



# BXUV.Y724

## 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

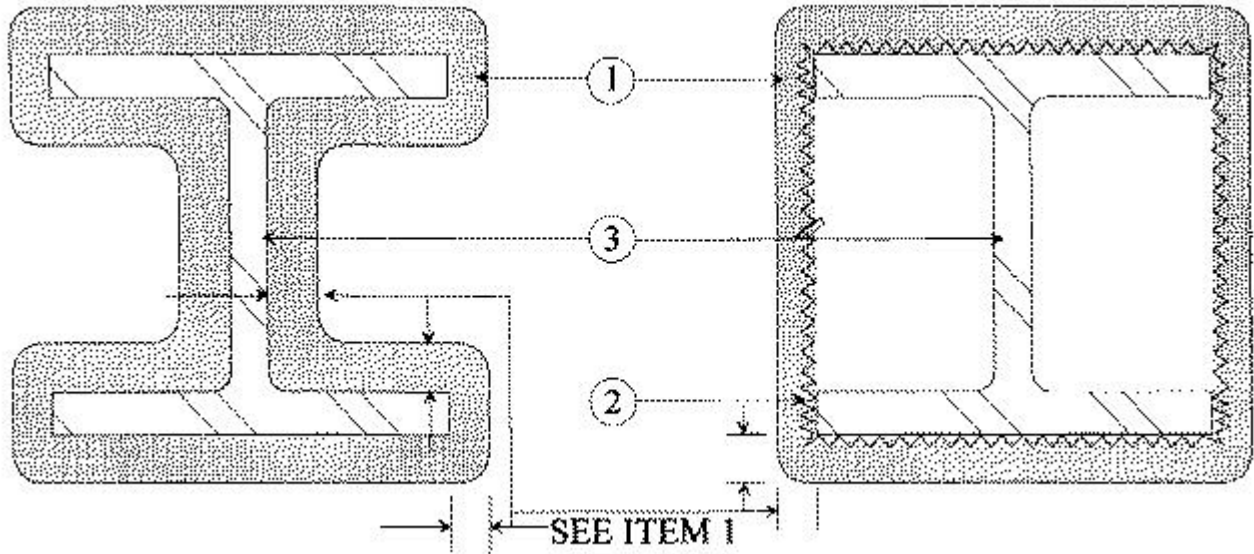
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada  
Design Criteria and Allowable Variances

### Design No. Y724

June 02, 2016

### Ratings — 1, 1-1/2, 2, 3 & 4 Hr

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



**1. Spray-Applied Resistive Material\*** — See table below for appropriate thickness. Applied in several coats to steel surfaces which must be clean and free of dirt, loose scale and oil. Min avg and min ind density of 22/19 pcf respectively. For method of density determination refer to General Information Section.  
 The thickness of spray-applied resistive material (Item 1) required for rating periods of 1 h, 1-1/2 h, 2 h, 3 h, 4 h may be determined by the equation:

$$h = \frac{R}{1.05 (W/D) + 0.61}$$

Where:

h = Spray-Applied Resistive Material in the range of 0.25-3.875 in.

R = Fire resistance rating in hours (1 - 4 h).

D = Heated perimeter of steel column in inches.

W = Weight of steel column in lbs per foot.

W/D = 0.33 to 6.62.

As an alternate to the equation, the minimum thickness of spray-applied resistive material mixture required for various fire resistance ratings of contour sprayed or boxed columns may be determined from the table below:

Min Col Size	W/D	Min Thk In.				
		1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W6x9	0.33	1-1/8	1-1/2	2	2-1/2	3-13/16
W6x16	0.57	13/16	1-1/4	1-9/16	2-1/2	3
W8x28	0.67	3/4	1-3/16	1-3/8	2	2-1/2
W10x49	0.83	11/16	7/8	1-1/8	1-11/16	2-7/16
W14x228	2.49	5/16	7/16	9/16	7/8	1-1/4
W14x730	6.62	—	—	1/4	3/8	9/16

The thicknesses of Spray-Applied Fire Resistive Materials contained in the table below are applicable when the protection of the contour sprayed column's flange tips are reduced to one-half.

