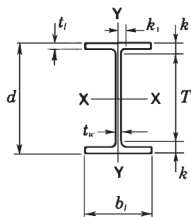




STRUCTURAL SHAPES

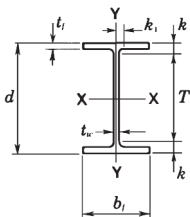


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_f	T	k	k_1			
											In.	In.	In.
W 4x13	3.83	4.16	4 $\frac{1}{8}$	0.280	$\frac{1}{4}$	$\frac{1}{8}$	4.060	4	0.345	$\frac{3}{8}$	2 $\frac{5}{8}$	$\frac{3}{4}$	$\frac{1}{2}$
W 5x16	4.71	5.01	5	0.240	$\frac{1}{4}$	$\frac{1}{8}$	5.000	5	0.360	$\frac{3}{8}$	3 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{16}$
x19	5.56	5.15	5 $\frac{1}{2}$	0.270	$\frac{1}{4}$	$\frac{1}{8}$	5.030	5	0.430	$\frac{7}{16}$	3 $\frac{1}{2}$	1 $\frac{3}{16}$	$\frac{7}{16}$
W 6x9	2.68	5.90	5 $\frac{1}{2}$	0.170	$\frac{3}{16}$	$\frac{1}{8}$	3.940	4	0.215	$\frac{3}{16}$	4 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$
x12	3.55	6.03	6	0.230	$\frac{1}{4}$	$\frac{1}{8}$	4.000	4	0.280	$\frac{1}{4}$	4 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{9}{16}$
x16	4.74	6.28	6 $\frac{1}{4}$	0.260	$\frac{1}{4}$	$\frac{1}{8}$	4.030	4	0.405	$\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{7}{8}$	$\frac{9}{16}$
W 6x15	4.45	5.99	6	0.230	$\frac{1}{4}$	$\frac{1}{8}$	5.990	6	0.260	$\frac{1}{4}$	4 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{9}{16}$
x20	5.89	6.20	6 $\frac{1}{4}$	0.260	$\frac{1}{4}$	$\frac{1}{8}$	6.020	6	0.365	$\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{7}{8}$	$\frac{9}{16}$
x25	7.36	6.38	6 $\frac{3}{8}$	0.320	$\frac{5}{16}$	$\frac{3}{16}$	6.080	6 $\frac{1}{2}$	0.455	$\frac{7}{16}$	4 $\frac{1}{2}$	1 $\frac{5}{16}$	$\frac{9}{16}$
W 8x10	2.96	7.89	7 $\frac{1}{2}$	0.170	$\frac{3}{16}$	$\frac{1}{8}$	3.940	4	0.205	$\frac{3}{16}$	6 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$
x13	3.84	7.99	8	0.230	$\frac{1}{4}$	$\frac{1}{8}$	4.000	4	0.255	$\frac{1}{4}$	6 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{9}{16}$
x15	4.44	8.11	8 $\frac{1}{8}$	0.245	$\frac{1}{4}$	$\frac{1}{8}$	4.015	4	0.315	$\frac{5}{16}$	6 $\frac{1}{2}$	1 $\frac{3}{16}$	$\frac{9}{16}$
W 8x18	5.26	8.14	8 $\frac{1}{8}$	0.230	$\frac{1}{4}$	$\frac{1}{8}$	5.250	5 $\frac{1}{4}$	0.330	$\frac{5}{16}$	6 $\frac{1}{2}$	1 $\frac{3}{16}$	$\frac{9}{16}$
x21	6.16	8.28	8 $\frac{1}{4}$	0.250	$\frac{1}{4}$	$\frac{1}{8}$	5.270	5 $\frac{1}{4}$	0.400	$\frac{3}{8}$	6 $\frac{1}{2}$	$\frac{7}{8}$	$\frac{9}{16}$
W 8x24	7.08	7.93	7 $\frac{1}{2}$	0.245	$\frac{1}{4}$	$\frac{1}{8}$	6.495	6 $\frac{1}{2}$	0.400	$\frac{3}{8}$	6 $\frac{1}{8}$	$\frac{7}{8}$	$\frac{9}{16}$
x28	8.24	8.06	8	0.285	$\frac{5}{16}$	$\frac{3}{16}$	6.535	6 $\frac{1}{2}$	0.465	$\frac{7}{16}$	6 $\frac{1}{8}$	1 $\frac{5}{16}$	$\frac{5}{8}$
W 8x31	9.12	8.00	8	0.285	$\frac{5}{16}$	$\frac{3}{16}$	7.995	8	0.435	$\frac{7}{16}$	5 $\frac{3}{4}$	1 $\frac{1}{8}$	$\frac{3}{4}$
x35	10.3	8.12	8 $\frac{1}{8}$	0.310	$\frac{5}{16}$	$\frac{3}{16}$	8.020	8	0.495	$\frac{1}{2}$	5 $\frac{3}{4}$	1 $\frac{3}{16}$	1 $\frac{3}{16}$
x40	11.7	8.25	8 $\frac{1}{4}$	0.360	$\frac{3}{8}$	$\frac{3}{16}$	8.070	8 $\frac{1}{2}$	0.560	$\frac{9}{16}$	5 $\frac{3}{4}$	1 $\frac{1}{4}$	1 $\frac{3}{16}$
x48	14.1	8.50	8 $\frac{1}{2}$	0.400	$\frac{3}{8}$	$\frac{3}{16}$	8.110	8 $\frac{1}{2}$	0.685	1 $\frac{1}{16}$	5 $\frac{3}{4}$	1 $\frac{3}{8}$	1 $\frac{3}{16}$
x58	17.1	8.75	8 $\frac{1}{4}$	0.510	$\frac{1}{2}$	$\frac{1}{4}$	8.220	8 $\frac{1}{4}$	0.810	1 $\frac{3}{16}$	5 $\frac{3}{4}$	1 $\frac{1}{2}$	$\frac{7}{8}$
x67	19.7	9.00	9	0.570	$\frac{5}{8}$	$\frac{3}{8}$	8.280	8 $\frac{1}{4}$	0.935	1 $\frac{5}{16}$	5 $\frac{3}{4}$	1 $\frac{5}{8}$	1 $\frac{5}{16}$

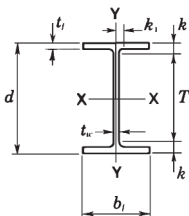


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance			
				Thickness t_w		$\frac{t_w}{2}$	Width b_f		Thickness t_f		T	k	k_1	
				In.	In.		In.	In.	In.	In.				In.
W 10x 12	3.54	9.87	9%	0.190	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{1}{8}$	3.960	4	0.210	$\frac{3}{16}$	8%	$\frac{3}{8}$	$\frac{9}{16}$
x 15	4.41	9.99	10	0.230	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	4.000	4	0.270	$\frac{1}{4}$	8%	$\frac{13}{16}$	$\frac{9}{16}$
x 17	4.99	10.11	10%	0.240	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	4.010	4	0.330	$\frac{5}{16}$	8%	$\frac{7}{8}$	$\frac{9}{16}$
x 19	5.62	10.24	10%	0.250	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	4.020	4	0.395	$\frac{3}{8}$	8%	$\frac{15}{16}$	$\frac{5}{8}$
W 10x 22	6.49	10.17	10%	0.240	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	5.750	5%	0.360	$\frac{3}{8}$	8%	$\frac{15}{16}$	$\frac{5}{8}$
x 26	7.61	10.33	10%	0.260	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	5.770	5%	0.440	$\frac{7}{16}$	8%	1%	$\frac{11}{16}$
x 30	8.84	10.47	10%	0.300	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	5.810	5%	0.510	$\frac{1}{2}$	8%	1%	$\frac{11}{16}$
W 10x 33	9.71	9.73	9%	0.290	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	7.960	8	0.435	$\frac{7}{16}$	7%	1%	$\frac{3}{4}$
x 39	11.5	9.92	9%	0.315	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	7.985	8	0.530	$\frac{1}{2}$	7%	1%	$\frac{13}{16}$
x 45	13.3	10.10	10%	0.350	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	8.020	8	0.620	$\frac{5}{8}$	7%	1%	$\frac{13}{16}$
W 10x 49	14.4	9.98	10	0.340	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	10.000	10	0.560	$\frac{9}{16}$	7%	1%	$\frac{13}{16}$
x 54	15.8	10.09	10%	0.370	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	10.030	10	0.615	$\frac{5}{8}$	7%	1%	$\frac{13}{16}$
x 60	17.6	10.22	10%	0.420	$\frac{7}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	10.080	10%	0.680	$\frac{11}{16}$	7%	1%	$\frac{13}{16}$
x 68	20.0	10.40	10%	0.470	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	10.130	10%	0.770	$\frac{3}{4}$	7%	1%	$\frac{7}{8}$
x 77	22.6	10.60	10%	0.530	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	10.190	10%	0.870	$\frac{7}{8}$	7%	1%	$\frac{7}{8}$
x 88	25.9	10.84	10%	0.605	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	10.265	10%	0.990	1	7%	1%	$\frac{15}{16}$
x100	29.4	11.10	11%	0.680	$\frac{11}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	10.340	10%	1.120	1%	7%	1%	1
x112	32.9	11.36	11%	0.755	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	10.415	10%	1.250	1%	7%	1%	1

