on bridging bars or bridging angles same as on joist chords or webs. Min avg and min ind density of 15/14 pcf respectively. Min avg and min ind density of 19/18 pcf respectively for Types 7GP and 7HD. For method of density determination, refer to Design Information Section.

Restrained & Unrestrained Beam Rating Hr	Min Thkns In.
1	1-1/8
1-1/2	1-3/4
2	2-1/4
3 or 4	2-7/8

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

GCP Korea Inc — Types MK-6/CBF, MK-6/ED, Monokote Acoustic 1. Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-106/HY, Z-146 investigated for exterior use.

Pyrok Inc — Type LD.

Southwest Fireproofing Products Co — Types 4, 5, 5EF, 5GP, 5MD, 7GP, 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD.

GCP Applied Technologies Inc — Types Monokote Acoustic 1. Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, RG,Z-106, Z-106/G, Z-106/HY, Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC investigated for exterior use.

6A. Alternate Spray-Applied Fire Resistive Materials* — Applied by mixing water and spraying in one or more coats to final thicknesses as shown in the table below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. When fluted deck is used, crest areas above the joist shall be filled. Min avg and min ind density of 22/19 pcf, respectively. For method density determination, refer to Design Information Section.

Restrained & Unrestrained Beam Rating Hr	Min Thkns In.
1	1-1/8
1-1/2	1-3/4
2	2-1/4
3 or 4	2-7/8

ARABIAN Vermiculite Industries — Types Sonotex 5, Z-106, Z-106/G, Z-106/HY.

GCP Korea Inc — Types Monokote Acoustic 5, Z-106, Z-106/G, Z-106/HY.

GCP Applied Technologies Inc — Types Monokote Acoustic 5, Z-106, Z-106/G, Z-106/HY.

6B. Alternate Spray-Applied Fire Resistive Materials* — Applied by mixing water and spraying in one or more coats to final thicknesses as shown in the table below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. When fluted deck is used, crest areas above the joist shall be filled. Application to steel roof deck requires the installation of expanded metal lath. See Item 7. Min avg and min ind density of 40/36 pcf, respectively. 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, refer to Design Information Section.

**Restrained & Unrestrained
Beam Rating Hr**

Min Thkns In.

1	1-1/8
1-1/2	1-3/4
2	2-1/4
3 or 4	2-7/8

ARABIAN VERMICULITE INDUSTRIES — Type Z-146, investigated for exterior use.

GCP KOREA INC — Type Z-146, investigated for exterior use, Monokote Acoustic 35.

GCP APPLIED TECHNOLOGIES INC — Types Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC, investigated for exterior use, Monokote Acoustic 35.

7. Metal Lath — (Required on both sides of joists with Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC, otherwise optional) — Metal lath may be used to 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/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. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive Materials with no min thickness requirements for material applied onto the lath between chords and between web members.

8. Non-Metallic Fabric Mesh — (Optional) — As an alternate to metal lath, glass fiber fabric mesh, weighing approximately 2.5 oz/sq yd, polypropylene fabric mesh, weighing approximately 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 materials 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. 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.

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

Last Updated on 2017-10-17