

**Southwest Fireproofing Type 5 GP, 5 MD, 7 GP and 7 HD**

**Design No. S740 - Beam-only Design for Roofs**

Minimum Thickness, in., Required on Beam When Lower Flange Edge Thickness is Reduced by One-Half \*

<b>Unrestrained Beam Rating</b>				<b>Restrained Beam Rating**</b>					
1 Hr	1.5 Hr	2 Hr	3 Hr	Member	W/D	1 Hr	1.5 Hr	2 Hr	3 Hr
0.560	0.910	1.400	2.240	W4x13	0.65	0.560	0.770	1.190	1.890
0.560	0.910	1.400	2.240	W5x16	0.65	0.560	0.770	1.190	1.890
0.515	0.836	1.287	2.059	W5x19	0.76	0.515	0.708	1.094	1.737
0.707	1.149	1.768	2.828	W6x9	0.39	0.707	0.972	1.503	2.386
0.631	1.025	1.577	2.523	W6x12	0.51	0.631	0.867	1.340	2.128
0.556	0.903	1.389	2.222	W6x16	0.66	0.556	0.764	1.181	1.875
0.551	0.896	1.378	2.205	W6x20	0.67	0.551	0.758	1.171	1.860
0.493	0.801	1.232	1.972	W6x26	0.82	0.493	0.678	1.048	1.664
0.722	1.173	1.804	2.887	W8x10	0.37	0.722	0.992	1.534	2.436
0.654	1.063	1.636	2.617	W8x13	0.47	0.654	0.900	1.390	2.208
0.614	0.998	1.535	2.456	W8x15	0.54	0.614	0.844	1.305	2.072
0.598	0.972	1.496	2.393	W8x18	0.57	0.598	0.823	1.271	2.019
0.556	0.903	1.389	2.222	W8x21	0.66	0.556	0.764	1.181	1.875
0.543	0.882	1.357	2.171	W8x24	0.69	0.543	0.746	1.153	1.831
0.500	0.813	1.250	2.000	W8x28	0.80	0.500	0.688	1.063	1.688
0.504	0.818	1.259	2.014	W8x31	0.79	0.504	0.692	1.070	1.700
0.473	0.769	1.182	1.892	W8x35	0.88	0.473	0.650	1.005	1.596
0.438	0.711	1.094	1.750	W8x40	1.00	0.438	0.602	0.930	1.477
0.393	0.639	0.983	1.573	W8x48	1.18	0.393	0.541	0.836	1.327
0.375	0.566	0.871	1.393	W8x58	1.41	0.375	0.479	0.740	1.175
