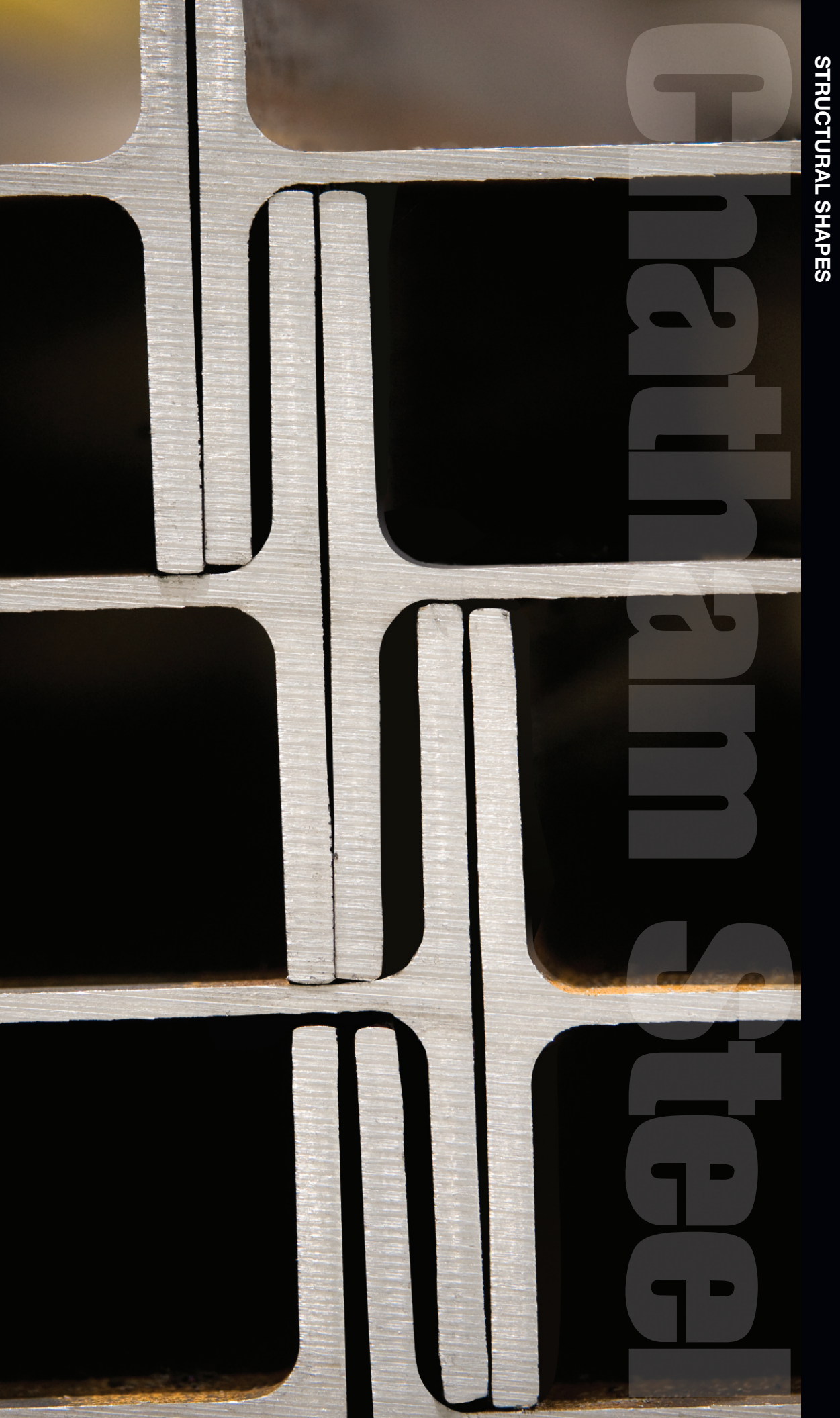
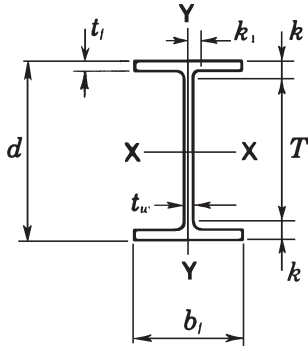


STRUCTURAL SHAPES

Channel Beam Steel



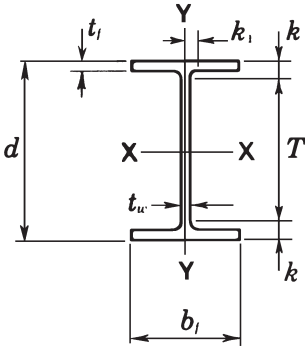


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t _w	t _w 2	Width b _f	Thickness t _f	T	k	k ₁			
											In.	In.	In.
W 4x13	3.83	4.16	4 1/8	0.280	1/4	1/8	4.060	4	0.345	3/8	2 5/8	3/4	1/2
W 5x16 x19	4.71	5.01	5	0.240	1/4	1/8	5.000	5	0.360	3/8	3 1/2	3/4	7/16
	5.56	5.15	5 1/2	0.270	1/4	1/8	5.030	5	0.430	7/16	3 1/2	13/16	7/16
W 6x9 x12 x16	2.68	5.90	5 7/8	0.170	3/16	1/8	3.940	4	0.215	3/16	4 1/2	1 1/16	1/2
	3.55	6.03	6	0.230	1/4	1/8	4.000	4	0.280	1/4	4 1/2	3/4	9/16
	4.74	6.28	6 1/4	0.260	1/4	1/8	4.030	4	0.405	5/8	4 1/2	7/8	9/16
W 6x15 x20 x25	4.45	5.99	6	0.230	1/4	1/8	5.990	6	0.260	1/4	4 1/2	3/4	9/16
	5.89	6.20	6 1/4	0.260	1/4	1/8	6.020	6	0.365	3/8	4 1/2	7/8	9/16
	7.36	6.38	6 3/8	0.320	5/16	3/16	6.080	6 1/8	0.455	7/16	4 1/2	15/16	9/16
W 8x10 x13 x15	2.96	7.89	7 7/8	0.170	3/16	1/8	3.940	4	0.205	3/16	6 1/2	1 1/16	1/2
	3.84	7.99	8	0.230	1/4	1/8	4.000	4	0.255	1/4	6 1/2	3/4	9/16
	4.44	8.11	8 1/8	0.245	1/4	1/8	4.015	4	0.315	5/16	6 1/2	13/16	9/16
W 8x18 x21	5.26	8.14	8 1/8	0.230	1/4	1/8	5.250	5 1/4	0.330	5/16	6 1/2	13/16	9/16
	6.16	8.28	8 1/4	0.250	1/4	1/8	5.270	5 1/4	0.400	3/8	6 1/2	7/8	9/16
W 8x24 x28	7.08	7.93	7 7/8	0.245	1/4	1/8	6.495	6 1/2	0.400	3/8	6 1/8	7/8	9/16
	8.24	8.06	8	0.285	5/16	3/16	6.535	6 1/2	0.465	7/16	6 1/8	15/16	5/8
W 8x31 x35 x40 x48 x58 x67	9.12	8.00	8	0.285	5/16	3/16	7.995	8	0.435	7/16	5 3/4	1 1/8	3/4
	10.3	8.12	8 1/8	0.310	5/16	3/16	8.020	8	0.495	1/2	5 3/4	1 3/16	13/16
	11.7	8.25	8 1/4	0.360	3/8	3/16	8.070	8 1/8	0.560	9/16	5 3/4	1 1/4	13/16
	14.1	8.50	8 1/2	0.400	3/8	3/16	8.110	8 3/8	0.685	1 1/16	5 3/4	1 3/8	13/16
	17.1	8.75	8 3/4	0.510	1/2	1/4	8.220	8 1/4	0.810	1 3/16	5 3/4	1 1/2	7/8
	19.7	9.00	9	0.570	5/8	5/16	8.280	8 3/4	0.935	1 5/16	5 3/4	1 5/8	15/16