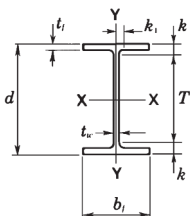


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange			Distance			
				Thickness t _w		Width b _f	Thickness t _f		T	k	k _t		
					$\frac{t_w}{2}$								
In. ²	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.		
W 12x 14	4.16	11.91	11%	0.200	$\frac{3}{16}$	$\frac{1}{8}$	3.970	4	0.225	$\frac{3}{8}$	10%	$\frac{3}{8}$	$\frac{9}{16}$
x 16	4.71	11.99	12	0.220	$\frac{1}{4}$	$\frac{1}{8}$	3.990	4	0.265	$\frac{3}{8}$	10%	$\frac{13}{16}$	$\frac{9}{16}$
x 19	5.57	12.16	12%	0.235	$\frac{1}{4}$	$\frac{1}{8}$	4.005	4	0.350	$\frac{3}{8}$	10%	$\frac{7}{8}$	$\frac{9}{16}$
x 22	6.48	12.31	12%	0.260	$\frac{1}{4}$	$\frac{1}{8}$	4.030	4	0.425	$\frac{7}{16}$	10%	$\frac{15}{16}$	$\frac{5}{8}$
W 12x 26	7.65	12.22	12%	0.230	$\frac{1}{4}$	$\frac{1}{8}$	6.490	6 $\frac{1}{2}$	0.380	$\frac{3}{8}$	10%	1 $\frac{1}{16}$	$\frac{3}{4}$
x 30	8.79	12.34	12%	0.260	$\frac{1}{4}$	$\frac{1}{8}$	6.520	6 $\frac{1}{2}$	0.440	$\frac{7}{16}$	10%	1 $\frac{1}{8}$	$\frac{3}{4}$
x 35	10.3	12.50	12%	0.300	$\frac{5}{16}$	$\frac{3}{8}$	6.560	6 $\frac{1}{2}$	0.520	$\frac{1}{2}$	10%	1 $\frac{1}{8}$	$\frac{3}{4}$
W 12x 40	11.7	11.94	12	0.295	$\frac{5}{16}$	$\frac{3}{8}$	8.005	8	0.515	$\frac{1}{2}$	9 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{7}{8}$
x 45	13.1	12.06	12	0.335	$\frac{5}{16}$	$\frac{3}{8}$	8.045	8	0.575	$\frac{9}{16}$	9 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{15}{16}$
x 50	14.6	12.19	12%	0.370	$\frac{3}{8}$	$\frac{3}{8}$	8.080	8 $\frac{1}{2}$	0.640	$\frac{3}{8}$	9 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{15}{16}$
W 12x 53	15.6	12.06	12	0.345	$\frac{3}{8}$	$\frac{3}{8}$	9.995	10	0.575	$\frac{9}{16}$	9 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{15}{16}$
x 58	17.0	12.19	12%	0.360	$\frac{3}{8}$	$\frac{3}{8}$	10.010	10	0.640	$\frac{5}{8}$	9 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{15}{16}$
W 12x 65	19.1	12.12	12%	0.390	$\frac{3}{8}$	$\frac{3}{8}$	12.000	12	0.605	$\frac{3}{8}$	9 $\frac{1}{2}$	1 $\frac{1}{2}$	1
x 72	21.1	12.25	12%	0.430	$\frac{7}{16}$	$\frac{1}{4}$	12.040	12	0.670	$\frac{11}{16}$	9 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x 79	23.2	12.38	12%	0.470	$\frac{1}{2}$	$\frac{1}{4}$	12.080	12 $\frac{1}{2}$	0.735	$\frac{3}{4}$	9 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x 87	25.6	12.53	12%	0.515	$\frac{1}{2}$	$\frac{1}{4}$	12.125	12 $\frac{1}{2}$	0.810	$\frac{13}{16}$	9 $\frac{1}{2}$	1 $\frac{11}{16}$	1 $\frac{1}{16}$
x 96	28.2	12.71	12%	0.550	$\frac{9}{16}$	$\frac{5}{16}$	12.160	12 $\frac{1}{2}$	0.900	$\frac{7}{8}$	9 $\frac{1}{2}$	1 $\frac{13}{16}$	1 $\frac{1}{8}$
x106	31.2	12.89	12%	0.610	$\frac{3}{8}$	$\frac{5}{16}$	12.220	12 $\frac{1}{2}$	0.990	1	9 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
x120	35.3	13.12	13%	0.710	$\frac{11}{16}$	$\frac{3}{8}$	12.320	12 $\frac{1}{2}$	1.105	1 $\frac{1}{8}$	9 $\frac{1}{2}$	2	1 $\frac{1}{8}$
x136	39.9	13.41	13%	0.790	$\frac{13}{16}$	$\frac{7}{16}$	12.400	12 $\frac{1}{2}$	1.250	1 $\frac{1}{4}$	9 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{4}$
x152	44.7	13.71	13%	0.870	$\frac{7}{8}$	$\frac{7}{16}$	12.480	12 $\frac{1}{2}$	1.400	1 $\frac{3}{8}$	9 $\frac{1}{2}$	2 $\frac{5}{8}$	1 $\frac{1}{4}$
x170	50.0	14.03	14	0.960	$\frac{15}{16}$	$\frac{1}{2}$	12.570	12 $\frac{1}{2}$	1.560	1 $\frac{5}{8}$	9 $\frac{1}{2}$	2 $\frac{7}{8}$	1 $\frac{1}{8}$
x190	55.8	14.38	14%	1.060	1 $\frac{1}{8}$	$\frac{9}{16}$	12.670	12 $\frac{1}{2}$	1.735	1 $\frac{3}{4}$	9 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{8}$
x210	61.8	14.71	14%	1.180	1 $\frac{3}{16}$	$\frac{5}{8}$	12.790	12 $\frac{1}{2}$	1.900	1 $\frac{7}{8}$	9 $\frac{1}{2}$	2 $\frac{3}{8}$	1 $\frac{1}{8}$
x230	67.7	15.05	15	1.285	1 $\frac{1}{2}$	$\frac{11}{16}$	12.895	12 $\frac{1}{2}$	2.070	2 $\frac{1}{8}$	9 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$
x252	74.0	15.41	15%	1.395	1 $\frac{1}{2}$	$\frac{11}{16}$	13.005	13	2.250	2 $\frac{1}{4}$	9 $\frac{1}{2}$	3 $\frac{1}{8}$	1 $\frac{1}{2}$
x279	81.9	15.85	15%	1.530	1 $\frac{1}{2}$	$\frac{3}{4}$	13.140	13 $\frac{1}{2}$	2.470	2 $\frac{1}{2}$	9 $\frac{1}{2}$	3 $\frac{1}{8}$	1 $\frac{1}{8}$
x305	89.6	16.32	16%	1.625	1 $\frac{1}{8}$	$\frac{13}{16}$	13.235	13 $\frac{1}{2}$	2.705	2 $\frac{11}{16}$	9 $\frac{1}{2}$	3 $\frac{1}{8}$	1 $\frac{1}{8}$
x336	98.8	16.82	16%	1.775	1 $\frac{1}{4}$	$\frac{7}{8}$	13.385	13 $\frac{1}{2}$	2.955	2 $\frac{15}{16}$	9 $\frac{1}{2}$	3 $\frac{1}{8}$	1 $\frac{1}{16}$

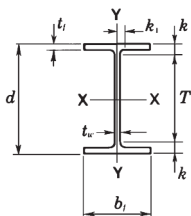


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t_w		Width b_f	Thickness t_f		T	k	k_1		
				In.	In.		In.	In.				In.	In.
W 14x 22	6.49	13.74	13%	0.230	$\frac{1}{4}$	$\frac{1}{8}$	5.000	5	0.335	$\frac{5}{16}$	11 $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{3}{4}$
x 26	7.69	13.91	13%	0.255	$\frac{1}{4}$	$\frac{1}{8}$	5.025	5	0.420	$\frac{7}{16}$	11 $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{3}{4}$
W 14x 30	8.85	13.8	13%	0.270	$\frac{1}{4}$	$\frac{1}{8}$	6.730	6 $\frac{1}{4}$	0.385	$\frac{3}{8}$	11 $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{3}{4}$
x 34	10.0	14.0	14	0.285	$\frac{3}{8}$	$\frac{3}{8}$	6.745	6 $\frac{1}{4}$	0.455	$\frac{7}{16}$	11 $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{3}{4}$
x 38	11.2	14.1	14 $\frac{1}{2}$	0.310	$\frac{3}{8}$	$\frac{3}{8}$	6.770	6 $\frac{1}{4}$	0.515	$\frac{1}{2}$	11 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$
W 14x 43	12.6	13.66	13%	0.305	$\frac{5}{16}$	$\frac{3}{8}$	7.995	8	0.530	$\frac{1}{2}$	10 $\frac{1}{8}$	1 $\frac{1}{8}$	1
x 48	14.1	13.79	13%	0.340	$\frac{5}{16}$	$\frac{3}{8}$	8.030	8	0.595	$\frac{5}{16}$	10 $\frac{1}{8}$	1 $\frac{1}{8}$	1
x 53	15.6	13.92	13%	0.370	$\frac{3}{8}$	$\frac{3}{8}$	8.060	8	0.660	1 $\frac{1}{16}$	10 $\frac{1}{8}$	1 $\frac{1}{2}$	1
W 14x 61	17.9	13.89	13%	0.375	$\frac{3}{8}$	$\frac{3}{8}$	9.995	10	0.645	$\frac{3}{8}$	10 $\frac{1}{8}$	1 $\frac{1}{2}$	1
x 68	20.0	14.04	14	0.415	$\frac{7}{16}$	$\frac{1}{4}$	10.035	10	0.720	$\frac{3}{4}$	10 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
x 74	21.8	14.17	14 $\frac{1}{2}$	0.450	$\frac{7}{16}$	$\frac{1}{4}$	10.070	10 $\frac{1}{8}$	0.785	1 $\frac{3}{16}$	10 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
x 82	24.0	14.31	14 $\frac{1}{4}$	0.510	$\frac{1}{2}$	$\frac{1}{4}$	10.130	10 $\frac{1}{8}$	0.855	$\frac{3}{8}$	10 $\frac{1}{8}$	1 $\frac{11}{16}$	1 $\frac{1}{8}$
W 14x 90	26.5	14.02	14	0.440	$\frac{3}{8}$	$\frac{1}{4}$	14.520	14 $\frac{1}{2}$	0.710	1 $\frac{1}{16}$	10	2	1 $\frac{1}{8}$
x 99	29.1	14.16	14 $\frac{1}{8}$	0.485	$\frac{1}{2}$	$\frac{1}{4}$	14.565	14 $\frac{1}{8}$	0.780	$\frac{3}{4}$	10	2 $\frac{1}{8}$	1 $\frac{1}{8}$
x109	32.0	14.32	14%	0.525	$\frac{1}{2}$	$\frac{1}{4}$	14.605	14%	0.860	$\frac{3}{8}$	10	2 $\frac{3}{8}$	1 $\frac{1}{2}$
x120	35.3	14.48	14 $\frac{1}{2}$	0.590	$\frac{3}{8}$	$\frac{3}{8}$	14.670	14%	0.940	1 $\frac{5}{16}$	10	2 $\frac{1}{4}$	1 $\frac{1}{2}$
x132	38.8	14.66	14%	0.645	$\frac{3}{8}$	$\frac{3}{8}$	14.725	14%	1.030	1	10	2 $\frac{5}{8}$	1 $\frac{1}{8}$

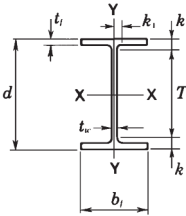


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web		Flange				Distance			
				Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_f	T	k	k_t			
											In.	In.	In.
W 14x145	42.7	14.78	14%	0.680	$\frac{1}{4}$	$\frac{3}{8}$	15.500	15%	1.090	$1\frac{1}{8}$	10	$2\frac{3}{8}$	$1\frac{1}{8}$
x159	46.7	14.98	15	0.745	$\frac{3}{8}$	$\frac{3}{8}$	15.565	15%	1.190	$1\frac{1}{8}$	10	$2\frac{1}{2}$	$1\frac{1}{8}$
x176	51.8	15.22	15%	0.830	$1\frac{3}{16}$	$\frac{7}{8}$	15.650	15%	1.310	$1\frac{1}{8}$	10	$2\frac{3}{8}$	$1\frac{1}{8}$
x193	56.8	15.48	15%	0.890	$\frac{7}{8}$	$\frac{7}{8}$	15.710	15%	1.440	$1\frac{1}{8}$	10	$2\frac{3}{4}$	$1\frac{1}{8}$
x211	62.0	15.72	15%	0.980	1	$\frac{1}{2}$	15.800	15%	1.560	$1\frac{1}{8}$	10	$2\frac{3}{8}$	$1\frac{1}{8}$
x233	68.5	16.04	16	1.070	$1\frac{1}{8}$	$\frac{5}{8}$	15.890	15%	1.720	$1\frac{1}{4}$	10	3	$1\frac{1}{4}$
x257	75.6	16.38	16%	1.175	$1\frac{1}{8}$	$\frac{5}{8}$	15.995	16	1.890	$1\frac{1}{8}$	10	$3\frac{3}{8}$	$1\frac{3}{8}$
x283	83.3	16.74	16%	1.290	$1\frac{1}{8}$	$1\frac{1}{16}$	16.110	16%	2.070	$2\frac{1}{8}$	10	3%	$1\frac{1}{8}$
x311	91.4	17.12	17%	1.410	$1\frac{1}{8}$	$\frac{3}{4}$	16.230	16%	2.260	$2\frac{1}{4}$	10	$3\frac{3}{8}$	$1\frac{15}{16}$
x342	101.0	17.54	17%	1.540	$1\frac{1}{8}$	$1\frac{3}{16}$	16.360	16%	2.470	$2\frac{1}{2}$	10	$3\frac{1}{4}$	2
x370	109.0	17.92	17%	1.655	1%	$1\frac{3}{16}$	16.475	16%	2.660	$2\frac{1}{8}$	10	$3\frac{15}{16}$	$2\frac{1}{8}$
x398	117.0	18.29	18%	1.770	$1\frac{1}{4}$	$\frac{7}{8}$	16.590	16%	2.845	$2\frac{3}{8}$	10	$4\frac{1}{8}$	$2\frac{1}{8}$
x426	125.0	18.67	18%	1.875	$1\frac{1}{8}$	$1\frac{15}{16}$	16.695	16%	3.035	$3\frac{1}{8}$	10	$4\frac{5}{8}$	$2\frac{1}{8}$
W 14x455	134.0	19.02	19	2.015	2	1	16.835	16%	3.210	$3\frac{3}{8}$	10	$4\frac{1}{2}$	$2\frac{1}{4}$
x500	147.0	19.60	19%	2.190	$2\frac{1}{8}$	$1\frac{1}{8}$	17.010	17	3.500	$3\frac{1}{2}$	10	$4\frac{13}{16}$	$2\frac{1}{8}$
x550	162.0	20.24	20%	2.380	$2\frac{1}{8}$	$1\frac{1}{8}$	17.200	17%	3.820	$3\frac{3}{8}$	10	5%	$2\frac{1}{8}$
x605	178.0	20.92	20%	2.595	$2\frac{1}{8}$	$1\frac{1}{8}$	17.415	17%	4.160	$4\frac{3}{8}$	10	$5\frac{1}{8}$	$2\frac{1}{2}$
x665	196.0	21.64	21%	2.830	$2\frac{3}{8}$	$1\frac{1}{8}$	17.650	17%	4.520	$4\frac{1}{2}$	10	$5\frac{3}{8}$	$2\frac{1}{8}$
x730	215.0	22.42	22%	3.070	$3\frac{1}{8}$	$1\frac{1}{8}$	17.890	17%	4.910	$4\frac{15}{16}$	10	$6\frac{1}{8}$	$2\frac{1}{4}$