0.375	0.515	0.792	1.267	W8x67	1.61	0.375	0.436	0.673	1.069
0.714	1.161	1.786	2.857	W10x12	0.38	0.714	0.982	1.518	2.411
0.648	1.053	1.620	2.593	W10x15	0.48	0.648	0.891	1.377	2.188
0.614	0.998	1.535	2.456	W10x17	0.54	0.614	0.844	1.305	2.072
0.588	0.956	1.471	2.353	W10x19	0.59	0.588	0.809	1.250	1.985
0.588	0.956	1.471	2.353	W10x22	0.59	0.588	0.809	1.250	1.985
0.543	0.882	1.357	2.171	W10x26	0.69	0.543	0.746	1.153	1.831
0.504	0.818	1.259	2.014	W10x30	0.79	0.504	0.692	1.070	1.700
0.511	0.830	1.277	2.044	W10x33	0.77	0.511	0.703	1.086	1.724
0.467	0.758	1.167	1.867	W10x39	0.90	0.467	0.642	0.992	1.575
0.429	0.698	1.074	1.718	W10x46	1.03	0.429	0.590	0.913	1.449
0.440	0.715	1.101	1.761	W10x49	0.99	0.440	0.605	0.936	1.486
0.414	0.673	1.036	1.657	W10x54	1.09	0.414	0.570	0.880	1.398
0.389	0.632	0.972	1.556	W10x60	1.20	0.389	0.535	0.826	1.313
0.375	0.580	0.893	1.429	W10x68	1.36	0.375	0.491	0.759	1.205
0.375	0.537	0.825	1.321	W10x77	1.52	0.375	0.454	0.702	1.114
0.375	0.490	0.754	1.207	W10x88	1.72	0.375	0.415	0.641	1.018
0.375	0.450	0.692	1.107	W10x100	1.93	0.375	0.380	0.588	0.934
0.375	0.415	0.639	1.022	W10x112	2.14	0.375	0.375	0.543	0.862
0.700	1.138	1.750	2.800	W12x14	0.40	0.700	0.963	1.488	2.363
0.667	1.083	1.667	2.667	W12x16	0.45	0.667	0.917	1.417	2.250
0.619	1.007	1.549	2.478	W12x19	0.53	0.619	0.852	1.316	2.091
0.579	0.940	1.446	2.314	W12x22	0.61	0.579	0.795	1.229	1.952
0.583	0.948	1.458	2.333	W12x26	0.60	0.583	0.802	1.240	1.969
0.543	0.882	1.357	2.171	W12x30	0.69	0.543	0.746	1.153	1.831