**Column**

**Min Thkns In.**

Size	W/D	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W6x9	0.33	1-1/8	1-5/8	2-1/16	2-15/16	3-13/16
W6x16	0.67	7/8	1-5/16	1-3/4	2-9/16	3-3/8
W8x28	0.67	13/16	1-3/16	1-1/2	2-1/4	2-15/16
W10x49	0.83	3/4	1-1/16	1-3/8	2-1/16	2-3/4
W14x228	2.49	3/8	1/2	11/16	1-3/16	1-5/8
W14x730	6.62	—	—	1/4	9/16	3/4

**GCP APPLIED TECHNOLOGIES INC** — Type Z-106/HY

**GCP KOREA INC** — Type Z-106/HY

Min Col Size	W/D	Min Thk In.				
		1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W6x9	0.33	1-1/8	1-1/2	2	2-1/2	3-13/16
W6x16	0.57	13/16	1-1/4	1-11/16	2-1/2	3-5/16
W8x28	0.67	3/4	1-3/16	1-3/8	2	2-11/16
W10x49	0.83	11/16	7/8	1-1/8	1-11/16	2-1/2
W14x228	2.49	5/16	1/2	9/16	7/8	1-1/4
W14x730	6.62	—	—	5/16	3/8	9/16

The thicknesses contained in the table below are applicable when the Spray-Applied Fire Resistive Materials applied to columns' flange tips are reduced to one-half that shown in the table below:

Member Min. Column Size	W/D	Half Flange Tip Thickness				
		1 hr	1.5 hr	2 hr	3 hr	4 hr
W6x9	0.340	1-1/8	1-5/8	2	2-15/16	3-15/16
W10x12	0.347	1-1/8	1-5/8	2	2-15/16	3-7/8
W12x14	0.363	1-1/16	1-5/8	1-15/16	2-7/8	3-13/16
W12x16	0.410	1-1/16	1-9/16	1-7/8	2-13/16	3-11/16
W8x13	0.421	1-1/16	1-9/16	1-7/8	2-3/4	3-11/16
W10x15	0.429	1-1/16	1-9/16	1-7/8	2-3/4	3-5/8
W6x15	0.431	1	1-9/16	1-7/8	2-3/4	3-5/8
W6x12	0.448	1	1-1/2	1-13/16	2-11/16	3-9/16
W14x22	0.476	1	1-1/2	1-13/16	2-11/16	3-1/2

W8x15	0.481	1	1-1/2	1-13/16	2-5/8	3-1/2
W10x17	0.482	1	1-1/2	1-13/16	2-5/8	3-1/2
W12x19	0.485	1	1-1/2	1-13/16	2-5/8	3-1/2
W8x18	0.499	1	1-7/16	1-3/4	2-5/8	3-7/16
W16x26	0.499	1	1-7/16	1-3/4	2-5/8	3-7/16
W10x22	0.523	15/16	1-7/16	1-3/4	2-9/16	3-7/16
W12x26	0.531	15/16	1-7/16	1-3/4	2-9/16	3-7/16
W10x19	0.538	15/16	1-7/16	1-11/16	2-9/16	3-7/16
W5x16	0.550	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W4x13	0.556	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W14x26	0.559	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W12x22	0.560	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W14x30	0.562	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W6x20	0.563	15/16	1-7/16	1-11/16	2-1/2	3-7/16
W8x21	0.577	7/8	1-3/8	1-11/16	2-1/2	3-3/8
W6x16	0.584	7/8	1-1/4	1-11/16	2-7/16	3-3/8
W8x24	0.591	7/8	1-1/4	1-5/8	2-7/16	3-1/4
W16x31	0.592	7/8	1-1/4	1-5/8	2-7/16	3-1/4
W18x35	0.602	7/8	1-1/4	1-5/8	2-7/16	3-3/16
W12x30	0.607	7/8	1-1/4	1-5/8	2-7/16	3-3/16
W10x26	0.612	7/8	1-1/4	1-5/8	2-7/16	3-3/16
W16x36	0.617	7/8	1-1/4	1-5/8	2-3/8	3-3/16
W14x34	0.633	13/16	1-1/4	1-5/8	2-3/8	3-1/8
W5x19	0.644	13/16	1-3/16	1-5/8	2-3/8	3-1/8
W10x33	0.661	13/16	1-3/16	1-9/16	2-15/16	3-1/16
W8x31	0.665	13/16	1-3/16	1-9/16	2-15/16	3-1/16
W21x44	0.672	13/16	1-3/16	1-9/16	2-15/16	3-1/16
W16x40	0.686	13/16	1-3/16	1-9/16	2-15/16	3-1/16
W8x28	0.688	3/4	1-3/16	1-9/16	2-15/16	3-1/16
W18x40	0.688	3/4	1-3/16	1-9/16	2-15/16	3-1/16
W6x25	0.696	3/4	1-3/16	1-9/16	2-15/16	3

