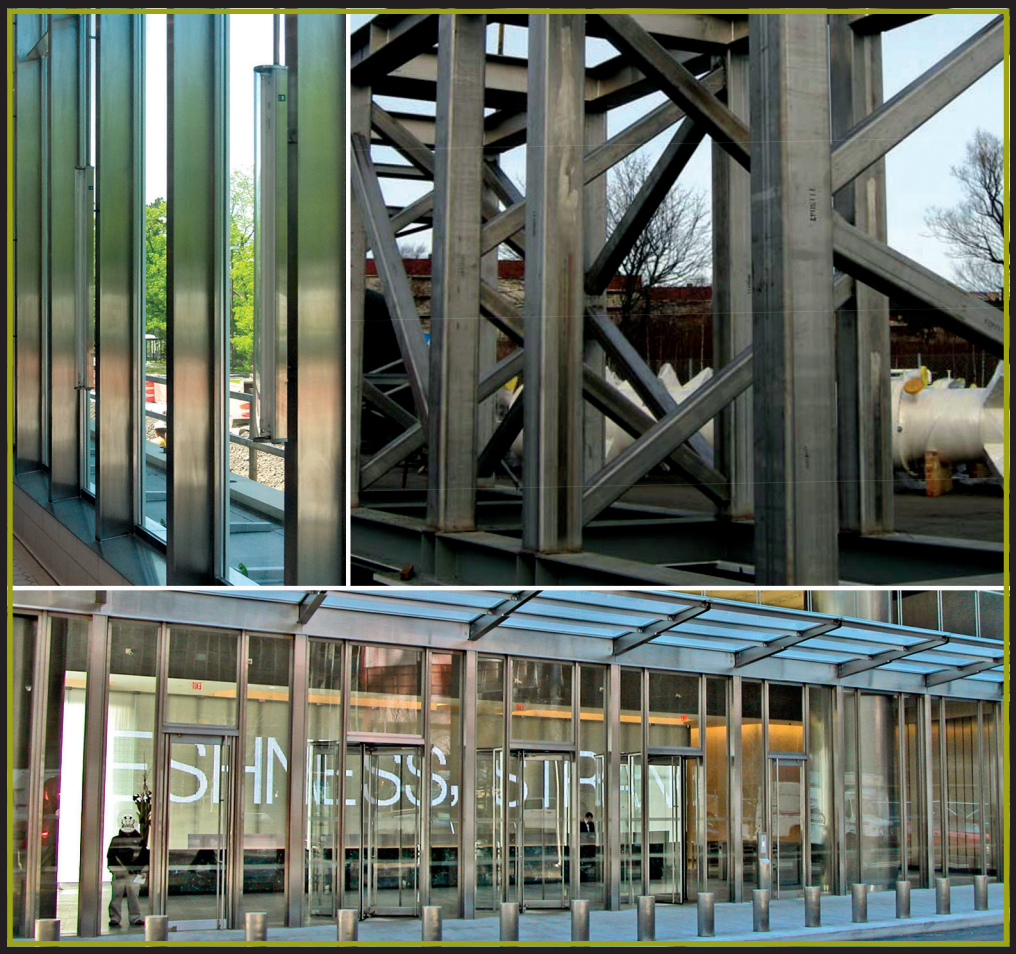
STRUCTURAL STAINLESS STEEL DESIGN TABLES

IN ACCORDANCE WITH AISC DG27: STRUCTURAL STAINLESS STEEL



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Skid for offshore regasification plant
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Stainless steel entrance structure,
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PART 3: DESIGN OF FLEXURAL MEMBERS (F_y = 65 ksi)

Z_x

Table 3-1
W-Shapes (Welded)
Selection by Z_x

F_y = 65 ksi

Shape	Z_x	M_{px}/Ω_b	$\varphi_b M_{px}$	M_{rx}/Ω_b	$\varphi_b M_{rx}$	BF/Ω_b	$\varphi_b BF$	L_p	L_r	I_x	V_{nx}/Ω_v	$\varphi_v V_{nx}$
		kip-ft	kip-ft	kip-ft	kip-ft	kips	kips				kips	kips
	in.^{3}	ASD	LRFD	ASD	LRFD	ASD	LRFD	ft	ft	in.^{4}	ASD	LRFD
W24×131	**367**	**1190**	**1790**	**476**	**715**	**31.7**	**47.6**	**4.20**	**26.7**	**3990**	**346**	**520**
W24×117 [f2]	**325**	**979**	**1470**	**422**	**634**	**29.3**	**44.0**	**6.72**	**25.7**	**3510**	**312**	**469**
W21×122	305	989	1490	396	595	25.8	38.8	4.11	27.1	2940	304	457
W24×104 [f2]	**287**	**746**	**1120**	**374**	**562**	**26.8**	**40.3**	**11.0**	**24.9**	**3080**	**281**	**423**
W21×111 [f2]	276	889	1340	361	542	24.3	36.5	4.37	26.1	2650	276	415
W24×94	**251**	**814**	**1220**	**321**	**483**	**32.6**	**49.0**	**2.80**	**17.9**	**2670**	**292**	**439**
W21×101 [f2]	251	741	1110	328	494	22.9	34.4	7.30	25.3	2400	250	376
W18×106	229	743	1120	296	445	20.1	30.2	3.76	26.0	1900	258	387
W24×84	**222**	**720**	**1080**	**283**	**426**	**30.1**	**45.2**	**2.76**	**17.3**	**2340**	**265**	**398**
W21×93	219	710	1070	277	417	28.8	43.2	2.61	17.7	2050	293	440
W18×97	210	681	1020	273	410	19.2	28.9	3.75	25.0	1740	232	349
W14×120 [f2]	210	608	914	274	412	11.4	17.1	11.7	41.1	1360	200	300
W24×76	**198**	**642**	**965**	**253**	**380**	**27.7**	**41.7**	**2.72**	**16.8**	**2070**	**246**	**369**
W16×100	197	639	960	254	382	16.9	25.5	3.55	26.3	1480	232	349
W21×83	194	629	946	247	371	26.7	40.2	2.58	16.9	1810	257	387
W14×109 [f2]	190	499	750	250	375	11.0	16.6	15.9	38.6	1230	175	264
W18×86 [f2]	185	582	875	241	362	17.9	26.9	4.73	23.8	1520	206	310
W24×68 [f2,v2]	**174**	**513**	**771**	**222**	**333**	**20.5**	**30.7**	**2.04**	**16.3**	**1800**	**220**	**330**
W16×89	174	564	848	225	338	16.1	24.2	3.52	24.6	1290	206	310
W14×99 [f2]	171	391	588	226	340	10.5	15.8	20.8	36.5	1100	161	242
W21×73	170	551	829	217	327	24.3	36.6	2.56	16.3	1580	225	339
W18×76 [f2]	162	451	678	212	318	16.4	24.6	8.22	22.9	1320	181	271
W12×106	162	525	790	209	314	9.09	13.7	4.41	39.3	925	184	276
W21×68	**158**	**512**	**770**	**201**	**303**	**23.2**	**34.9**	**2.55**	**16.0**	**1460**	**212**	**318**
W14×90 [f2]	155	303	456	206	309	N/A	N/A	N/A	34.6	987	144	216
W24×62 [v2]	**151**	**490**	**736**	**187**	**281**	**28.8**	**43.3**	**1.94**	**12.4**	**1520**	**236**	**355**
W16×77	149	483	726	194	292	14.8	22.3	3.49	23.0	1100	175	264
W12×96	146	474	712	190	285	8.92	13.4	4.38	36.2	824	163	245
W18×71	144	467	702	184	276	20.5	30.8	2.41	16.2	1160	214	321
W21×62	**142**	**461**	**692**	**182**	**274**	**21.4**	**32.2**	**2.51**	**15.5**	**1310**	**196**	**295**
W14×82	137	444	668	178	268	11.8	17.7	3.52	26.1	870	170	256

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

[v2] Shape does not meet the h/t_w limit for shear in AISC *Specification* Section G2.1(b) with F_y = 65 ksi.

F_y = 65 ksi

Table 3-1 (continued)
W-Shapes (Welded)
Selection by Z_x

Z_x

Shape	Z_x	M_{px}/Ω_b	$\varphi_b M_{px}$	M_{rx}/Ω_b	$\varphi_b M_{rx}$	BF/Ω_b	$\varphi_b BF$	L_p	L_r	I_x	V_{nx}/Ω_v	$\varphi_v V_{nx}$
		kip-ft	kip-ft	kip-ft	kip-ft	kips	kips				kips	kips
	in.^{3}	ASD	LRFD	ASD	LRFD	ASD	LRFD	ft	ft	in.^{4}	ASD	LRFD
W24×55 [f2,v2]	**132**	**428**	**644**	**163**	**246**	**25.2**	**37.9**	**1.52**	**12.0**	**1320**	**198**	**297**
W18×65	132	428	644	169	254	19.5	29.2	2.39	15.7	1060	193	291
W12×87 [f2]	130	395	594	171	257	8.55	12.9	7.43	33.7	731	150	226
W16×67 [f2]	129	382	574	169	254	13.6	20.4	6.17	21.8	947	150	226
W21×57	126	409	614	159	239	24.2	36.4	1.92	12.2	1150	200	300
W14×74	124	402	605	162	244	11.3	17.0	3.51	24.8	784	149	224
W18×60	122	396	595	156	235	18.5	27.9	2.38	15.3	974	176	265
W12×79 [f2]	117	320	481	155	233	8.25	12.4	11.5	31.6	654	136	205
W14×68	113	367	551	147	222	10.8	16.2	3.49	23.8	711	136	204
W10×88	112	363	546	143	214	6.25	9.40	3.72	39.0	530	153	229
W18×55	**111**	**360**	**541**	**142**	**213**	**17.5**	**26.2**	**2.35**	**14.8**	**881**	**165**	**248**
W21×50 [v2]	**108**	**350**	**527**	**135**	**203**	**21.9**	**32.9**	**1.84**	**11.7**	**964**	**185**	**277**
W12×72 [f2]	106	259	390	140	211	7.94	11.9	14.9	30.0	588	124	186
W16×57	104	337	507	133	200	15.8	23.8	2.27	15.2	750	165	248
W14×61 [f2]	100	293	440	132	199	10.1	15.1	6.60	22.6	628	122	183
W18×50	**99.6**	**323**	**486**	**128**	**193**	**16.1**	**24.2**	**2.34**	**14.5**	**790**	**149**	**224**
W10×77	96.7	314	471	124	187	6.09	9.16	3.69	34.8	451	131	197
W12×65 [f2]	95.2	197	296	126	190	7.56	11.4	19.1	28.4	524	110	166
W21×44 [f2,v2]	**93.3**	**292**	**439**	**116**	**175**	**17.9**	**26.9**	**1.42**	**11.3**	**822**	**155**	**234**
W16×50	91.0	295	444	117	176	14.6	22.0	2.25	14.5	651	145	217
W18×46	89.5	290	436	114	171	18.1	27.2	1.83	11.6	702	152	229
W14×53	85.2	276	415	111	167	10.7	16.1	2.73	18.1	530	120	181
W12×58 [f2]	84.7	246	370	112	168	7.93	11.9	7.18	24.1	467	103	154
W10×68	84.3	273	411	109	164	5.92	8.90	3.66	31.4	390	114	172
W16×45	81.3	264	396	105	158	13.5	20.4	2.22	14.0	579	130	195
W18×40 [v2]	**77.2**	**250**	**376**	**98.2**	**148**	**16.2**	**24.3**	**1.80**	**11.2**	**602**	**128**	**192**
W14×48	76.5	248	373	100	150	10.1	15.2	2.72	17.4	473	110	165
W12×53 [f2]	76.3	195	293	101	152	7.53	11.3	10.5	23.0	417	97.5	147
W10×60 [f2]	73.6	225	338	96.2	145	5.71	8.58	6.04	28.6	337	100	150
W16×40	**71.9**	**233**	**351**	**93.1**	**140**	**12.4**	**18.6**	**2.21**	**13.5**	**511**	**114**	**171**
W12×50	70.7	229	345	92.2	139	8.33	12.5	2.79	19.2	385	105	158
W8×67	69.7	226	340	87.6	132	4.17	6.27	3.00	36.2	270	120	180
W14×43 [f2]	67.7	204	306	89.0	134	9.31	14.0	4.39	16.7	416	97.6	147
W10×54 [f2]	65.7	182	274	86.4	130	5.50	8.26	9.23	26.7	299	87.3	131

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

[v2] Shape does not meet the h/t_w limit for shear in AISC *Specification* Section G2.1(b) with F_y = 65 ksi.

Z_x

Table 3-1 (continued)
W-Shapes (Welded)
Selection by Z_x

F_y = 65 ksi

Shape	Z_x	M_{px}/Ω_b	$\varphi_b M_{px}$	M_{rx}/Ω_b	$\varphi_b M_{rx}$	BF/Ω_b	$\varphi_b BF$	L_p	L_r	I_x	V_{nx}/Ω_v	$\varphi_v V_{nx}$
		kip-ft	kip-ft	kip-ft	kip-ft	kips	kips				kips	kips
	in.^{3}	ASD	LRFD	ASD	LRFD	ASD	LRFD	ft	ft	in.^{4}	ASD	LRFD
W18×35 [f2,v2]	**65.3**	**209**	**315**	**82.5**	**124**	**13.6**	**20.4**	**1.35**	**10.7**	**500**	**115**	**172**
W12×45 [f2]	63.1	204	306	82.6	124	7.85	11.8	2.87	18.3	342	94.7	142
W16×36 [f2]	62.9	174	261	81.2	122	11.2	16.9	4.86	13.1	441	110	165
W14×38	60.6	197	295	78.5	118	10.3	15.4	2.20	13.7	380	102	153
W10×49 [f2]	59.4	146	219	78.5	118	5.28	7.93	12.5	25.2	268	79.2	119
W8×58	59.3	192	289	75.5	113	4.07	6.11	2.96	31.7	226	104	157
W12×40 [f2]	56.1	163	245	74.0	111	7.29	11.0	5.39	17.6	303	82.0	123
W10×45	54.0	175	263	70.5	106	5.70	8.56	2.84	21.2	244	82.6	124
W14×34 [f2]	**53.7**	**164**	**247**	**69.8**	**105**	**9.42**	**14.2**	**3.22**	**13.3**	**334**	**93.2**	**140**
W16×31 [f2,v2]	**53.0**	**172**	**258**	**67.4**	**101**	**11.7**	**17.5**	**1.27**	**10.2**	**367**	**97.1**	**146**
W12×35	50.7	164	247	66.0	99.2	8.37	12.6	2.17	13.9	283	87.6	132
W8×48	48.5	157	236	62.6	94.1	3.92	5.90	2.94	27.1	182	79.4	119
W14×30 [f2]	**46.4**	**116**	**175**	**60.1**	**90.4**	**8.50**	**12.8**	**6.12**	**12.7**	**285**	**87.0**	**131**
W10×39 [f2]	45.9	138	208	60.3	90.6	5.33	8.01	4.80	19.4	205	73.0	110
W16×26 [f2,v2]	**43.2**	**121**	**183**	**54.6**	**82.0**	**7.87**	**11.8**	**1.23**	**9.73**	**294**	**79.3**	**119**
W12×30 [f2]	42.7	131	197	55.8	83.8	7.49	11.3	3.18	13.2	236	74.7	112
W14×26	**39.4**	**128**	**192**	**50.2**	**75.5**	**9.76**	**14.7**	**1.53**	**9.49**	**240**	**82.8**	**124**
W8×40 [f2]	39.3	124	186	51.2	77.0	3.74	5.62	3.92	23.3	145	69.4	104
W10×33 [f2]	37.9	89.6	135	49.9	75.0	4.85	7.29	9.64	17.8	166	65.9	99.0
W12×26 [f2]	**36.8**	**95.8**	**144**	**48.2**	**72.4**	**6.72**	**10.1**	**5.64**	**12.7**	**202**	**65.5**	**98.5**
W10×30	36.2	117	176	46.9	70.4	6.26	9.41	1.94	13.2	168	73.6	111
W8×35 [f2]	34.2	95.3	143	45.0	67.6	3.57	5.37	7.28	21.4	125	58.8	88.4
W14×22 [f2,v2]	**32.3**	**97.9**	**147**	**41.0**	**61.6**	**7.21**	**10.8**	**1.13**	**9.03**	**193**	**67.5**	**101**
W10×26	30.9	100	151	40.3	60.5	5.72	8.60	1.93	12.4	143	62.5	94.0
W8×31 [f2]	29.9	70.3	106	39.6	59.5	3.38	5.08	10.7	19.8	108	53.2	80.0
W12×22	**28.9**	**93.7**	**141**	**36.5**	**54.8**	**8.74**	**13.1**	**1.20**	**7.75**	**154**	**74.7**	**112**
W8×28 [f2]	26.7	85.9	129	34.9	52.4	3.60	5.42	2.48	16.6	96.4	53.6	80.6
W10×22 [f2]	**25.7**	**72.6**	**109**	**33.4**	**50.2**	**5.11**	**7.68**	**3.98**	**11.6**	**117**	**57.2**	**85.9**
W12×19	**24.3**	**78.8**	**118**	**30.5**	**45.8**	**7.77**	**11.7**	**1.16**	**7.38**	**127**	**67.0**	**101**
W8×24 [f2]	22.7	63.1	94.8	29.9	45.0	3.35	5.04	5.44	15.3	81.1	45.4	68.2

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

[v2] Shape does not meet the h/t_w limit for shear in AISC *Specification* Section G2.1(b) with F_y = 65 ksi.

F_y = 65 ksi

Table 3-1 (continued)
W-Shapes (Welded)
Selection by Z_x

Z_x

Shape	Z_x	M_{px}/Ω_b	$\varphi_b M_{px}$	M_{rx}/Ω_b	$\varphi_b M_{rx}$	BF/Ω_b	$\varphi_b BF$	L_p	L_r	I_x	V_{nx}/Ω_v	$\varphi_v V_{nx}$
		kip-ft	kip-ft	kip-ft	kip-ft	kips	kips				kips	kips
	in.^{3}	ASD	LRFD	ASD	LRFD	ASD	LRFD	ft	ft	in.^{4}	ASD	LRFD
W10×19	**21.2**	**68.8**	**103**	**27.0**	**40.6**	**6.07**	**9.12**	**1.24**	**8.12**	**94.6**	**59.6**	**89.5**
W8×21	20.1	65.2	98.0	26.1	39.3	3.80	5.72	1.79	12.1	74.2	48.3	72.7
W12×16 [f2,v2]	**19.6**	**58.7**	**88.3**	**24.4**	**36.6**	**6.69**	**10.0**	**1.82**	**6.96**	**100**	**61.4**	**92.3**
W6×25	18.8	61.0	91.7	24.2	36.4	2.25	3.39	2.15	18.5	53.0	47.7	71.7
W10×17	18.3	59.4	89.2	23.2	34.9	5.55	8.34	1.20	7.71	80.2	56.6	85.1
W12×14 [f2,v2]	**17.0**	**41.2**	**62.0**	**21.2**	**31.8**	**3.42**	**5.14**	**0.857**	**6.73**	**86.1**	**50.4**	**75.8**
W8×18 [f2]	16.7	47.5	71.4	21.9	32.9	3.43	5.16	3.70	11.2	60.9	43.7	65.7
W10×15 [f2]	15.6	47.7	71.6	19.7	29.6	4.99	7.50	1.74	7.34	67.2	53.7	80.6
W6×20 [f2]	14.8	40.2	60.5	19.3	29.0	2.10	3.16	5.83	15.8	41.0	37.6	56.6
W8×15	13.3	43.1	64.8	16.9	25.4	3.72	5.59	1.24	8.30	47.0	46.4	69.7
W10×12 [f2]	**12.3**	**26.7**	**40.2**	**15.5**	**23.3**	**4.18**	**6.28**	**4.27**	**6.96**	**52.2**	**43.8**	**65.8**
W6×16	11.5	37.3	56.1	14.7	22.2	2.34	3.51	1.37	11.0	31.8	38.1	57.3
W5×19	11.5	37.3	56.1	14.7	22.2	1.44	2.17	1.82	17.4	25.9	32.5	48.8
W8×13 [f2]	11.1	31.8	47.9	14.1	21.2	3.32	4.98	2.45	7.81	38.5	42.9	64.5
W5×18.9	10.9	35.4	53.1	13.9	20.9	1.34	2.02	1.77	17.7	23.8	36.9	55.5
W6×15 [f2]	10.6	16.2	24.4	14.0	21.0	N/A	N/A	N/A	13.5	28.7	32.2	48.4
W5×16	9.47	30.7	46.2	12.3	18.4	1.37	2.06	1.79	15.2	21.1	28.1	42.2
W8×10 [f2]	**8.59**	**18.3**	**27.5**	**11.0**	**16.6**	**2.74**	**4.12**	**4.69**	**7.34**	**29.8**	**31.3**	**47.1**
W6×12 [f2]	8.16	25.9	38.9	10.5	15.8	2.05	3.08	1.59	9.10	21.7	32.4	48.7
W4×13	6.19	20.1	30.2	7.85	11.8	0.937	1.41	1.42	14.5	11.2	27.2	40.9
W6×9 [f2]	**6.09**	**14.2**	**21.4**	**7.93**	**11.9**	**1.73**	**2.60**	**4.47**	**8.12**	**16.0**	**23.4**	**35.2**

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

[v2] Shape does not meet the h/t_w limit for shear in AISC *Specification* Section G2.1(b) with F_y = 65 ksi.