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Minimum Thickness, in., Required on Beam When Lower Flange Edge Thickness is Reduced by One-Half \*

<b>Unrestrained Beam Rating</b>				<b>Member</b>	<b>W/D</b>	<b>Restrained Beam Rating**</b>			
1 Hr	1.5 Hr	2 Hr	3 Hr			1 Hr	1.5 Hr	2 Hr	3 Hr
0.504	0.818	1.259	2.014	W12x35	0.79	0.504	0.692	1.070	1.700
0.483	0.784	1.207	1.931	W12x40	0.85	0.483	0.664	1.026	1.629
0.452	0.734	1.129	1.806	W12x45	0.95	0.452	0.621	0.960	1.524
0.427	0.694	1.067	1.707	W12x50	1.04	0.427	0.587	0.907	1.441
0.440	0.715	1.101	1.761	W12x53	0.99	0.440	0.605	0.936	1.486
0.427	0.694	1.067	1.707	W12x54	1.04	0.427	0.587	0.907	1.441
0.417	0.677	1.042	1.667	W12x58	1.08	0.417	0.573	0.885	1.406
0.414	0.673	1.036	1.657	W12x65	1.09	0.414	0.570	0.880	1.398
0.389	0.632	0.972	1.556	W12x72	1.20	0.389	0.535	0.826	1.313
0.375	0.592	0.911	1.458	W12x79	1.32	0.375	0.501	0.775	1.230
0.375	0.558	0.858	1.373	W12x87	1.44	0.375	0.472	0.729	1.158
0.375	0.524	0.806	1.290	W12x96	1.57	0.375	0.444	0.685	1.089
0.375	0.488	0.751	1.202	W12x106	1.73	0.375	0.413	0.638	1.014
0.375	0.448	0.689	1.102	W12x120	1.94	0.375	0.379	0.586	0.930
0.375	0.411	0.632	1.011	W12x136	2.17	0.375	0.375	0.537	0.853
0.375	0.379	0.583	0.933	W12x152	2.40	0.375	0.375	0.496	0.788
0.375	0.375	0.537	0.859	W12x170	2.66	0.375	0.375	0.456	0.725
0.375	0.375	0.496	0.793	W12x190	2.93	0.375	0.375	0.421	0.669
0.375	0.375	0.459	0.735	W12x210	3.21	0.375	0.375	0.390	0.620
0.375	0.375	0.430	0.688	W12x230	3.47	0.375	0.375	0.375	0.580
0.375	0.375	0.401	0.642	W12x262	3.76	0.375	0.375	0.375	0.542
0.375	0.375	0.375	0.596	W12x279	4.10	0.375	0.375	0.375	0.503
0.375	0.375	0.375	0.559	W12x305	4.41	0.375	0.375	0.375	0.472
0.375	0.375	0.375	0.520	W12x336	4.78	0.375	0.375	0.375	0.439
0.625	1.016	1.563	2.500	W14x22	0.52	0.625	0.859	1.328	2.109
0.579	0.940	1.446	2.314	W14x26	0.61	0.579	0.795	1.229	1.952
0.569	0.925	1.423	2.276	W14x30	0.63	0.569	0.783	1.209	1.921
0.534	0.868	1.336	2.137	W14x34	0.71	0.534	0.735	1.135	1.803
0.504	0.818	1.259	2.014	W14x38	0.79	0.504	0.692	1.070	1.700
0.483	0.784	1.207	1.931	W14x43	0.85	0.483	0.664	1.026	1.629
0.455	0.739	1.136	1.818	W14x48	0.94	0.455	0.625	0.966	1.534
0.429	0.698	1.074	1.718	W14x53	1.03	0.429	0.590	0.913	1.449
0.419	0.681	1.048	1.677	W14x61	1.07	0.419	0.576	0.891	1.415
0.391	0.635	0.978	1.564	W14x68	1.19	0.391	0.538	0.831	1.320
0.375	0.605	0.931	1.489	W14x74	1.28	0.375	0.512	0.791	1.257
0.375	0.566	0.871	1.393	W14x82	1.41	0.375	0.479	0.740	1.175
0.375	0.608	0.936	1.497	W14x90	1.27	0.375	0.515	0.795	1.263
0.375	0.572	0.879	1.407	W14x99	1.39	0.375	0.484	0.747	1.187
0.375	0.534	0.822	1.315	W14x109	1.53	0.375	0.452	0.698	1.109
0.375	0.501	0.771	1.233	W14x120	1.67	0.375	0.424	0.655	1.041
0.375	0.468	0.720	1.152	W14x132	1.83	0.375	0.396	0.612	0.972
0.375	0.448	0.689	1.102	W14x145	1.94	0.375	0.379	0.586	0.930
0.375	0.420	0.646	1.033	W14x159	2.11	0.375	0.375	0.549	0.872
0.375	0.399	0.614	0.982	W14x176	2.25	0.375	0.375	0.522	0.829
0.375	0.390	0.599	0.959	W14x193	2.32	0.375	0.375	0.509	0.809

