

FIRE-RESISTANCE DESIGN

Assembly Usage Disclaimer

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. N619

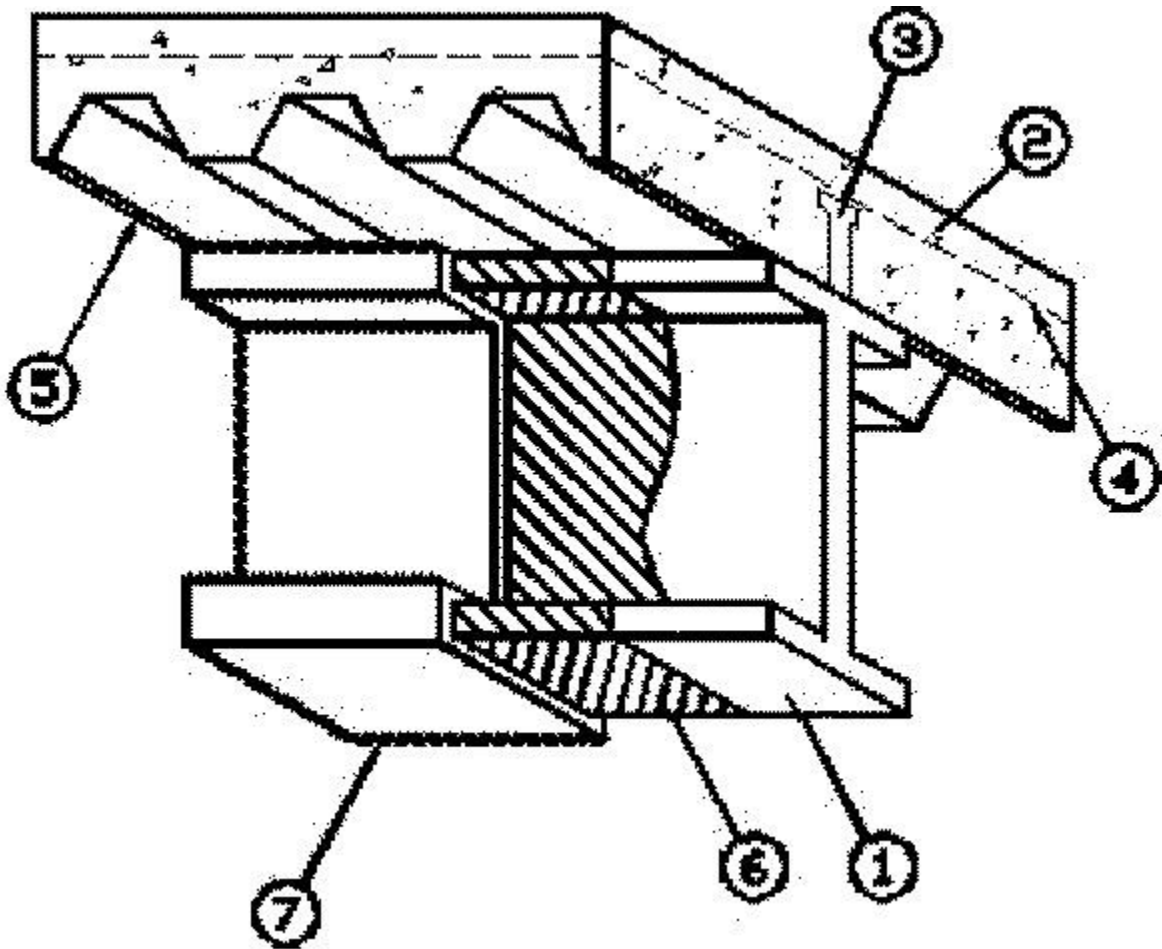
December 11, 2013

Restrained Beam Rating — 1, 1-1/2 and 2 Hr (See Item 7 and 8)

Unrestrained Beam Rating — 1, 1-1/2 and 2 Hr (See Item 7 and 8)

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** — Min size as shown in the table below (See Item 7).
2. **Normal Weight or Lightweight Concrete** — Compressive strength 3000 psi. For normal weight concrete either carbonate or siliceous aggregate may be used. Unit weight 148 lbs / cu ft for normal weight concrete and 110 lbs / cu ft for lightweight concrete.
3. **Shear Connectors** — (Optional) Studs, headed type or equivalent per AISC specifications welded to the top flange of beam through the steel floor units.
4. **Welded Wire Fabric** — 6x6 SWG.
5. **Steel Floor Units** — 1-1/2, 2 or 3 in. deep fluted units, welded to beam.
6. **Primer Coating** — Two Component Epoxy or Phenolic Modified Alkyd applied at 0.002 in. dry film thickness.
7. **Mastic and Intumescent Coating*** — Coating spray or brush applied in accordance with the manufacturer's instructions at the minimum dry thickness shown in the table below. The thickness shown does not include primer.