Z_y

Table 3-2
W-Shapes (Welded)
Selection by Z_y

F_y = 65 ksi

Shape	Z_y	M_{ny}/Ω_b	$\varphi_b M_{ny}$	Shape	Z_y	M_{ny}/Ω_b	$\varphi_b M_{ny}$	Shape	Z_y	M_{ny}/Ω_b	$\varphi_b M_{ny}$
		kip-ft	kip-ft			kip-ft	kip-ft			kip-ft	kip-ft
	in.^{3}	ASD	LRFD		in.^{3}	ASD	LRFD		in.^{3}	ASD	LRFD
W14×120 [f2]	**102**	**280**	**421**	**W10×60** [f2]	**34.9**	**104**	**156**	**W10×39** [f2]	**17.1**	**49.7**	**74.8**
				W21×93	34.6	112	169	W12×40 [f2]	16.9	46.4	69.7
W14×109 [f2]	**92.6**	**217**	**327**	W14×61 [f2]	32.7	90.9	137	W18×50	16.5	53.5	80.4
				W24×84	32.6	106	159	W16×50	16.3	52.9	79.5
W14×99 [f2]	**83.5**	**153**	**230**	W8×67	32.6	106	159				
W24×131	81.4	264	397					**W8×35** [f2]	**16.1**	**41.5**	**62.3**
W21×122	75.5	245	368	**W12×58** [f2]	**32.4**	**89.0**	**134**	W24×62	15.7	50.8	76.4
								W21×57	14.8	48.0	72.2
W14×90 [f2]	**75.5**	**107**	**161**	**W10×54** [f2]	**31.2**	**79.9**	**120**	W16×45	14.4	46.7	70.2
W12×106	74.9	243	365	W21×83	30.3	98.3	148				
W24×117 [f2]	71.3	208	312					**W10×33** [f2]	**14.0**	**27.3**	**41.1**
W21×111 [f2]	68.1	219	328	**W12×53** [f2]	**29.0**	**64.6**	**97.1**				
W12×96	67.4	219	329	W24×76	28.6	92.8	139	**W8×31** [f2]	**14.0**	**27.1**	**40.7**
W24×104 [f2]	62.4	144	217					W24×55 [f2]	13.3	43.0	64.7
W21×101 [f2]	61.7	174	261	**W10×49** [f2]	**28.3**	**59.1**	**88.9**	W16×40	12.7	41.2	61.9
W18×106	60.4	196	294	W8×58	27.8	90.2	136	W21×50	12.1	39.2	59.0
				W21×73	26.5	86.0	129	W14×38	12.1	39.2	59.0
W12×87 [f2]	**60.3**	**178**	**267**	W18×71	24.6	79.8	120	W18×46	11.7	37.9	57.0
W18×97	55.2	179	269	W24×68 [f2]	24.5	69.1	104	W12×35	11.4	37.0	55.6
W16×100	54.8	178	267	W21×68	24.3	78.8	118	W16×36 [f2]	10.8	27.5	41.4
								W14×34 [f2]	10.6	31.6	47.4
W12×79 [f2]	**54.2**	**135**	**204**	**W8×48**	**22.8**	**74.0**	**111**	W21×44 [f2]	10.1	31.2	46.9
W10×88	53.0	172	258	W18×65	22.5	73.0	110				
				W14×53	21.9	71.0	107	**W8×28** [f2]	**10.1**	**32.4**	**48.7**
W12×72 [f2]	**49.1**	**102**	**153**	W21×62	21.7	70.4	106	W18×40	9.92	32.2	48.4
W18×86 [f2]	48.3	150	225	W12×50	21.3	69.1	104	W12×30 [f2]	9.55	28.5	42.8
W16×89	48.0	156	234	W18×60	20.6	66.8	100	W14×30 [f2]	8.96	19.6	29.4
W10×77	45.8	149	223					W10×30	8.82	28.6	43.0
W14×82	44.7	145	218	**W10×45**	**20.2**	**65.5**	**98.5**				
				W14×48	19.5	63.2	95.1	**W6×25**	**8.55**	**27.7**	**41.7**
W12×65 [f2]	**44.0**	**66.1**	**99.4**								
W18×76 [f2]	42.2	109	164	**W12×45** [f2]	**18.9**	**61.0**	**91.6**	**W8×24** [f2]	**8.54**	**21.9**	**32.9**
W16×77	41.1	133	200	W16×57	18.8	61.0	91.7	W12×26 [f2]	8.15	18.8	28.3
W14×74	40.4	131	197	W18×55	18.5	60.0	90.2	W18×35 [f2]	8.03	25.6	38.5
W10×68	40.0	130	195					W10×26	7.48	24.3	36.5
W24×94	37.4	121	182	**W8×40** [f2]	**18.5**	**57.4**	**86.3**	W16×31 [f2]	7.00	22.7	34.1
W14×68	36.8	119	179	W14×43 [f2]	17.2	49.9	75.0				
W16×67 [f2]	35.4	100	151					**W6×20** [f2]	**6.71**	**16.7**	**25.1**
								W10×22 [f2]	6.09	16.1	24.1
								W8×21	5.67	18.4	27.6
								W14×26	5.52	17.9	26.9

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

F_y = 65 ksi

Table 3-2 (continued)
W-Shapes (Welded)
Selection by Z_y

Z_y

Shape	Z_y	M_{ny}/Ω_b	$\varphi_b M_{ny}$
	kip-ft	kip-ft	
	in.^{3}	ASD	LRFD
W5×19	**5.52**	**17.9**	**26.9**
W16×26 [f2]	5.45	14.4	21.6
W5×18.9	**5.31**	**17.2**	**25.9**
W6×15 [f2]	**4.74**	**5.26**	**7.90**
W8×18 [f2]	4.65	12.4	18.6
W5×16	4.56	14.8	22.2
W14×22 [f2]	4.36	12.8	19.3
W12×22	3.64	11.8	17.7
W6×16	3.38	11.0	16.5
W10×19	3.34	10.8	16.3
W12×19	2.97	9.63	14.5
W4×13	**2.91**	**9.44**	**14.2**
W10×17	2.79	9.05	13.6
W8×15	2.65	8.60	12.9
W6×12 [f2]	**2.31**	**7.25**	**10.9**
W10×15 [f2]	2.28	6.79	10.2
W12×16 [f2]	2.25	6.53	9.81
W8×13 [f2]	2.14	5.80	8.72
W12×14 [f2]	1.89	3.98	5.99
W10×12 [f2]	**1.73**	**3.02**	**4.54**
W6×9 [f2]	**1.71**	**3.30**	**4.96**
W8×10 [f2]	1.65	2.72	4.09

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

W24

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

F_y = 65 ksi

Shape		W24×											
		131		117 [f2]		104 [f2]		94		84		76	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8												
	9												
	10					562	846			530	796	492	738
	11					543	816	584	878	524	787	467	702
	12			624	938	497	748	543	816	480	722	428	644
	13	692	1040	602	905	459	690	501	753	443	666	395	594
	14	680	1020	559	841	426	641	465	699	411	618	367	552
	15	635	954	522	785	398	598	434	653	384	577	343	515
	16	595	895	489	736	373	561	407	612	360	541	321	483
	17	560	842	461	692	351	528	383	576	339	509	302	454
	18	529	795	435	654	332	498	362	544	320	481	285	429
	19	501	753	412	619	314	472	343	515	303	456	270	406
	20	476	716	392	589	298	449	326	489	288	433	257	386
	21	453	682	373	560	284	427	310	466	274	412	245	368
	22	433	651	356	535	271	408	296	445	262	394	234	351
	23	414	622	340	512	260	390	283	426	250	376	223	336
	24	397	596	326	490	249	374	271	408	240	361	214	322
	25	381	573	313	471	239	359	261	392	230	346	206	309
	26	366	551	301	453	230	345	250	377	222	333	198	297
	27	353	530	290	436	221	332	241	363	213	321	190	286
	28	340	511	280	420	213	320	233	350	206	309	183	276
	29	328	494	270	406	206	309	225	338	199	299	177	266
	30	317	477	261	392	199	299	217	326	192	289	171	257
	32	298	447	245	368	187	280	204	306	180	271	161	241
	34	280	421	230	346	176	264	192	288	169	255	151	227
	36	265	398	218	327	166	249	181	272	160	241	143	215
	38	251	377	206	310	157	236	171	258	152	228	135	203
	40	238	358	196	294	149	224	163	245	144	216	128	193
	42	227	341	186	280	142	214	155	233	137	206	122	184
	44	216	325	178	268	136	204	148	222	131	197	117	176
	46	207	311	170	256	130	195	142	213	125	188	112	168
	48	198	298	163	245	124	187	136	204	120	180	107	161
	50	190	286	157	235	119	179	130	196	115	173	103	154
	52	183	275	151	226	115	173	125	188	111	167	98.8	149
	54	176	265	145	218	111	166	121	181	107	160	95.1	143
	56	170	256	140	210	107	160	116	175	103	155	91.7	138
	58	164	247	135	203	103	155	112	169	99.3	149	88.6	133
	60	159	239	131	196	100	150	109	163	96.0	144	85.6	129
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	9520	14300	7830	11800	5970	8970	6510	9790	5760	8660	5140	7720
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	1190	1790	979	1470	746	1120	814	1220	720	1080	642	965
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	476	715	422	634	374	562	321	483	283	426	253	380
BF/Ω_b	$\varphi_b BF$, kips	31.7	47.6	29.3	44.0	26.8	40.3	32.6	49.0	30.1	45.2	27.7	41.7
V_n/Ω_v	$\varphi_v V_{nx}$, kips	346	520	312	469	281	423	292	439	265	398	246	369
Z_x, in.^{3}		367		325		287		251		222		198	
L_p, ft		4.20		6.72		11.0		2.80		2.76		2.72	
L_r, ft		26.7		25.7		24.9		17.9		17.3		16.8	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W24-W21

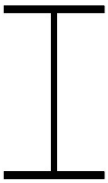
Shape		W24×						W21×					
		68 [f2,v2]		62 [v2]		55 [f2,v2]		122		111 [f2]		101 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8			472	710	396	594						
	9	440	660	435	654	360	541						
	10	407	612	392	589	324	487						
	11	370	557	356	535	295	443					500	752
	12	339	510	327	491	270	406			552	830	494	742
	13	313	471	301	453	249	375	608	914	547	822	456	685
	14	291	437	280	421	231	348	565	850	508	763	423	636
	15	272	408	261	393	216	325	528	793	474	712	395	594
	16	255	383	245	368	203	304	495	743	444	668	370	557
	17	240	360	230	346	191	286	466	700	418	629	349	524
	18	226	340	218	327	180	271	440	661	395	594	329	495
	19	214	322	206	310	171	256	417	626	374	562	312	469
	20	204	306	196	294	162	243	396	595	355	534	296	445
	21	194	292	187	280	154	232	377	566	339	509	282	424
	22	185	278	178	268	147	221	360	541	323	486	269	405
	23	177	266	170	256	141	212	344	517	309	465	258	387
	24	170	255	163	245	135	203	330	496	296	445	247	371
	25	163	245	157	236	130	195	317	476	284	427	237	356
	26	157	236	151	227	125	187	304	458	273	411	228	342
	27	151	227	145	218	120	180	293	441	263	396	219	330
	28	145	219	140	210	116	174	283	425	254	382	212	318
	29	140	211	135	203	112	168	273	410	245	368	204	307
	30	136	204	131	196	108	162	264	397	237	356	197	297
	32	127	191	122	184	101	152	247	372	222	334	185	278
	34	120	180	115	173	95.3	143	233	350	209	314	174	262
	36	113	170	109	164	90.0	135	220	330	197	297	165	247
	38	107	161	103	155	85.3	128	208	313	187	281	156	234
	40	102	153	98.0	147	81.0	122	198	297	178	267	148	223
	42	97.0	146	93.3	140	77.1	116	188	283	169	254	141	212
	44	92.6	139	89.0	134	73.6	111	180	270	162	243	135	202
	46	88.6	133	85.2	128	70.4	106	172	259	155	232	129	194
	48	84.9	128	81.6	123	67.5	101	165	248	148	223	123	186
	50	81.5	122	78.4	118	64.8	97.4	158	238	142	214	118	178
	52	78.3	118	75.3	113	62.3	93.7	152	229	137	205	114	171
	54	75.4	113	72.6	109	60.0	90.2	147	220	132	198	110	165
	56	72.7	109	70.0	105	57.9	87.0	141	212	127	191	106	159
	58	70.2	106	67.6	102	55.9	84.0	136	205	123	184	102	154
	60	67.9	102	65.3	98.2	54.0	81.2	132	198	118	178	98.7	148
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	4070	6120	3920	5890	3240	4870	7910	11900	7110	10700	5920	8900
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	513	771	490	736	428	644	989	1490	889	1340	741	1110
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	222	333	187	281	163	246	396	595	361	542	328	494
BF/Ω_b	$\varphi_b BF$, kips	20.5	30.7	28.8	43.3	25.2	37.9	25.8	38.8	24.3	36.5	22.9	34.4
V_n/Ω_v	$\varphi_v V_{nx}$, kips	220	330	236	355	198	297	304	457	276	415	250	376
Z_x, in.^{3}		174		151		132		305		276		251	
L_p, ft		2.04		1.94		1.52		4.11		4.37		7.30	
L_r, ft		16.3		12.4		12.0		27.1		26.1		25.3	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W21

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

F_y = 65 ksi

Shape		W21×											
		93		83		73		68		62		57	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8											400	600
	9	586	880	514	774	450	678	424	636	392	590	363	546
	10	568	854	503	757	441	663	410	616	368	554	327	491
	11	517	776	458	688	401	603	373	560	335	503	297	447
	12	474	712	419	631	368	553	342	514	307	462	272	410
	13	437	657	387	582	339	510	315	474	283	426	251	378
	14	406	610	360	540	315	474	293	440	263	396	234	351
	15	379	569	336	504	294	442	273	411	246	369	218	328
	16	355	534	315	473	276	414	256	385	230	346	204	307
	17	334	502	296	445	259	390	241	362	217	326	192	289
	18	316	475	280	420	245	368	228	342	205	308	182	273
	19	299	450	265	398	232	349	216	324	194	291	172	259
	20	284	427	252	378	221	332	205	308	184	277	163	246
	21	271	407	240	360	210	316	195	293	175	264	156	234
	22	258	388	229	344	201	301	186	280	167	252	149	223
	23	247	371	219	329	192	288	178	268	160	241	142	214
	24	237	356	210	315	184	276	171	257	154	231	136	205
	25	227	342	201	303	176	265	164	246	147	222	131	197
	26	219	329	194	291	170	255	158	237	142	213	126	189
	27	210	316	186	280	163	246	152	228	136	205	121	182
	28	203	305	180	270	158	237	146	220	132	198	117	176
	29	196	295	174	261	152	229	141	212	127	191	113	169
	30	189	285	168	252	147	221	137	205	123	185	109	164
	32	178	267	157	236	138	207	128	193	115	173	102	154
	34	167	251	148	223	130	195	121	181	108	163	96.2	145
	36	158	237	140	210	123	184	114	171	102	154	90.8	137
	38	150	225	132	199	116	174	108	162	97.0	146	86.0	129
	40	142	214	126	189	110	166	102	154	92.1	138	81.7	123
	42	135	203	120	180	105	158	97.6	147	87.7	132	77.8	117
	44	129	194	114	172	100	151	93.2	140	83.7	126	74.3	112
	46	124	186	109	164	95.9	144	89.1	134	80.1	120	71.1	107
	48	118	178	105	158	91.9	138	85.4	128	76.8	115	68.1	102
	50	114	171	101	151	88.2	133	82.0	123	73.7	111	65.4	98.3
	52	109	164	96.8	146	84.8	128	78.8	119	70.9	107	62.9	94.5
	54	105	158	93.2	140	81.7	123	75.9	114	68.2	103	60.5	91.0
	56	101	153	89.9	135	78.8	118	73.2	110	65.8	98.9	58.4	87.8
	58	98.0	147	86.8	130	76.1	114	70.7	106	63.5	95.5	56.4	84.7
	60	94.7	142	83.9	126	73.5	111	68.3	103	61.4	92.3	54.5	81.9
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	5680	8540	5030	7570	4410	6630	4100	6160	3680	5540	3270	4910
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	710	1070	629	946	551	829	512	770	461	692	409	614
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	277	417	247	371	217	327	201	303	182	274	159	239
BF/Ω_b	$\varphi_b BF$, kips	28.8	43.2	26.7	40.2	24.3	36.6	23.2	34.9	21.4	32.2	24.2	36.4
V_n/Ω_v	$\varphi_v V_{nx}$, kips	293	440	257	387	225	339	212	318	196	295	200	300
Z_x, in.^{3}		219		194		170		158		142		126	
L_p, ft		2.61		2.58		2.56		2.55		2.51		1.92	
L_r, ft		17.7		16.9		16.3		16.0		15.5		12.2	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W21-W18

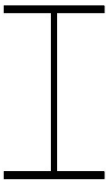
Shape		W21×				W18×							
		50 [v2]		44 [f2,v2]		106		97		86 [f2]		76 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7	370	554	310	468								
	8	350	527	280	421								
	9	311	468	249	374							362	542
	10	280	421	224	337							361	543
	11	255	383	204	306	516	774	464	698	412	620	328	493
	12	234	351	187	281	495	744	454	683	388	583	301	452
	13	216	324	172	259	457	687	419	630	358	538	278	417
	14	200	301	160	241	424	638	389	585	333	500	258	388
	15	187	281	149	225	396	595	363	546	310	466	241	362
	16	175	263	140	211	371	558	341	512	291	437	226	339
	17	165	248	132	198	350	525	321	482	274	412	212	319
	18	156	234	125	187	330	496	303	455	259	389	201	301
	19	147	222	118	177	313	470	287	431	245	368	190	286
	20	140	211	112	169	297	447	272	410	233	350	181	271
	21	133	201	107	160	283	425	259	390	222	333	172	258
	22	127	191	102	153	270	406	248	372	212	318	164	247
	23	122	183	97.5	147	258	388	237	356	202	304	157	236
	24	117	176	93.4	140	248	372	227	341	194	292	150	226
	25	112	168	89.7	135	238	357	218	328	186	280	144	217
	26	108	162	86.2	130	229	344	210	315	179	269	139	209
	27	104	156	83.0	125	220	331	202	303	172	259	134	201
	28	100	150	80.1	120	212	319	195	293	166	250	129	194
	29	96.6	145	77.3	116	205	308	188	282	161	241	124	187
	30	93.4	140	74.7	112	198	298	182	273	155	233	120	181
	32	87.6	132	70.1	105	186	279	170	256	145	219	113	170
	34	82.4	124	65.9	99.1	175	263	160	241	137	206	106	160
	36	77.8	117	62.3	93.6	165	248	151	228	129	194	100	151
	38	73.7	111	59.0	88.7	156	235	143	216	123	184	95.0	143
	40	70.1	105	56.1	84.3	149	223	136	205	116	175	90.3	136
	42	66.7	100	53.4	80.2	141	213	130	195	111	167	86.0	129
	44	63.7	95.7	51.0	76.6	135	203	124	186	106	159	82.0	123
	46	60.9	91.6	48.7	73.3	129	194	118	178	101	152	78.5	118
	48	58.4	87.8	46.7	70.2	124	186	114	171	97.0	146	75.2	113
	50	56.0	84.2	44.8	67.4	119	179	109	164	93.1	140	72.2	109
	52	53.9	81.0	43.1	64.8	114	172	105	158	89.5	135	69.4	104
	54	51.9	78.0	41.5	62.4	110	165	101	152	86.2	130	66.9	100
	56	50.0	75.2	40.0	60.2	106	159	97.3	146	83.1	125	64.5	96.9
	58	48.3	72.6	38.7	58.1	102	154	94.0	141	80.3	121	62.2	93.6
	60	46.7	70.2	37.4	56.2	99.0	149	90.8	137	77.6	117	60.2	90.4
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2800	4210	2240	3370	5940	8930	5450	8190	4660	7000	3610	5430
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	350	527	292	439	743	1120	681	1020	582	875	451	678
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	135	203	116	175	296	445	273	410	241	362	212	318
BF/Ω_b	$\varphi_b BF$, kips	21.9	32.9	17.9	26.9	20.1	30.2	19.2	28.9	17.9	26.9	16.4	24.6
V_n/Ω_v	$\varphi_v V_{nx}$, kips	185	277	155	234	258	387	232	349	206	310	181	271
Z_x, in.^{3}		108		93.3		229		210		185		162	
L_p, ft		1.84		1.42		3.76		3.75		4.73		8.22	
L_r, ft		11.7		11.3		26.0		25.0		23.8		22.9	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W18

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

F_y = 65 ksi

Shape		W18×											
		71		65		60		55		50		46	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7											304	458
	8	428	642	386	582			330	496	298	448	290	436
	9	415	624	381	572	352	530	320	481	287	432	258	388
	10	374	562	343	515	317	476	288	433	258	388	232	349
	11	340	511	311	468	288	433	262	394	235	353	211	317
	12	311	468	285	429	264	397	240	361	215	324	194	291
	13	287	432	263	396	244	366	222	333	199	299	179	269
	14	267	401	245	368	226	340	206	309	185	277	166	249
	15	249	374	228	343	211	317	192	289	172	259	155	233
	16	234	351	214	322	198	297	180	271	162	243	145	218
	17	220	330	201	303	186	280	169	255	152	228	137	205
	18	208	312	190	286	176	264	160	241	144	216	129	194
	19	197	296	180	271	167	250	152	228	136	204	122	184
	20	187	281	171	257	158	238	144	216	129	194	116	175
	21	178	267	163	245	151	227	137	206	123	185	111	166
	22	170	255	156	234	144	216	131	197	117	177	106	159
	23	162	244	149	224	138	207	125	188	112	169	101	152
	24	156	234	143	215	132	198	120	180	108	162	96.8	145
	25	149	225	137	206	127	190	115	173	103	155	92.9	140
	26	144	216	132	198	122	183	111	167	99.4	149	89.3	134
	27	138	208	127	191	117	176	107	160	95.7	144	86.0	129
	28	133	201	122	184	113	170	103	155	92.3	139	82.9	125
	29	129	194	118	178	109	164	99.3	149	89.1	134	80.1	120
	30	125	187	114	172	106	159	96.0	144	86.1	129	77.4	116
	32	117	176	107	161	98.9	149	90.0	135	80.8	121	72.6	109
	34	110	165	101	151	93.1	140	84.7	127	76.0	114	68.3	103
	36	104	156	95.1	143	87.9	132	80.0	120	71.8	108	64.5	97.0
	38	98.3	148	90.1	135	83.3	125	75.8	114	68.0	102	61.1	91.9
	40	93.4	140	85.6	129	79.1	119	72.0	108	64.6	97.1	58.1	87.3
	42	89.0	134	81.6	123	75.4	113	68.6	103	61.5	92.5	55.3	83.1
	44	84.9	128	77.8	117	71.9	108	65.5	98.4	58.7	88.3	52.8	79.3
	46	81.2	122	74.5	112	68.8	103	62.6	94.1	56.2	84.4	50.5	75.9
	48	77.8	117	71.4	107	66.0	99.1	60.0	90.2	53.8	80.9	48.4	72.7
	50	74.7	112	68.5	103	63.3	95.2	57.6	86.6	51.7	77.7	46.4	69.8
	52	71.9	108	65.9	99.0	60.9	91.5	55.4	83.3	49.7	74.7	44.7	67.1
	54	69.2	104	63.4	95.3	58.6	88.1	53.3	80.2	47.9	71.9	43.0	64.6
	56	66.7	100	61.2	91.9	56.5	85.0	51.4	77.3	46.2	69.4	41.5	62.3
	58	64.4	96.8	59.1	88.8	54.6	82.0	49.7	74.6	44.6	67.0	40.0	60.2
	60	62.3	93.6	57.1	85.8	52.8	79.3	48.0	72.2	43.1	64.7	38.7	58.2
Beam Properties													
W_c/Ω_b	$\phi_b W_c$, kip-ft	3740	5620	3430	5150	3170	4760	2880	4330	2580	3880	2320	3490
M_p/Ω_b	$\phi_b M_{px}$, kip-ft	467	702	428	644	396	595	360	541	323	486	290	436
M_r/Ω_b	$\phi_b M_{rx}$, kip-ft	184	276	169	254	156	235	142	213	128	193	114	171
BF/Ω_b	$\phi_b BF$, kips	20.5	30.8	19.5	29.2	18.5	27.9	17.5	26.2	16.1	24.2	18.1	27.2
V_n/Ω_v	$\phi_v V_{nx}$, kips	214	321	193	291	176	265	165	248	149	224	152	229
Z_x, in.^{3}		144		132		122		111		100		89.5	
L_p, ft		2.41		2.39		2.38		2.35		2.34		1.83	
L_r, ft		16.2		15.7		15.3		14.8		14.5		11.6	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W18-W16

Shape		W18×				W16×							
		40 [v2]		35 [f2,v2]		100		89		77		67 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7	256	384	230	344								
	8	250	376	202	304								
	9	223	335	180	270								
	10	200	301	162	243			412	620			300	452
	11	182	274	147	221	464	698	410	617	350	528	278	417
	12	167	251	135	203	426	640	376	566	322	484	255	383
	13	154	232	124	187	393	591	347	522	297	447	235	353
	14	143	215	116	174	365	549	322	485	276	415	218	328
	15	134	201	108	162	341	512	301	452	258	387	204	306
	16	125	188	101	152	319	480	282	424	242	363	191	287
	17	118	177	95.2	143	301	452	266	399	227	342	180	270
	18	111	167	89.9	135	284	427	251	377	215	323	170	255
	19	105	158	85.2	128	269	404	238	357	203	306	161	242
	20	100	151	80.9	122	256	384	226	339	193	291	153	230
	21	95.4	143	77.1	116	243	366	215	323	184	277	145	219
	22	91.1	137	73.6	111	232	349	205	308	176	264	139	209
	23	87.1	131	70.4	106	222	334	196	295	168	253	133	200
	24	83.5	125	67.4	101	213	320	188	283	161	242	127	191
	25	80.1	120	64.7	97.3	204	307	181	271	155	232	122	184
	26	77.0	116	62.2	93.5	197	296	174	261	149	224	117	177
	27	74.2	112	59.9	90.1	189	285	167	251	143	215	113	170
	28	71.5	108	57.8	86.9	183	274	161	242	138	208	109	164
	29	69.1	104	55.8	83.9	176	265	156	234	133	200	105	158
	30	66.8	100	53.9	81.1	170	256	150	226	129	194	102	153
	32	62.6	94.1	50.6	76.0	160	240	141	212	121	182	95.4	143
	34	58.9	88.6	47.6	71.5	150	226	133	200	114	171	89.8	135
	36	55.6	83.6	45.0	67.6	142	213	125	189	107	161	84.8	128
	38	52.7	79.2	42.6	64.0	135	202	119	179	102	153	80.4	121
	40	50.1	75.3	40.5	60.8	128	192	113	170	96.7	145	76.4	115
	42	47.7	71.7	38.5	57.9	122	183	107	162	92.1	138	72.7	109
	44	45.5	68.4	36.8	55.3	116	175	103	154	87.9	132	69.4	104
	46	43.5	65.5	35.2	52.9	111	167	98.2	148	84.0	126	66.4	100
	48	41.7	62.7	33.7	50.7	106	160	94.1	141	80.5	121	63.6	95.6
	50	40.1	60.2	32.4	48.6	102	154	90.3	136	77.3	116	61.1	91.8
	52	38.5	57.9	31.1	46.8	98.3	148	86.8	131	74.4	112	58.7	88.3
	54	37.1	55.8	30.0	45.0	94.7	142	83.6	126	71.6	108	56.6	85.0
	56	35.8	53.8	28.9	43.4	91.3	137	80.6	121	69.0	104	54.5	82.0
	58	34.5	51.9	27.9	41.9	88.1	132	77.8	117	66.7	100	52.7	79.1
	60	33.4	50.2	27.0	40.5	85.2	128	75.2	113	64.4	96.9	50.9	76.5
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2000	3010	1620	2430	5110	7680	4510	6790	3870	5810	3050	4590
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	250	376	209	315	639	960	564	848	483	726	382	574
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	98.2	148	82.5	124	254	382	225	338	194	292	169	254
BF/Ω_b	$\varphi_b BF$, kips	16.2	24.3	13.6	20.4	16.9	25.5	16.1	24.2	14.8	22.3	13.6	20.4
V_n/Ω_v	$\varphi_v V_{nx}$, kips	128	192	115	172	232	349	206	310	175	264	150	226
Z_x, in.^{3}		77.2		65.3		197		174		149		129	
L_p, ft		1.80		1.35		3.55		3.52		3.49		6.17	
L_r, ft		11.2		10.7		26.3		24.6		23.0		21.8	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

