

FIRE RESISTANCE DIRECTORY
GCP APPLIED TECHNOLOGIES UL DESIGNS

Fire-resistance Ratings - ANSI/UL 263

Design No. S735

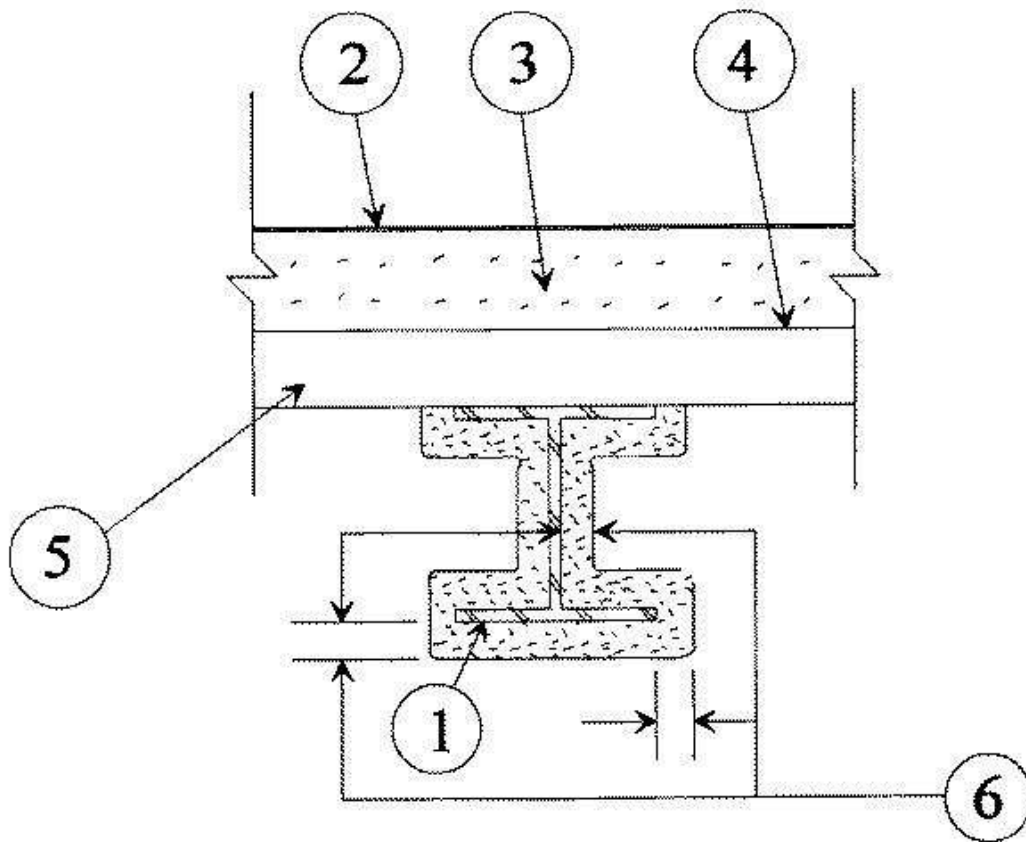
February 05, 2014

Restrained Beam Ratings — 1, 1-1/2, 2, 3 and 4 Hr

Unrestrained Beam Ratings — 1, 1-1/2, 2, 3 and 4 Hr

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.



1. **Steel Beam** — W6x16 or W8x28 min size.

2. **Roof Covering*** — Consisting of hot mopped, cold application or single-ply materials, compatible with 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*** — Consisting of building units, foamed plastic or mineral and fiber boards, applied in one or more layers. When multiple layers are used, end and side joints shall be offset a min of 12 in. in both directions in order to lap all joints. See category for names of companies providing Classified products — Building Units (BZXX), Foamed Plastic (CCVW) or Mineral and Fiber Boards (CERZ). Roof insulation shall be compatible with roof covering materials Class A, B or C system. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

3A. **Insulating Concrete*** — Consisting of Cellular Concrete-Floor- or Roof Topping Mixture, Vermiculite Concrete or Perlite Concrete. See category for names of companies providing Classified products- Floor- or Roof Topping Mixture (CCOX), Vermiculite Aggregate (CJZZ) or Perlite Aggregate (CFFX). Insulating Concrete shall be compatible with roof covering materials Class A, B or C system. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

4. **Adhesive** — (Optional) — May be applied to steel roof deck units or between insulation layers at a max application rate of 0.4 gal/100 sq ft. See Adhesives (BYWR) category for names of manufacturers.