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<b>Unrestrained Beam Rating</b>				<b>Restrained Beam Rating**</b>					
1 Hr	1.5 Hr	2 Hr	3 Hr	<b>Member</b>	<b>W/D</b>	1 Hr	1.5 Hr	2 Hr	3 Hr
0.375	0.375	0.524	0.838	W14x211	2.74	0.375	0.375	0.445	0.707
0.375	0.375	0.486	0.778	W14x233	3.00	0.375	0.375	0.413	0.656
0.375	0.375	0.452	0.724	W14x257	3.27	0.375	0.375	0.384	0.610
0.375	0.375	0.420	0.671	W14x283	3.57	0.375	0.375	0.375	0.567
0.375	0.375	0.391	0.625	W14x311	3.88	0.375	0.375	0.375	0.527
0.375	0.375	0.375	0.582	W14x342	4.21	0.375	0.375	0.375	0.491
0.375	0.375	0.375	0.548	W14x370	4.51	0.375	0.375	0.375	0.462
0.375	0.375	0.375	0.519	W14x398	4.80	0.375	0.375	0.375	0.438
0.375	0.375	0.375	0.492	W14x426	5.09	0.375	0.375	0.375	0.415
0.375	0.375	0.375	0.468	W14x455	5.38	0.375	0.375	0.375	0.395
0.375	0.375	0.375	0.436	W14x500	5.82	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.406	W14x550	6.30	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.378	W14x605	6.80	0.375	0.375	0.375	0.375
0.609	0.989	1.522	2.435	W16x26	0.55	0.609	0.837	1.293	2.054
0.560	0.910	1.400	2.240	W16x31	0.65	0.560	0.770	1.190	1.890
0.543	0.882	1.357	2.171	W16x36	0.69	0.543	0.746	1.153	1.831
0.515	0.836	1.287	2.059	W16x40	0.76	0.515	0.708	1.094	1.737
0.483	0.784	1.207	1.931	W16x45	0.85	0.483	0.664	1.026	1.629
0.455	0.739	1.136	1.818	W16x50	0.94	0.455	0.625	0.966	1.534
0.419	0.681	1.048	1.677	W16x67	1.07	0.419	0.576	0.891	1.415
0.419	0.681	1.048	1.677	W16x77	1.07	0.419	0.576	0.891	1.415
0.385	0.625	0.962	1.538	W16x89	1.22	0.385	0.529	0.817	1.298
0.375	0.527	0.810	1.296	W16x100	1.56	0.375	0.446	0.689	1.094
0.556	0.903	1.389	2.222	W18x35	0.66	0.556	0.764	1.181	1.875
0.515	0.836	1.287	2.059	W18x40	0.76	0.515	0.708	1.094	1.737
0.479	0.779	1.199	1.918	W18x46	0.86	0.479	0.659	1.019	1.618
0.476	0.774	1.190	1.905	W18x50	0.87	0.476	0.655	1.012	1.607
0.452	0.734	1.129	1.806	W18x55	0.95	0.452	0.621	0.960	1.524
0.429	0.698	1.074	1.718	W18x60	1.03	0.429	0.590	0.913	1.449
0.409	0.665	1.023	1.637	W18x65	1.11	0.409	0.563	0.870	1.382
0.387	0.628	0.967	1.547	W18x71	1.21	0.387	0.532	0.822	1.305
0.409	0.665	1.023	1.637	W18x76	1.11	0.409	0.563	0.870	1.382
0.380	0.618	0.951	1.522	W18x88	1.24	0.380	0.523	0.808	1.284
0.375	0.572	0.879	1.407	W18x97	1.39	0.375	0.484	0.747	1.187
0.375	0.537	0.825	1.321	W18x106	1.52	0.375	0.454	0.702	1.114
0.375	0.499	0.768	1.228	W18x119	1.68	0.375	0.422	0.652	1.036
0.526	0.855	1.316	2.105	W21x44	0.73	0.526	0.724	1.118	1.776
0.490	0.795	1.224	1.958	W21x50	0.83	0.490	0.673	1.040	1.652
0.458	0.743	1.144	1.830	W21x57	0.93	0.458	0.629	0.972	1.544
0.455	0.739	1.136	1.818	W21x62	0.94	0.455	0.625	0.966	1.534
0.429	0.698	1.074	1.718	W21x68	1.03	0.429	0.590	0.913	1.449
0.380	0.618	0.951	1.522	W21x83	1.24	0.380	0.523	0.808	1.284
0.375	0.574	0.884	1.414	W21x93	1.38	0.375	0.486	0.751	1.193
0.375	0.602	0.926	1.481	W21x101	1.29	0.375	0.509	0.787	1.250
0.375	0.566	0.871	1.393	W21x111	1.41	0.375	0.479	0.740	1.175

