

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

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. J709

October 17, 2017

Restrained Assembly Ratings — 1, 1-1/2, 2 or 3 Hr

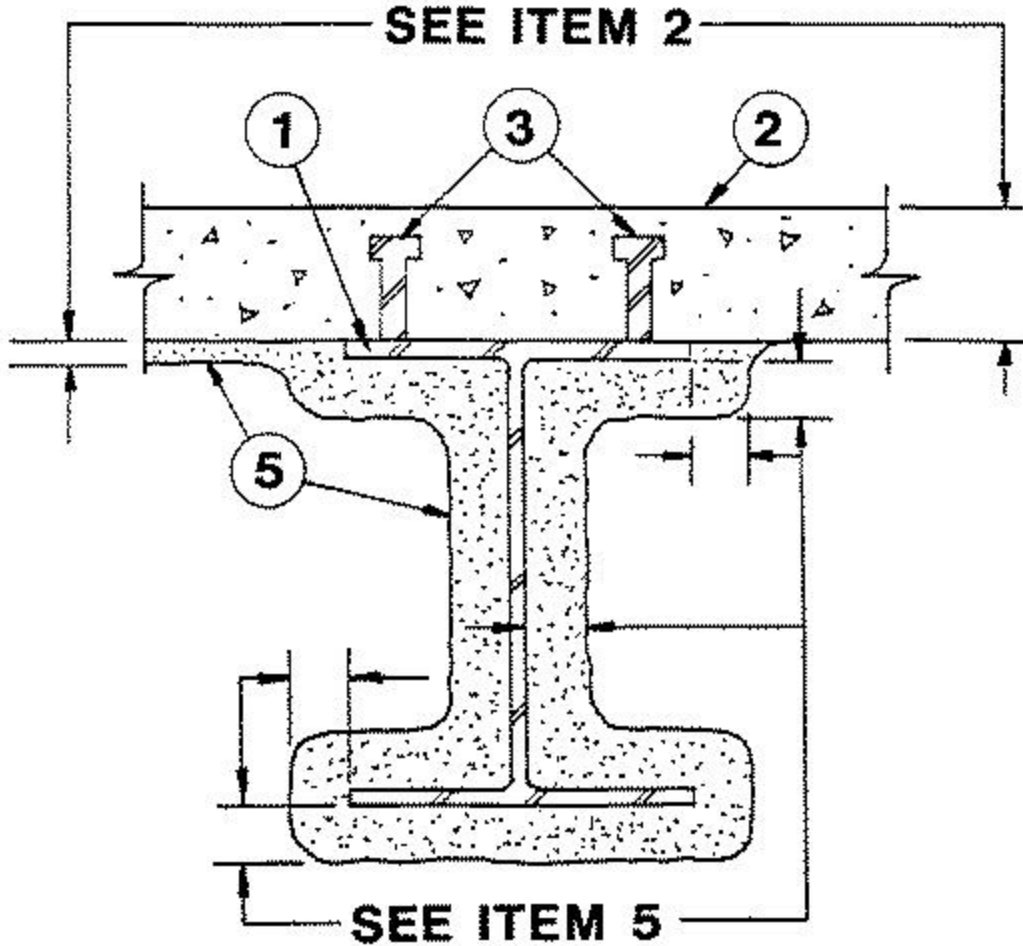
Unrestrained Assembly Ratings — 1, 1-1/2, 2 or 3 Hr

Unrestrained Beam Ratings — 1, 1-1/2, 2, 3 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. **Beam** — W8x28 min size.

2. **Normal Weight or Lightweight Concrete** — Normal weight concrete carbonate or siliceous aggregate, 145 plus or minus 3 pcf unit weight, 3500 psi compressive strength, vibrated. Lightweight concrete, expanded shale, or slate aggregate by rotary-kiln method, or expanded clay aggregate by rotary-kiln or sintered-grate method: 3000 psi compressive strength, vibrated, 4 to 7 percent entrained air, unit weight 105 pcf plus or minus 3.

Restrained & Unrestrained Assembly Rating Hr	Type of Concrete Aggregate	Min Slab Thk in.	
		Bare Slab	Slab protected with 3/8 In. Thk Spray Applied Fire Resistive Mtl
1, 1-1/2 or 2	NW	5	—
3	NW	6-1/4	5
1-1/2, 2 or 3	LT WT	5	—

For the unprotected slab the min concrete cover below the reinforcements shall vary according to the Restrained and Unrestrained Assembly Rating and the type of concrete aggregate as follows:

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Min Thkns of Concrete Cover In.
1, 1-1/2 or 2	1 or 1-1/2	1
2 or 3	2	1
3	3	1-5/8*

*For slabs with max spans of 10 ft the min cover thickness shall be 1 in.

3. **Shear Connector** — (Optional) — Studs 3/4 in. diam headed type or equivalent per AISC specifications. Welded to top flange of beam.

4. **Reinforcing Steel** — (Not shown) — Min No. 3 (3/8 in. diam) deformed bars, either grade 40 or 60. Min areas of reinforcing steel must be provided in accordance with the latest (ACI) Specifications.

5. **Spray-Applied Fire Resistive Materials*** — See table below for appropriate thicknesses. Prepared by mixing with water and spray-applied in one or more coats to beam surfaces or bottom side of concrete slab (if slab to be protected) which must be clean and free of dirt, loose scale and oil. Min average density of 15 pcf with min individual 14 pcf. Min avg and min ind density 22/19 pcf respectively for Types Z-106, Z-106/G. Min avg and min ind density of 19/18 pcf respectively for Type 7GP and 7HD. For method of density determination, see Design Information Section.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Thkns on Beam In.
1-1/2	1	1	7/16
2	1	1	7/16
2	1-1/2	1-1/2	3/4
3	1-1/2	1-1/2	3/4
3	2	2	1
3	3	3	1-5/16

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

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Thkns on Beam In.
1-1/2	1	1	7/16+
2	1	1	7/16+
2	1-1/2	1-1/2	3/4
3	1-1/2	1-1/2	3/4
3	2	2	1
3	3	3	1-9/16

+Thickness applied to beam's lower flange shall be a min of 1/4 in.

ARABIAN Vermiculite Industries — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-6s, MK-10 HB, MK-10 HB Extended Set, Sonophone 1, Sonophone 5, Z-106, Z-106/G.

GCP Korea Inc — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-6s, MK-10 HB, MK-10 HB Extended Set, Monokote Acoustic 1, Monokote Acoustic 5, Z-106, Z-106/G.

Pyrok Inc — Type LD.

Carboline Global Inc. — Types 4, 5, 5EF, 5GP, 5MD, 7GP, 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HB, MK-6s, MK-10 HB, MK-10 HB Extended Set, Monokote Acoustic 1, Monokote Acoustic 5, RG, Z-106, Z-106/G.

6. **Metal Lath** — (Not Shown) — Required when Type 7HD is applied - Metal lath shall be 3/8 in. expanded diamond mesh, weighing 3.4 lb per sq yd. Secured to underside through steel washers with an outside diam of 1/2 in. with fasteners spaced 12 in. OC in both directions with lath edges overlapped approx 3 in.

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