

BXUV.D995 - FIRE-RESISTANCE RATINGS - ANSI/UL 263

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. D995

January 22, 2019

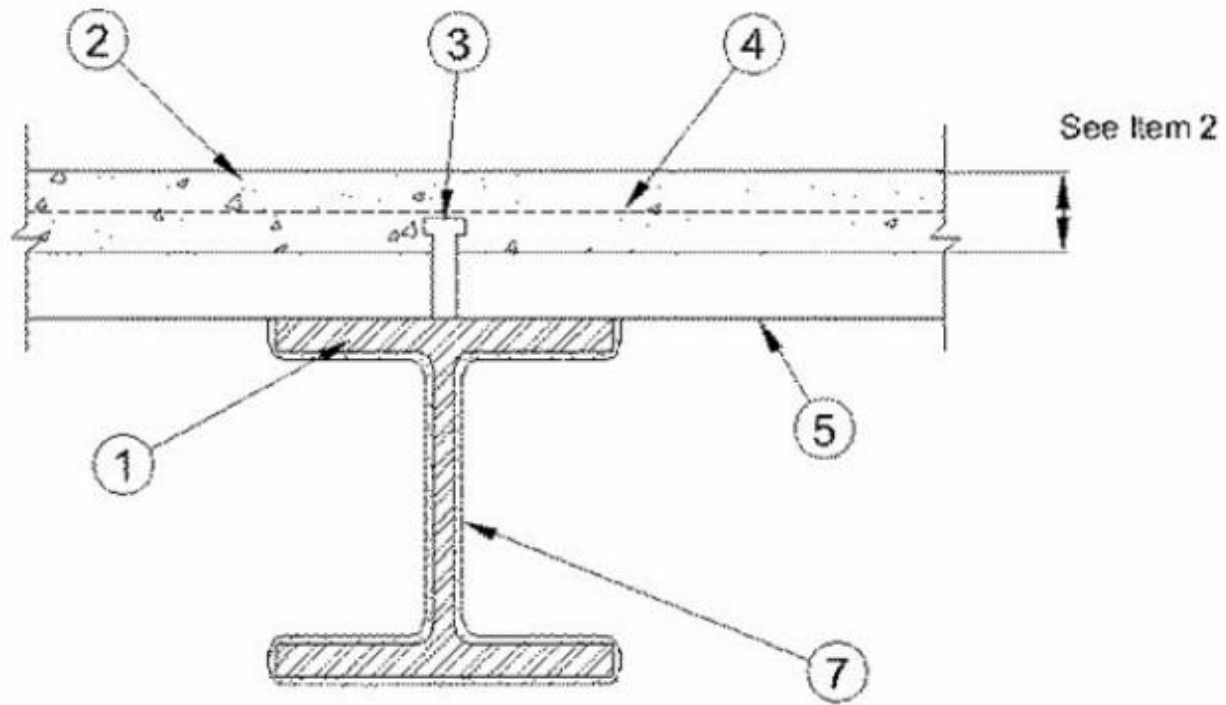
Restrained Assembly Ratings - 2 and 3 Hr. (See Items 2, 5 and 7)

Unrestrained Assembly Ratings - 1, 1-1/2, 2 and 3 Hr. (See Items 2, 5 and 7)

Unrestrained Beam Ratings - 1, 1-1/2, 2 and 3 Hr. (See Items 2, 5 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.**



1. **Steel Beams** — Any wide flange steel size shown in the table in Item 7. Beams shall be primed with a modified alkyd, or epoxy based primer.

2. Normal Weight or Lightweight Concrete — Normal weight concrete, carbonate or siliceous aggregate, 145 lb/ft or minus 3 lb/ft weight, 3000 psi compressive strength, vibrated. Lightweight concrete, expanded shale, clay or slate aggregate by rotary-kiln method, 102-120 lb/ft weight, 3000 psi compressive strength, vibrated, 4 to 7 percent entrained air. Min thickness shown in the table below:

Restrained Assembly Rating Hr	Concrete (Type)	Concrete Unit Weight pcf	Concrete Thkns In.
1	Normal Weight	147-153	3-1/2
1-1/2	Normal Weight	147-153	4
2	Normal Weight	147-153	4-1/2
3	Normal Weight	147-153	5-1/4
3/4 or 1 (See Item 6)	Lightweight	107-113	2-1/2
1	Lightweight	107-120	2-5/8
1-1/2	Lightweight	107-113	3
2	Lightweight	107-113	3-1/4
2	Lightweight	107-116	3-1/4*
2	Lightweight	114-120	3-1/2
3	Lightweight	107-113	4-3/16
3	Lightweight	114-120	4-7/16

*For use with 2 or 3 in. steel floor and form units only.

