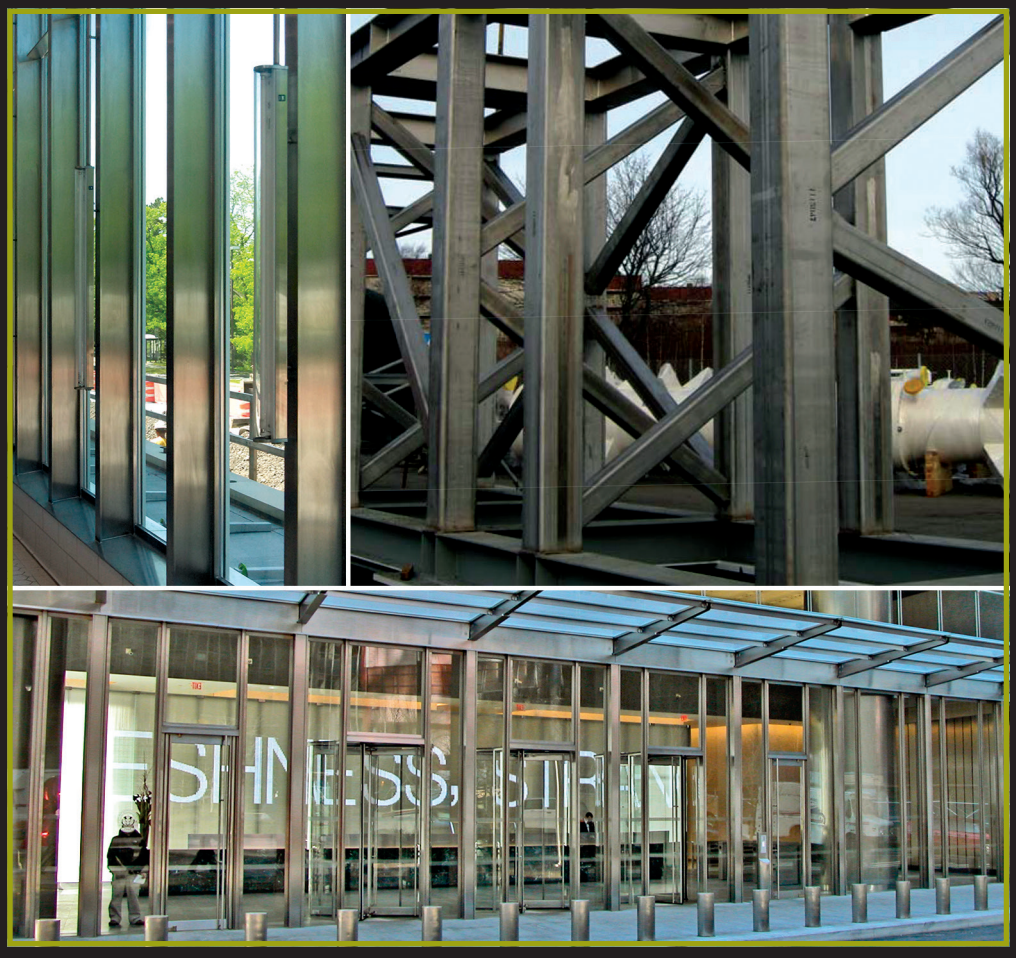
STRUCTURAL STAINLESS STEEL DESIGN TABLES

IN ACCORDANCE WITH AISC DG27: STRUCTURAL STAINLESS STEEL



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Z_x

Table 2-1
W-Shapes (Welded)
Selection by Z_x

F_y = 30 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**	**549**	**826**	**220**	**330**	**8.54**	**12.8**	**6.07**	**44.7**	**3990**	**160**	**240**
W24×117	**325**	**487**	**731**	**195**	**293**	**8.13**	**12.2**	**6.01**	**41.9**	**3510**	**144**	**217**
W21×122	305	457	686	183	274	6.71	10.1	5.95	46.8	2940	140	211
W24×104	**287**	**430**	**646**	**172**	**259**	**7.64**	**11.5**	**5.95**	**39.6**	**3080**	**130**	**195**
W21×111	276	413	621	166	250	6.48	9.74	5.93	44.0	2650	127	192
W24×94	**251**	**376**	**565**	**148**	**223**	**9.04**	**13.6**	**4.05**	**29.2**	**2670**	**135**	**203**
W21×101	251	376	565	152	228	6.25	9.39	5.91	41.8	2400	115	173
W18×106	229	343	515	137	206	5.02	7.55	5.44	46.5	1900	119	179
W24×84	**222**	**332**	**500**	**131**	**196**	**8.56**	**12.9**	**3.99**	**27.6**	**2340**	**122**	**183**
W21×93	219	328	493	128	192	7.55	11.4	3.77	30.2	2050	135	203
W18×97	210	314	473	126	189	4.91	7.38	5.42	43.8	1740	107	161
W14×120	210	314	473	127	190	2.63	3.96	7.66	79.0	1360	92.2	139
W24×76	**198**	**296**	**446**	**117**	**175**	**8.04**	**12.1**	**3.93**	**26.3**	**2070**	**113**	**170**
W16×100	197	295	443	117	176	4.06	6.10	5.13	48.9	1480	107	161
W21×83	194	290	437	114	171	7.24	10.9	3.73	28.1	1810	119	179
W14×109	190	284	428	115	173	2.61	3.92	7.64	72.5	1230	80.9	122
W18×86	185	277	416	111	167	4.73	7.11	5.38	40.4	1520	95.2	143
W24×68	**174**	**260**	**392**	**102**	**154**	**7.44**	**11.2**	**3.83**	**25.1**	**1800**	**106**	**159**
W16×89	174	260	392	104	156	3.99	5.99	5.09	44.4	1290	95.1	143
W14×99	171	256	385	104	157	2.55	3.84	7.60	67.0	1100	74.2	112
W21×73	170	254	383	100	151	6.78	10.2	3.71	26.4	1580	104	156
W18×76	162	243	365	97.7	147	4.47	6.72	5.34	37.7	1320	83.4	125
W12×106	162	243	365	96.3	145	2.04	3.06	6.37	78.2	925	84.8	127
W21×68	**158**	**237**	**356**	**93.0**	**140**	**6.56**	**9.86**	**3.69**	**25.6**	**1460**	**97.8**	**147**
W14×90 [f1]	155	229	345	95.0	143	2.52	3.78	8.59	62.0	987	66.4	99.8
W24x62	**151**	**226**	**340**	**86.2**	**130**	**8.49**	**12.8**	**2.81**	**19.3**	**1520**	**110**	**165**
W16×77	149	223	335	89.6	135	3.82	5.75	5.05	39.9	1100	80.9	122
W12×96	146	219	329	87.6	132	2.03	3.05	6.33	70.9	824	75.3	113
W18×71	144	216	324	84.9	128	5.36	8.05	3.48	27.9	1160	98.7	148
W21×62	**142**	**213**	**320**	**84.2**	**127**	**6.17**	**9.28**	**3.63**	**24.4**	**1310**	**90.5**	**136**
W14×82	137	205	308	82.2	124	2.80	4.21	5.09	49.0	870	78.6	118

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

Table 2-1 (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	**132**	**198**	**297**	**75.4**	**113**	**7.83**	**11.8**	**2.75**	**18.4**	**1320**	**100**	**151**
W18×65	132	198	297	78.1	117	5.20	7.82	3.46	26.4	1060	89.2	134
W12×87	130	195	293	78.8	118	1.98	2.98	6.29	64.7	731	69.4	104
W16×67	129	193	290	78.1	117	3.64	5.47	5.03	36.6	947	69.4	104
W21×57	126	189	284	73.4	110	6.93	10.4	2.77	19.4	1150	92.1	138
W14×74	124	186	279	74.8	112	2.75	4.13	5.07	45.4	784	68.9	104
W18×60	122	183	275	72.1	108	5.06	7.60	3.44	25.3	974	81.4	122
W12×79	117	175	263	71.4	107	1.96	2.94	6.25	59.3	654	62.8	94.4
W14×68	113	169	254	68.0	102	2.69	4.04	5.05	42.6	711	62.6	94.1
W10×88	112	168	252	65.8	98.9	1.37	2.06	5.38	79.5	530	70.4	106
W18×55	**111**	**166**	**250**	**65.5**	**98.4**	**4.87**	**7.31**	**3.40**	**24.1**	**881**	**76.1**	**114**
W21×50	**108**	**162**	**243**	**62.4**	**93.8**	**6.43**	**9.66**	**2.67**	**18.1**	**964**	**85.2**	**128**
W12×72	106	159	239	64.7	97.2	1.93	2.90	6.23	55.0	588	57.0	85.7
W16×57	104	156	234	61.5	92.4	4.15	6.24	3.28	26.0	750	76.0	114
W14×61	100	150	225	61.0	91.6	2.59	3.89	5.03	39.3	628	56.2	84.4
W18×50	**99.6**	**149**	**224**	**59.1**	**88.9**	**4.58**	**6.88**	**3.38**	**23.0**	**790**	**68.9**	**104**
W10×77	96.7	145	218	57.4	86.3	1.35	2.03	5.34	69.9	451	60.6	91.0
W12×65	95.2	143	214	58.3	87.6	1.89	2.84	6.21	50.8	524	50.9	76.4
W21×44	**93.3**	**140**	**210**	**53.6**	**80.6**	**5.87**	**8.82**	**2.59**	**17.2**	**822**	**78.1**	**117**
W16×50	91.0	136	205	54.0	81.1	3.96	5.95	3.26	24.0	651	66.8	100
W18×46	89.5	134	201	52.4	78.8	5.10	7.66	2.65	18.7	702	70.2	106
W14×53	85.2	128	192	51.3	77.1	2.75	4.13	3.95	31.7	530	55.4	83.3
W12×58	84.7	127	191	51.6	77.6	1.96	2.95	5.15	43.5	467	47.3	71.2
W10×68	84.3	126	190	50.5	75.8	1.34	2.01	5.30	62.0	390	52.7	79.2
W16×45	81.3	122	183	48.4	72.7	3.77	5.67	3.22	22.7	579	59.9	90.0
W18×40	**77.2**	**116**	**174**	**45.3**	**68.1**	**4.68**	**7.04**	**2.61**	**17.6**	**602**	**60.8**	**91.3**
W14×48	76.5	115	172	46.2	69.5	2.66	3.99	3.93	29.7	473	50.6	76.0
W12×53	76.3	114	172	46.5	70.0	1.92	2.88	5.09	40.4	417	45.0	67.6
W10×60	73.6	110	166	44.4	66.7	1.32	1.98	5.25	55.3	337	46.2	69.4
W16×40	**71.9**	**108**	**162**	**43.0**	**64.6**	**3.53**	**5.30**	**3.20**	**21.5**	**511**	**52.6**	**79.1**
W12×50	70.7	106	159	42.6	64.0	2.06	3.10	4.03	34.7	385	48.7	73.1
W8×67	69.7	104	157	40.4	60.8	0.910	1.37	4.34	74.6	270	55.3	83.1
W14×43	67.7	101	152	41.1	61.8	2.53	3.80	3.89	27.7	416	45.0	67.7
W10×54	65.7	98.4	148	39.9	59.9	1.30	1.95	5.23	50.3	299	40.3	60.5

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Z_x

Table 2-1 (continued)
W-Shapes (Welded)
Selection by Z_x

F_y = 30 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	**65.3**	**97.8**	**147**	**38.1**	**57.2**	**4.28**	**6.43**	**2.51**	**16.5**	**500**	**57.2**	**86.0**
W12×45	63.1	94.5	142	38.1	57.3	2.00	3.01	4.01	32.2	342	43.7	65.7
W16×36	62.9	94.2	142	37.5	56.3	3.28	4.93	3.12	20.4	441	50.6	76.0
W14×38	60.6	90.7	136	36.2	54.5	2.83	4.25	3.18	22.4	380	47.1	70.8
W10×49	59.4	88.9	134	36.2	54.5	1.27	1.92	5.21	46.5	268	36.6	55.0
W8×58	59.3	88.8	133	34.8	52.3	0.893	1.34	4.28	64.7	226	48.1	72.3
W12×40	56.1	84.0	126	34.2	51.3	1.92	2.88	4.01	30.0	303	37.8	56.9
W10×45	54.0	80.8	122	32.5	48.9	1.34	2.02	4.11	40.0	244	38.1	57.3
W14×34	**53.7**	**80.4**	**121**	**32.2**	**48.4**	**2.66**	**4.00**	**3.14**	**21.2**	**334**	**43.0**	**64.6**
W16×31	**53.0**	**79.3**	**119**	**31.1**	**46.8**	**3.56**	**5.35**	**2.38**	**15.9**	**367**	**47.1**	**70.8**
W12×35	50.7	75.9	114	30.4	45.8	2.23	3.35	3.14	23.5	283	40.4	60.8
W8×48	48.5	72.6	109	28.9	43.4	0.874	1.31	4.26	54.3	182	36.6	55.1
W14×30	**46.4**	**69.5**	**104**	**27.8**	**41.7**	**2.47**	**3.71**	**3.06**	**19.9**	**285**	**40.2**	**60.4**
W10×39	45.9	68.7	103	27.8	41.8	1.31	1.97	4.07	35.3	205	33.7	50.6
W16×26	**43.2**	**64.7**	**97.2**	**25.2**	**37.9**	**3.15**	**4.73**	**2.30**	**14.8**	**294**	**42.3**	**63.6**
W12×30	42.7	63.9	96.1	25.7	38.7	2.08	3.12	3.12	21.5	236	34.5	51.8
W14×26	**39.4**	**59.0**	**88.7**	**23.2**	**34.8**	**2.81**	**4.22**	**2.22**	**15.0**	**240**	**38.2**	**57.4**
W8×40	39.3	58.8	88.4	23.6	35.5	0.858	1.29	4.20	45.2	145	32.0	48.1
W10×33	37.9	56.7	85.3	23.0	34.6	1.25	1.88	3.99	30.9	166	30.4	45.7
W12×26	**36.8**	**55.1**	**82.8**	**22.2**	**33.4**	**1.92**	**2.89**	**3.08**	**20.2**	**202**	**30.2**	**45.5**
W10×30	36.2	54.2	81.5	21.6	32.5	1.58	2.38	2.81	23.4	168	34.0	51.0
W8×35	34.2	51.2	77.0	20.7	31.2	0.841	1.26	4.18	40.4	125	27.1	40.8
W14×22	**32.3**	**48.4**	**72.7**	**18.9**	**28.5**	**2.50**	**3.76**	**2.14**	**13.9**	**193**	**34.0**	**51.0**
W10×26	30.9	46.3	69.5	18.6	27.9	1.51	2.27	2.79	21.1	143	28.9	43.4
W8×31	29.9	44.8	67.3	18.3	27.4	0.823	1.24	4.13	36.3	108	24.6	36.9
W12×22	**28.9**	**43.3**	**65.0**	**16.8**	**25.3**	**2.44**	**3.67**	**1.74**	**12.6**	**154**	**34.5**	**51.8**
W8×28	26.7	40.0	60.1	16.1	24.2	0.863	1.30	3.32	31.0	96.4	24.8	37.2
W10×22	**25.7**	**38.5**	**57.8**	**15.4**	**23.2**	**1.41**	**2.12**	**2.71**	**19.0**	**117**	**26.4**	**39.7**
W12×19	**24.3**	**36.4**	**54.7**	**14.1**	**21.2**	**2.24**	**3.37**	**1.68**	**11.6**	**127**	**30.9**	**46.4**
W8×24	22.7	34.0	51.1	13.8	20.8	0.837	1.26	3.30	27.4	81.1	20.9	31.5

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

Table 2-1 (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**	**31.7**	**47.7**	**12.5**	**18.7**	**1.64**	**2.47**	**1.79**	**13.5**	**94.6**	**27.5**	**41.3**
W8×21	20.1	30.1	45.2	12.1	18.1	0.962	1.45	2.59	21.3	74.2	22.3	33.5
W12×16	**19.6**	**29.3**	**44.1**	**11.3**	**16.9**	**1.99**	**2.99**	**1.59**	**10.7**	**100**	**28.5**	**42.8**
W6×25	18.8	28.1	42.3	11.2	16.8	0.510	0.767	3.12	36.4	53.0	22.0	33.1
W10×17	18.3	27.4	41.2	10.7	16.1	1.55	2.33	1.73	12.5	80.2	26.1	39.3
W12×14	**17.0**	**25.4**	**38.3**	**9.77**	**14.7**	**1.81**	**2.72**	**1.55**	**10.2**	**86.1**	**25.7**	**38.6**
W8×18	16.7	25.0	37.6	10.1	15.2	0.911	1.37	2.53	18.9	60.9	20.2	30.3
W10×15	15.6	23.4	35.1	9.09	13.7	1.43	2.16	1.66	11.6	67.2	24.8	37.2
W6×20	14.8	22.2	33.3	8.89	13.4	0.498	0.748	3.08	29.7	41.0	17.4	26.1
W8×15	13.3	19.9	29.9	7.81	11.7	0.988	1.48	1.80	14.0	47.0	21.4	32.2
W10×12	**12.3**	**18.4**	**27.7**	**7.14**	**10.7**	**1.24**	**1.87**	**1.62**	**10.7**	**52.2**	**20.2**	**30.4**
W6×16	11.5	17.2	25.9	6.80	10.2	0.542	0.815	1.98	21.2	31.8	17.6	26.5
W5×19	11.5	17.2	25.9	6.80	10.2	0.320	0.481	2.63	35.2	25.9	15.0	22.5
W8×13	11.1	16.6	25.0	6.50	9.77	0.915	1.37	1.74	12.8	38.5	19.8	29.8
W5×18.9	10.9	16.3	24.5	6.42	9.65	0.297	0.446	2.57	35.9	23.8	17.0	25.6
W6x15 [f1]	10.6	13.9	20.9	6.46	9.71	0.457	0.687	7.26	23.6	28.7	14.8	22.3
W5×16	9.47	14.2	21.3	5.67	8.52	0.311	0.467	2.59	30.0	21.1	13.0	19.5
W8×10	**8.59**	**12.9**	**19.3**	**5.09**	**7.64**	**0.798**	**1.20**	**1.73**	**11.5**	**29.8**	**14.5**	**21.7**
W6×12	8.16	12.2	18.4	4.84	7.28	0.514	0.773	1.88	16.2	21.7	14.9	22.5
W4×13	6.19	9.27	13.9	3.62	5.45	0.207	0.311	2.06	29.3	11.2	12.6	18.9
W6×9	**6.09**	**9.12**	**13.7**	**3.66**	**5.50**	**0.470**	**0.706**	**1.86**	**13.5**	**16.0**	**10.8**	**16.2**

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

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

Z_y

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

F_y = 30 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	**102**	**153**	**230**	**W10×60**	**34.9**	**52.2**	**78.5**	**W10×39**	**17.1**	**25.6**	**38.5**
				W21×93	34.6	51.8	77.9	W12×40	16.9	25.3	38.0
W14×109	**92.6**	**139**	**208**	W14×61	32.7	49.0	73.6	W18×50	16.5	24.7	37.1
				W24×84	32.6	48.8	73.4	W16×50	16.3	24.4	36.7
W14×99	**83.5**	**125**	**188**	W8×67	32.6	48.8	73.4				
W24×131	81.4	122	183					**W8×35**	**16.1**	**24.1**	**36.2**
W21×122	75.5	113	170	**W12×58**	**32.4**	**48.5**	**72.9**	W24x62	15.7	23.4	35.2
								W21×57	14.8	22.2	33.3
W14×90 [f1]	**75.5**	**111**	**167**	**W10×54**	**31.2**	**46.7**	**70.2**	W16×45	14.4	21.6	32.4
W12×106	74.9	112	169	W21×83	30.3	45.4	68.2				
W24×117	71.3	107	160					**W10×33**	**14.0**	**21.0**	**31.5**
W21×111	68.1	102	153	**W12×53**	**29.0**	**43.4**	**65.3**				
W12×96	67.4	101	152	W24×76	28.6	42.8	64.4	**W8×31**	**14.0**	**21.0**	**31.5**
W24×104	62.4	93.4	140					W24×55	13.3	19.9	29.8
W21×101	61.7	92.4	139	**W10×49**	**28.3**	**42.4**	**63.7**	W16×40	12.7	19.0	28.6
W18×106	60.4	90.4	136	W8×58	27.8	41.6	62.6	W21×50	12.1	18.1	27.2
				W21×73	26.5	39.7	59.6	W14×38	12.1	18.1	27.2
W12×87	**60.3**	**90.3**	**136**	W18×71	24.6	36.8	55.4	W18×46	11.7	17.5	26.3
W18×97	55.2	82.6	124	W24×68	24.5	36.7	55.1	W12×35	11.4	17.1	25.7
W16×100	54.8	82.0	123	W21×68	24.3	36.4	54.7	W16×36	10.8	16.2	24.3
								W14×34	10.6	15.9	23.9
W12×79	**54.2**	**81.1**	**122**	**W8×48**	**22.8**	**34.1**	**51.3**	W21×44	10.1	15.1	22.7
W10×88	53.0	79.3	119	W18×65	22.5	33.7	50.6				
				W14×53	21.9	32.8	49.3	**W8×28**	**10.1**	**15.1**	**22.7**
W12×72	**49.1**	**73.5**	**110**	W21×62	21.7	32.5	48.8	W18×40	9.92	14.9	22.3
W18×86	48.3	72.3	109	W12×50	21.3	31.9	47.9	W12×30	9.55	14.3	21.5
W16×89	48.0	71.9	108	W18×60	20.6	30.8	46.4	W14×30	8.96	13.4	20.2
W10×77	45.8	68.6	103					W10×30	8.82	13.2	19.8
W14×82	44.7	66.9	101	**W10×45**	**20.2**	**30.2**	**45.5**				
				W14×48	19.5	29.2	43.9	**W6×25**	**8.55**	**12.8**	**19.2**
W12×65	**44.0**	**65.9**	**99.0**								
W18×76	42.2	63.2	95.0	**W12×45**	**18.9**	**28.3**	**42.5**	**W8×24**	**8.54**	**12.8**	**19.2**
W16×77	41.1	61.5	92.5	W16×57	18.8	28.1	42.3	W12×26	8.15	12.2	18.3
W14×74	40.4	60.5	90.9	W18×55	18.5	27.7	41.6	W18×35	8.03	12.0	18.1
W10×68	40.0	59.9	90.0					W10×26	7.48	11.2	16.8
W24×94	37.4	56.0	84.2	**W8×40**	**18.5**	**27.7**	**41.6**	W16×31	7.00	10.5	15.8
W14×68	36.8	55.1	82.8	W14×43	17.2	25.7	38.7				
W16×67	35.4	53.0	79.7					**W6×20**	**6.71**	**10.0**	**15.1**
								W10×22	6.09	9.12	13.7
								W8×21	5.67	8.49	12.8
								W14×26	5.52	8.26	12.4

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

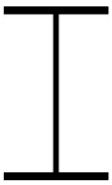
Table 2-2 (continued)
W-Shapes (Welded)
Selection by Z_y

