

AD Southwest Type 5 GP, 5 MD, 7 GP and 7 HD
N791 - Restrained and Unrestrained Beam Ratings
D949 - Unrestrained Beam Ratings only

Minimum Thickness Required on Beam for Size and Rating Indicated, in.
Lightweight Concrete

Unrestrained Beam Rating					Member	W/D	Restrained Beam Rating*				
1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr			1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr
0.420	0.630	0.910	1.400	1.820	W4x13	0.65	0.420	0.420	0.630	1.050	1.400
0.420	0.630	0.910	1.400	1.820	W5x16	0.65	0.420	0.420	0.630	1.050	1.400
0.386	0.579	0.836	1.287	1.673	W5x19	0.76	0.386	0.386	0.579	0.965	1.287
0.530	0.795	1.149	1.768	2.298	W6x9	0.39	0.530	0.530	0.795	1.326	1.768
0.473	0.709	1.025	1.577	2.050	W6x12	0.51	0.473	0.473	0.709	1.182	1.577
0.417	0.625	0.903	1.389	1.806	W6x16	0.66	0.417	0.417	0.625	1.042	1.389
0.413	0.620	0.896	1.378	1.791	W6x20	0.67	0.413	0.413	0.620	1.033	1.378
0.375	0.555	0.801	1.232	1.602	W6x26	0.82	0.375	0.375	0.555	0.924	1.232
0.541	0.812	1.173	1.804	2.345	W8x10	0.37	0.541	0.541	0.812	1.353	1.804
0.491	0.736	1.063	1.636	2.126	W8x13	0.47	0.491	0.491	0.736	1.227	1.636
0.461	0.691	0.998	1.535	1.996	W8x15	0.54	0.461	0.461	0.691	1.151	1.535
0.449	0.673	0.972	1.496	1.944	W8x18	0.57	0.449	0.449	0.673	1.122	1.496
0.417	0.625	0.903	1.389	1.806	W8x21	0.66	0.417	0.417	0.625	1.042	1.389
0.407	0.610	0.882	1.357	1.764	W8x24	0.69	0.407	0.407	0.610	1.017	1.357
0.375	0.563	0.813	1.250	1.625	W8x28	0.80	0.375	0.375	0.563	0.938	1.250
0.378	0.567	0.818	1.259	1.637	W8x31	0.79	0.378	0.378	0.567	0.944	1.259
0.375	0.532	0.769	1.182	1.537	W8x35	0.88	0.375	0.375	0.532	0.887	1.182
0.375	0.492	0.711	1.094	1.422	W8x40	1.00	0.375	0.375	0.492	0.820	1.094
0.375	0.442	0.639	0.983	1.278	W8x48	1.18	0.375	0.375	0.442	0.737	0.983
0.375	0.392	0.566	0.871	1.132	W8x58	1.41	0.375	0.375	0.392	0.653	0.871
0.375	0.375	0.515	0.792	1.029	W8x67	1.61	0.375	0.375	0.375	0.594	0.792
0.536	0.804	1.161	1.786	2.321	W10x12	0.38	0.536	0.536	0.804	1.339	1.786
0.486	0.729	1.053	1.620	2.106	W10x15	0.48	0.486	0.486	0.729	1.215	1.620
0.461	0.691	0.998	1.535	1.996	W10x17	0.54	0.461	0.461	0.691	1.151	1.535
0.441	0.662	0.956	1.471	1.912	W10x19	0.59	0.441	0.441	0.662	1.103	1.471
0.441	0.662	0.956	1.471	1.912	W10x22	0.59	0.441	0.441	0.662	1.103	1.471
0.407	0.610	0.882	1.357	1.764	W10x26	0.69	0.407	0.407	0.610	1.017	1.357
0.378	0.567	0.818	1.259	1.637	W10x30	0.79	0.378	0.378	0.567	0.944	1.259
0.383	0.575	0.830	1.277	1.661	W10x33	0.77	0.383	0.383	0.575	0.958	1.277
0.375	0.525	0.758	1.167	1.517	W10x39	0.90	0.375	0.375	0.525	0.875	1.167
0.375	0.483	0.698	1.074	1.396	W10x46	1.03	0.375	0.375	0.483	0.805	1.074
0.375	0.495	0.715	1.101	1.431	W10x49	0.99	0.375	0.375	0.495	0.825	1.101