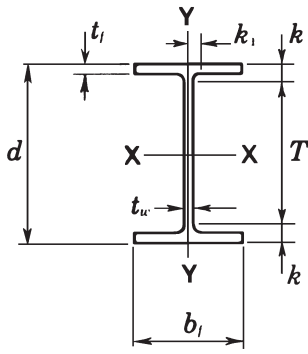


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area <i>A</i>	Depth <i>d</i>		Web			Flange				Distance		
				Thickness <i>t_w</i>		Width <i>b_f</i>	Thickness <i>t_f</i>		<i>T</i>	<i>k</i>	<i>k₁</i>		
				In.	In.		In.	In.				In.	In.
W 10x 12	3.54	9.87	9 ³ / ₈	0.190	³ / ₁₆	¹ / ₈	3.960	4	0.210	³ / ₁₆	8 ³ / ₈	³ / ₄	⁹ / ₁₆
x 15	4.41	9.99	10	0.230	¹ / ₄	¹ / ₈	4.000	4	0.270	¹ / ₄	8 ³ / ₈	¹³ / ₁₆	⁹ / ₁₆
x 17	4.99	10.11	10 ⁵ / ₈	0.240	¹ / ₄	¹ / ₈	4.010	4	0.330	⁵ / ₁₆	8 ³ / ₈	⁷ / ₈	⁹ / ₁₆
x 19	5.62	10.24	10 ³ / ₄	0.250	¹ / ₄	¹ / ₈	4.020	4	0.395	³ / ₈	8 ³ / ₈	¹⁵ / ₁₆	⁵ / ₈
W 10x 22	6.49	10.17	10 ⁵ / ₈	0.240	¹ / ₄	¹ / ₈	5.750	5 ³ / ₄	0.360	³ / ₈	8 ¹ / ₄	¹⁵ / ₁₆	⁵ / ₈
x 26	7.61	10.33	10 ⁵ / ₈	0.260	¹ / ₄	¹ / ₈	5.770	5 ³ / ₄	0.440	⁷ / ₁₆	8 ¹ / ₄	1 ¹ / ₁₆	¹¹ / ₁₆
x 30	8.84	10.47	10 ¹ / ₂	0.300	⁵ / ₁₆	³ / ₁₆	5.810	5 ³ / ₄	0.510	¹ / ₂	8 ¹ / ₄	1 ¹ / ₈	¹¹ / ₁₆
W 10x 33	9.71	9.73	9 ³ / ₄	0.290	⁵ / ₁₆	³ / ₁₆	7.960	8	0.435	⁷ / ₁₆	7 ¹ / ₂	1 ¹ / ₈	³ / ₄
x 39	11.5	9.92	9 ³ / ₈	0.315	⁵ / ₁₆	³ / ₁₆	7.985	8	0.530	¹ / ₂	7 ¹ / ₂	1 ³ / ₁₆	¹³ / ₁₆
x 45	13.3	10.10	10 ⁵ / ₈	0.350	³ / ₈	³ / ₁₆	8.020	8	0.620	⁵ / ₈	7 ¹ / ₂	1 ⁵ / ₁₆	¹³ / ₁₆
W 10x 49	14.4	9.98	10	0.340	⁵ / ₁₆	³ / ₁₆	10.000	10	0.560	⁹ / ₁₆	7 ¹ / ₂	1 ¹ / ₄	¹³ / ₁₆
x 54	15.8	10.09	10 ⁵ / ₈	0.370	³ / ₈	³ / ₁₆	10.030	10	0.615	⁵ / ₈	7 ¹ / ₂	1 ⁵ / ₁₆	¹³ / ₁₆
x 60	17.6	10.22	10 ³ / ₄	0.420	⁷ / ₁₆	¹ / ₄	10.080	10 ⁵ / ₈	0.680	¹¹ / ₁₆	7 ¹ / ₂	1 ³ / ₈	¹³ / ₁₆
x 68	20.0	10.40	10 ⁵ / ₈	0.470	¹ / ₂	¹ / ₄	10.130	10 ⁵ / ₈	0.770	³ / ₄	7 ¹ / ₂	1 ⁷ / ₁₆	⁷ / ₈
x 77	22.6	10.60	10 ⁵ / ₈	0.530	¹ / ₂	¹ / ₄	10.190	10 ³ / ₄	0.870	⁷ / ₈	7 ¹ / ₂	1 ⁹ / ₁₆	⁷ / ₈
x 88	25.9	10.84	10 ⁷ / ₈	0.605	⁵ / ₈	⁵ / ₁₆	10.265	10 ³ / ₄	0.990	1	7 ¹ / ₂	1 ¹¹ / ₁₆	¹⁵ / ₁₆
x100	29.4	11.10	11 ¹ / ₈	0.680	¹¹ / ₁₆	³ / ₈	10.340	10 ⁵ / ₈	1.120	1 ¹ / ₈	7 ¹ / ₂	1 ¹³ / ₁₆	1
x112	32.9	11.36	11 ¹ / ₈	0.755	³ / ₄	³ / ₈	10.415	10 ⁵ / ₈	1.250	1 ¹ / ₄	7 ¹ / ₂	1 ¹⁵ / ₁₆	1

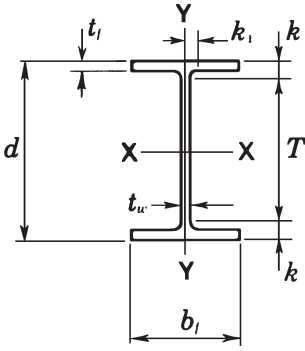


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

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

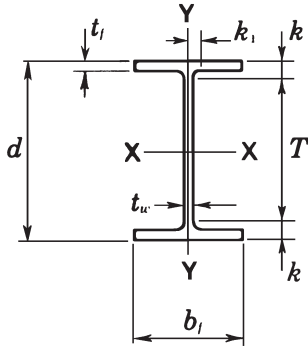


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area <i>A</i>	Depth <i>d</i>		Web			Flange				Distance		
				Thickness <i>t_w</i>		Width <i>b_f</i>	Thickness <i>t_f</i>		<i>T</i>	<i>k</i>	<i>k₁</i>		
				In.	In.		In.	In.				In.	In.
W 14x 22	6.49	13.74	13%	0.230	¼	¼	5.000	5	0.335	⅝	11%	1⅛	¾
x 26	7.69	13.91	13%	0.255	¼	¼	5.025	5	0.420	⅞	11%	1⅛	¾
W 14x 30	8.85	13.8	13%	0.270	¼	¼	6.730	6¾	0.385	¾	11%	1⅛	¾
x 34	10.0	14.0	14	0.285	⅝	⅝	6.745	6¾	0.455	⅞	11%	1⅜	¾
x 38	11.2	14.1	14%	0.310	⅝	⅝	6.770	6¾	0.515	½	11%	1¼	1⅜
W 14x 43	12.6	13.66	13%	0.305	⅝	⅝	7.995	8	0.530	½	10%	1⅛	1
x 48	14.1	13.79	13%	0.340	⅝	⅝	8.030	8	0.595	⅝	10%	1⅞	1
x 53	15.6	13.92	13%	0.370	¾	⅝	8.060	8	0.660	1⅞	10%	1½	1
W 14x 61	17.9	13.89	13%	0.375	¾	⅝	9.995	10	0.645	⅝	10%	1½	1
x 68	20.0	14.04	14	0.415	⅞	¼	10.035	10	0.720	¾	10%	1⅞	1⅞
x 74	21.8	14.17	14%	0.450	⅞	¼	10.070	10%	0.785	1⅜	10%	1⅞	1⅞
x 82	24.0	14.31	14%	0.510	½	¼	10.130	10%	0.855	⅞	10%	1⅞	1⅞
W 14x 90	26.5	14.02	14	0.440	⅞	¼	14.520	14½	0.710	1⅞	10	2	1⅞
x 99	29.1	14.16	14%	0.485	½	¼	14.565	14%	0.780	¾	10	2⅞	1⅞
x109	32.0	14.32	14%	0.525	½	¼	14.605	14%	0.860	⅞	10	2⅞	1½
x120	35.3	14.48	14½	0.590	⅝	⅝	14.670	14%	0.940	1⅞	10	2¼	1½
x132	38.8	14.66	14%	0.645	¾	⅝	14.725	14%	1.030	1	10	2⅞	1⅞