W10x30	0.699	3/4	1-3/16	1-9/16	2-1/4	3
W12x35	0.703	3/4	1-3/16	1-9/16	2-1/4	3
W14x38	0.706	3/4	1-3/16	1-9/16	2-1/4	3
W12x40	0.734	3/4	1-1/8	1-1/2	2-1/4	2-15/16
W8x35	0.749	3/4	1-1/8	1-1/2	2-3/16	2-15/16
W24x55	0.749	3/4	1-1/8	1-1/2	2-3/16	2-15/16
W14x43	0.752	3/4	1-1/8	1-1/2	2-3/16	2-15/16
W21x50	0.754	3/4	1-1/8	1-1/2	2-3/16	2-15/16
W16x45	0.767	3/4	1-1/8	1-1/2	2-3/16	2-7/8
W18x50	0.778	3/4	1-1/8	1-1/2	2-3/16	2-7/8
W10x39	0.780	3/4	1-1/8	1-7/16	2-3/16	2-7/8
W18x46	0.786	3/4	1-1/8	1-7/16	2-3/16	2-7/8
W12x45	0.829	3/4	1-1/16	1-7/16	2-1/8	2-13/16
W14x48	0.835	3/4	1-1/16	1-7/16	2-1/8	2-3/4
W24x68	0.837	3/4	1-1/16	1-7/16	2-1/8	2-3/4
W10x49	0.840	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W24x62	0.844	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W16x50	0.846	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W21x62	0.846	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W8x40	0.849	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W18x55	0.850	3/4	1-1/16	1-7/16	2-1/16	2-3/4
W12x53	0.855	3/4	1-1/16	1-3/8	2-1/16	2-3/4
W21x57	0.857	3/4	1-1/16	1-3/8	2-1/16	2-3/4
W10x45	0.888	3/4	1-1/16	1-3/8	2-1/16	2-11/16
W12x50	0.909	11/16	1-1/16	1-3/8	2	2-11/16
W14x53	0.915	11/16	1-1/16	1-3/8	2	2-5/8
W27x84	0.921	11/16	1-1/16	1-3/8	2	2-5/8
W10x54	0.922	11/16	1	1-3/8	2	2-5/8
W18x60	0.923	11/16	1	1-3/8	2	2-5/8
W12x58	0.925	11/16	1	1-3/8	2	2-5/8
W12x65	0.925	11/16	1	1-3/8	2	2-5/8

W21x68	0.926	11/16	1	1-3/8	2	2-5/8
W14x61	0.928	11/16	1	1-3/8	2	2-5/8
W24x76	0.933	11/16	1	1-3/8	2	2-5/8
W16x67	0.936	11/16	1	1-5/16	2	2-5/8
W16x57	0.963	11/16	1	1-5/16	1-5/16	2-9/16
W18x76	0.971	11/16	1	1-5/16	1-5/16	2-9/16
W21x73	0.989	11/16	1	1-5/16	1-5/16	2-9/16
W18x65	0.997	11/16	1	1-5/16	1-5/16	2-9/16
W8x48	1.000	11/16	1	1-5/16	1-5/16	2-1/2
W30x99	1.000	11/16	1	1-5/16	1-5/16	2-1/2
W10x60	1.010	11/16	1	1-5/16	1-7/8	2-1/2
W12x72	1.020	11/16	1	1-5/16	1-7/8	2-1/2
W24x84	1.020	11/16	1	1-5/16	1-7/8	2-1/2
W27x94	1.030	11/16	1	1-1/4	1-7/8	2-1/2
W14x68	1.040	11/16	15/16	1-1/4	1-7/8	2-1/2
W16x77	1.070	11/16	15/16	1-1/4	1-7/8	2-7/16
W24x104	1.070	11/16	15/16	1-1/4	1-7/8	2-7/16
W14x90	1.080	5/8	15/16	1-1/4	1-13/16	2-7/16
W18x71	1.080	5/8	15/16	1-1/4	1-13/16	2-7/16
W33x118	1.080	5/8	15/16	1-1/4	1-13/16	2-7/16
W18x86	1.090	5/8	15/16	1-1/4	1-13/16	2-7/16
W30x108	1.090	5/8	15/16	1-1/4	1-13/16	2-7/16
W12x79	1.110	5/8	15/16	1-1/4	1-13/16	2-3/8
W27x102	1.110	5/8	15/16	1-1/4	1-13/16	2-3/8
W14x74	1.120	5/8	15/16	1-1/4	1-13/16	2-3/8
W21x83	1.120	5/8	15/16	1-1/4	1-13/16	2-3/8
W21x101	1.130	5/8	15/16	1-3/16	1-13/16	2-3/8
W24x94	1.140	5/8	15/16	1-3/16	1-13/16	2-3/8
W10x68	1.150	5/8	15/16	1-3/16	1-3/4	2-5/16
W36x135	1.150	5/8	15/16	1-3/16	1-3/4	2-5/16
W30x116	1.160	5/8	15/16	1-3/16	1-3/4	2-5/16

