

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.
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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. **N661**

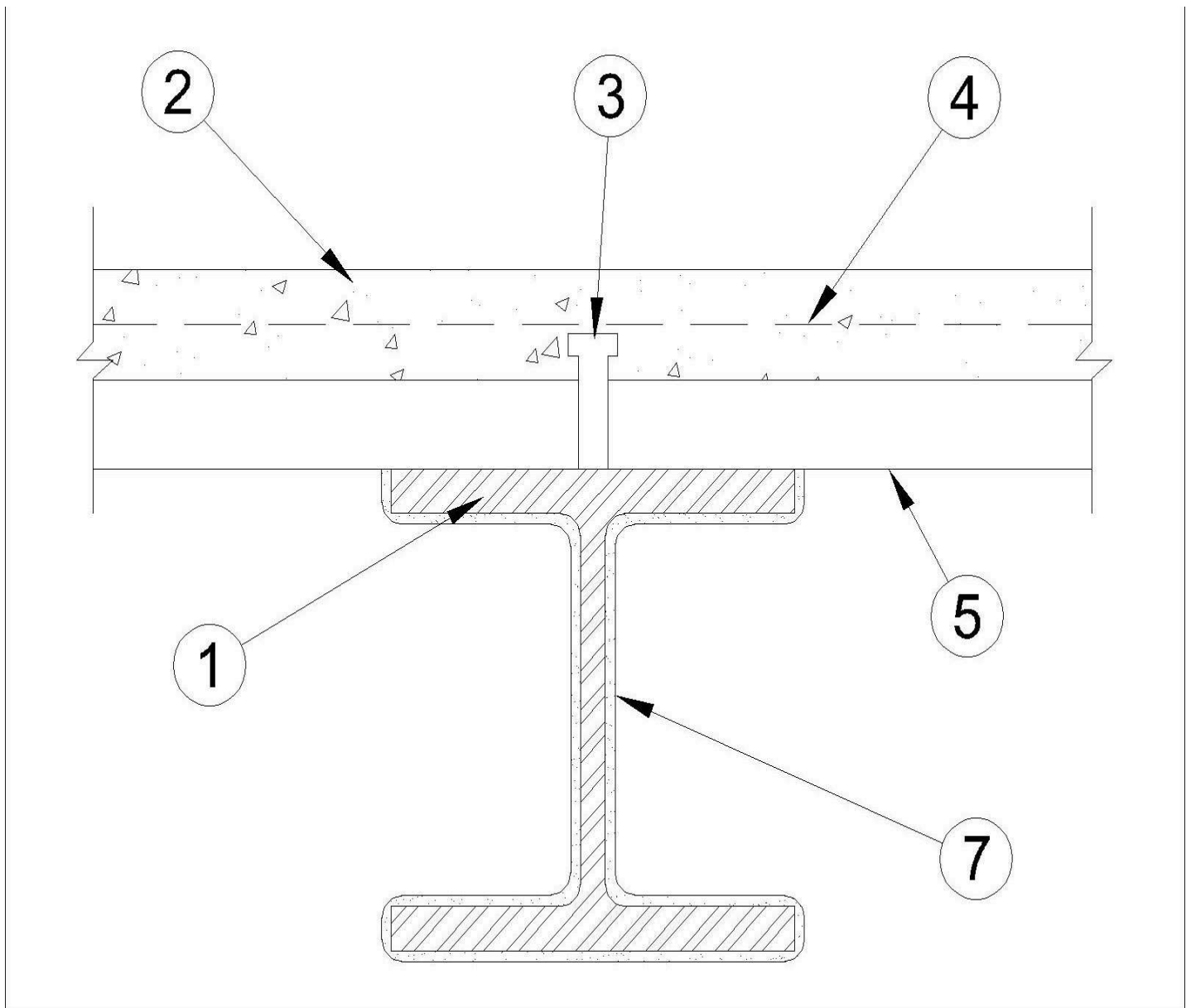
December 3, 2024

Restrained Beam Ratings - 1, 1-1/2, 2 and 2-1/2 Hr. (See Item 7)

Unrestrained Beam Ratings - 1, 1-1/2 and 2 Hr. (See Item 7)

