inued)
es
ıs

ange		Distance				
Thickness, t_f		k		k_1	T	Work-able Gage
		k_{des}	k_{det}			
in.		in.	in.	in.	in.	in.
0.640	5/8	1.24	1 1/2	15/16	9 1/4	5 1/2
0.575	9/16	1.18	1 3/8	15/16	9 1/4	5 1/2
0.640	5/8	1.14	1 1/2	15/16	9 1/4	5 1/2
0.575	9/16	1.08	1 3/8	15/16	↓	↓
0.515	1/2	1.02	1 3/8	7/8	↓	↓
0.520	1/2	0.820	1 3/16	3/4	10 1/8	3 1/2
0.440	7/16	0.740	1 1/8	3/4	↓	↓
0.380	3/8	0.680	1 1/16	3/4	↓	↓
0.425	7/16	0.725	15/16	5/8	10 3/8	2 1/4 [9]
0.350	3/8	0.650	7/8	9/16	↓	↓
0.265	1/4	0.565	13/16	9/16	↓	↓
0.225	1/4	0.525	3/4	9/16	↓	↓
1.25	1 1/4	1.75	1 15/16	1	7 1/2	5 1/2
1.12	1 1/8	1.62	1 13/16	1	↓	↓
0.990	1	1.49	1 11/16	15/16	↓	↓
0.870	7/8	1.37	1 9/16	7/8	↓	↓
0.770	3/4	1.27	1 7/16	7/8	↓	↓
0.680	11/16	1.18	1 3/8	13/16	↓	↓
0.615	5/8	1.12	1 5/16	13/16	↓	↓
0.560	9/16	1.06	1 1/4	13/16	↓	↓
0.620	5/8	1.12	1 5/16	13/16	7 1/2	5 1/2
0.530	1/2	1.03	1 3/16	13/16	↓	↓
0.435	7/16	0.935	1 1/8	3/4	↓	↓
0.510	1/2	0.810	1 1/8	11/16	8 1/4	2 3/4 [9]
0.440	7/16	0.740	1 1/16	11/16	↓	↓
0.360	3/8	0.660	15/16	5/8	↓	↓
0.395	3/8	0.695	15/16	5/8	8 3/8	2 1/4 [9]
0.330	5/16	0.630	7/8	9/16	↓	↓
0.270	1/4	0.570	13/16	9/16	↓	↓
0.210	3/16	0.510	3/4	9/16	↓	↓

ts should be compared with the geometry of the cross section

Section G2.1(a) with $F_y = 50$ ksi.

Table 1-1 (continued)
W-Shapes
Properties

W12-W10

Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties	
	$\frac{b_f}{2t_f}$	$\frac{h}{t_w}$	I	S	r	Z	I	S	r	Z			J	C_w
lb/ft			in.^{4}	in.^{3}	in.	in.^{3}	in.^{4}	in.^{3}	in.	in.^{3}	in.	in.	in.^{4}	in.^{6}
58	7.82	27.0	475	78.0	5.28	86.4	107	21.4	2.51	32.5	2.81	11.6	2.10	3570
53	8.69	28.1	425	70.6	5.23	77.9	95.8	19.2	2.48	29.1	2.79	11.5	1.58	3160
50	6.31	26.8	391	64.2	5.18	71.9	56.3	13.9	1.96	21.3	2.25	11.6	1.71	1880
45	7.00	29.6	348	57.7	5.15	64.2	50.0	12.4	1.95	19.0	2.23	11.5	1.26	1650
40	7.77	33.6	307	51.5	5.13	57.0	44.1	11.0	1.94	16.8	2.21	11.4	0.906	1440
35	6.31	36.2	285	45.6	5.25	51.2	24.5	7.47	1.54	11.5	1.79	12.0	0.741	879
30	7.41	41.8	238	38.6	5.21	43.1	20.3	6.24	1.52	9.56	1.77	11.9	0.457	720
26	8.54	47.2	204	33.4	5.17	37.2	17.3	5.34	1.51	8.17	1.75	11.8	0.300	607
22	4.74	41.8	156	25.4	4.91	29.3	4.66	2.31	0.848	3.66	1.04	11.9	0.293	164
19	5.72	46.2	130	21.3	4.82	24.7	3.76	1.88	0.822	2.98	1.02	11.9	0.180	131
16	7.53	49.4	103	17.1	4.67	20.1	2.82	1.41	0.773	2.26	0.983	11.7	0.103	96.9
14	8.82	54.3	88.6	14.9	4.62	17.4	2.36	1.19	0.753	1.90	0.961	11.7	0.0704	80.4
112	4.17	10.4	716	126	4.66	147	236	45.3	2.68	69.2	3.08	10.2	15.1	6020
100	4.62	11.6	623	112	4.60	130	207	40.0	2.65	61.0	3.04	10.0	10.9	5150
88	5.18	13.0	534	98.5	4.54	113	179	34.8	2.63	53.1	2.99	9.81	7.53	4330
77	5.86	14.8	455	85.9	4.49	97.6	154	30.1	2.60	45.9	2.95	9.73	5.11	3630
68	6.58	16.7	394	75.7	4.44	85.3	134	26.4	2.59	40.1	2.92	9.63	3.56	3100
60	7.41	18.7	341	66.7	4.39	74.6	116	23.0	2.57	35.0	2.88	9.52	2.48	2640
54	8.15	21.2	303	60.0	4.37	66.6	103	20.6	2.56	31.3	2.85	9.49	1.82	2320
49	8.93	23.1	272	54.6	4.35	60.4	93.4	18.7	2.54	28.3	2.84	9.44	1.39	2070
45	6.47	22.5	248	49.1	4.32	54.9	53.4	13.3	2.01	20.3	2.27	9.48	1.51	1200
39	7.53	25.0	209	42.1	4.27	46.8	45.0	11.3	1.98	17.2	2.24	9.39	0.976	992
33	9.15	27.1	171	35.0	4.19	38.8	36.6	9.20	1.94	14.0	2.20	9.30	0.583	791
30	5.70	29.5	170	32.4	4.38	36.6	16.7	5.75	1.37	8.84	1.60	10.0	0.622	414
26	6.56	34.0	144	27.9	4.35	31.3	14.1	4.89	1.36	7.50	1.58	9.86	0.402	345
22	7.99	36.9	118	23.2	4.27	26.0	11.4	3.97	1.33	6.10	1.55	9.84	0.239	275
19	5.09	35.4	96.3	18.8	4.14	21.6	4.29	2.14	0.874	3.35	1.06	9.81	0.233	104
17	6.08	36.9	81.9	16.2	4.05	18.7	3.56	1.78	0.845	2.80	1.04	9.77	0.156	85.1
15	7.41	38.5	68.9	13.8	3.95	16.0	2.89	1.45	0.810	2.30	1.01	9.72	0.104	68.3
12	9.43	46.6	53.8	10.9	3.90	12.6	2.18	1.10	0.785	1.74	0.983	9.66	0.0547	50.9