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5. **Steel Roof Deck** — (Unclassified) — Fluted, No. 22 MSG min galv 1-1/2 in. deep with 3-1/2 in. wide flutes spaced 6 in. OC. Ends overlapped a min 1-1/2 in. and welded to supports, 12 in. OC max. Adjacent units button-punched, welded or fastened with No. 12 by 1/2 in. long self-drilling, self-tapping steel screws.

6. **Spray-Applied Fire Resistive Materials*** — Applied by mixing with water and spraying to the beam surfaces to the final min thicknesses shown below. Crest areas above the beam shall be filled with the Spray-Applied Fire Resistive Materials. Surfaces must be clean and free of dirt, loose scale and oil. Min avg and min ind density of 15/14 pcf. For method of density determination see Design Information Section.

Rating Hr	Min Spray Applied Fire Resistive Mtl Thkns In.		
	Restrained Beam W6x16	Unrestrained Beam W6x16	Unrestrained and Restrained Beam W8x28
1	9/16	9/16	—
1-1/2	7/8	1-1/16	—
2	1-7/16	1-1/2	—
3	2-1/2	2-1/2	2
4	3-5/16	3-5/16	2-9/16

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half .

Rating (Hr)	Restrained Beam Thickness (in.) W6x16	Unrestrained Beam Thickness (in.) W6x16	Restrained and Unrestrained Beam Thickness (in.) W8x28
1	11/16	3/4	—
1-1/2	1-1/4	1-5/16	—
2	1-13/16	1-7/8	—
3	2-15/16	2-15/16	2-5/16
4	4-1/16	4-1/16	3

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-6GF, MK-6 GF Extended Set, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6s, MK-1000/HB, MK-1000/HB Extended Set, Sonophone 1.

GCP KOREA INC — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6GF, MK-6 GF Extended Set, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-1000/HB, MK-1000/HB Extended Set, Monokote Acoustic 1.

GCP APPLIED TECHNOLOGIES INC — 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, RG, Monokote Acoustic 1.

FIRE RESISTANCE DIRECTORY
GCP APPLIED TECHNOLOGIES UL DESIGNS

Fire-resistance Ratings - ANSI/UL 263

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

Rating Hr	Min Spray Applied Fire Resistive Mtl Thkns In.		
	Restrained Beam W6x16	Unrestrained Beam W6x16	Unrestrained and Restrained Beam W8x28
1	9/16	9/16	—
1-1/2	7/8	1-1/16	—
2	1-7/16	1-1/2	—
3	2-1/2	2-1/2	2
4	3	3	2-9/16

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half .

Rating (Hr)	Restrained Beam Thickness (in.) W6x16	Unrestrained Beam Thickness (in.) W6x16	Restrained and Unrestrained Beam Thickness (in.) W8x28
1	11/16	3/4	—
1-1/2	1-1/4	1-5/16	—
2	1-13/16	1-7/8	—
3	2-15/16	2-15/16	2-5/16
4	4-1/16	4-1/16	3

ARABIAN Vermiculite Industries — Types Sonophone 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 with water and spraying in one or more coats to a final thickness as shown in the table below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. Crest areas above the beam shall be filled with Spray-Applied Fire Resistive Materials. 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.

Rating Hr	Min Spray Applied Fire Resistive Mtl Thkns In.		
	Restrained Beam W6x16	Unrestrained Beam W6x16	Unrestrained and Restrained Beam W8x28
1	9/16	9/16	—
1-1/2	7/8	1-1/16	—
2	1-7/16	1-1/2	—
3	2-1/2	2-1/2	2
4	3-5/16	3-5/16	2-9/16

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The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half .

Rating (Hr)	Restrained Beam Thickness (in.) W6x16	Unrestrained Beam Thickness (in.) W6x16	Restrained and Unrestrained Beam Thickness (in.) W8x28
1	11/16	3/4	—
1-1/2	1-1/4	1-5/16	—
2	1-13/16	1-7/8	—
3	2-15/16	2-15/16	2-5/16
4	4-1/16	4-1/16	3

ARABIAN VERMICULITE INDUSTRIES — Type Z-146 investigated for exterior use, Sonophone 35.

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

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

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