W16

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

F_y = 65 ksi

Shape		W16×											
		57		50		45		40		36 [f2]		31 [f2,v2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6									220	330		
	7									198	298	194	292
	8	330	496	290	434	260	390	228	342	174	261	170	255
	9	300	451	262	394	234	352	207	312	154	232	151	227
	10	270	406	236	355	211	317	187	280	139	209	136	204
	11	245	369	215	323	192	288	170	255	126	190	123	186
	12	225	338	197	296	176	264	155	234	116	174	113	170
	13	208	312	182	273	162	244	144	216	107	161	104	157
	14	193	290	169	254	151	226	133	200	99.2	149	97.0	146
	15	180	270	157	237	141	211	124	187	92.6	139	90.5	136
	16	169	254	148	222	132	198	117	175	86.8	130	84.9	128
	17	159	239	139	209	124	187	110	165	81.7	123	79.9	120
	18	150	225	131	197	117	176	104	156	77.1	116	75.4	113
	19	142	213	124	187	111	167	98.2	148	73.1	110	71.5	107
	20	135	203	118	177	105	159	93.3	140	69.4	104	67.9	102
	21	129	193	112	169	100	151	88.8	134	66.1	99.4	64.7	97.2
	22	123	184	107	161	95.9	144	84.8	127	63.1	94.9	61.7	92.8
	23	117	176	103	154	91.7	138	81.1	122	60.4	90.7	59.0	88.7
	24	112	169	98.4	148	87.9	132	77.7	117	57.9	87.0	56.6	85.0
	25	108	162	94.5	142	84.4	127	74.6	112	55.5	83.5	54.3	81.6
	26	104	156	90.8	137	81.1	122	71.8	108	53.4	80.3	52.2	78.5
	27	100	150	87.5	131	78.1	117	69.1	104	51.4	77.3	50.3	75.6
	28	96.4	145	84.3	127	75.3	113	66.6	100	49.6	74.5	48.5	72.9
	29	93.1	140	81.4	122	72.7	109	64.3	96.7	47.9	72.0	46.8	70.4
	30	90.0	135	78.7	118	70.3	106	62.2	93.5	46.3	69.6	45.3	68.0
	32	84.3	127	73.8	111	65.9	99.1	58.3	87.6	43.4	65.2	42.4	63.8
	34	79.4	119	69.4	104	62.0	93.3	54.9	82.5	40.8	61.4	39.9	60.0
	36	75.0	113	65.6	98.6	58.6	88.1	51.8	77.9	38.6	58.0	37.7	56.7
	38	71.0	107	62.1	93.4	55.5	83.4	49.1	73.8	36.5	54.9	35.7	53.7
	40	67.5	101	59.0	88.7	52.7	79.3	46.6	70.1	34.7	52.2	34.0	51.0
	42	64.3	96.6	56.2	84.5	50.2	75.5	44.4	66.8	33.1	49.7	32.3	48.6
	44	61.3	92.2	53.7	80.7	47.9	72.1	42.4	63.7	31.6	47.4	30.9	46.4
	46	58.7	88.2	51.3	77.2	45.9	68.9	40.6	61.0	30.2	45.4	29.5	44.4
	48	56.2	84.5	49.2	73.9	43.9	66.1	38.9	58.4	28.9	43.5	28.3	42.5
	50	54.0	81.1	47.2	71.0	42.2	63.4	37.3	56.1	27.8	41.7	27.2	40.8
	52	51.9	78.0	45.4	68.3	40.6	61.0	35.9	53.9	26.7	40.1	26.1	39.3
	54	50.0	75.1	43.7	65.7	39.1	58.7	34.5	51.9	25.7	38.6	25.1	37.8
	56	48.2	72.4	42.2	63.4	37.7	56.6	33.3	50.1	24.8	37.3	24.3	36.4
	58	46.5	69.9	40.7	61.2	36.4	54.7	32.2	48.3	23.9	36.0	23.4	35.2
	60	45.0	67.6	39.4	59.2	35.2	52.8	31.1	46.7	23.1	34.8	22.6	34.0
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2700	4060	2360	3550	2110	3170	1870	2800	1390	2090	1360	2040
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	337	507	295	444	264	396	233	351	174	261	172	258
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	133	200	117	176	105	158	93.1	140	81.2	122	67.4	101
BF/Ω_b	$\varphi_b BF$, kips	15.8	23.8	14.6	22.0	13.5	20.4	12.4	18.6	11.2	16.9	11.7	17.5
V_n/Ω_v	$\varphi_v V_{nx}$, kips	165	248	145	217	130	195	114	171	110	165	97.1	146
Z_x, in.^{3}		104		91.0		81.3		71.9		62.9		53.0	
L_p, ft		2.27		2.25		2.22		2.21		4.86		1.27	
L_r, ft		15.2		14.5		14.0		13.5		13.1		10.2	

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

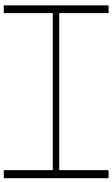
[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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



W16-W14

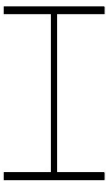
Shape		W16×		W14×									
		26 [f2,v2]		120 [f2]		109 [f2]		99 [f2]		90 [f2]		82	
Design		ASD	LRFD	ASD	LRFD			ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5	159	238										
	6	151	227										
	7	130	195										
	8	113	170							288	432		
	9	101	152					322	484	270	405		
	10	90.7	136					313	470	243	365	340	512
	11	82.5	124			350	528	284	427	221	332	323	486
	12	75.6	114	400	600	333	500	261	392	202	304	296	445
	13	69.8	105	374	562	307	462	241	362	187	281	273	411
	14	64.8	97.4	348	522	285	429	223	336	173	261	254	382
	15	60.5	90.9	324	487	266	400	208	313	162	243	237	356
	16	56.7	85.2	304	457	250	375	195	294	152	228	222	334
	17	53.4	80.2	286	430	235	353	184	276	143	215	209	314
	18	50.4	75.8	270	406	222	333	174	261	135	203	197	297
	19	47.8	71.8	256	385	210	316	165	247	128	192	187	281
	20	45.4	68.2	243	366	200	300	156	235	121	182	178	267
	21	43.2	64.9	232	348	190	286	149	224	116	174	169	254
	22	41.2	62.0	221	332	182	273	142	214	110	166	162	243
	23	39.5	59.3	212	318	174	261	136	204	106	159	155	232
	24	37.8	56.8	203	305	166	250	130	196	101	152	148	223
	25	36.3	54.6	195	292	160	240	125	188	97.1	146	142	214
	26	34.9	52.5	187	281	154	231	120	181	93.3	140	137	206
	27	33.6	50.5	180	271	148	222	116	174	89.9	135	132	198
	28	32.4	48.7	174	261	143	214	112	168	86.7	130	127	191
	29	31.3	47.0	168	252	138	207	108	162	83.7	126	123	184
	30	30.2	45.5	162	244	133	200	104	157	80.9	122	118	178
	32	28.4	42.6	152	229	125	188	97.7	147	75.8	114	111	167
	34	26.7	40.1	143	215	117	177	92.0	138	71.4	107	105	157
	36	25.2	37.9	135	203	111	167	86.9	131	67.4	101	98.7	148
	38	23.9	35.9	128	192	105	158	82.3	124	63.9	96.0	93.5	141
	40	22.7	34.1	122	183	100	150	78.2	118	60.7	91.2	88.9	134
	42	21.6	32.5	116	174	95.1	143	74.5	112	57.8	86.8	84.6	127
	44	20.6	31.0	111	166	90.8	136	71.1	107	55.1	82.9	80.8	121
	46	19.7	29.6	106	159	86.8	130	68.0	102	52.8	79.3	77.3	116
	48	18.9	28.4	101	152	83.2	125	65.1	97.9	50.6	76.0	74.1	111
	50	18.1	27.3	97.3	146	79.9	120	62.5	94.0	48.5	72.9	71.1	107
	52	17.5	26.2	93.6	141	76.8	115	60.1	90.4	46.7	70.1	68.4	103
	54	16.8	25.3	90.1	135	74.0	111	57.9	87.0	44.9	67.5	65.8	98.9
	56	16.2	24.4	86.9	131	71.3	107	55.8	83.9	43.3	65.1	63.5	95.4
	58	15.6	23.5	83.9	126	68.9	103	53.9	81.0	41.8	62.9	61.3	92.1
	60	15.1	22.7	81.1	122	66.6	100	52.1	78.3	40.4	60.8	59.2	89.1
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	907	1360	4870	7310	3990	6000	3130	4700	2430	3650	3550	5340
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	121	183	608	914	499	750	391	588	303	456	444	668
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	54.6	82.0	274	412	250	375	226	340	206	309	178	268
BF/Ω_b	$\varphi_b BF$, kips	7.87	11.8	11.4	17.1	11.0	16.6	10.5	15.8	N/A	N/A	11.8	17.7
V_n/Ω_v	$\varphi_v V_{nx}$, kips	79.3	119	200	300	175	264	161	242	144	216	170	256
Z_x, in.^{3}		43.2		210		190		171		155		137	
L_p, ft		1.23		11.7		15.9		20.8		N/A		3.52	
L_r, ft		9.73		41.1		38.6		36.5		34.6		26.1	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W14

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

F_y = 65 ksi

Shape		W14×											
		74		68		61 [f2]		53		48		43 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8											195	294
	9					244	366	240	362	220	330	181	272
	10	298	448	272	408	234	352	221	332	199	298	163	245
	11	293	440	267	401	213	320	201	302	180	271	148	223
	12	268	403	244	367	195	294	184	277	165	249	136	204
	13	248	372	226	339	180	271	170	256	153	230	125	188
	14	230	345	209	315	167	252	158	237	142	213	116	175
	15	215	322	195	294	156	235	147	222	132	199	109	163
	16	201	302	183	275	146	220	138	208	124	186	102	153
	17	189	284	172	259	138	207	130	195	117	176	95.9	144
	18	179	269	163	245	130	196	123	185	110	166	90.6	136
	19	169	255	154	232	123	185	116	175	104	157	85.8	129
	20	161	242	147	220	117	176	111	166	99.3	149	81.5	123
	21	153	230	140	210	112	168	105	158	94.5	142	77.6	117
	22	146	220	133	200	107	160	100	151	90.2	136	74.1	111
	23	140	210	127	192	102	153	96.1	144	86.3	130	70.9	107
	24	134	202	122	184	97.6	147	92.1	138	82.7	124	67.9	102
	25	129	193	117	176	93.7	141	88.4	133	79.4	119	65.2	98.0
	26	124	186	113	170	90.1	135	85.0	128	76.3	115	62.7	94.2
	27	119	179	109	163	86.8	130	81.9	123	73.5	111	60.4	90.7
	28	115	173	105	157	83.7	126	79.0	119	70.9	107	58.2	87.5
	29	111	167	101	152	80.8	121	76.2	115	68.4	103	56.2	84.5
	30	107	161	97.7	147	78.1	117	73.7	111	66.2	99.5	54.3	81.7
	32	101	151	91.6	138	73.2	110	69.1	104	62.0	93.2	50.9	76.6
	34	94.6	142	86.2	130	68.9	104	65.0	97.7	58.4	87.8	47.9	72.1
	36	89.4	134	81.4	122	65.1	97.8	61.4	92.3	55.1	82.9	45.3	68.1
	38	84.7	127	77.2	116	61.7	92.7	58.2	87.4	52.2	78.5	42.9	64.5
	40	80.4	121	73.3	110	58.6	88.1	55.3	83.1	49.6	74.6	40.8	61.3
	42	76.6	115	69.8	105	55.8	83.9	52.6	79.1	47.3	71.0	38.8	58.3
	44	73.1	110	66.6	100	53.3	80.1	50.2	75.5	45.1	67.8	37.0	55.7
	46	69.9	105	63.7	95.8	50.9	76.6	48.1	72.2	43.2	64.9	35.4	53.3
	48	67.0	101	61.1	91.8	48.8	73.4	46.1	69.2	41.4	62.2	34.0	51.0
	50	64.4	96.7	58.6	88.1	46.9	70.4	44.2	66.5	39.7	59.7	32.6	49.0
	52	61.9	93.0	56.4	84.8	45.1	67.7	42.5	63.9	38.2	57.4	31.3	47.1
	54	59.6	89.6	54.3	81.6	43.4	65.2	40.9	61.5	36.8	55.3	30.2	45.4
	56	57.5	86.4	52.4	78.7	41.8	62.9	39.5	59.3	35.4	53.3	29.1	43.8
	58	55.5	83.4	50.6	76.0	40.4	60.7	38.1	57.3	34.2	51.4	28.1	42.2
	60	53.6	80.6	48.9	73.5	39.1	58.7	36.8	55.4	33.1	49.7	27.2	40.8
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	3220	4840	2930	4410	2340	3520	2210	3320	1990	2980	1630	2450
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	402	605	367	551	293	440	276	415	248	373	204	306
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	162	244	147	222	132	199	111	167	100	150	89.0	134
BF/Ω_b	$\varphi_b BF$, kips	11.3	17.0	10.8	16.2	10.1	15.1	10.7	16.1	10.1	15.2	9.31	14.0
V_n/Ω_v	$\varphi_v V_{nx}$, kips	149	224	136	204	122	183	120	181	110	165	97.6	147
Z_x, in.^{3}		124		113		100		85.2		76.5		67.7	
L_p, ft		3.51		3.49		6.60		2.73		2.72		4.39	
L_r, ft		24.8		23.8		22.6		18.1		17.4		16.7	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W14-W12

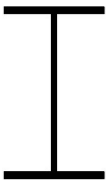
Shape		W14×										W12×	
		38		34 [f2]		30 [f2]		26		22 [f2,v2]		106	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5					174	262			135	202		
	6					155	233	166	248	126	189		
	7	204	306	186	280	133	200	146	220	108	162		
	8	197	295	164	247	116	175	128	192	94.5	142		
	9	175	263	146	219	103	156	114	171	84.0	126		
	10	157	236	131	197	93.1	140	102	154	75.6	114		
	11	143	215	119	180	84.7	127	92.9	140	68.7	103	368	552
	12	131	197	109	165	77.6	117	85.2	128	63.0	94.7	350	527
	13	121	182	101	152	71.6	108	78.6	118	58.2	87.4	323	486
	14	112	169	93.9	141	66.5	100	73.0	110	54.0	81.2	300	451
	15	105	158	87.6	132	62.1	93.3	68.2	102	50.4	75.8	280	421
	16	98.3	148	82.1	123	58.2	87.5	63.9	96.0	47.3	71.0	263	395
	17	92.5	139	77.3	116	54.8	82.3	60.1	90.4	44.5	66.8	247	372
	18	87.4	131	73.0	110	51.7	77.8	56.8	85.4	42.0	63.1	234	351
	19	82.8	124	69.2	104	49.0	73.7	53.8	80.9	39.8	59.8	221	333
	20	78.6	118	65.7	98.7	46.6	70.0	51.1	76.8	37.8	56.8	210	316
	21	74.9	113	62.6	94.0	44.3	66.7	48.7	73.2	36.0	54.1	200	301
	22	71.5	107	59.7	89.8	42.3	63.6	46.5	69.8	34.4	51.7	191	287
	23	68.4	103	57.1	85.9	40.5	60.9	44.5	66.8	32.9	49.4	183	275
	24	65.5	98.5	54.7	82.3	38.8	58.3	42.6	64.0	31.5	47.4	175	263
	25	62.9	94.5	52.6	79.0	37.3	56.0	40.9	61.5	30.2	45.5	168	253
	26	60.5	90.9	50.5	76.0	35.8	53.8	39.3	59.1	29.1	43.7	162	243
	27	58.2	87.5	48.7	73.1	34.5	51.8	37.9	56.9	28.0	42.1	156	234
	28	56.2	84.4	46.9	70.5	33.3	50.0	36.5	54.9	27.0	40.6	150	226
	29	54.2	81.5	45.3	68.1	32.1	48.3	35.3	53.0	26.1	39.2	145	218
	30	52.4	78.8	43.8	65.8	31.0	46.7	34.1	51.2	25.2	37.9	140	211
	32	49.1	73.9	41.1	61.7	29.1	43.7	31.9	48.0	23.6	35.5	131	197
	34	46.2	69.5	38.6	58.1	27.4	41.2	30.1	45.2	22.2	33.4	124	186
	36	43.7	65.7	36.5	54.9	25.9	38.9	28.4	42.7	21.0	31.6	117	176
	38	41.4	62.2	34.6	52.0	24.5	36.8	26.9	40.4	19.9	29.9	111	166
	40	39.3	59.1	32.8	49.4	23.3	35.0	25.6	38.4	18.9	28.4	105	158
	42	37.4	56.3	31.3	47.0	22.2	33.3	24.3	36.6	18.0	27.1	100	150
	44	35.7	53.7	29.9	44.9	21.2	31.8	23.2	34.9	17.2	25.8	95.5	144
	46	34.2	51.4	28.6	42.9	20.2	30.4	22.2	33.4	16.4	24.7	91.4	137
	48	32.8	49.2	27.4	41.1	19.4	29.2	21.3	32.0	15.8	23.7	87.6	132
	50	31.4	47.3	26.3	39.5	18.6	28.0	20.4	30.7	15.1	22.7	84.1	126
	52	30.2	45.5	25.3	38.0	17.9	26.9	19.7	29.6	14.5	21.9	80.8	122
	54	29.1	43.8	24.3	36.6	17.2	25.9	18.9	28.5	14.0	21.0	77.8	117
	56	28.1	42.2	23.5	35.3	16.6	25.0	18.3	27.4	13.5	20.3	75.1	113
	58	27.1	40.7	22.7	34.1	16.1	24.1	17.6	26.5	13.0	19.6	72.5	109
	60	26.2	39.4	21.9	32.9	15.5	23.3	17.0	25.6	12.6	18.9	70.1	105
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1570	2360	1310	1970	931	1400	1020	1540	756	1140	4200	6320
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	197	295	164	247	116	175	128	192	98	147	525	790
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	78.5	118	69.8	105	60.1	90.4	50.2	75.5	41.0	61.6	209	314
BF/Ω_b	$\varphi_b BF$, kips	10.3	15.4	9.42	14.2	8.50	12.8	9.76	14.7	7.21	10.8	9.09	13.7
V_n/Ω_v	$\varphi_v V_{nx}$, kips	102	153	93.2	140	87.0	131	82.8	124	67.5	101	184	276
Z_x, in.^{3}		60.6		53.7		46.4		39.4		32.3		162	
L_p, ft		2.20		3.22		6.12		1.53		1.13		4.41	
L_r, ft		13.7		13.3		12.7		9.49		9.03		39.3	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W12

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

F_y = 65 ksi

Shape		W12×											
		96		87 [f2]		79 [f2]		72 [f2]		65 [f2]		58 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7									220	332		
	8							248	372	197	296		
	9					272	410	231	346	175	263	206	308
	10			300	452	256	385	207	312	157	237	197	296
	11	326	490	288	432	233	350	189	283	143	215	179	269
	12	316	475	264	396	214	321	173	260	131	197	164	247
	13	291	438	243	366	197	296	160	240	121	182	151	228
	14	271	407	226	340	183	275	148	223	112	169	141	211
	15	253	380	211	317	171	257	138	208	105	158	131	197
	16	237	356	198	297	160	241	130	195	98.4	148	123	185
	17	223	335	186	280	151	227	122	183	92.6	139	116	174
	18	210	316	176	264	142	214	115	173	87.5	131	109	164
	19	199	300	166	250	135	203	109	164	82.9	125	104	156
	20	189	285	158	238	128	193	104	156	78.7	118	98.4	148
	21	180	271	151	226	122	183	98.8	148	75.0	113	93.7	141
	22	172	259	144	216	116	175	94.3	142	71.6	108	89.5	134
	23	165	248	138	207	111	167	90.2	136	68.4	103	85.6	129
	24	158	237	132	198	107	160	86.4	130	65.6	98.6	82.0	123
	25	152	228	127	190	102	154	83.0	125	63.0	94.6	78.7	118
	26	146	219	122	183	98.6	148	79.8	120	60.5	91.0	75.7	114
	27	140	211	117	176	94.9	143	76.8	115	58.3	87.6	72.9	110
	28	135	203	113	170	91.5	138	74.1	111	56.2	84.5	70.3	106
	29	131	196	109	164	88.4	133	71.5	108	54.3	81.6	67.9	102
	30	126	190	105	158	85.4	128	69.2	104	52.5	78.9	65.6	98.6
	32	118	178	98.8	149	80.1	120	64.8	97.4	49.2	73.9	61.5	92.4
	34	111	167	93.0	140	75.4	113	61.0	91.7	46.3	69.6	57.9	87.0
	36	105	158	87.9	132	71.2	107	57.6	86.6	43.7	65.7	54.7	82.2
	38	99.7	150	83.2	125	67.4	101	54.6	82.1	41.4	62.3	51.8	77.8
	40	94.7	142	79.1	119	64.1	96.3	51.9	78.0	39.4	59.2	49.2	74.0
	42	90.2	136	75.3	113	61.0	91.7	49.4	74.2	37.5	56.3	46.9	70.4
	44	86.1	129	71.9	108	58.2	87.5	47.2	70.9	35.8	53.8	44.7	67.2
	46	82.4	124	68.8	103	55.7	83.7	45.1	67.8	34.2	51.4	42.8	64.3
	48	78.9	119	65.9	99.0	53.4	80.2	43.2	65.0	32.8	49.3	41.0	61.6
	50	75.8	114	63.3	95.1	51.2	77.0	41.5	62.4	31.5	47.3	39.4	59.2
	52	72.9	110	60.8	91.4	49.3	74.1	39.9	60.0	30.3	45.5	37.8	56.9
	54	70.2	105	58.6	88.0	47.5	71.3	38.4	57.7	29.2	43.8	36.4	54.8
	56	67.7	102	56.5	84.9	45.8	68.8	37.0	55.7	28.1	42.3	35.1	52.8
	58	65.3	98.2	54.5	82.0	44.2	66.4	35.8	53.8	27.1	40.8	33.9	51.0
	60	63.1	94.9	52.7	79.2	42.7	64.2	34.6	52.0	26.2	39.4	32.8	49.3
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	3790	5690	3160	4750	2560	3850	2070	3120	1570	2370	1970	2960
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	474	712	395	594	320	481	259	390	197	296	246	370
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	190	285	171	257	155	233	140	211	126	190	112	168
BF/Ω_b	$\varphi_b BF$, kips	8.92	13.4	8.55	12.9	8.25	12.4	7.94	11.9	7.56	11.4	7.93	11.9
V_n/Ω_v	$\varphi_v V_{nx}$, kips	163	245	150	226	136	205	124	186	110	166	103	154
Z_x, in.^{3}		146		130		117		106		95.2		84.7	
L_p, ft		4.38		7.43		11.5		14.9		19.1		7.18	
L_r, ft		36.2		33.7		31.6		30.0		28.4		24.1	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W12