Z_y

Shape	Z_y	M_{ny}/Ω_b	$\varphi_b M_{ny}$
	kip-ft	*kip-ft*	*kip-ft*
	in.^{3}	ASD	LRFD
W5×19	**5.52**	**8.26**	**12.4**
W16×26	5.45	8.16	12.3
W5×18.9	**5.31**	**7.95**	**11.9**
W6×15 [f1]	**4.74**	**5.81**	**8.73**
W8×18	4.65	6.96	10.5
W5×16	4.56	6.83	10.3
W14×22	4.36	6.53	9.81
W12×22	3.64	5.45	8.19
W6×16	3.38	5.06	7.61
W10×19	3.34	5.00	7.52
W12×19	2.97	4.45	6.68
W4×13	**2.91**	**4.36**	**6.55**
W10×17	2.79	4.18	6.28
W8×15	2.65	3.97	5.96
W6×12	**2.31**	**3.46**	**5.20**
W10×15	2.28	3.41	5.13
W12×16	2.25	3.37	5.06
W8×13	2.14	3.20	4.82
W12×14	1.89	2.83	4.25
W10×12	**1.73**	**2.59**	**3.89**
W6×9	**1.71**	**2.56**	**3.85**
W8×10	1.65	2.47	3.71

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



W24

Table 2-3
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W24×											
		131		117		104		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									244	366	226	340
	11							270	406	242	363	216	324
	12							250	377	222	333	198	297
	13	320	480	288	434	260	390	231	348	205	307	182	274
	14	314	472	278	418	246	369	215	323	190	285	169	255
	15	293	440	259	390	229	344	200	301	177	266	158	238
	16	275	413	243	366	215	323	188	282	166	250	148	223
	17	259	389	229	344	202	304	177	266	156	235	139	210
	18	244	367	216	325	191	287	167	251	148	222	132	198
	19	231	348	205	308	181	272	158	238	140	210	125	188
	20	220	330	195	293	172	258	150	226	133	200	119	178
	21	209	315	185	279	164	246	143	215	127	190	113	170
	22	200	300	177	266	156	235	137	205	121	182	108	162
	23	191	287	169	254	149	225	131	196	116	174	103	155
	24	183	275	162	244	143	215	125	188	111	167	98.8	149
	25	176	264	156	234	137	207	120	181	106	160	94.9	143
	26	169	254	150	225	132	199	116	174	102	154	91.2	137
	27	163	245	144	217	127	191	111	167	98.5	148	87.8	132
	28	157	236	139	209	123	185	107	161	95.0	143	84.7	127
	29	152	228	134	202	119	178	104	156	91.7	138	81.8	123
	30	147	220	130	195	115	172	100	151	88.6	133	79.0	119
	32	137	206	122	183	107	161	93.9	141	83.1	125	74.1	111
	34	129	194	114	172	101	152	88.4	133	78.2	118	69.7	105
	36	122	184	108	163	95.5	144	83.5	126	73.9	111	65.9	99.0
	38	116	174	102	154	90.5	136	79.1	119	70.0	105	62.4	93.8
	40	110	165	97.3	146	85.9	129	75.1	113	66.5	99.9	59.3	89.1
	42	105	157	92.7	139	81.8	123	71.6	108	63.3	95.1	56.5	84.9
	44	99.9	150	88.5	133	78.1	117	68.3	103	60.4	90.8	53.9	81.0
	46	95.5	144	84.6	127	74.7	112	65.3	98.2	57.8	86.9	51.5	77.5
	48	91.6	138	81.1	122	71.6	108	62.6	94.1	55.4	83.3	49.4	74.3
	50	87.9	132	77.8	117	68.7	103	60.1	90.4	53.2	79.9	47.4	71.3
	52	84.5	127	74.9	113	66.1	99.3	57.8	86.9	51.1	76.8	45.6	68.5
	54	81.4	122	72.1	108	63.7	95.7	55.7	83.7	49.2	74.0	43.9	66.0
	56	78.5	118	69.5	104	61.4	92.3	53.7	80.7	47.5	71.4	42.3	63.6
	58	75.8	114	67.1	101	59.3	89.1	51.8	77.9	45.8	68.9	40.9	61.4
	60	73.3	110	64.9	97.5	57.3	86.1	50.1	75.3	44.3	66.6	39.5	59.4
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	4400	6610	3890	5850	3440	5170	3010	4520	2660	4000	2370	3560
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	549	826	487	731	430	646	376	565	332	500	296	446
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	220	330	195	293	172	259	148	223	131	196	117	175
BF/Ω_b	$\varphi_b BF$, kips	8.54	12.8	8.13	12.2	7.64	11.5	9.04	13.6	8.56	12.9	8.04	12.1
V_n/Ω_v	$\varphi_v V_{nx}$, kips	160	240	144	217	130	195	135	203	122	183	113	170
Z_x, in.^{3}		367		325		287		251		222		198	
L_p, ft		6.07		6.01		5.95		4.05		3.99		3.93	
L_r, ft		44.7		41.9		39.6		29.2		27.6		26.3	

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

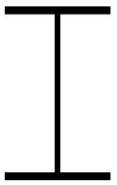
[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)



W24-W21

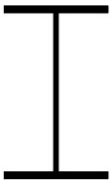
Shape		W24×						W21×					
		68		62		55		122		111		101	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7					200	302						
	8			220	330	198	297						
	9	212	318	201	302	176	264						
	10	208	313	181	272	158	238						
	11	189	285	164	247	144	216						
	12	174	261	151	227	132	198						
	13	160	241	139	209	122	183	280	422	254	384	230	346
	14	149	224	129	194	113	170	261	392	236	355	215	323
	15	139	209	121	181	105	158	244	366	220	331	200	301
	16	130	196	113	170	98.8	149	228	343	207	311	188	282
	17	123	184	106	160	93.0	140	215	323	194	292	177	266
	18	116	174	100	151	87.8	132	203	305	184	276	167	251
	19	110	165	95.2	143	83.2	125	192	289	174	261	158	238
	20	104	157	90.4	136	79.0	119	183	275	165	248	150	226
	21	99.2	149	86.1	129	75.3	113	174	261	157	237	143	215
	22	94.7	142	82.2	124	71.9	108	166	250	150	226	137	205
	23	90.6	136	78.6	118	68.7	103	159	239	144	216	131	196
	24	86.8	131	75.3	113	65.9	99.0	152	229	138	207	125	188
	25	83.4	125	72.3	109	63.2	95.0	146	220	132	199	120	181
	26	80.1	120	69.6	105	60.8	91.4	140	211	127	191	116	174
	27	77.2	116	67.0	101	58.5	88.0	135	203	122	184	111	167
	28	74.4	112	64.6	97.1	56.5	84.9	130	196	118	177	107	161
	29	71.9	108	62.4	93.7	54.5	81.9	126	189	114	171	104	156
	30	69.5	104	60.3	90.6	52.7	79.2	122	183	110	166	100	151
	32	65.1	97.9	56.5	84.9	49.4	74.3	114	172	103	155	93.9	141
	34	61.3	92.1	53.2	79.9	46.5	69.9	107	161	97.2	146	88.4	133
	36	57.9	87.0	50.2	75.5	43.9	66.0	101	153	91.8	138	83.5	126
	38	54.8	82.4	47.6	71.5	41.6	62.5	96.1	144	87.0	131	79.1	119
	40	52.1	78.3	45.2	68.0	39.5	59.4	91.3	137	82.6	124	75.1	113
	42	49.6	74.6	43.1	64.7	37.6	56.6	87.0	131	78.7	118	71.6	108
	44	47.4	71.2	41.1	61.8	35.9	54.0	83.0	125	75.1	113	68.3	103
	46	45.3	68.1	39.3	59.1	34.4	51.7	79.4	119	71.9	108	65.3	98.2
	48	43.4	65.3	37.7	56.6	32.9	49.5	76.1	114	68.9	104	62.6	94.1
	50	41.7	62.6	36.2	54.4	31.6	47.5	73.1	110	66.1	99.4	60.1	90.4
	52	40.1	60.2	34.8	52.3	30.4	45.7	70.2	106	63.6	95.5	57.8	86.9
	54	38.6	58.0	33.5	50.3	29.3	44.0	67.6	102	61.2	92.0	55.7	83.7
	56	37.2	55.9	32.3	48.5	28.2	42.4	65.2	98.0	59.0	88.7	53.7	80.7
	58	35.9	54.0	31.2	46.9	27.3	41.0	63.0	94.7	57.0	85.7	51.8	77.9
	60	34.7	52.2	30.1	45.3	26.3	39.6	60.9	91.5	55.1	82.8	50.1	75.3
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2080	3130	1810	2720	1580	2380	3650	5490	3310	4970	3010	4520
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	260	392	226	340	198	297	457	686	413	621	376	565
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	102	154	86.2	130	75.4	113	183	274	166	250	152	228
BF/Ω_b	$\varphi_b BF$, kips	7.44	11.2	8.49	12.8	7.83	11.8	6.71	10.1	6.48	9.74	6.25	9.39
V_n/Ω_v	$\varphi_v V_{nx}$, kips	106	159	110	165	100	151	140	211	127	192	115	173
Z_x, in.^{3}		174		151		132		305		276		251	
L_p, ft		3.83		2.81		2.75		5.95		5.93		5.91	
L_r, ft		25.1		19.3		18.4		46.8		44.0		41.8	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W21

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 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											184	276
	9	270	406	238	358	208	312	196	294	181	272	168	252
	10	262	394	232	349	204	306	189	284	170	256	151	227
	11	238	358	211	317	185	278	172	259	155	232	137	206
	12	219	329	194	291	170	255	158	237	142	213	126	189
	13	202	303	179	269	157	235	146	219	131	197	116	174
	14	187	282	166	249	145	219	135	203	121	183	108	162
	15	175	263	155	233	136	204	126	190	113	170	101	151
	16	164	246	145	218	127	191	118	178	106	160	94.3	142
	17	154	232	137	205	120	180	111	167	100	150	88.8	133
	18	146	219	129	194	113	170	105	158	94.5	142	83.8	126
	19	138	207	122	184	107	161	99.6	150	89.5	135	79.4	119
	20	131	197	116	175	102	153	94.6	142	85.0	128	75.4	113
	21	125	188	111	166	96.9	146	90.1	135	81.0	122	71.9	108
	22	119	179	106	159	92.5	139	86.0	129	77.3	116	68.6	103
	23	114	171	101	152	88.5	133	82.3	124	73.9	111	65.6	98.6
	24	109	164	96.8	146	84.8	128	78.8	119	70.9	107	62.9	94.5
	25	105	158	92.9	140	81.4	122	75.7	114	68.0	102	60.4	90.7
	26	101	152	89.4	134	78.3	118	72.8	109	65.4	98.3	58.0	87.2
	27	97.1	146	86.1	129	75.4	113	70.1	105	63.0	94.7	55.9	84.0
	28	93.7	141	83.0	125	72.7	109	67.6	102	60.7	91.3	53.9	81.0
	29	90.4	136	80.1	120	70.2	106	65.2	98.1	58.6	88.1	52.0	78.2
	30	87.4	131	77.4	116	67.9	102	63.1	94.8	56.7	85.2	50.3	75.6
	32	82.0	123	72.6	109	63.6	95.6	59.1	88.9	53.1	79.9	47.2	70.9
	34	77.1	116	68.3	103	59.9	90.0	55.7	83.6	50.0	75.2	44.4	66.7
	36	72.9	110	64.5	97.0	56.6	85.0	52.6	79.0	47.2	71.0	41.9	63.0
	38	69.0	104	61.1	91.9	53.6	80.5	49.8	74.8	44.8	67.3	39.7	59.7
	40	65.6	98.6	58.1	87.3	50.9	76.5	47.3	71.1	42.5	63.9	37.7	56.7
	42	62.4	93.9	55.3	83.1	48.5	72.9	45.1	67.7	40.5	60.9	35.9	54.0
	44	59.6	89.6	52.8	79.4	46.3	69.5	43.0	64.6	38.6	58.1	34.3	51.5
	46	57.0	85.7	50.5	75.9	44.3	66.5	41.1	61.8	37.0	55.6	32.8	49.3
	48	54.6	82.1	48.4	72.8	42.4	63.8	39.4	59.3	35.4	53.3	31.4	47.3
	50	52.5	78.8	46.5	69.8	40.7	61.2	37.8	56.9	34.0	51.1	30.2	45.4
	52	50.4	75.8	44.7	67.2	39.2	58.8	36.4	54.7	32.7	49.2	29.0	43.6
	54	48.6	73.0	43.0	64.7	37.7	56.7	35.0	52.7	31.5	47.3	27.9	42.0
	56	46.8	70.4	41.5	62.4	36.4	54.6	33.8	50.8	30.4	45.6	26.9	40.5
	58	45.2	68.0	40.1	60.2	35.1	52.8	32.6	49.0	29.3	44.1	26.0	39.1
	60	43.7	65.7	38.7	58.2	33.9	51.0	31.5	47.4	28.3	42.6	25.1	37.8
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	2620	3940	2320	3490	2040	3060	1890	2840	1700	2560	1510	2270
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	328	493	290	437	254	383	237	356	213	320	189	284
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	128	192	114	171	100	151	93.0	140	84.2	127	73.4	110
BF/Ω_b	$\varphi_b BF$, kips	7.55	11.4	7.24	10.9	6.78	10.2	6.56	9.86	6.17	9.28	6.93	10.4
V_n/Ω_v	$\varphi_v V_{nx}$, kips	135	203	119	179	104	156	97.8	147	90.5	136	92.1	138
Z_x, in.^{3}		219		194		170		158		142		126	
L_p, ft		3.77		3.73		3.71		3.69		3.63		2.77	
L_r, ft		30.2		28.1		26.4		25.6		24.4		19.4	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W21-W18

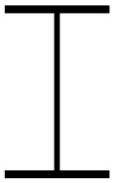
Shape		W21×				W18×							
		50		44		106		97		86		76	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7	170	256	156	234								
	8	162	243	140	210								
	9	144	216	124	187								
	10	129	194	112	168								
	11	118	177	102	153	238	358	214	322	190	286	167	250
	12	108	162	93.1	140	229	344	210	315	185	278	162	243
	13	99.5	150	86.0	129	211	317	193	291	170	256	149	224
	14	92.4	139	79.8	120	196	294	180	270	158	238	139	208
	15	86.2	130	74.5	112	183	275	168	252	148	222	129	194
	16	80.8	122	69.8	105	171	258	157	236	138	208	121	182
	17	76.1	114	65.7	98.8	161	242	148	222	130	196	114	172
	18	71.9	108	62.1	93.3	152	229	140	210	123	185	108	162
	19	68.1	102	58.8	88.4	144	217	132	199	117	175	102	153
	20	64.7	97.2	55.9	84.0	137	206	126	189	111	167	97.0	146
	21	61.6	92.6	53.2	80.0	131	196	120	180	106	159	92.4	139
	22	58.8	88.4	50.8	76.3	125	187	114	172	101	151	88.2	133
	23	56.2	84.5	48.6	73.0	119	179	109	164	96.3	145	84.4	127
	24	53.9	81.0	46.6	70.0	114	172	105	158	92.3	139	80.8	122
	25	51.7	77.8	44.7	67.2	110	165	101	151	88.6	133	77.6	117
	26	49.7	74.8	43.0	64.6	105	159	96.7	145	85.2	128	74.6	112
	27	47.9	72.0	41.4	62.2	102	153	93.1	140	82.1	123	71.9	108
	28	46.2	69.4	39.9	60.0	97.9	147	89.8	135	79.1	119	69.3	104
	29	44.6	67.0	38.5	57.9	94.6	142	86.7	130	76.4	115	66.9	101
	30	43.1	64.8	37.2	56.0	91.4	137	83.8	126	73.9	111	64.7	97.2
	32	40.4	60.8	34.9	52.5	85.7	129	78.6	118	69.2	104	60.6	91.1
	34	38.0	57.2	32.9	49.4	80.7	121	74.0	111	65.2	97.9	57.1	85.8
	36	35.9	54.0	31.0	46.7	76.2	115	69.9	105	61.5	92.5	53.9	81.0
	38	34.0	51.2	29.4	44.2	72.2	108	66.2	99.5	58.3	87.6	51.1	76.7
	40	32.3	48.6	27.9	42.0	68.6	103	62.9	94.5	55.4	83.3	48.5	72.9
	42	30.8	46.3	26.6	40.0	65.3	98.1	59.9	90.0	52.8	79.3	46.2	69.4
	44	29.4	44.2	25.4	38.2	62.3	93.7	57.2	85.9	50.4	75.7	44.1	66.3
	46	28.1	42.3	24.3	36.5	59.6	89.6	54.7	82.2	48.2	72.4	42.2	63.4
	48	26.9	40.5	23.3	35.0	57.1	85.9	52.4	78.8	46.2	69.4	40.4	60.8
	50	25.9	38.9	22.3	33.6	54.9	82.4	50.3	75.6	44.3	66.6	38.8	58.3
	52	24.9	37.4	21.5	32.3	52.7	79.3	48.4	72.7	42.6	64.0	37.3	56.1
	54	24.0	36.0	20.7	31.1	50.8	76.3	46.6	70.0	41.0	61.7	35.9	54.0
	56	23.1	34.7	20.0	30.0	49.0	73.6	44.9	67.5	39.6	59.5	34.6	52.1
	58	22.3	33.5	19.3	29.0	47.3	71.1	43.4	65.2	38.2	57.4	33.5	50.3
	60	21.6	32.4	18.6	28.0	45.7	68.7	41.9	63.0	36.9	55.5	32.3	48.6
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1290	1940	1120	1680	2740	4120	2510	3780	2220	3330	1940	2920
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	162	243	140	210	343	515	314	473	277	416	243	365
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	62.4	93.8	53.6	80.6	137	206	126	189	111	167	97.7	147
BF/Ω_b	$\varphi_b BF$, kips	6.43	9.66	5.87	8.82	5.02	7.55	4.91	7.38	4.73	7.11	4.47	6.72
V_n/Ω_v	$\varphi_v V_{nx}$, kips	85.2	128	78.1	117	119	179	107	161	95.2	143	83.4	125
Z_x, in.^{3}		108		93.3		229		210		185		162	
L_p, ft		2.67		2.59		5.44		5.42		5.38		5.34	
L_r, ft		18.1		17.2		46.5		43.8		40.4		37.7	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W18

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 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											140	212
	8	197	296	178	268	163	244	152	228	138	208	134	201
	9	192	288	176	264	162	244	148	222	133	199	119	179
	10	172	259	158	238	146	220	133	200	119	179	107	161
	11	157	236	144	216	133	200	121	182	108	163	97.4	146
	12	144	216	132	198	122	183	111	167	99.4	149	89.3	134
	13	133	199	122	183	112	169	102	154	91.8	138	82.5	124
	14	123	185	113	170	104	157	95.0	143	85.2	128	76.6	115
	15	115	173	105	158	97.4	146	88.6	133	79.5	120	71.5	107
	16	108	162	98.8	149	91.3	137	83.1	125	74.6	112	67.0	101
	17	101	152	93.0	140	85.9	129	78.2	118	70.2	105	63.1	94.8
	18	95.8	144	87.8	132	81.2	122	73.9	111	66.3	99.6	59.5	89.5
	19	90.8	136	83.2	125	76.9	116	70.0	105	62.8	94.4	56.4	84.8
	20	86.2	130	79.0	119	73.1	110	66.5	99.9	59.6	89.6	53.6	80.6
	21	82.1	123	75.3	113	69.6	105	63.3	95.1	56.8	85.4	51.0	76.7
	22	78.4	118	71.9	108	66.4	99.8	60.4	90.8	54.2	81.5	48.7	73.2
	23	75.0	113	68.7	103	63.5	95.5	57.8	86.9	51.9	77.9	46.6	70.0
	24	71.9	108	65.9	99.0	60.9	91.5	55.4	83.3	49.7	74.7	44.7	67.1
	25	69.0	104	63.2	95.0	58.4	87.8	53.2	79.9	47.7	71.7	42.9	64.4
	26	66.3	99.7	60.8	91.4	56.2	84.5	51.1	76.8	45.9	69.0	41.2	62.0
	27	63.9	96.0	58.5	88.0	54.1	81.3	49.2	74.0	44.2	66.4	39.7	59.7
	28	61.6	92.6	56.5	84.9	52.2	78.4	47.5	71.4	42.6	64.0	38.3	57.5
	29	59.5	89.4	54.5	81.9	50.4	75.7	45.8	68.9	41.1	61.8	37.0	55.6
	30	57.5	86.4	52.7	79.2	48.7	73.2	44.3	66.6	39.8	59.8	35.7	53.7
	32	53.9	81.0	49.4	74.3	45.7	68.6	41.5	62.4	37.3	56.0	33.5	50.3
	34	50.7	76.2	46.5	69.9	43.0	64.6	39.1	58.8	35.1	52.7	31.5	47.4
	36	47.9	72.0	43.9	66.0	40.6	61.0	36.9	55.5	33.1	49.8	29.8	44.8
	38	45.4	68.2	41.6	62.5	38.4	57.8	35.0	52.6	31.4	47.2	28.2	42.4
	40	43.1	64.8	39.5	59.4	36.5	54.9	33.2	50.0	29.8	44.8	26.8	40.3
	42	41.1	61.7	37.6	56.6	34.8	52.3	31.7	47.6	28.4	42.7	25.5	38.4
	44	39.2	58.9	35.9	54.0	33.2	49.9	30.2	45.4	27.1	40.7	24.4	36.6
	46	37.5	56.3	34.4	51.7	31.8	47.7	28.9	43.4	25.9	39.0	23.3	35.0
	48	35.9	54.0	32.9	49.5	30.4	45.8	27.7	41.6	24.9	37.4	22.3	33.6
	50	34.5	51.8	31.6	47.5	29.2	43.9	26.6	40.0	23.9	35.9	21.4	32.2
	52	33.2	49.8	30.4	45.7	28.1	42.2	25.6	38.4	22.9	34.5	20.6	31.0
	54	31.9	48.0	29.3	44.0	27.1	40.7	24.6	37.0	22.1	33.2	19.8	29.8
	56	30.8	46.3	28.2	42.4	26.1	39.2	23.7	35.7	21.3	32.0	19.1	28.8
	58	29.7	44.7	27.3	41.0	25.2	37.9	22.9	34.4	20.6	30.9	18.5	27.8
	60	28.7	43.2	26.3	39.6	24.4	36.6	22.2	33.3	19.9	29.9	17.9	26.9
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1720	2590	1580	2380	1460	2200	1330	2000	1190	1790	1070	1610
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	216	324	198	297	183	275	166	250	149	224	134	201
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	84.9	128	78.1	117	72.1	108	65.5	98.4	59.1	88.9	52.4	78.8
BF/Ω_b	$\varphi_b BF$, kips	5.36	8.05	5.20	7.82	5.06	7.60	4.87	7.31	4.58	6.88	5.10	7.66
V_n/Ω_v	$\varphi_v V_{nx}$, kips	98.7	148	89.2	134	81.4	122	76.1	114	68.9	104	70.2	106
Z_x, in.^{3}		144		132		122		111		99.6		89.5	
L_p, ft		3.48		3.46		3.44		3.40		3.38		2.65	
L_r, ft		27.9		26.4		25.3		24.1		23.0		18.7	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W18-W16