3. Shear Connectors (Optional) — Studs, 3/4 in. diam by 4-1/2 in. long, headed type or equivalent per AISC specification. Welded to the top flange of the beam, through the deck.

4. Welded Wire Fabric — 6x6 — W1.4xW1.4.

5. Steel Floor and Form Units* — Composite 1-1/2, 2, or 3 in. deep galv Units. Fluted units may be uncoated. Min gauges 22 MSG for fluted and 20/20 MSG for cellular. Any combination of fluted and cellular units may be used. Spacing of welds attaching units to supports shall be 12 in. OC max unless specified otherwise, adjacent units button-punched or welded together at side joints and, unless specified otherwise for specific unit types, spacing of all side joint fastening systems shall not exceed 36 in. OC.

DESIGN ASSISTANCE CONSTRUCTION SYSTEMS INC — 24 in. wide Type DACS2.0CD, or DACS3.0CD.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 12, 24 or 36 in. wide Types Mac-Lok 2, Mac-Lok 3; 12 in. wide Mac-Way Cellular Types 2-633MTWA, 3-633MTWA, 2-633MTWV, 3-633MTWV. For the 1, 1-1/2, 2h Restrained Assembly Ratings and the 1h Unrestrained Assembly and Beam Rating, 12 in. wide, Type 1.5-633 MTWA may be used. Types Mac-Lok 2, Mac-Lok 3 may be phos/ptd. Two rows of steel studs with discs (Item 7) shall be welded along the sides of the Types 2-633MTWV, 3-633MTWV cellular units a max of 22 in. OC.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 24 or 36 in. wide Types 2.0CD, 3.0CD, 2.0CFD, 3.0CFD, 3.0CFDES ; 24, 30 or 36 in. wide Types 1.5CD, 1.5CDI, 1.5CFD. Fluted units may be phos/painted or galvanized

VULCRAFT, DIV OF NUCOR CORP — 24, 30 or 36 in. wide Type 1.5VLI, 1.5PLVLI, 1.5VLP, 1.5PLVLP; 24 or 36 in. wide Types 2VLI, 2.0PLVLI, 3VLI, 3.0PLVLI, 2VLP, 2.0PLVLP, 3VLP, 3.0PLVLP. Types 1.5VLI, 1.5PLVLI, 2VLI, 2.0PLVLI, 3VLI 3.0PLVLI units may be phos/ptd; 24 or 36 in. wide Types 2VLJ, 3VLJ units (+) may be used for max 2 hr. Restrained Assembly.

(+) Side joints of Type 2VLJ or 3VLJ units may be fastened together with No. 8-3/4 in. long self-drilling Tek screws driven diagonally from the top side through the joint of the units at 36 in. OC max.

The Unrestrained Assembly Rating is equal to the Unrestrained Beam Rating for a max of 3 Hr. and is limited to the following units and limitations:

(a) 1-1/2 in. deep, 24 in. wide, 22 MSG or thicker fluted with clear spans not more than 7 ft 8 in.

(b) 1-1/2 in. deep, 24 in. wide, 20 MSG or thicker fluted with clear spans not more than 8 ft 8 in.

(c) 1-1/2 in. deep, 24 in. wide, 16 MSG or thicker fluted and 18/18 MDG or thicker cellular with clear spans not more than 9 ft 11 in.

(d) 3 in. deep, 36 in. wide, 18 MSG or thicker fluted and 24 in. wide, 20/18 MSG or thicker cellular with clear spans not more than 13 ft 2 in.

6. Joint Cover — (Not Shown) — 2 in. wide pressure sensitive cloth tape.

7. Mastic and Intumescent Coating* — Coating spray, brush or towel applied directly from containers to desired thickness. See table below for appropriate final dry thickness. After each coat, the surface shall be lightly rolled with a paint roller. Flutes above beam to be completely filled with mineral wool insulation having a minimum density of 6 lb/ft³. Top flange of the beam shall be protected with the same thickness of coating as required on the beam.