Table 3-10 (continued)
W-Shapes
Available Moment vs. Unbraced Length

$F_y = 50$ ksi
$C_b = 1$

M_n/Ω_b kip-ft ASD	$\phi_b M_n$ kip-ft LRFD
80	120
76	114
72	108
68	102
64	96
60	90
56	84
52	78
48	72
44	66
40	60

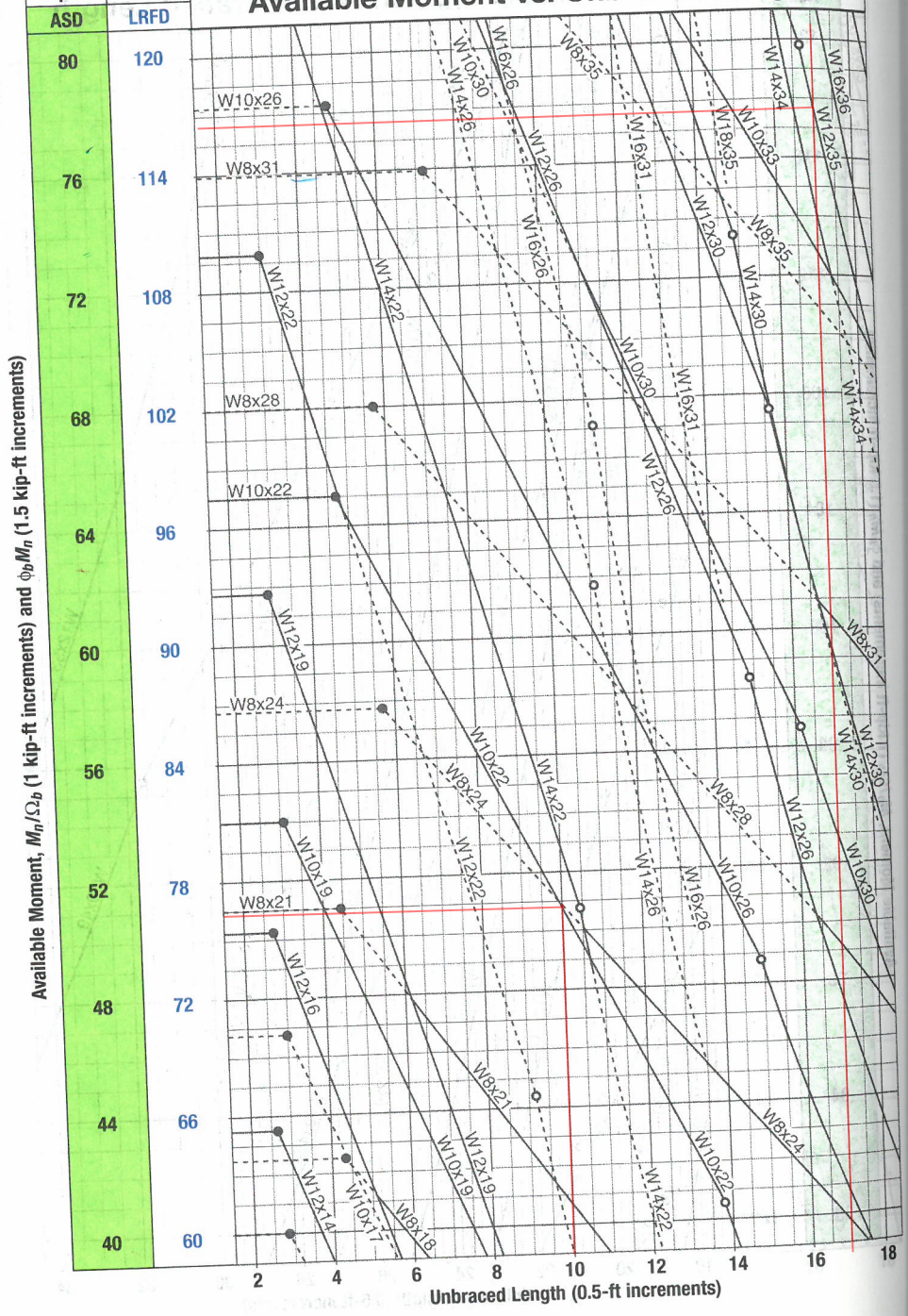

Table 3-6 (continued)
Maximum Total Uniform Load, kips
W-Shapes

F_y = 50 ksi

W12

Shape		W12×											
		53		50		45		40		35		30	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	6									150	225	128	192
	7			181	271	162	243			146	219	123	185
	8			179	270	160	241	140	211	128	192	108	162
	9	167	250	159	240	142	214	126	190	114	171	95.6	144
	10	155	234	144	216	128	193	114	171	102	154	86.0	129
	11	141	212	130	196	116	175	103	155	92.9	140	78.2	118
	12	130	195	120	180	107	161	94.8	143	85.2	128	71.7	108
	13	120	180	110	166	98.6	148	87.5	132	78.6	118	66.2	99.5
	14	111	167	103	154	91.5	138	81.3	122	73.0	110	61.4	92.4
	15	104	156	95.7	144	85.4	128	75.8	114	68.1	102	57.4	86.2
	16	97.2	146	89.7	135	80.1	120	71.1	107	63.9	96.0	53.8	80.8
	17	91.5	137	84.4	127	75.4	113	66.9	101	60.1	90.4	50.6	76.1
	18	86.4	130	79.7	120	71.2	107	63.2	95.0	56.8	85.3	47.8	71.8
	19	81.8	123	75.5	114	67.4	101	59.9	90.0	53.8	80.8	45.3	68.1
	20	77.7	117	71.8	108	64.1	96.3	56.9	85.5	51.1	76.8	43.0	64.7
	21	74.0	111	68.3	103	61.0	91.7	54.2	81.4	48.7	73.1	41.0	61.6
	22	70.7	106	65.2	98.0	58.2	87.5	51.7	77.7	46.5	69.8	39.1	58.8