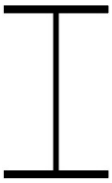
Shape		W18×				W16×							
		40		35		100		89		77		67	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6			114	172								
	7	122	183	112	168								
	8	116	174	97.8	147								
	9	103	154	86.9	131								
	10	92.5	139	78.2	118			190	286				
	11	84.1	126	71.1	107	214	322	189	285	162	244	139	208
	12	77.0	116	65.2	98.0	197	296	174	261	149	224	129	194
	13	71.1	107	60.2	90.4	181	273	160	241	137	206	119	179
	14	66.0	99.3	55.9	84.0	169	253	149	224	127	192	110	166
	15	61.6	92.6	52.1	78.4	157	236	139	209	119	179	103	155
	16	57.8	86.9	48.9	73.5	147	222	130	196	112	168	96.6	145
	17	54.4	81.7	46.0	69.1	139	209	123	184	105	158	90.9	137
	18	51.4	77.2	43.4	65.3	131	197	116	174	99.1	149	85.8	129
	19	48.7	73.1	41.2	61.9	124	187	110	165	93.9	141	81.3	122
	20	46.2	69.5	39.1	58.8	118	177	104	157	89.2	134	77.2	116
	21	44.0	66.2	37.2	56.0	112	169	99.2	149	85.0	128	73.6	111
	22	42.0	63.2	35.5	53.4	107	161	94.7	142	81.1	122	70.2	106
	23	40.2	60.4	34.0	51.1	103	154	90.6	136	77.6	117	67.2	101
	24	38.5	57.9	32.6	49.0	98.3	148	86.8	131	74.4	112	64.4	96.8
	25	37.0	55.6	31.3	47.0	94.4	142	83.4	125	71.4	107	61.8	92.9
	26	35.6	53.4	30.1	45.2	90.7	136	80.1	120	68.6	103	59.4	89.3
	27	34.2	51.5	29.0	43.5	87.4	131	77.2	116	66.1	99.3	57.2	86.0
	28	33.0	49.6	27.9	42.0	84.3	127	74.4	112	63.7	95.8	55.2	82.9
	29	31.9	47.9	27.0	40.5	81.4	122	71.9	108	61.5	92.5	53.3	80.1
	30	30.8	46.3	26.1	39.2	78.6	118	69.5	104	59.5	89.4	51.5	77.4
	32	28.9	43.4	24.4	36.7	73.7	111	65.1	97.9	55.8	83.8	48.3	72.6
	34	27.2	40.9	23.0	34.6	69.4	104	61.3	92.1	52.5	78.9	45.4	68.3
	36	25.7	38.6	21.7	32.7	65.5	98.5	57.9	87.0	49.6	74.5	42.9	64.5
	38	24.3	36.6	20.6	30.9	62.1	93.3	54.8	82.4	47.0	70.6	40.7	61.1
	40	23.1	34.7	19.6	29.4	59.0	88.7	52.1	78.3	44.6	67.1	38.6	58.1
	42	22.0	33.1	18.6	28.0	56.2	84.4	49.6	74.6	42.5	63.9	36.8	55.3
	44	21.0	31.6	17.8	26.7	53.6	80.6	47.4	71.2	40.6	61.0	35.1	52.8
	46	20.1	30.2	17.0	25.6	51.3	77.1	45.3	68.1	38.8	58.3	33.6	50.5
	48	19.3	29.0	16.3	24.5	49.2	73.9	43.4	65.3	37.2	55.9	32.2	48.4
	50	18.5	27.8	15.6	23.5	47.2	70.9	41.7	62.6	35.7	53.6	30.9	46.4
	52	17.8	26.7	15.0	22.6	45.4	68.2	40.1	60.2	34.3	51.6	29.7	44.7
	54	17.1	25.7	14.5	21.8	43.7	65.7	38.6	58.0	33.0	49.7	28.6	43.0
	56	16.5	24.8	14.0	21.0	42.1	63.3	37.2	55.9	31.9	47.9	27.6	41.5
	58	15.9	24.0	13.5	20.3	40.7	61.1	35.9	54.0	30.8	46.2	26.6	40.0
	60	15.4	23.2	13.0	19.6	39.3	59.1	34.7	52.2	29.7	44.7	25.7	38.7
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	925	1390	782	1180	2360	3550	2080	3130	1780	2680	1540	2320
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	116	174	97.8	147	295	443	260	392	223	335	193	290
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	45.3	68.1	38.1	57.2	117	176	104	156	89.6	135	78.1	117
BF/Ω_b	$\varphi_b BF$, kips	4.68	7.04	4.28	6.43	4.06	6.10	3.99	5.99	3.82	5.75	3.64	5.47
V_n/Ω_v	$\varphi_v V_{nx}$, kips	60.8	91.3	57.2	86.0	107	161	95.1	143	80.9	122	69.4	104
Z_x, in.^{3}		77.2		65.3		197		174		149		129	
L_p, ft		2.61		2.51		5.13		5.09		5.05		5.03	
L_r, ft		17.6		16.5		48.9		44.4		39.9		36.6	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W16

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W16×											
		57		50		45		40		36		31	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6											94.2	142
	7									101	152	90.7	136
	8	152	228	134	200	120	180	105	158	94.2	142	79.3	119
	9	138	208	121	182	108	163	95.7	144	83.7	126	70.5	106
	10	125	187	109	164	97.4	146	86.1	129	75.3	113	63.5	95.4
	11	113	170	99.1	149	88.5	133	78.3	118	68.5	103	57.7	86.7
	12	104	156	90.8	137	81.1	122	71.8	108	62.8	94.4	52.9	79.5
	13	95.8	144	83.8	126	74.9	113	66.2	99.6	57.9	87.1	48.8	73.4
	14	89.0	134	77.8	117	69.5	105	61.5	92.4	53.8	80.9	45.3	68.1
	15	83.0	125	72.7	109	64.9	97.6	57.4	86.3	50.2	75.5	42.3	63.6
	16	77.8	117	68.1	102	60.9	91.5	53.8	80.9	47.1	70.8	39.7	59.6
	17	73.3	110	64.1	96.4	57.3	86.1	50.7	76.1	44.3	66.6	37.3	56.1
	18	69.2	104	60.5	91.0	54.1	81.3	47.8	71.9	41.8	62.9	35.3	53.0
	19	65.6	98.5	57.4	86.2	51.2	77.0	45.3	68.1	39.6	59.6	33.4	50.2
	20	62.3	93.6	54.5	81.9	48.7	73.2	43.1	64.7	37.7	56.6	31.7	47.7
	21	59.3	89.1	51.9	78.0	46.4	69.7	41.0	61.6	35.9	53.9	30.2	45.4
	22	56.6	85.1	49.5	74.5	44.3	66.5	39.1	58.8	34.2	51.5	28.9	43.4
	23	54.2	81.4	47.4	71.2	42.3	63.6	37.4	56.3	32.8	49.2	27.6	41.5
	24	51.9	78.0	45.4	68.3	40.6	61.0	35.9	53.9	31.4	47.2	26.4	39.8
	25	49.8	74.9	43.6	65.5	38.9	58.5	34.4	51.8	30.1	45.3	25.4	38.2
	26	47.9	72.0	41.9	63.0	37.4	56.3	33.1	49.8	29.0	43.5	24.4	36.7
	27	46.1	69.3	40.4	60.7	36.1	54.2	31.9	47.9	27.9	41.9	23.5	35.3
	28	44.5	66.9	38.9	58.5	34.8	52.3	30.8	46.2	26.9	40.4	22.7	34.1
	29	42.9	64.6	37.6	56.5	33.6	50.5	29.7	44.6	26.0	39.0	21.9	32.9
	30	41.5	62.4	36.3	54.6	32.5	48.8	28.7	43.1	25.1	37.7	21.2	31.8
	32	38.9	58.5	34.1	51.2	30.4	45.7	26.9	40.4	23.5	35.4	19.8	29.8
	34	36.6	55.1	32.1	48.2	28.6	43.0	25.3	38.1	22.2	33.3	18.7	28.1
	36	34.6	52.0	30.3	45.5	27.0	40.7	23.9	36.0	20.9	31.5	17.6	26.5
	38	32.8	49.3	28.7	43.1	25.6	38.5	22.7	34.1	19.8	29.8	16.7	25.1
	40	31.1	46.8	27.2	41.0	24.3	36.6	21.5	32.4	18.8	28.3	15.9	23.9
	42	29.7	44.6	25.9	39.0	23.2	34.8	20.5	30.8	17.9	27.0	15.1	22.7
	44	28.3	42.5	24.8	37.2	22.1	33.3	19.6	29.4	17.1	25.7	14.4	21.7
	46	27.1	40.7	23.7	35.6	21.2	31.8	18.7	28.1	16.4	24.6	13.8	20.7
	48	25.9	39.0	22.7	34.1	20.3	30.5	17.9	27.0	15.7	23.6	13.2	19.9
	50	24.9	37.4	21.8	32.8	19.5	29.3	17.2	25.9	15.1	22.6	12.7	19.1
	52	24.0	36.0	21.0	31.5	18.7	28.1	16.6	24.9	14.5	21.8	12.2	18.3
	54	23.1	34.7	20.2	30.3	18.0	27.1	15.9	24.0	13.9	21.0	11.8	17.7
	56	22.2	33.4	19.5	29.3	17.4	26.1	15.4	23.1	13.5	20.2	11.3	17.0
	58	21.5	32.3	18.8	28.2	16.8	25.2	14.8	22.3	13.0	19.5	10.9	16.4
	60	20.8	31.2	18.2	27.3	16.2	24.4	14.4	21.6	12.6	18.9	10.6	15.9
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1250	1870	1090	1640	974	1460	861	1290	753	1130	635	954
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	156	234	136	205	122	183	108	162	94.2	142	79.3	119
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	61.5	92.4	54.0	81.1	48.4	72.7	43.0	64.6	37.5	56.3	31.1	46.8
BF/Ω_b	$\varphi_b BF$, kips	4.15	6.24	3.96	5.95	3.77	5.67	3.53	5.30	3.28	4.93	3.56	5.35
V_n/Ω_v	$\varphi_v V_{nx}$, kips	76.0	114	66.8	100	59.9	90.0	52.6	79.1	50.6	76.0	47.1	70.8
Z_x, in.^{3}		104		91.0		81.3		71.9		62.9		53.0	
L_p, ft		3.28		3.26		3.22		3.20		3.12		2.38	
L_r, ft		26.0		24.0		22.7		21.5		20.4		15.9	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W16-W14

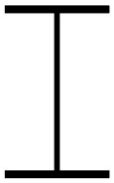
Shape		W16×		W14×									
		26		120		109		99		90 [f1]		82	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6	84.6	127										
	7	73.9	111										
	8	64.7	97.2										
	9	57.5	86.4										
	10	51.7	77.8									157	236
	11	47.0	70.7									149	224
	12	43.1	64.8									137	206
	13	39.8	59.8	184	278			148	224	133	200	126	190
	14	37.0	55.5	180	270	162	244	146	220	131	197	117	176
	15	34.5	51.8	168	252	152	228	137	205	122	184	109	164
	16	32.3	48.6	157	236	142	214	128	192	115	172	103	154
	17	30.4	45.7	148	222	134	201	120	181	108	162	96.5	145
	18	28.7	43.2	140	210	126	190	114	171	102	153	91.2	137
	19	27.2	40.9	132	199	120	180	108	162	96.6	145	86.4	130
	20	25.9	38.9	126	189	114	171	102	154	91.8	138	82.0	123
	21	24.6	37.0	120	180	108	163	97.5	147	87.4	131	78.1	117
	22	23.5	35.3	114	172	103	155	93.1	140	83.4	125	74.6	112
	23	22.5	33.8	109	164	98.9	149	89.0	134	79.8	120	71.3	107
	24	21.6	32.4	105	158	94.8	143	85.3	128	76.5	115	68.4	103
	25	20.7	31.1	101	151	91.0	137	81.9	123	73.4	110	65.6	98.6
	26	19.9	29.9	96.7	145	87.5	132	78.8	118	70.6	106	63.1	94.8
	27	19.2	28.8	93.1	140	84.3	127	75.8	114	68.0	102	60.8	91.3
	28	18.5	27.8	89.8	135	81.3	122	73.1	110	65.6	98.5	58.6	88.1
	29	17.8	26.8	86.7	130	78.5	118	70.6	106	63.3	95.1	56.6	85.0
	30	17.2	25.9	83.8	126	75.8	114	68.3	103	61.2	92.0	54.7	82.2
	32	16.2	24.3	78.6	118	71.1	107	64.0	96.2	57.4	86.2	51.3	77.1
	34	15.2	22.9	74.0	111	66.9	101	60.2	90.5	54.0	81.2	48.3	72.5
	36	14.4	21.6	69.9	105	63.2	95.0	56.9	85.5	51.0	76.6	45.6	68.5
	38	13.6	20.5	66.2	99.5	59.9	90.0	53.9	81.0	48.3	72.6	43.2	64.9
	40	12.9	19.4	62.9	94.5	56.9	85.5	51.2	77.0	45.9	69.0	41.0	61.7
	42	12.3	18.5	59.9	90.0	54.2	81.4	48.8	73.3	43.7	65.7	39.1	58.7
	44	11.8	17.7	57.2	85.9	51.7	77.7	46.5	70.0	41.7	62.7	37.3	56.0
	46	11.2	16.9	54.7	82.2	49.5	74.3	44.5	66.9	39.9	60.0	35.7	53.6
	48	10.8	16.2	52.4	78.8	47.4	71.3	42.7	64.1	38.2	57.5	34.2	51.4
	50	10.3	15.6	50.3	75.6	45.5	68.4	41.0	61.6	36.7	55.2	32.8	49.3
	52	10.0	15.0	48.4	72.7	43.8	65.8	39.4	59.2	35.3	53.1	31.6	47.4
	54	9.58	14.4	46.6	70.0	42.1	63.3	37.9	57.0	34.0	51.1	30.4	45.7
	56	9.24	13.9	44.9	67.5	40.6	61.1	36.6	55.0	32.8	49.3	29.3	44.0
	58	8.92	13.4	43.4	65.2	39.2	59.0	35.3	53.1	31.7	47.6	28.3	42.5
	60	8.62	13.0	41.9	63.0	37.9	57.0	34.1	51.3	30.6	46.0	27.3	41.1
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	517	778	2510	3780	2280	3420	2050	3080	1840	2760	1640	2470
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	64.7	97.2	314	473	284	428	256	385	229	345	205	308
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	25.2	37.9	127	190	115	173	104	157	95.0	143	82.2	124
BF/Ω_b	$\varphi_b BF$, kips	3.15	4.73	2.63	3.96	2.61	3.92	2.55	3.84	2.52	3.78	2.80	4.21
V_n/Ω_v	$\varphi_v V_{nx}$, kips	42.3	63.6	92.2	139	80.9	122	74.2	112	66.4	99.8	78.6	118
Z_x, in.^{3}		43.2		210		190		171		155		137	
L_p, ft		2.30		7.66		7.64		7.60		8.59		5.09	
L_r, ft		14.8		79.0		72.5		67.0		62.0		49.0	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W14

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W14×											
		74		68		61		53		48		43	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8												
	9							111	167	101	152	90.0	135
	10	138	208	125	188	112	169	102	153	91.6	138	81.1	122
	11	135	203	123	185	109	164	92.8	139	83.3	125	73.7	111
	12	124	186	113	170	99.8	150	85.0	128	76.3	115	67.6	102
	13	114	172	104	156	92.1	138	78.5	118	70.5	106	62.4	93.7
	14	106	159	96.7	145	85.5	129	72.9	110	65.4	98.4	57.9	87.0
	15	99.0	149	90.2	136	79.8	120	68.0	102	61.1	91.8	54.1	81.2
	16	92.8	140	84.6	127	74.9	113	63.8	95.9	57.3	86.1	50.7	76.2
	17	87.4	131	79.6	120	70.4	106	60.0	90.2	53.9	81.0	47.7	71.7
	18	82.5	124	75.2	113	66.5	100	56.7	85.2	50.9	76.5	45.0	67.7
	19	78.2	117	71.2	107	63.0	94.7	53.7	80.7	48.2	72.5	42.7	64.1
	20	74.3	112	67.7	102	59.9	90.0	51.0	76.7	45.8	68.9	40.5	60.9
	21	70.7	106	64.4	96.9	57.0	85.7	48.6	73.0	43.6	65.6	38.6	58.0
	22	67.5	101	61.5	92.5	54.4	81.8	46.4	69.7	41.6	62.6	36.9	55.4
	23	64.6	97.0	58.8	88.4	52.1	78.3	44.4	66.7	39.8	59.9	35.3	53.0
	24	61.9	93.0	56.4	84.8	49.9	75.0	42.5	63.9	38.2	57.4	33.8	50.8
	25	59.4	89.3	54.1	81.4	47.9	72.0	40.8	61.3	36.6	55.1	32.4	48.7
	26	57.1	85.8	52.0	78.2	46.1	69.2	39.2	59.0	35.2	53.0	31.2	46.9
	27	55.0	82.7	50.1	75.3	44.4	66.7	37.8	56.8	33.9	51.0	30.0	45.1
	28	53.0	79.7	48.3	72.6	42.8	64.3	36.4	54.8	32.7	49.2	29.0	43.5
	29	51.2	77.0	46.7	70.1	41.3	62.1	35.2	52.9	31.6	47.5	28.0	42.0
	30	49.5	74.4	45.1	67.8	39.9	60.0	34.0	51.1	30.5	45.9	27.0	40.6
	32	46.4	69.8	42.3	63.6	37.4	56.3	31.9	47.9	28.6	43.0	25.3	38.1
	34	43.7	65.6	39.8	59.8	35.2	52.9	30.0	45.1	26.9	40.5	23.8	35.8
	36	41.3	62.0	37.6	56.5	33.3	50.0	28.3	42.6	25.4	38.3	22.5	33.9
	38	39.1	58.7	35.6	53.5	31.5	47.4	26.9	40.4	24.1	36.2	21.3	32.1
	40	37.1	55.8	33.8	50.9	29.9	45.0	25.5	38.3	22.9	34.4	20.3	30.5
	42	35.4	53.1	32.2	48.4	28.5	42.9	24.3	36.5	21.8	32.8	19.3	29.0
	44	33.8	50.7	30.8	46.2	27.2	40.9	23.2	34.9	20.8	31.3	18.4	27.7
	46	32.3	48.5	29.4	44.2	26.0	39.1	22.2	33.3	19.9	29.9	17.6	26.5
	48	30.9	46.5	28.2	42.4	25.0	37.5	21.3	32.0	19.1	28.7	16.9	25.4
	50	29.7	44.6	27.1	40.7	24.0	36.0	20.4	30.7	18.3	27.5	16.2	24.4
	52	28.6	42.9	26.0	39.1	23.0	34.6	19.6	29.5	17.6	26.5	15.6	23.4
	54	27.5	41.3	25.1	37.7	22.2	33.3	18.9	28.4	17.0	25.5	15.0	22.6
	56	26.5	39.9	24.2	36.3	21.4	32.1	18.2	27.4	16.4	24.6	14.5	21.8
	58	25.6	38.5	23.3	35.1	20.6	31.0	17.6	26.4	15.8	23.7	14.0	21.0
	60	24.8	37.2	22.6	33.9	20.0	30.0	17.0	25.6	15.3	23.0	13.5	20.3
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1490	2230	1350	2030	1200	1800	1020	1530	916	1380	811	1220
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	186	279	169	254	150	225	128	192	115	172	101	152
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	74.8	112	68.0	102	61.0	91.6	51.3	77.1	46.2	69.5	41.1	61.8
BF/Ω_b	$\varphi_b BF$, kips	2.75	4.13	2.69	4.04	2.59	3.89	2.75	4.13	2.66	3.99	2.53	3.80
V_n/Ω_v	$\varphi_v V_{nx}$, kips	68.9	104	62.6	94.1	56.2	84.4	55.4	83.3	50.6	76.0	45.0	67.7
Z_x, in.^{3}		124		113		100		85.2		76.5		67.7	
L_p, ft		5.07		5.05		5.03		3.95		3.93		3.89	
L_r, ft		45.4		42.6		39.3		31.7		29.7		27.7	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W14-W12

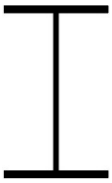
Shape		W14×										W12×	
		38		34		30		26		22		106	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5									68.0	102		
	6					80.4	121	76.4	115	64.5	96.9		
	7	94.2	142	86.0	129	79.4	119	67.4	101	55.3	83.1		
	8	90.7	136	80.4	121	69.5	104	59.0	88.7	48.4	72.7		
	9	80.6	121	71.5	107	61.7	92.8	52.4	78.8	43.0	64.6		
	10	72.6	109	64.3	96.7	55.6	83.5	47.2	70.9	38.7	58.1		
	11	66.0	99.2	58.5	87.9	50.5	75.9	42.9	64.5	35.2	52.9	170	254
	12	60.5	90.9	53.6	80.6	46.3	69.6	39.3	59.1	32.2	48.5	162	243
	13	55.8	83.9	49.5	74.4	42.7	64.2	36.3	54.6	29.8	44.7	149	224
	14	51.8	77.9	45.9	69.0	39.7	59.7	33.7	50.7	27.6	41.5	139	208
	15	48.4	72.7	42.9	64.4	37.0	55.7	31.5	47.3	25.8	38.8	129	194
	16	45.4	68.2	40.2	60.4	34.7	52.2	29.5	44.3	24.2	36.3	121	182
	17	42.7	64.2	37.8	56.9	32.7	49.1	27.8	41.7	22.8	34.2	114	172
	18	40.3	60.6	35.7	53.7	30.9	46.4	26.2	39.4	21.5	32.3	108	162
	19	38.2	57.4	33.8	50.9	29.2	44.0	24.8	37.3	20.4	30.6	102	153
	20	36.3	54.5	32.2	48.3	27.8	41.8	23.6	35.5	19.3	29.1	97.0	146
	21	34.6	51.9	30.6	46.0	26.5	39.8	22.5	33.8	18.4	27.7	92.4	139
	22	33.0	49.6	29.2	43.9	25.3	38.0	21.4	32.2	17.6	26.4	88.2	133
	23	31.6	47.4	28.0	42.0	24.2	36.3	20.5	30.8	16.8	25.3	84.4	127
	24	30.2	45.5	26.8	40.3	23.2	34.8	19.7	29.6	16.1	24.2	80.8	122
	25	29.0	43.6	25.7	38.7	22.2	33.4	18.9	28.4	15.5	23.3	77.6	117
	26	27.9	42.0	24.7	37.2	21.4	32.1	18.1	27.3	14.9	22.4	74.6	112
	27	26.9	40.4	23.8	35.8	20.6	30.9	17.5	26.3	14.3	21.5	71.9	108
	28	25.9	39.0	23.0	34.5	19.8	29.8	16.9	25.3	13.8	20.8	69.3	104
	29	25.0	37.6	22.2	33.3	19.2	28.8	16.3	24.5	13.3	20.0	66.9	101
	30	24.2	36.4	21.4	32.2	18.5	27.8	15.7	23.6	12.9	19.4	64.7	97.2
	32	22.7	34.1	20.1	30.2	17.4	26.1	14.7	22.2	12.1	18.2	60.6	91.1
	34	21.3	32.1	18.9	28.4	16.3	24.6	13.9	20.9	11.4	17.1	57.1	85.8
	36	20.2	30.3	17.9	26.9	15.4	23.2	13.1	19.7	10.7	16.2	53.9	81.0
	38	19.1	28.7	16.9	25.4	14.6	22.0	12.4	18.7	10.2	15.3	51.1	76.7
	40	18.1	27.3	16.1	24.2	13.9	20.9	11.8	17.7	9.67	14.5	48.5	72.9
	42	17.3	26.0	15.3	23.0	13.2	19.9	11.2	16.9	9.21	13.8	46.2	69.4
	44	16.5	24.8	14.6	22.0	12.6	19.0	10.7	16.1	8.79	13.2	44.1	66.3
	46	15.8	23.7	14.0	21.0	12.1	18.2	10.3	15.4	8.41	12.6	42.2	63.4
	48	15.1	22.7	13.4	20.1	11.6	17.4	9.83	14.8	8.06	12.1	40.4	60.8
	50	14.5	21.8	12.9	19.3	11.1	16.7	9.44	14.2	7.74	11.6	38.8	58.3
	52	14.0	21.0	12.4	18.6	10.7	16.1	9.07	13.6	7.44	11.2	37.3	56.1
	54	13.4	20.2	11.9	17.9	10.3	15.5	8.74	13.1	7.16	10.8	35.9	54.0
	56	13.0	19.5	11.5	17.3	9.92	14.9	8.43	12.7	6.91	10.4	34.6	52.1
	58	12.5	18.8	11.1	16.7	9.58	14.4	8.14	12.2	6.67	10.0	33.5	50.3
	60	12.1	18.2	10.7	16.1	9.26	13.9	7.86	11.8	6.45	9.69	32.3	48.6
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	726	1090	643	967	556	835	472	709	387	581	1940	2920
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	90.7	136	80.4	121	69.5	104	59.0	88.7	48.4	72.7	243	365
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	36.2	54.5	32.2	48.4	27.8	41.7	23.2	34.8	18.9	28.5	96.3	145
BF/Ω_b	$\varphi_b BF$, kips	2.83	4.25	2.66	4.00	2.47	3.71	2.81	4.22	2.50	3.76	2.04	3.06
V_n/Ω_v	$\varphi_v V_{nx}$, kips	47.1	70.8	43.0	64.6	40.2	60.4	38.2	57.4	34.0	51.0	84.8	127
Z_x, in.^{3}		60.6		53.7		46.4		39.4		32.3		162	
L_p, ft		3.18		3.14		3.06		2.22		2.14		6.37	
L_r, ft		22.4		21.2		19.9		15.0		13.9		78.2	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W12