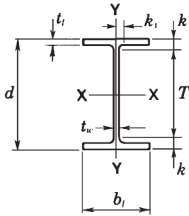


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d	Web			Flange			Distance				
			Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_f	T	k	k_1				
										In.	In.	In.	In.
W 16x 26	7.68	15.69	15%	0.250	$\frac{1}{4}$	$\frac{1}{2}$	5.500	5 $\frac{1}{2}$	0.345	$\frac{3}{8}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{3}{8}$
x 31	9.12	15.88	15%	0.275	$\frac{1}{4}$	$\frac{1}{2}$	5.525	5 $\frac{1}{2}$	0.440	$\frac{7}{16}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{3}{8}$
W 16x 36	10.6	15.86	15%	0.295	$\frac{3}{16}$	$\frac{3}{8}$	6.985	7	0.430	$\frac{7}{16}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{3}{8}$
x 40	11.8	16.01	16	0.305	$\frac{5}{16}$	$\frac{3}{8}$	6.995	7	0.505	$\frac{1}{2}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{13}{16}$
x 45	13.3	16.13	16%	0.345	$\frac{3}{8}$	$\frac{3}{8}$	7.035	7	0.565	$\frac{9}{16}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{13}{16}$
x 50	14.7	16.26	16%	0.380	$\frac{3}{8}$	$\frac{3}{8}$	7.070	7 $\frac{1}{2}$	0.630	$\frac{5}{8}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{13}{16}$
x 57	16.8	16.43	16%	0.430	$\frac{7}{16}$	$\frac{1}{2}$	7.120	7 $\frac{1}{2}$	0.715	$\frac{11}{16}$	13 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{7}{8}$
W 16x 67	20.0	16.33	16%	0.395	$\frac{3}{8}$	$\frac{3}{8}$	10.235	10 $\frac{1}{4}$	0.665	$\frac{11}{16}$	13 $\frac{1}{4}$	1 $\frac{1}{8}$	1
x 77	22.9	16.52	16%	0.455	$\frac{7}{16}$	$\frac{1}{2}$	10.295	10 $\frac{1}{4}$	0.760	$\frac{3}{4}$	13 $\frac{1}{4}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
x 89	26.4	16.75	16%	0.525	$\frac{1}{2}$	$\frac{1}{2}$	10.365	10 $\frac{1}{2}$	0.875	$\frac{7}{8}$	13 $\frac{1}{4}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
x100	29.7	16.97	17	0.585	$\frac{9}{16}$	$\frac{5}{8}$	10.425	10 $\frac{5}{8}$	0.985	1	13 $\frac{1}{4}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$
W 18x 35	10.3	17.70	17%	0.300	$\frac{3}{16}$	$\frac{3}{8}$	6.000	6	0.425	$\frac{7}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{3}{8}$
x 40	11.8	17.90	17%	0.315	$\frac{3}{16}$	$\frac{3}{8}$	6.015	6	0.525	$\frac{1}{2}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 46	13.5	18.06	18	0.360	$\frac{3}{8}$	$\frac{3}{8}$	6.060	6	0.605	$\frac{5}{8}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
W 18x 50	14.7	17.99	18	0.355	$\frac{3}{8}$	$\frac{3}{8}$	7.495	7 $\frac{1}{2}$	0.570	$\frac{9}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 55	16.2	18.11	18%	0.390	$\frac{3}{8}$	$\frac{3}{8}$	7.530	7 $\frac{1}{2}$	0.630	$\frac{5}{8}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 60	17.6	18.24	18%	0.415	$\frac{7}{16}$	$\frac{1}{2}$	7.555	7 $\frac{1}{2}$	0.695	$\frac{11}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 65	19.1	18.35	18%	0.450	$\frac{7}{16}$	$\frac{1}{2}$	7.590	7 $\frac{1}{2}$	0.750	$\frac{3}{4}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{7}{8}$
x 71	20.8	18.47	18%	0.495	$\frac{1}{2}$	$\frac{1}{2}$	7.635	7 $\frac{3}{4}$	0.810	$\frac{13}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{7}{8}$
W 18x 76	22.3	18.21	18%	0.425	$\frac{7}{16}$	$\frac{1}{2}$	11.035	11	0.680	$\frac{11}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x 86	25.3	18.39	18%	0.480	$\frac{1}{2}$	$\frac{1}{2}$	11.090	11 $\frac{1}{8}$	0.770	$\frac{3}{4}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x 97	28.5	18.59	18%	0.535	$\frac{9}{16}$	$\frac{5}{8}$	11.145	11 $\frac{1}{8}$	0.870	$\frac{7}{8}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x106	31.1	18.73	18%	0.590	$\frac{5}{8}$	$\frac{3}{4}$	11.200	11 $\frac{1}{4}$	0.940	$\frac{15}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x119	35.1	18.97	19	0.655	$\frac{5}{8}$	$\frac{3}{4}$	11.265	11 $\frac{1}{4}$	1.060	$\frac{11}{16}$	15 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x130	38.2	19.3	19%	0.670	$\frac{11}{16}$	$\frac{3}{4}$	11.2	11 $\frac{1}{2}$	1.200	$\frac{13}{16}$	15 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{8}$
x143	42.1	19.5	19%	0.73	$\frac{3}{4}$	$\frac{1}{2}$	11.2	11 $\frac{1}{2}$	1.320	$\frac{15}{16}$	15 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{8}$
x158	46.3	19.7	19%	0.810	$\frac{13}{16}$	$\frac{7}{8}$	11.3	11 $\frac{1}{2}$	1.440	$\frac{11}{16}$	15 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{4}$
x175	51.3	20.0	20	0.890	$\frac{7}{8}$	$\frac{7}{8}$	11.4	11 $\frac{3}{4}$	1.590	$\frac{15}{16}$	15 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{4}$
W 21x 44	13.0	20.66	20%	0.350	$\frac{3}{8}$	$\frac{3}{8}$	6.500	6 $\frac{1}{2}$	0.450	$\frac{7}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 48	14.1	20.6	20%	0.350	$\frac{3}{8}$	$\frac{3}{8}$	8.140	8 $\frac{1}{8}$	0.430	$\frac{7}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 50	14.7	20.83	20%	0.380	$\frac{3}{8}$	$\frac{3}{8}$	6.530	6 $\frac{1}{2}$	0.535	$\frac{9}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 55	16.2	20.8	20%	0.375	$\frac{3}{8}$	$\frac{3}{8}$	8.220	8 $\frac{1}{4}$	0.522	$\frac{1}{2}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 57	16.7	21.06	21	0.405	$\frac{3}{8}$	$\frac{3}{8}$	6.555	6 $\frac{3}{4}$	0.650	$\frac{5}{8}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
W 21x 62	18.3	20.99	21	0.400	$\frac{3}{8}$	$\frac{3}{8}$	8.240	8 $\frac{1}{4}$	0.615	$\frac{5}{8}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{13}{16}$
x 68	20.0	21.13	21%	0.430	$\frac{7}{16}$	$\frac{1}{2}$	8.270	8 $\frac{1}{4}$	0.685	$\frac{11}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{7}{8}$
x 73	21.5	21.24	21%	0.455	$\frac{7}{16}$	$\frac{1}{2}$	8.295	8 $\frac{1}{4}$	0.740	$\frac{3}{4}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{7}{8}$
x 83	24.3	21.43	21%	0.515	$\frac{1}{2}$	$\frac{1}{2}$	8.355	8 $\frac{1}{4}$	0.835	$\frac{13}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{7}{8}$
x 93	27.3	21.62	21%	0.580	$\frac{9}{16}$	$\frac{5}{8}$	8.420	8 $\frac{1}{4}$	0.930	$\frac{15}{16}$	18 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{15}{16}$
W 21x101	29.8	21.36	21%	0.500	$\frac{1}{2}$	$\frac{1}{2}$	12.290	12 $\frac{1}{4}$	0.800	$\frac{13}{16}$	18	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x111	32.7	21.51	21%	0.550	$\frac{5}{8}$	$\frac{3}{4}$	12.340	12 $\frac{1}{2}$	0.875	$\frac{7}{8}$	18	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x122	35.9	21.68	21%	0.600	$\frac{5}{8}$	$\frac{3}{4}$	12.390	12 $\frac{1}{2}$	0.960	$\frac{15}{16}$	18	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x132	38.8	21.83	21%	0.650	$\frac{3}{4}$	$\frac{3}{4}$	12.440	12 $\frac{1}{2}$	1.035	$\frac{11}{16}$	18	1 $\frac{1}{4}$	1 $\frac{1}{8}$
x147	43.2	22.06	22	0.720	$\frac{3}{4}$	$\frac{3}{4}$	12.510	12 $\frac{1}{2}$	1.150	$\frac{11}{16}$	18	2	1 $\frac{1}{8}$
x166	48.8	22.50	22%	0.750	$\frac{3}{4}$	$\frac{3}{4}$	12.4	12 $\frac{1}{2}$	1.36	$\frac{11}{16}$	18	2 $\frac{1}{4}$	1 $\frac{1}{8}$
x182	53.6	22.70	22%	0.830	$\frac{13}{16}$	$\frac{7}{8}$	12.5	12 $\frac{1}{2}$	1.48	$\frac{1}{2}$	18	2 $\frac{1}{4}$	1 $\frac{1}{4}$
x201	59.2	23.00	23	0.910	$\frac{15}{16}$	$\frac{1}{2}$	12.6	12 $\frac{1}{2}$	1.63	$\frac{11}{16}$	18	2 $\frac{1}{4}$	1 $\frac{1}{8}$