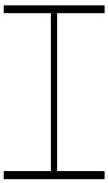
Shape		W12×											
		53 [f2]		50		45 [f2]		40 [f2]		35		30 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7							164	246	175	264	149	224
	8	195	294	210	316	189	284	163	245	164	247	131	197
	9	173	260	204	306	181	272	145	218	146	220	116	175
	10	156	234	183	276	163	245	130	196	132	198	105	157
	11	142	213	167	251	148	223	118	178	120	180	95.1	143
	12	130	195	153	230	136	204	109	163	110	165	87.2	131
	13	120	180	141	212	125	189	100	151	101	152	80.5	121
	14	111	167	131	197	117	175	93.1	140	94.0	141	74.8	112
	15	104	156	122	184	109	163	86.9	131	87.7	132	69.8	105
	16	97.3	146	115	172	102	153	81.4	122	82.2	124	65.4	98.3
	17	91.6	138	108	162	96.0	144	76.6	115	77.4	116	61.6	92.5
	18	86.5	130	102	153	90.6	136	72.4	109	73.1	110	58.1	87.4
	19	81.9	123	96.6	145	85.9	129	68.6	103	69.2	104	55.1	82.8
	20	77.9	117	91.7	138	81.6	123	65.1	97.9	65.8	98.9	52.3	78.6
	21	74.1	111	87.4	131	77.7	117	62.0	93.2	62.6	94.2	49.8	74.9
	22	70.8	106	83.4	125	74.1	111	59.2	89.0	59.8	89.9	47.6	71.5
	23	67.7	102	79.8	120	70.9	107	56.6	85.1	57.2	86.0	45.5	68.4
	24	64.9	97.5	76.4	115	68.0	102	54.3	81.6	54.8	82.4	43.6	65.5
	25	62.3	93.6	73.4	110	65.2	98.1	52.1	78.3	52.6	79.1	41.9	62.9
	26	59.9	90.0	70.6	106	62.7	94.3	50.1	75.3	50.6	76.1	40.3	60.5
	27	57.7	86.7	67.9	102	60.4	90.8	48.3	72.5	48.7	73.2	38.8	58.3
	28	55.6	83.6	65.5	98.5	58.3	87.6	46.5	69.9	47.0	70.6	37.4	56.2
	29	53.7	80.7	63.3	95.1	56.2	84.5	44.9	67.5	45.4	68.2	36.1	54.2
	30	51.9	78.0	61.2	91.9	54.4	81.7	43.4	65.3	43.9	65.9	34.9	52.4
	32	48.7	73.1	57.3	86.2	51.0	76.6	40.7	61.2	41.1	61.8	32.7	49.2
	34	45.8	68.8	54.0	81.1	48.0	72.1	38.3	57.6	38.7	58.2	30.8	46.3
	36	43.3	65.0	51.0	76.6	45.3	68.1	36.2	54.4	36.5	54.9	29.1	43.7
	38	41.0	61.6	48.3	72.6	42.9	64.5	34.3	51.5	34.6	52.0	27.5	41.4
	40	38.9	58.5	45.9	68.9	40.8	61.3	32.6	49.0	32.9	49.4	26.2	39.3
	42	37.1	55.7	43.7	65.7	38.8	58.4	31.0	46.6	31.3	47.1	24.9	37.5
	44	35.4	53.2	41.7	62.7	37.1	55.7	29.6	44.5	29.9	44.9	23.8	35.7
	46	33.8	50.9	39.9	59.9	35.5	53.3	28.3	42.6	28.6	43.0	22.8	34.2
	48	32.4	48.8	38.2	57.4	34.0	51.1	27.1	40.8	27.4	41.2	21.8	32.8
	50	31.1	46.8	36.7	55.1	32.6	49.0	26.1	39.2	26.3	39.5	20.9	31.5
	52	29.9	45.0	35.3	53.0	31.4	47.1	25.1	37.7	25.3	38.0	20.1	30.2
	54	28.8	43.3	34.0	51.1	30.2	45.4	24.1	36.3	24.4	36.6	19.4	29.1
	56	27.8	41.8	32.8	49.2	29.1	43.8	23.3	35.0	23.5	35.3	18.7	28.1
	58	26.8	40.3	31.6	47.5	28.1	42.3	22.5	33.8	22.7	34.1	18.0	27.1
	60	26.0	39.0	30.6	46.0	27.2	40.9	21.7	32.6	21.9	33.0	17.4	26.2
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1560	2340	1830	2760	1630	2450	1300	1960	1320	1980	1050	1570
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	195	293	229	345	204	306	163	245	164	247	131	197
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	101	152	92.2	139	82.6	124	74.0	111	66.0	99.2	55.8	83.8
BF/Ω_b	$\varphi_b BF$, kips	7.53	11.3	8.33	12.5	7.85	11.8	7.29	11.0	8.37	12.6	7.49	11.3
V_n/Ω_v	$\varphi_v V_{nx}$, kips	97.5	147	105	158	94.7	142	82.0	123	87.6	132	74.7	112
Z_x, in.^{3}		76.3		70.7		63.1		56.1		50.7		42.7	
L_p, ft		10.5		2.79		2.87		5.39		2.17		3.18	
L_r, ft		23.0		19.2		18.3		17.6		13.9		13.2	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W12-W10

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

F_y = 65 ksi

Shape		W12×										W10×	
		26 [f2]		22		19		16 [f2,v2]		14 [f2,v2]		88	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4					134	202	117	177	80.3	121		
	5	131	197	149	224	126	190	94.0	141	64.2	96.5		
	6	128	192	125	188	105	158	78.3	118	53.5	80.4		
	7	109	165	107	161	90.1	135	67.1	101	45.9	68.9		
	8	95.8	144	93.7	141	78.8	118	58.7	88.3	40.1	60.3		
	9	85.1	128	83.3	125	70.1	105	52.2	78.5	35.7	53.6	306	458
	10	76.6	115	75.0	113	63.1	94.8	47.0	70.6	32.1	48.2	291	437
	11	69.7	105	68.2	102	57.3	86.2	42.7	64.2	29.2	43.9	264	397
	12	63.9	96.0	62.5	93.9	52.5	79.0	39.2	58.8	26.8	40.2	242	364
	13	58.9	88.6	57.7	86.7	48.5	72.9	36.1	54.3	24.7	37.1	224	336
	14	54.7	82.3	53.6	80.5	45.0	67.7	33.6	50.4	22.9	34.5	208	312
	15	51.1	76.8	50.0	75.1	42.0	63.2	31.3	47.1	21.4	32.2	194	291
	16	47.9	72.0	46.9	70.4	39.4	59.2	29.4	44.1	20.1	30.2	182	273
	17	45.1	67.7	44.1	66.3	37.1	55.7	27.6	41.5	18.9	28.4	171	257
	18	42.6	64.0	41.7	62.6	35.0	52.7	26.1	39.2	17.8	26.8	161	243
	19	40.3	60.6	39.5	59.3	33.2	49.9	24.7	37.2	16.9	25.4	153	230
	20	38.3	57.6	37.5	56.4	31.5	47.4	23.5	35.3	16.1	24.1	145	218
	21	36.5	54.8	35.7	53.7	30.0	45.1	22.4	33.6	15.3	23.0	138	208
	22	34.8	52.3	34.1	51.2	28.7	43.1	21.4	32.1	14.6	21.9	132	199
	23	33.3	50.1	32.6	49.0	27.4	41.2	20.4	30.7	14.0	21.0	126	190
	24	31.9	48.0	31.2	47.0	26.3	39.5	19.6	29.4	13.4	20.1	121	182
	25	30.7	46.1	30.0	45.1	25.2	37.9	18.8	28.2	12.8	19.3	116	175
	26	29.5	44.3	28.8	43.4	24.3	36.5	18.1	27.2	12.3	18.6	112	168
	27	28.4	42.7	27.8	41.7	23.4	35.1	17.4	26.2	11.9	17.9	108	162
	28	27.4	41.1	26.8	40.3	22.5	33.8	16.8	25.2	11.5	17.2	104	156
	29	26.4	39.7	25.9	38.9	21.7	32.7	16.2	24.4	11.1	16.6	100	151
	30	25.5	38.4	25.0	37.6	21.0	31.6	15.7	23.5	10.7	16.1	96.9	146
	32	23.9	36.0	23.4	35.2	19.7	29.6	14.7	22.1	10.0	15.1	90.8	137
	34	22.5	33.9	22.1	33.2	18.5	27.9	13.8	20.8	9.44	14.2	85.5	128
	36	21.3	32.0	20.8	31.3	17.5	26.3	13.1	19.6	8.92	13.4	80.7	121
	38	20.2	30.3	19.7	29.7	16.6	24.9	12.4	18.6	8.45	12.7	76.5	115
	40	19.2	28.8	18.7	28.2	15.8	23.7	11.7	17.7	8.03	12.1	72.7	109
	42	18.2	27.4	17.9	26.8	15.0	22.6	11.2	16.8	7.64	11.5	69.2	104
	44	17.4	26.2	17.0	25.6	14.3	21.5	10.7	16.0	7.30	11.0	66.0	99.3
	46	16.7	25.0	16.3	24.5	13.7	20.6	10.2	15.4	6.98	10.5	63.2	95.0
	48	16.0	24.0	15.6	23.5	13.1	19.7	9.79	14.7	6.69	10.1	60.5	91.0
	50	15.3	23.0	15.0	22.5	12.6	19.0	9.40	14.1	6.42	9.65	58.1	87.4
	52	14.7	22.1	14.4	21.7	12.1	18.2	9.04	13.6	6.17	9.28	55.9	84.0
	54	14.2	21.3	13.9	20.9	11.7	17.6	8.70	13.1	5.94	8.94	53.8	80.9
	56	13.7	20.6	13.4	20.1	11.3	16.9	8.39	12.6	5.73	8.62	51.9	78.0
	58	13.2	19.9	12.9	19.4	10.9	16.3	8.10	12.2	5.53	8.32	50.1	75.3
	60	12.8	19.2	12.5	18.8	10.5	15.8	7.83	11.8	5.35	8.04	48.4	72.8
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	766	1150	750	1130	631	948	470	706	321	482	2910	4370
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	95.8	144	93.7	141	78.8	118	58.7	88.3	41.2	62.0	363	546
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	48.2	72.4	36.5	54.8	30.5	45.8	24.4	36.6	21.2	31.8	143	214
BF/Ω_b	$\varphi_b BF$, kips	6.72	10.1	8.74	13.1	7.77	11.7	6.69	10.0	3.42	5.14	6.25	9.40
V_n/Ω_v	$\varphi_v V_{nx}$, kips	65.5	98.5	74.7	112	67.0	101	61.4	92.3	50.4	75.8	153	229
Z_x, in.^{3}		36.8		28.9		24.3		19.6		17.0		112	
L_p, ft		5.64		1.20		1.16		1.82		0.857		3.72	
L_r, ft		12.7		7.75		7.38		6.96		6.73		39.0	

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

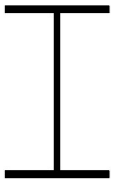
[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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



W10

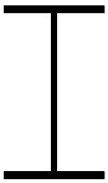
Shape		W10×											
		77		68		60 [f2]		54 [f2]		49 [f2]		45	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7									158	238		
	8							175	262	146	219	165	248
	9	262	394	228	344	200	300	162	243	130	195	156	234
	10	251	377	219	329	180	271	146	219	117	176	140	211
	11	228	343	199	299	164	246	133	199	106	160	127	191
	12	209	314	182	274	150	225	121	183	97.3	146	117	176
	13	193	290	168	253	138	208	112	169	89.8	135	108	162
	14	179	269	156	235	129	193	104	157	83.4	125	100	150
	15	167	251	146	219	120	180	97.2	146	77.9	117	93.4	140
	16	157	236	137	205	112	169	91.1	137	73.0	110	87.6	132
	17	148	222	129	193	106	159	85.8	129	68.7	103	82.4	124
	18	139	210	122	183	100	150	81.0	122	64.9	97.5	77.8	117
	19	132	198	115	173	94.7	142	76.7	115	61.5	92.4	73.7	111
	20	125	189	109	164	90.0	135	72.9	110	58.4	87.8	70.1	105
	21	119	180	104	157	85.7	129	69.4	104	55.6	83.6	66.7	100
	22	114	171	99.4	149	81.8	123	66.3	99.6	53.1	79.8	63.7	95.7
	23	109	164	95.1	143	78.3	118	63.4	95.3	50.8	76.3	60.9	91.6
	24	105	157	91.1	137	75.0	113	60.7	91.3	48.7	73.1	58.4	87.8
	25	100	151	87.5	132	72.0	108	58.3	87.7	46.7	70.2	56.0	84.2
	26	96.5	145	84.1	126	69.2	104	56.1	84.3	44.9	67.5	53.9	81.0
	27	92.9	140	81.0	122	66.7	100	54.0	81.2	43.3	65.0	51.9	78.0
	28	89.6	135	78.1	117	64.3	96.6	52.1	78.3	41.7	62.7	50.0	75.2
	29	86.5	130	75.4	113	62.1	93.3	50.3	75.6	40.3	60.5	48.3	72.6
	30	83.6	126	72.9	110	60.0	90.2	48.6	73.0	38.9	58.5	46.7	70.2
	32	78.4	118	68.4	103	56.2	84.5	45.6	68.5	36.5	54.8	43.8	65.8
	34	73.8	111	64.3	96.7	52.9	79.6	42.9	64.4	34.3	51.6	41.2	61.9
	36	69.7	105	60.8	91.3	50.0	75.1	40.5	60.9	32.4	48.8	38.9	58.5
	38	66.0	99.2	57.6	86.5	47.4	71.2	38.4	57.7	30.7	46.2	36.9	55.4
	40	62.7	94.3	54.7	82.2	45.0	67.6	36.4	54.8	29.2	43.9	35.0	52.7
	42	59.7	89.8	52.1	78.3	42.9	64.4	34.7	52.2	27.8	41.8	33.4	50.1
	44	57.0	85.7	49.7	74.7	40.9	61.5	33.1	49.8	26.5	39.9	31.8	47.9
	46	54.5	82.0	47.6	71.5	39.1	58.8	31.7	47.6	25.4	38.2	30.5	45.8
	48	52.3	78.6	45.6	68.5	37.5	56.4	30.4	45.7	24.3	36.6	29.2	43.9
	50	50.2	75.4	43.7	65.8	36.0	54.1	29.2	43.8	23.4	35.1	28.0	42.1
	52	48.3	72.5	42.1	63.2	34.6	52.0	28.0	42.1	22.5	33.8	26.9	40.5
	54	46.5	69.8	40.5	60.9	33.3	50.1	27.0	40.6	21.6	32.5	25.9	39.0
	56	44.8	67.3	39.1	58.7	32.1	48.3	26.0	39.1	20.9	31.3	25.0	37.6
	58	43.3	65.0	37.7	56.7	31.0	46.6	25.1	37.8	20.1	30.3	24.2	36.3
	60	41.8	62.9	36.5	54.8	30.0	45.1	24.3	36.5	19.5	29.3	23.4	35.1
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2510	3770	2190	3290	1800	2710	1460	2190	1170	1760	1400	2110
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	314	471	273	411	225	338	182	274	146	219	175	263
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	124	187	109	164	96.2	145	86.4	130	78.5	118	70.5	106
BF/Ω_b	$\varphi_b BF$, kips	6.09	9.16	5.92	8.90	5.71	8.58	5.50	8.26	5.28	7.93	5.70	8.56
V_n/Ω_v	$\varphi_v V_{nx}$, kips	131	197	114	172	100	150	87.3	131	79.2	119	82.6	124
Z_x, in.^{3}		96.7		84.3		73.6		65.7		59.4		54.0	
L_p, ft		3.69		3.66		6.04		9.23		12.5		2.84	
L_r, ft		34.8		31.4		28.6		26.7		25.2		21.2	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W10

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

F_y = 65 ksi

Shape		W10×											
		39 [f2]		33 [f2]		30		26		22 [f2]		19	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD			ASD	LRFD	ASD	LRFD
Span, ft	4											119	179
	5			132	198					114	172	110	165
	6			119	179	147	222	125	188	96.8	145	91.7	138
	7	146	220	102	154	134	202	115	172	83.0	125	78.6	118
	8	138	208	89.6	135	117	176	100	151	72.6	109	68.8	103
	9	123	185	79.6	120	104	157	89.1	134	64.5	97.0	61.1	91.9
	10	111	166	71.7	108	93.9	141	80.2	121	58.1	87.3	55.0	82.7
	11	101	151	65.1	97.9	85.4	128	72.9	110	52.8	79.3	50.0	75.2
	12	92.2	139	59.7	89.7	78.3	118	66.8	100	48.4	72.7	45.8	68.9
	13	85.1	128	55.1	82.8	72.3	109	61.7	92.7	44.7	67.1	42.3	63.6
	14	79.0	119	51.2	76.9	67.1	101	57.3	86.1	41.5	62.3	39.3	59.1
	15	73.8	111	47.8	71.8	62.6	94.1	53.5	80.3	38.7	58.2	36.7	55.1
	16	69.2	104	44.8	67.3	58.7	88.2	50.1	75.3	36.3	54.5	34.4	51.7
	17	65.1	97.8	42.1	63.3	55.3	83.0	47.2	70.9	34.2	51.3	32.4	48.6
	18	61.5	92.4	39.8	59.8	52.2	78.4	44.5	67.0	32.3	48.5	30.6	45.9
	19	58.2	87.5	37.7	56.7	49.4	74.3	42.2	63.4	30.6	45.9	29.0	43.5
	20	55.3	83.1	35.8	53.8	47.0	70.6	40.1	60.3	29.0	43.6	27.5	41.3
	21	52.7	79.2	34.1	51.3	44.7	67.2	38.2	57.4	27.7	41.6	26.2	39.4
	22	50.3	75.6	32.6	49.0	42.7	64.2	36.4	54.8	26.4	39.7	25.0	37.6
	23	48.1	72.3	31.2	46.8	40.8	61.4	34.9	52.4	25.2	37.9	23.9	35.9
	24	46.1	69.3	29.9	44.9	39.1	58.8	33.4	50.2	24.2	36.4	22.9	34.5
	25	44.3	66.5	28.7	43.1	37.6	56.5	32.1	48.2	23.2	34.9	22.0	33.1
	26	42.6	64.0	27.6	41.4	36.1	54.3	30.8	46.4	22.3	33.6	21.2	31.8
	27	41.0	61.6	26.5	39.9	34.8	52.3	29.7	44.6	21.5	32.3	20.4	30.6
	28	39.5	59.4	25.6	38.5	33.5	50.4	28.6	43.0	20.7	31.2	19.6	29.5
	29	38.2	57.3	24.7	37.1	32.4	48.7	27.6	41.6	20.0	30.1	19.0	28.5
	30	36.9	55.4	23.9	35.9	31.3	47.1	26.7	40.2	19.4	29.1	18.3	27.6
	32	34.6	52.0	22.4	33.7	29.4	44.1	25.1	37.7	18.1	27.3	17.2	25.8
	34	32.5	48.9	21.1	31.7	27.6	41.5	23.6	35.4	17.1	25.7	16.2	24.3
	36	30.7	46.2	19.9	29.9	26.1	39.2	22.3	33.5	16.1	24.2	15.3	23.0
	38	29.1	43.8	18.9	28.3	24.7	37.2	21.1	31.7	15.3	23.0	14.5	21.8
	40	27.7	41.6	17.9	26.9	23.5	35.3	20.0	30.1	14.5	21.8	13.8	20.7
	42	26.3	39.6	17.1	25.6	22.4	33.6	19.1	28.7	13.8	20.8	13.1	19.7
	44	25.1	37.8	16.3	24.5	21.3	32.1	18.2	27.4	13.2	19.8	12.5	18.8
	46	24.1	36.2	15.6	23.4	20.4	30.7	17.4	26.2	12.6	19.0	12.0	18.0
	48	23.1	34.6	14.9	22.4	19.6	29.4	16.7	25.1	12.1	18.2	11.5	17.2
	50	22.1	33.3	14.3	21.5	18.8	28.2	16.0	24.1	11.6	17.5	11.0	16.5
	52	21.3	32.0	13.8	20.7	18.1	27.2	15.4	23.2	11.2	16.8	10.6	15.9
	54	20.5	30.8	13.3	19.9	17.4	26.1	14.8	22.3	10.8	16.2	10.2	15.3
	56	19.8	29.7	12.8	19.2	16.8	25.2	14.3	21.5	10.4	15.6	9.82	14.8
	58	19.1	28.7	12.4	18.6	16.2	24.3	13.8	20.8	10.0	15.0	9.48	14.3
	60	18.4	27.7	11.9	17.9	15.7	23.5	13.4	20.1	9.68	14.5	9.17	13.8
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1110	1660	717	1080	939	1410	802	1210	581	873	550	827
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	138	208	89.6	135	117	176	100	151	72.6	109	68.8	103
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	60.3	90.6	49.9	75.0	46.9	70.4	40.3	60.5	33.4	50.2	27.0	40.6
BF/Ω_b	$\varphi_b BF$, kips	5.33	8.01	4.85	7.29	6.26	9.41	5.72	8.60	5.11	7.68	6.07	9.12
V_n/Ω_v	$\varphi_v V_{nx}$, kips	73.0	110	65.9	99.0	73.6	111	62.5	94.0	57.2	85.9	59.6	89.5
Z_x, in.^{3}		45.9		37.9		36.2		30.9		25.7		21.2	
L_p, ft		4.80		9.64		1.94		1.93		3.98		1.24	
L_r, ft		19.4		17.8		13.2		12.4		11.6		8.12	

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

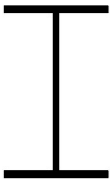
[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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