W14x99	1.180	5/8	14/16	1-3/16	1-3/4	2-5/16
W33x130	1.180	5/8	14/16	1-3/16	1-3/4	2-5/16
W8x58	1.200	5/8	14/16	1-3/16	1-3/4	2-5/16
W24x117	1.200	5/8	14/16	1-3/16	1-3/4	2-5/16
W12x87	1.220	5/8	14/16	1-3/16	1-11/16	2-1/4
W16x89	1.220	5/8	14/16	1-3/16	1-11/16	2-1/4
W18x97	1.220	5/8	14/16	1-3/16	1-11/16	2-1/4
W14x82	1.230	5/8	14/16	1-3/16	1-11/16	2-1/4
W27x114	1.230	5/8	14/16	1-3/16	1-11/16	2-1/4
W21x93	1.240	5/8	14/16	1-1/8	1-11/16	2-1/4
W21x111	1.240	5/8	14/16	1-1/8	1-11/16	2-1/4
W30x124	1.240	5/8	14/16	1-1/8	1-11/16	2-1/4
W36x150	1.270	5/8	14/16	1-1/8	1-11/16	2-3/16
W10x77	1.280	5/8	14/16	1-1/8	1-11/16	2-3/16
W33x414	1.280	5/8	14/16	1-1/8	1-11/16	2-3/16
W14x109	1.290	9/16	14/16	1-1/8	1-11/16	2-3/16
W30x132	1.320	9/16	14/16	1-1/8	1-5/8	2-3/16
W18x106	1.330	9/16	14/16	1-1/8	1-5/8	2-1/8
W24x131	1.330	9/16	14/16	1-1/8	1-5/8	2-1/8
W12x96	1.340	9/16	13/16	1-1/8	1-5/8	2-1/8
W21x122	1.350	9/16	13/16	1-1/8	1-5/8	2-1/8
W27x146	1.350	9/16	13/16	1-1/8	1-5/8	2-1/8
W36x160	1.350	9/16	13/16	1-1/8	1-5/8	2-1/8
W8x67	1.370	9/16	13/16	1-1/16	1-5/8	2-1/8
W16x100	1.370	9/16	13/16	1-1/16	1-5/8	2-1/8
W33x152	1.370	9/16	13/16	1-1/16	1-5/8	2-1/8
W14x120	1.420	9/16	13/16	1-1/16	1-9/16	2-1/16
W36x170	1.430	9/16	13/16	1-1/16	1-9/16	2-1/16
W10x88	1.450	9/16	13/16	1-1/16	1-9/16	2-1/16
W21x132	1.450	9/16	13/16	1-1/16	1-9/16	2-1/16
W12x106	1.470	9/16	13/16	1-1/16	1-9/16	2