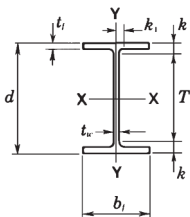


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_f		T	k	k_f		
							In.	In.				In.	In.
W 24x 55	16.3	23.57	23%	0.395	$\frac{3}{8}$	$\frac{3}{16}$	7.005	7	0.505	$\frac{1}{2}$	20%	1 $\frac{1}{16}$	1
x 62	18.3	23.74	23%	0.430	$\frac{7}{16}$	$\frac{1}{4}$	7.040	7	0.590	$\frac{5}{8}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
W 24x 68	20.1	23.73	23%	0.415	$\frac{7}{16}$	$\frac{1}{4}$	8.965	9	0.585	$\frac{5}{8}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x 76	22.4	23.92	23%	0.440	$\frac{7}{16}$	$\frac{1}{4}$	8.990	9	0.680	1 $\frac{1}{8}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x 84	24.7	24.10	24%	0.470	$\frac{1}{2}$	$\frac{1}{4}$	9.020	9	0.770	$\frac{3}{4}$	20%	1 $\frac{11}{16}$	1 $\frac{1}{16}$
x 94	27.7	24.31	24%	0.515	$\frac{1}{2}$	$\frac{1}{4}$	9.065	9 $\frac{1}{2}$	0.875	$\frac{3}{4}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x103	30.3	24.50	24%	0.550	$\frac{5}{8}$	$\frac{5}{16}$	9.00	9	0.980	1	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
W 24x104	30.6	24.06	24	0.500	$\frac{1}{2}$	$\frac{1}{4}$	12.750	12 $\frac{1}{2}$	0.750	$\frac{3}{4}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x117	34.4	24.26	24%	0.550	$\frac{5}{8}$	$\frac{5}{16}$	12.800	12 $\frac{1}{2}$	0.850	$\frac{7}{8}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x131	38.5	24.48	24%	0.605	$\frac{5}{8}$	$\frac{5}{16}$	12.855	12 $\frac{1}{2}$	0.960	1 $\frac{1}{8}$	20%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x146	43.0	24.74	24%	0.650	$\frac{5}{8}$	$\frac{5}{16}$	12.900	12 $\frac{1}{2}$	1.090	1 $\frac{1}{8}$	20%	2	1 $\frac{1}{16}$
x162	47.7	25.00	25	0.705	1 $\frac{1}{16}$	$\frac{3}{8}$	12.955	13	1.220	1 $\frac{1}{4}$	20%	2 $\frac{1}{8}$	1 $\frac{1}{16}$
x176	51.7	25.20	25%	0.750	$\frac{3}{8}$	$\frac{1}{2}$	12.9	12 $\frac{1}{2}$	1.34	1 $\frac{3}{8}$	20%	2 $\frac{1}{4}$	1 $\frac{1}{16}$
x192	56.3	25.50	25%	0.810	1 $\frac{1}{16}$	$\frac{7}{16}$	13.0	13	1.46	1 $\frac{3}{8}$	20%	2 $\frac{1}{2}$	1 $\frac{1}{16}$
x207	60.7	25.70	25%	0.870	$\frac{3}{8}$	$\frac{7}{16}$	13.0	13	1.57	1 $\frac{3}{8}$	20%	2 $\frac{1}{2}$	1 $\frac{1}{16}$
x229	67.2	26.00	26	0.960	1 $\frac{1}{16}$	$\frac{1}{2}$	13.1	13 $\frac{1}{2}$	1.73	1 $\frac{3}{4}$	20%	2 $\frac{3}{4}$	1 $\frac{1}{16}$
x250	73.5	26.30	26%	1.040	1 $\frac{1}{8}$	$\frac{9}{16}$	13.2	13 $\frac{1}{2}$	1.89	1 $\frac{3}{4}$	20%	2 $\frac{3}{8}$	1 $\frac{1}{16}$
x279	82.0	26.70	26%	1.160	1 $\frac{1}{8}$	$\frac{5}{8}$	13.3	13 $\frac{1}{2}$	2.09	2 $\frac{1}{8}$	20%	3	1 $\frac{1}{16}$
x306	89.8	27.10	27%	1.260	1 $\frac{1}{4}$	$\frac{3}{4}$	13.4	13 $\frac{1}{2}$	2.28	2 $\frac{1}{4}$	20%	3 $\frac{1}{8}$	1 $\frac{1}{16}$
x335	98.4	27.50	27%	1.380	1 $\frac{1}{2}$	1 $\frac{1}{8}$	13.5	13 $\frac{1}{2}$	2.48	2 $\frac{1}{2}$	20%	3 $\frac{1}{2}$	1 $\frac{1}{16}$
x370	109.0	28.00	28	1.520	1 $\frac{1}{2}$	$\frac{3}{4}$	13.7	13 $\frac{1}{2}$	2.72	2 $\frac{3}{4}$	20%	3 $\frac{3}{8}$	1 $\frac{1}{16}$
W 27x 84	24.8	26.71	26%	0.460	$\frac{3}{8}$	$\frac{1}{4}$	9.960	10	0.640	$\frac{5}{8}$	23%	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x 94	27.7	26.92	26%	0.490	$\frac{1}{2}$	$\frac{1}{4}$	9.990	10	0.745	$\frac{3}{4}$	23%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x102	30.0	27.09	27%	0.515	$\frac{1}{2}$	$\frac{1}{4}$	10.015	10	0.830	1 $\frac{3}{8}$	23%	1 $\frac{3}{4}$	1 $\frac{1}{16}$
x114	33.5	27.29	27%	0.570	$\frac{5}{8}$	$\frac{5}{16}$	10.070	10 $\frac{1}{2}$	0.930	1 $\frac{5}{8}$	23%	1 $\frac{3}{8}$	1 $\frac{1}{16}$
x129	37.8	27.60	27%	0.610	$\frac{5}{8}$	$\frac{5}{16}$	10.0	10	1.10	1 $\frac{1}{2}$	23%	2	1 $\frac{1}{16}$
W 27x146	43.1	27.38	27%	0.605	$\frac{5}{8}$	$\frac{5}{16}$	13.965	14	0.975	1	23%	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x161	47.6	27.59	27%	0.660	1 $\frac{1}{16}$	$\frac{3}{8}$	14.020	14	1.080	1 $\frac{1}{8}$	23%	2	1 $\frac{1}{16}$
x178	52.5	27.81	27%	0.725	$\frac{3}{4}$	$\frac{3}{8}$	14.085	14 $\frac{1}{2}$	1.190	1 $\frac{1}{8}$	23%	2 $\frac{1}{8}$	1 $\frac{1}{16}$
x194	57.2	28.10	28%	0.750	$\frac{3}{4}$	$\frac{3}{8}$	14.0	14	1.34	1 $\frac{1}{4}$	23%	2 $\frac{1}{4}$	1 $\frac{1}{16}$
x217	64.0	28.40	28%	0.830	1 $\frac{1}{16}$	$\frac{7}{16}$	14.1	14 $\frac{1}{2}$	1.50	1 $\frac{1}{2}$	23%	2 $\frac{1}{2}$	1 $\frac{1}{16}$
x235	69.4	28.70	28%	0.910	1 $\frac{1}{8}$	$\frac{1}{2}$	14.2	14 $\frac{1}{2}$	1.61	1 $\frac{1}{2}$	23%	2 $\frac{1}{2}$	1 $\frac{1}{16}$
x258	76	29.00	29	0.980	1	$\frac{1}{2}$	14.3	14 $\frac{1}{2}$	1.77	1 $\frac{3}{4}$	23%	2 $\frac{3}{8}$	1 $\frac{1}{16}$
W 27x281	82.9	29.3	29%	1.06	1 $\frac{1}{8}$	$\frac{9}{16}$	14.4	14 $\frac{1}{2}$	1.930	1 $\frac{15}{16}$	23%	2 $\frac{3}{8}$	1 $\frac{1}{16}$
x307	90.4	29.6	29%	1.16	1 $\frac{1}{8}$	$\frac{5}{8}$	14.4	14 $\frac{1}{2}$	2.090	2 $\frac{1}{8}$	23%	3	1 $\frac{1}{16}$
x336	98.9	30.0	30	1.26	1 $\frac{1}{4}$	$\frac{5}{8}$	14.6	14 $\frac{1}{2}$	2.280	2 $\frac{1}{4}$	23%	3 $\frac{1}{8}$	1 $\frac{1}{16}$
x368	108	30.4	30%	1.38	1 $\frac{1}{2}$	1 $\frac{1}{16}$	14.7	14 $\frac{1}{2}$	2.480	2 $\frac{1}{2}$	23%	3 $\frac{1}{2}$	1 $\frac{1}{16}$
x539	159	32.5	32 $\frac{1}{2}$	1.97	2	1	15.3	15 $\frac{1}{2}$	3.54	3 $\frac{3}{8}$	23%	4 $\frac{1}{2}$	1 $\frac{1}{16}$
W 30x 90	26.4	29.5	29 $\frac{1}{2}$	0.470	$\frac{1}{2}$	$\frac{1}{4}$	10.4	10 $\frac{1}{2}$	0.610	$\frac{5}{8}$	26 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x 99	29.1	29.65	29%	0.520	$\frac{1}{2}$	$\frac{1}{4}$	10.450	10 $\frac{1}{2}$	0.670	1 $\frac{1}{8}$	26 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x108	31.7	29.83	29%	0.545	$\frac{5}{8}$	$\frac{5}{16}$	10.475	10 $\frac{1}{2}$	0.760	$\frac{3}{4}$	26 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x116	34.2	30.1	30	0.565	$\frac{5}{8}$	$\frac{5}{16}$	10.495	10 $\frac{1}{2}$	0.850	$\frac{7}{8}$	26 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{16}$
x124	36.5	30.17	30%	0.585	$\frac{5}{8}$	$\frac{5}{16}$	10.515	10 $\frac{1}{2}$	0.930	1 $\frac{5}{8}$	26 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$
x132	38.9	30.31	30%	0.615	$\frac{5}{8}$	$\frac{5}{16}$	10.545	10 $\frac{1}{2}$	1.000	1	26 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{16}$
x148	43.5	30.7	30%	0.650	$\frac{5}{8}$	$\frac{5}{16}$	10.5	10 $\frac{1}{2}$	1.18	1 $\frac{1}{8}$	26 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{1}{16}$