Restrained Assembly Rating (Hr)		2			3		
Unrestrained Beam Rating (Hr)		1	1-1/2	2	1-1/2	2	3
Steel Size	W/D	Thickness (In.)					
W6x16	0.67	0.103	0.103	0.143	0.275	0.275	NR
W8x21	0.67	0.103	0.103	0.143	0.275	0.275	NR
W18x35	0.67	0.103	0.103	0.143	0.275	0.275	NR
W6x20	0.68	0.102	0.102	0.143	0.273	0.273	NR
W12x30	0.69	0.101	0.101	0.143	0.270	0.270	NR
W8x24	0.7	0.100	0.100	0.143	0.268	0.268	NR
W10x26	0.7	0.100	0.100	0.143	0.268	0.268	NR
W16x36	0.7	0.100	0.100	0.143	0.268	0.268	NR
W14x34	0.72	0.098	0.098	0.143	0.263	0.263	NR
W21x44	0.74	0.097	0.097	0.143	0.259	0.259	NR
W18x40	0.76	0.095	0.095	0.143	0.256	0.256	NR
W16x40	0.77	0.094	0.094	0.143	0.253	0.253	NR
W5x19	0.78	0.094	0.094	0.143	0.253	0.253	NR
W10x33	0.79	0.093	0.093	0.143	0.250	0.250	NR
W8x31	0.8	0.092	0.092	0.143	0.248	0.248	NR
W12x35	0.8	0.092	0.092	0.143	0.247	0.247	NR
W8x28	0.81	0.092	0.092	0.143	0.246	0.246	0.279
W10x30	0.81	0.092	0.092	0.143	0.246	0.246	0.279
W14x38	0.81	0.092	0.092	0.143	0.246	0.246	0.279
W24x55	0.83	0.09	0.090	0.143	0.243	0.243	0.274
W6x25	0.84	0.09	0.090	0.143	0.241	0.241	0.272

W21x50	0.84	0.09	0.090	0.143	0.241	0.241	0.272
W12x40	0.86	0.088	0.089	0.143	0.237	0.237	0.268
W14x43	0.87	0.088	0.089	0.143	0.236	0.236	0.266
W16x45	0.87	0.088	0.089	0.143	0.236	0.236	0.266
W18x46	0.87	0.088	0.089	0.143	0.236	0.236	0.266
W18x50	0.88	0.087	0.089	0.143	0.235	0.235	0.264
W8x35	0.9	0.086	0.089	0.143	0.231	0.231	0.261
W10x39	0.92	0.084	0.089	0.143	0.227	0.227	0.257
W24x62	0.93	0.084	0.088	0.143	0.226	0.226	0.255
W24x68	0.94	0.084	0.087	0.143	0.225	0.225	0.253
W21x57	0.95	0.083	0.086	0.143	0.223	0.223	0.252
W21x62	0.95	0.083	0.086	0.143	0.222	0.222	0.252
W14x48	0.96	0.082	0.085	0.143	0.221	0.221	0.250
W16x50	0.96	0.082	0.085	0.143	0.221	0.221	0.250
W18x55	0.96	0.082	0.085	0.143	0.221	0.221	0.250
W12x45	0.97	0.082	0.085	0.143	0.220	0.220	0.248
W10x49	1.01	0.079	0.081	0.143	0.214	0.214	0.241
W12x53	1.01	0.079	0.081	0.143	0.214	0.214	0.241
W8x40	1.02	0.079	0.081	0.143	0.213	0.213	0.240
W27x84	1.03	0.078	0.080	0.143	0.211	0.211	0.238
W18x60	1.04	0.078	0.079	0.143	0.210	0.210	0.237
W21x68	1.04	0.078	0.079	0.143	0.210	0.210	0.237
W24x76	1.04	0.078	0.079	0.143	0.210	0.210	0.237
W10x45	1.05	0.077	0.078	0.143	0.208	0.208	0.235
W14x53	1.05	0.077	0.078	0.143	0.208	0.208	0.235
W12x50	1.07	0.076	0.077	0.143	0.206	0.206	0.232
W16x57	1.08	0.076	0.076	0.143	0.204	0.204	0.231
W16x67	1.08	0.076	0.076	0.143	0.204	0.204	0.231
W14x61	1.09	0.075	0.076	0.143	0.203	0.203	0.229
W12x58	1.1	0.075	0.075	0.143	0.202	0.202	0.228