	23	67.6	102	62.4	93.8	55.7	83.7	49.5	74.3	44.4	66.8	37.4	56.2
	24	64.8	97.4	59.8	89.9	53.4	80.3	47.4	71.3	42.6	64.0	35.8	53.9
	25	62.2	93.5	57.4	86.3	51.3	77.0	45.5	68.4	40.9	61.4	34.4	51.7
	26	59.8	89.9	55.2	83.0	49.3	74.1	43.8	65.8	39.3	59.1	33.1	49.7
	27	57.6	86.6	53.2	79.9	47.5	71.3	42.1	63.3	37.9	56.9	31.9	47.9
	28	55.5	83.5	51.3	77.0	45.8	68.8	40.6	61.1	36.5	54.9	30.7	46.2
	29	53.6	80.6	49.5	74.4	44.2	66.4	39.2	59.0	35.2	53.0	29.7	44.6
	30	51.8	77.9	47.8	71.9	42.7	64.2			34.1	51.2	28.7	43.1
	31									33.0	49.5		
Beam Properties													
W_c/Ω_b	$\phi_b W_c$, kip-ft	1550	2340	1440	2160	1280	1930	1140	1710	1020	1540	860	1290
M_p/Ω_b	$\phi_b M_p$, kip-ft	194	292	179	270	160	241	142	214	128	192	108	162
M_r/Ω_b	$\phi_b M_r$, kip-ft	123	185	112	169	101	151	89.9	135	79.6	120	67.4	101
BF/Ω_b	$\phi_b BF$, kips	3.65	5.50	3.97	5.98	3.80	5.80	3.66	5.54	4.34	6.45	3.97	5.96
V_n/Ω_v	$\phi_v V_n$, kips	83.5	125	90.3	135	81.1	122	70.2	105	75.0	113	64.0	95.9
Z_x, in.^{3}		77.9		71.9		64.2		57.0		51.2		43.1	
L_p, ft		8.76		6.92		6.89		6.85		5.44		5.37	
L_r, ft		28.2		23.8		22.4		21.1		16.6		15.6	

ASD	LRFD
Ω_b = 1.67	ϕ_b = 0.90
Ω_v = 1.50	ϕ_v = 1.00

Note: For beams laterally unsupported, see Table 3-10.
Available strength tabulated above heavy line is limited by available shear strength.