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 Beam** — Minimum beam sizes as shown in table below. Maximum allowable yield stress of 50 ksi. Beams shall be free of dirt, loose scale and oil. Beams shall be primed with a metal alkyd primer at a nominal thickness of 2 mils.
2. **Normal Weight or Lightweight Concrete** — Compressive strength 3500 psi. For normal weight concrete either carbonate or siliceous aggregate may be used. Unit weight 147 lbs/cu ft. for normal weight concrete and 110 lbs/cu ft. for lightweight concrete. Min concrete thickness, as measured from top plane of steel floor and form units is 2-1/2 in.
3. **Shear Connector** — (Optional) — Studs, 3/4 in. diam headed type or equivalent per AISC specifications welded to the top flange of beam through the steel floor units.
4. **Welded Wire Fabric** — 6 x 6 - 10/10 SWG.
5. **Steel Floor or Form Units** — 1-1/2, 2 or 3 in. deep fluted units, welded to beam.
6. **Mineral Wool Insulation** — (Not Shown) — Min 6 pcf mineral wool insulation cut into pieces and firmly packed into, and completely filling the spaces between the flutes of the steel floor and form units and the top flange of the beam. Mineral wool is not required when the top flange of the beam is protected with intumescent coating at the same thickness shown in the table in Item 7.
7. **Intumescent Fire-resistive Materials*** — Coating spray or brush applied in accordance with the manufacturer's instructions at the min dry thickness as shown in the table below. The thickness shown below includes the primer thickness. When mineral wool (Item 6) is used, the top surface of the beam need not be protected with coating.

Restrained			Minimum Thickness (inches) for Rating (min)			
Size	W/D	Hp/A	60	90	120	150
W8x24	0.70	191	0.028	0.058	0.098	0.139
W12x35	0.8	167	0.027	0.055	0.093	0.132
W8X35	0.9	149	0.026	0.052	0.089	0.125
W10x49	1.01	132	0.026	0.049	0.083	0.118
W12x58	1.1	122	0.025	0.046	0.079	0.112
W8x48	1.2	111	0.024	0.044	0.074	0.105
W14x74	1.31	102	0.024	0.041	0.069	0.097
W18x97	1.41	95	0.023	0.038	0.064	0.090
W24x131	1.53	87	0.022	0.035	0.058	0.082
W8x67	1.65	81	0.021	0.031	0.053	0.074
W10x88	1.75	76	0.021	0.031	0.053	0.074

Unrestrained			Minimum Thickness (inches) for Rating (min)		
Size	W/D	Hp/A	60	90	120
W8x24	0.70	191	0.028	0.070	0.115
W12x35	0.8	167	0.027	0.067	0.110
W8X35	0.9	149	0.026	0.064	0.105
W10x49	1.01	132	0.026	0.061	0.099
W12x58	1.1	122	0.025	0.058	0.094
W8x48	1.2	111	0.024	0.055	0.089
W14x74	1.31	102	0.024	0.052	0.084
W18x97	1.41	95	0.023	0.049	0.079
W24x131	1.53	87	0.022	0.046	0.073
W8x67	1.65	81	0.021	0.042	0.067
W10x88	1.75	76	0.021	0.042	0.067

The following table lists the thicknesses in metric units.

Restrained	Minimum Thickness (mm) for Rating (min)
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Size	W/D	Hp/A	60	90	120	150
W8x24	0.70	191	0.704	1.462	2.497	3.532
W12x35	0.8	167	0.686	1.392	2.375	3.357
W8X35	0.9	149	0.669	1.321	2.252	3.183
W10x49	1.01	132	0.651	1.244	2.118	2.991
W12x58	1.1	122	0.635	1.181	2.008	2.834
W8x48	1.2	111	0.618	1.111	1.885	2.660
W14x74	1.31	102	0.599	1.034	1.751	2.468
W18x97	1.41	95	0.582	0.963	1.628	2.294
W24x131	1.53	87	0.562	0.879	1.482	2.084
W8x67	1.65	82	0.541	0.795	1.335	1.875
W10x88	1.75	76	0.541	0.795	1.335	1.875

Unrestrained			Minimum Thickness (mm) for Rating (min)		
Size	W/D	Hp/A	60	90	120
W8x24	0.70	191	0.704	1.773	2.916
W12x35	0.8	167	0.686	1.699	2.787
W8X35	0.9	149	0.669	1.626	2.657
W10x49	1.01	132	0.651	1.545	2.515
W12x58	1.1	122	0.635	1.479	2.399
W8x48	1.2	111	0.618	1.405	2.270
W14x74	1.31	102	0.599	1.324	2.128
W18x97	1.41	95	0.582	1.251	1.999
W24x131	1.53	87	0.562	1.162	1.844
W8x67	1.65	82	0.541	1.074	1.689
W10x88	1.75	76	0.541	1.074	1.689

ISOLATEK INTERNATIONAL — Type FIRESOLVE SB, Investigated for Interior Conditioned Space. Investigated for Interior General Purpose with one of the topcoats as described in Item 8.

8. **Topcoat** — (Not Shown) — Types Macropoxy 646, TNEMEC 1095, Acrolon 100 HS, or Sher-Cryl HPA required for Interior General Purpose with Type FIRESOLVE SB, applied at a minimum dry thickness of 6.1 mils over the intumescent material.

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

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