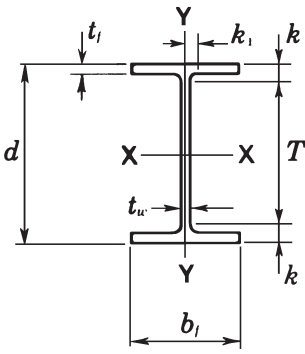


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t _w	t _w 2	Width b _f	Thickness t _f	T	k	k ₁			
											In.	In.	In.
W 14x145	42.7	14.78	14%	0.680	1 ¹ / ₁₆	3 ⁸ / ₁₆	15.500	15½	1.090	1 ¹ / ₁₆	10	2 ³ / ₈	1 ¹ / ₁₆
x159	46.7	14.98	15	0.745	3 ⁴ / ₁₆	3 ⁸ / ₁₆	15.565	15½	1.190	1 ³ / ₁₆	10	2½	1 ¹ / ₁₆
x176	51.8	15.22	15¼	0.830	1 ³ / ₁₆	7 ¹ / ₁₆	15.650	15½	1.310	1 ⁵ / ₁₆	10	2 ⁵ / ₈	1 ⁵ / ₁₆
x193	56.8	15.48	15½	0.890	7 ⁸ / ₁₆	7 ¹ / ₁₆	15.710	15¾	1.440	1 ⁷ / ₁₆	10	2¾	1 ¹¹ / ₁₆
x211	62.0	15.72	15¾	0.980	1	½	15.800	15¾	1.560	1 ¹ / ₁₆	10	2 ⁷ / ₈	1 ¹¹ / ₁₆
x233	68.5	16.04	16	1.070	1 ¹ / ₁₆	9 ¹ / ₁₆	15.890	15¾	1.720	1¾	10	3	1¾
x257	75.6	16.38	16%	1.175	1 ¹ / ₁₆	5 ⁸ / ₁₆	15.995	16	1.890	1 ⁷ / ₁₆	10	3 ³ / ₁₆	1 ¹³ / ₁₆
x283	83.3	16.74	16¾	1.290	1 ⁵ / ₁₆	1 ¹ / ₁₆	16.110	16%	2.070	2 ¹ / ₁₆	10	3 ³ / ₈	1 ⁷ / ₈
x311	91.4	17.12	17%	1.410	1 ⁷ / ₁₆	3 ⁴ / ₁₆	16.230	16¾	2.260	2¼	10	3 ⁹ / ₁₆	1 ¹⁵ / ₁₆
x342	101.0	17.54	17½	1.540	1 ¹ / ₁₆	1 ³ / ₁₆	16.360	16%	2.470	2½	10	3¾	2
x370	109.0	17.92	17%	1.655	1 ¹ / ₈	1 ³ / ₁₆	16.475	16½	2.660	2 ¹ / ₁₆	10	3 ¹⁵ / ₁₆	2 ¹ / ₁₆
x398	117.0	18.29	18¾	1.770	1¾	7 ⁸ / ₁₆	16.590	16%	2.845	2 ⁷ / ₈	10	4 ¹ / ₈	2 ¹ / ₈
x426	125.0	18.67	18%	1.875	1 ⁷ / ₈	1 ⁵ / ₁₆	16.695	16¾	3.035	3 ¹ / ₁₆	10	4 ⁵ / ₁₆	2 ¹ / ₈
W 14x455	134.0	19.02	19	2.015	2	1	16.835	16%	3.210	3 ³ / ₁₆	10	4½	2¼
x500	147.0	19.60	19%	2.190	2 ³ / ₁₆	1 ¹ / ₈	17.010	17	3.500	3½	10	4 ¹³ / ₁₆	2 ⁵ / ₁₆
x550	162.0	20.24	20%	2.380	2 ³ / ₈	1 ³ / ₁₆	17.200	17¼	3.820	3 ¹³ / ₁₆	10	5 ¹ / ₈	2 ³ / ₈
x605	178.0	20.92	20%	2.595	2 ⁵ / ₈	1 ⁵ / ₁₆	17.415	17%	4.160	4 ³ / ₁₆	10	5 ⁵ / ₁₆	2½
x665	196.0	21.64	21%	2.830	2 ¹³ / ₁₆	1 ⁷ / ₁₆	17.650	17%	4.520	4½	10	5 ¹³ / ₁₆	2 ⁵ / ₈
x730	215.0	22.42	22%	3.070	3 ¹ / ₁₆	1 ¹ / ₁₆	17.890	17%	4.910	4 ¹⁵ / ₁₆	10	6 ³ / ₁₆	2¾