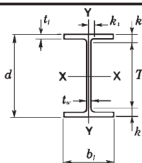


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d	Web				Flange				Distance		
			Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_f	T	k	k_1				
										In.	In.	In.	In.
W 30x173	51.0	30.44	30½	0.655	⅝	⅝	14.985	15	1.065	1⅞	26½	2	1⅞
x191	56.3	30.68	30%	0.710	1⅞	⅝	15.040	15	1.185	1⅞	26½	2⅞	1⅞
x211	62.2	30.94	31	0.775	¾	⅝	15.105	15½	1.315	1⅞	26½	2¼	1⅞
x235	69.2	31.3	31¼	0.830	1⅞	⅞	15.1	15	1.50	1½	26½	2%	1¼
x261	76.9	31.6	31%	0.930	1⅞	½	15.2	15½	1.65	1%	26½	2⅞	1⅞
x292	85.9	32.0	32	1.02	1	½	15.3	15½	1.85	1⅞	26½	2%	1⅞
x326	95.8	32.4	32%	1.14	1½	⅞	15.4	15½	2.05	2⅞	26½	2⅞	1%
W 33x118	34.7	32.86	32%	0.550	⅞	⅞	11.480	11½	0.740	¾	29%	1%	1%
x130	38.3	33.09	33%	0.580	⅞	⅞	11.510	11½	0.855	⅞	29%	1¼	1%
x141	41.6	33.30	33¼	0.605	⅞	⅞	11.535	11½	0.960	1⅞	29%	1⅞	1%
x152	44.8	33.49	33%	0.635	⅞	⅞	11.565	11½	1.055	1⅞	29%	1⅞	1%
x169	49.5	33.8	33%	0.670	1⅞	⅝	11.5	11½	1.22	1¼	29%	2⅞	1⅞
W 33x201	59.2	33.68	33%	0.715	1⅞	⅝	15.745	15½	1.150	1%	29%	2	1⅞
x221	65.2	33.93	33%	0.775	¾	⅝	15.805	15½	1.275	1¼	29%	2⅞	1⅞
x241	71.0	34.18	34%	0.830	1⅞	⅞	15.860	15½	1.400	1%	29%	2¼	1¼
x263	77.5	34.5	34½	0.870	⅞	⅞	15.8	15½	1.57	1⅞	29%	2⅞	1¼
x291	85.7	34.8	34%	0.960	1⅞	½	15.9	15½	1.73	1¼	29%	2%	1⅞
W 36x135	39.7	35.6	35½	0.600	⅞	⅞	11.950	12	0.790	1⅞	32%	1⅞	1%
x150	44.2	35.85	35%	0.625	⅞	⅞	11.975	12	0.940	1⅞	32%	1¼	1%
x160	47.0	36.01	36	0.650	⅞	⅞	12.00	12	1.020	1	32%	1⅞	1%
x170	50.0	36.17	36%	0.680	1⅞	⅝	12.030	12	1.100	1½	32%	2	1⅞
x182	53.6	36.33	36%	0.725	¾	⅝	12.075	12½	1.180	1⅞	32%	2¼	1⅞
x194	57.0	36.49	36%	0.765	¾	⅝	12.115	12½	1.260	1¼	32%	2⅞	1⅞
x210	61.8	36.69	36%	0.830	1⅞	⅞	12.180	12½	1.360	1%	32%	2⅞	1¼
x232	68.1	37.1	37%	0.870	⅞	⅞	12.1	12½	1.570	1⅞	32%	2⅞	1¼
x256	75.4	37.4	37%	0.960	1⅞	½	12.2	12½	1.730	1¼	32%	2%	1⅞
W 36x231	68.0	36.49	35%	0.760	¾	⅝	16.5	16½	1.26	1¼	30%	2½	1⅞
x247	72.1	36.1	36%	0.800	1⅞	⅞	16.5	16½	1.35	1%	30%	2%	1%
x262	76.5	36.3	36¼	0.840	1⅞	⅞	16.5	16½	1.44	1⅞	30%	2⅞	1%
x282	82.4	36.5	36%	0.885	⅞	⅞	16.6	16½	1.57	1⅞	30%	2⅞	1%
x302	88.3	36.7	36%	0.945	1⅞	½	16.6	16½	1.68	1⅞	30%	2⅞	1⅞
x330	96.4	37.1	37%	1.02	1	½	16.6	16½	1.85	1⅞	30%	3¼	1%
x361	105	37.4	37%	1.12	1½	⅞	16.7	16½	2.01	2	30%	3¼	1%
x395	116	37.8	37%	1.22	1¼	⅞	16.8	16½	2.20	2⅞	30%	3⅞	1⅞
x441	129	38.3	38%	1.36	1%	1⅞	17.0	17	2.44	2⅞	30%	3⅞	1⅞
x527	155	39.2	39¼	1.61	1½	⅞	17.2	17¼	2.91	2⅞	30%	4⅞	2
x650	191	40.5	40%	1.97	2	1	17.6	17½	3.54	3⅞	30%	4⅞	2⅞
x798	235	42.0	42	2.38	2%	1⅞	18.0	18	4.29	4⅞	30%	5%	2%

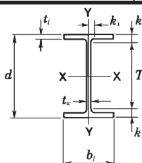


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation (Nominal Depth in Millimetres and Mass in Kilograms per Metre)	Area A In. ²	Depth d In.	Flange		Web Thickness t _w In.
			Width b _f In.	Thickness t _f In.	
W 40x149	43.8	38.2	11.8	0.830	0.630
x167	49.2	38.6	11.8	1.02	0.650
x183	53.8	39.0	11.8	1.22	0.650
x211	62.0	39.4	11.8	1.42	0.750
x235	69.0	39.7	11.9	1.58	0.830
x264	77.6	40.0	11.9	1.73	0.960
x278	81.8	40.2	12.0	1.81	1.02
x327	96.0	40.8	12.1	2.13	1.18
x331	97.5	40.8	12.2	2.13	1.22
x392	115	41.6	12.4	2.52	1.42
W 40x199	58.5	38.7	15.8	1.07	0.650
x215	63.4	39.0	15.8	1.22	0.650
x249	73.3	39.4	15.8	1.42	0.750
x277	81.4	39.7	15.8	1.58	0.830
x297	87.4	39.8	15.8	1.65	0.930
x324	95.3	40.2	15.9	1.81	1.00
x362	107	40.6	16.0	2.01	1.12
x372	109	40.6	16.1	2.05	1.16
x397	117	41.0	16.1	2.20	1.22
x431	127	41.3	16.2	2.36	1.34
x503	148	42.1	16.4	2.76	1.54
x593	174	43.0	16.7	3.23	1.79
W 44x230	67.7	42.9	15.8	1.22	0.710
x262	77.2	43.3	15.8	1.42	0.790
x290	85.8	43.6	15.8	1.58	0.870
x335	96.3	44.0	16.0	1.77	1.02



MISCELLANEOUS BEAMS

M SHAPES Dimensions

ZX Designation	Area A	Depth d	Web		Flange		Distance		Grip	Max. Flge. Fas- ten- er				
			Thickness t _w	t _w 2	Width b _f	Thickness t _f	T	k						
											In. ²	In.	In.	In.
M 4x13	3.81	4.00	4	0.254	¼	¼	3.940	4	0.371	⅜	2½	1⅜	⅜	¼
M 5x18.9	5.55	5.00	5	0.316	⅝	⅝	5.003	5	0.416	⅞	3½	1⅞	⅞	⅝
M 6x4.4	1.29	6.00	6	0.114	⅝	⅝	1.844	1½	0.171	⅜	5¼	⅞	⅝	—
M 6x20	5.89	6.00	6	0.250	¼	¼	5.938	6	0.379	⅜	4¼	⅞	⅞	⅞
M 8x6.5	1.92	8.00	8	0.135	⅝	⅝	2.281	2½	0.189	⅜	6½	⅞	⅞	—
M10x9	2.65	10.00	10	0.157	⅝	⅝	2.690	2½	0.206	⅜	8½	⅞	⅞	—
M12x11.8	3.47	12.00	12	0.177	⅝	⅝	3.065	3½	0.225	¼	10½	⅞	¼	—
M14x18	5.10	14.00	14	0.215	⅝	⅝	4.000	4	0.270	¼	12¾	⅞	¼	⅝ _{xxx}

STANDARD BEAMS

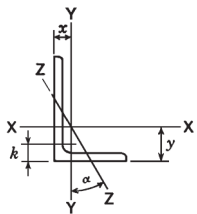
(S SHAPES)

Dimensions

ASTM-A36 & A992



Designation	Area		Depth		Web		Flange			Distance		Grip	Max. Flge. Fastener	
	A		d		Thickness	$\frac{t_w}{2}$	Width	Thickness	T	k				
	In. ²		In.		In.	In.	In.	In.	In.	In.	In.	In.	In.	
S 3x5.7 x7.5	1.67	3.00	3	0.170	$\frac{3}{8}$	$\frac{3}{8}$	2.330	2%	0.260	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	—	
	2.21	3.00	3	0.349	$\frac{3}{8}$	$\frac{3}{8}$	2.509	2½	0.260	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	—	
S 4x7.7 x9.5	2.26	4.00	4	0.193	$\frac{3}{8}$	$\frac{3}{8}$	2.663	2%	0.293	$\frac{5}{8}$	2½	$\frac{3}{4}$	$\frac{5}{8}$	—
	2.79	4.00	4	0.326	$\frac{3}{8}$	$\frac{3}{8}$	2.796	2%	0.293	$\frac{5}{8}$	2½	$\frac{3}{4}$	$\frac{5}{8}$	—
S 5x10	2.94	5.00	5	0.214	$\frac{3}{8}$	$\frac{3}{8}$	3.004	3	0.326	$\frac{5}{8}$	3½	$\frac{3}{4}$	$\frac{5}{8}$	—
S 6x12.5 x17.25	3.66	6.00	6	0.232	$\frac{1}{4}$	$\frac{1}{4}$	3.332	3%	0.359	$\frac{3}{8}$	4¼	$\frac{7}{8}$	$\frac{3}{8}$	—
	5.06	6.00	6	0.465	$\frac{7}{8}$	$\frac{1}{4}$	3.565	3%	0.359	$\frac{3}{8}$	4¼	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
S 7x15.3 x20	4.50	7.00	7	0.252	$\frac{1}{4}$	$\frac{1}{4}$	3.662	3%	0.392	$\frac{3}{8}$	5%	$\frac{15}{16}$	$\frac{3}{8}$	$\frac{3}{8}$
	5.88	7.00	7	0.45	$\frac{7}{8}$	$\frac{1}{4}$	3.860	3%	0.392	$\frac{3}{8}$	5%	$\frac{15}{16}$	$\frac{3}{8}$	$\frac{3}{8}$
S 8x18.4 x23	5.41	8.00	8	0.271	$\frac{1}{4}$	$\frac{1}{4}$	4.001	4	0.426	$\frac{7}{8}$	6	1	$\frac{7}{8}$	$\frac{3}{4}$
	6.76	8.00	8	0.441	$\frac{7}{8}$	$\frac{1}{4}$	4.171	4%	0.426	$\frac{7}{8}$	6	1	$\frac{7}{8}$	$\frac{3}{4}$
S10x25.4 x35	7.45	10.00	10	0.311	$\frac{5}{8}$	$\frac{3}{8}$	4.661	4%	0.491	$\frac{1}{2}$	7¼	1½	$\frac{1}{2}$	$\frac{3}{4}$
	10.3	10.00	10	0.594	$\frac{5}{8}$	$\frac{3}{8}$	4.944	5	0.491	$\frac{1}{2}$	7¼	1½	$\frac{1}{2}$	$\frac{3}{4}$
S12x31.8 x 35	9.31	12.00	12	0.350	$\frac{3}{8}$	$\frac{3}{8}$	5.00	5	0.544	$\frac{5}{8}$	9%	1½	$\frac{1}{2}$	$\frac{3}{4}$
	10.2	12.00	12	0.428	$\frac{7}{8}$	$\frac{1}{4}$	5.078	5%	0.544	$\frac{5}{8}$	9%	1½	$\frac{1}{2}$	$\frac{3}{4}$
S12x40.8 x50	11.9	12.00	12	0.462	$\frac{7}{8}$	$\frac{1}{4}$	5.252	5¼	0.659	$\frac{11}{16}$	9%	1½	$\frac{5}{8}$	$\frac{3}{4}$
	14.6	12.00	12	0.687	$\frac{11}{16}$	$\frac{3}{8}$	5.477	5½	0.659	$\frac{11}{16}$	9%	1½	$\frac{11}{16}$	$\frac{3}{4}$
S15x42.9 x50	12.6	15.00	15	0.411	$\frac{7}{8}$	$\frac{1}{4}$	5.501	5½	0.622	$\frac{5}{8}$	12¼	1%	$\frac{5}{8}$	$\frac{3}{4}$
	14.7	15.00	15	0.550	$\frac{5}{8}$	$\frac{3}{8}$	5.640	5%	0.622	$\frac{5}{8}$	12¼	1%	$\frac{5}{8}$	$\frac{3}{4}$
S18x54.7 x70	16.0	18.00	18	0.461	$\frac{7}{8}$	$\frac{1}{4}$	6.001	6	0.691	$\frac{11}{16}$	15	1½	$\frac{11}{16}$	$\frac{7}{8}$
	20.5	18.00	18	0.711	$\frac{11}{16}$	$\frac{3}{8}$	6.251	6¼	0.691	$\frac{11}{16}$	15	1½	$\frac{11}{16}$	$\frac{7}{8}$
S20x66 x75	19.4	20.00	20	0.505	$\frac{1}{2}$	$\frac{1}{4}$	6.255	6¼	0.795	$\frac{13}{16}$	16¼	1%	$\frac{13}{16}$	$\frac{7}{8}$
	22.0	20.00	20	0.635	$\frac{5}{8}$	$\frac{3}{8}$	6.385	6%	0.795	$\frac{13}{16}$	16¼	1%	$\frac{13}{16}$	$\frac{7}{8}$
S20x86 x96	25.3	20.30	20¼	0.660	$\frac{11}{16}$	$\frac{3}{8}$	7.060	7	0.920	$\frac{15}{16}$	16¾	1¾	$\frac{15}{16}$	1
	28.2	20.30	20¼	0.800	$\frac{13}{16}$	$\frac{7}{8}$	7.200	7¼	0.920	$\frac{15}{16}$	16¾	1¾	$\frac{15}{16}$	1
S24x80 x90 x100	23.5	24.00	24	0.500	$\frac{1}{2}$	$\frac{1}{4}$	7.00	7	0.870	$\frac{7}{8}$	20½	1¾	$\frac{7}{8}$	1
	26.5	24.00	24	0.625	$\frac{5}{8}$	$\frac{3}{8}$	7.125	7%	0.870	$\frac{7}{8}$	20½	1¾	$\frac{7}{8}$	1
	29.3	24.00	24	0.745	$\frac{3}{4}$	$\frac{3}{8}$	7.245	7¼	0.870	$\frac{7}{8}$	20½	1¾	$\frac{7}{8}$	1
S24x106 x121	31.1	24.50	24½	0.620	$\frac{5}{8}$	$\frac{3}{8}$	7.870	7%	1.090	$\frac{11}{16}$	20%	2	1½	1
	35.5	24.50	24½	0.800	$\frac{13}{16}$	$\frac{7}{8}$	8.050	8	1.090	$\frac{11}{16}$	20%	2	1½	1