0.375	0.466	0.673	1.036	1.346	W10x54	1.09	0.375	0.375	0.466	0.777	1.036
0.375	0.438	0.632	0.972	1.264	W10x60	1.20	0.375	0.375	0.438	0.729	0.972
0.375	0.402	0.580	0.893	1.161	W10x68	1.36	0.375	0.375	0.402	0.670	0.893
0.375	0.375	0.537	0.825	1.073	W10x77	1.52	0.375	0.375	0.375	0.619	0.825
0.375	0.375	0.490	0.754	0.981	W10x88	1.72	0.375	0.375	0.375	0.566	0.754
0.375	0.375	0.450	0.692	0.899	W10x100	1.93	0.375	0.375	0.375	0.519	0.692
0.375	0.375	0.415	0.639	0.830	W10x112	2.14	0.375	0.375	0.375	0.479	0.639
0.525	0.788	1.138	1.750	2.275	W12x14	0.40	0.525	0.525	0.788	1.313	1.750
0.500	0.750	1.083	1.667	2.167	W12x16	0.45	0.500	0.500	0.750	1.250	1.667
0.465	0.697	1.007	1.549	2.013	W12x19	0.53	0.465	0.465	0.697	1.162	1.549
0.434	0.651	0.940	1.446	1.880	W12x22	0.61	0.434	0.434	0.651	1.085	1.446
0.438	0.656	0.948	1.458	1.896	W12x26	0.60	0.438	0.438	0.656	1.094	1.458
0.407	0.610	0.882	1.357	1.764	W12x30	0.69	0.407	0.407	0.610	1.017	1.357

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Unrestrained Beam Rating					Member W/D		Restrained Beam Rating*				
1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr			1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr
0.378	0.567	0.818	1.259	1.637	W12x35	0.79	0.378	0.378	0.567	0.944	1.259
0.375	0.543	0.784	1.207	1.569	W12x40	0.85	0.375	0.375	0.543	0.905	1.207
0.375	0.508	0.734	1.129	1.468	W12x45	0.95	0.375	0.375	0.508	0.847	1.129
0.375	0.480	0.694	1.067	1.387	W12x50	1.04	0.375	0.375	0.480	0.800	1.067
0.375	0.495	0.715	1.101	1.431	W12x53	0.99	0.375	0.375	0.495	0.825	1.101
0.375	0.480	0.694	1.067	1.387	W12x54	1.04	0.375	0.375	0.480	0.800	1.067
0.375	0.469	0.677	1.042	1.354	W12x58	1.08	0.375	0.375	0.469	0.781	1.042
0.375	0.466	0.673	1.036	1.346	W12x65	1.09	0.375	0.375	0.466	0.777	1.036
0.375	0.438	0.632	0.972	1.264	W12x72	1.20	0.375	0.375	0.438	0.729	0.972
0.375	0.410	0.592	0.911	1.185	W12x79	1.32	0.375	0.375	0.410	0.684	0.911
0.375	0.386	0.558	0.858	1.115	W12x87	1.44	0.375	0.375	0.386	0.643	0.858
0.375	0.375	0.524	0.806	1.048	W12x96	1.57	0.375	0.375	0.375	0.605	0.806
0.375	0.375	0.488	0.751	0.976	W12x106	1.73	0.375	0.375	0.375	0.563	0.751
0.375	0.375	0.448	0.689	0.896	W12x120	1.94	0.375	0.375	0.375	0.517	0.689
0.375	0.375	0.411	0.632	0.821	W12x136	2.17	0.375	0.375	0.375	0.474	0.632
0.375	0.375	0.379	0.583	0.758	W12x152	2.40	0.375	0.375	0.375	0.438	0.583
0.375	0.375	0.375	0.537	0.698	W12x170	2.66	0.375	0.375	0.375	0.403	0.537
0.375	0.375	0.375	0.496	0.644	W12x190	2.93	0.375	0.375	0.375	0.375	0.496
0.375	0.375	0.375	0.459	0.597	W12x210	3.21	0.375	0.375	0.375	0.375	0.459
0.375	0.375	0.375	0.430	0.559	W12x230	3.47	0.375	0.375	0.375	0.375	0.430