UNRESTRAINED BEAM RATINGS

	W/D	Hp/A	1 hr (inches)	1.5 hr (inches)	2 hr (inches)
W18x35	0.67	200	0.061	NR	NR

W6x16	0.67	200	0.061	NR	NR
W8x21	0.67	200	0.061	NR	NR
W6x20	0.68	197	0.061	NR	NR
W12x30	0.69	194	0.060	NR	NR
W10x26	0.70	191	0.060	NR	NR
W16x36	0.70	191	0.060	NR	NR
W8x24	0.70	191	0.060	NR	NR
W14x34	0.72	186	0.059	NR	NR
W21x44	0.74	181	0.059	NR	NR
W18x40	0.76	176	0.058	NR	NR
W16x40	0.77	174	0.057	NR	NR
W5x19	0.78	172	0.057	NR	NR
W10x33	0.79	170	0.057	NR	NR
W12x35	0.80	168	0.056	NR	NR
W8x31	0.80	168	0.056	NR	NR
W10x30	0.81	165	0.056	NR	NR
W14x38	0.81	165	0.056	NR	NR
W8x28	0.81	165	0.056	NR	NR
W24x55	0.83	161	0.055	NR	NR
W21x50	0.84	160	0.055	NR	NR
W6x25	0.84	160	0.055	NR	NR
W12x40	0.86	156	0.054	NR	NR
W14x43	0.87	154	0.054	NR	NR
W16x45	0.87	154	0.054	NR	NR
W18x46	0.87	154	0.054	NR	NR
W18x50	0.88	152	0.053	NR	NR
W8x35	0.90	149	0.053	NR	NR
W10x39	0.92	146	0.052	NR	NR
W24x62	0.93	144	0.051	NR	NR
W24x68	0.94	143	0.051	NR	NR
W21x57	0.95	141	0.051	NR	NR

W21x62	0.95	141	0.051	NR	NR
W14x48	0.96	140	0.050	NR	NR
W16x50	0.96	140	0.050	NR	NR
W18x55	0.96	140	0.050	NR	NR
W12x45	0.97	138	0.050	NR	NR
W10x49	1.01	133	0.048	NR	NR
W12x53	1.01	133	0.048	NR	NR
W8x40	1.02	131	0.048	NR	NR
W27x84	1.03	130	0.048	NR	NR
W18x60	1.04	129	0.047	NR	NR
W21x68	1.04	129	0.047	NR	NR
W24x76	1.04	129	0.047	NR	NR
W10x45	1.05	128	0.047	NR	NR
W14x53	1.05	128	0.047	NR	NR
W12x50	1.07	125	0.046	NR	NR
W16x57	1.08	124	0.046	NR	NR
W16x67	1.08	124	0.046	NR	NR
W14x61	1.09	123	0.045	NR	NR
W12x58	1.10	122	0.045	NR	NR
W10x54	1.11	121	0.045	NR	NR
W12x65	1.11	121	0.045	NR	NR
W21x73	1.11	121	0.045	NR	NR
W18x65	1.12	120	0.044	NR	NR
W18x76	1.12	120	0.044	NR	NR
W30x99	1.12	120	0.044	NR	NR
W24x84	1.14	118	0.044	NR	NR
W27x94	1.15	117	0.043	NR	NR
W8x48	1.20	112	0.041	NR	NR
W14x68	1.21	111	0.041	NR	NR
W30x108	1.21	111	0.041	NR	NR
W33x118	1.21	111	0.041	NR	NR