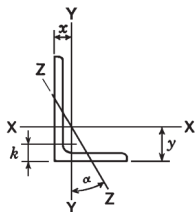


STRUCTURAL ANGLES

Equal legs and unequal legs
Properties for designing

ASTM-A36

Size and Thickness	k	Weight per Foot	Area	AXIS X-X				AXIS Y-Y				AXIS Z-Z		
				l	S	r	y	l	S	r	x	r	Tan ok	
In.	In.	Lb.	In. ²	In. ⁴	In. ³	In.	In.	In. ⁴	In. ³	In.	In.	In.	In.	In.
L3 x2	x 3/16	1/2	3.12	0.917	0.847	0.414	0.961	0.952	0.305	0.198	0.577	0.462	0.435	0.442
	x 1/4	5/16	4.09	1.20	1.09	0.541	0.953	0.980	0.390	0.258	0.569	0.487	0.431	0.437
	x 5/16	3/8	5.03	1.48	1.32	0.662	0.945	11.010	0.467	0.314	0.562	0.511	0.428	0.432
	x 3/8	7/16	5.95	1.75	1.54	0.779	0.937	1.03	0.539	0.368	0.555	0.535	0.426	0.426
	x 1/2	9/16	7.7	2.26	1.92	1.00	0.922	1.08	0.667	0.470	0.543	0.580	0.425	0.413
L3 x2 1/2	x 3/16	5/16	3.41	1.00	0.899	0.423	0.947	0.874	0.568	0.303	0.753	0.627	0.521	0.687
	x 1/4	3/8	4.49	1.32	1.16	0.555	0.940	0.900	0.734	0.397	0.746	0.653	0.520	0.683
	x 5/16	7/16	5.54	1.63	1.41	0.681	0.932	0.925	0.888	0.487	0.739	0.677	0.518	0.680
	x 3/8	1/2	6.56	1.93	1.65	0.803	0.924	0.949	1.03	0.573	0.731	0.701	0.517	0.675
	x 1/2	5/8	7.56	2.22	1.87	0.921	0.917	0.972	1.17	0.656	0.224	0.724	0.516	0.671
	x 5/8	3/4	8.53	2.51	2.07	1.03	0.910	0.995	1.29	0.736	0.718	0.746	0.516	0.666
L3 X3	x 3/16	5/16	3.70	1.09	0.948	0.433	0.933	0.812	0.948	0.433	0.933	0.812	0.586	1.000
	x 1/4	3/8	4.89	1.44	1.23	0.569	0.926	0.836	1.23	0.569	0.926	0.836	.585	1.000
	x 5/16	7/16	6.04	1.78	1.50	0.699	0.918	0.860	1.50	0.699	0.918	0.860	0.583	1.000
	x 3/8	1/2	7.17	2.11	1.75	0.825	0.910	0.884	1.75	0.825	0.910	0.884	0.581	1.000
	x 1/2	5/8	8.28	2.43	1.98	0.946	0.903	0.907	1.98	0.946	0.903	0.907	0.580	1.000
	x 5/8	3/4	9.35	2.75	2.20	1.06	0.895	0.929	2.20	1.06	0.895	0.929	0.580	1.000
L3 1/2 x 2 1/2	x 1/4	5/16	4.94	1.45	1.81	0.753	1.12	1.10	0.775	0.410	0.731	0.607	0.541	0.504
	x 5/16	3/8	6.10	1.79	2.20	0.925	1.11	1.13	0.937	0.501	0.723	0.632	0.538	0.500
	x 3/8	1/2	7.23	2.12	2.56	1.09	1.10	1.15	1.09	0.589	0.716	0.655	0.535	0.495
	x 1/2	5/8	9.41	2.76	3.24	1.41	1.08	1.20	1.36	0.756	0.701	0.701	0.532	0.485
L3 1/2 x 3	x 1/4	5/16	5.38	1.58	1.92	0.773	1.10	1.02	1.30	0.585	0.908	0.773	0.628	0.725
	x 5/16	3/8	6.65	1.95	2.33	0.95	1.09	1.05	1.58	0.718	0.900	0.798	0.624	0.722
	x 3/8	1/2	7.88	2.32	2.73	1.12	1.09	1.07	1.84	0.847	0.892	0.823	0.622	0.720
	x 1/2	5/8	9.09	2.67	3.10	1.29	1.08	1.09	2.09	0.971	0.885	0.846	0.620	0.717
	x 5/8	3/4	10.3	3.02	3.45	1.45	1.07	1.12	2.32	1.09	0.877	0.869	0.618	0.713
L3 1/2 x 3 1/2	x 1/4	5/16	5.79	1.70	2.00	0.787	1.09	0.954	2.00	0.787	1.09	0.954	0.688	1.000
	x 5/16	3/8	7.16	2.10	2.44	0.969	1.08	0.979	2.44	0.969	1.08	0.979	0.685	1.000
	x 3/8	1/2	8.51	2.50	2.86	1.15	1.07	1.00	2.86	1.15	1.07	1.00	0.683	1.000
	x 1/2	5/8	9.82	2.89	3.25	1.32	1.06	1.03	3.25	1.32	1.06	1.03	0.681	1.000
	x 5/8	3/4	11.1	3.27	3.63	1.48	1.05	1.05	3.63	1.48	1.05	1.05	0.679	1.000
L4 x3	x 1/4	7/16	5.75	1.69	2.75	0.988	1.27	1.22	1.33	0.585	0.887	0.725	0.631	0.558
	x 5/16	3/8	7.12	2.09	3.36	1.22	1.27	1.25	1.62	0.721	0.880	0.750	0.633	0.554
	x 3/8	1/2	8.47	2.49	3.94	1.44	1.26	1.27	1.89	0.851	0.873	0.775	0.636	0.551
	x 1/2	5/8	11.1	3.25	5.02	1.87	1.24	1.32	2.40	1.10	0.858	0.822	0.638	0.543
	x 5/8	3/4	13.6	3.99	6.01	2.28	1.23	1.37	2.85	1.34	0.845	0.867	0.639	0.534

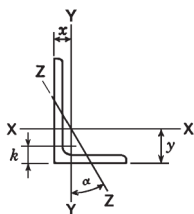


STRUCTURAL ANGLES

Equal legs and unequal legs
Properties for designing

ASTM-A36

Size and Thickness	k	Weight per Foot	Area	AXIS X-X				AXIS Y-Y				AXIS Z-Z		
				l	S	r	y	l	S	r	x	r	Tan ok	
In.	In.	Lb.	In. ²	In. ⁴	In. ³	In.	In.	In. ⁴	In. ³	In.	In.	In.	In.	
L4 x 3½ x ¼	11/16	6.2	1.82	2.89	1.01	1.26	1.14	2.07	0.794	1.07	0.897	0.723	0.759	
	¾	7.7	2.25	3.53	1.25	1.25	1.17	2.52	0.980	1.06	0.923	0.721	0.757	
	7/8	9.1	2.68	4.15	1.48	1.25	1.20	2.96	1.16	1.05	0.947	0.719	0.755	
	15/16	11.9	3.50	5.30	1.92	1.23	1.24	3.76	1.50	1.04	0.994	0.716	0.750	
L4 x 4 x ¼	5/16	6.6	1.93	3.00	1.03	1.25	1.08	3.00	1.03	1.25	1.08	0.783	1.000	
	3/8	8.2	2.40	3.67	1.27	1.24	1.11	3.67	1.27	1.24	1.11	0.781	1.000	
	7/16	9.72	2.86	4.32	1.5	1.23	1.13	4.32	1.50	1.23	1.13	0.779	1.000	
	9/16	11.2	3.30	4.93	1.73	1.22	1.15	4.93	1.73	1.22	1.15	0.777	1.000	
	5/8	12.7	3.75	5.52	1.96	1.21	1.18	5.52	1.96	1.21	1.18	0.776	1.000	
	¾	15.7	4.61	6.62	2.38	1.20	1.22	6.62	2.38	1.20	1.22	0.774	1.000	
	7/8	18.5	5.43	7.62	2.79	1.18	1.27	7.62	2.79	1.18	1.27	0.774	1.000	
L5 x 3 x ¼	11/16	6.6	1.94	5.09	1.51	1.62	1.64	1.41	0.600	0.853	0.648	0.652	0.371	
	¾	8.2	2.41	6.24	1.87	1.61	1.67	1.72	0.739	0.846	0.673	0.649	0.368	
	7/8	9.8	2.86	7.35	2.22	1.60	1.69	2.01	0.874	0.838	0.698	0.646	0.364	
	15/16	11.3	3.31	8.41	2.56	1.59	1.72	2.29	1.00	0.831	0.722	0.644	0.361	
	1	12.8	3.75	9.43	2.89	1.58	1.74	2.55	1.13	0.824	0.746	0.642	0.357	
L5 x 3½ x ¼	11/16	7.03	2.07	5.36	1.55	1.61	1.55	2.20	0.816	1.03	0.804	0.761	0.491	
	¾	8.72	2.56	6.58	1.92	1.60	1.57	2.69	1.01	1.02	0.829	0.758	0.489	
	7/8	10.4	3.05	7.75	2.28	1.59	1.60	3.15	1.19	1.02	0.854	0.755	0.486	
	15/16	13.6	4.00	9.96	2.97	1.58	1.65	4.02	1.55	1.00	0.901	0.750	0.479	
	1	16.8	4.93	12.0	3.63	1.56	1.69	4.80	1.88	0.987	0.947	0.746	0.472	
	11/16	19.8	5.82	13.9	4.26	1.55	1.74	5.52	2.20	0.974	0.993	0.744	0.464	