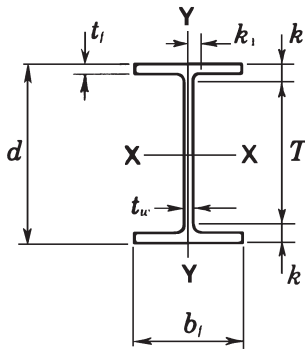


WIDE FLANGE BEAMS

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.
W 16x 26	7.68	15.69	15%	0.250	¼	¼	5.500	5½	0.345	¾	13%	1¼	¾
x 31	9.12	15.88	15%	0.275	¼	¼	5.525	5½	0.440	⅞	13%	1½	¾
W 16x 36	10.6	15.86	15%	0.295	⅝	¾	6.985	7	0.430	⅞	13%	1½	¾
x 40	11.8	16.01	16	0.305	⅝	¾	6.995	7	0.505	½	13%	1¾	13/16
x 45	13.3	16.13	16%	0.345	¾	¾	7.035	7	0.565	⅞	13%	1¼	13/16
x 50	14.7	16.26	16%	0.380	¾	¾	7.070	7	0.630	⅝	13%	1½	13/16
x 57	16.8	16.43	16%	0.430	⅞	¼	7.120	7	0.715	11/16	13%	1	7/8
W 16x 67	20.0	16.33	16%	0.395	¾	¾	10.235	10¼	0.665	11/16	13¼	19/16	1
x 77	22.9	16.52	16%	0.455	7/16	¼	10.295	10¼	0.760	¾	13¼	1½	1 1/16
x 89	26.4	16.75	16%	0.525	½	¼	10.365	10%	0.875	7/8	13¼	1¾	1 1/16
x100	29.7	16.97	17	0.585	⅝	⅝	10.425	10%	0.985	1	13¼	1 7/8	1 1/8
W 18x 35	10.3	17.70	17¾	0.300	⅝	¾	6.000	6	0.425	7/16	15½	1½	¾
x 40	11.8	17.90	17%	0.315	⅝	¾	6.015	6	0.525	½	15½	1¾	13/16
x 46	13.5	18.06	18	0.360	¾	¾	6.060	6	0.605	¾	15½	1¼	13/16
W 18x 50	14.7	17.99	18	0.355	¾	¾	7.495	7½	0.570	⅞	15½	1¼	13/16
x 55	16.2	18.11	18%	0.390	¾	¾	7.530	7½	0.630	⅝	15½	1½	13/16
x 60	17.6	18.24	18¼	0.415	7/16	¼	7.555	7½	0.695	11/16	15½	1½	13/16
x 65	19.1	18.35	18%	0.450	7/16	¼	7.590	7	0.750	¾	15½	1¾	7/8
x 71	20.8	18.47	18½	0.495	½	¼	7.635	7	0.810	13/16	15½	1½	7/8
W 18x 76	22.3	18.21	18¼	0.425	7/16	¼	11.035	11	0.680	11/16	15½	19/16	1 1/16
x 86	25.3	18.39	18%	0.480	½	¼	11.090	11½	0.770	¾	15½	1½	1 1/16
x 97	28.5	18.59	18%	0.535	⅝	¾	11.145	11½	0.870	7/8	15½	1¾	1½
x106	31.1	18.73	18¾	0.590	⅝	⅝	11.200	11¼	0.940	15/16	15½	1 13/16	1½
x119	35.1	18.97	19	0.655	¾	¾	11.265	11¼	1.060	1½	15½	1 15/16	1¾
x130	38.2	19.3	19¼	0.670	11/16	¾	11.2	11½	1.200	1¾	15½	2 1/16	1¾
x143	42.1	19.5	19½	0.73	¾	¾	11.2	11¼	1.320	15/16	15½	2 3/16	1¾
x158	46.3	19.7	19¾	0.810	13/16	7/16	11.3	11¼	1.440	1 1/16	15½	2 5/16	1¼
x175	51.3	20.0	20	0.890	7/8	7/16	11.4	11½	1.590	1 1/16	15½	2 7/16	1¼
W 21x 44	13.0	20.66	20%	0.350	¾	¾	6.500	6½	0.450	7/16	18%	1½	13/16
x 48	14.1	20.6	20%	0.350	¾	¾	8.140	8	0.430	7/16	18%	1½	13/16
x 50	14.7	20.83	20%	0.380	¾	¾	6.530	6½	0.535	⅞	18%	1¼	13/16
x 55	16.2	20.8	20¾	0.375	¾	¾	8.220	8¼	0.522	½	18%	1¾	13/16
x 57	16.7	21.06	21	0.405	¾	¾	6.555	6½	0.650	⅝	18%	1 5/16	13/16
W 21x 62	18.3	20.99	21	0.400	¾	¾	8.240	8¼	0.615	⅝	18%	1 5/16	13/16
x 68	20.0	21.13	21½	0.430	7/16	¼	8.270	8¼	0.685	11/16	18%	1¾	7/8
x 73	21.5	21.24	21¼	0.455	7/16	¼	8.295	8¼	0.740	¾	18%	1 7/16	7/8
x 83	24.3	21.43	21%	0.515	½	¼	8.355	8	0.835	13/16	18%	1½	7/8
x 93	27.3	21.62	21%	0.580	⅝	¾	8.420	8	0.930	15/16	18%	1½	15/16
W 21x101	29.8	21.36	21%	0.500	½	¼	12.290	12¼	0.800	13/16	18	1 11/16	1 1/16
x111	32.7	21.51	21½	0.550	⅝	¾	12.340	12%	0.875	7/8	18	1¾	1½
x122	35.9	21.68	21%	0.600	⅝	⅝	12.390	12%	0.960	15/16	18	1 13/16	1½
x132	38.8	21.83	21%	0.650	¾	¾	12.440	12½	1.035	1 1/16	18	1 15/16	1½
x147	43.2	22.06	22	0.720	¾	¾	12.510	12½	1.150	1½	18	2	1¾
x166	48.8	22.50	22½	0.750	¾	¾	12.4	12%	1.36	1½	18	2¼	1¾
x182	53.6	22.70	22¾	0.830	13/16	7/16	12.5	12½	1.48	1½	18	2½	1¼
x201	59.2	23.00	23	0.910	15/16	½	12.6	12%	1.63	1½	18	2½	1 5/16