W18x71	1.22	110	0.041	NR	NR
W10x60	1.23	109	0.040	NR	NR
W12x72	1.23	109	0.040	NR	NR
W24x104	1.23	109	0.040	NR	NR
W16x77	1.24	108	0.040	NR	NR
W27x102	1.24	108	0.040	NR	NR
W18x86	1.26	106	0.039	NR	NR
W21x83	1.26	106	0.039	NR	NR
W24x94	1.27	106	0.039	NR	NR
W14x90	1.29	104	0.038	NR	NR
W36x135	1.29	104	0.038	NR	NR
W21x101	1.30	103	0.038	NR	NR
W30x116	1.30	103	0.038	NR	NR
W14x74	1.31	102	0.037	NR	NR
W33x130	1.32	102	0.037	NR	NR
W12x79	1.34	100	0.036	NR	NR
W10x68	1.38	97	0.035	NR	NR
W24x117	1.38	97	0.035	NR	NR
W27x114	1.38	97	0.035	NR	NR
W30X124	1.38	97	0.035	NR	NR
W21x93	1.40	96	0.034	NR	NR
W18x97	1.41	95	0.033	NR	NR
W14x99	1.42	94	0.033	NR	NR
W16x89	1.42	94	0.033	NR	NR
W21x111	1.42	94	0.033	NR	NR
W33x141	1.43	94	0.033	NR	NR
W36x150	1.43	94	0.033	NR	NR
W8x58	1.43	94	0.033	NR	NR
W14x82	1.44	93	0.032	NR	NR
W12x87	1.46	92	0.032	NR	NR
W30x132	1.47	91	0.031	NR	NR

W36x160	1.52	88	0.030	NR	NR
W18x106	1.53	88	0.030	NR	NR
W24x131	1.53	88	0.030	NR	NR
W33x152	1.53	88	0.030	NR	NR
W10x77	1.55	86	0.030	NR	NR
W14x109	1.55	86	0.030	NR	NR
W21x122	1.55	86	0.030	NR	NR
W27x146	1.55	86	0.030	NR	NR
W16x100	1.58	85	0.030	NR	NR
W12x96	1.61	83	0.030	NR	NR
W36x170	1.61	83	0.030	NR	NR
W8x67	1.63	82	0.030	NR	NR
W21x132	1.67	80	0.030	NR	NR
W30x173	1.67	80	0.030	NR	NR
W14x120	1.69	79	0.030	NR	NR
W24x146	1.70	79	0.030	NR	NR
W27x161	1.70	79	0.030	NR	NR
W18x119	1.71	78	0.030	NR	NR
W36x182	1.71	78	0.030	NR	NR
W10x88	1.75	77	0.030	0.051	0.081

RESTRAINED BEAM RATINGS

	W/D	Hp/A	1 hr (inches)	1.5 hr (inches)	2 hr (inches)
W18x35	0.67	200	0.061	0.061	0.096
W6x16	0.67	200	0.061	0.061	0.096
W8x21	0.67	200	0.061	0.061	0.096
W6x20	0.68	197	0.061	0.061	0.095
W12x30	0.69	194	0.060	0.060	0.095
W10x26	0.70	191	0.060	0.060	0.095
W16x36	0.70	191	0.060	0.060	0.095
W8x24	0.70	191	0.060	0.060	0.095

W14x34	0.72	186	0.059	0.059	0.094
W21x44	0.74	181	0.059	0.059	0.094
W18x40	0.76	176	0.058	0.058	0.093
W16x40	0.77	174	0.057	0.057	0.093
W5x19	0.78	172	0.057	0.057	0.093
W10x33	0.79	170	0.057	0.057	0.092
W12x35	0.80	168	0.056	0.056	0.092
W8x31	0.80	168	0.056	0.056	0.092
W10x30	0.81	165	0.056	0.056	0.092
W14x38	0.81	165	0.056	0.056	0.092
W8x28	0.81	165	0.056	0.056	0.092
W24x55	0.83	161	0.055	0.055	0.091
W21x50	0.84	160	0.055	0.055	0.091
W6x25	0.84	160	0.055	0.055	0.091
W12x40	0.86	156	0.054	0.054	0.090
W14x43	0.87	154	0.054	0.054	0.090
W16x45	0.87	154	0.054	0.054	0.090
W18x46	0.87	154	0.054	0.054	0.090
W18x50	0.88	152	0.053	0.053	0.090
W8x35	0.90	149	0.053	0.053	0.089
W10x39	0.92	146	0.052	0.052	0.089
W24x62	0.93	144	0.051	0.051	0.088
W24x68	0.94	143	0.051	0.051	0.088
W21x57	0.95	141	0.051	0.051	0.088
W21x62	0.95	141	0.051	0.051	0.088
W14x48	0.96	140	0.050	0.050	0.088
W16x50	0.96	140	0.050	0.050	0.088
W18x55	0.96	140	0.050	0.050	0.088
W12x45	0.97	138	0.050	0.050	0.087
W10x49	1.01	133	0.048	0.048	0.086
W12x53	1.01	133	0.048	0.048	0.086