0.375	0.375	0.375	0.401	0.522	W12x262	3.76	0.375	0.375	0.375	0.375	0.401
0.375	0.375	0.375	0.375	0.484	W12x279	4.10	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.454	W12x305	4.41	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.423	W12x336	4.78	0.375	0.375	0.375	0.375	0.375
0.469	0.703	1.016	1.563	2.031	W14x22	0.52	0.469	0.469	0.703	1.172	1.563
0.434	0.651	0.940	1.446	1.880	W14x26	0.61	0.434	0.434	0.651	1.085	1.446
0.427	0.640	0.925	1.423	1.850	W14x30	0.63	0.427	0.427	0.640	1.067	1.423
0.401	0.601	0.868	1.336	1.737	W14x34	0.71	0.401	0.401	0.601	1.002	1.336
0.378	0.567	0.818	1.259	1.637	W14x38	0.79	0.378	0.378	0.567	0.944	1.259
0.375	0.543	0.784	1.207	1.569	W14x43	0.85	0.375	0.375	0.543	0.905	1.207
0.375	0.511	0.739	1.136	1.477	W14x48	0.94	0.375	0.375	0.511	0.852	1.136
0.375	0.483	0.698	1.074	1.396	W14x53	1.03	0.375	0.375	0.483	0.805	1.074
0.375	0.472	0.681	1.048	1.362	W14x61	1.07	0.375	0.375	0.472	0.786	1.048
0.375	0.440	0.635	0.978	1.271	W14x68	1.19	0.375	0.375	0.440	0.733	0.978
0.375	0.419	0.605	0.931	1.210	W14x74	1.28	0.375	0.375	0.419	0.698	0.931
0.375	0.392	0.566	0.871	1.132	W14x82	1.41	0.375	0.375	0.392	0.653	0.871
0.375	0.421	0.608	0.936	1.217	W14x90	1.27	0.375	0.375	0.421	0.702	0.936
0.375	0.396	0.572	0.879	1.143	W14x99	1.39	0.375	0.375	0.396	0.660	0.879
0.375	0.375	0.534	0.822	1.068	W14x109	1.53	0.375	0.375	0.375	0.616	0.822
0.375	0.375	0.501	0.771	1.002	W14x120	1.67	0.375	0.375	0.375	0.578	0.771
0.375	0.375	0.468	0.720	0.936	W14x132	1.83	0.375	0.375	0.375	0.540	0.720
0.375	0.375	0.448	0.689	0.896	W14x145	1.94	0.375	0.375	0.375	0.517	0.689
0.375	0.375	0.420	0.646	0.839	W14x159	2.11	0.375	0.375	0.375	0.484	0.646
0.375	0.375	0.399	0.614	0.798	W14x176	2.25	0.375	0.375	0.375	0.461	0.614
0.375	0.375	0.390	0.599	0.779	W14x193	2.32	0.375	0.375	0.375	0.449	0.599

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Unrestrained Beam Rating					Restrained Beam Rating*						
1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr	Member	W/D	1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr
0.375	0.375	0.375	0.524	0.681	W14x211	2.74	0.375	0.375	0.375	0.393	0.524
0.375	0.375	0.375	0.486	0.632	W14x233	3.00	0.375	0.375	0.375	0.375	0.486
0.375	0.375	0.375	0.452	0.588	W14x257	3.27	0.375	0.375	0.375	0.375	0.452
0.375	0.375	0.375	0.420	0.546	W14x283	3.57	0.375	0.375	0.375	0.375	0.420
0.375	0.375	0.375	0.391	0.508	W14x311	3.88	0.375	0.375	0.375	0.375	0.391
0.375	0.375	0.375	0.375	0.473	W14x342	4.21	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.445	W14x370	4.51	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.421	W14x398	4.80	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.400	W14x426	5.09	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.380	W14x455	5.38	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.375	W14x500	5.82	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.375	W14x550	6.30	0.375	0.375	0.375	0.375	0.375