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W12×											
		96		87		79		72		65		58	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8												
	9												
	10											94.6	142
	11	151	226	139	208	126	189	114	171	102	153	92.2	139
	12	146	219	130	195	117	176	106	159	95.0	143	84.5	127
	13	135	202	120	180	108	162	97.7	147	87.7	132	78.0	117
	14	125	188	111	167	100	150	90.7	136	81.4	122	72.5	109
	15	117	175	104	156	93.4	140	84.6	127	76.0	114	67.6	102
	16	109	164	97.3	146	87.6	132	79.3	119	71.3	107	63.4	95.3
	17	103	155	91.6	138	82.4	124	74.7	112	67.1	101	59.7	89.7
	18	97.1	146	86.5	130	77.8	117	70.5	106	63.3	95.2	56.4	84.7
	19	92.0	138	81.9	123	73.7	111	66.8	100	60.0	90.2	53.4	80.2
	20	87.4	131	77.8	117	70.1	105	63.5	95.4	57.0	85.7	50.7	76.2
	21	83.3	125	74.1	111	66.7	100	60.5	90.9	54.3	81.6	48.3	72.6
	22	79.5	119	70.8	106	63.7	95.7	57.7	86.7	51.8	77.9	46.1	69.3
	23	76.0	114	67.7	102	60.9	91.6	55.2	83.0	49.6	74.5	44.1	66.3
	24	72.9	110	64.9	97.5	58.4	87.8	52.9	79.5	47.5	71.4	42.3	63.5
	25	69.9	105	62.3	93.6	56.0	84.2	50.8	76.3	45.6	68.5	40.6	61.0
	26	67.3	101	59.9	90.0	53.9	81.0	48.8	73.4	43.9	65.9	39.0	58.6
	27	64.8	97.3	57.7	86.7	51.9	78.0	47.0	70.7	42.2	63.5	37.6	56.5
	28	62.4	93.9	55.6	83.6	50.0	75.2	45.3	68.1	40.7	61.2	36.2	54.5
	29	60.3	90.6	53.7	80.7	48.3	72.6	43.8	65.8	39.3	59.1	35.0	52.6
	30	58.3	87.6	51.9	78.0	46.7	70.2	42.3	63.6	38.0	57.1	33.8	50.8
	32	54.6	82.1	48.7	73.1	43.8	65.8	39.7	59.6	35.6	53.6	31.7	47.6
	34	51.4	77.3	45.8	68.8	41.2	61.9	37.3	56.1	33.5	50.4	29.8	44.8
	36	48.6	73.0	43.2	65.0	38.9	58.5	35.3	53.0	31.7	47.6	28.2	42.4
	38	46.0	69.2	41.0	61.6	36.9	55.4	33.4	50.2	30.0	45.1	26.7	40.1
	40	43.7	65.7	38.9	58.5	35.0	52.7	31.7	47.7	28.5	42.8	25.4	38.1
	42	41.6	62.6	37.1	55.7	33.4	50.1	30.2	45.4	27.1	40.8	24.2	36.3
	44	39.7	59.7	35.4	53.2	31.8	47.9	28.9	43.4	25.9	38.9	23.1	34.7
	46	38.0	57.1	33.8	50.9	30.5	45.8	27.6	41.5	24.8	37.3	22.1	33.1
	48	36.4	54.8	32.4	48.8	29.2	43.9	26.4	39.8	23.8	35.7	21.1	31.8
	50	35.0	52.6	31.1	46.8	28.0	42.1	25.4	38.2	22.8	34.3	20.3	30.5
	52	33.6	50.5	29.9	45.0	26.9	40.5	24.4	36.7	21.9	33.0	19.5	29.3
	54	32.4	48.7	28.8	43.3	25.9	39.0	23.5	35.3	21.1	31.7	18.8	28.2
	56	31.2	46.9	27.8	41.8	25.0	37.6	22.7	34.1	20.4	30.6	18.1	27.2
	58	30.1	45.3	26.8	40.3	24.2	36.3	21.9	32.9	19.7	29.5	17.5	26.3
	60	29.1	43.8	25.9	39.0	23.4	35.1	21.2	31.8	19.0	28.6	16.9	25.4
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1750	2630	1560	2340	1400	2110	1270	1910	1140	1710	1010	1520
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	219	329	195	293	175	263	159	239	143	214	127	191
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	87.6	132	78.8	118	71.4	107	64.7	97.2	58.3	87.6	51.6	77.6
BF/Ω_b	$\varphi_b BF$, kips	2.03	3.05	1.98	2.98	1.96	2.94	1.93	2.90	1.89	2.84	1.96	2.95
V_n/Ω_v	$\varphi_v V_{nx}$, kips	75.3	113	69.4	104	62.8	94.4	57.0	85.7	50.9	76.4	47.3	71.2
Z_x, in.^{3}		146		130		117		106		95.2		84.7	
L_p, ft		6.33		6.29		6.25		6.23		6.21		5.15	
L_r, ft		70.9		64.7		59.3		55.0		50.8		43.5	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W12

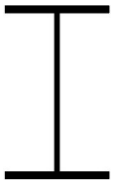
Shape		W12×											
		53		50		45		40		35		30	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7									80.8	122	69.0	104
	8			97.4	146	87.4	131	75.6	114	75.9	114	63.9	96.1
	9			94.1	141	84.0	126	74.7	112	67.5	101	56.8	85.4
	10	90.0	135	84.7	127	75.6	114	67.2	101	60.7	91.3	51.1	76.9
	11	83.1	125	77.0	116	68.7	103	61.1	91.8	55.2	83.0	46.5	69.9
	12	76.1	114	70.6	106	63.0	94.7	56.0	84.2	50.6	76.1	42.6	64.1
	13	70.3	106	65.1	97.9	58.1	87.4	51.7	77.7	46.7	70.2	39.3	59.1
	14	65.3	98.1	60.5	90.9	54.0	81.1	48.0	72.1	43.4	65.2	36.5	54.9
	15	60.9	91.6	56.4	84.8	50.4	75.7	44.8	67.3	40.5	60.8	34.1	51.2
	16	57.1	85.8	52.9	79.5	47.2	71.0	42.0	63.1	37.9	57.0	32.0	48.0
	17	53.8	80.8	49.8	74.9	44.5	66.8	39.5	59.4	35.7	53.7	30.1	45.2
	18	50.8	76.3	47.0	70.7	42.0	63.1	37.3	56.1	33.7	50.7	28.4	42.7
	19	48.1	72.3	44.6	67.0	39.8	59.8	35.4	53.1	32.0	48.0	26.9	40.5
	20	45.7	68.7	42.3	63.6	37.8	56.8	33.6	50.5	30.4	45.6	25.6	38.4
	21	43.5	65.4	40.3	60.6	36.0	54.1	32.0	48.1	28.9	43.5	24.4	36.6
	22	41.5	62.4	38.5	57.8	34.3	51.6	30.5	45.9	27.6	41.5	23.2	34.9
	23	39.7	59.7	36.8	55.3	32.9	49.4	29.2	43.9	26.4	39.7	22.2	33.4
	24	38.1	57.2	35.3	53.0	31.5	47.3	28.0	42.1	25.3	38.0	21.3	32.0
	25	36.6	54.9	33.9	50.9	30.2	45.4	26.9	40.4	24.3	36.5	20.5	30.7
	26	35.1	52.8	32.6	48.9	29.1	43.7	25.8	38.8	23.4	35.1	19.7	29.6
	27	33.8	50.9	31.4	47.1	28.0	42.1	24.9	37.4	22.5	33.8	18.9	28.5
	28	32.6	49.1	30.2	45.5	27.0	40.6	24.0	36.1	21.7	32.6	18.3	27.5
	29	31.5	47.4	29.2	43.9	26.1	39.2	23.2	34.8	20.9	31.5	17.6	26.5
	30	30.5	45.8	28.2	42.4	25.2	37.9	22.4	33.7	20.2	30.4	17.0	25.6
	32	28.6	42.9	26.5	39.8	23.6	35.5	21.0	31.6	19.0	28.5	16.0	24.0
	34	26.9	40.4	24.9	37.4	22.2	33.4	19.8	29.7	17.9	26.8	15.0	22.6
	36	25.4	38.2	23.5	35.4	21.0	31.6	18.7	28.1	16.9	25.4	14.2	21.4
	38	24.0	36.1	22.3	33.5	19.9	29.9	17.7	26.6	16.0	24.0	13.5	20.2
	40	22.8	34.3	21.2	31.8	18.9	28.4	16.8	25.2	15.2	22.8	12.8	19.2
	42	21.8	32.7	20.2	30.3	18.0	27.0	16.0	24.0	14.5	21.7	12.2	18.3
	44	20.8	31.2	19.2	28.9	17.2	25.8	15.3	23.0	13.8	20.7	11.6	17.5
	46	19.9	29.9	18.4	27.7	16.4	24.7	14.6	22.0	13.2	19.8	11.1	16.7
	48	19.0	28.6	17.6	26.5	15.7	23.7	14.0	21.0	12.6	19.0	10.7	16.0
	50	18.3	27.5	16.9	25.5	15.1	22.7	13.4	20.2	12.1	18.3	10.2	15.4
	52	17.6	26.4	16.3	24.5	14.5	21.8	12.9	19.4	11.7	17.6	9.83	14.8
	54	16.9	25.4	15.7	23.6	14.0	21.0	12.4	18.7	11.2	16.9	9.47	14.2
	56	16.3	24.5	15.1	22.7	13.5	20.3	12.0	18.0	10.8	16.3	9.13	13.7
	58	15.8	23.7	14.6	21.9	13.0	19.6	11.6	17.4	10.5	15.7	8.82	13.3
	60	15.2	22.9	14.1	21.2	12.6	18.9	11.2	16.8	10.1	15.2	8.52	12.8
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	914	1370	847	1270	756	1140	672	1010	607	913	511	769
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	114	172	106	159	94.5	142	84.0	126	75.9	114	63.9	96.1
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	46.5	70.0	42.6	64.0	38.1	57.3	34.2	51.3	30.4	45.8	25.7	38.7
BF/Ω_b	$\varphi_b BF$, kips	1.92	2.88	2.06	3.10	2.00	3.01	1.92	2.88	2.23	3.35	2.08	3.12
V_n/Ω_v	$\varphi_v V_{nx}$, kips	45.0	67.6	48.7	73.1	43.7	65.7	37.8	56.9	40.4	60.8	34.5	51.8
Z_x, in.^{3}		76.3		70.7		63.1		56.1		50.7		42.7	
L_p, ft		5.09		4.03		4.01		4.01		3.14		3.12	
L_r, ft		40.4		34.7		32.2		30.0		23.5		21.5	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W12-W10

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W12×										W10×	
		26		22		19		16		14		88	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4					61.8	92.8	57.0	85.6	50.9	76.5		
	5			69.0	104	58.2	87.5	46.9	70.6	40.7	61.2		
	6			57.7	86.7	48.5	72.9	39.1	58.8	33.9	51.0		
	7	60.4	91.0	49.4	74.3	41.6	62.5	33.5	50.4	29.1	43.7		
	8	55.1	82.8	43.3	65.0	36.4	54.7	29.3	44.1	25.4	38.3		
	9	49.0	73.6	38.5	57.8	32.3	48.6	26.1	39.2	22.6	34.0	141	212
	10	44.1	66.2	34.6	52.0	29.1	43.7	23.5	35.3	20.4	30.6	134	202
	11	40.1	60.2	31.5	47.3	26.5	39.8	21.3	32.1	18.5	27.8	122	183
	12	36.7	55.2	28.8	43.4	24.3	36.5	19.6	29.4	17.0	25.5	112	168
	13	33.9	51.0	26.6	40.0	22.4	33.6	18.1	27.1	15.7	23.5	103	155
	14	31.5	47.3	24.7	37.2	20.8	31.2	16.8	25.2	14.5	21.9	95.8	144
	15	29.4	44.2	23.1	34.7	19.4	29.2	15.6	23.5	13.6	20.4	89.4	134
	16	27.5	41.4	21.6	32.5	18.2	27.3	14.7	22.1	12.7	19.1	83.8	126
	17	25.9	39.0	20.4	30.6	17.1	25.7	13.8	20.8	12.0	18.0	78.9	119
	18	24.5	36.8	19.2	28.9	16.2	24.3	13.0	19.6	11.3	17.0	74.5	112
	19	23.2	34.9	18.2	27.4	15.3	23.0	12.4	18.6	10.7	16.1	70.6	106
	20	22.0	33.1	17.3	26.0	14.6	21.9	11.7	17.6	10.2	15.3	67.1	101
	21	21.0	31.5	16.5	24.8	13.9	20.8	11.2	16.8	9.69	14.6	63.9	96.0
	22	20.0	30.1	15.7	23.6	13.2	19.9	10.7	16.0	9.25	13.9	61.0	91.6
	23	19.2	28.8	15.0	22.6	12.7	19.0	10.2	15.3	8.85	13.3	58.3	87.7
	24	18.4	27.6	14.4	21.7	12.1	18.2	9.78	14.7	8.48	12.8	55.9	84.0
	25	17.6	26.5	13.8	20.8	11.6	17.5	9.39	14.1	8.14	12.2	53.7	80.6
	26	17.0	25.5	13.3	20.0	11.2	16.8	9.03	13.6	7.83	11.8	51.6	77.5
	27	16.3	24.5	12.8	19.3	10.8	16.2	8.69	13.1	7.54	11.3	49.7	74.7
	28	15.7	23.7	12.4	18.6	10.4	15.6	8.38	12.6	7.27	10.9	47.9	72.0
	29	15.2	22.8	11.9	17.9	10.0	15.1	8.09	12.2	7.02	10.6	46.3	69.5
	30	14.7	22.1	11.5	17.3	9.70	14.6	7.82	11.8	6.79	10.2	44.7	67.2
	32	13.8	20.7	10.8	16.3	9.09	13.7	7.34	11.0	6.36	9.56	41.9	63.0
	34	13.0	19.5	10.2	15.3	8.56	12.9	6.90	10.4	5.99	9.00	39.5	59.3
	36	12.2	18.4	9.61	14.5	8.08	12.2	6.52	9.80	5.66	8.50	37.3	56.0
	38	11.6	17.4	9.11	13.7	7.66	11.5	6.18	9.28	5.36	8.05	35.3	53.1
	40	11.0	16.6	8.65	13.0	7.28	10.9	5.87	8.82	5.09	7.65	33.5	50.4
	42	10.5	15.8	8.24	12.4	6.93	10.4	5.59	8.40	4.85	7.29	31.9	48.0
	44	10.0	15.1	7.87	11.8	6.61	9.94	5.33	8.02	4.63	6.95	30.5	45.8
	46	9.58	14.4	7.52	11.3	6.33	9.51	5.10	7.67	4.43	6.65	29.2	43.8
	48	9.18	13.8	7.21	10.8	6.06	9.11	4.89	7.35	4.24	6.38	27.9	42.0
	50	8.81	13.2	6.92	10.4	5.82	8.75	4.69	7.06	4.07	6.12	26.8	40.3
	52	8.48	12.7	6.66	10.0	5.60	8.41	4.51	6.78	3.92	5.88	25.8	38.8
	54	8.16	12.3	6.41	9.63	5.39	8.10	4.35	6.53	3.77	5.67	24.8	37.3
	56	7.87	11.8	6.18	9.29	5.20	7.81	4.19	6.30	3.64	5.46	24.0	36.0
	58	7.60	11.4	5.97	8.97	5.02	7.54	4.05	6.08	3.51	5.28	23.1	34.8
	60	7.35	11.0	5.77	8.67	4.85	7.29	3.91	5.88	3.39	5.10	22.4	33.6
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	441	662	346	520	291	437	235	353	204	306	1340	2020
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	55.1	82.8	43.3	65.0	36.4	54.7	29.3	44.1	25.4	38.3	168	252
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	22.2	33.4	16.8	25.3	14.1	21.2	11.3	16.9	9.77	14.7	65.8	98.9
BF/Ω_b	$\varphi_b BF$, kips	1.92	2.89	2.44	3.67	2.24	3.37	1.99	2.99	1.81	2.72	1.37	2.06
V_n/Ω_v	$\varphi_v V_{nx}$, kips	30.2	45.5	34.5	51.8	30.9	46.4	28.5	42.8	25.7	38.6	70.4	106
Z_x, in.^{3}		36.8		28.9		24.3		19.6		17.0		112	
L_p, ft		3.08		1.74		1.68		1.59		1.55		5.38	
L_r, ft		20.2		12.6		11.6		10.7		10.2		79.5	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W10

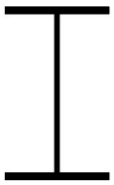
Shape		W10×											
		77		68		60		54		49		45	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5												
	6												
	7												
	8											76.2	115
	9	121	182	105	158	92.4	139	80.6	121	73.2	110	71.9	108
	10	116	174	101	152	88.1	132	78.7	118	71.1	107	64.7	97.2
	11	105	158	91.8	138	80.1	120	71.5	108	64.7	97.2	58.8	88.4
	12	96.5	145	84.1	126	73.5	110	65.6	98.6	59.3	89.1	53.9	81.0
	13	89.1	134	77.7	117	67.8	102	60.5	91.0	54.7	82.2	49.7	74.8
	14	82.7	124	72.1	108	63.0	94.6	56.2	84.5	50.8	76.4	46.2	69.4
	15	77.2	116	67.3	101	58.8	88.3	52.5	79	47.4	71.3	43.1	64.8
	16	72.4	109	63.1	94.8	55.1	82.8	49.2	73.9	44.5	66.8	40.4	60.8
	17	68.1	102	59.4	89.3	51.8	77.9	46.3	69.6	41.8	62.9	38.0	57.2
	18	64.3	96.7	56.1	84.3	49.0	73.6	43.7	65.7	39.5	59.4	35.9	54.0
	19	61.0	91.6	53.1	79.9	46.4	69.7	41.4	62.2	37.4	56.3	34.0	51.2
	20	57.9	87.0	50.5	75.9	44.1	66.2	39.3	59.1	35.6	53.5	32.3	48.6
	21	55.1	82.9	48.1	72.3	42.0	63.1	37.5	56.3	33.9	50.9	30.8	46.3
	22	52.6	79.1	45.9	69.0	40.1	60.2	35.8	53.8	32.3	48.6	29.4	44.2
	23	50.4	75.7	43.9	66.0	38.3	57.6	34.2	51.4	30.9	46.5	28.1	42.3
	24	48.3	72.5	42.1	63.2	36.7	55.2	32.8	49.3	29.6	44.6	26.9	40.5
	25	46.3	69.6	40.4	60.7	35.3	53.0	31.5	47.3	28.5	42.8	25.9	38.9
	26	44.5	66.9	38.8	58.4	33.9	51.0	30.3	45.5	27.4	41.1	24.9	37.4
	27	42.9	64.5	37.4	56.2	32.6	49.1	29.1	43.8	26.3	39.6	24.0	36.0
	28	41.4	62.2	36.1	54.2	31.5	47.3	28.1	42.2	25.4	38.2	23.1	34.7
	29	39.9	60.0	34.8	52.3	30.4	45.7	27.1	40.8	24.5	36.9	22.3	33.5
	30	38.6	58.0	33.7	50.6	29.4	44.2	26.2	39.4	23.7	35.6	21.6	32.4
	32	36.2	54.4	31.5	47.4	27.5	41.4	24.6	37.0	22.2	33.4	20.2	30.4
	34	34.1	51.2	29.7	44.6	25.9	39.0	23.1	34.8	20.9	31.4	19.0	28.6
	36	32.2	48.4	28.0	42.2	24.5	36.8	21.9	32.9	19.8	29.7	18.0	27.0
	38	30.5	45.8	26.6	39.9	23.2	34.9	20.7	31.1	18.7	28.1	17.0	25.6
	40	29.0	43.5	25.2	37.9	22.0	33.1	19.7	29.6	17.8	26.7	16.2	24.3
	42	27.6	41.4	24.0	36.1	21.0	31.5	18.7	28.2	16.9	25.5	15.4	23.1
	44	26.3	39.6	22.9	34.5	20.0	30.1	17.9	26.9	16.2	24.3	14.7	22.1
	46	25.2	37.8	21.9	33.0	19.2	28.8	17.1	25.7	15.5	23.2	14.1	21.1
	48	24.1	36.3	21.0	31.6	18.4	27.6	16.4	24.6	14.8	22.3	13.5	20.3
	50	23.2	34.8	20.2	30.3	17.6	26.5	15.7	23.7	14.2	21.4	12.9	19.4
	52	22.3	33.5	19.4	29.2	17.0	25.5	15.1	22.7	13.7	20.6	12.4	18.7
	54	21.4	32.2	18.7	28.1	16.3	24.5	14.6	21.9	13.2	19.8	12.0	18.0
	56	20.7	31.1	18.0	27.1	15.7	23.7	14.1	21.1	12.7	19.1	11.5	17.4
	58	20.0	30.0	17.4	26.2	15.2	22.8	13.6	20.4	12.3	18.4	11.2	16.8
	60	19.3	29.0	16.8	25.3	14.7	22.1	13.1	19.7	11.9	17.8	10.8	16.2
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	1160	1740	1010	1520	881	1320	787	1180	711	1070	647	972
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	145	218	126	190	110	166	98.4	148	88.9	134	80.8	122
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	57.4	86.3	50.5	75.8	44.4	66.7	39.9	59.9	36.2	54.5	32.5	48.9
BF/Ω_b	$\varphi_b BF$, kips	1.35	2.03	1.34	2.01	1.32	1.98	1.30	1.95	1.27	1.92	1.34	2.02
V_n/Ω_v	$\varphi_v V_{nx}$, kips	60.6	91.0	52.7	79.2	46.2	69.4	40.3	60.5	36.6	55.0	38.1	57.3
Z_x, in.^{3}		96.7		84.3		73.6		65.7		59.4		54.0	
L_p, ft		5.34		5.30		5.25		5.23		5.21		4.11	
L_r, ft		69.9		62.0		55.3		50.3		46.5		40.0	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W10