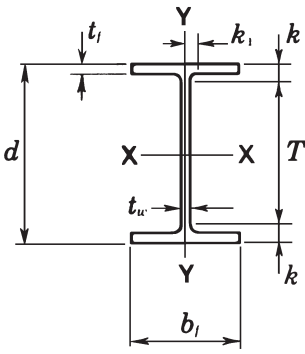


WIDE FLANGE BEAMS

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.
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	$\frac{5}{16}$	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	$\frac{5}{16}$	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	$\frac{11}{16}$	20%	1 $\frac{1}{16}$	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 $\frac{1}{16}$	1 $\frac{1}{16}$
x 94	27.7	24.31	24%	0.515	$\frac{1}{2}$	$\frac{1}{4}$	9.065	9	0.875	$\frac{7}{8}$	20%	1 $\frac{1}{4}$	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 $\frac{1}{8}$	1 $\frac{1}{8}$
W 24x104	30.6	24.06	24	0.500	$\frac{1}{2}$	$\frac{1}{4}$	12.750	12	0.750	$\frac{3}{4}$	20%	1 $\frac{5}{8}$	1 $\frac{1}{16}$
x117	34.4	24.26	24%	0.550	$\frac{5}{8}$	$\frac{3}{8}$	12.800	12	0.850	$\frac{7}{8}$	20%	1 $\frac{3}{4}$	1 $\frac{1}{8}$
x131	38.5	24.48	24%	0.605	$\frac{5}{8}$	$\frac{5}{16}$	12.855	12	0.960	$\frac{15}{16}$	20%	1 $\frac{7}{8}$	1 $\frac{1}{8}$
x146	43.0	24.74	24%	0.650	$\frac{5}{8}$	$\frac{5}{16}$	12.900	12	1.090	1 $\frac{1}{8}$	20%	2	1 $\frac{1}{8}$
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 $\frac{3}{16}$
x176	51.7	25.20	25%	0.750	$\frac{3}{4}$	$\frac{3}{8}$	12.9	12	1.34	1 $\frac{5}{16}$	20%	2 $\frac{1}{4}$	1 $\frac{3}{16}$
x192	56.3	25.50	25%	0.810	1 $\frac{3}{16}$	$\frac{7}{16}$	13.0	13	1.46	1 $\frac{1}{2}$	20%	2 $\frac{3}{8}$	1 $\frac{1}{4}$
x207	60.7	25.70	25%	0.870	$\frac{7}{8}$	$\frac{7}{16}$	13.0	13	1.57	1 $\frac{5}{8}$	20%	2 $\frac{1}{2}$	1 $\frac{1}{4}$
x229	67.2	26.00	26	0.960	1 $\frac{5}{16}$	$\frac{1}{2}$	13.1	13	1.73	1 $\frac{3}{4}$	20%	2 $\frac{5}{8}$	1 $\frac{5}{16}$
x250	73.5	26.30	26%	1.040	1 $\frac{1}{8}$	$\frac{9}{16}$	13.2	13	1.89	1 $\frac{7}{8}$	20%	2 $\frac{3}{4}$	1 $\frac{3}{8}$
x279	82.0	26.70	26%	1.160	1 $\frac{3}{16}$	$\frac{5}{8}$	13.3	13	2.09	2 $\frac{1}{16}$	20%	3	1 $\frac{7}{16}$
x306	89.8	27.10	27%	1.260	1 $\frac{1}{4}$	$\frac{5}{8}$	13.4	13	2.28	2 $\frac{1}{4}$	20%	3 $\frac{3}{16}$	1 $\frac{7}{16}$
x335	98.4	27.50	27%	1.380	1 $\frac{1}{8}$	1 $\frac{1}{16}$	13.5	13	2.48	2 $\frac{1}{2}$	20%	3 $\frac{3}{8}$	1 $\frac{1}{2}$
x370	109.0	28.00	28	1.520	1 $\frac{1}{2}$	$\frac{3}{4}$	13.7	13	2.72	2 $\frac{3}{4}$	20%	3 $\frac{5}{8}$	1 $\frac{9}{16}$
W 27x 84	24.8	26.71	26%	0.460	$\frac{7}{16}$	$\frac{1}{4}$	9.960	10	0.640	$\frac{5}{8}$	23%	1 $\frac{1}{16}$	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 $\frac{5}{8}$	1 $\frac{1}{16}$
x102	30.0	27.09	27%	0.515	$\frac{1}{2}$	$\frac{1}{4}$	10.015	10	0.830	1 $\frac{3}{16}$	23%	1 $\frac{3}{4}$	1 $\frac{1}{16}$
x114	33.5	27.29	27%	0.570	$\frac{9}{16}$	$\frac{5}{16}$	10.070	10	0.930	1 $\frac{5}{16}$	23%	1 $\frac{13}{16}$	1 $\frac{1}{8}$
x129	37.8	27.60	27%	0.610	$\frac{5}{8}$	$\frac{5}{16}$	10.0	10	1.10	1 $\frac{1}{8}$	23%	2	1 $\frac{1}{8}$
W 27x146	43.1	27.38	27%	0.605	$\frac{5}{8}$	$\frac{5}{16}$	13.965	14	0.975	1	23%	1 $\frac{7}{8}$	1 $\frac{1}{8}$
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 $\frac{3}{16}$
x178	52.5	27.81	27%	0.725	$\frac{3}{4}$	$\frac{3}{8}$	14.085	14	1.190	1 $\frac{1}{8}$	23%	2 $\frac{1}{16}$	1 $\frac{3}{16}$
x194	57.2	28.10	28%	0.750	$\frac{3}{4}$	$\frac{3}{8}$	14.0	14	1.34	1 $\frac{5}{16}$	23%	2 $\frac{1}{4}$	1 $\frac{3}{16}$
x217	64.0	28.40	28%	0.830	1 $\frac{3}{16}$	$\frac{7}{16}$	14.1	14	1.50	1 $\frac{1}{2}$	23%	2 $\frac{3}{8}$	1 $\frac{1}{4}$
x235	69.4	28.70	28%	0.910	1 $\frac{5}{16}$	$\frac{1}{2}$	14.2	14	1.61	1 $\frac{1}{8}$	23%	2 $\frac{1}{2}$	1 $\frac{5}{16}$
x258	76	29.00	29	0.980	1	$\frac{1}{2}$	14.3	14	1.77	1 $\frac{3}{8}$	23%	2 $\frac{11}{16}$	1 $\frac{5}{16}$
W 27x281	82.9	29.3	29%	1.06	1 $\frac{1}{16}$	$\frac{9}{16}$	14.4	14	1.930	1 $\frac{15}{16}$	23%	2 $\frac{3}{4}$	1 $\frac{3}{8}$
x307	90.4	29.6	29%	1.16	1 $\frac{3}{16}$	$\frac{5}{8}$	14.4	14	2.090	2 $\frac{1}{16}$	23%	3	1 $\frac{7}{16}$
x336	98.9	30.0	30	1.26	1 $\frac{1}{4}$	$\frac{5}{8}$	14.6	14	2.280	2 $\frac{1}{4}$	23%	3 $\frac{3}{16}$	1 $\frac{7}{16}$
x368	108	30.4	30%	1.38	1 $\frac{3}{8}$	1 $\frac{1}{16}$	14.7	14	2.480	2 $\frac{1}{2}$	23%	3 $\frac{3}{8}$	1 $\frac{1}{2}$
x539	159	32.5	32%	1.97	2	1	15.3	15	3.54	3 $\frac{3}{16}$	23%	4 $\frac{7}{16}$	1 $\frac{13}{16}$
W 30x 90	26.4	29.5	29%	0.470	$\frac{1}{2}$	$\frac{1}{4}$	10.4	10	0.610	$\frac{5}{8}$	26%	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	0.670	1 $\frac{1}{16}$	26%	1 $\frac{9}{16}$	1 $\frac{1}{16}$
x108	31.7	29.83	29%	0.545	$\frac{5}{8}$	$\frac{5}{16}$	10.475	10	0.760	$\frac{3}{4}$	26%	1 $\frac{11}{16}$	1 $\frac{1}{8}$
x116	34.2	30.1	30	0.565	$\frac{5}{8}$	$\frac{5}{16}$	10.495	10	0.850	$\frac{7}{8}$	26%	1 $\frac{3}{4}$	1 $\frac{1}{8}$
x124	36.5	30.17	30%	0.585	$\frac{5}{8}$	$\frac{5}{16}$	10.515	10	0.930	1 $\frac{15}{16}$	26%	1 $\frac{13}{16}$	1 $\frac{1}{8}$
x132	38.9	30.31	30%	0.615	$\frac{5}{8}$	$\frac{5}{16}$	10.545	10	1.000	1	26%	1 $\frac{7}{8}$	1 $\frac{1}{8}$
x148	43.5	30.7	30%	0.650	$\frac{3}{4}$	$\frac{5}{16}$	10.5	10	1.18	1 $\frac{3}{16}$	26%	2 $\frac{1}{16}$	1 $\frac{1}{8}$

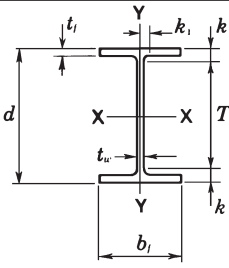


WIDE FLANGE BEAMS

ASTM A36 & A992

W SHAPES Dimensions

Designation	Area A	Depth d	Web			Flange				Distance			
			Thickness t _w	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	5/16	5/16	14.985	15	1.065	1¼	26½	2	1½
x191	56.3	30.68	30¾	0.710	1¼	¾	15.040	15	1.185	1¼	26½	2¼	1¾
x211	62.2	30.94	31	0.775	¾	¾	15.105	15½	1.315	1¼	26½	2¼	1¾
x235	69.2	31.3	31¼	0.830	13/16	7/16	15.1	15	1.50	1½	26½	2¾	1¼
x261	76.9	31.6	31½	0.930	15/16	½	15.2	15½	1.65	1½	26½	29/16	15/16
x292	85.9	32.0	32	1.02	1	½	15.3	15¼	1.85	1½	26½	2¾	15/16
x326	95.8	32.4	32¾	1.14	1½	9/16	15.4	15¾	2.05	2¼	26½	215/16	1¾
W 33x118	34.7	32.86	327/8	0.550	5/16	5/16	11.480	11½	0.740	¾	295/8	15/8	1½
x130	38.3	33.09	33¾	0.580	5/16	5/16	11.510	11½	0.855	7/8	295/8	1¾	1½
x141	41.6	33.30	33¼	0.605	5/8	5/16	11.535	11½	0.960	15/16	295/8	113/16	1½
x152	44.8	33.49	33½	0.635	5/8	5/16	11.565	115/8	1.055	1½	295/8	115/16	1½
x169	49.5	33.8	33¾	0.670	1¼	¾	11.5	11½	1.22	1¼	295/8	2½	1¾
W 33x201	59.2	33.68	335/8	0.715	1¼	¾	15.745	15¾	1.150	1½	295/8	2	1¾
x221	65.2	33.93	33¾	0.775	¾	¾	15.805	15¾	1.275	1¼	295/8	2½	1¾
x241	71.0	34.18	34¼	0.830	13/16	7/16	15.860	15¾	1.400	1½	295/8	2¼	1¼
x263	77.5	34.5	34½	0.870	7/8	7/16	15.8	15¾	1.57	1¼	295/8	27/16	1¼
x291	85.7	34.8	34¾	0.960	15/16	½	15.9	15¾	1.73	1¼	295/8	25/8	15/16
W 36x135	39.7	35.6	35½	0.600	5/8	5/16	11.950	12	0.790	13/16	32½	111/16	1½
x150	44.2	35.85	35¾	0.625	5/8	5/16	11.975	12	0.940	15/16	32½	17/8	1½
x160	47.0	36.01	36	0.650	5/8	5/16	12.00	12	1.020	1	32½	115/16	1½
x170	50.0	36.17	36¾	0.680	11/16	¾	12.030	12	1.100	1½	32½	2	1¾
x182	53.6	36.33	36¾	0.725	¾	¾	12.075	12½	1.180	1¾	32½	2½	1¾
x194	57.0	36.49	36½	0.765	¾	¾	12.115	12½	1.260	1¼	32½	2¾	1¾
x210	61.8	36.69	36¾	0.830	13/16	7/16	12.180	12½	1.360	1½	32½	25/16	1¼
x232	68.1	37.1	37½	0.870	7/8	7/16	12.1	12½	1.570	1¾	32½	27/16	1¼
x256	75.4	37.4	37¾	0.960	15/16	½	12.2	12¼	1.730	1¾	32½	25/8	15/16
W 36x230	67.6	35.9	35¾	0.760	¾	¾	16.5	16½	1.26	1¼	30¾	2½	1¾
x245	72.1	36.1	36¾	0.800	13/16	7/16	16.5	16½	1.35	1½	30¾	25/8	15/8
x260	76.5	36.3	36¼	0.840	13/16	7/16	16.5	16½	1.44	17/16	30¾	211/16	15/8
x280	82.4	36.5	36½	0.885	7/8	7/16	16.6	165/8	1.57	1¾	30¾	213/16	15/8
x300	88.3	36.7	36¾	0.945	15/16	½	16.6	165/8	1.68	111/16	30¾	215/16	111/16
x328	96.4	37.1	371/8	1.02	1	½	16.6	165/8	1.85	17/8	30¾	3½	1¾
x359	105	37.4	37¾	1.12	1½	9/16	16.7	16¾	2.01	2	30¾	3¼	1¾
x393	116	37.8	37¾	1.22	1¼	5/8	16.8	16¾	2.20	23/16	30¾	37/16	113/16
x439	129	38.3	38¼	1.36	1¾	11/16	17.0	17	2.44	27/16	30¾	311/16	17/8
x527	155	39.2	39¼	1.61	15/8	13/16	17.2	17¼	2.91	215/16	30¾	43/16	2
x650	191	40.5	40½	1.97	2	1	17.6	175/8	3.54	39/16	30¾	413/16	23/16
x798	235	42.0	42	2.38	25/8	11/16	18.0	18	4.29	45/16	30¾	55/16	25/8