W10x54	1.11	0.074	0.075	0.143	0.201	0.201	0.226
W12x65	1.11	0.074	0.074	0.143	0.200	0.200	0.226
W21x73	1.11	0.074	0.074	0.143	0.200	0.200	0.226
W18x65	1.12	0.074	0.074	0.143	0.199	0.199	0.225
W18x76	1.12	0.074	0.074	0.143	0.199	0.199	0.225
W30x99	1.12	0.074	0.074	0.143	0.199	0.199	0.225
W24x84	1.14	0.073	0.073	0.143	0.196	0.196	0.222
W27x94	1.15	0.073	0.073	0.143	0.196	0.196	0.221
W8x48	1.2	0.07	0.070	0.143	0.189	0.189	0.214
W14x68	1.21	0.07	0.070	0.143	0.189	0.189	0.213
W30x108	1.21	0.07	0.070	0.143	0.189	0.189	0.213
W33x118	1.21	0.07	0.070	0.143	0.189	0.189	0.213
W18x71	1.22	0.07	0.070	0.143	0.188	0.188	0.212
W10x60	1.23	0.069	0.069	0.143	0.187	0.187	0.211
W12x72	1.23	0.069	0.069	0.143	0.187	0.187	0.211
W24x104	1.23	0.069	0.069	0.143	0.187	0.187	0.211
W16x77	1.24	0.069	0.069	0.143	0.186	0.186	0.209
W27x102	1.24	0.069	0.069	0.143	0.186	0.186	0.209
W18x86	1.26	0.068	0.068	0.143	0.184	0.184	0.207
W21x83	1.26	0.068	0.068	0.143	0.184	0.184	0.207
W24x94	1.27	0.067	0.067	0.143	0.182	0.182	0.206
W14x90	1.29	0.067	0.067	0.143	0.180	0.180	0.203
W36x135	1.29	0.067	0.067	0.143	0.180	0.180	0.203
W21x101	1.3	0.066	0.066	0.143	0.180	0.180	0.202
W30x116	1.3	0.066	0.066	0.143	0.180	0.180	0.202
W14x74	1.31	0.066	0.066	0.143	0.179	0.179	0.201
W33x130	1.32	0.066	0.066	0.143	0.177	0.177	0.200
W12x79	1.34	0.065	0.065	0.143	0.176	0.176	0.198
W10x68	1.38	0.064	0.064	0.143	0.172	0.172	0.194
W24x117	1.38	0.064	0.064	0.143	0.172	0.172	0.194

W27x114	1.38	0.063	0.063	0.143	0.172	0.172	0.194
W30x124	1.38	0.063	0.063	0.143	0.171	0.171	0.194
W21x93	1.4	0.063	0.063	0.143	0.170	0.170	0.192
W18x97	1.41	0.062	0.062	0.143	0.169	0.169	0.191
W14x99	1.42	0.062	0.062	0.143	0.169	0.169	0.190
W16x89	1.42	0.062	0.062	0.143	0.169	0.169	0.190
W21x111	1.42	0.062	0.062	0.143	0.168	0.168	0.190
W8x58	1.43	0.062	0.062	0.142	0.167	0.167	0.189
W33x141	1.43	0.062	0.062	0.142	0.167	0.167	0.189
W36x150	1.43	0.062	0.062	0.142	0.167	0.167	0.189
W14x82	1.44	0.061	0.061	0.141	0.166	0.166	0.188
W12x87	1.46	0.061	0.061	0.139	0.164	0.164	0.186
W30x132	1.47	0.061	0.061	0.138	0.164	0.164	0.185
W36x160	1.52	0.059	0.059	0.134	0.160	0.160	0.180
W18x106	1.53	0.059	0.059	0.133	0.159	0.159	0.179
W24x131	1.53	0.059	0.059	0.133	0.159	0.159	0.179
W33x152	1.53	0.059	0.059	0.133	0.159	0.159	0.179
W10x77	1.55	0.058	0.058	0.132	0.158	0.158	0.177
W14x109	1.55	0.058	0.058	0.132	0.158	0.158	0.177
W21x122	1.55	0.058	0.058	0.132	0.158	0.158	0.177
W27x146	1.55	0.058	0.058	0.131	0.158	0.158	0.177
W16x100	1.58	0.057	0.057	0.129	0.155	0.155	0.175
W12x96	1.61	0.056	0.056	0.127	0.153	0.153	0.172
W36x170	1.61	0.056	0.056	0.127	0.153	0.153	0.172
W8x67	1.63	0.056	0.056	0.125	0.151	0.151	0.171
W21x132	1.67	0.055	0.055	0.122	0.149	0.149	0.167
W30x173	1.67	0.055	0.055	0.122	0.149	0.149	0.167
W14x120	1.69	0.054	0.054	0.121	0.147	0.147	0.167
W24x146	1.7	0.054	0.054	0.121	0.147	0.147	0.167
W27x161	1.7	0.054	0.054	0.121	0.147	0.147	0.167