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Minimum Thickness, in., Required on Beam When Lower Flange Edge Thickness is Reduced by One-Half \*

Unrestrained Beam Rating				Restrained Beam Rating**					
1 Hr	1.5 Hr	2 Hr	3 Hr	Member	W/D	1 Hr	1.5 Hr	2 Hr	3 Hr
0.375	0.532	0.818	1.308	W21x122	1.54	0.375	0.450	0.695	1.104
0.375	0.503	0.774	1.239	W21x132	1.66	0.375	0.426	0.658	1.045
0.375	0.468	0.720	1.152	W21x147	1.83	0.375	0.396	0.612	0.972
0.493	0.801	1.232	1.972	W24x55	0.82	0.493	0.678	1.048	1.664
0.461	0.748	1.151	1.842	W24x62	0.92	0.461	0.633	0.979	1.554
0.458	0.743	1.144	1.830	W24x68	0.93	0.458	0.629	0.972	1.544
0.432	0.702	1.080	1.728	W24x76	1.02	0.432	0.594	0.918	1.458
0.405	0.658	1.012	1.618	W24x84	1.13	0.405	0.556	0.860	1.366
0.376	0.612	0.941	1.505	W24x94	1.26	0.376	0.517	0.800	1.270
0.385	0.625	0.962	1.538	W24x104	1.22	0.385	0.529	0.817	1.298
0.375	0.580	0.893	1.429	W24x117	1.36	0.375	0.491	0.759	1.205
0.375	0.537	0.825	1.321	W24x131	1.52	0.375	0.454	0.702	1.114
0.375	0.499	0.768	1.228	W24x146	1.68	0.375	0.422	0.652	1.036
0.375	0.464	0.714	1.143	W24x162	1.85	0.375	0.393	0.607	0.964
0.432	0.702	1.080	1.728	W27x84	1.02	0.432	0.594	0.918	1.458
0.405	0.658	1.012	1.618	W27x94	1.13	0.405	0.556	0.860	1.366
0.383	0.622	0.956	1.530	W27x102	1.23	0.383	0.526	0.813	1.291
0.375	0.580	0.893	1.429	W27x114	1.36	0.375	0.491	0.759	1.205
0.375	0.534	0.822	1.315	W27x146	1.53	0.375	0.452	0.698	1.109
0.375	0.499	0.768	1.228	W27x161	1.68	0.375	0.422	0.652	1.036
0.375	0.464	0.714	1.143	W27x178	1.85	0.375	0.393	0.607	0.964
0.412	0.669	1.029	1.647	W30x99	1.10	0.412	0.566	0.875	1.390
0.389	0.632	0.972	1.556	W30x108	1.20	0.389	0.535	0.826	1.313
0.375	0.605	0.931	1.489	W30x116	1.28	0.375	0.512	0.791	1.257
0.375	0.577	0.888	1.421	W30x124	1.37	0.375	0.489	0.755	1.199
0.375	0.552	0.850	1.359	W30x132	1.46	0.375	0.467	0.722	1.147
0.375	0.503	0.774	1.239	W30x173	1.66	0.375	0.426	0.658	1.045
0.375	0.470	0.723	1.157	W30x191	1.82	0.375	0.398	0.615	0.976
0.375	0.438	0.673	1.077	W30x211	2.00	0.375	0.375	0.572	0.909
0.391	0.635	0.978	1.564	W33x118	1.19	0.391	0.538	0.831	1.320
0.375	0.596	0.916	1.466	W33x130	1.31	0.375	0.504	0.779	1.237
0.375	0.566	0.871	1.393	W33x141	1.41	0.375	0.479	0.740	1.175
0.375	0.539	0.829	1.327	W33x152	1.51	0.375	0.456	0.705	1.120
0.375	0.478	0.735	1.176	W33x201	1.78	0.375	0.404	0.625	0.993

These beam protection thicknesses have been calculated for the convenience of users, in accordance with "6. Adjustment of Thickness of Spray-applied Fire Resistive Materials for Restrained and Unrestrained Beams", as detailed in the UL FireResistance Directory - Volume 1, 2007, page 9. While we have taken care to be as accurate as possible, we will not be held responsible for errors or omissions. If any discrepancy is found between these tables and the UL Design information, the UL Design information shall govern.

\*Thickness applied to beam lower flange edges shall be a minimum of 3/8-in. (0.375-in.)

\*\*When used to adjust the material thickness for a **Restrained** beam the use of this procedure is limited to steel sections classified as **compact** in accordance with the *Specification for the Design of Structural Steel Buildings* by the American Institute of Steel Construction. Refer to the UL Fire Resistance Directory.