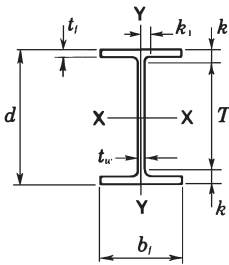


WIDE FLANGE BEAMS

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

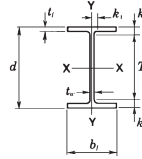
ZX Designation	Area A	Depth d	Web				Flange				Distance		Grip	Max. Flge. Fas- ten- er
			Thickness t_w	$t_w/2$	Width b_f	Thickness t_f	T	k	In.	In.				
											In.	In.		
M 4x13	3.81	4.00	4	0.254	1/8	3/16	3.940	4	0.371	3/8	2 3/8	1 1/16	3/8	3/4
M 5x18.9	5.55	5.00	5	0.316	5/16	3/16	5.003	5	0.416	7/16	3 3/8	1 3/16	7/16	7/8
M 6x4.4	1.29	6.00	6	0.114	1/8	1/16	1.844	1 1/8	0.171	3/16	5 1/4	3/8	3/16	—
M 6x20	5.89	6.00	6	0.250	1/4	1/8	5.938	6	0.379	3/8	4 1/4	7/8	3/8	7/8
M 8x6.5	1.92	8.00	8	0.135	1/8	1/16	2.281	2 1/4	0.189	3/16	6 7/8	9/16	3/16	—
M10x9	2.65	10.00	10	0.157	3/16	1/8	2.690	2 3/4	0.206	3/16	8 7/8	9/16	3/16	—
M12x11.8	3.47	12.00	12	0.177	3/16	1/8	3.065	3 3/8	0.225	1/4	10 7/8	9/16	1/4	—
M14x18	5.10	14.00	14	0.215	3/16	1/8	4.000	4	0.270	1/4	12 3/4	5/8	1/4	3/4xx

STANDARD BEAMS

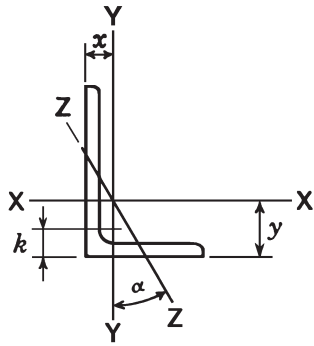
(S SHAPES)

Dimensions

ASTM-A36 & A992



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

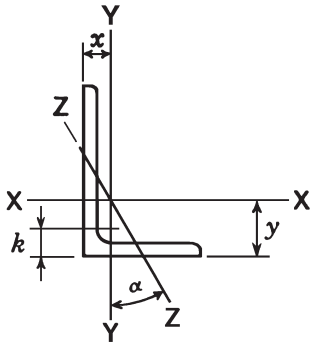


STRUCTURAL ANGLES

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.	ok	
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	5/8	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	11/16	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	13/16	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	5/8	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	11/16	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	3/4	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 7/16	13/16	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 1/2	7/8	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	5/8	4.89	1.44	1.23	0.569	0.926	0.836	1.23	0.569	0.926	0.836	0.585	1.000
	x 5/16	11/16	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	3/4	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 7/16	13/16	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 1/2	7/8	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	5/8	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	11/16	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	3/4	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	7/8	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	5/8	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	11/16	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	3/4	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 7/16	13/16	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 1/2	7/8	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	5/8	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	11/16	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	3/4	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 7/16	13/16	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 1/2	7/8	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	11/16	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	3/4	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	13/16	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	15/16	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	1 1/16	13.6	3.99	6.01	2.28	1.23	1.37	2.85	1.34	0.845	0.867	0.639	0.534