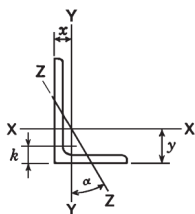


STRUCTURAL ANGLES

Equal legs and unequal legs
Properties for designing

ASTM-A36

Size and Thickness	k	Weight per Foot	Area	AXIS X-X				AXIS Y-Y				AXIS Z-Z		
				l	S	r	y	l	S	r	x	r	Tan ok	
L5 x5	x 5/16	13/16	10.4	3.07	7.44	2.04	1.56	1.35	7.44	2.04	1.56	1.35	0.990	1.000
	x 3/8	3/8	12.4	3.65	8.76	2.41	1.55	1.37	8.76	2.41	1.55	1.37	0.986	1.000
	x 7/16	19/16	14.4	4.22	10.0	2.78	1.54	1.40	10.0	2.78	1.54	1.40	0.983	1.000
	x 1/2	1	16.3	4.79	11.3	3.15	1.53	1.42	11.3	3.15	1.53	1.42	0.980	1.000
	x 5/8	1 1/8	20.1	5.90	13.6	3.85	1.52	1.47	13.6	3.85	1.52	1.47	0.975	1.000
	x 3/4	1 1/4	23.7	6.98	15.7	4.52	1.50	1.52	15.7	4.52	1.50	1.52	0.972	1.000
	x 7/8	1 3/8	27.3	8.02	17.8	5.16	1.49	1.56	17.8	5.16	1.49	1.56	0.971	1.000
L6 x3 1/2	x 5/16	19/16	9.72	2.86	10.9	2.72	1.95	2.02	2.83	1.03	0.995	0.763	0.768	0.353
	x 3/8	3/8	11.6	3.41	12.8	3.24	1.94	2.04	3.32	1.22	0.987	0.786	0.764	0.350
	x 1/2	1	15.3	4.48	16.6	4.23	1.92	2.08	4.23	1.58	0.971	0.833	0.757	0.344
L6 x4	x 5/16	19/16	10.2	2.99	11.3	2.77	1.94	1.92	4.11	1.33	1.17	0.916	0.874	0.450
	x 3/8	3/8	12.2	3.58	13.4	3.3	1.93	1.94	4.84	1.58	1.16	0.94	0.871	0.447
	x 7/16	19/16	14.1	4.15	15.4	3.81	1.92	1.97	5.54	1.82	1.16	0.963	0.868	0.444
	x 1/2	1	16.0	4.72	17.3	4.31	1.92	1.99	6.21	2.06	1.15	0.986	0.865	0.441
	x 5/8	1 1/8	17.9	5.27	19.2	4.81	1.91	2.01	6.85	2.29	1.14	1.01	0.862	0.438
	x 3/4	1 1/4	19.8	5.83	21.0	5.29	1.90	2.03	7.47	2.52	1.13	1.03	0.860	0.435
	x 7/8	1 3/8	23.5	6.90	24.4	6.23	1.88	2.08	8.63	2.95	1.12	1.08	0.857	0.429
	x 1	1 1/2	27.1	7.95	27.6	7.13	1.86	2.12	9.70	3.37	1.10	1.12	0.855	0.422
L6 x6	x 5/16	19/16	12.5	3.67	13.0	2.95	1.88	1.60	13.0	2.95	1.88	1.60	1.19	1.000
	x 3/8	3/8	14.9	4.38	15.4	3.51	1.87	1.62	15.4	3.51	1.87	1.62	1.19	1.000
	x 7/16	19/16	17.3	5.08	17.6	4.06	1.86	1.65	17.6	4.06	1.86	1.65	1.18	1.000
	x 1/2	1	19.6	5.77	19.9	4.59	1.86	1.67	19.9	4.59	1.86	1.67	1.18	1.000
	x 5/8	1 1/8	22.0	6.45	22.0	5.12	1.85	1.70	22.0	5.12	1.85	1.70	1.18	1.000
	x 3/4	1 1/4	24.3	7.13	24.1	5.64	1.84	1.72	24.1	5.64	1.84	1.72	1.17	1.000
	x 7/8	1 3/8	28.8	8.40	28.1	6.64	1.82	1.77	28.1	6.64	1.82	1.77	1.17	1.000
	x 1	1 1/2	33.2	9.75	31.9	7.61	1.81	1.81	31.9	7.61	1.81	1.81	1.17	1.000
	x 1 1/8	1 5/8	37.5	11.0	35.4	8.55	1.79	1.86	35.4	8.55	1.79	1.86	1.17	1.000

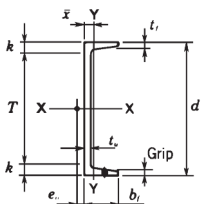


STRUCTURAL ANGLES

Equal legs and unequal legs
Properties for designing

ASTM-A36

Size and Thickness	k	Weight per Foot	Area	AXIS X-X				AXIS Y-Y				AXIS Z-Z		
				l	S	r	y	l	S	r	x	r	Tan ok	
L7 x4	x 3/8	3/8	13.6	4.00	20.5	4.42	2.27	2.35	5.06	1.61	1.12	0.861	0.873	0.339
	x 7/16	15/16	15.8	4.63	23.6	5.11	2.26	2.38	5.79	1.86	1.12	0.886	0.869	0.337
	x 1/2	1	17.9	5.26	26.6	5.79	2.25	2.40	6.48	2.10	1.11	0.910	0.866	0.334
	x 5/8	1 1/8	22.1	6.50	32.4	7.12	2.23	2.45	7.79	2.56	1.10	0.958	0.860	0.329
	x 3/4	1 1/4	26.2	7.70	37.8	8.39	2.21	2.50	9.00	3.01	1.08	1.00	0.855	0.324
L8 x4	x 7/16	15/16	17.4	5.11	34.2	6.59	2.59	2.81	6.03	1.90	1.09	0.829	0.867	0.268
	x 1/2	1	19.7	5.80	38.6	7.48	2.58	2.84	6.75	2.15	1.08	0.854	0.863	0.266
	x 5/8	1 1/8	22.1	6.49	42.9	8.34	2.57	2.86	7.44	2.38	1.07	0.878	0.859	0.264
	x 3/4	1 1/4	28.9	8.49	55.0	10.9	2.55	2.94	9.37	3.07	1.05	0.949	0.850	0.257
	x 1	1 1/2	37.6	11.1	69.7	14.0	2.51	3.03	11.6	3.94	1.03	1.04	0.844	0.247
L8 x6	x 7/16	15/16	20.4	5.99	39.3	7.06	2.56	2.43	19.3	4.23	1.80	1.44	1.31	0.559
	x 1/2	1	23.0	6.80	44.4	8.01	2.55	2.46	21.7	4.79	1.79	1.46	1.30	0.557
	x 5/8	1 1/8	25.9	7.61	49.4	8.94	2.55	2.48	24.1	5.34	1.78	1.49	1.30	0.556
	x 3/4	1 1/4	28.6	8.41	54.2	9.86	2.54	2.50	26.4	5.88	1.77	1.51	1.29	0.554
	x 1	1 1/2	34.0	9.99	63.5	11.7	2.52	2.55	30.8	6.92	1.75	1.56	1.29	0.550
	x 1 1/8	1 3/4	39.3	11.5	72.4	13.4	2.50	2.60	34.9	7.94	1.74	1.60	1.28	0.546
	x 1 1/2	2	44.4	13.1	80.9	15.1	2.49	2.65	38.8	8.92	1.72	1.65	1.28	0.542
L8 x8	x 1/2	1 1/8	26.7	7.84	48.8	8.36	2.49	2.17	48.8	8.36	2.49	2.17	1.59	1.000
	x 5/8	1 1/4	29.8	8.77	54.1	9.33	2.49	2.19	54.2	9.33	2.49	2.19	1.58	1.000
	x 3/4	1 1/2	33.0	9.69	59.6	10.3	2.48	2.21	59.6	10.3	2.48	2.21	1.58	1.000
	x 1	1 3/4	39.2	11.5	69.9	12.2	2.46	2.26	69.9	12.2	2.46	2.26	1.57	1.000
	x 1 1/8	2	45.3	13.3	79.7	14.0	2.45	2.31	79.7	14.0	2.45	2.31	1.57	1.000
	x 1 1/2	2 1/4	51.3	15.1	89.1	15.8	2.43	2.36	89.1	15.8	2.43	2.36	1.56	1.000
	x 2	3	57.2	16.8	98.1	17.5	2.41	2.40	98.1	17.5	2.41	2.40	1.56	1.000



STRUCTURAL CHANNELS

AMERICAN STANDARD

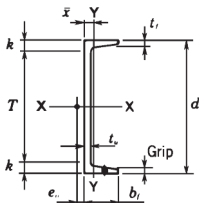
Dimensions ASTM-A36

Designation	Area A	Depth d	Web		Flange			Distance		Grip	Max. Flge. Faste-ner		
			Thickness t _w	t _w /2	Width b _f	Thickness t _f	T	k					
									In.			In.	In.
C 3x4.1	1.20	3.00	0.170	3/16	1/8	1.410	1%	0.273	3/8	1%	1 1/16	—	—
x 5	1.47	3.00	0.258	1/4	1/8	1.498	1 1/2	0.273	3/8	1%	1 1/16	—	—
x 6	1.76	3.00	0.356	3/8	3/16	1.596	1%	0.273	3/8	1%	1 1/16	—	—
C 4x5.4	1.58	4.00	0.184	3/16	1/8	1.584	1%	0.296	3/8	2 1/2	3/4	—	—
x 7.25	2.13	4.00	0.321	3/8	3/16	1.721	1%	0.296	3/8	2 1/2	3/4	3/16	3/8
C 5x6.7	1.97	5.00	0.190	3/16	1/8	1.750	1 1/4	0.320	3/8	3 1/2	3/4	—	—
x 9	2.64	5.00	0.325	3/8	3/16	1.885	1%	0.320	3/8	3 1/2	3/4	3/16	3/8
C 6x 8.2	2.39	6.00	0.200	3/16	1/8	1.920	1 1/8	0.343	3/8	4%	1 3/16	3/16	3/8
x10.5	3.08	6.00	0.314	3/8	3/16	2.034	2	0.343	3/8	4%	1 3/16	3/8	3/8
x13	3.81	6.00	0.437	7/16	1/4	2.157	2 1/2	0.343	3/8	4%	1 3/16	3/8	3/8
C 7x9.8	2.87	7.00	0.210	3/16	1/8	2.090	2 1/4	0.366	3/8	5 1/4	7/8	3/8	3/8
x12.25	3.60	7.00	0.314	3/8	3/16	2.194	2 1/4	0.366	3/8	5 1/4	7/8	3/8	3/8
x14.75	4.33	7.00	0.419	7/16	1/4	2.299	2 1/4	0.366	3/8	5 1/4	7/8	3/8	3/8
C 8x11.5	3.37	8.00	0.220	1/4	1/8	2.260	2 1/4	0.390	3/8	6%	1 5/16	3/8	3/4
x13.75	4.04	8.00	0.303	3/8	3/16	2.343	2 3/4	0.390	3/8	6%	1 5/16	3/8	3/4
x18.75	5.51	8.00	0.487	1/2	1/4	2.527	2 1/2	0.390	3/8	6%	1 5/16	3/8	3/4
C 9x13.4	3.94	9.00	0.233	1/4	1/8	2.433	2 3/4	0.413	7/16	7	1	3/16	3/4
x15	4.41	9.00	0.285	3/8	3/16	2.485	2 1/2	0.413	7/16	7	1	3/16	3/4
x20	5.87	9.00	0.448	7/16	1/4	2.648	2 3/4	0.413	7/16	7	1	3/16	3/4
C 10x15.3	4.48	10.00	0.240	1/4	1/8	2.60	2%	0.436	7/16	8	1	3/16	3/4
x20	5.87	10.00	0.379	3/8	3/16	2.74	2 1/4	0.436	7/16	8	1	3/16	3/4
x25	7.34	10.00	0.526	1/2	1/4	2.89	2%	0.436	7/16	8	1	3/16	3/4
x30	8.81	10.00	0.673	1 1/16	3/8	3.03	3	0.436	7/16	8	1	3/16	3/4
C 12x20.7	6.08	12.00	0.282	3/8	3/16	2.94	3	0.501	1/2	9 1/4	1 1/8	1/2	3/8
x25	7.34	12.00	0.387	3/8	3/16	3.05	3	0.501	1/2	9 1/4	1 1/8	1/2	3/8
x30	8.81	12.00	0.510	1/2	1/4	3.170	3 3/8	0.501	1/2	9 1/4	1 1/8	1/2	3/8
C 15x33.9	9.96	15.00	0.400	3/8	3/16	3.400	3 3/8	0.650	3/4	12%	1 7/16	3/8	1
x40	11.8	15.00	0.520	1/2	1/4	3.520	3 1/2	0.650	3/4	12%	1 7/16	3/8	1
x50	14.7	15.00	0.716	1 1/16	3/8	3.72	3 3/4	0.650	3/4	12 1/2	1 7/16	3/8	1