W18x119	1.71	0.054	0.054	0.120	0.146	0.146	0.167
W36x182	1.71	0.054	0.054	0.119	0.146	0.146	0.167
W10x88	1.75	0.046	0.046	0.053	0.064	0.064	0.167
W12x106	1.76	0.046	0.046	0.053	0.064	0.064	0.167
W33x201	1.8	0.046	0.046	0.053	0.064	0.064	0.167
W36x194	1.82	0.046	0.046	0.053	0.064	0.064	0.167
W30x191	1.84	0.046	0.046	0.053	0.064	0.064	0.167
W14x132	1.85	0.046	0.046	0.053	0.064	0.064	0.167
W21x147	1.85	0.046	0.046	0.053	0.064	0.064	0.167
W24x162	1.87	0.046	0.046	0.053	0.064	0.064	0.167
W27x178	1.87	0.046	0.046	0.053	0.064	0.064	0.167
W36x230	1.95	0.046	0.046	0.053	0.064	0.064	0.167
W10x100	1.96	0.046	0.046	0.053	0.064	0.064	0.167
W33x221	1.96	0.046	0.046	0.053	0.064	0.064	0.167
W36x210	1.96	0.046	0.046	0.053	0.064	0.064	0.167
W14x145	1.97	0.046	0.046	0.053	0.064	0.064	0.167
W12x120	1.98	0.046	0.046	0.053	0.064	0.064	0.167
W30x211	2.02	0.046	0.046	0.053	0.064	0.064	0.167
W36x245	2.07	0.046	0.046	0.053	0.064	0.064	0.167
W33x241	2.13	0.046	0.046	0.053	0.064	0.064	0.167
W14x159	2.14	0.046	0.046	0.053	0.064	0.064	0.167
W10x112	2.17	0.046	0.046	0.053	0.064	0.064	0.167
W36x260	2.19	0.046	0.046	0.053	0.064	0.064	0.167
W12x136	2.21	0.046	0.046	0.053	0.064	0.064	0.167
W36x280	2.35	0.046	0.046	0.053	0.064	0.064	0.167
W14x176	2.36	0.046	0.046	0.053	0.064	0.064	0.167
W12x152	2.45	0.046	0.046	0.053	0.064	0.064	0.167
W36x300	2.50	0.046	0.046	0.053	0.064	0.064	0.167
W14x193	2.57	0.046	0.046	0.053	0.064	0.064	0.167
W12x170	2.71	0.046	0.046	0.053	0.064	0.064	0.167

W14x211	2.78	0.046	0.046	0.053	0.064	0.064	0.167
W12x190	2.99	0.046	0.046	0.053	0.064	0.064	0.167
W14x233	3.04	0.046	0.046	0.053	0.064	0.064	0.167
W12x210	3.26	0.046	0.046	0.053	0.064	0.064	0.167
W14x257	3.32	0.046	0.046	0.053	0.064	0.064	0.167
W12x230	3.53	0.046	0.046	0.053	0.064	0.064	0.167
W14x283	3.62	0.046	0.046	0.053	0.064	0.064	0.167
W12x252	3.82	0.046	0.046	0.053	0.064	0.064	0.167
W14x311	3.93	0.046	0.046	0.053	0.064	0.064	0.167
W12x279	4.16	0.046	0.046	0.053	0.064	0.064	0.167
W14x342	4.27	0.046	0.046	0.053	0.064	0.064	0.167
W12x305	4.48	0.046	0.046	0.053	0.064	0.064	0.167
W14x370	4.57	0.046	0.046	0.053	0.064	0.064	0.167
W12x336	4.85	0.046	0.046	0.053	0.064	0.064	0.167
W14x398	4.87	0.046	0.046	0.053	0.064	0.064	0.167
W14x426	5.15	0.046	0.046	0.053	0.064	0.064	0.167
W14x455	5.45	0.046	0.046	0.053	0.064	0.064	0.167
W14x500	5.89	0.046	0.046	0.053	0.064	0.064	0.167
W14x550	6.37	0.046	0.046	0.053	0.064	0.064	0.167
W14x605	6.89	0.046	0.046	0.053	0.064	0.064	0.167
W14x665	7.43	0.046	0.046	0.053	0.064	0.064	0.167
W14x730	7.99	0.046	0.046	0.053	0.064	0.064	0.167

NR - Not Rated

CARBOLINE CO — Type Thermo-Sorb 263. Investigated for Interior Condition Space Purpose and Interior General Purpose. (See Item 8)

8. Top Coat — For Interior General Purpose Type Carboguard 1340 or Type Rustbond Penetrating Sealer intermediate coat applied over the base coat at 0.002 in. thickness and Type Carbothane 133HB top-coat, Type Carbocrylic 3359 or Type Carbothane 133VOC top-coat or Carbothane 133MC top-coat applied over the intermediate coat at 0.003 in. thickness.

*** 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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