W10-W8

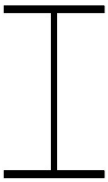
Shape		W10×						W8×					
		17		15 [f2]		12 [f2]		67		58		48	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	113	170	95.3	143	53.5	80.4						
	5	95.0	143	76.2	115	42.8	64.3						
	6	79.1	119	63.5	95.5	35.6	53.6						
	7	67.8	102	54.5	81.9	30.6	45.9	240	360	208	314	159	238
	8	59.4	89.2	47.7	71.6	26.7	40.2	226	340	192	289	157	236
	9	52.8	79.3	42.4	63.7	23.8	35.7	201	302	171	257	140	210
	10	47.5	71.4	38.1	57.3	21.4	32.1	181	272	154	231	126	189
	11	43.2	64.9	34.7	52.1	19.4	29.2	164	247	140	210	114	172
	12	39.6	59.5	31.8	47.7	17.8	26.8	151	227	128	193	105	158
	13	36.5	54.9	29.3	44.1	16.5	24.7	139	209	118	178	96.8	146
	14	33.9	51.0	27.2	40.9	15.3	23.0	129	194	110	165	89.9	135
	15	31.7	47.6	25.4	38.2	14.3	21.4	121	181	103	154	83.9	126
	16	29.7	44.6	23.8	35.8	13.4	20.1	113	170	96.2	145	78.7	118
	17	27.9	42.0	22.4	33.7	12.6	18.9	106	160	90.5	136	74.0	111
	18	26.4	39.7	21.2	31.8	11.9	17.9	100	151	85.5	128	69.9	105
	19	25.0	37.6	20.1	30.2	11.3	16.9	95.2	143	81.0	122	66.2	99.6
	20	23.7	35.7	19.1	28.6	10.7	16.1	90.4	136	76.9	116	62.9	94.6
	21	22.6	34.0	18.2	27.3	10.2	15.3	86.1	129	73.3	110	59.9	90.1
	22	21.6	32.4	17.3	26.0	9.72	14.6	82.2	124	69.9	105	57.2	86.0
	23	20.6	31.0	16.6	24.9	9.30	14.0	78.6	118	66.9	101	54.7	82.2
	24	19.8	29.7	15.9	23.9	8.91	13.4	75.4	113	64.1	96.4	52.4	78.8
	25	19.0	28.5	15.2	22.9	8.56	12.9	72.3	109	61.5	92.5	50.3	75.7
	26	18.3	27.5	14.7	22.0	8.23	12.4	69.6	105	59.2	89.0	48.4	72.8
	27	17.6	26.4	14.1	21.2	7.92	11.9	67.0	101	57.0	85.7	46.6	70.1
	28	17.0	25.5	13.6	20.5	7.64	11.5	64.6	97.1	55.0	82.6	44.9	67.6
	29	16.4	24.6	13.1	19.8	7.38	11.1	62.4	93.7	53.1	79.7	43.4	65.2
	30	15.8	23.8	12.7	19.1	7.13	10.7	60.3	90.6	51.3	77.1	41.9	63.1
	32	14.8	22.3	11.9	17.9	6.68	10.0	56.5	84.9	48.1	72.3	39.3	59.1
	34	14.0	21.0	11.2	16.9	6.29	9.46	53.2	80.0	45.3	68.0	37.0	55.6
	36	13.2	19.8	10.6	15.9	5.94	8.93	50.2	75.5	42.7	64.2	35.0	52.5
	38	12.5	18.8	10.0	15.1	5.63	8.46	47.6	71.5	40.5	60.9	33.1	49.8
	40	11.9	17.8	9.53	14.3	5.35	8.04	45.2	68.0	38.5	57.8	31.5	47.3
	42	11.3	17.0	9.08	13.6	5.09	7.65	43.1	64.7	36.6	55.1	30.0	45.0
	44	10.8	16.2	8.66	13.0	4.86	7.31	41.1	61.8	35.0	52.6	28.6	43.0
	46	10.3	15.5	8.29	12.5	4.65	6.99	39.3	59.1	33.5	50.3	27.4	41.1
	48	9.89	14.9	7.94	11.9	4.46	6.70	37.7	56.6	32.1	48.2	26.2	39.4
	50	9.50	14.3	7.62	11.5	4.28	6.43	36.2	54.4	30.8	46.3	25.2	37.8
	52	9.13	13.7	7.33	11.0	4.11	6.18	34.8	52.3	29.6	44.5	24.2	36.4
	54	8.79	13.2	7.06	10.6	3.96	5.95	33.5	50.3	28.5	42.8	23.3	35.0
	56	8.48	12.7	6.81	10.2	3.82	5.74	32.3	48.5	27.5	41.3	22.5	33.8
	58	8.19	12.3	6.57	9.88	3.69	5.54	31.2	46.9	26.5	39.9	21.7	32.6
	60	7.91	11.9	6.35	9.55	3.56	5.36	30.1	45.3	25.6	38.5	21.0	31.5
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	475	714	381	573	214	321	1810	2720	1540	2310	1260	1890
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	59.4	89.2	47.7	71.6	26.7	40.2	226	340	192	289	157	236
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	23.2	34.9	19.7	29.6	15.5	23.3	87.6	132	75.5	113	62.6	94.1
BF/Ω_b	$\varphi_b BF$, kips	5.55	8.34	4.99	7.50	4.18	6.28	4.17	6.27	4.07	6.11	3.92	5.90
V_n/Ω_v	$\varphi_v V_{nx}$, kips	56.6	85.1	53.7	80.6	43.8	65.8	120	180	104	157	79.4	119
Z_x, in.^{3}		18.3		15.6		12.3		69.7		59.3		48.5	
L_p, ft		1.20		1.74		4.27		3.00		2.96		2.94	
L_r, ft		7.71		7.34		6.96		36.2		31.7		27.1	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



W8

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

F_y = 65 ksi

Shape		W8×											
		40 [f2]		35 [f2]		31 [f2]		28 [f2]		24 [f2]		21	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5					106	160			90.8	136	96.6	145
	6			118	177	93.7	141	107	161	84.1	126	86.9	131
	7	139	208	109	164	80.4	121	98.2	148	72.1	108	74.5	112
	8	124	186	95.3	143	70.3	106	85.9	129	63.1	94.8	65.2	98.0
	9	110	165	84.7	127	62.5	93.9	76.4	115	56.0	84.2	58.0	87.1
	10	98.9	149	76.2	115	56.2	84.5	68.7	103	50.4	75.8	52.2	78.4
	11	89.9	135	69.3	104	51.1	76.9	62.5	93.9	45.9	68.9	47.4	71.3
	12	82.4	124	63.5	95.4	46.9	70.4	57.3	86.1	42.0	63.2	43.5	65.3
	13	76.1	114	58.6	88.1	43.3	65.0	52.9	79.5	38.8	58.3	40.1	60.3
	14	70.7	106	54.4	81.8	40.2	60.4	49.1	73.8	36.0	54.2	37.3	56.0
	15	66.0	99.1	50.8	76.4	37.5	56.4	45.8	68.9	33.6	50.5	34.8	52.3
	16	61.8	92.9	47.6	71.6	35.2	52.8	43.0	64.6	31.5	47.4	32.6	49.0
	17	58.2	87.5	44.8	67.4	33.1	49.7	40.4	60.8	29.7	44.6	30.7	46.1
	18	55.0	82.6	42.3	63.6	31.2	47.0	38.2	57.4	28.0	42.1	29.0	43.6
	19	52.1	78.3	40.1	60.3	29.6	44.5	36.2	54.4	26.5	39.9	27.5	41.3
	20	49.5	74.4	38.1	57.3	28.1	42.3	34.4	51.7	25.2	37.9	26.1	39.2
	21	47.1	70.8	36.3	54.5	26.8	40.3	32.7	49.2	24.0	36.1	24.8	37.3
	22	45.0	67.6	34.6	52.1	25.6	38.4	31.2	47.0	22.9	34.5	23.7	35.6
	23	43.0	64.7	33.1	49.8	24.5	36.8	29.9	44.9	21.9	33.0	22.7	34.1
	24	41.2	62.0	31.8	47.7	23.4	35.2	28.6	43.0	21.0	31.6	21.7	32.7
	25	39.6	59.5	30.5	45.8	22.5	33.8	27.5	41.3	20.2	30.3	20.9	31.4
	26	38.1	57.2	29.3	44.1	21.6	32.5	26.4	39.7	19.4	29.2	20.1	30.2
	27	36.6	55.1	28.2	42.4	20.8	31.3	25.5	38.3	18.7	28.1	19.3	29.0
	28	35.3	53.1	27.2	40.9	20.1	30.2	24.6	36.9	18.0	27.1	18.6	28.0
	29	34.1	51.3	26.3	39.5	19.4	29.2	23.7	35.6	17.4	26.1	18.0	27.0
	30	33.0	49.6	25.4	38.2	18.7	28.2	22.9	34.4	16.8	25.3	17.4	26.1
	32	30.9	46.5	23.8	35.8	17.6	26.4	21.5	32.3	15.8	23.7	16.3	24.5
	34	29.1	43.7	22.4	33.7	16.5	24.9	20.2	30.4	14.8	22.3	15.3	23.1
	36	27.5	41.3	21.2	31.8	15.6	23.5	19.1	28.7	14.0	21.1	14.5	21.8
	38	26.0	39.1	20.1	30.1	14.8	22.2	18.1	27.2	13.3	20.0	13.7	20.6
	40	24.7	37.2	19.1	28.6	14.1	21.1	17.2	25.8	12.6	19.0	13.0	19.6
	42	23.6	35.4	18.1	27.3	13.4	20.1	16.4	24.6	12.0	18.1	12.4	18.7
	44	22.5	33.8	17.3	26.0	12.8	19.2	15.6	23.5	11.5	17.2	11.9	17.8
	46	21.5	32.3	16.6	24.9	12.2	18.4	14.9	22.5	11.0	16.5	11.3	17.0
	48	20.6	31.0	15.9	23.9	11.7	17.6	14.3	21.5	10.5	15.8	10.9	16.3
	50	19.8	29.7	15.2	22.9	11.2	16.9	13.7	20.7	10.1	15.2	10.4	15.7
	52	19.0	28.6	14.7	22.0	10.8	16.3	13.2	19.9	9.70	14.6	10.0	15.1
	54	18.3	27.5	14.1	21.2	10.4	15.7	12.7	19.1	9.34	14.0	9.66	14.5
	56	17.7	26.6	13.6	20.5	10.0	15.1	12.3	18.4	9.01	13.5	9.31	14.0
	58	17.1	25.6	13.1	19.7	9.70	14.6	11.9	17.8	8.70	13.1	8.99	13.5
	60	16.5	24.8	12.7	19.1	9.37	14.1	11.5	17.2	8.41	12.6	8.69	13.1
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	989	1490	762	1150	562	845	687	1030	504	758	522	784
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	124	186	95.3	143	70.3	106	85.9	129	63.1	94.8	65.2	98.0
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	51.2	77.0	45.0	67.6	39.6	59.5	34.9	52.4	29.9	45.0	26.1	39.3
BF/Ω_b	$\varphi_b BF$, kips	3.74	5.62	3.57	5.37	3.38	5.08	3.60	5.42	3.35	5.04	3.80	5.72
V_n/Ω_v	$\varphi_v V_{nx}$, kips	69.4	104	58.8	88.4	53.2	80.0	53.6	80.6	45.4	68.2	48.3	72.7
Z_x, in.^{3}		39.3		34.2		29.9		26.7		22.7		20.1	
L_p, ft		3.92		7.28		10.7		2.48		5.44		1.79	
L_r, ft		23.3		21.4		19.8		16.6		15.3		12.1	

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

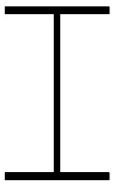
[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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



W8-W6

Shape		W8×								W6×			
		18 [f2]		15		13 [f2]		10 [f2]		25		20 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	87.4	131	86.3	130	63.7	95.7	36.6	55.0			75.2	113
	5	76.0	114	69.0	104	50.9	76.6	29.3	44.0	95.4	143	64.4	96.7
	6	63.3	95.1	57.5	86.5	42.5	63.8	24.4	36.7	81.3	122	53.6	80.6
	7	54.3	81.5	49.3	74.1	36.4	54.7	20.9	31.4	69.7	105	46.0	69.1
	8	47.5	71.4	43.1	64.8	31.8	47.9	18.3	27.5	61.0	91.7	40.2	60.5
	9	42.2	63.4	38.3	57.6	28.3	42.5	16.3	24.4	54.2	81.5	35.8	53.7
	10	38.0	57.1	34.5	51.9	25.5	38.3	14.6	22.0	48.8	73.3	32.2	48.4
	11	34.5	51.9	31.4	47.2	23.2	34.8	13.3	20.0	44.3	66.7	29.3	44.0
	12	31.6	47.6	28.8	43.2	21.2	31.9	12.2	18.3	40.7	61.1	26.8	40.3
	13	29.2	43.9	26.5	39.9	19.6	29.5	11.3	16.9	37.5	56.4	24.8	37.2
	14	27.1	40.8	24.7	37.1	18.2	27.3	10.5	15.7	34.8	52.4	23.0	34.5
	15	25.3	38.1	23.0	34.6	17.0	25.5	9.76	14.7	32.5	48.9	21.5	32.2
	16	23.7	35.7	21.6	32.4	15.9	23.9	9.15	13.7	30.5	45.8	20.1	30.2
	17	22.3	33.6	20.3	30.5	15.0	22.5	8.61	12.9	28.7	43.1	18.9	28.4
	18	21.1	31.7	19.2	28.8	14.2	21.3	8.13	12.2	27.1	40.7	17.9	26.9
	19	20.0	30.0	18.2	27.3	13.4	20.2	7.70	11.6	25.7	38.6	16.9	25.5
	20	19.0	28.5	17.3	25.9	12.7	19.1	7.32	11.0	24.4	36.7	16.1	24.2
	21	18.1	27.2	16.4	24.7	12.1	18.2	6.97	10.5	23.2	34.9	15.3	23.0
	22	17.3	25.9	15.7	23.6	11.6	17.4	6.65	10.0	22.2	33.3	14.6	22.0
	23	16.5	24.8	15.0	22.6	11.1	16.6	6.36	9.56	21.2	31.9	14.0	21.0
	24	15.8	23.8	14.4	21.6	10.6	16.0	6.10	9.17	20.3	30.6	13.4	20.2
	25	15.2	22.8	13.8	20.7	10.2	15.3	5.85	8.80	19.5	29.3	12.9	19.3
	26	14.6	22.0	13.3	20.0	9.80	14.7	5.63	8.46	18.8	28.2	12.4	18.6
	27	14.1	21.1	12.8	19.2	9.44	14.2	5.42	8.15	18.1	27.2	11.9	17.9
	28	13.6	20.4	12.3	18.5	9.10	13.7	5.23	7.86	17.4	26.2	11.5	17.3
	29	13.1	19.7	11.9	17.9	8.78	13.2	5.05	7.59	16.8	25.3	11.1	16.7
	30	12.7	19.0	11.5	17.3	8.49	12.8	4.88	7.33	16.3	24.4	10.7	16.1
	32	11.9	17.8	10.8	16.2	7.96	12.0	4.57	6.87	15.2	22.9	10.1	15.1
	34	11.2	16.8	10.2	15.3	7.49	11.3	4.30	6.47	14.3	21.6	9.46	14.2
	36	10.5	15.9	9.59	14.4	7.08	10.6	4.07	6.11	13.6	20.4	8.94	13.4
	38	10.0	15.0	9.08	13.7	6.70	10.1	3.85	5.79	12.8	19.3	8.47	12.7
	40	9.49	14.3	8.63	13.0	6.37	9.57	3.66	5.50	12.2	18.3	8.04	12.1
	42	9.04	13.6	8.22	12.4	6.07	9.12	3.48	5.24	11.6	17.5	7.66	11.5
	44	8.63	13.0	7.84	11.8	5.79	8.70	3.33	5.00	11.1	16.7	7.31	11.0
	46	8.26	12.4	7.50	11.3	5.54	8.32	3.18	4.78	10.6	15.9	6.99	10.5
	48	7.91	11.9	7.19	10.8	5.31	7.98	3.05	4.58	10.2	15.3	6.70	10.1
	50	7.60	11.4	6.90	10.4	5.09	7.66	2.93	4.40	9.76	14.7	6.44	9.67
	52	7.30	11.0	6.64	10.0	4.90	7.36	2.81	4.23	9.38	14.1	6.19	9.30
	54	7.03	10.6	6.39	9.61	4.72	7.09	2.71	4.07	9.03	13.6	5.96	8.96
	56	6.78	10.2	6.16	9.26	4.55	6.84	2.61	3.93	8.71	13.1	5.75	8.64
	58	6.55	9.84	5.95	8.94	4.39	6.60	2.52	3.79	8.41	12.6	5.55	8.34
	60	6.33	9.51	5.75	8.65	4.25	6.38	2.44	3.67	8.13	12.2	5.36	8.06
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	380	571	345	519	255	383	146	220	488	733	322	484
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	47.5	71.4	43.1	64.8	31.8	47.9	18.3	27.5	61.0	91.7	40.2	60.5
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	21.9	32.9	16.9	25.4	14.1	21.2	11.0	16.6	24.2	36.4	19.3	29.0
BF/Ω_b	$\varphi_b BF$, kips	3.43	5.16	3.72	5.59	3.32	4.98	2.74	4.12	2.25	3.39	2.10	3.16
V_n/Ω_v	$\varphi_v V_{nx}$, kips	43.7	65.7	46.4	69.7	42.9	64.5	31.3	47.1	47.7	71.7	37.6	56.6
Z_x, in.^{3}		16.7		13.3		11.1		8.59		18.8		14.8	
L_p, ft		3.70		1.24		2.45		4.69		2.15		5.83	
L_r, ft		11.2		8.30		7.81		7.34		18.5		15.8	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

W6-W5

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

F_y = 65 ksi

Shape		W6×								W5×			
		16		15 [f2]		12 [f2]		9 [f2]		19		18.9	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	74.6	112	32.4	48.7	51.8	77.8	28.5	42.8	65.0	97.6	70.7	106
	5	59.7	89.7	25.9	39.0	41.4	62.2	22.8	34.3	59.7	89.7	56.6	85.0
	6	49.7	74.8	21.6	32.5	34.5	51.9	19.0	28.6	49.7	74.8	47.1	70.9
	7	42.6	64.1	18.5	27.8	29.6	44.4	16.3	24.5	42.6	64.1	40.4	60.7
	8	37.3	56.1	16.2	24.4	25.9	38.9	14.2	21.4	37.3	56.1	35.4	53.1
	9	33.2	49.8	14.4	21.7	23.0	34.6	12.7	19.0	33.2	49.8	31.4	47.2
	10	29.8	44.9	13.0	19.5	20.7	31.1	11.4	17.1	29.8	44.9	28.3	42.5
	11	27.1	40.8	11.8	17.7	18.8	28.3	10.4	15.6	27.1	40.8	25.7	38.6
	12	24.9	37.4	10.8	16.2	17.3	25.9	9.50	14.3	24.9	37.4	23.6	35.4
	13	23.0	34.5	9.98	15.0	15.9	23.9	8.77	13.2	23.0	34.5	21.8	32.7
	14	21.3	32.0	9.26	13.9	14.8	22.2	8.14	12.2	21.3	32.0	20.2	30.4
	15	19.9	29.9	8.65	13.0	13.8	20.7	7.60	11.4	19.9	29.9	18.9	28.3
	16	18.7	28.0	8.11	12.2	12.9	19.4	7.12	10.7	18.7	28.0	17.7	26.6
	17	17.6	26.4	7.63	11.5	12.2	18.3	6.71	10.1	17.6	26.4	16.6	25.0
	18	16.6	24.9	7.20	10.8	11.5	17.3	6.33	9.52	16.6	24.9	15.7	23.6
	19	15.7	23.6	6.83	10.3	10.9	16.4	6.00	9.02	15.7	23.6	14.9	22.4
	20	14.9	22.4	6.48	9.75	10.4	15.6	5.70	8.57	14.9	22.4	14.1	21.3
	21	14.2	21.4	6.18	9.28	9.86	14.8	5.43	8.16	14.2	21.4	13.5	20.2
	22	13.6	20.4	5.89	8.86	9.41	14.1	5.18	7.79	13.6	20.4	12.9	19.3
	23	13.0	19.5	5.64	8.47	9.00	13.5	4.96	7.45	13.0	19.5	12.3	18.5
	24	12.4	18.7	5.40	8.12	8.63	13.0	4.75	7.14	12.4	18.7	11.8	17.7
	25	11.9	17.9	5.19	7.80	8.28	12.4	4.56	6.85	11.9	17.9	11.3	17.0
	26	11.5	17.3	4.99	7.50	7.96	12.0	4.38	6.59	11.5	17.3	10.9	16.4
	27	11.1	16.6	4.80	7.22	7.67	11.5	4.22	6.35	11.1	16.6	10.5	15.7
	28	10.7	16.0	4.63	6.96	7.39	11.1	4.07	6.12	10.7	16.0	10.1	15.2
	29	10.3	15.5	4.47	6.72	7.14	10.7	3.93	5.91	10.3	15.5	9.75	14.7
	30	9.95	15.0	4.32	6.50	6.90	10.4	3.80	5.71	9.95	15.0	9.43	14.2
	32	9.33	14.0	4.05	6.09	6.47	9.72	3.56	5.35	9.33	14.0	8.84	13.3
	34	8.78	13.2	3.81	5.73	6.09	9.15	3.35	5.04	8.78	13.2	8.32	12.5
	36	8.29	12.5	3.60	5.41	5.75	8.64	3.17	4.76	8.29	12.5	7.86	11.8
	38	7.85	11.8	3.41	5.13	5.45	8.19	3.00	4.51	7.85	11.8	7.44	11.2
	40	7.46	11.2	3.24	4.87	5.18	7.78	2.85	4.28	7.46	11.2	7.07	10.6
	42	7.10	10.7	3.09	4.64	4.93	7.41	2.71	4.08	7.10	10.7	6.73	10.1
	44	6.78	10.2	2.95	4.43	4.70	7.07	2.59	3.89	6.78	10.2	6.43	9.66
	46	6.49	9.75	2.82	4.24	4.50	6.76	2.48	3.72	6.49	9.75	6.15	9.24
	48	6.22	9.34	2.70	4.06	4.31	6.48	2.37	3.57	6.22	9.34	5.89	8.86
	50	5.97	8.97	2.59	3.90	4.14	6.22	2.28	3.43	5.97	8.97	5.66	8.50
	52	5.74	8.63	2.49	3.75	3.98	5.98	2.19	3.29	5.74	8.63	5.44	8.18
	54	5.53	8.31	2.40	3.61	3.83	5.76	2.11	3.17	5.53	8.31	5.24	7.87
	56	5.33	8.01	2.32	3.48	3.70	5.56	2.04	3.06	5.33	8.01	5.05	7.59
	58	5.14	7.73	2.24	3.36	3.57	5.36	1.97	2.95	5.14	7.73	4.88	7.33
	60	4.97	7.48	2.16	3.25	3.45	5.19	1.90	2.86	4.97	7.48	4.71	7.09
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	298	449	130.0	195	207	311	114	171	298	449	283	425
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	37.3	56.1	16.2	24.4	25.9	38.9	14.2	21.4	37.3	56.1	35.4	53.1
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	14.7	22.2	14.0	21.0	10.5	15.8	7.93	11.9	14.7	22.2	13.9	20.9
BF/Ω_b	$\varphi_b BF$, kips	2.34	3.51	N/A	N/A	2.05	3.08	1.73	2.60	1.44	2.17	1.34	2.02
V_n/Ω_v	$\varphi_v V_{nx}$, kips	38.1	57.3	32.2	48.4	32.4	48.7	23.4	35.2	32.5	48.8	36.9	55.5
Z_x, in.^{3}		11.5		10.6		8.16		6.09		11.5		10.9	
L_p, ft		1.37		N/A		1.59		4.47		1.82		1.77	
L_r, ft		11.0		13.5		9.10		8.12		17.4		17.7	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

W5-W4

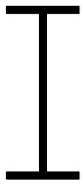
Shape		W5×		W4×	
		16		13	
Design		ASD	LRFD	ASD	LRFD
Span, ft	4	56.2	84.4	40.2	60.4
	5	49.1	73.9	32.1	48.3
	6	41.0	61.6	26.8	40.2
	7	35.1	52.8	22.9	34.5
	8	30.7	46.2	20.1	30.2
	9	27.3	41.0	17.8	26.8
	10	24.6	36.9	16.1	24.1
	11	22.3	33.6	14.6	21.9
	12	20.5	30.8	13.4	20.1
	13	18.9	28.4	12.4	18.6
	14	17.6	26.4	11.5	17.2
	15	16.4	24.6	10.7	16.1
	16	15.4	23.1	10.0	15.1
	17	14.5	21.7	9.45	14.2
	18	13.7	20.5	8.92	13.4
	19	12.9	19.4	8.45	12.7
	20	12.3	18.5	8.03	12.1
	21	11.7	17.6	7.65	11.5
	22	11.2	16.8	7.30	11.0
	23	10.7	16.1	6.98	10.5
	24	10.2	15.4	6.69	10.1
	25	9.83	14.8	6.42	9.66
	26	9.45	14.2	6.18	9.29
	27	9.10	13.7	5.95	8.94
	28	8.78	13.2	5.74	8.62
	29	8.47	12.7	5.54	8.32
	30	8.19	12.3	5.35	8.05
	32	7.68	11.5	5.02	7.54
	34	7.23	10.9	4.72	7.10
	36	6.83	10.3	4.46	6.71
	38	6.47	9.72	4.23	6.35
	40	6.14	9.23	4.02	6.04
	42	5.85	8.79	3.82	5.75
	44	5.58	8.39	3.65	5.49
	46	5.34	8.03	3.49	5.25
	48	5.12	7.69	3.35	5.03
	50	4.91	7.39	3.21	4.83
	52	4.73	7.10	3.09	4.64
	54	4.55	6.84	2.97	4.47
	56	4.39	6.60	2.87	4.31
	58	4.24	6.37	2.77	4.16
	60	4.10	6.16	2.68	4.02
Beam Properties					
W_c/Ω_b	$\varphi_b W_c$, kip-ft	246	369	161	241
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	30.7	46.2	20.1	30.2
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	12.3	18.4	7.85	11.8
BF/Ω_b	$\varphi_b BF$, kips	1.37	2.06	0.937	1.41
V_n/Ω_v	$\varphi_v V_{nx}$, kips	28.1	42.2	27.2	40.9
Z_x, in.^{3}		9.47		6.19	
L_p, ft		1.79		1.42	
L_r, ft		15.2		14.5	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-3 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