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W10×											
		39		33		30		26		22		19	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4											55.0	82.6
	5									52.8	79.4	50.8	76.3
	6					68.0	102	57.8	86.8	51.3	77.1	42.3	63.6
	7			60.8	91.4	61.9	93.1	52.9	79.5	44.0	66.1	36.3	54.5
	8	67.4	101	56.7	85.3	54.2	81.5	46.3	69.5	38.5	57.8	31.7	47.7
	9	61.1	91.8	50.4	75.8	48.2	72.4	41.1	61.8	34.2	51.4	28.2	42.4
	10	55.0	82.6	45.4	68.2	43.4	65.2	37.0	55.6	30.8	46.3	25.4	38.2
	11	50.0	75.1	41.3	62.0	39.4	59.2	33.6	50.6	28.0	42.1	23.1	34.7
	12	45.8	68.9	37.8	56.9	36.1	54.3	30.8	46.4	25.6	38.6	21.2	31.8
	13	42.3	63.6	34.9	52.5	33.3	50.1	28.5	42.8	23.7	35.6	19.5	29.4
	14	39.3	59.0	32.4	48.7	31.0	46.5	26.4	39.7	22.0	33.0	18.1	27.3
	15	36.6	55.1	30.3	45.5	28.9	43.4	24.7	37.1	20.5	30.8	16.9	25.4
	16	34.4	51.6	28.4	42.6	27.1	40.7	23.1	34.8	19.2	28.9	15.9	23.9
	17	32.3	48.6	26.7	40.1	25.5	38.3	21.8	32.7	18.1	27.2	14.9	22.4
	18	30.5	45.9	25.2	37.9	24.1	36.2	20.6	30.9	17.1	25.7	14.1	21.2
	19	28.9	43.5	23.9	35.9	22.8	34.3	19.5	29.3	16.2	24.3	13.4	20.1
	20	27.5	41.3	22.7	34.1	21.7	32.6	18.5	27.8	15.4	23.1	12.7	19.1
	21	26.2	39.3	21.6	32.5	20.6	31.0	17.6	26.5	14.7	22.0	12.1	18.2
	22	25.0	37.6	20.6	31.0	19.7	29.6	16.8	25.3	14.0	21.0	11.5	17.3
	23	23.9	35.9	19.7	29.7	18.8	28.3	16.1	24.2	13.4	20.1	11.0	16.6
	24	22.9	34.4	18.9	28.4	18.1	27.2	15.4	23.2	12.8	19.3	10.6	15.9
	25	22.0	33.0	18.2	27.3	17.3	26.1	14.8	22.2	12.3	18.5	10.2	15.3
	26	21.1	31.8	17.5	26.2	16.7	25.1	14.2	21.4	11.8	17.8	9.77	14.7
	27	20.4	30.6	16.8	25.3	16.1	24.1	13.7	20.6	11.4	17.1	9.40	14.1
	28	19.6	29.5	16.2	24.4	15.5	23.3	13.2	19.9	11.0	16.5	9.07	13.6
	29	19.0	28.5	15.7	23.5	14.9	22.5	12.8	19.2	10.6	16.0	8.75	13.2
	30	18.3	27.5	15.1	22.7	14.5	21.7	12.3	18.5	10.3	15.4	8.46	12.7
	32	17.2	25.8	14.2	21.3	13.5	20.4	11.6	17.4	9.62	14.5	7.93	11.9
	34	16.2	24.3	13.3	20.1	12.8	19.2	10.9	16.4	9.05	13.6	7.47	11.2
	36	15.3	23.0	12.6	19.0	12.0	18.1	10.3	15.5	8.55	12.9	7.05	10.6
	38	14.5	21.7	11.9	18.0	11.4	17.1	9.74	14.6	8.10	12.2	6.68	10.0
	40	13.7	20.7	11.3	17.1	10.8	16.3	9.25	13.9	7.69	11.6	6.35	9.54
	42	13.1	19.7	10.8	16.2	10.3	15.5	8.81	13.2	7.33	11.0	6.05	9.09
	44	12.5	18.8	10.3	15.5	9.85	14.8	8.41	12.6	7.00	10.5	5.77	8.67
	46	12.0	18.0	9.87	14.8	9.42	14.2	8.04	12.1	6.69	10.1	5.52	8.30
	48	11.5	17.2	9.46	14.2	9.03	13.6	7.71	11.6	6.41	9.64	5.29	7.95
	50	11.0	16.5	9.08	13.6	8.67	13.0	7.40	11.1	6.16	9.25	5.08	7.63
	52	10.6	15.9	8.73	13.1	8.34	12.5	7.12	10.7	5.92	8.90	4.88	7.34
	54	10.2	15.3	8.41	12.6	8.03	12.1	6.85	10.3	5.70	8.57	4.70	7.07
	56	9.82	14.8	8.11	12.2	7.74	11.6	6.61	9.93	5.50	8.26	4.53	6.81
	58	9.48	14.2	7.83	11.8	7.47	11.2	6.38	9.59	5.31	7.98	4.38	6.58
	60	9.16	13.8	7.56	11.4	7.23	10.9	6.17	9.27	5.13	7.71	4.23	6.36
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	550	826	454	682	434	652	370	556	308	463	254	382
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	68.7	103	56.7	85.3	54.2	81.5	46.3	69.5	38.5	57.8	31.7	47.7
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	27.8	41.8	23.0	34.6	21.6	32.5	18.6	27.9	15.4	23.2	12.5	18.7
BF/Ω_b	$\varphi_b BF$, kips	1.31	1.97	1.25	1.88	1.58	2.38	1.51	2.27	1.41	2.12	1.64	2.47
V_n/Ω_v	$\varphi_v V_{nx}$, kips	33.7	50.6	30.4	45.7	34.0	51.0	28.9	43.4	26.4	39.7	27.5	41.3
Z_x, in.^{3}		45.9		37.9		36.2		30.9		25.7		21.2	
L_p, ft		4.07		3.99		2.81		2.79		2.71		1.79	
L_r, ft		35.3		30.9		23.4		21.1		19.0		13.5	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W10-W8

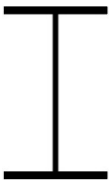
Shape		W10×						W8×					
		17		15		12		67		58		48	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	52.2	78.6	46.7	70.2	36.8	55.4						
	5	43.8	65.9	37.4	56.2	29.5	44.3						
	6	36.5	54.9	31.1	46.8	24.6	36.9						
	7	31.3	47.1	26.7	40.1	21.0	31.6	111	166	96.2	145	73.2	110
	8	27.4	41.2	23.4	35.1	18.4	27.7	104	157	88.8	133	72.6	109
	9	24.4	36.6	20.8	31.2	16.4	24.6	92.7	139	78.9	119	64.5	97.0
	10	21.9	32.9	18.7	28.1	14.7	22.1	83.5	125	71.0	107	58.1	87.3
	11	19.9	29.9	17.0	25.5	13.4	20.1	75.9	114	64.6	97.0	52.8	79.4
	12	18.3	27.5	15.6	23.4	12.3	18.5	69.6	105	59.2	89.0	48.4	72.8
	13	16.9	25.3	14.4	21.6	11.3	17.0	64.2	96.5	54.6	82.1	44.7	67.2
	14	15.7	23.5	13.3	20.1	10.5	15.8	59.6	89.6	50.7	76.2	41.5	62.4
	15	14.6	22.0	12.5	18.7	9.82	14.8	55.6	83.6	47.3	71.2	38.7	58.2
	16	13.7	20.6	11.7	17.6	9.21	13.8	52.2	78.4	44.4	66.7	36.3	54.6
	17	12.9	19.4	11.0	16.5	8.67	13.0	49.1	73.8	41.8	62.8	34.2	51.4
	18	12.2	18.3	10.4	15.6	8.18	12.3	46.4	69.7	39.5	59.3	32.3	48.5
	19	11.5	17.3	9.83	14.8	7.75	11.7	43.9	66.0	37.4	56.2	30.6	45.9
	20	11.0	16.5	9.34	14.0	7.37	11.1	41.7	62.7	35.5	53.4	29.0	43.7
	21	10.4	15.7	8.90	13.4	7.01	10.5	39.7	59.7	33.8	50.8	27.7	41.6
	22	10.0	15.0	8.49	12.8	6.70	10.1	37.9	57.0	32.3	48.5	26.4	39.7
	23	9.53	14.3	8.12	12.2	6.40	9.63	36.3	54.5	30.9	46.4	25.3	38.0
	24	9.13	13.7	7.78	11.7	6.14	9.23	34.8	52.3	29.6	44.5	24.2	36.4
	25	8.77	13.2	7.47	11.2	5.89	8.86	33.4	50.2	28.4	42.7	23.2	34.9
	26	8.43	12.7	7.19	10.8	5.67	8.52	32.1	48.3	27.3	41.1	22.3	33.6
	27	8.12	12.2	6.92	10.4	5.46	8.20	30.9	46.5	26.3	39.5	21.5	32.3
	28	7.83	11.8	6.67	10.0	5.26	7.91	29.8	44.8	25.4	38.1	20.7	31.2
	29	7.56	11.4	6.44	9.68	5.08	7.63	28.8	43.3	24.5	36.8	20.0	30.1
	30	7.31	11.0	6.23	9.36	4.91	7.38	27.8	41.8	23.7	35.6	19.4	29.1
	32	6.85	10.3	5.84	8.78	4.60	6.92	26.1	39.2	22.2	33.4	18.2	27.3
	34	6.45	9.69	5.49	8.26	4.33	6.51	24.6	36.9	20.9	31.4	17.1	25.7
	36	6.09	9.15	5.19	7.80	4.09	6.15	23.2	34.9	19.7	29.7	16.1	24.3
	38	5.77	8.67	4.92	7.39	3.88	5.83	22.0	33.0	18.7	28.1	15.3	23.0
	40	5.48	8.24	4.67	7.02	3.68	5.54	20.9	31.4	17.8	26.7	14.5	21.8
	42	5.22	7.84	4.45	6.69	3.51	5.27	19.9	29.9	16.9	25.4	13.8	20.8
	44	4.98	7.49	4.25	6.38	3.35	5.03	19.0	28.5	16.1	24.3	13.2	19.8
	46	4.76	7.16	4.06	6.10	3.20	4.81	18.1	27.3	15.4	23.2	12.6	19.0
	48	4.57	6.86	3.89	5.85	3.07	4.61	17.4	26.1	14.8	22.2	12.1	18.2
	50	4.38	6.59	3.74	5.62	2.95	4.43	16.7	25.1	14.2	21.3	11.6	17.5
	52	4.21	6.33	3.59	5.40	2.83	4.26	16.1	24.1	13.7	20.5	11.2	16.8
	54	4.06	6.10	3.46	5.20	2.73	4.10	15.5	23.2	13.2	19.8	10.8	16.2
	56	3.91	5.88	3.34	5.01	2.63	3.95	14.9	22.4	12.7	19.1	10.4	15.6
	58	3.78	5.68	3.22	4.84	2.54	3.82	14.4	21.6	12.2	18.4	10.0	15.1
	60	3.65	5.49	3.11	4.68	2.46	3.69	13.9	20.9	11.8	17.8	9.68	14.6
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	219	329	187	281	147	221	835	1250	710	1070	581	873
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	27.4	41.2	23.4	35.1	18.4	27.7	104	157	88.8	133	72.6	109
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	10.7	16.1	9.09	13.7	7.14	10.7	40.4	60.8	34.8	52.3	28.9	43.4
BF/Ω_b	$\varphi_b BF$, kips	1.55	2.33	1.43	2.16	1.24	1.87	0.910	1.37	0.893	1.34	0.874	1.31
V_n/Ω_v	$\varphi_v V_{nx}$, kips	26.1	39.3	24.8	37.2	20.2	30.4	55.3	83.1	48.1	72.3	36.6	55.1
Z_x, in.^{3}		18.3		15.6		12.3		69.7		59.3		48.5	
L_p, ft		1.73		1.66		1.62		4.34		4.28		4.26	
L_r, ft		12.5		11.6		10.7		74.6		64.7		54.3	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W8

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W8×											
		40		35		31		28		24		21	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4												
	5											44.6	67.0
	6							49.6	74.4	41.8	63.0	40.1	60.3
	7	64.0	96.2	54.2	81.6	49.2	73.8	45.7	68.7	38.8	58.4	34.4	51.7
	8	58.8	88.4	51.2	77.0	44.8	67.3	40.0	60.1	34.0	51.1	30.1	45.2
	9	52.3	78.6	45.5	68.4	39.8	59.8	35.5	53.4	30.2	45.4	26.7	40.2
	10	47.1	70.7	41.0	61.6	35.8	53.8	32.0	48.1	27.2	40.9	24.1	36.2
	11	42.8	64.3	37.2	56.0	32.6	48.9	29.1	43.7	24.7	37.1	21.9	32.9
	12	39.2	59.0	34.1	51.3	29.8	44.9	26.6	40.1	22.7	34.1	20.1	30.2
	13	36.2	54.4	31.5	47.4	27.5	41.4	24.6	37.0	20.9	31.4	18.5	27.8
	14	33.6	50.5	29.3	44.0	25.6	38.4	22.8	34.3	19.4	29.2	17.2	25.8
	15	31.4	47.2	27.3	41.0	23.9	35.9	21.3	32.0	18.1	27.2	16.0	24.1
	16	29.4	44.2	25.6	38.5	22.4	33.6	20.0	30.0	17.0	25.5	15.0	22.6
	17	27.7	41.6	24.1	36.2	21.1	31.7	18.8	28.3	16.0	24.0	14.2	21.3
	18	26.1	39.3	22.8	34.2	19.9	29.9	17.8	26.7	15.1	22.7	13.4	20.1
	19	24.8	37.2	21.6	32.4	18.8	28.3	16.8	25.3	14.3	21.5	12.7	19.0
	20	23.5	35.4	20.5	30.8	17.9	26.9	16.0	24.0	13.6	20.4	12.0	18.1
	21	22.4	33.7	19.5	29.3	17.1	25.6	15.2	22.9	12.9	19.5	11.5	17.2
	22	21.4	32.2	18.6	28.0	16.3	24.5	14.5	21.8	12.4	18.6	10.9	16.4
	23	20.5	30.8	17.8	26.8	15.6	23.4	13.9	20.9	11.8	17.8	10.5	15.7
	24	19.6	29.5	17.1	25.7	14.9	22.4	13.3	20.0	11.3	17.0	10.0	15.1
	25	18.8	28.3	16.4	24.6	14.3	21.5	12.8	19.2	10.9	16.3	9.63	14.5
	26	18.1	27.2	15.8	23.7	13.8	20.7	12.3	18.5	10.5	15.7	9.26	13.9
	27	17.4	26.2	15.2	22.8	13.3	19.9	11.8	17.8	10.1	15.1	8.92	13.4
	28	16.8	25.3	14.6	22.0	12.8	19.2	11.4	17.2	9.71	14.6	8.60	12.9
	29	16.2	24.4	14.1	21.2	12.3	18.6	11.0	16.6	9.37	14.1	8.30	12.5
	30	15.7	23.6	13.7	20.5	11.9	17.9	10.7	16.0	9.06	13.6	8.02	12.1
	32	14.7	22.1	12.8	19.2	11.2	16.8	10.0	15.0	8.50	12.8	7.52	11.3
	34	13.8	20.8	12.0	18.1	10.5	15.8	9.40	14.1	8.00	12.0	7.08	10.6
	36	13.1	19.7	11.4	17.1	10.0	15.0	8.88	13.4	7.55	11.4	6.69	10.1
	38	12.4	18.6	10.8	16.2	9.42	14.2	8.41	12.6	7.15	10.8	6.33	9.52
	40	11.8	17.7	10.2	15.4	8.95	13.5	7.99	12.0	6.80	10.2	6.02	9.05
	42	11.2	16.8	9.75	14.7	8.53	12.8	7.61	11.4	6.47	9.73	5.73	8.61
	44	10.7	16.1	9.31	14.0	8.14	12.2	7.27	10.9	6.18	9.29	5.47	8.22
	46	10.2	15.4	8.90	13.4	7.78	11.7	6.95	10.4	5.91	8.88	5.23	7.87
	48	9.81	14.7	8.53	12.8	7.46	11.2	6.66	10.0	5.66	8.51	5.01	7.54
	50	9.41	14.1	8.19	12.3	7.16	10.8	6.40	9.61	5.44	8.17	4.81	7.24
	52	9.05	13.6	7.88	11.8	6.89	10.4	6.15	9.24	5.23	7.86	4.63	6.96
	54	8.72	13.1	7.58	11.4	6.63	10.0	5.92	8.90	5.03	7.57	4.46	6.70
	56	8.40	12.6	7.31	11.0	6.39	9.61	5.71	8.58	4.85	7.30	4.30	6.46
	58	8.11	12.2	7.06	10.6	6.17	9.28	5.51	8.29	4.69	7.04	4.15	6.24
	60	7.84	11.8	6.83	10.3	5.97	8.97	5.33	8.01	4.53	6.81	4.01	6.03
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	471	707	410	616	358	538	320	481	272	409	241	362
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	58.8	88.4	51.2	77.0	44.8	67.3	40.0	60.1	34.0	51.1	30.1	45.2
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	23.6	35.5	20.7	31.2	18.3	27.4	16.1	24.2	13.8	20.8	12.1	18.1
BF/Ω_b	$\varphi_b BF$, kips	0.858	1.29	0.841	1.26	0.823	1.24	0.863	1.30	0.837	1.26	0.962	1.45
V_n/Ω_v	$\varphi_v V_{nx}$, kips	32.0	48.1	27.1	40.8	24.6	36.9	24.8	37.2	20.9	31.5	22.3	33.5
Z_x, in.^{3}		39.3		34.2		29.9		26.7		22.7		20.1	
L_p, ft		4.20		4.18		4.13		3.32		3.30		2.59	
L_r, ft		45.2		40.4		36.3		31.0		27.4		21.3	

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

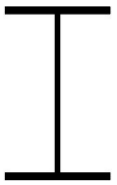
[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)



W8-W6

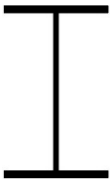
Shape		W8×								W6×			
		18		15		13		10		25		20	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	40.4	60.6	39.8	59.9	33.2	50.0	25.7	38.7				
	5	40.0	60.1	31.9	47.9	26.6	40.0	20.6	30.9	44.0	66.2	34.8	52.2
	6	33.3	50.1	26.5	39.9	22.2	33.3	17.1	25.8	37.5	56.4	29.5	44.4
	7	28.6	42.9	22.8	34.2	19.0	28.5	14.7	22.1	32.2	48.3	25.3	38.1
	8	25.0	37.6	19.9	29.9	16.6	25.0	12.9	19.3	28.1	42.3	22.2	33.3
	9	22.2	33.4	17.7	26.6	14.8	22.2	11.4	17.2	25.0	37.6	19.7	29.6
	10	20.0	30.1	15.9	23.9	13.3	20.0	10.3	15.5	22.5	33.8	17.7	26.6
	11	18.2	27.3	14.5	21.8	12.1	18.2	9.35	14.1	20.5	30.8	16.1	24.2
	12	16.7	25.1	13.3	20.0	11.1	16.7	8.57	12.9	18.8	28.2	14.8	22.2
	13	15.4	23.1	12.3	18.4	10.2	15.4	7.91	11.9	17.3	26.0	13.6	20.5
	14	14.3	21.5	11.4	17.1	9.50	14.3	7.35	11.0	16.1	24.2	12.7	19.0
	15	13.3	20.0	10.6	16.0	8.86	13.3	6.86	10.3	15.0	22.6	11.8	17.8
	16	12.5	18.8	10.0	15.0	8.31	12.5	6.43	9.66	14.1	21.2	11.1	16.7
	17	11.8	17.7	9.37	14.1	7.82	11.8	6.05	9.10	13.2	19.9	10.4	15.7
	18	11.1	16.7	8.85	13.3	7.39	11.1	5.72	8.59	12.5	18.8	9.85	14.8
	19	10.5	15.8	8.38	12.6	7.00	10.5	5.41	8.14	11.8	17.8	9.33	14.0
	20	10.0	15.0	7.96	12.0	6.65	10.0	5.14	7.73	11.3	16.9	8.86	13.3
	21	9.52	14.3	7.58	11.4	6.33	9.51	4.90	7.36	10.7	16.1	8.44	12.7
	22	9.09	13.7	7.24	10.9	6.04	9.08	4.68	7.03	10.2	15.4	8.06	12.1
	23	8.70	13.1	6.93	10.4	5.78	8.69	4.47	6.72	9.79	14.7	7.71	11.6
	24	8.33	12.5	6.64	10.0	5.54	8.33	4.29	6.44	9.38	14.1	7.39	11.1
	25	8.00	12.0	6.37	9.58	5.32	7.99	4.11	6.18	9.01	13.5	7.09	10.7
	26	7.69	11.6	6.13	9.21	5.11	7.68	3.96	5.95	8.66	13.0	6.82	10.2
	27	7.41	11.1	5.90	8.87	4.92	7.40	3.81	5.73	8.34	12.5	6.56	9.87
	28	7.14	10.7	5.69	8.55	4.75	7.14	3.67	5.52	8.04	12.1	6.33	9.51
	29	6.90	10.4	5.49	8.26	4.58	6.89	3.55	5.33	7.76	11.7	6.11	9.19
	30	6.67	10.0	5.31	7.98	4.43	6.66	3.43	5.15	7.50	11.3	5.91	8.88
	32	6.25	9.39	4.98	7.48	4.15	6.24	3.21	4.83	7.04	10.6	5.54	8.33
	34	5.88	8.84	4.68	7.04	3.91	5.88	3.03	4.55	6.62	10.0	5.21	7.84
	36	5.56	8.35	4.42	6.65	3.69	5.55	2.86	4.30	6.25	9.40	4.92	7.40
	38	5.26	7.91	4.19	6.30	3.50	5.26	2.71	4.07	5.92	8.91	4.66	7.01
	40	5.00	7.52	3.98	5.99	3.32	5.00	2.57	3.87	5.63	8.46	4.43	6.66
	42	4.76	7.16	3.79	5.70	3.17	4.76	2.45	3.68	5.36	8.06	4.22	6.34
	44	4.55	6.83	3.62	5.44	3.02	4.54	2.34	3.51	5.12	7.69	4.03	6.05
	46	4.35	6.53	3.46	5.20	2.89	4.34	2.24	3.36	4.89	7.36	3.85	5.79
	48	4.17	6.26	3.32	4.99	2.77	4.16	2.14	3.22	4.69	7.05	3.69	5.55
	50	4.00	6.01	3.19	4.79	2.66	4.00	2.06	3.09	4.50	6.77	3.54	5.33
	52	3.85	5.78	3.06	4.60	2.56	3.84	1.98	2.97	4.33	6.51	3.41	5.12
	54	3.70	5.57	2.95	4.43	2.46	3.70	1.91	2.86	4.17	6.27	3.28	4.93
	56	3.57	5.37	2.84	4.28	2.37	3.57	1.84	2.76	4.02	6.04	3.17	4.76
	58	3.45	5.18	2.75	4.13	2.29	3.44	1.77	2.67	3.88	5.83	3.06	4.59
	60	3.33	5.01	2.65	3.99	2.22	3.33	1.71	2.58	3.75	5.64	2.95	4.44
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	200	301	159	239	133	200	103	155	225	338	177	266
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	25.0	37.6	19.9	29.9	16.6	25.0	12.9	19.3	28.1	42.3	22.2	33.3
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	10.1	15.2	7.81	11.7	6.50	9.77	5.09	7.64	11.2	16.8	8.89	13.4
BF/Ω_b	$\varphi_b BF$, kips	0.911	1.37	0.988	1.48	0.915	1.37	0.798	1.20	0.510	0.767	0.498	0.748
V_n/Ω_v	$\varphi_v V_{nx}$, kips	20.2	30.3	21.4	32.2	19.8	29.8	14.5	21.7	22.0	33.1	17.4	26.1
Z_x, in.^{3}		16.7		13.3		11.1		8.59		18.8		14.8	
L_p, ft		2.53		1.80		1.74		1.73		3.12		3.08	
L_r, ft		18.9		14.0		12.8		11.5		36.4		29.7	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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