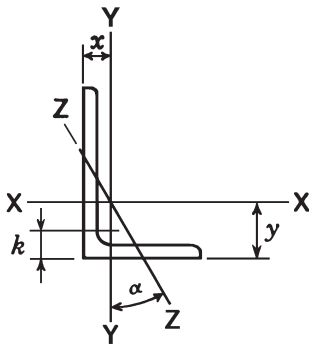


STRUCTURAL ANGLES

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		
				<i>l</i>	<i>S</i>	<i>r</i>	<i>y</i>	<i>l</i>	<i>S</i>	<i>r</i>	<i>x</i>	<i>r</i>	Tan ok	
in.	in.	Lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.	in.	
L4 x3½ x ¼	1/16	6.2	1.82	2.89	1.01	1.26	1.14	2.07	0.794	1.07	0.897	0.723	0.759	
	¼	7.7	2.25	3.53	1.25	1.25	1.17	2.52	0.980	1.06	0.923	0.721	0.757	
	3/16	9.1	2.68	4.15	1.48	1.25	1.20	2.96	1.16	1.05	0.947	0.719	0.755	
	5/16	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 x4	x ¼	5/8	6.6	1.93	3.00	1.03	1.25	1.08	3.00	1.03	1.25	1.08	0.783	1.000
	x 5/16	11/16	8.2	2.40	3.67	1.27	1.24	1.11	3.67	1.27	1.24	1.11	0.781	1.000
	x 3/8	3/4	9.72	2.86	4.32	1.5	1.23	1.13	4.32	1.50	1.23	1.13	0.779	1.000
	x 7/16	13/16	11.2	3.30	4.93	1.73	1.22	1.15	4.93	1.73	1.22	1.15	0.777	1.000
	x 1/2	7/8	12.7	3.75	5.52	1.96	1.21	1.18	5.52	1.96	1.21	1.18	0.776	1.000
	x 5/8	1	15.7	4.61	6.62	2.38	1.20	1.22	6.62	2.38	1.20	1.22	0.774	1.000
	x 3/4	1 1/8	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 x3	x ¼	1/16	6.6	1.94	5.09	1.51	1.62	1.64	1.41	0.600	0.853	0.648	0.652	0.371
	x 5/16	3/4	8.2	2.41	6.24	1.87	1.61	1.67	1.72	0.739	0.846	0.673	0.649	0.368
	x 3/8	13/16	9.8	2.86	7.35	2.22	1.60	1.69	2.01	0.874	0.838	0.698	0.646	0.364
	x 7/16	7/8	11.3	3.31	8.41	2.56	1.59	1.72	2.29	1.00	0.831	0.722	0.644	0.361
	x 1/2	15/16	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 x3½ x ¼	1/16	7.03	2.07	5.36	1.55	1.61	1.55	2.20	0.816	1.03	0.804	0.761	0.491	
	¼	8.72	2.56	6.58	1.92	1.60	1.57	2.69	1.01	1.02	0.829	0.758	0.489	
	3/16	10.4	3.05	7.75	2.28	1.59	1.60	3.15	1.19	1.02	0.854	0.755	0.486	
	x 1/2	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
	x 5/8	1 1/8	16.8	4.93	12.0	3.63	1.56	1.69	4.80	1.88	0.987	0.947	0.746	0.472
	x 3/4	1 3/8	19.8	5.82	13.9	4.26	1.55	1.74	5.52	2.20	0.974	0.993	0.744	0.464

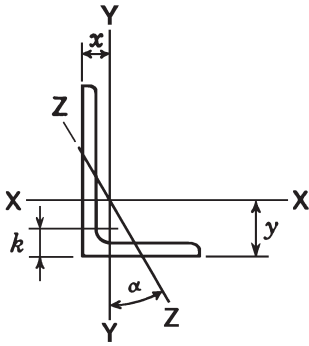


STRUCTURAL ANGLES

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	
ln.	ln.	Lb.	ln. ²	ln. ⁴	ln. ³	ln.	ln.	ln. ⁴	ln. ³	ln.	ln.	ln.	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	7/8	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	15/16	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	13/16	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	7/8	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	13/16	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	7/8	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	15/16	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	13/16	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	7/8	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	15/16	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 1/2	1 3/4	37.5	11.0	35.4	8.55	1.79	1.86	35.4	8.55	1.79	1.86	1.17	1.000

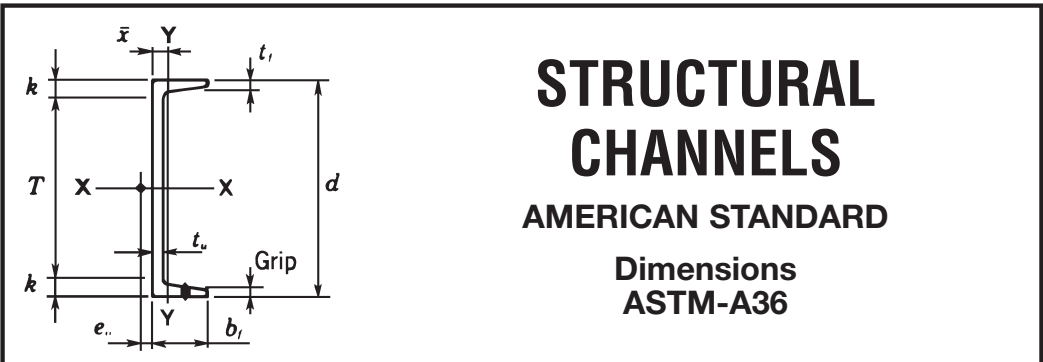


STRUCTURAL ANGLES

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		
				<i>l</i>	<i>S</i>	<i>r</i>	<i>y</i>	<i>l</i>	<i>S</i>	<i>r</i>	<i>x</i>	<i>r</i>	Tan ok	
ln.	ln.	Lb.	ln. ²	ln. ⁴	ln. ³	ln.	ln.	ln. ⁴	ln. ³	ln.	ln.	ln.	ln.	
L7 x4	x 3/8	7/16	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 9/16	1 1/16	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	23.2	6.80	44.4	8.01	2.55	2.46	21.7	4.79	1.79	1.46	1.30	0.557
	x 9/16	1 1/16	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 5/8	1 1/8	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 3/4	1 1/4	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 7/8	1 1/2	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 1/2	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 9/16	1 1/16	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 5/8	1 1/4	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 3/4	1 1/2	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 7/8	1 1/2	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 3/4	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 1 1/8	1 3/4	57.2	16.8	98.1	17.5	2.41	2.40	98.1	17.5	2.41	2.40	1.56	1.000

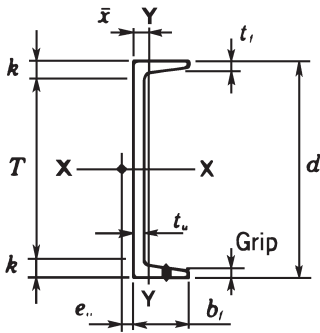


STRUCTURAL CHANNELS

AMERICAN STANDARD

Dimensions ASTM-A36

Designation	Area A	Depth d	Web		Flange			Distance		Grip	Max. Flge. Fastener		
			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 3/8	0.273	1/4	1 1/8	1 1/16	—	—
x 5	1.47	3.00	0.258	1/4	1/8	1.498	1 1/2	0.273	1/4	1 1/8	1 1/16	—	—
x 6	1.76	3.00	0.356	3/8	3/16	1.596	1 5/8	0.273	1/4	1 1/8	1 1/16	—	—
C 4x5.4	1.58	4.00	0.184	3/16	1/8	1.584	1 5/8	0.296	5/16	2 1/2	3/4	—	—
x 7.25	2.13	4.00	0.321	5/16	3/16	1.721	1 3/4	0.296	5/16	2 1/2	3/4	5/16	5/8
C 5x6.7	1.97	5.00	0.190	3/16	1/8	1.750	1 3/4	0.320	5/16	3 1/2	3/4	—	—
x 9	2.64	5.00	0.325	5/16	3/16	1.885	1 7/8	0.320	5/16	3 1/2	3/4	5/16	5/8
C 6x 8.2	2.39	6.00	0.200	3/16	1/8	1.920	1 7/8	0.343	5/16	4 3/8	13/16	5/16	5/8
x10.5	3.08	6.00	0.314	5/16	3/16	2.034	2	0.343	5/16	4 3/8	13/16	3/8	5/8
x13	3.81	6.00	0.437	7/16	1/4	2.157	2 1/8	0.343	5/16	4 3/8	13/16	5/16	5/8
C 7x9.8	2.87	7.00	0.210	3/16	1/8	2.090	2 1/8	0.366	3/8	5 1/4	7/8	3/8	5/8
x12.25	3.60	7.00	0.314	5/16	3/16	2.194	2 1/4	0.366	3/8	5 1/4	7/8	3/8	5/8
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	5/8
C 8x11.5	3.37	8.00	0.220	1/4	1/8	2.260	2 1/4	0.390	3/8	6 1/8	15/16	3/8	3/4
x13.75	4.04	8.00	0.303	5/16	3/16	2.343	2 3/8	0.390	3/8	6 1/8	15/16	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 1/8	15/16	3/8	3/4
C 9x13.4	3.94	9.00	0.233	1/4	1/8	2.433	2 3/8	0.413	7/16	7	1	7/16	3/4
x15	4.41	9.00	0.285	5/16	3/16	2.485	2 1/2	0.413	7/16	7	1	7/16	3/4
x20	5.87	9.00	0.448	7/16	1/4	2.648	2 5/8	0.413	7/16	7	1	7/16	3/4
C 10x15.3	4.48	10.00	0.240	1/4	1/8	2.60	2 3/8	0.436	7/16	8	1	7/16	3/4
x20	5.87	10.00	0.379	3/8	3/16	2.74	2 3/4	0.436	7/16	8	1	7/16	3/4
x25	7.34	10.00	0.526	1/2	1/4	2.89	2 7/8	0.436	7/16	8	1	7/16	3/4
x30	8.81	10.00	0.673	11/16	3/8	3.03	3	0.436	7/16	8	1	7/16	3/4
C 12x20.7	6.08	12.00	0.282	5/16	3/16	2.94	3	0.501	1/2	9 1/4	1 1/8	1/2	7/8
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	7/8
x30	8.81	12.00	0.510	1/2	1/4	3.170	3 1/8	0.501	1/2	9 1/4	1 1/8	1/2	7/8
C 15x33.9	9.96	15.00	0.400	3/8	3/16	3.400	3 3/8	0.650	5/8	12 1/2	1 7/16	5/8	1
x40	11.8	15.00	0.520	1/2	1/4	3.520	3 1/2	0.650	5/8	12 1/2	1 7/16	5/8	1
x50	14.7	15.00	0.716	11/16	3/8	3.72	3 3/4	0.650	5/8	12 1/2	1 7/16	5/8	1