S15-S12

Table 3-4
Maximum Total Uniform Load, kips
S-Shapes (Welded)

F_y = 65 ksi

Shape		S15×				S12×							
		50		42.9		50		40.8		35		31.8	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	6	331	497	288	432	262	394	228	343	192	289	180	270
	7	284	426	254	382	225	338	195	294	165	247	154	232
	8	248	373	223	334	197	295	171	257	144	216	135	203
	9	221	332	198	297	175	263	152	228	128	192	120	180
	10	199	298	178	268	157	236	137	206	115	173	108	162
	11	180	271	162	243	143	215	124	187	105	157	98.1	147
	12	165	249	148	223	131	197	114	171	96.0	144	90.0	135
	13	153	230	137	206	121	182	105	158	88.6	133	83.0	125
	14	142	213	127	191	112	169	97.7	147	82.3	124	77.1	116
	15	132	199	119	178	105	158	91.2	137	76.8	115	72.0	108
	16	124	186	111	167	98.3	148	85.5	128	72.0	108	67.5	101
	17	117	176	105	157	92.5	139	80.4	121	67.8	102	63.5	95.4
	18	110	166	98.9	149	87.4	131	76.0	114	64.0	96.2	60.0	90.1
	19	104	157	93.7	141	82.8	124	72.0	108	60.6	91.1	56.8	85.4
	20	99.3	149	89.0	134	78.6	118	68.4	103	57.6	86.6	54.0	81.1
	21	94.5	142	84.8	127	74.9	113	65.1	97.9	54.9	82.5	51.4	77.3
	22	90.2	136	80.9	122	71.5	107	62.2	93.4	52.4	78.7	49.1	73.7
	23	86.3	130	77.4	116	68.4	103	59.5	89.4	50.1	75.3	46.9	70.5
	24	82.7	124	74.2	111	65.5	98.5	57.0	85.6	48.0	72.2	45.0	67.6
	25	79.4	119	71.2	107	62.9	94.5	54.7	82.2	46.1	69.3	43.2	64.9
	26	76.3	115	68.5	103	60.5	90.9	52.6	79.1	44.3	66.6	41.5	62.4
	27	73.5	111	65.9	99.1	58.2	87.5	50.6	76.1	42.7	64.1	40.0	60.1
	28	70.9	107	63.6	95.6	56.2	84.4	48.8	73.4	41.1	61.8	38.6	57.9
	29	68.4	103	61.4	92.3	54.2	81.5	47.2	70.9	39.7	59.7	37.2	55.9
	30	66.2	99.5	59.3	89.2	52.4	78.8	45.6	68.5	38.4	57.7	36.0	54.1
	32	62.0	93.2	55.6	83.6	49.1	73.9	42.7	64.2	36.0	54.1	33.7	50.7
	34	58.4	87.8	52.4	78.7	46.2	69.5	40.2	60.5	33.9	50.9	31.7	47.7
	36	55.1	82.9	49.4	74.3	43.7	65.7	38.0	57.1	32.0	48.1	30.0	45.1
	38	52.2	78.5	46.8	70.4	41.4	62.2	36.0	54.1	30.3	45.6	28.4	42.7
	40	49.6	74.6	44.5	66.9	39.3	59.1	34.2	51.4	28.8	43.3	27.0	40.6
	42	47.3	71.0	42.4	63.7	37.4	56.3	32.6	48.9	27.4	41.2	25.7	38.6
	44	45.1	67.8	40.5	60.8	35.7	53.7	31.1	46.7	26.2	39.4	24.5	36.9
	46	43.2	64.9	38.7	58.2	34.2	51.4	29.7	44.7	25.0	37.6	23.5	35.3
	48	41.4	62.2	37.1	55.7	32.8	49.2	28.5	42.8	24.0	36.1	22.5	33.8
	50	39.7	59.7	35.6	53.5	31.4	47.3	27.3	41.1	23.0	34.6	21.6	32.4
	52	38.2	57.4	34.2	51.5	30.2	45.5	26.3	39.5	22.2	33.3	20.8	31.2
	54	36.8	55.3	33.0	49.5	29.1	43.8	25.3	38.1	21.3	32.1	20.0	30.0
	56	35.4	53.3	31.8	47.8	28.1	42.2	24.4	36.7	20.6	30.9	19.3	29.0
	58	34.2	51.4	30.7	46.1	27.1	40.7	23.6	35.4	19.9	29.9	18.6	28.0
	60	33.1	49.7	29.7	44.6	26.2	39.4	22.8	34.3	19.2	28.9	18.0	27.0
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1990	2980	1780	2680	1570	2360	1370	2060	1150	1730	1080	1620
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	248	373	223	334	197	295	171	257	144	216	135	203
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	93.9	141	86.3	130	73.4	110	66.0	99.2	55.5	83.4	52.8	79.4
BF/Ω_b	$\varphi_b BF$, kips	15.0	22.6	14.1	21.2	9.45	14.2	9.49	14.3	9.23	13.9	8.91	13.4
V_n/Ω_v	$\varphi_v V_{nx}$, kips	193	290	144	216	193	289	132	199	120	180	98.1	147
Z_x, in.^{3}		76.5		68.6		60.6		52.7		44.4		41.6	
L_p, ft		1.59		1.66		1.58		1.62		1.52		1.56	
L_r, ft		11.9		11.3		14.6		12.7		11.1		10.8	

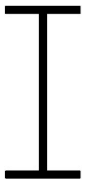
ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

Note 1: Beams must be laterally supported if Table 3-4 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

Table 3-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)



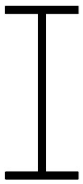
S10-S7

Shape		S10×				S8×				S7×			
		35		25.4		23		18.4		20		15.3	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	6	152	228	122	183	82.6	124	70.5	106	61.8	93.0	51.5	77.4
	7	130	196	104	157	70.8	106	60.4	90.8	53.0	79.7	44.1	66.3
	8	114	171	91.1	137	62.0	93.1	52.9	79.5	46.4	69.7	38.6	58.0
	9	101	152	81.0	122	55.1	82.8	47.0	70.6	41.2	62.0	34.3	51.6
	10	91.1	137	72.9	110	49.6	74.5	42.3	63.6	37.1	55.8	30.9	46.4
	11	82.8	124	66.3	99.6	45.1	67.7	38.5	57.8	33.7	50.7	28.1	42.2
	12	75.9	114	60.8	91.3	41.3	62.1	35.2	53.0	30.9	46.5	25.7	38.7
	13	70.1	105	56.1	84.3	38.1	57.3	32.5	48.9	28.5	42.9	23.8	35.7
	14	65.1	97.8	52.1	78.3	35.4	53.2	30.2	45.4	26.5	39.8	22.1	33.2
	15	60.7	91.3	48.6	73.1	33.0	49.7	28.2	42.4	24.7	37.2	20.6	30.9
	16	56.9	85.6	45.6	68.5	31.0	46.6	26.4	39.7	23.2	34.9	19.3	29.0
	17	53.6	80.5	42.9	64.5	29.2	43.8	24.9	37.4	21.8	32.8	18.2	27.3
	18	50.6	76.1	40.5	60.9	27.5	41.4	23.5	35.3	20.6	31.0	17.2	25.8
	19	47.9	72.0	38.4	57.7	26.1	39.2	22.3	33.5	19.5	29.4	16.3	24.4
	20	45.5	68.4	36.5	54.8	24.8	37.2	21.1	31.8	18.6	27.9	15.4	23.2
	21	43.4	65.2	34.7	52.2	23.6	35.5	20.1	30.3	17.7	26.6	14.7	22.1
	22	41.4	62.2	33.1	49.8	22.5	33.9	19.2	28.9	16.9	25.4	14.0	21.1
	23	39.6	59.5	31.7	47.6	21.5	32.4	18.4	27.6	16.1	24.2	13.4	20.2
	24	37.9	57.0	30.4	45.7	20.7	31.0	17.6	26.5	15.5	23.2	12.9	19.3
	25	36.4	54.8	29.2	43.8	19.8	29.8	16.9	25.4	14.8	22.3	12.4	18.6
	26	35.0	52.7	28.0	42.2	19.1	28.7	16.3	24.5	14.3	21.5	11.9	17.9
	27	33.7	50.7	27.0	40.6	18.4	27.6	15.7	23.5	13.7	20.7	11.4	17.2
	28	32.5	48.9	26.0	39.1	17.7	26.6	15.1	22.7	13.3	19.9	11.0	16.6
	29	31.4	47.2	25.1	37.8	17.1	25.7	14.6	21.9	12.8	19.2	10.6	16.0
	30	30.4	45.6	24.3	36.5	16.5	24.8	14.1	21.2	12.4	18.6	10.3	15.5
	32	28.5	42.8	22.8	34.2	15.5	23.3	13.2	19.9	11.6	17.4	9.65	14.5
	34	26.8	40.3	21.4	32.2	14.6	21.9	12.4	18.7	10.9	16.4	9.08	13.7
	36	25.3	38.0	20.3	30.4	13.8	20.7	11.7	17.7	10.3	15.5	8.58	12.9
	38	24.0	36.0	19.2	28.8	13.0	19.6	11.1	16.7	9.76	14.7	8.13	12.2
	40	22.8	34.2	18.2	27.4	12.4	18.6	10.6	15.9	9.28	13.9	7.72	11.6
	42	21.7	32.6	17.4	26.1	11.8	17.7	10.1	15.1	8.83	13.3	7.35	11.1
	44	20.7	31.1	16.6	24.9	11.3	16.9	9.61	14.4	8.43	12.7	7.02	10.5
	46	19.8	29.8	15.9	23.8	10.8	16.2	9.19	13.8	8.07	12.1	6.71	10.1
	48	19.0	28.5	15.2	22.8	10.3	15.5	8.81	13.2	7.73	11.6	6.43	9.67
	50	18.2	27.4	14.6	21.9	9.91	14.9	8.46	12.7	7.42	11.2	6.18	9.28
	52	17.5	26.3	14.0	21.1	9.53	14.3	8.13	12.2	7.14	10.7	5.94	8.93
	54	16.9	25.4	13.5	20.3	9.18	13.8	7.83	11.8	6.87	10.3	5.72	8.59
	56	16.3	24.4	13.0	19.6	8.85	13.3	7.55	11.4	6.63	10.0	5.51	8.29
	58	15.7	23.6	12.6	18.9	8.54	12.8	7.29	11.0	6.40	9.62	5.32	8.00
	60	15.2	22.8	12.2	18.3	8.26	12.4	7.05	10.6	6.18	9.30	5.15	7.74
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	911	1370	729	1100	496	745	423	636	371	558	309	464
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	114	171	91.1	137	62.0	93.1	52.9	79.5	46.4	69.7	38.6	58.0
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	42.6	64.1	35.9	54.0	23.5	35.3	20.9	31.4	17.5	26.3	15.2	22.8
BF/Ω_b	$\varphi_b BF$, kips	6.28	9.44	6.13	9.21	4.05	6.08	3.92	5.89	2.98	4.48	3.01	4.53
V_n/Ω_v	$\varphi_v V_{nx}$, kips	139	208	72.6	109	82.4	124	50.6	76.1	73.6	111	41.2	61.9
Z_x, in.^{3}		35.1		28.1		19.1		16.3		14.3		11.9	
L_p, ft		1.39		1.49		1.24		1.30		1.14		1.20	
L_r, ft		12.7		10.5		10.7		9.46		10.8		8.97	

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

Note 1: Beams must be laterally supported if Table 3-4 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



S6-S4

Table 3-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)

F_y = 65 ksi

Shape		S6×				S5×				S4×			
		17.25		12.5		14.75		10		9.5		7.7	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	6	45.4	68.3	36.2	54.3	31.7	47.6	24.1	36.3	17.3	25.9	14.9	22.4
	7	38.9	58.5	31.0	46.6	27.2	40.8	20.7	31.1	14.8	22.2	12.8	19.2
	8	34.1	51.2	27.1	40.8	23.8	35.7	18.1	27.2	12.9	19.5	11.2	16.8
	9	30.3	45.5	24.1	36.2	21.1	31.8	16.1	24.2	11.5	17.3	9.95	15.0
	10	27.2	41.0	21.7	32.6	19.0	28.6	14.5	21.8	10.4	15.6	8.95	13.5
	11	24.8	37.2	19.7	29.6	17.3	26.0	13.2	19.8	9.41	14.1	8.14	12.2
	12	22.7	34.1	18.1	27.2	15.8	23.8	12.1	18.1	8.63	13.0	7.46	11.2
	13	21.0	31.5	16.7	25.1	14.6	22.0	11.1	16.7	7.96	12.0	6.89	10.4
	14	19.5	29.3	15.5	23.3	13.6	20.4	10.3	15.5	7.40	11.1	6.39	9.61
	15	18.2	27.3	14.5	21.7	12.7	19.1	9.65	14.5	6.90	10.4	5.97	8.97
	16	17.0	25.6	13.6	20.4	11.9	17.9	9.05	13.6	6.47	9.73	5.60	8.41
	17	16.0	24.1	12.8	19.2	11.2	16.8	8.52	12.8	6.09	9.15	5.27	7.91
	18	15.1	22.8	12.1	18.1	10.6	15.9	8.04	12.1	5.75	8.65	4.97	7.48
	19	14.3	21.6	11.4	17.2	10.0	15.0	7.62	11.5	5.45	8.19	4.71	7.08
	20	13.6	20.5	10.8	16.3	9.51	14.3	7.24	10.9	5.18	7.78	4.48	6.73
	21	13.0	19.5	10.3	15.5	9.06	13.6	6.89	10.4	4.93	7.41	4.26	6.41
	22	12.4	18.6	9.86	14.8	8.65	13.0	6.58	9.89	4.71	7.07	4.07	6.12
	23	11.8	17.8	9.43	14.2	8.27	12.4	6.30	9.46	4.50	6.77	3.89	5.85
	24	11.4	17.1	9.04	13.6	7.92	11.9	6.03	9.07	4.31	6.48	3.73	5.61
	25	10.9	16.4	8.68	13.0	7.61	11.4	5.79	8.70	4.14	6.22	3.58	5.38
	26	10.5	15.8	8.34	12.5	7.32	11.0	5.57	8.37	3.98	5.99	3.44	5.18
	27	10.1	15.2	8.03	12.1	7.04	10.6	5.36	8.06	3.83	5.76	3.32	4.98
	28	9.73	14.6	7.75	11.6	6.79	10.2	5.17	7.77	3.70	5.56	3.20	4.81
	29	9.40	14.1	7.48	11.2	6.56	9.86	4.99	7.50	3.57	5.37	3.09	4.64
	30	9.08	13.7	7.23	10.9	6.34	9.53	4.83	7.25	3.45	5.19	2.98	4.49
	32	8.51	12.8	6.78	10.2	5.94	8.93	4.52	6.80	3.24	4.86	2.80	4.20
	34	8.01	12.0	6.38	9.59	5.59	8.41	4.26	6.40	3.05	4.58	2.63	3.96
	36	7.57	11.4	6.03	9.06	5.28	7.94	4.02	6.05	2.88	4.32	2.49	3.74
	38	7.17	10.8	5.71	8.58	5.01	7.52	3.81	5.73	2.72	4.10	2.36	3.54
	40	6.81	10.2	5.42	8.15	4.75	7.15	3.62	5.44	2.59	3.89	2.24	3.36
	42	6.49	9.75	5.16	7.76	4.53	6.81	3.45	5.18	2.47	3.71	2.13	3.20
	44	6.19	9.31	4.93	7.41	4.32	6.50	3.29	4.95	2.35	3.54	2.03	3.06
	46	5.92	8.90	4.72	7.09	4.13	6.21	3.15	4.73	2.25	3.38	1.95	2.93
	48	5.68	8.53	4.52	6.79	3.96	5.96	3.02	4.53	2.16	3.24	1.87	2.80
	50	5.45	8.19	4.34	6.52	3.80	5.72	2.90	4.35	2.07	3.11	1.79	2.69
	52	5.24	7.88	4.17	6.27	3.66	5.50	2.78	4.19	1.99	2.99	1.72	2.59
	54	5.05	7.58	4.02	6.04	3.52	5.29	2.68	4.03	1.92	2.88	1.66	2.49
	56	4.87	7.31	3.87	5.82	3.40	5.10	2.59	3.89	1.85	2.78	1.60	2.40
	58	4.70	7.06	3.74	5.62	3.28	4.93	2.50	3.75	1.79	2.68	1.54	2.32
	60	4.54	6.83	3.62	5.43	3.17	4.76	2.41	3.63	1.73	2.59	1.49	2.24
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	272	410	217	326	190	286	145	218	104	156	89.5	135
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	34.1	51.2	27.1	40.8	23.8	35.7	18.1	27.2	12.9	19.5	11.2	16.8
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	12.7	19.1	10.7	16.0	8.82	13.3	7.12	10.7	4.92	7.39	4.39	6.60
BF/Ω_b	$\varphi_b BF$, kips	2.08	3.12	2.21	3.32	1.28	1.93	1.52	2.28	0.895	1.35	0.948	1.42
V_n/Ω_v	$\varphi_v V_{nx}$, kips	65.2	97.9	32.5	48.9	57.7	86.7	25.0	37.6	30.5	45.8	18.0	27.1
Z_x, in.^{3}		10.5		8.36		7.33		5.58		3.99		3.45	
L_p, ft		1.05		1.10		0.952		1.00		0.883		0.907	
L_r, ft		11.3		8.54		12.6		8.23		9.84		8.08	

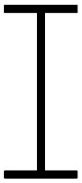
ASD	LRFD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

Note 1: Beams must be laterally supported if Table 3-4 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

Table 3-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)



S3

Shape		S3×			
		7.5		5.7	
Design		ASD	LRFD	ASD	LRFD
Span, ft	6	10.0	15.1	8.30	12.5
	7	8.60	12.9	7.12	10.7
	8	7.52	11.3	6.23	9.36
	9	6.69	10.1	5.54	8.32
	10	6.02	9.05	4.98	7.49
	11	5.47	8.23	4.53	6.81
	12	5.02	7.54	4.15	6.24
	13	4.63	6.96	3.83	5.76
	14	4.30	6.46	3.56	5.35
	15	4.01	6.03	3.32	4.99
	16	3.76	5.66	3.11	4.68
	17	3.54	5.32	2.93	4.40
	18	3.34	5.03	2.77	4.16
	19	3.17	4.76	2.62	3.94
	20	3.01	4.52	2.49	3.74
	21	2.87	4.31	2.37	3.57
	22	2.74	4.11	2.26	3.40
	23	2.62	3.93	2.17	3.26
	24	2.51	3.77	2.08	3.12
	25	2.41	3.62	1.99	3.00
	26	2.32	3.48	1.92	2.88
	27	2.23	3.35	1.85	2.77
	28	2.15	3.23	1.78	2.67
	29	2.08	3.12	1.72	2.58
	30	2.01	3.02	1.66	2.50
	32	1.88	2.83	1.56	2.34
	34	1.77	2.66	1.47	2.20
	36	1.67	2.51	1.38	2.08
	38	1.58	2.38	1.31	1.97
	40	1.50	2.26	1.25	1.87
	42	1.43	2.15	1.19	1.78
	44	1.37	2.06	1.13	1.70
	46	1.31	1.97	1.08	1.63
	48	1.25	1.89	1.04	1.56
	50	1.20	1.81	1.00	1.50
	52	1.16	1.74	0.958	1.44
	54	1.11	1.68	0.923	1.39
	56	1.07	1.62	0.890	1.34
	58	1.04	1.56	0.859	1.29
	60	1.00	1.51	0.830	1.25
Beam Properties					
W_c/Ω_b	$\varphi_b W_c$, kip-ft	60.2	90.5	49.8	74.9
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	7.52	11.3	6.23	9.36
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	2.82	4.23	2.44	3.66
BF/Ω_b	$\varphi_b BF$, kips	0.429	0.645	0.503	0.756
V_n/Ω_v	$\varphi_v V_{nx}$, kips	24.5	36.7	11.9	17.9
Z_x, in.^{3}		2.32		1.92	
L_p, ft		0.797		0.817	
L_r, ft		11.8		8.35	

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

Note 1: Beams must be laterally supported if Table 3-4 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

C15-C12

Table 3-5
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 65 ksi

Shape		C15×						C12×					
		50		40		33.9		30		25		20.7	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	502	754					286	430	216	326		
	4	443	666	364	548	280	422	219	329	190	286	158	238
	5	354	533	297	446	262	394	175	263	152	229	132	199
	6	295	444	247	372	218	328	146	219	127	190	110	166
	7	253	381	212	319	187	281	125	188	109	163	94.5	142
	8	222	333	186	279	164	246	109	164	95.0	143	82.7	124
	9	197	296	165	248	146	219	97.2	146	84.5	127	73.5	111
	10	177	266	148	223	131	197	87.4	131	76.0	114	66.2	99.5
	11	161	242	135	203	119	179	79.5	119	69.1	104	60.2	90.4
	12	148	222	124	186	109	164	72.9	110	63.4	95.2	55.1	82.9
	13	136	205	114	172	101	152	67.3	101	58.5	87.9	50.9	76.5
	14	127	190	106	159	93.6	141	62.5	93.9	54.3	81.6	47.3	71.0
	15	118	178	98.9	149	87.4	131	58.3	87.6	50.7	76.2	44.1	66.3
	16	111	166	92.8	139	81.9	123	54.7	82.1	47.5	71.4	41.4	62.2
	17	104	157	87.3	131	77.1	116	51.4	77.3	44.7	67.2	38.9	58.5
	18	98.5	148	82.5	124	72.8	109	48.6	73.0	42.2	63.5	36.8	55.3
	19	93.3	140	78.1	117	69.0	104	46.0	69.2	40.0	60.1	34.8	52.3
	20	88.6	133	74.2	112	65.5	98.5	43.7	65.7	38.0	57.1	33.1	49.7
	21	84.4	127	70.7	106	62.4	93.8	41.6	62.6	36.2	54.4	31.5	47.4
	22	80.6	121	67.5	101	59.6	89.5	39.7	59.7	34.6	51.9	30.1	45.2
	23	77.1	116	64.5	97.0	57.0	85.6	38.0	57.1	33.1	49.7	28.8	43.2
	24	73.8	111	61.8	93.0	54.6	82.1	36.4	54.8	31.7	47.6	27.6	41.4
	25	70.9	107	59.4	89.2	52.4	78.8	35.0	52.6	30.4	45.7	26.5	39.8
	26	68.2	102	57.1	85.8	50.4	75.8	33.6	50.6	29.2	44.0	25.4	38.3
	27	65.6	98.7	55.0	82.6	48.5	72.9	32.4	48.7	28.2	42.3	24.5	36.8
	28	63.3	95.1	53.0	79.7	46.8	70.3	31.2	46.9	27.2	40.8	23.6	35.5
	29	61.1	91.9	51.2	76.9	45.2	67.9	30.2	45.3	26.2	39.4	22.8	34.3
	30	59.1	88.8	49.5	74.4	43.7	65.7	29.1	43.8	25.3	38.1	22.1	33.2
	31	57.2	85.9	47.9	72.0	42.3	63.5	28.2	42.4	24.5	36.9	21.3	32.1
	32	55.4	83.2	46.4	69.7	40.9	61.5	27.3	41.1	23.8	35.7	20.7	31.1
	33	53.7	80.7	45.0	67.6	39.7	59.7	26.5	39.8	23.0	34.6	20.1	30.1
	34	52.1	78.3	43.7	65.6	38.5	57.9	25.7	38.7	22.4	33.6	19.5	29.3
	35	50.6	76.1	42.4	63.7	37.4	56.3	25.0	37.6	21.7	32.6	18.9	28.4
	36	49.2	74.0	41.2	62.0	36.4	54.7	24.3	36.5	21.1	31.7	18.4	27.6
	37	47.9	72.0	40.1	60.3	35.4	53.2	23.6	35.5	20.5	30.9	17.9	26.9
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1770	2660	1480	2230	1310	1970	874	1310	760	1140	662	995
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	222	333	186	279	164	246	109	164	95.0	143	82.7	124
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	78.4	118	67.6	102	60.9	91.5	39.4	59.2	35.0	52.7	31.4	47.2
BF/Ω_b	$\varphi_b BF$, kips	13.4	20.2	13.2	19.9	12.5	18.9	8.20	12.3	7.96	12.0	7.44	11.2
V_n/Ω_v	$\varphi_v V_{nx}$, kips	251	377	182	274	140	211	143	215	108	163	79.0	119
Z_x, in.^{3}		68.3		57.2		50.5		33.7		29.3		25.5	
L_p, ft		1.34		1.38		1.40		1.20		1.23		1.26	
L_r, ft		12.0		10.3		9.61		9.72		8.77		8.16	