W6-W5

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

F_y = 30 ksi

Shape		W6×								W5×			
		16		15 [f1]		12		9		19		18.9	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	4	34.4	51.8	27.8	41.8	24.4	36.7	18.2	27.4	30.0	45.0	32.6	49.1
	5	27.5	41.4	22.3	33.5	19.5	29.4	14.6	21.9	27.5	41.4	26.1	39.2
	6	23.0	34.5	18.5	27.9	16.3	24.5	12.2	18.3	23.0	34.5	21.8	32.7
	7	19.7	29.6	15.9	23.9	14.0	21.0	10.4	15.7	19.7	29.6	18.6	28.0
	8	17.2	25.9	13.9	20.9	12.2	18.4	9.12	13.7	17.2	25.9	16.3	24.5
	9	15.3	23.0	12.4	18.6	10.9	16.3	8.10	12.2	15.3	23.0	14.5	21.8
	10	13.8	20.7	11.1	16.7	9.77	14.7	7.29	11.0	13.8	20.7	13.1	19.6
	11	12.5	18.8	10.1	15.2	8.88	13.4	6.63	9.97	12.5	18.8	11.9	17.8
	12	11.5	17.3	9.27	13.9	8.14	12.2	6.08	9.14	11.5	17.3	10.9	16.4
	13	10.6	15.9	8.56	12.9	7.52	11.3	5.61	8.43	10.6	15.9	10.0	15.1
	14	9.84	14.8	7.95	11.9	6.98	10.5	5.21	7.83	9.84	14.8	9.32	14.0
	15	9.18	13.8	7.42	11.2	6.51	9.79	4.86	7.31	9.18	13.8	8.70	13.1
	16	8.61	12.9	6.96	10.5	6.11	9.18	4.56	6.85	8.61	12.9	8.16	12.3
	17	8.10	12.2	6.55	9.84	5.75	8.64	4.29	6.45	8.10	12.2	7.68	11.5
	18	7.65	11.5	6.18	9.29	5.43	8.16	4.05	6.09	7.65	11.5	7.25	10.9
	19	7.25	10.9	5.86	8.80	5.14	7.73	3.84	5.77	7.25	10.9	6.87	10.3
	20	6.89	10.4	5.56	8.36	4.89	7.34	3.65	5.48	6.89	10.4	6.53	9.81
	21	6.56	9.86	5.30	7.97	4.65	6.99	3.47	5.22	6.56	9.86	6.22	9.34
	22	6.26	9.41	5.06	7.60	4.44	6.68	3.32	4.98	6.26	9.41	5.93	8.92
	23	5.99	9.00	4.84	7.27	4.25	6.39	3.17	4.77	5.99	9.00	5.68	8.53
	24	5.74	8.63	4.64	6.97	4.07	6.12	3.04	4.57	5.74	8.63	5.44	8.18
	25	5.51	8.28	4.45	6.69	3.91	5.88	2.92	4.38	5.51	8.28	5.22	7.85
	26	5.30	7.96	4.28	6.43	3.76	5.65	2.81	4.22	5.30	7.96	5.02	7.55
	27	5.10	7.67	4.12	6.20	3.62	5.44	2.70	4.06	5.10	7.67	4.83	7.27
	28	4.92	7.39	3.97	5.97	3.49	5.25	2.60	3.92	4.92	7.39	4.66	7.01
	29	4.75	7.14	3.84	5.77	3.37	5.06	2.51	3.78	4.75	7.14	4.50	6.77
	30	4.59	6.90	3.71	5.58	3.26	4.90	2.43	3.65	4.59	6.90	4.35	6.54
	32	4.30	6.47	3.48	5.23	3.05	4.59	2.28	3.43	4.30	6.47	4.08	6.13
	34	4.05	6.09	3.27	4.92	2.87	4.32	2.15	3.22	4.05	6.09	3.84	5.77
	36	3.83	5.75	3.09	4.65	2.71	4.08	2.03	3.05	3.83	5.75	3.63	5.45
	38	3.62	5.45	2.93	4.40	2.57	3.87	1.92	2.88	3.62	5.45	3.44	5.16
	40	3.44	5.18	2.78	4.18	2.44	3.67	1.82	2.74	3.44	5.18	3.26	4.91
	42	3.28	4.93	2.65	3.98	2.33	3.50	1.74	2.61	3.28	4.93	3.11	4.67
	44	3.13	4.70	2.53	3.80	2.22	3.34	1.66	2.49	3.13	4.70	2.97	4.46
	46	2.99	4.50	2.42	3.64	2.12	3.19	1.59	2.38	2.99	4.50	2.84	4.27
	48	2.87	4.31	2.32	3.49	2.04	3.06	1.52	2.28	2.87	4.31	2.72	4.09
	50	2.75	4.14	2.23	3.35	1.95	2.94	1.46	2.19	2.75	4.14	2.61	3.92
	52	2.65	3.98	2.14	3.22	1.88	2.82	1.40	2.11	2.65	3.98	2.51	3.77
	54	2.55	3.83	2.06	3.10	1.81	2.72	1.35	2.03	2.55	3.83	2.42	3.63
	56	2.46	3.70	1.99	2.99	1.75	2.62	1.30	1.96	2.46	3.70	2.33	3.50
	58	2.37	3.57	1.92	2.88	1.68	2.53	1.26	1.89	2.37	3.57	2.25	3.38
	60	2.30	3.45	1.85	2.79	1.63	2.45	1.22	1.83	2.30	3.45	2.18	3.27
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	138	207	111	167	97.7	147	72.9	110	138	207	131	196
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	17.2	25.9	13.9	20.9	12.2	18.4	9.12	13.7	17.2	25.9	16.3	24.5
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	6.80	10.2	6.46	9.71	4.84	7.28	3.66	5.50	6.80	10.2	6.42	9.65
BF/Ω_b	$\varphi_b BF$, kips	0.542	0.815	0.457	0.687	0.514	0.773	0.470	0.706	0.320	0.481	0.297	0.446
V_n/Ω_v	$\varphi_v V_{nx}$, kips	17.6	26.5	14.8	22.3	14.9	22.5	10.8	16.2	15.0	22.5	17.0	25.6
Z_x, in.^{3}		11.5		10.6		8.16		6.09		11.5		10.9	
L_p, ft		1.98		7.26		1.88		1.86		2.63		2.57	
L_r, ft		21.2		23.6		16.2		13.5		35.2		35.9	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

F_y = 30 ksi

Table 2-3 (continued)
Maximum Total Uniform Load, kips
W-Shapes (Welded)

W5-W4

Shape		W5×		W4×	
		16		13	
Design		ASD	LRFD	ASD	LRFD
Span, ft	4	26.0	39.0	18.5	27.9
	5	22.7	34.1	14.8	22.3
	6	18.9	28.4	12.4	18.6
	7	16.2	24.4	10.6	15.9
	8	14.2	21.3	9.27	13.9
	9	12.6	18.9	8.24	12.4
	10	11.3	17.0	7.41	11.1
	11	10.3	15.5	6.74	10.1
	12	9.45	14.2	6.18	9.29
	13	8.72	13.1	5.70	8.57
	14	8.10	12.2	5.30	7.96
	15	7.56	11.4	4.94	7.43
	16	7.09	10.7	4.63	6.96
	17	6.67	10.0	4.36	6.55
	18	6.30	9.47	4.12	6.19
	19	5.97	8.97	3.90	5.86
	20	5.67	8.52	3.71	5.57
	21	5.40	8.12	3.53	5.31
	22	5.16	7.75	3.37	5.06
	23	4.93	7.41	3.22	4.84
	24	4.73	7.10	3.09	4.64
	25	4.54	6.82	2.97	4.46
	26	4.36	6.56	2.85	4.29
	27	4.20	6.31	2.75	4.13
	28	4.05	6.09	2.65	3.98
	29	3.91	5.88	2.56	3.84
	30	3.78	5.68	2.47	3.71
	32	3.54	5.33	2.32	3.48
	34	3.34	5.01	2.18	3.28
	36	3.15	4.74	2.06	3.10
	38	2.98	4.49	1.95	2.93
	40	2.84	4.26	1.85	2.79
	42	2.70	4.06	1.77	2.65
	44	2.58	3.87	1.68	2.53
	46	2.47	3.71	1.61	2.42
	48	2.36	3.55	1.54	2.32
	50	2.27	3.41	1.48	2.23
	52	2.18	3.28	1.43	2.14
	54	2.10	3.16	1.37	2.06
	56	2.03	3.04	1.32	1.99
	58	1.96	2.94	1.28	1.92
	60	1.89	2.84	1.24	1.86
Beam Properties					
W_c/Ω_b	$\varphi_b W_c$, kip-ft	113	170	74.1	111
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	14.2	21.3	9.27	13.9
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	5.67	8.52	3.62	5.45
BF/Ω_b	$\varphi_b BF$, kips	0.311	0.467	0.207	0.311
V_n/Ω_v	$\varphi_v V_{nx}$, kips	13.0	19.5	12.6	18.9
Z_x, in.^{3}		9.47		6.19	
L_p, ft		2.59		2.06	
L_r, ft		30.0		29.3	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-3 is used.

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

S15-S12

Table 2-4
Maximum Total Uniform Load, kips
S-Shapes (Welded)

F_y = 30 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	153	230	133	200	121	182	105	158	88.6	133	83.0	125
	7	131	197	117	176	104	156	90.2	136	76.0	114	71.2	107
	8	115	172	103	154	90.7	136	78.9	119	66.5	99.9	62.3	93.6
	9	102	153	91.3	137	80.6	121	70.1	105	59.1	88.8	55.4	83.2
	10	91.6	138	82.2	123	72.6	109	63.1	94.9	53.2	79.9	49.8	74.9
	11	83.3	125	74.7	112	66.0	99.2	57.4	86.2	48.3	72.7	45.3	68.1
	12	76.3	115	68.5	103	60.5	90.9	52.6	79.1	44.3	66.6	41.5	62.4
	13	70.5	106	63.2	95.0	55.8	83.9	48.5	73.0	40.9	61.5	38.3	57.6
	14	65.4	98.4	58.7	88.2	51.8	77.9	45.1	67.8	38.0	57.1	35.6	53.5
	15	61.1	91.8	54.8	82.3	48.4	72.7	42.1	63.2	35.4	53.3	33.2	49.9
	16	57.3	86.1	51.3	77.2	45.4	68.2	39.4	59.3	33.2	50.0	31.1	46.8
	17	53.9	81.0	48.3	72.6	42.7	64.2	37.1	55.8	31.3	47.0	29.3	44.0
	18	50.9	76.5	45.6	68.6	40.3	60.6	35.1	52.7	29.5	44.4	27.7	41.6
	19	48.2	72.5	43.2	65.0	38.2	57.4	33.2	49.9	28.0	42.1	26.2	39.4
	20	45.8	68.9	41.1	61.7	36.3	54.5	31.6	47.4	26.6	40.0	24.9	37.4
	21	43.6	65.6	39.1	58.8	34.6	51.9	30.1	45.2	25.3	38.1	23.7	35.7
	22	41.6	62.6	37.3	56.1	33.0	49.6	28.7	43.1	24.2	36.3	22.6	34.0
	23	39.8	59.9	35.7	53.7	31.6	47.4	27.4	41.2	23.1	34.7	21.7	32.6
	24	38.2	57.4	34.2	51.5	30.2	45.5	26.3	39.5	22.2	33.3	20.8	31.2
	25	36.6	55.1	32.9	49.4	29.0	43.6	25.2	37.9	21.3	32.0	19.9	30.0
	26	35.2	53.0	31.6	47.5	27.9	42.0	24.3	36.5	20.5	30.7	19.2	28.8
	27	33.9	51.0	30.4	45.7	26.9	40.4	23.4	35.1	19.7	29.6	18.5	27.7
	28	32.7	49.2	29.3	44.1	25.9	39.0	22.5	33.9	19.0	28.5	17.8	26.7
	29	31.6	47.5	28.3	42.6	25.0	37.6	21.8	32.7	18.3	27.6	17.2	25.8
	30	30.5	45.9	27.4	41.2	24.2	36.4	21.0	31.6	17.7	26.6	16.6	25.0
	32	28.6	43.0	25.7	38.6	22.7	34.1	19.7	29.6	16.6	25.0	15.6	23.4
	34	26.9	40.5	24.2	36.3	21.3	32.1	18.6	27.9	15.6	23.5	14.7	22.0
	36	25.4	38.3	22.8	34.3	20.2	30.3	17.5	26.4	14.8	22.2	13.8	20.8
	38	24.1	36.2	21.6	32.5	19.1	28.7	16.6	25.0	14.0	21.0	13.1	19.7
	40	22.9	34.4	20.5	30.9	18.1	27.3	15.8	23.7	13.3	20.0	12.5	18.7
	42	21.8	32.8	19.6	29.4	17.3	26.0	15.0	22.6	12.7	19.0	11.9	17.8
	44	20.8	31.3	18.7	28.1	16.5	24.8	14.3	21.6	12.1	18.2	11.3	17.0
	46	19.9	29.9	17.9	26.8	15.8	23.7	13.7	20.6	11.6	17.4	10.8	16.3
	48	19.1	28.7	17.1	25.7	15.1	22.7	13.1	19.8	11.1	16.7	10.4	15.6
	50	18.3	27.5	16.4	24.7	14.5	21.8	12.6	19.0	10.6	16.0	10.0	15.0
	52	17.6	26.5	15.8	23.7	14.0	21.0	12.1	18.2	10.2	15.4	9.58	14.4
	54	17.0	25.5	15.2	22.9	13.4	20.2	11.7	17.6	9.85	14.8	9.23	13.9
	56	16.4	24.6	14.7	22.1	13.0	19.5	11.3	16.9	9.50	14.3	8.90	13.4
	58	15.8	23.7	14.2	21.3	12.5	18.8	10.9	16.4	9.17	13.8	8.59	12.9
	60	15.3	23.0	13.7	20.6	12.1	18.2	10.5	15.8	8.86	13.3	8.30	12.5
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	916	1380	822	1230	726	1090	631	949	532	799	498	749
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	115	172	103	154	90.7	136	78.9	119	66.5	99.9	62.3	93.6
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	43.3	65.1	39.8	59.8	33.9	50.9	30.4	45.8	25.6	38.5	24.4	36.7
BF/Ω_b	$\varphi_b BF$, kips	3.82	5.74	3.73	5.60	2.17	3.27	2.28	3.43	2.33	3.50	2.30	3.45
V_n/Ω_v	$\varphi_v V_{nx}$, kips	88.9	134	66.4	99.9	88.9	134	61.0	91.8	55.4	83.2	45.3	68.0
Z_x, in.^{3}		76.5		68.6		60.6		52.7		44.4		41.6	
L_p, ft		2.30		2.40		2.28		2.34		2.20		2.26	
L_r, ft		20.9		19.3		28.4		23.6		19.7		18.8	

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 2-4 is used.

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

F_y = 30 ksi

Table 2-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)

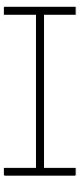
S10-S7

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	70.1	105	56.1	84.3	38.1	57.3	32.5	48.9	28.5	42.9	23.8	35.7
	7	60.1	90.3	48.1	72.3	32.7	49.1	27.9	41.9	24.5	36.8	20.4	30.6
	8	52.5	79.0	42.1	63.2	28.6	43.0	24.4	36.7	21.4	32.2	17.8	26.8
	9	46.7	70.2	37.4	56.2	25.4	38.2	21.7	32.6	19.0	28.6	15.8	23.8
	10	42.0	63.2	33.7	50.6	22.9	34.4	19.5	29.3	17.1	25.7	14.3	21.4
	11	38.2	57.4	30.6	46.0	20.8	31.3	17.7	26.7	15.6	23.4	13.0	19.5
	12	35.0	52.7	28.0	42.2	19.1	28.7	16.3	24.5	14.3	21.5	11.9	17.9
	13	32.3	48.6	25.9	38.9	17.6	26.4	15.0	22.6	13.2	19.8	11.0	16.5
	14	30.0	45.1	24.0	36.1	16.3	24.6	13.9	21.0	12.2	18.4	10.2	15.3
	15	28.0	42.1	22.4	33.7	15.2	22.9	13.0	19.6	11.4	17.2	9.50	14.3
	16	26.3	39.5	21.0	31.6	14.3	21.5	12.2	18.3	10.7	16.1	8.91	13.4
	17	24.7	37.2	19.8	29.8	13.5	20.2	11.5	17.3	10.1	15.1	8.38	12.6
	18	23.4	35.1	18.7	28.1	12.7	19.1	10.8	16.3	9.51	14.3	7.92	11.9
	19	22.1	33.3	17.7	26.6	12.0	18.1	10.3	15.4	9.01	13.5	7.50	11.3
	20	21.0	31.6	16.8	25.3	11.4	17.2	9.76	14.7	8.56	12.9	7.13	10.7
	21	20.0	30.1	16.0	24.1	10.9	16.4	9.30	14.0	8.16	12.3	6.79	10.2
	22	19.1	28.7	15.3	23.0	10.4	15.6	8.87	13.3	7.78	11.7	6.48	9.74
	23	18.3	27.5	14.6	22.0	9.95	14.9	8.49	12.8	7.45	11.2	6.20	9.31
	24	17.5	26.3	14.0	21.1	9.53	14.3	8.13	12.2	7.14	10.7	5.94	8.93
	25	16.8	25.3	13.5	20.2	9.15	13.8	7.81	11.7	6.85	10.3	5.70	8.57
	26	16.2	24.3	12.9	19.5	8.80	13.2	7.51	11.3	6.59	9.90	5.48	8.24
	27	15.6	23.4	12.5	18.7	8.47	12.7	7.23	10.9	6.34	9.53	5.28	7.93
	28	15.0	22.6	12.0	18.1	8.17	12.3	6.97	10.5	6.12	9.19	5.09	7.65
	29	14.5	21.8	11.6	17.4	7.89	11.9	6.73	10.1	5.91	8.88	4.91	7.39
	30	14.0	21.1	11.2	16.9	7.62	11.5	6.51	9.78	5.71	8.58	4.75	7.14
	32	13.1	19.7	10.5	15.8	7.15	10.7	6.10	9.17	5.35	8.04	4.45	6.69
	34	12.4	18.6	9.90	14.9	6.73	10.1	5.74	8.63	5.04	7.57	4.19	6.30
	36	11.7	17.6	9.35	14.1	6.35	9.55	5.42	8.15	4.76	7.15	3.96	5.95
	38	11.1	16.6	8.86	13.3	6.02	9.05	5.14	7.72	4.51	6.77	3.75	5.64
	40	10.5	15.8	8.41	12.6	5.72	8.60	4.88	7.34	4.28	6.44	3.56	5.36
	42	10.0	15.0	8.01	12.0	5.45	8.19	4.65	6.99	4.08	6.13	3.39	5.10
	44	9.55	14.4	7.65	11.5	5.20	7.81	4.44	6.67	3.89	5.85	3.24	4.87
	46	9.14	13.7	7.32	11.0	4.97	7.47	4.24	6.38	3.72	5.60	3.10	4.66
	48	8.76	13.2	7.01	10.5	4.77	7.16	4.07	6.11	3.57	5.36	2.97	4.46
	50	8.41	12.6	6.73	10.1	4.57	6.88	3.90	5.87	3.43	5.15	2.85	4.28
	52	8.08	12.2	6.47	9.73	4.40	6.61	3.75	5.64	3.29	4.95	2.74	4.12
	54	7.78	11.7	6.23	9.37	4.24	6.37	3.61	5.43	3.17	4.77	2.64	3.97
	56	7.51	11.3	6.01	9.03	4.08	6.14	3.49	5.24	3.06	4.60	2.54	3.83
	58	7.25	10.9	5.80	8.72	3.94	5.93	3.37	5.06	2.95	4.44	2.46	3.69
	60	7.01	10.5	5.61	8.43	3.81	5.73	3.25	4.89	2.85	4.29	2.38	3.57
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	420	632	337	506	229	344	195	293	171	257	143	214
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	52.5	79.0	42.1	63.2	28.6	43.0	24.4	36.7	21.4	32.2	17.8	26.8
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	19.7	29.6	16.6	24.9	10.8	16.3	9.63	14.5	8.08	12.2	7.01	10.5
BF/Ω_b	$\varphi_b BF$, kips	1.45	2.18	1.54	2.32	0.942	1.42	0.962	1.45	0.677	1.02	0.727	1.09
V_n/Ω_v	$\varphi_v V_{nx}$, kips	64.0	96.2	33.5	50.4	38.0	57.2	23.4	35.1	34.0	51.0	19.0	28.6
Z_x, in.^{3}		35.1		28.1		19.1		16.3		14.3		11.9	
L_p, ft		2.02		2.16		1.79		1.88		1.65		1.73	
L_r, ft		24.7		18.7		20.6		17.2		21.3		16.6	

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 2-4 is used.