W30x173	1.470	9/16	13/16	1-1/16	1-9/16	2
W18x119	1.480	9/16	13/16	1-1/16	1-1/2	2
W24x146	1.480	9/16	13/16	1-1/16	1-1/2	2
W27x161	1.480	9/16	13/16	1-1/16	1-1/2	2
W36x182	1.520	9/16	12/16	1	1-1/2	2
W14x132	1.560	1/2	12/16	1	1-1/2	1-15/16
W33x201	1.580	1/2	12/16	1	1-7/16	1-15/16
W21x147	1.610	1/2	12/16	1	1-7/16	1-15/16
W30x191	1.620	1/2	12/16	1	1-7/16	1-7/8
W36x194	1.620	1/2	12/16	1	1-7/16	1-7/8
W24x162	1.630	1/2	12/16	1	1-7/16	1-7/8
W27x178	1.630	1/2	12/16	1	1-7/16	1-7/8
W10x100	1.640	1/2	12/16	1	1-7/16	1-7/8
W14x145	1.640	1/2	12/16	1	1-7/16	1-7/8
W12x120	1.650	1/2	12/16	15/16	1-7/16	1-7/8
W36x230	1.690	1/2	12/16	15/16	1-3/8	1-7/8
W33x221	1.730	1/2	11/16	15/16	1-3/8	1-13/16
W36x210	1.740	1/2	11/16	15/16	1-3/8	1-13/16
W30x211	1.760	1/2	11/16	15/16	1-3/8	1-13/16
W14x159	1.780	1/2	11/16	15/16	1-3/8	1-13/16
W36x245	1.790	1/2	11/16	15/16	1-3/8	1-13/16
W10x112	1.810	1/2	11/16	15/16	1-5/16	1-3/4
W12x136	1.860	1/2	11/16	7/8	1-5/16	1-3/4
W33x241	1.870	1/2	11/16	7/8	1-5/16	1-3/4
W36x260	1.900	7/16	11/16	7/8	1-5/16	1-11/16
W14x176	1.960	7/16	11/16	7/8	1-1/4	1-11/16
W36x280	2.030	7/16	10/16	7/8	1-1/4	1-5/8
W12x152	2.040	7/16	10/16	13/16	1-1/4	1-5/8
W14x193	2.140	7/16	10/16	13/16	1-3/16	1-5/8
W36x300	2.170	7/16	10/16	13/16	1-3/16	1-5/8
W12x170	2.260	7/16	10/16	13/16	1-1/8	1-5/8



W14x211	2.320	7/16	9/16	3/4	1-1/8	1-5/8
W12x190	2.500	3/8	9/16	3/4	1-1/16	1-5/8
W14x233	2.550	3/8	9/16	11/16	1-1/16	1-5/8
W12x210	2.730	3/8	8/16	11/16	1-1/16	1-7/16
W14x257	2.780	3/8	8/16	11/16	1-1/16	1-7/16
W12x230	2.960	3/8	8/16	5/8	15/16	1-3/8
W14x283	3.030	5/16	8/16	5/8	15/16	1-3/8
W12x252	3.200	5/16	8/16	5/8	7/8	1-5/16
W14x311	3.300	5/16	7/16	5/8	7/8	1-1/4
W12x279	3.500	5/16	7/16	9/16	13/16	1-1/4
W14x342	3.580	5/16	7/16	9/16	13/16	1-3/16
W12x305	3.760	5/16	7/16	9/16	13/16	1-3/16
W14x370	3.840	5/16	7/16	1/2	3/4	1-1/8
W12x336	4.060	5/16	6/16	1/2	3/4	1-1/8
W14x398	4.090	5/16	6/16	1/2	3/4	1-1/16
W14x426	4.320	5/16	6/16	1/2	11/16	1-1/16
W14x455	4.590	5/16	6/16	7/16	11/16	1
W14x500	4.950	5/16	5/16	7/16	5/8	15/16
W14x550	5.340	5/16	5/16	7/16	5/8	7/8
W14x605	5.820	5/16	5/16	3/8	9/16	7/8
W14x665	6.210	5/16	5/16	3/8	1/2	13/16
W14x730	6.760	5/16	5/16	5/16	1/2	3/4

**ARABIAN VERMICULITE INDUSTRIES** — Types Z-106/G, Z106/HY, Z-106

**GCP APPLIED TECHNOLOGIES INC** — Type Z-106/G, Z-106/HY, Z-106

**GCP KOREA INC** — Type Z-106/G, Z-106/HY, Z-106

**\* 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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