0.375	0.375	0.375	0.375	0.375	W14x605	6.80	0.375	0.375	0.375	0.375	0.375
0.457	0.685	0.989	1.522	1.978	W16x26	0.55	0.457	0.457	0.685	1.141	1.522
0.420	0.630	0.910	1.400	1.820	W16x31	0.65	0.420	0.420	0.630	1.050	1.400
0.407	0.610	0.882	1.357	1.764	W16x36	0.69	0.407	0.407	0.610	1.017	1.357
0.386	0.579	0.836	1.287	1.673	W16x40	0.76	0.386	0.386	0.579	0.965	1.287
0.375	0.543	0.784	1.207	1.569	W16x45	0.85	0.375	0.375	0.543	0.905	1.207
0.375	0.511	0.739	1.136	1.477	W16x50	0.94	0.375	0.375	0.511	0.852	1.136
0.375	0.472	0.681	1.048	1.362	W16x67	1.07	0.375	0.375	0.472	0.786	1.048
0.375	0.472	0.681	1.048	1.362	W16x77	1.07	0.375	0.375	0.472	0.786	1.048
0.375	0.433	0.625	0.962	1.250	W16x89	1.22	0.375	0.375	0.433	0.721	0.962
0.375	0.375	0.527	0.810	1.053	W16x100	1.56	0.375	0.375	0.375	0.608	0.810
0.417	0.625	0.903	1.389	1.806	W18x35	0.66	0.417	0.417	0.625	1.042	1.389
0.386	0.579	0.836	1.287	1.673	W18x40	0.76	0.386	0.386	0.579	0.965	1.287
0.375	0.539	0.779	1.199	1.558	W18x46	0.86	0.375	0.375	0.539	0.899	1.199
0.375	0.536	0.774	1.190	1.548	W18x50	0.87	0.375	0.375	0.536	0.893	1.190
0.375	0.508	0.734	1.129	1.468	W18x55	0.95	0.375	0.375	0.508	0.847	1.129
0.375	0.483	0.698	1.074	1.396	W18x60	1.03	0.375	0.375	0.483	0.805	1.074
0.375	0.461	0.665	1.023	1.330	W18x65	1.11	0.375	0.375	0.461	0.768	1.023
0.375	0.435	0.628	0.967	1.257	W18x71	1.21	0.375	0.375	0.435	0.725	0.967
0.375	0.461	0.665	1.023	1.330	W18x76	1.11	0.375	0.375	0.461	0.768	1.023
0.375	0.428	0.618	0.951	1.236	W18x88	1.24	0.375	0.375	0.428	0.713	0.951
0.375	0.396	0.572	0.879	1.143	W18x97	1.39	0.375	0.375	0.396	0.660	0.879
0.375	0.375	0.537	0.825	1.073	W18x106	1.52	0.375	0.375	0.375	0.619	0.825
0.375	0.375	0.499	0.768	0.998	W18x119	1.68	0.375	0.375	0.375	0.576	0.768
0.395	0.592	0.855	1.316	1.711	W21x44	0.73	0.395	0.395	0.592	0.987	1.316
0.375	0.551	0.795	1.224	1.591	W21x50	0.83	0.375	0.375	0.551	0.918	1.224
0.375	0.515	0.743	1.144	1.487	W21x57	0.93	0.375	0.375	0.515	0.858	1.144
0.375	0.511	0.739	1.136	1.477	W21x62	0.94	0.375	0.375	0.511	0.852	1.136
0.375	0.483	0.698	1.074	1.396	W21x68	1.03	0.375	0.375	0.483	0.805	1.074
0.375	0.428	0.618	0.951	1.236	W21x83	1.24	0.375	0.375	0.428	0.713	0.951
0.375	0.398	0.574	0.884	1.149	W21x93	1.38	0.375	0.375	0.398	0.663	0.884
0.375	0.417	0.602	0.926	1.204	W21x101	1.29	0.375	0.375	0.417	0.694	0.926
0.375	0.392	0.566	0.871	1.132	W21x111	1.41	0.375	0.375	0.392	0.653	0.871