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



S6-S4

Table 2-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)

F_y = 30 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	21.0	31.5	16.7	25.1	14.6	22.0	11.1	16.7	7.96	12.0	6.89	10.4
	7	18.0	27.0	14.3	21.5	12.5	18.8	9.55	14.3	6.83	10.3	5.90	8.87
	8	15.7	23.6	12.5	18.8	11.0	16.5	8.35	12.6	5.97	8.98	5.16	7.76
	9	14.0	21.0	11.1	16.7	9.75	14.7	7.43	11.2	5.31	7.98	4.59	6.90
	10	12.6	18.9	10.0	15.0	8.78	13.2	6.68	10.0	4.78	7.18	4.13	6.21
	11	11.4	17.2	9.10	13.7	7.98	12.0	6.08	9.13	4.34	6.53	3.76	5.65
	12	10.5	15.8	8.34	12.5	7.32	11.0	5.57	8.37	3.98	5.99	3.44	5.18
	13	9.67	14.5	7.70	11.6	6.75	10.1	5.14	7.73	3.68	5.52	3.18	4.78
	14	8.98	13.5	7.15	10.7	6.27	9.42	4.77	7.17	3.41	5.13	2.95	4.44
	15	8.38	12.6	6.67	10.0	5.85	8.80	4.46	6.70	3.19	4.79	2.75	4.14
	16	7.86	11.8	6.26	9.41	5.49	8.25	4.18	6.28	2.99	4.49	2.58	3.88
	17	7.40	11.1	5.89	8.85	5.16	7.76	3.93	5.91	2.81	4.22	2.43	3.65
	18	6.99	10.5	5.56	8.36	4.88	7.33	3.71	5.58	2.65	3.99	2.30	3.45
	19	6.62	9.95	5.27	7.92	4.62	6.94	3.52	5.29	2.51	3.78	2.17	3.27
	20	6.29	9.45	5.01	7.52	4.39	6.60	3.34	5.02	2.39	3.59	2.07	3.11
	21	5.99	9.00	4.77	7.17	4.18	6.28	3.18	4.78	2.28	3.42	1.97	2.96
	22	5.72	8.59	4.55	6.84	3.99	6.00	3.04	4.57	2.17	3.26	1.88	2.82
	23	5.47	8.22	4.35	6.54	3.82	5.74	2.91	4.37	2.08	3.12	1.80	2.70
	24	5.24	7.88	4.17	6.27	3.66	5.50	2.78	4.19	1.99	2.99	1.72	2.59
	25	5.03	7.56	4.00	6.02	3.51	5.28	2.67	4.02	1.91	2.87	1.65	2.48
	26	4.84	7.27	3.85	5.79	3.38	5.07	2.57	3.86	1.84	2.76	1.59	2.39
	27	4.66	7.00	3.71	5.57	3.25	4.89	2.48	3.72	1.77	2.66	1.53	2.30
	28	4.49	6.75	3.58	5.37	3.14	4.71	2.39	3.59	1.71	2.57	1.48	2.22
	29	4.34	6.52	3.45	5.19	3.03	4.55	2.30	3.46	1.65	2.48	1.42	2.14
	30	4.19	6.30	3.34	5.02	2.93	4.40	2.23	3.35	1.59	2.39	1.38	2.07
	32	3.93	5.91	3.13	4.70	2.74	4.12	2.09	3.14	1.49	2.24	1.29	1.94
	34	3.70	5.56	2.94	4.43	2.58	3.88	1.97	2.95	1.41	2.11	1.22	1.83
	36	3.49	5.25	2.78	4.18	2.44	3.67	1.86	2.79	1.33	2.00	1.15	1.73
	38	3.31	4.97	2.63	3.96	2.31	3.47	1.76	2.64	1.26	1.89	1.09	1.63
	40	3.14	4.73	2.50	3.76	2.19	3.30	1.67	2.51	1.19	1.80	1.03	1.55
	42	2.99	4.50	2.38	3.58	2.09	3.14	1.59	2.39	1.14	1.71	0.984	1.48
	44	2.86	4.30	2.28	3.42	2.00	3.00	1.52	2.28	1.09	1.63	0.939	1.41
	46	2.73	4.11	2.18	3.27	1.91	2.87	1.45	2.18	1.04	1.56	0.898	1.35
	48	2.62	3.94	2.09	3.14	1.83	2.75	1.39	2.09	1.00	1.50	0.861	1.29
	50	2.51	3.78	2.00	3.01	1.76	2.64	1.34	2.01	0.956	1.44	0.826	1.24
	52	2.42	3.63	1.93	2.89	1.69	2.54	1.29	1.93	0.919	1.38	0.795	1.19
	54	2.33	3.50	1.85	2.79	1.63	2.44	1.24	1.86	0.885	1.33	0.765	1.15
	56	2.25	3.38	1.79	2.69	1.57	2.36	1.19	1.79	0.853	1.28	0.738	1.11
	58	2.17	3.26	1.73	2.59	1.51	2.27	1.15	1.73	0.824	1.24	0.712	1.07
	60	2.10	3.15	1.67	2.51	1.46	2.20	1.11	1.67	0.796	1.20	0.689	1.04
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	126	189	100	150	87.8	132	66.8	100	47.8	71.8	41.3	62.1
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	15.7	23.6	12.5	18.8	11.0	16.5	8.35	12.6	5.97	8.98	5.16	7.76
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	5.86	8.81	4.92	7.39	4.07	6.12	3.29	4.94	2.27	3.41	2.03	3.05
BF/Ω_b	$\varphi_b BF$, kips	0.462	0.694	0.523	0.787	0.282	0.423	0.351	0.528	0.198	0.297	0.214	0.322
V_n/Ω_v	$\varphi_v V_{nx}$, kips	30.1	45.2	15.0	22.6	26.6	40.0	11.5	17.3	14.1	21.1	8.32	12.5
Z_x, in.^{3}		10.5		8.36		7.33		5.58		3.99		3.45	
L_p, ft		1.51		1.59		1.38		1.45		1.28		1.31	
L_r, ft		22.9		16.1		25.9		15.9		20.0		16.0	

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 2-4 is used.

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

F_y = 30 ksi

Table 2-4 (continued)
Maximum Total Uniform Load, kips
S-Shapes (Welded)

S3

Shape		S3×			
		7.5		5.7	
Design		ASD	LRFD	ASD	LRFD
Span, ft	6	4.63	6.96	3.83	5.76
	7	3.97	5.97	3.28	4.94
	8	3.47	5.22	2.87	4.32
	9	3.09	4.64	2.55	3.84
	10	2.78	4.18	2.30	3.46
	11	2.53	3.80	2.09	3.14
	12	2.32	3.48	1.92	2.88
	13	2.14	3.21	1.77	2.66
	14	1.98	2.98	1.64	2.47
	15	1.85	2.78	1.53	2.30
	16	1.74	2.61	1.44	2.16
	17	1.63	2.46	1.35	2.03
	18	1.54	2.32	1.28	1.92
	19	1.46	2.20	1.21	1.82
	20	1.39	2.09	1.15	1.73
	21	1.32	1.99	1.09	1.65
	22	1.26	1.90	1.05	1.57
	23	1.21	1.82	1.00	1.50
	24	1.16	1.74	0.958	1.44
	25	1.11	1.67	0.920	1.38
	26	1.07	1.61	0.884	1.33
	27	1.03	1.55	0.852	1.28
	28	0.992	1.49	0.821	1.23
	29	0.958	1.44	0.793	1.19
	30	0.926	1.39	0.766	1.15
	32	0.868	1.31	0.719	1.08
	34	0.817	1.23	0.676	1.02
	36	0.772	1.16	0.639	0.960
	38	0.731	1.10	0.605	0.909
	40	0.695	1.04	0.575	0.864
	42	0.662	0.994	0.547	0.823
	44	0.631	0.949	0.523	0.785
	46	0.604	0.908	0.500	0.751
	48	0.579	0.870	0.479	0.720
	50	0.556	0.835	0.460	0.691
	52	0.534	0.803	0.442	0.665
	54	0.515	0.773	0.426	0.640
	56	0.496	0.746	0.411	0.617
	58	0.479	0.720	0.396	0.596
	60	0.463	0.696	0.383	0.576
Beam Properties					
W_c/Ω_b	$\varphi_b W_c$, kip-ft	27.8	41.8	23.0	34.6
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	3.47	5.22	2.87	4.32
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	1.30	1.95	1.13	1.69
BF/Ω_b	$\varphi_b BF$, kips	0.094	0.141	0.111	0.167
V_n/Ω_v	$\varphi_v V_{nx}$, kips	11.3	17.0	5.50	8.26
Z_x, in.^{3}		2.32		1.92	
L_p, ft		1.15		1.18	
L_r, ft		24.4		16.9	

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 2-4 is used.

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

S6-S3

Table 2-5
Maximum Total Uniform Load, kips
S-Shapes (Hot Rolled)

F_y = 30 ksi

Shape		S6×		S5×		S4×		S3×	
		12.5		10		7.7		5.7	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	6	16.9	25.4	11.3	17.0	6.99	10.5	3.87	5.82
	7	14.5	21.7	9.68	14.6	5.99	9.00	3.32	4.99
	8	12.6	19.0	8.47	12.7	5.24	7.88	2.90	4.37
	9	11.2	16.9	7.53	11.3	4.66	7.00	2.58	3.88
	10	10.1	15.2	6.78	10.2	4.19	6.30	2.32	3.49
	11	9.20	13.8	6.16	9.26	3.81	5.73	2.11	3.17
	12	8.43	12.7	5.65	8.49	3.49	5.25	1.94	2.91
	13	7.78	11.7	5.21	7.84	3.22	4.85	1.79	2.69
	14	7.23	10.9	4.84	7.28	2.99	4.50	1.66	2.49
	15	6.75	10.1	4.52	6.79	2.79	4.20	1.55	2.33
	16	6.32	9.51	4.24	6.37	2.62	3.94	1.45	2.18
	17	5.95	8.95	3.99	5.99	2.47	3.71	1.37	2.05
	18	5.62	8.45	3.77	5.66	2.33	3.50	1.29	1.94
	19	5.33	8.01	3.57	5.36	2.21	3.32	1.22	1.84
	20	5.06	7.61	3.39	5.09	2.10	3.15	1.16	1.75
	21	4.82	7.24	3.23	4.85	2.00	3.00	1.11	1.66
	22	4.60	6.91	3.08	4.63	1.91	2.86	1.06	1.59
	23	4.40	6.61	2.95	4.43	1.82	2.74	1.01	1.52
	24	4.22	6.34	2.82	4.25	1.75	2.63	0.968	1.46
	25	4.05	6.08	2.71	4.08	1.68	2.52	0.929	1.40
	26	3.89	5.85	2.61	3.92	1.61	2.42	0.894	1.34
	27	3.75	5.63	2.51	3.77	1.55	2.33	0.861	1.29
	28	3.61	5.43	2.42	3.64	1.50	2.25	0.830	1.25
	29	3.49	5.24	2.34	3.51	1.45	2.17	0.801	1.20
	30	3.37	5.07	2.26	3.40	1.40	2.10	0.774	1.16
	32	3.16	4.75	2.12	3.18	1.31	1.97	0.726	1.09
	34	2.98	4.47	1.99	3.00	1.23	1.85	0.683	1.03
	36	2.81	4.23	1.88	2.83	1.16	1.75	0.645	0.970
	38	2.66	4.00	1.78	2.68	1.10	1.66	0.611	0.919
	40	2.53	3.80	1.69	2.55	1.05	1.58	0.581	0.873
	42	2.41	3.62	1.61	2.43	1.00	1.50	0.553	0.831
	44	2.30	3.46	1.54	2.32	0.953	1.43	0.528	0.794
	46	2.20	3.31	1.47	2.21	0.911	1.37	0.505	0.759
	48	2.11	3.17	1.41	2.12	0.873	1.31	0.484	0.728
	50	2.02	3.04	1.36	2.04	0.838	1.26	0.465	0.698
	52	1.95	2.93	1.30	1.96	0.806	1.21	0.447	0.672
	54	1.87	2.82	1.26	1.89	0.776	1.17	0.430	0.647
	56	1.81	2.72	1.21	1.82	0.749	1.13	0.415	0.624
	58	1.74	2.62	1.17	1.76	0.723	1.09	0.401	0.602
	60	1.69	2.54	1.13	1.70	0.699	1.05	0.387	0.582
Beam Properties									
W_c/Ω_b	$\varphi_b W_c$, kip-ft	101	152	67.8	102	41.9	63.0	23.2	34.9
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	12.6	19.0	8.47	12.7	5.24	7.88	2.90	4.37
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	4.94	7.43	3.30	4.96	2.04	3.07	1.13	1.69
BF/Ω_b	$\varphi_b BF$, kips	0.507	0.762	0.338	0.508	0.203	0.305	0.104	0.157
V_n/Ω_v	$\varphi_v V_{nx}$, kips	15.0	22.6	11.5	17.3	8.32	12.5	5.50	8.26
Z_x, in.^{3}		8.45		5.66		3.50		1.94	
L_p, ft		1.43		1.30		1.17		1.06	
L_r, ft		16.6		16.6		16.9		18.1	

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 2-5 is used.

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

C15-C12

Table 2-6
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 30 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	232	348					132	198	100	150		
	4	204	307	168	252	129	194	101	152	87.7	132	73.0	110
	5	164	246	137	206	121	182	80.7	121	70.2	105	61.1	91.8
	6	136	205	114	172	101	152	67.3	101	58.5	87.9	50.9	76.5
	7	117	176	97.9	147	86.4	130	57.7	86.7	50.1	75.3	43.6	65.6
	8	102	154	85.6	129	75.6	114	50.4	75.8	43.9	65.9	38.2	57.4
	9	90.9	137	76.1	114	67.2	101	44.8	67.4	39.0	58.6	33.9	51.0
	10	81.8	123	68.5	103	60.5	90.9	40.4	60.7	35.1	52.7	30.5	45.9
	11	74.4	112	62.3	93.6	55.0	82.6	36.7	55.1	31.9	47.9	27.8	41.7
	12	68.2	102	57.1	85.8	50.4	75.8	33.6	50.6	29.2	44.0	25.4	38.3
	13	62.9	94.6	52.7	79.2	46.5	69.9	31.0	46.7	27.0	40.6	23.5	35.3
	14	58.4	87.8	48.9	73.5	43.2	64.9	28.8	43.3	25.1	37.7	21.8	32.8
	15	54.5	82.0	45.7	68.6	40.3	60.6	26.9	40.4	23.4	35.2	20.4	30.6
	16	51.1	76.8	42.8	64.4	37.8	56.8	25.2	37.9	21.9	33.0	19.1	28.7
	17	48.1	72.3	40.3	60.6	35.6	53.5	23.7	35.7	20.6	31.0	18.0	27.0
	18	45.4	68.3	38.1	57.2	33.6	50.5	22.4	33.7	19.5	29.3	17.0	25.5
	19	43.1	64.7	36.1	54.2	31.8	47.8	21.2	31.9	18.5	27.8	16.1	24.2
	20	40.9	61.5	34.3	51.5	30.2	45.5	20.2	30.3	17.5	26.4	15.3	23.0
	21	39.0	58.5	32.6	49.0	28.8	43.3	19.2	28.9	16.7	25.1	14.5	21.9
	22	37.2	55.9	31.1	46.8	27.5	41.3	18.3	27.6	15.9	24.0	13.9	20.9
	23	35.6	53.5	29.8	44.8	26.3	39.5	17.5	26.4	15.3	22.9	13.3	20.0
	24	34.1	51.2	28.5	42.9	25.2	37.9	16.8	25.3	14.6	22.0	12.7	19.1
	25	32.7	49.2	27.4	41.2	24.2	36.4	16.1	24.3	14.0	21.1	12.2	18.4
	26	31.5	47.3	26.3	39.6	23.3	35.0	15.5	23.3	13.5	20.3	11.7	17.7
	27	30.3	45.5	25.4	38.1	22.4	33.7	14.9	22.5	13.0	19.5	11.3	17.0
	28	29.2	43.9	24.5	36.8	21.6	32.5	14.4	21.7	12.5	18.8	10.9	16.4
	29	28.2	42.4	23.6	35.5	20.9	31.3	13.9	20.9	12.1	18.2	10.5	15.8
	30	27.3	41.0	22.8	34.3	20.2	30.3	13.5	20.2	11.7	17.6	10.2	15.3
	31	26.4	39.7	22.1	33.2	19.5	29.3	13.0	19.6	11.3	17.0	9.85	14.8
	32	25.6	38.4	21.4	32.2	18.9	28.4	12.6	19.0	11.0	16.5	9.54	14.3
	33	24.8	37.3	20.8	31.2	18.3	27.5	12.2	18.4	10.6	16.0	9.25	13.9
	34	24.1	36.2	20.1	30.3	17.8	26.7	11.9	17.8	10.3	15.5	8.98	13.5
	35	23.4	35.1	19.6	29.4	17.3	26.0	11.5	17.3	10.0	15.1	8.73	13.1
	36	22.7	34.2	19.0	28.6	16.8	25.3	11.2	16.9	9.75	14.7	8.48	12.8
	37	22.1	33.2	18.5	27.8	16.3	24.6	10.9	16.4	9.48	14.3	8.25	12.4
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	818	1230	685	1030	605	909	404	607	351	527	305	459
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	102	154	85.6	129	75.6	114	50.4	75.8	43.9	65.9	38.2	57.4
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	36.2	54.4	31.2	46.9	28.1	42.2	18.2	27.3	16.2	24.3	14.5	21.8
BF/Ω_b	$\varphi_b BF$, kips	3.12	4.68	3.27	4.91	3.22	4.84	1.96	2.95	2.01	3.02	1.95	2.93
V_n/Ω_v	$\varphi_v V_{nx}$, kips	116	174	84.1	126	64.7	97.2	66.0	99.1	50.1	75.2	36.5	54.8
Z_x, in.^{3}		68.3		57.2		50.5		33.7		29.3		25.5	
L_p, ft		1.94		1.99		2.03		1.73		1.78		1.82	
L_r, ft		23.1		18.7		16.8		18.2		15.6		14.0	

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 2-6 is used.

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

F_y = 30 ksi

Table 2-6 (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	107	160	91.8	138	77.0	116	51.8	77.8	67.5	101	54.3	81.6
	4	79.9	120	68.9	104	57.8	86.9	47.3	71.1	50.6	76.1	40.7	61.2
	5	64.0	96.1	55.1	82.8	46.2	69.5	37.8	56.9	40.5	60.8	32.6	49.0
	6	53.3	80.1	45.9	69.0	38.5	57.9	31.5	47.4	33.7	50.7	27.1	40.8
	7	45.7	68.7	39.3	59.1	33.0	49.6	27.0	40.6	28.9	43.5	23.3	35.0
	8	40.0	60.1	34.4	51.8	28.9	43.4	23.7	35.6	25.3	38.0	20.4	30.6
	9	35.5	53.4	30.6	46.0	25.7	38.6	21.0	31.6	22.5	33.8	18.1	27.2
	10	32.0	48.1	27.5	41.4	23.1	34.7	18.9	28.4	20.2	30.4	16.3	24.5
	11	29.1	43.7	25.0	37.6	21.0	31.6	17.2	25.9	18.4	27.7	14.8	22.3
	12	26.6	40.1	23.0	34.5	19.3	29.0	15.8	23.7	16.9	25.4	13.6	20.4
	13	24.6	37.0	21.2	31.8	17.8	26.7	14.6	21.9	15.6	23.4	12.5	18.8
	14	22.8	34.3	19.7	29.6	16.5	24.8	13.5	20.3	14.5	21.7	11.6	17.5
	15	21.3	32.0	18.4	27.6	15.4	23.2	12.6	19.0	13.5	20.3	10.9	16.3
	16	20.0	30.0	17.2	25.9	14.4	21.7	11.8	17.8	12.6	19.0	10.2	15.3
	17	18.8	28.3	16.2	24.4	13.6	20.4	11.1	16.7	11.9	17.9	9.58	14.4
	18	17.8	26.7	15.3	23.0	12.8	19.3	10.5	15.8	11.2	16.9	9.05	13.6
	19	16.8	25.3	14.5	21.8	12.2	18.3	10.0	15.0	10.7	16.0	8.57	12.9
	20	16.0	24.0	13.8	20.7	11.6	17.4	9.46	14.2	10.1	15.2	8.14	12.2
	21	15.2	22.9	13.1	19.7	11.0	16.5	9.01	13.5	9.64	14.5	7.76	11.7
	22	14.5	21.8	12.5	18.8	10.5	15.8	8.60	12.9	9.20	13.8	7.40	11.1
	23	13.9	20.9	12.0	18.0	10.0	15.1	8.23	12.4	8.80	13.2	7.08	10.6
	24	13.3	20.0	11.5	17.3	9.63	14.5	7.88	11.9	8.43	12.7	6.79	10.2
	25	12.8	19.2	11.0	16.6	9.25	13.9	7.57	11.4	8.10	12.2	6.51	9.79
	26	12.3	18.5	10.6	15.9	8.89	13.4	7.28	10.9	7.78	11.7	6.26	9.42
	27	11.8	17.8	10.2	15.3	8.56	12.9	7.01	10.5	7.50	11.3	6.03	9.07
	28	11.4	17.2	9.84	14.8	8.25	12.4	6.76	10.2	7.23	10.9	5.82	8.74
	29	11.0	16.6	9.50	14.3	7.97	12.0	6.52	9.81	6.98	10.5	5.62	8.44
	30	10.7	16.0	9.18	13.8	7.70	11.6	6.31	9.48	6.75	10.1	5.43	8.16
	31	10.3	15.5	8.89	13.4	7.46	11.2	6.10	9.17	6.53	9.81	5.25	7.90
	32	10.0	15.0	8.61	12.9	7.22	10.9	5.91	8.89	6.32	9.51	5.09	7.65
	33	9.69	14.6	8.35	12.5	7.00	10.5	5.73	8.62	6.13	9.22	4.94	7.42
	34	9.40	14.1	8.10	12.2	6.80	10.2	5.57	8.36	5.95	8.95	4.79	7.20
	35	9.14	13.7	7.87	11.8	6.60	9.93	5.41	8.13	5.78	8.69	4.65	6.99
	36	8.88	13.4	7.65	11.5	6.42	9.65	5.26	7.90	5.62	8.45	4.52	6.80
	37	8.64	13.0	7.44	11.2	6.25	9.39	5.11	7.69	5.47	8.22	4.40	6.62
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	320	481	275	414	231	347	189	284	202	304	163	245
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	40.0	60.1	34.4	51.8	28.9	43.4	23.7	35.6	25.3	38.0	20.4	30.6
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	13.9	20.9	12.3	18.4	10.6	15.9	9.03	13.6	9.09	13.7	7.61	11.4
BF/Ω_b	$\varphi_b BF$, kips	1.15	1.73	1.27	1.90	1.36	2.04	1.32	1.99	1.04	1.57	1.10	1.65
V_n/Ω_v	$\varphi_v V_{nx}$, kips	72.5	109	56.7	85.2	40.9	61.4	25.9	38.9	43.5	65.3	27.6	41.6
Z_x, in.^{3}		26.7		23.0		19.3		15.8		16.9		13.6	
L_p, ft		1.51		1.54		1.58		1.63		1.46		1.51	
L_r, ft		24.2		19.0		15.1		12.7		17.0		13.1	

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 2-6 is used.