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

Note 1: Beams must be laterally supported if Table 3-5 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

Table 3-5 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

C10-C9

Shape		C10×								C9×			
		30		25		20		15.3		20		15	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	231	347	199	299	167	251	112	168	146	220	118	177
	4	173	260	149	224	125	188	102	154	110	165	88.2	133
	5	139	208	119	179	100	151	82.0	123	87.7	132	70.6	106
	6	115	174	99.5	150	83.5	125	68.3	103	73.1	110	58.8	88.4
	7	99.0	149	85.3	128	71.5	108	58.6	88.0	62.6	94.2	50.4	75.8
	8	86.6	130	74.6	112	62.6	94.1	51.2	77.0	54.8	82.4	44.1	66.3
	9	77.0	116	66.3	99.7	55.6	83.6	45.6	68.5	48.7	73.2	39.2	58.9
	10	69.3	104	59.7	89.7	50.1	75.3	41.0	61.6	43.9	65.9	35.3	53.0
	11	63.0	94.7	54.3	81.5	45.5	68.4	37.3	56.0	39.9	59.9	32.1	48.2
	12	57.7	86.8	49.7	74.8	41.7	62.7	34.2	51.4	36.5	54.9	29.4	44.2
	13	53.3	80.1	45.9	69.0	38.5	57.9	31.5	47.4	33.7	50.7	27.1	40.8
	14	49.5	74.4	42.6	64.1	35.8	53.8	29.3	44.0	31.3	47.1	25.2	37.9
	15	46.2	69.4	39.8	59.8	33.4	50.2	27.3	41.1	29.2	43.9	23.5	35.4
	16	43.3	65.1	37.3	56.1	31.3	47.0	25.6	38.5	27.4	41.2	22.1	33.2
	17	40.8	61.3	35.1	52.8	29.5	44.3	24.1	36.2	25.8	38.8	20.8	31.2
	18	38.5	57.9	33.2	49.8	27.8	41.8	22.8	34.2	24.4	36.6	19.6	29.5
	19	36.5	54.8	31.4	47.2	26.4	39.6	21.6	32.4	23.1	34.7	18.6	27.9
	20	34.6	52.1	29.8	44.9	25.0	37.6	20.5	30.8	21.9	33.0	17.6	26.5
	21	33.0	49.6	28.4	42.7	23.8	35.8	19.5	29.3	20.9	31.4	16.8	25.3
	22	31.5	47.3	27.1	40.8	22.8	34.2	18.6	28.0	19.9	30.0	16.0	24.1
	23	30.1	45.3	25.9	39.0	21.8	32.7	17.8	26.8	19.1	28.7	15.3	23.1
	24	28.9	43.4	24.9	37.4	20.9	31.4	17.1	25.7	18.3	27.5	14.7	22.1
	25	27.7	41.7	23.9	35.9	20.0	30.1	16.4	24.6	17.5	26.4	14.1	21.2
	26	26.6	40.1	23.0	34.5	19.3	29.0	15.8	23.7	16.9	25.4	13.6	20.4
	27	25.7	38.6	22.1	33.2	18.5	27.9	15.2	22.8	16.2	24.4	13.1	19.6
	28	24.7	37.2	21.3	32.0	17.9	26.9	14.6	22.0	15.7	23.5	12.6	18.9
	29	23.9	35.9	20.6	30.9	17.3	26.0	14.1	21.2	15.1	22.7	12.2	18.3
	30	23.1	34.7	19.9	29.9	16.7	25.1	13.7	20.5	14.6	22.0	11.8	17.7
	31	22.3	33.6	19.3	28.9	16.2	24.3	13.2	19.9	14.1	21.3	11.4	17.1
	32	21.7	32.5	18.7	28.0	15.6	23.5	12.8	19.3	13.7	20.6	11.0	16.6
	33	21.0	31.6	18.1	27.2	15.2	22.8	12.4	18.7	13.3	20.0	10.7	16.1
	34	20.4	30.6	17.6	26.4	14.7	22.1	12.1	18.1	12.9	19.4	10.4	15.6
	35	19.8	29.8	17.1	25.6	14.3	21.5	11.7	17.6	12.5	18.8	10.1	15.2
	36	19.2	28.9	16.6	24.9	13.9	20.9	11.4	17.1	12.2	18.3	9.80	14.7
	37	18.7	28.1	16.1	24.2	13.5	20.3	11.1	16.7	11.9	17.8	9.54	14.3
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	693	1040	597	897	501	753	410	616	439	659	353	530
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	86.6	130	74.6	112	62.6	94.1	51.2	77.0	54.8	82.4	44.1	66.3
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	30.1	45.2	26.6	39.9	22.9	34.4	19.6	29.4	19.7	29.6	16.5	24.8
BF/Ω_b	$\varphi_b BF$, kips	5.19	7.80	5.51	8.29	5.55	8.34	5.11	7.68	4.50	6.76	4.39	6.59
V_n/Ω_v	$\varphi_v V_{nx}$, kips	157	236	123	185	88.5	133	56.0	84.2	94.2	142	59.9	90.0
Z_x, in.^{3}		26.7		23.0		19.3		15.8		16.9		13.6	
L_p, ft		1.04		1.06		1.09		1.12		1.01		1.04	
L_r, ft		11.9		9.78		8.25		7.33		8.82		7.34	

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

Note 1: Beams must be laterally supported if Table 3-5 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

C9-C7

Table 3-5 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 65 ksi

Shape		C9×		C8×						C7×			
		13.4		18.75		13.75		11.5		14.75		12.25	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	98.0	147	120	181	94.3	142	82.2	124	83.9	126	72.7	109
	4	81.1	122	90.2	136	70.7	106	62.1	93.3	62.9	94.6	54.5	81.9
	5	64.9	97.5	72.1	108	56.6	85.0	49.7	74.6	50.3	75.7	43.6	65.5
	6	54.1	81.3	60.1	90.4	47.1	70.9	41.4	62.2	41.9	63.1	36.3	54.6
	7	46.3	69.6	51.5	77.4	40.4	60.7	35.5	53.3	36.0	54.0	31.1	46.8
	8	40.5	60.9	45.1	67.8	35.4	53.1	31.0	46.7	31.5	47.3	27.2	41.0
	9	36.0	54.2	40.1	60.2	31.4	47.2	27.6	41.5	28.0	42.0	24.2	36.4
	10	32.4	48.8	36.1	54.2	28.3	42.5	24.8	37.3	25.2	37.8	21.8	32.8
	11	29.5	44.3	32.8	49.3	25.7	38.6	22.6	33.9	22.9	34.4	19.8	29.8
	12	27.0	40.6	30.1	45.2	23.6	35.4	20.7	31.1	21.0	31.5	18.2	27.3
	13	25.0	37.5	27.7	41.7	21.8	32.7	19.1	28.7	19.4	29.1	16.8	25.2
	14	23.2	34.8	25.8	38.7	20.2	30.4	17.7	26.7	18.0	27.0	15.6	23.4
	15	21.6	32.5	24.0	36.1	18.9	28.3	16.6	24.9	16.8	25.2	14.5	21.8
	16	20.3	30.5	22.5	33.9	17.7	26.6	15.5	23.3	15.7	23.6	13.6	20.5
	17	19.1	28.7	21.2	31.9	16.6	25.0	14.6	22.0	14.8	22.3	12.8	19.3
	18	18.0	27.1	20.0	30.1	15.7	23.6	13.8	20.7	14.0	21.0	12.1	18.2
	19	17.1	25.7	19.0	28.5	14.9	22.4	13.1	19.6	13.2	19.9	11.5	17.2
	20	16.2	24.4	18.0	27.1	14.1	21.3	12.4	18.7	12.6	18.9	10.9	16.4
	21	15.4	23.2	17.2	25.8	13.5	20.2	11.8	17.8	12.0	18.0	10.4	15.6
	22	14.7	22.2	16.4	24.6	12.9	19.3	11.3	17.0	11.4	17.2	9.91	14.9
	23	14.1	21.2	15.7	23.6	12.3	18.5	10.8	16.2	10.9	16.4	9.48	14.2
	24	13.5	20.3	15.0	22.6	11.8	17.7	10.3	15.6	10.5	15.8	9.08	13.7
	25	13.0	19.5	14.4	21.7	11.3	17.0	9.93	14.9	10.1	15.1	8.72	13.1
	26	12.5	18.8	13.9	20.9	10.9	16.4	9.55	14.4	9.68	14.6	8.38	12.6
	27	12.0	18.1	13.4	20.1	10.5	15.7	9.20	13.8	9.32	14.0	8.07	12.1
	28	11.6	17.4	12.9	19.4	10.1	15.2	8.87	13.3	8.99	13.5	7.78	11.7
	29	11.2	16.8	12.4	18.7	9.75	14.7	8.56	12.9	8.68	13.0	7.52	11.3
	30	10.8	16.3	12.0	18.1	9.43	14.2	8.28	12.4	8.39	12.6	7.27	10.9
	31	10.5	15.7	11.6	17.5	9.12	13.7	8.01	12.0	8.12	12.2	7.03	10.6
	32	10.1	15.2	11.3	16.9	8.84	13.3	7.76	11.7	7.87	11.8	6.81	10.2
	33	9.83	14.8	10.9	16.4	8.57	12.9	7.52	11.3	7.63	11.5	6.60	9.93
	34	9.54	14.3	10.6	15.9	8.32	12.5	7.30	11.0	7.40	11.1	6.41	9.64
	35	9.27	13.9	10.3	15.5	8.08	12.1	7.09	10.7	7.19	10.8	6.23	9.36
	36	9.01	13.5	10.0	15.1	7.86	11.8	6.90	10.4	6.99	10.5	6.05	9.10
	37	8.77	13.2	9.75	14.7	7.64	11.5	6.71	10.1	6.80	10.2	5.89	8.85
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	324	488	361	542	283	425	248	373	252	378	218	328
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	40.5	60.9	45.1	67.8	35.4	53.1	31.0	46.7	31.5	47.3	27.2	41.0
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	15.5	23.3	16.1	24.1	13.1	19.7	11.8	17.8	11.3	17.0	10.1	15.1
BF/Ω_b	$\varphi_b BF$, kips	4.23	6.35	3.43	5.15	3.54	5.33	3.37	5.07	2.61	3.92	2.71	4.07
V_n/Ω_v	$\varphi_v V_{nx}$, kips	49.0	73.6	91.0	137	56.6	85.1	41.1	61.8	68.5	103	51.3	77.1
Z_x, in.^{3}		12.5		13.9		10.9		9.57		9.70		8.40	
L_p, ft		1.05		0.939		0.963		0.983		0.882		0.891	
L_r, ft		6.99		9.41		7.23		6.68		8.60		7.23	

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

Note 1: Beams must be laterally supported if Table 3-5 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

Table 3-5 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

C7-C5

Shape		C7×		C6×						C5×			
		9.8		13		10.5		8.2		9		6.7	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	61.8	92.8	63.0	94.6	53.3	80.1	44.5	66.8	37.8	56.8	30.4	45.8
	4	46.3	69.6	47.2	71.0	40.0	60.1	33.3	50.1	28.3	42.6	22.8	34.3
	5	37.1	55.7	37.8	56.8	32.0	48.0	26.7	40.1	22.7	34.1	18.3	27.5
	6	30.9	46.4	31.5	47.3	26.6	40.0	22.2	33.4	18.9	28.4	15.2	22.9
	7	26.5	39.8	27.0	40.6	22.8	34.3	19.1	28.6	16.2	24.3	13.0	19.6
	8	23.2	34.8	23.6	35.5	20.0	30.0	16.7	25.1	14.2	21.3	11.4	17.2
	9	20.6	30.9	21.0	31.5	17.8	26.7	14.8	22.3	12.6	18.9	10.1	15.3
	10	18.5	27.8	18.9	28.4	16.0	24.0	13.3	20.0	11.3	17.0	9.13	13.7
	11	16.8	25.3	17.2	25.8	14.5	21.8	12.1	18.2	10.3	15.5	8.30	12.5
	12	15.4	23.2	15.7	23.7	13.3	20.0	11.1	16.7	9.45	14.2	7.61	11.4
	13	14.3	21.4	14.5	21.8	12.3	18.5	10.3	15.4	8.72	13.1	7.03	10.6
	14	13.2	19.9	13.5	20.3	11.4	17.2	9.53	14.3	8.10	12.2	6.52	9.81
	15	12.4	18.6	12.6	18.9	10.7	16.0	8.89	13.4	7.56	11.4	6.09	9.15
	16	11.6	17.4	11.8	17.7	9.99	15.0	8.34	12.5	7.09	10.7	5.71	8.58
	17	10.9	16.4	11.1	16.7	9.40	14.1	7.85	11.8	6.67	10.0	5.37	8.08
	18	10.3	15.5	10.5	15.8	8.88	13.3	7.41	11.1	6.30	9.47	5.07	7.63
	19	9.75	14.7	9.94	14.9	8.41	12.6	7.02	10.6	5.97	8.97	4.81	7.23
	20	9.26	13.9	9.45	14.2	7.99	12.0	6.67	10.0	5.67	8.52	4.57	6.86
	21	8.82	13.3	9.00	13.5	7.61	11.4	6.35	9.55	5.40	8.12	4.35	6.54
	22	8.42	12.7	8.59	12.9	7.27	10.9	6.06	9.11	5.15	7.75	4.15	6.24
	23	8.06	12.1	8.21	12.3	6.95	10.4	5.80	8.72	4.93	7.41	3.97	5.97
	24	7.72	11.6	7.87	11.8	6.66	10.0	5.56	8.35	4.72	7.10	3.81	5.72
	25	7.41	11.1	7.56	11.4	6.39	9.61	5.33	8.02	4.54	6.82	3.65	5.49
	26	7.13	10.7	7.27	10.9	6.15	9.24	5.13	7.71	4.36	6.56	3.51	5.28
	27	6.86	10.3	7.00	10.5	5.92	8.90	4.94	7.42	4.20	6.31	3.38	5.08
	28	6.62	9.95	6.75	10.1	5.71	8.58	4.76	7.16	4.05	6.09	3.26	4.90
	29	6.39	9.60	6.51	9.79	5.51	8.28	4.60	6.91	3.91	5.88	3.15	4.73
	30	6.18	9.28	6.30	9.46	5.33	8.01	4.45	6.68	3.78	5.68	3.04	4.58
	31	5.98	8.98	6.09	9.16	5.16	7.75	4.30	6.47	3.66	5.50	2.95	4.43
	32	5.79	8.70	5.90	8.87	5.00	7.51	4.17	6.26	3.54	5.33	2.85	4.29
	33	5.61	8.44	5.72	8.60	4.84	7.28	4.04	6.07	3.44	5.16	2.77	4.16
	34	5.45	8.19	5.56	8.35	4.70	7.07	3.92	5.90	3.34	5.01	2.69	4.04
	35	5.29	7.96	5.40	8.11	4.57	6.86	3.81	5.73	3.24	4.87	2.61	3.92
	36	5.15	7.74	5.25	7.89	4.44	6.67	3.70	5.57	3.15	4.73	2.54	3.81
	37	5.01	7.53	5.11	7.67	4.32	6.49	3.60	5.42	3.06	4.61	2.47	3.71
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	185	278	189	284	160	240	133	200	113	170	91.3	137
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	23.2	34.8	23.6	35.5	20.0	30.0	16.7	25.1	14.2	21.3	11.4	17.2
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	8.85	13.3	8.42	12.7	7.34	11.0	6.38	9.59	5.18	7.79	4.35	6.54
BF/Ω_b	$\varphi_b BF$, kips	2.62	3.94	1.81	2.72	1.96	2.94	1.94	2.92	1.29	1.95	1.34	2.02
V_n/Ω_v	$\varphi_v V_{nx}$, kips	34.3	51.6	61.2	92.0	44.0	66.1	28.0	42.1	37.9	57.0	22.2	33.3
Z_x, in.^{3}		7.14		7.28		6.16		5.14		4.37		3.52	
L_p, ft		0.910		0.817		0.825		0.838		0.765		0.766	
L_r, ft		6.38		9.20		7.28		6.14		7.71		6.04	

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90
Ω_v = 1.67	φ_v = 0.90

Note 1: Beams must be laterally supported if Table 3-5 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

C4-C3

Table 3-5 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 65 ksi

Shape		C4×				C3×					
		7.25		5.4		6		5		4.1	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	24.4	36.7	19.6	29.5	15.0	22.5	13.1	19.6	11.3	17.0
	4	18.3	27.5	14.7	22.1	11.2	16.9	9.80	14.7	8.50	12.8
	5	14.6	22.0	11.8	17.7	8.98	13.5	7.84	11.8	6.80	10.2
	6	12.2	18.3	9.82	14.8	7.48	11.2	6.53	9.82	5.67	8.52
	7	10.5	15.7	8.41	12.6	6.41	9.64	5.60	8.41	4.86	7.30
	8	9.15	13.7	7.36	11.1	5.61	8.43	4.90	7.36	4.25	6.39
	9	8.13	12.2	6.54	9.84	4.99	7.50	4.35	6.54	3.78	5.68
	10	7.32	11.0	5.89	8.85	4.49	6.75	3.92	5.89	3.40	5.11
	11	6.65	10.0	5.35	8.05	4.08	6.13	3.56	5.35	3.09	4.64
	12	6.10	9.17	4.91	7.38	3.74	5.62	3.27	4.91	2.83	4.26
	13	5.63	8.46	4.53	6.81	3.45	5.19	3.01	4.53	2.61	3.93
	14	5.23	7.86	4.21	6.32	3.21	4.82	2.80	4.21	2.43	3.65
	15	4.88	7.33	3.93	5.90	2.99	4.50	2.61	3.93	2.27	3.41
	16	4.57	6.87	3.68	5.53	2.81	4.22	2.45	3.68	2.12	3.19
	17	4.30	6.47	3.46	5.21	2.64	3.97	2.30	3.46	2.00	3.01
	18	4.07	6.11	3.27	4.92	2.49	3.75	2.18	3.27	1.89	2.84
	19	3.85	5.79	3.10	4.66	2.36	3.55	2.06	3.10	1.79	2.69
	20	3.66	5.50	2.95	4.43	2.24	3.37	1.96	2.94	1.70	2.55
	21	3.48	5.24	2.80	4.22	2.14	3.21	1.87	2.80	1.62	2.43
	22	3.33	5.00	2.68	4.02	2.04	3.07	1.78	2.68	1.55	2.32
	23	3.18	4.78	2.56	3.85	1.95	2.93	1.70	2.56	1.48	2.22
	24	3.05	4.58	2.45	3.69	1.87	2.81	1.63	2.45	1.42	2.13
	25	2.93	4.40	2.36	3.54	1.80	2.70	1.57	2.36	1.36	2.04
	26	2.81	4.23	2.27	3.41	1.73	2.60	1.51	2.27	1.31	1.97
	27	2.71	4.07	2.18	3.28	1.66	2.50	1.45	2.18	1.26	1.89
	28	2.61	3.93	2.10	3.16	1.60	2.41	1.40	2.10	1.21	1.82
	29	2.52	3.79	2.03	3.05	1.55	2.33	1.35	2.03	1.17	1.76
	30	2.44	3.67	1.96	2.95	1.50	2.25	1.31	1.96	1.13	1.70
	31	2.36	3.55	1.90	2.86	1.45	2.18	1.26	1.90	1.10	1.65
	32	2.29	3.44	1.84	2.77	1.40	2.11	1.22	1.84	1.06	1.60
	33	2.22	3.33	1.78	2.68	1.36	2.04	1.19	1.78	1.03	1.55
	34	2.15	3.23	1.73	2.60	1.32	1.98	1.15	1.73	1.00	1.50
	35	2.09	3.14	1.68	2.53	1.28	1.93	1.12	1.68	0.971	1.46
	36	2.03	3.06	1.64	2.46	1.25	1.87	1.09	1.64	0.944	1.42
	37	1.98	2.97	1.59	2.39	1.21	1.82	1.06	1.59	0.919	1.38
Beam Properties											
W_c/Ω_b	$\varphi_b W_c$, kip-ft	73.2	110	58.9	88.5	44.9	67.5	39.2	58.9	34.0	51.1
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	9.15	13.7	7.36	11.1	5.61	8.43	4.90	7.36	4.25	6.39
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	3.33	5.00	2.79	4.19	2.01	3.03	1.80	2.70	1.61	2.41
BF/Ω_b	$\varphi_b BF$, kips	0.781	1.17	0.846	1.270	0.383	0.575	0.426	0.640	0.450	0.677
V_n/Ω_v	$\varphi_v V_{nx}$, kips	30.0	45.1	17.2	25.8	24.9	37.5	18.1	27.2	11.9	17.9
Z_x, in.^{3}		2.82		2.27		1.73		1.51		1.31	
L_p, ft		0.697		0.694		0.644		0.635		0.622	
L_r, ft		8.15		6.10		10.0		7.92		6.49	

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

Note 1: Beams must be laterally supported if Table 3-5 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

MC8-MC4

Table 3-6
Maximum Total Uniform Load, kips
MC-Shapes (Welded)

F_y = 65 ksi

Shape		MC8×				MC6×				MC4×			
		19.8 [f2]		13.5 [f2]		14.6 [f2]		10 [f2]		6.5 [f2]		6.1 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	73.1	110	22.7	34.1	65.9	99.0	22.0	33.1	19.5	29.4	20.8	31.2
	4	54.8	82.4	17.0	25.5	49.4	74.3	16.5	24.8	14.7	22.0	15.6	23.4
	5	43.8	65.9	13.6	20.4	39.5	59.4	13.2	19.9	11.7	17.6	12.5	18.7
	6	36.5	54.9	11.3	17.0	32.9	49.5	11.0	16.5	9.77	14.7	10.4	15.6
	7	31.3	47.1	9.71	14.6	28.2	42.4	9.43	14.2	8.38	12.6	8.90	13.4
	8	27.4	41.2	8.50	12.8	24.7	37.1	8.26	12.4	7.33	11.0	7.78	11.7
	9	24.4	36.6	7.55	11.4	22.0	33.0	7.34	11.0	6.51	9.79	6.92	10.4
	10	21.9	32.9	6.80	10.2	19.8	29.7	6.60	9.93	5.86	8.81	6.23	9.36
	11	19.9	30.0	6.18	9.29	18.0	27.0	6.00	9.02	5.33	8.01	5.66	8.51
	12	18.3	27.5	5.67	8.52	16.5	24.8	5.50	8.27	4.89	7.34	5.19	7.80
	13	16.9	25.3	5.23	7.86	15.2	22.9	5.08	7.64	4.51	6.78	4.79	7.20
	14	15.7	23.5	4.86	7.30	14.1	21.2	4.72	7.09	4.19	6.29	4.45	6.69
	15	14.6	22.0	4.53	6.81	13.2	19.8	4.40	6.62	3.91	5.87	4.15	6.24
	16	13.7	20.6	4.25	6.39	12.4	18.6	4.13	6.20	3.66	5.51	3.89	5.85
	17	12.9	19.4	4.00	6.01	11.6	17.5	3.88	5.84	3.45	5.18	3.66	5.51
	18	12.2	18.3	3.78	5.68	11.0	16.5	3.67	5.51	3.26	4.90	3.46	5.20
	19	11.5	17.3	3.58	5.38	10.4	15.6	3.48	5.22	3.09	4.64	3.28	4.93
	20	11.0	16.5	3.40	5.11	9.88	14.9	3.30	4.96	2.93	4.41	3.11	4.68
	21	10.4	15.7	3.24	4.87	9.41	14.1	3.14	4.73	2.79	4.20	2.97	4.46
	22	9.96	15.0	3.09	4.65	8.99	13.5	3.00	4.51	2.66	4.01	2.83	4.25
	23	9.53	14.3	2.96	4.44	8.60	12.9	2.87	4.32	2.55	3.83	2.71	4.07
	24	9.13	13.7	2.83	4.26	8.24	12.4	2.75	4.14	2.44	3.67	2.59	3.90
	25	8.77	13.2	2.72	4.09	7.91	11.9	2.64	3.97	2.35	3.52	2.49	3.74
	26	8.43	12.7	2.62	3.93	7.60	11.4	2.54	3.82	2.25	3.39	2.40	3.60
	27	8.12	12.2	2.52	3.78	7.32	11.0	2.45	3.68	2.17	3.26	2.31	3.47
	28	7.83	11.8	2.43	3.65	7.06	10.6	2.36	3.55	2.09	3.15	2.22	3.34
	29	7.56	11.4	2.34	3.52	6.82	10.2	2.28	3.42	2.02	3.04	2.15	3.23
	30	7.31	11.0	2.27	3.41	6.59	9.90	2.20	3.31	1.95	2.94	2.08	3.12
	32	6.85	10.3	2.12	3.19	6.18	9.29	2.06	3.10	1.83	2.75	1.95	2.92
	34	6.45	9.69	2.00	3.01	5.81	8.74	1.94	2.92	1.72	2.59	1.83	2.75
	36	6.09	9.15	1.89	2.84	5.49	8.25	1.83	2.76	1.63	2.45	1.73	2.60
	38	5.77	8.67	1.79	2.69	5.20	7.82	1.74	2.61	1.54	2.32	1.64	2.46
	40	5.48	8.24	1.70	2.55	4.94	7.43	1.65	2.48	1.47	2.20	1.56	2.34
	42	5.22	7.84	1.62	2.43	4.71	7.07	1.57	2.36	1.40	2.10	1.48	2.23
	44	4.98	7.49	1.55	2.32	4.49	6.75	1.50	2.26	1.33	2.00	1.42	2.13
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	219	329	68.0	102	198	297	66.0	99.3	58.6	88.1	62.3	93.6
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	27.4	41.2	8.50	12.8	24.7	37.1	8.26	12.4	7.33	11.0	7.78	11.7
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	20.3	30.5	14.2	21.3	10.8	16.3	7.74	11.6	3.23	4.85	2.90	4.37
BF/Ω_b	$\varphi_b BF$, kips	N/A	N/A	N/A	N/A	1.70	2.55	N/A	N/A	0.773	1.16	0.807	1.21
V_n/Ω_v	$\varphi_v V_{nx}$, kips	70.1	105	46.7	70.2	52.5	79.0	35.0	52.7	23.4	35.1	23.4	35.1
Z_x, in.^{3}		16.4		11.3		8.91		6.20		2.64		2.41	
L_p, ft		N/A		N/A		3.75		N/A		2.45		0.773	
L_r, ft		13.0		10.9		11.9		9.07		7.76		6.82	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-6 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.