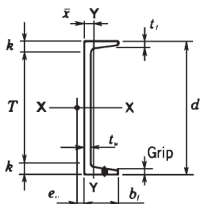
STRUCTURAL CHANNELS

MISCELLANEOUS

Dimensions
ASTM-A36



Designation	Area A	Depth d	Web			Flange				Distance		Grip	Max. Flge. Fas- ten- er
			Thickness		Width b_f	Thickness		T	k				
			t_w	$\frac{t_w}{2}$		t_f	t_f						
In. ²	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.		
MC 3x 7.1	2.11	3.00	0.312	$\frac{5}{16}$	$\frac{3}{16}$	1.94	2	0.351	$\frac{5}{16}$	1 $\frac{1}{2}$	1 $\frac{3}{16}$	—	—
MC 4x13.8	4.03	4.00	0.500	$\frac{1}{2}$	$\frac{3}{4}$	2.500	2 $\frac{1}{2}$	0.500	$\frac{1}{2}$	2	1	—	—
MC 6x12	2.09	6.00	0.310	$\frac{5}{16}$	$\frac{3}{16}$	2.500	2 $\frac{1}{2}$	0.375	$\frac{5}{16}$	4 $\frac{1}{4}$	$\frac{7}{8}$	—	—
MC 6x15.1	4.44	6.00	0.316	$\frac{5}{16}$	$\frac{3}{16}$	2.941	3	0.475	$\frac{1}{2}$	3 $\frac{3}{8}$	1 $\frac{1}{16}$	$\frac{1}{2}$	$\frac{3}{4}$
x16.3	4.79	6.00	0.375	$\frac{3}{8}$	$\frac{3}{8}$	3.000	3	0.475	$\frac{1}{2}$	3 $\frac{3}{8}$	1 $\frac{1}{16}$	$\frac{1}{2}$	$\frac{3}{4}$
MC 6x15.3	4.49	6.00	0.340	$\frac{5}{16}$	$\frac{3}{16}$	3.500	3 $\frac{1}{2}$	0.385	$\frac{5}{16}$	4 $\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{7}{8}$
x18	5.29	6.00	0.379	$\frac{3}{8}$	$\frac{3}{8}$	3.500	3 $\frac{1}{2}$	0.475	$\frac{1}{2}$	3 $\frac{3}{8}$	1 $\frac{1}{16}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 7x19.1	5.61	7.00	0.352	$\frac{3}{8}$	$\frac{3}{8}$	3.45	3 $\frac{3}{8}$	0.500	$\frac{1}{2}$	4 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
x22.7	6.67	7.00	0.503	$\frac{1}{2}$	$\frac{3}{4}$	3.60	3 $\frac{3}{8}$	0.500	$\frac{1}{2}$	4 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 8x8.5	2.50	8.00	0.179	$\frac{3}{16}$	$\frac{1}{8}$	1.87	1 $\frac{1}{8}$	0.311	$\frac{5}{16}$	6 $\frac{3}{8}$	1 $\frac{3}{16}$	$\frac{5}{16}$	$\frac{5}{8}$
MC 8x18.7	5.50	8.00	0.353	$\frac{3}{8}$	$\frac{3}{8}$	2.98	3	0.500	$\frac{1}{2}$	5 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
x20	5.88	8.00	0.400	$\frac{3}{8}$	$\frac{3}{8}$	3.03	3	0.500	$\frac{1}{2}$	5 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 8x21.4	6.28	8.00	0.375	$\frac{3}{8}$	$\frac{3}{8}$	3.450	3 $\frac{1}{2}$	0.525	$\frac{1}{2}$	5 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$	$\frac{7}{8}$
x22.8	6.70	8.00	0.427	$\frac{7}{16}$	$\frac{1}{4}$	3.502	3 $\frac{1}{2}$	0.525	$\frac{1}{2}$	5 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 9x23.9	7.02	9.00	0.400	$\frac{3}{8}$	$\frac{3}{8}$	3.450	3 $\frac{1}{2}$	0.550	$\frac{5}{16}$	6 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{3}{8}$	$\frac{7}{8}$
x25.4	7.47	9.00	0.450	$\frac{7}{16}$	$\frac{1}{4}$	3.500	3 $\frac{1}{2}$	0.550	$\frac{5}{16}$	6 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{3}{8}$	$\frac{7}{8}$



STRUCTURAL CHANNELS

MISCELLANEOUS

Dimensions ASTM-A36

Designation	Area A	Depth d	Web		Flange				Distance		Grip	Max. Flge. Fastener	
			Thickness t_w	$\frac{t_w}{2}$	Width b_f		Thickness t_f		T	k			
					In.	In.	In.	In.					In.
MC10x8.4	2.46	10.00	0.170	$\frac{3}{16}$	$\frac{3}{8}$	1.500	1½	0.280	$\frac{1}{4}$	8½	$\frac{3}{4}$	—	—
MC10x22 x25	6.45	10.00	0.290	$\frac{5}{16}$	$\frac{3}{8}$	3.32	3%	0.575	$\frac{5}{16}$	7%	1½ $\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$
	7.35	10.00	0.380	$\frac{3}{8}$	$\frac{3}{8}$	3.41	3%	0.575	$\frac{5}{16}$	7%	1½ $\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$
MC10x28.5 x33.6 x41.1	8.37	10.00	0.425	$\frac{7}{16}$	$\frac{1}{4}$	3.950	4	0.575	$\frac{5}{16}$	7%	1½ $\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$
	9.87	10.00	0.575	$\frac{9}{16}$	$\frac{5}{8}$	4.100	4%	0.575	$\frac{5}{16}$	7%	1½ $\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$
	12.1	10.00	0.796	1 $\frac{1}{16}$	$\frac{7}{8}$	4.321	4%	0.575	$\frac{5}{16}$	7%	1½ $\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$
MC12x10.6	3.10	12.00	0.190	$\frac{3}{16}$	$\frac{3}{8}$	1.500	1½	0.309	$\frac{5}{16}$	10½	$\frac{3}{4}$	—	—
MC12x31 12x35 x40 x45 x50	9.12	12.00	0.370	$\frac{3}{8}$	$\frac{3}{8}$	3.670	3%	0.700	1 $\frac{1}{16}$	9%	1½ $\frac{1}{16}$	1 $\frac{1}{16}$	1
	10.3	12.00	0.467	$\frac{7}{16}$	$\frac{1}{4}$	3.77	3%	0.700	1 $\frac{1}{16}$	9%	1½ $\frac{1}{16}$	1 $\frac{1}{16}$	1
	11.8	12.00	0.590	$\frac{9}{16}$	$\frac{5}{8}$	3.89	3%	0.700	1 $\frac{1}{16}$	9%	1½ $\frac{1}{16}$	1 $\frac{1}{16}$	1
	13.2	12.00	0.712	1 $\frac{1}{16}$	$\frac{3}{8}$	4.01	4	0.700	1 $\frac{1}{16}$	9%	1½ $\frac{1}{16}$	1 $\frac{1}{16}$	1
	14.7	12.00	0.835	1 $\frac{5}{16}$	$\frac{7}{8}$	4.14	4%	0.700	1 $\frac{1}{16}$	9%	1½ $\frac{1}{16}$	1 $\frac{1}{16}$	1
MC13x31.8 x35 x40 x50	9.35	13.00	0.375	$\frac{3}{8}$	$\frac{3}{8}$	4.00	4	0.610	$\frac{5}{8}$	10%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	10.3	13.00	0.447	$\frac{7}{16}$	$\frac{1}{4}$	4.07	4%	0.610	$\frac{5}{8}$	10%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	11.8	13.00	0.560	$\frac{9}{16}$	$\frac{5}{8}$	4.18	4%	0.610	$\frac{5}{8}$	10%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	14.7	13.00	0.787	1 $\frac{1}{16}$	$\frac{7}{8}$	4.41	4%	0.610	$\frac{5}{8}$	10%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
MC18x42.7 x45.8 x51.9 x58	12.6	18.00	0.450	$\frac{7}{16}$	$\frac{1}{4}$	3.950	4	0.625	$\frac{5}{8}$	15%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	13.5	18.00	0.500	$\frac{1}{2}$	$\frac{1}{4}$	4.000	4	0.625	$\frac{5}{8}$	15%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	15.3	18.00	0.600	$\frac{5}{8}$	$\frac{3}{8}$	4.100	4%	0.625	$\frac{5}{8}$	15%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1
	17.1	18.00	0.700	1 $\frac{1}{16}$	$\frac{3}{8}$	4.200	4%	0.625	$\frac{5}{8}$	15%	1½ $\frac{1}{16}$	$\frac{5}{8}$	1

ZEES-STRUCTURAL

ASTM A-36

Size In.	Weight Per Foot Lbs.	In Lengths Up To Feet
3 x 2 ¹ / ₁₆ x 1/4	6.7	60
x 2 ¹ / ₁₆ x 3/8	9.8	60
x 2 ¹ / ₁₆ x 1/2	12.6	60
4 x 3 ¹ / ₁₆ x 1/4	8.2	60
x 3 ¹ / ₁₆ x 5/16	10.3	60
x 3 ¹ / ₁₆ x 3/8	12.5	60
x 3 ¹ / ₁₆ x 1/2	15.9	60
5 x 3 ¹ / ₄ x 5/16	11.6	60
x 3 ⁵ / ₁₆ x 3/8	14.0	60
x 3 ¹ / ₄ x 1/2	17.9	60
6 x 3 ¹ / ₂ x 3/8	15.7	60
6 x 3 ³ / ₈ x 1/2	21.1	60