W8x40	1.02	131	0.048	0.048	0.086
W27x84	1.03	130	0.048	0.048	0.086
W18x60	1.04	129	0.047	0.047	0.085
W21x68	1.04	129	0.047	0.047	0.085
W24x76	1.04	129	0.047	0.047	0.085
W10x45	1.05	128	0.047	0.047	0.085
W14x53	1.05	128	0.047	0.047	0.085
W12x50	1.07	125	0.046	0.046	0.084
W16x57	1.08	124	0.046	0.046	0.084
W16x67	1.08	124	0.046	0.046	0.084
W14x61	1.09	123	0.045	0.045	0.084
W12x58	1.10	122	0.045	0.045	0.084
W10x54	1.11	121	0.045	0.045	0.083
W12x65	1.11	121	0.045	0.045	0.083
W21x73	1.11	121	0.045	0.045	0.083
W18x65	1.12	120	0.044	0.044	0.083
W18x76	1.12	120	0.044	0.044	0.083
W30x99	1.12	120	0.044	0.044	0.083
W24x84	1.14	118	0.044	0.044	0.082
W27x94	1.15	117	0.043	0.043	0.082
W8x48	1.20	112	0.041	0.041	0.081
W14x68	1.21	111	0.041	0.041	0.081
W30x108	1.21	111	0.041	0.041	0.081
W33x118	1.21	111	0.041	0.041	0.081
W18x71	1.22	110	0.041	0.041	0.080
W10x60	1.23	109	0.040	0.040	0.080
W12x72	1.23	109	0.040	0.040	0.080
W24x104	1.23	109	0.040	0.040	0.080
W16x77	1.24	108	0.040	0.040	0.080
W27x102	1.24	108	0.040	0.040	0.080
W18x86	1.26	106	0.039	0.039	0.079

W21x83	1.26	106	0.039	0.039	0.079
W24x94	1.27	106	0.039	0.039	0.079
W14x90	1.29	104	0.038	0.039	0.078
W36x135	1.29	104	0.038	0.039	0.078
W21x101	1.30	103	0.038	0.038	0.078
W30x116	1.30	103	0.038	0.038	0.078
W14x74	1.31	102	0.037	0.038	0.078
W33x130	1.32	102	0.037	0.038	0.077
W12x79	1.34	100	0.036	0.038	0.077
W10x68	1.38	97	0.035	0.037	0.076
W24x117	1.38	97	0.035	0.037	0.076
W27x114	1.38	97	0.035	0.037	0.076
W30X124	1.38	97	0.035	0.037	0.076
W21x93	1.40	96	0.034	0.037	0.075
W18x97	1.41	95	0.033	0.036	0.075
W14x99	1.42	94	0.033	0.036	0.075
W16x89	1.42	94	0.033	0.036	0.075
W21x111	1.42	94	0.033	0.036	0.075
W33x141	1.43	94	0.033	0.036	0.074
W36x150	1.43	94	0.033	0.036	0.074
W8x58	1.43	94	0.033	0.036	0.074
W14x82	1.44	93	0.032	0.036	0.074
W12x87	1.46	92	0.032	0.035	0.074
W30x132	1.47	91	0.031	0.035	0.073
W36x160	1.52	88	0.030	0.034	0.072
W18x106	1.53	88	0.030	0.034	0.072
W24x131	1.53	88	0.030	0.034	0.072
W33x152	1.53	88	0.030	0.034	0.072
W10x77	1.55	86	0.030	0.034	0.071
W14x109	1.55	86	0.030	0.034	0.071
W21x122	1.55	86	0.030	0.034	0.071

W27x146	1.55	86	0.030	0.034	0.071
W16x100	1.58	85	0.030	0.033	0.070
W12x96	1.61	83	0.030	0.033	0.069
W36x170	1.61	83	0.030	0.033	0.069
W8x67	1.63	82	0.030	0.032	0.069
W21x132	1.67	80	0.030	0.031	0.068
W30x173	1.67	80	0.030	0.031	0.068
W14x120	1.69	79	0.030	0.031	0.067
W24x146	1.70	79	0.030	0.031	0.067
W27x161	1.70	79	0.030	0.031	0.067
W18x119	1.71	78	0.030	0.031	0.067
W36x182	1.71	78	0.030	0.031	0.067
W10x88	1.75	77	0.030	0.030	0.065

CARBOLINE CO — TYPE THERMO-SORB, THERMO-SORB VOC. Investigated for Interior Conditioned Space and Interior General Purpose.

8. **Top Coat** — (Not Shown) - No topcoat required for Interior Conditioned Space. Finishing topcoat for Interior General Purpose, Types Carboguard 893 SG or Santile 655 applied at 0.006 in. dry film thickness or Carbocrylic 3350 or Carbocoat 30R applied at 0.003 in. dry film thickness.

*** 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 2013-12-11

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- 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.

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