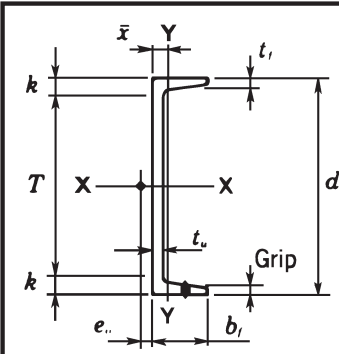


STRUCTURAL CHANNELS

MISCELLANEOUS

Dimensions
ASTM-A36

Designation	Area A	Depth d	Web		Flange			Distance		Grip	Max. Flge. Faste-ner		
			Thickness t_w	$\frac{t_w}{2}$	Width b_f	Thickness t_r	T	k					
			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	$\frac{3}{8}$	1 $\frac{1}{2}$	$\frac{13}{16}$	—	—
MC 4x13.8	4.03	4.00	0.500	$\frac{1}{2}$	$\frac{1}{4}$	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	$\frac{3}{8}$	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	$\frac{3}{8}$	$\frac{3}{16}$	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	$\frac{3}{8}$	4 $\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{7}{8}$
x18	5.29	6.00	0.379	$\frac{3}{8}$	$\frac{3}{16}$	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	$\frac{3}{8}$	$\frac{3}{16}$	3.45	3 $\frac{1}{2}$	0.500	$\frac{1}{2}$	4 $\frac{3}{4}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
x22.7	6.67	7.00	0.503	$\frac{1}{2}$	$\frac{1}{4}$	3.60	3 $\frac{5}{8}$	0.500	$\frac{1}{2}$	4 $\frac{3}{4}$	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 $\frac{7}{8}$	0.311	$\frac{5}{16}$	6 $\frac{3}{8}$	$\frac{13}{16}$	$\frac{5}{16}$	$\frac{5}{8}$
MC 8x18.7	5.50	8.00	0.353	$\frac{3}{8}$	$\frac{3}{16}$	2.98	3	0.500	$\frac{1}{2}$	5 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
x20	5.88	8.00	0.400	$\frac{3}{8}$	$\frac{3}{16}$	3.03	3	0.500	$\frac{1}{2}$	5 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 8x21.4	6.28	8.00	0.375	$\frac{3}{8}$	$\frac{3}{16}$	3.450	3 $\frac{1}{2}$	0.525	$\frac{1}{2}$	5 $\frac{5}{8}$	1 $\frac{3}{16}$	$\frac{1}{2}$	$\frac{7}{8}$
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 $\frac{5}{8}$	1 $\frac{3}{16}$	$\frac{1}{2}$	$\frac{7}{8}$
MC 9x23.9	7.02	9.00	0.400	$\frac{3}{8}$	$\frac{3}{16}$	3.450	3 $\frac{1}{2}$	0.550	$\frac{5}{16}$	6 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{5}{16}$	$\frac{7}{8}$
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 $\frac{1}{4}$	$\frac{5}{16}$	$\frac{7}{8}$



STRUCTURAL CHANNELS

MISCELLANEOUS

Dimensions
ASTM-A36

Designation	Area A	Depth d	Web		Flange				Distance		Grip	Max. Flge. Fas- ten- er	
			Thickness t _w	t _w 2	Width b _r		Thickness t _r		T	k			
			In.	In.	In.	In.	In.	In.	In.	In.			In.
MC10x8.4	2.46	10.00	0.170	3/16	1/8	1.500	1 1/2	0.280	1/4	8 1/2	3/4	—	—
MC10x22 x25	6.45	10.00	0.290	5/16	3/16	3.32	3 3/8	0.575	5/16	7 3/8	1 5/16	5/16	7/8
	7.35	10.00	0.380	3/8	3/16	3.41	3 3/8	0.575	5/16	7 3/8	1 5/16	5/16	7/8
MC10x28.5 x33.6 x41.1	8.37	10.00	0.425	7/16	1/4	3.950	4	0.575	5/16	7 3/8	1 5/16	5/16	7/8
	9.87	10.00	0.575	5/8	5/16	4.100	4 1/8	0.575	5/16	7 3/8	1 5/16	5/16	7/8
	12.1	10.00	0.796	1 1/16	7/16	4.321	4 3/8	0.575	5/16	7 3/8	1 5/16	5/16	7/8
MC12x10.6	3.10	12.00	0.190	3/16	1/8	1.500	1 1/2	0.309	5/16	10 1/2	3/4	—	—
MC12x31 12x35 x40 x45 x50	9.12	12.00	0.370	5/16	3/16	3.670	3 3/8	0.700	1 1/16	9 3/8	1 5/16	1 1/16	1
	10.3	12.00	0.467	7/16	1/4	3.77	3 3/4	0.700	1 1/16	9 3/8	1 5/16	1 1/16	1
	11.8	12.00	0.590	9/16	5/16	3.89	3 7/8	0.700	1 1/16	9 3/8	1 5/16	1 1/16	1
	13.2	12.00	0.712	1 1/16	3/8	4.01	4	0.700	1 1/16	9 3/8	1 5/16	1 1/16	1
	14.7	12.00	0.835	1 3/16	7/16	4.14	4 1/8	0.700	1 1/16	9 3/8	1 5/16	1 1/16	1
MC13x31.8 x35 x40 x50	9.35	13.00	0.375	5/16	3/16	4.00	4	0.610	5/16	10 3/8	1 7/16	5/16	1
	10.3	13.00	0.447	7/16	1/4	4.07	4 1/8	0.610	5/16	10 3/8	1 7/16	5/16	1
	11.8	13.00	0.560	9/16	5/16	4.18	4 1/8	0.610	5/16	10 3/8	1 7/16	5/16	1
	14.7	13.00	0.787	1 3/16	7/16	4.41	4 3/8	0.610	5/16	10 3/8	1 7/16	5/8	1
MC18x42.7 x45.8 x51.9 x58	12.6	18.00	0.450	7/16	1/4	3.950	4	0.625	5/16	15 3/8	1 7/16	5/8	1
	13.5	18.00	0.500	1/2	1/4	4.000	4	0.625	5/16	15 3/8	1 7/16	5/8	1
	15.3	18.00	0.600	5/8	5/16	4.100	4 1/8	0.625	5/16	15 3/8	1 7/16	5/8	1
	17.1	18.00	0.700	1 1/16	3/8	4.200	4 1/4	0.625	5/16	15 3/8	1 7/16	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 / ₈ x 5/16	10.3	60
x 3 ³ / ₁₆ x 3/8	12.5	60
x 3 ¹ / ₈ 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 ⁵ / ₈ x 1/2	21.1	60