F_y = 65 ksi

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

MC3-MC2

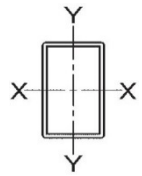
Shape		MC3×				MC2×					
		4.8		3.5 [f2]		3		2.4		1.6 [f2]	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	12.3	18.5	8.61	12.9	5.00	7.51	4.02	6.05	2.44	3.67
	4	9.21	13.8	6.46	9.70	3.75	5.64	3.02	4.53	1.83	2.75
	5	7.37	11.1	5.16	7.76	3.00	4.51	2.41	3.63	1.47	2.20
	6	6.14	9.23	4.30	6.47	2.50	3.76	2.01	3.02	1.22	1.84
	7	5.26	7.91	3.69	5.54	2.14	3.22	1.72	2.59	1.05	1.57
	8	4.61	6.92	3.23	4.85	1.87	2.82	1.51	2.27	0.916	1.38
	9	4.09	6.15	2.87	4.31	1.67	2.50	1.34	2.02	0.814	1.22
	10	3.68	5.54	2.58	3.88	1.50	2.25	1.21	1.81	0.733	1.10
	11	3.35	5.03	2.35	3.53	1.36	2.05	1.10	1.65	0.666	1.00
	12	3.07	4.62	2.15	3.23	1.25	1.88	1.01	1.51	0.611	0.918
	13	2.83	4.26	1.99	2.99	1.15	1.73	0.928	1.40	0.564	0.847
	14	2.63	3.96	1.84	2.77	1.07	1.61	0.862	1.30	0.523	0.787
	15	2.46	3.69	1.72	2.59	1.00	1.50	0.804	1.21	0.488	0.734
	16	2.30	3.46	1.61	2.43	0.937	1.41	0.754	1.13	0.458	0.688
	17	2.17	3.26	1.52	2.28	0.882	1.33	0.710	1.07	0.431	0.648
	18	2.05	3.08	1.43	2.16	0.833	1.25	0.670	1.01	0.407	0.612
	19	1.94	2.91	1.36	2.04	0.789	1.19	0.635	0.954	0.386	0.580
	20	1.84	2.77	1.29	1.94	0.750	1.13	0.603	0.907	0.366	0.551
	21	1.75	2.64	1.23	1.85	0.714	1.07	0.575	0.864	0.349	0.524
	22	1.67	2.52	1.17	1.76	0.682	1.02	0.548	0.824	0.333	0.501
	23	1.60	2.41	1.12	1.69	0.652	0.980	0.525	0.788	0.319	0.479
	24	1.54	2.31	1.08	1.62	0.625	0.939	0.503	0.756	0.305	0.459
	25	1.47	2.22	1.03	1.55	0.600	0.902	0.483	0.725	0.293	0.440
	26	1.42	2.13	0.993	1.49	0.577	0.867	0.464	0.698	0.282	0.424
	27	1.36	2.05	0.956	1.44	0.555	0.835	0.447	0.672	0.271	0.408
	28	1.32	1.98	0.922	1.39	0.536	0.805	0.431	0.648	0.262	0.393
	29	1.27	1.91	0.890	1.34	0.517	0.777	0.416	0.625	0.253	0.380
	30	1.23	1.85	0.861	1.29	0.500	0.751	0.402	0.605	0.244	0.367
	32	1.15	1.73	0.807	1.21	0.469	0.704	0.377	0.567	0.229	0.344
	34	1.08	1.63	0.759	1.14	0.441	0.663	0.355	0.533	0.215	0.324
	36	1.02	1.54	0.717	1.08	0.417	0.626	0.335	0.504	0.204	0.306
	38	0.970	1.46	0.679	1.02	0.395	0.593	0.318	0.477	0.193	0.290
	40	0.921	1.38	0.646	0.970	0.375	0.564	0.302	0.453	0.183	0.275
	42	0.877	1.32	0.615	0.924	0.357	0.537	0.287	0.432	0.174	0.262
	44	0.837	1.26	0.587	0.882	0.341	0.512	0.274	0.412	0.167	0.250
Beam Properties											
W_c/Ω_b	$\varphi_b W_c$, kip-ft	36.8	55.4	25.8	38.8	15.0	22.5	12.1	18.1	7.33	11.0
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	4.61	6.92	3.23	4.85	1.87	2.82	1.51	2.27	0.916	1.38
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	1.71	2.57	1.27	1.92	0.666	1.00	0.550	0.827	0.403	0.605
BF/Ω_b	$\varphi_b BF$, kips	0.429	0.644	0.454	0.683	0.178	0.267	0.197	0.296	0.208	0.313
V_n/Ω_v	$\varphi_v V_{nx}$, kips	17.5	26.3	13.2	19.8	11.7	17.6	8.78	13.2	5.84	8.78
Z_x, in.^{3}		1.42		1.05		0.578		0.465		0.330	
L_p, ft		0.631		0.977		0.408		0.418		1.17	
L_r, ft		7.39		5.28		7.20		5.28		3.63	

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

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

Note 1: Beams must be laterally supported if Table 3-6 is used.

Note 2: Available strength tabulated above heavy line is limited by available shear strength.



HSS16-HSS1.5

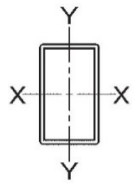
Table 3-7
Available Flexural Strength, kip-ft
Rectangular HSS (Roll Formed)

F_y = 65 ksi

Shape		X-Axis		Y-Axis	
		M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD	ASD	LRFD
HSS16×8×	0.250 [f2]	156	234	67.8	102
HSS12×8×	0.250 [f2]	103	155	64.5	96.9
HSS12×4×	0.250	88.5	133	26.0	39.1
	0.180 [f2]	52.5	78.9	15.7	23.7
HSS10×6×	0.250	81.4	122	42.5	63.9
	0.180 [f2]	47.8	71.9	26.2	39.4
HSS8×4×	0.250	45.7	68.7	23.9	35.9
	0.180	34.1	51.2	14.6	22.0
	0.120 [f2]	18.4	27.6	7.96	12.0
HSS6×4×	0.250	29.4	44.2	22.2	33.3
	0.180	22.0	33.1	13.8	20.7
	0.120 [f2]	12.1	18.2	7.59	11.4
HSS4×3×	0.120	7.07	10.6	4.74	7.12
	0.080 [f2]	3.69	5.55	2.63	3.96
HSS4×2×	0.120	5.55	8.34	2.79	4.20
	0.080	3.86	5.80	1.53	2.30
HSS3×2×	0.120	3.57	5.36	2.70	4.05
	0.080	2.49	3.75	1.44	2.17
HSS3×1×	0.080	1.74	2.61	0.589	0.885
	0.060	1.33	2.00	0.382	0.574
HSS2×1.5×	0.080	1.14	1.72	0.937	1.41
	0.060	0.879	1.32	0.593	0.891
HSS2×1×	0.080	0.892	1.34	0.548	0.824
	0.060	0.691	1.04	0.351	0.528
HSS1.5×1×	0.080	0.568	0.853	0.428	0.644
	0.060	0.441	0.663	0.334	0.502

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with *Fy* = 65 ksi.



HSS20-HSS10

Table 3-8
Available Flexural Strength, kip-ft
Rectangular HSS (Press Braked)

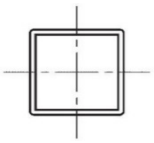
F_y = 65 ksi

Shape		X-Axis		Y-Axis	
		M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD	ASD	LRFD
HSS20×16×	0.500 [f2]	643	967	502	754
	0.375 [f2]	432	649	333	500
	0.312 [f2]	336	505	255	384
HSS20×12×	0.500	645	970	343	515
	0.375 [f2]	404	607	224	337
	0.312 [f2]	317	477	171	257
	0.250 [f2]	-SW-	-SW-	124	186
HSS20×8×	0.500	519	780	202	304
	0.375	402	605	131	197
	0.312 [f2]	294	441	99.0	149
	0.250 [f2]	-SW-	-SW-	70.5	106
HSS18×6×	0.500	379	570	137	205
	0.375	295	444	88.8	133
	0.312 [f2]	243	366	66.9	101
	0.250 [f2]	-SW-	-SW-	47.5	71.4
HSS16×12×	0.500	461	692	325	488
	0.375 [f2]	297	446	214	322
	0.312 [f2]	231	347	164	247
	0.250 [f2]	171	257	120	180
HSS14×10×	0.500	337	507	268	402
	0.375 [f2]	262	393	164	246
	0.312 [f2]	183	276	125	188
	0.250 [f2]	135	203	90.8	136
HSS12×8×	0.500	231	347	175	263
	0.375	181	272	117	176
	0.312	154	231	89.8	135
	0.250 [f2]	104	156	64.9	97.5
HSS10×6×	0.500	144	217	101	152
	0.375	114	172	80.4	121
	0.312	98.0	147	59.1	88.9
	0.250	80.4	121	42.8	64.4

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with *Fy* = 65 ksi.

-SW- Slender web (outside scope of DG27).



HSS12-HSS1

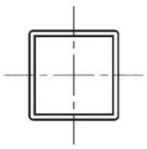
Table 3-9
Available Flexural Strength, kip-ft
Square HSS (Roll Formed)

F_y = 65 ksi

Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS12×12×	0.250 [f2]	113	169
HSS10×10×	0.250 [f2]	84.4	127
HSS8×8×	0.250 [f2]	59.0	88.7
	0.180 [f2]	37.2	55.9
HSS6×6×	0.250	38.6	58.0
	0.180 [f2]	23.5	35.4
	0.120 [f2]	13.3	20.0
HSS5×5×	0.250	26.2	39.3
	0.180	19.7	29.5
	0.120 [f2]	9.91	14.9
HSS4×4×	0.250	16.1	24.2
	0.180	12.2	18.4
	0.120 [f2]	6.95	10.4
HSS3.5×3.5×	0.180	9.18	13.8
	0.120 [f2]	5.80	8.71
HSS3×3×	0.120	4.70	7.07
	0.080 [f2]	2.48	3.73
HSS2.5×2.5×	0.120	3.18	4.78
	0.080 [f2]	1.86	2.79
HSS2×2×	0.080	1.39	2.09
	0.060 [f2]	0.873	1.31
HSS1.5×1.5×	0.080	0.752	1.13
	0.060	0.581	0.873
HSS1.25×1.25×	0.080	0.506	0.761
	0.060	0.396	0.595
HSS1×1×	0.060	0.243	0.365

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.



HSS20-HSS6

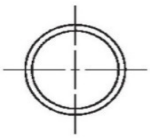
Table 3-10
Available Flexural Strength, kip-ft
Square HSS (Roll Formed)

F_y = 65 ksi

Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS20×20×	0.500 [f2]	679	1020
	0.375 [f2]	452	680
HSS16×16×	0.500 [f2]	476	715
	0.375 [f2]	317	477
	0.312 [f2]	245	368
HSS14×14×	0.500	425	639
	0.375 [f2]	256	385
	0.312 [f2]	198	298
HSS12×12×	0.500	306	459
	0.375 [f2]	200	301
	0.312 [f2]	155	232
	0.250 [f2]	113	170
HSS10×10×	0.500	206	310
	0.375	161	242
	0.312 [f2]	116	174
	0.250 [f2]	84.6	127
HSS8×8×	0.500	126	190
	0.375	99.9	150
	0.312	85.6	129
	0.250 [f2]	59.4	89.2
HSS7×7×	0.500	93.4	140
	0.375	74.6	112
	0.312	64.2	96.5
	0.250	52.9	79.5
HSS6×6×	0.500	65.5	98.5
	0.375	53.2	80.0
	0.312	46.1	69.2
	0.250	38.3	57.5

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.



HSS7.5-HSS2.5

Table 3-11
Available Flexural Strength, kip-ft
Round HSS

F_y = 65 ksi

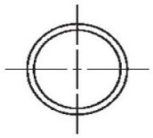
Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS7.5×	0.375	62.0	93.1	HSS3.125×	0.250	6.71	10.1
	0.250	42.5	63.9		0.180	5.06	7.61
	0.180 [f2]	29.4	44.1		0.120	3.50	5.27
	0.120 [f2]	18.8	28.3		0.109	3.22	4.84
					0.083 [f2]	2.38	3.58
HSS6.25×	0.375	42.2	63.4		0.063 [f2]	1.74	2.61
	0.250	29.2	43.9				
	0.180 [f2]	20.8	31.3	HSS3×	0.250	6.16	9.26
	0.120 [f2]	13.4	20.1		0.180	4.64	6.97
					0.148	3.89	5.85
HSS5×	0.250	18.3	27.5		0.120	3.23	4.86
	0.180	13.6	20.4		0.109	2.95	4.44
	0.120 [f2]	8.70	13.1		0.083 [f2]	2.21	3.31
	0.109 [f2]	7.81	11.7		0.063 [f2]	1.61	2.42
	0.083 [f2]	5.81	8.73		0.049 [f2]	1.23	1.85
HSS4.5×	0.250	14.7	22.0	HSS2.875×	0.180	4.25	6.39
	0.180	10.9	16.4		0.120	2.95	4.44
	0.148	9.08	13.7		0.109	2.71	4.07
	0.120 [f2]	7.13	10.7		0.083 [f2]	2.04	3.06
	0.109 [f2]	6.41	9.63				
	0.083 [f2]	4.76	7.15	HSS2.75×	0.250	5.09	7.65
					0.180	3.86	5.80
HSS4×	0.120 [f2]	5.73	8.62		0.148	3.24	4.88
	0.109 [f2]	5.13	7.71		0.120	2.70	4.05
	0.083 [f2]	3.80	5.71		0.109	2.47	3.71
					0.083 [f2]	1.87	2.81
HSS3.75×	0.250	9.96	15.0		0.065 [f2]	1.42	2.14
	0.180	7.46	11.2				
	0.148	6.23	9.36	HSS2.5×	0.250	4.12	6.19
	0.120 [f2]	5.10	7.67		0.180	3.15	4.73
	0.109 [f2]	4.54	6.82		0.148	2.66	4.00
	0.083 [f2]	3.36	5.06		0.120	2.21	3.32
					0.109	2.02	3.04
HSS3.5×	0.180	6.45	9.70		0.083	1.57	2.36
	0.148	5.38	8.09		0.063 [f2]	1.14	1.71
	0.120 [f2]	4.44	6.68		0.049 [f2]	0.871	1.31
	0.109 [f2]	4.00	6.01				
	0.083 [f2]	2.95	4.43				
	0.063 [f2]	2.16	3.24				
	0.049 [f2]	1.66	2.49				

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

F_y = 65 ksi

Table 3-11 (continued)
Available Flexural Strength, kip-ft
Round HSS

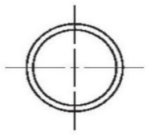


HSS2.375-HSS1

Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS2.375×	0.180	2.82	4.24	HSS1.66×	0.148	1.10	1.65
	0.148	2.38	3.58		0.120	0.924	1.39
	0.120	1.98	2.98		0.109	0.853	1.28
	0.109	1.82	2.73		0.083	0.671	1.01
	0.083	1.41	2.13		0.063	0.519	0.780
	0.063 [f2]	1.04	1.56				
	0.049 [f2]	0.790	1.19	HSS1.5×	0.120	0.743	1.12
					0.109	0.684	1.03
HSS2.25×	0.180	2.51	3.77		0.083	0.542	0.814
	0.148	2.12	3.19		0.063	0.418	0.629
	0.120	1.77	2.66		0.049	0.334	0.502
	0.109	1.62	2.44		0.035 [f2]	0.228	0.342
	0.083	1.26	1.90				
	0.063 [f2]	0.932	1.40	HSS1.25×	0.120	0.500	0.751
					0.109	0.461	0.692
HSS2×	0.180	1.94	2.92		0.083	0.367	0.551
	0.148	1.65	2.48		0.063	0.286	0.430
	0.120	1.38	2.07		0.049	0.229	0.345
	0.109	1.26	1.90		0.035 [f2]	0.162	0.243
	0.083	0.989	1.49				
	0.063 [f2]	0.751	1.13	HSS1×	0.120	0.303	0.456
	0.049 [f2]	0.570	0.857		0.109	0.282	0.424
	0.035 [f2]	0.393	0.590		0.083	0.227	0.341
					0.065	0.185	0.277
HSS1.9×	0.148	1.48	2.22		0.063	0.178	0.268
	0.120	1.24	1.86		0.049	0.144	0.216
	0.109	1.14	1.71		0.042	0.125	0.188
	0.083	0.889	1.34		0.035	0.106	0.159
	0.063	0.684	1.03		0.032 [f2]	0.096	0.144
	0.049 [f2]	0.515	0.775				
	0.035 [f2]	0.357	0.537				
HSS1.75×	0.120	1.03	1.56				
	0.109	0.954	1.43				
	0.083	0.749	1.13				
	0.063	0.577	0.868				
	0.049 [f2]	0.442	0.665				
	0.035 [f2]	0.305	0.459				

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.



PIPE 12-PIPE 1

Table 3-12
Available Flexural Strength, kip-ft
Pipe

F_y = 65 ksi

Shape	M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape	M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
Pipe 12 Std. 40S [f2]	183	275	Pipe 2 Std. 80S	3.31	4.97
Pipe 12 Std. 10S [f2]	81.5	122	Pipe 2 Std. 40S	2.48	3.72
			Pipe 2 Std. 10S	1.83	2.74
Pipe 10 Std. 40S	129	194	Pipe 2 Std. 5S [f2]	1.08	1.63
Pipe 10 Std. 10S [f2]	53.4	80.2			
			Pipe 1½ Std. 80S	1.88	2.83
Pipe 8 Std. 80S	107	161	Pipe 1½ Std. 40S	1.45	2.18
Pipe 8 Std. 40S	72.0	108	Pipe 1½ Std. 10S	1.14	1.71
Pipe 8 Std. 10S [f2]	31.0	46.6	Pipe 1½ Std. 5S	0.710	1.07
Pipe 8 Std. 5S [f2]	22.3	33.5			
			Pipe 1¼ Std. 80S	1.34	2.02
Pipe 6 Std. 80S	53.8	80.9	Pipe 1¼ Std. 40S	1.05	1.58
Pipe 6 Std. 40S	36.7	55.1	Pipe 1¼ Std. 10S	0.853	1.28
Pipe 6 Std. 10S [f2]	16.7	25.2	Pipe 1¼ Std. 5S	0.535	0.804
Pipe 6 Std. 5S [f2]	13.4	20.2			
			Pipe 1 Std. 80S	0.762	1.15
Pipe 5 Std. 80S	32.8	49.2	Pipe 1 Std. 40S	0.610	0.917
Pipe 5 Std. 40S	23.5	35.4	Pipe 1 Std. 10S	0.519	0.780
Pipe 5 Std. 10S [f2]	12.0	18.1	Pipe 1 Std. 5S	0.331	0.497
Pipe 5 Std. 5S [f2]	9.60	14.4			
Pipe 4 Std. 80S	19.0	28.5			
Pipe 4 Std. 40S	14.0	21.0			
Pipe 4 Std. 10S [f2]	7.13	10.7			
Pipe 4 Std. 5S [f2]	4.76	7.15			
Pipe 3½ Std. 80S	14.0	21.1			
Pipe 3½ Std. 40S	10.4	15.7			
Pipe 3½ Std. 10S [f2]	5.73	8.62			
Pipe 3½ Std. 5S [f2]	3.80	5.71			
Pipe 3 Std. 80S	9.99	15.0			
Pipe 3 Std. 40S	7.56	11.4			
Pipe 3 Std. 10S	4.44	6.68			
Pipe 3 Std. 5S [f2]	2.95	4.43			
Pipe 2½ Std. 80S	6.10	9.17			
Pipe 2½ Std. 40S	4.74	7.12			
Pipe 2½ Std. 10S	2.97	4.46			
Pipe 2½ Std. 5S [f2]	2.04	3.07			

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f2] Shape exceeds compact limit for flexure with F_y = 65 ksi.

STRUCTURAL STAINLESS STEEL DESIGN TABLES

IN ACCORDANCE WITH AISC DG27: STRUCTURAL STAINLESS STEEL

This publication presents design data derived in accordance with the American Institute of Steel Construction's Design Guide 27 *Structural Stainless Steel*. The data is presented in an equivalent set of tables to those in the AISC *Steel Construction Manual* for carbon steel sections. Tables cover dimensions and properties, design data for flexural members and design data for compression members. Two strength levels are covered – 30 ksi which corresponds to austenitic stainless steels and 65 ksi which corresponds to duplex stainless steels.

The following structural sections are included in this publication:

- W- and S-shapes
- C- and MC-shapes
- Equal angles
- Rectangular hollow structural sections (HSS)
- Square HSS
- Circular HSS.

Section ranges listed cover sections that are readily available at the time of printing.

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Always refer to www.steel-stainless.org/usdesigntables for the latest version