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1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr			1 Hr	1.5 Hr	2 Hr	3 Hr	4 Hr
0.375	0.375	0.532	0.818	1.063	W21x122	1.54	0.375	0.375	0.375	0.613	0.818
0.375	0.375	0.503	0.774	1.007	W21x132	1.66	0.375	0.375	0.375	0.523	0.774
0.375	0.375	0.468	0.720	0.936	W21x147	1.83	0.375	0.375	0.375	0.486	0.720
0.375	0.499	0.801	1.232	1.602	W24x55	0.82	0.375	0.375	0.499	0.832	1.232
0.375	0.466	0.748	1.151	1.497	W24x62	0.92	0.375	0.375	0.466	0.777	1.151
0.375	0.463	0.743	1.144	1.487	W24x68	0.93	0.375	0.375	0.463	0.772	1.144
0.375	0.438	0.702	1.080	1.404	W24x76	1.02	0.375	0.375	0.438	0.729	1.080
0.375	0.410	0.658	1.012	1.315	W24x84	1.13	0.375	0.375	0.410	0.683	1.012
0.375	0.381	0.612	0.941	1.223	W24x94	1.26	0.375	0.375	0.381	0.635	0.941
0.375	0.389	0.625	0.962	1.250	W24x104	1.22	0.375	0.375	0.389	0.649	0.962
0.375	0.375	0.580	0.893	1.161	W24x117	1.36	0.375	0.375	0.375	0.603	0.893
0.375	0.375	0.537	0.825	1.073	W24x131	1.52	0.375	0.375	0.375	0.557	0.825
0.375	0.375	0.499	0.768	0.998	W24x146	1.68	0.375	0.375	0.375	0.518	0.768
0.375	0.375	0.464	0.714	0.929	W24x162	1.85	0.375	0.375	0.375	0.482	0.714
0.375	0.438	0.702	1.080	1.404	W27x84	1.02	0.375	0.375	0.438	0.729	1.080
0.375	0.410	0.658	1.012	1.315	W27x94	1.13	0.375	0.375	0.410	0.683	1.012
0.375	0.387	0.622	0.956	1.243	W27x102	1.23	0.375	0.375	0.387	0.645	0.956
0.375	0.375	0.580	0.893	1.161	W27x114	1.36	0.375	0.375	0.375	0.603	0.893
0.375	0.375	0.534	0.822	1.068	W27x146	1.53	0.375	0.375	0.375	0.555	0.822
0.375	0.375	0.499	0.768	0.998	W27x161	1.68	0.375	0.375	0.375	0.518	0.768
0.375	0.375	0.464	0.714	0.929	W27x178	1.85	0.375	0.375	0.375	0.482	0.714
0.375	0.417	0.669	1.029	1.338	W30x99	1.10	0.375	0.375	0.417	0.695	1.029
0.375	0.394	0.632	0.972	1.264	W30x108	1.20	0.375	0.375	0.394	0.656	0.972
0.375	0.377	0.605	0.931	1.210	W30x116	1.28	0.375	0.375	0.377	0.628	0.931
0.375	0.375	0.577	0.888	1.155	W30x124	1.37	0.375	0.375	0.375	0.600	0.888
0.375	0.375	0.552	0.850	1.104	W30x132	1.46	0.375	0.375	0.375	0.573	0.850
0.375	0.375	0.503	0.774	1.007	W30x173	1.66	0.375	0.375	0.375	0.523	0.774
0.375	0.375	0.470	0.723	0.940	W30x191	1.82	0.375	0.375	0.375	0.488	0.723
0.375	0.375	0.438	0.673	0.875	W30x211	2.00	0.375	0.375	0.375	0.454	0.673
0.375	0.396	0.635	0.978	1.271	W33x118	1.19	0.375	0.375	0.396	0.660	0.978
0.375	0.375	0.596	0.916	1.191	W33x130	1.31	0.375	0.375	0.375	0.618	0.916
0.375	0.375	0.566	0.871	1.132	W33x141	1.41	0.375	0.375	0.375	0.588	0.871
0.375	0.375	0.539	0.829	1.078	W33x152	1.51	0.375	0.375	0.375	0.560	0.829
0.375	0.375	0.478	0.735	0.956	W33x201	1.78	0.375	0.375	0.375	0.496	0.735

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.

* 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.