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

C9-C7

Table 2-6 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 30 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	45.2	68.0	55.5	83.4	43.5	65.4	38.0	57.0	38.7	58.2	33.5	50.4
	4	37.4	56.3	41.6	62.6	32.6	49.1	28.7	43.1	29.0	43.7	25.1	37.8
	5	29.9	45.0	33.3	50.0	26.1	39.2	22.9	34.5	23.2	34.9	20.1	30.2
	6	25.0	37.5	27.7	41.7	21.8	32.7	19.1	28.7	19.4	29.1	16.8	25.2
	7	21.4	32.1	23.8	35.7	18.6	28.0	16.4	24.6	16.6	24.9	14.4	21.6
	8	18.7	28.1	20.8	31.3	16.3	24.5	14.3	21.5	14.5	21.8	12.6	18.9
	9	16.6	25.0	18.5	27.8	14.5	21.8	12.7	19.1	12.9	19.4	11.2	16.8
	10	15.0	22.5	16.6	25.0	13.1	19.6	11.5	17.2	11.6	17.5	10.1	15.1
	11	13.6	20.5	15.1	22.7	11.9	17.8	10.4	15.7	10.6	15.9	9.15	13.7
	12	12.5	18.8	13.9	20.9	10.9	16.4	9.55	14.4	9.68	14.6	8.38	12.6
	13	11.5	17.3	12.8	19.2	10.0	15.1	8.82	13.3	8.94	13.4	7.74	11.6
	14	10.7	16.1	11.9	17.9	9.32	14.0	8.19	12.3	8.30	12.5	7.19	10.8
	15	9.98	15.0	11.1	16.7	8.70	13.1	7.64	11.5	7.74	11.6	6.71	10.1
	16	9.36	14.1	10.4	15.6	8.16	12.3	7.16	10.8	7.26	10.9	6.29	9.45
	17	8.81	13.2	9.79	14.7	7.68	11.5	6.74	10.1	6.83	10.3	5.92	8.89
	18	8.32	12.5	9.25	13.9	7.25	10.9	6.37	9.57	6.45	9.70	5.59	8.40
	19	7.88	11.8	8.76	13.2	6.87	10.3	6.03	9.07	6.11	9.19	5.29	7.96
	20	7.49	11.3	8.32	12.5	6.53	9.81	5.73	8.61	5.81	8.73	5.03	7.56
	21	7.13	10.7	7.93	11.9	6.22	9.34	5.46	8.20	5.53	8.31	4.79	7.20
	22	6.80	10.2	7.57	11.4	5.93	8.92	5.21	7.83	5.28	7.94	4.57	6.87
	23	6.51	9.78	7.24	10.9	5.68	8.53	4.98	7.49	5.05	7.59	4.37	6.57
	24	6.24	9.38	6.94	10.4	5.44	8.18	4.78	7.18	4.84	7.28	4.19	6.30
	25	5.99	9.00	6.66	10.0	5.22	7.85	4.58	6.89	4.65	6.98	4.02	6.05
	26	5.76	8.65	6.40	9.62	5.02	7.55	4.41	6.63	4.47	6.72	3.87	5.82
	27	5.54	8.33	6.17	9.27	4.83	7.27	4.24	6.38	4.30	6.47	3.73	5.60
	28	5.35	8.04	5.95	8.94	4.66	7.01	4.09	6.15	4.15	6.24	3.59	5.40
	29	5.16	7.76	5.74	8.63	4.50	6.77	3.95	5.94	4.01	6.02	3.47	5.21
	30	4.99	7.50	5.55	8.34	4.35	6.54	3.82	5.74	3.87	5.82	3.35	5.04
	31	4.83	7.26	5.37	8.07	4.21	6.33	3.70	5.56	3.75	5.63	3.25	4.88
	32	4.68	7.03	5.20	7.82	4.08	6.13	3.58	5.38	3.63	5.46	3.14	4.73
	33	4.54	6.82	5.04	7.58	3.96	5.95	3.47	5.22	3.52	5.29	3.05	4.58
	34	4.40	6.62	4.90	7.36	3.84	5.77	3.37	5.07	3.42	5.14	2.96	4.45
	35	4.28	6.43	4.76	7.15	3.73	5.61	3.27	4.92	3.32	4.99	2.87	4.32
	36	4.16	6.25	4.62	6.95	3.63	5.45	3.18	4.79	3.23	4.85	2.79	4.20
	37	4.05	6.08	4.50	6.76	3.53	5.30	3.10	4.66	3.14	4.72	2.72	4.09
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	150	225	166	250	131	196	115	172	116	175	101	151
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	18.7	28.1	20.8	31.3	16.3	24.5	14.3	21.5	14.5	21.8	12.6	18.9
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	7.14	10.7	7.41	11.1	6.06	9.11	5.46	8.20	5.21	7.84	4.64	6.98
BF/Ω_b	$\varphi_b BF$, kips	1.08	1.62	0.770	1.16	0.856	1.29	0.842	1.27	0.588	0.884	0.635	0.954
V_n/Ω_v	$\varphi_v V_{nx}$, kips	22.6	34.0	42.0	63.1	26.1	39.3	19.0	28.5	31.6	47.5	23.7	35.6
Z_x, in.^{3}		12.5		13.9		10.9		9.57		9.70		8.40	
L_p, ft		1.52		1.36		1.39		1.42		1.27		1.29	
L_r, ft		12.3		18.8		13.4		12.0		17.1		13.8	

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 2-6 is used.

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

F_y = 30 ksi

Table 2-6 (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	28.5	42.8	29.1	43.7	24.6	37.0	20.5	30.8	17.4	26.2	14.1	21.1
	4	21.4	32.1	21.8	32.8	18.4	27.7	15.4	23.1	13.1	19.7	10.5	15.8
	5	17.1	25.7	17.4	26.2	14.8	22.2	12.3	18.5	10.5	15.7	8.43	12.7
	6	14.3	21.4	14.5	21.8	12.3	18.5	10.3	15.4	8.72	13.1	7.03	10.6
	7	12.2	18.4	12.5	18.7	10.5	15.8	8.79	13.2	7.48	11.2	6.02	9.05
	8	10.7	16.1	10.9	16.4	9.22	13.9	7.69	11.6	6.54	9.83	5.27	7.92
	9	9.50	14.3	9.69	14.6	8.20	12.3	6.84	10.3	5.82	8.74	4.68	7.04
	10	8.55	12.9	8.72	13.1	7.38	11.1	6.16	9.25	5.23	7.87	4.22	6.34
	11	7.77	11.7	7.93	11.9	6.71	10.1	5.60	8.41	4.76	7.15	3.83	5.76
	12	7.13	10.7	7.27	10.9	6.15	9.24	5.13	7.71	4.36	6.56	3.51	5.28
	13	6.58	9.89	6.71	10.1	5.67	8.53	4.74	7.12	4.03	6.05	3.24	4.87
	14	6.11	9.18	6.23	9.36	5.27	7.92	4.40	6.61	3.74	5.62	3.01	4.53
	15	5.70	8.57	5.81	8.74	4.92	7.39	4.10	6.17	3.49	5.24	2.81	4.22
	16	5.34	8.03	5.45	8.19	4.61	6.93	3.85	5.78	3.27	4.92	2.63	3.96
	17	5.03	7.56	5.13	7.71	4.34	6.52	3.62	5.44	3.08	4.63	2.48	3.73
	18	4.75	7.14	4.84	7.28	4.10	6.16	3.42	5.14	2.91	4.37	2.34	3.52
	19	4.50	6.76	4.59	6.90	3.88	5.84	3.24	4.87	2.75	4.14	2.22	3.33
	20	4.28	6.43	4.36	6.55	3.69	5.54	3.08	4.63	2.62	3.93	2.11	3.17
	21	4.07	6.12	4.15	6.24	3.51	5.28	2.93	4.41	2.49	3.75	2.01	3.02
	22	3.89	5.84	3.96	5.96	3.35	5.04	2.80	4.21	2.38	3.58	1.92	2.88
	23	3.72	5.59	3.79	5.70	3.21	4.82	2.68	4.02	2.28	3.42	1.83	2.75
	24	3.56	5.36	3.63	5.46	3.07	4.62	2.56	3.86	2.18	3.28	1.76	2.64
	25	3.42	5.14	3.49	5.24	2.95	4.44	2.46	3.70	2.09	3.15	1.69	2.53
	26	3.29	4.94	3.35	5.04	2.84	4.26	2.37	3.56	2.01	3.03	1.62	2.44
	27	3.17	4.76	3.23	4.85	2.73	4.11	2.28	3.43	1.94	2.91	1.56	2.35
	28	3.05	4.59	3.11	4.68	2.63	3.96	2.20	3.30	1.87	2.81	1.51	2.26
	29	2.95	4.43	3.01	4.52	2.54	3.82	2.12	3.19	1.80	2.71	1.45	2.18
	30	2.85	4.28	2.91	4.37	2.46	3.70	2.05	3.08	1.74	2.62	1.41	2.11
	31	2.76	4.15	2.81	4.23	2.38	3.58	1.99	2.98	1.69	2.54	1.36	2.04
	32	2.67	4.02	2.72	4.10	2.31	3.47	1.92	2.89	1.64	2.46	1.32	1.98
	33	2.59	3.89	2.64	3.97	2.24	3.36	1.87	2.80	1.59	2.38	1.28	1.92
	34	2.51	3.78	2.56	3.85	2.17	3.26	1.81	2.72	1.54	2.31	1.24	1.86
	35	2.44	3.67	2.49	3.74	2.11	3.17	1.76	2.64	1.50	2.25	1.20	1.81
	36	2.38	3.57	2.42	3.64	2.05	3.08	1.71	2.57	1.45	2.19	1.17	1.76
	37	2.31	3.47	2.36	3.54	1.99	3.00	1.66	2.50	1.41	2.13	1.14	1.71
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	85.5	129	87.2	131	73.8	111	61.6	92.5	52.3	78.7	42.2	63.4
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	10.7	16.1	10.9	16.4	9.22	13.9	7.69	11.6	6.54	9.83	5.27	7.92
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	4.08	6.14	3.89	5.84	3.39	5.09	2.94	4.42	2.39	3.59	2.01	3.02
BF/Ω_b	$\varphi_b BF$, kips	0.640	0.963	0.400	0.602	0.447	0.671	0.463	0.695	0.288	0.432	0.310	0.466
V_n/Ω_v	$\varphi_v V_{nx}$, kips	15.8	23.8	28.3	42.5	20.3	30.5	12.9	19.4	17.5	26.3	10.2	15.4
Z_x, in.^{3}		7.14		7.28		6.16		5.14		4.37		3.52	
L_p, ft		1.32		1.18		1.19		1.21		1.11		1.11	
L_r, ft		11.6		18.7		14.3		11.5		15.5		11.6	

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 2-6 is used.

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

C4-C3

Table 2-6 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Welded)

F_y = 30 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	11.3	16.9	9.06	13.6	6.91	10.4	6.03	9.06	5.23	7.86
	4	8.44	12.7	6.80	10.2	5.18	7.79	4.52	6.80	3.92	5.90
	5	6.75	10.2	5.44	8.17	4.14	6.23	3.62	5.44	3.14	4.72
	6	5.63	8.46	4.53	6.81	3.45	5.19	3.01	4.53	2.61	3.93
	7	4.82	7.25	3.88	5.84	2.96	4.45	2.58	3.88	2.24	3.37
	8	4.22	6.35	3.40	5.11	2.59	3.89	2.26	3.40	1.96	2.95
	9	3.75	5.64	3.02	4.54	2.30	3.46	2.01	3.02	1.74	2.62
	10	3.38	5.08	2.72	4.09	2.07	3.11	1.81	2.72	1.57	2.36
	11	3.07	4.61	2.47	3.71	1.88	2.83	1.64	2.47	1.43	2.14
	12	2.81	4.23	2.27	3.41	1.73	2.60	1.51	2.27	1.31	1.97
	13	2.60	3.90	2.09	3.14	1.59	2.40	1.39	2.09	1.21	1.81
	14	2.41	3.63	1.94	2.92	1.48	2.22	1.29	1.94	1.12	1.68
	15	2.25	3.38	1.81	2.72	1.38	2.08	1.21	1.81	1.05	1.57
	16	2.11	3.17	1.70	2.55	1.29	1.95	1.13	1.70	0.981	1.47
	17	1.99	2.99	1.60	2.40	1.22	1.83	1.06	1.60	0.923	1.39
	18	1.88	2.82	1.51	2.27	1.15	1.73	1.00	1.51	0.872	1.31
	19	1.78	2.67	1.43	2.15	1.09	1.64	0.952	1.43	0.826	1.24
	20	1.69	2.54	1.36	2.04	1.04	1.56	0.904	1.36	0.784	1.18
	21	1.61	2.42	1.29	1.95	0.987	1.48	0.861	1.29	0.747	1.12
	22	1.54	2.31	1.24	1.86	0.942	1.42	0.822	1.24	0.713	1.07
	23	1.47	2.21	1.18	1.78	0.901	1.35	0.786	1.18	0.682	1.03
	24	1.41	2.12	1.13	1.70	0.863	1.30	0.753	1.13	0.654	0.983
	25	1.35	2.03	1.09	1.63	0.829	1.25	0.723	1.09	0.628	0.943
	26	1.30	1.95	1.05	1.57	0.797	1.20	0.696	1.05	0.603	0.907
	27	1.25	1.88	1.01	1.51	0.767	1.15	0.670	1.01	0.581	0.873
	28	1.21	1.81	0.971	1.46	0.740	1.11	0.646	0.971	0.560	0.842
	29	1.16	1.75	0.937	1.41	0.714	1.07	0.624	0.937	0.541	0.813
	30	1.13	1.69	0.906	1.36	0.691	1.04	0.603	0.906	0.523	0.786
	31	1.09	1.64	0.877	1.32	0.668	1.00	0.583	0.877	0.506	0.761
	32	1.06	1.59	0.850	1.28	0.647	0.973	0.565	0.849	0.490	0.737
	33	1.02	1.54	0.824	1.24	0.628	0.944	0.548	0.824	0.475	0.715
	34	0.993	1.49	0.800	1.20	0.609	0.916	0.532	0.799	0.461	0.694
	35	0.965	1.45	0.777	1.17	0.592	0.890	0.517	0.777	0.448	0.674
	36	0.938	1.41	0.755	1.14	0.576	0.865	0.502	0.755	0.436	0.655
	37	0.913	1.37	0.735	1.10	0.560	0.842	0.489	0.735	0.424	0.637
Beam Properties											
W_c/Ω_b	$\varphi_b W_c$, kip-ft	33.8	50.8	27.2	40.9	20.7	31.1	18.1	27.2	15.7	23.6
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	4.22	6.35	3.40	5.11	2.59	3.89	2.26	3.40	1.96	2.95
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	1.54	2.31	1.29	1.93	0.930	1.40	0.829	1.25	0.741	1.11
BF/Ω_b	$\varphi_b BF$, kips	0.171	0.257	0.190	0.285	0.083	0.125	0.093	0.140	0.099	0.149
V_n/Ω_v	$\varphi_v V_{nx}$, kips	13.8	20.8	7.93	11.9	11.5	17.3	8.34	12.5	5.50	8.26
Z_x, in.^{3}		2.82		2.27		1.73		1.51		1.31	
L_p, ft		1.01		1.00		0.931		0.919		0.900	
L_r, ft		16.7		12.1		20.9		16.3		13.2	

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 2-6 is used.

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

C8-C4

Table 2-7
Maximum Total Uniform Load, kips
C-Shapes (Hot Rolled)

F_y = 30 ksi

Shape		C8×		C6×				C5×				C4×	
		18.75		10.5		8.2		9		6.7		7.25	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	55.5	83.4	24.7	37.1	20.6	31.0	17.5	26.3	14.2	21.3	11.3	17.0
	4	41.6	62.6	18.5	27.8	15.4	23.2	13.1	19.8	10.6	16.0	8.50	12.8
	5	33.3	50.0	14.8	22.2	12.4	18.6	10.5	15.8	8.50	12.8	6.80	10.2
	6	27.7	41.7	12.3	18.5	10.3	15.5	8.76	13.2	7.09	10.7	5.67	8.52
	7	23.8	35.7	10.6	15.9	8.83	13.3	7.51	11.3	6.07	9.13	4.86	7.30
	8	20.8	31.3	9.25	13.9	7.72	11.6	6.57	9.88	5.31	7.99	4.25	6.39
	9	18.5	27.8	8.22	12.4	6.87	10.3	5.84	8.78	4.72	7.10	3.78	5.68
	10	16.6	25.0	7.40	11.1	6.18	9.29	5.26	7.90	4.25	6.39	3.40	5.11
	11	15.1	22.7	6.73	10.1	5.62	8.44	4.78	7.18	3.86	5.81	3.09	4.65
	12	13.9	20.9	6.17	9.27	5.15	7.74	4.38	6.59	3.54	5.33	2.83	4.26
	13	12.8	19.2	5.69	8.56	4.75	7.14	4.04	6.08	3.27	4.92	2.62	3.93
	14	11.9	17.9	5.29	7.95	4.41	6.63	3.76	5.64	3.04	4.56	2.43	3.65
	15	11.1	16.7	4.93	7.42	4.12	6.19	3.50	5.27	2.83	4.26	2.27	3.41
	16	10.4	15.6	4.63	6.95	3.86	5.81	3.29	4.94	2.66	3.99	2.13	3.20
	17	9.79	14.7	4.35	6.54	3.64	5.46	3.09	4.65	2.50	3.76	2.00	3.01
	18	9.25	13.9	4.11	6.18	3.43	5.16	2.92	4.39	2.36	3.55	1.89	2.84
	19	8.76	13.2	3.90	5.85	3.25	4.89	2.77	4.16	2.24	3.36	1.79	2.69
	20	8.32	12.5	3.70	5.56	3.09	4.64	2.63	3.95	2.13	3.20	1.70	2.56
	21	7.93	11.9	3.52	5.30	2.94	4.42	2.50	3.76	2.02	3.04	1.62	2.43
	22	7.57	11.4	3.36	5.06	2.81	4.22	2.39	3.59	1.93	2.90	1.55	2.32
	23	7.24	10.9	3.22	4.84	2.69	4.04	2.29	3.44	1.85	2.78	1.48	2.22
	24	6.94	10.4	3.08	4.64	2.57	3.87	2.19	3.29	1.77	2.66	1.42	2.13
	25	6.66	10.0	2.96	4.45	2.47	3.72	2.10	3.16	1.70	2.56	1.36	2.04
	26	6.40	9.62	2.85	4.28	2.38	3.57	2.02	3.04	1.64	2.46	1.31	1.97
	27	6.17	9.27	2.74	4.12	2.29	3.44	1.95	2.93	1.57	2.37	1.26	1.89
	28	5.95	8.94	2.64	3.97	2.21	3.32	1.88	2.82	1.52	2.28	1.21	1.83
	29	5.74	8.63	2.55	3.84	2.13	3.20	1.81	2.72	1.47	2.20	1.17	1.76
	30	5.55	8.34	2.47	3.71	2.06	3.10	1.75	2.63	1.42	2.13	1.13	1.70
	31	5.37	8.07	2.39	3.59	1.99	3.00	1.70	2.55	1.37	2.06	1.10	1.65
	32	5.20	7.82	2.31	3.48	1.93	2.90	1.64	2.47	1.33	2.00	1.06	1.60
	33	5.04	7.58	2.24	3.37	1.87	2.81	1.59	2.39	1.29	1.94	1.03	1.55
	34	4.90	7.36	2.18	3.27	1.82	2.73	1.55	2.32	1.25	1.88	1.00	1.50
	35	4.76	7.15	2.11	3.18	1.77	2.65	1.50	2.26	1.21	1.83	0.972	1.46
	36	4.62	6.95	2.06	3.09	1.72	2.58	1.46	2.20	1.18	1.78	0.945	1.42
	37	4.50	6.76	2.00	3.01	1.67	2.51	1.42	2.14	1.15	1.73	0.919	1.38
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	166	250	74.0	111	61.8	92.9	52.6	79.0	42.5	63.9	34.0	51.1
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	20.8	31.3	9.25	13.9	7.72	11.6	6.57	9.88	5.31	7.99	4.25	6.39
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	7.41	11.1	3.40	5.10	2.93	4.40	2.40	3.60	2.01	3.03	1.54	2.32
BF/Ω_b	$\varphi_b BF$, kips	0.776	1.17	0.435	0.654	0.454	0.682	0.278	0.417	0.302	0.454	0.161	0.242
V_n/Ω_v	$\varphi_v V_{nx}$, kips	42.0	63.1	20.3	30.5	12.9	19.4	17.5	26.3	10.2	15.4	13.8	20.8
Z_x, in.^{3}		13.9		6.18		5.16		4.39		3.55		2.84	
L_p, ft		1.22		1.08		1.09		0.990		0.996		0.910	
L_r, ft		18.5		14.5		11.7		16.0		11.9		17.7	

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 2-7 is used.

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

F_y = 30 ksi

Table 2-7 (continued)
Maximum Total Uniform Load, kips
C-Shapes (Hot Rolled)

C4-C3

Shape		C4× 5.4		C3× 4.1	
Design		ASD	LRFD	ASD	LRFD
Span, ft	3	9.14	13.7	5.27	7.92
	4	6.86	10.3	3.95	5.94
	5	5.49	8.24	3.16	4.75
	6	4.57	6.87	2.63	3.96
	7	3.92	5.89	2.26	3.39
	8	3.43	5.15	1.98	2.97
	9	3.05	4.58	1.76	2.64
	10	2.74	4.12	1.58	2.38
	11	2.49	3.75	1.44	2.16
	12	2.29	3.44	1.32	1.98
	13	2.11	3.17	1.22	1.83
	14	1.96	2.94	1.13	1.70
	15	1.83	2.75	1.05	1.58
	16	1.71	2.58	0.988	1.49
	17	1.61	2.42	0.930	1.40
	18	1.52	2.29	0.878	1.32
	19	1.44	2.17	0.832	1.25
	20	1.37	2.06	0.790	1.19
	21	1.31	1.96	0.753	1.13
	22	1.25	1.87	0.719	1.08
	23	1.19	1.79	0.687	1.03
	24	1.14	1.72	0.659	0.990
	25	1.10	1.65	0.632	0.950
	26	1.05	1.59	0.608	0.914
	27	1.02	1.53	0.585	0.880
	28	0.979	1.47	0.565	0.849
	29	0.946	1.42	0.545	0.819
	30	0.914	1.37	0.527	0.792
	31	0.885	1.33	0.510	0.766
	32	0.857	1.29	0.494	0.743
	33	0.831	1.25	0.479	0.720
	34	0.807	1.21	0.465	0.699
	35	0.784	1.18	0.452	0.679
	36	0.762	1.15	0.439	0.660
	37	0.741	1.11	0.427	0.642
Beam Properties					
W_c/Ω_b	$\varphi_b W_c$, kip-ft	27.4	41.2	15.8	23.8
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	3.43	5.15	1.98	2.97
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	1.29	1.94	0.741	1.11
BF/Ω_b	$\varphi_b BF$, kips	0.180	0.271	0.092	0.139
V_n/Ω_v	$\varphi_v V_{nx}$, kips	7.93	11.9	5.50	8.26
Z_x, in.^{3}		2.29		1.32	
L_p, ft		0.904		0.811	
L_r, ft		12.7		14.2	

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 2-7 is used.

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

MC8-MC4

Table 2-8
Maximum Total Uniform Load, kips
MC-Shapes (Welded)

F_y = 30 ksi

Shape		MC8×				MC6×				MC4×			
		19.8 [f1]		13.5 [f1]		14.6		10 [f1]		6.5		6.1	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	61.8	92.9	21.9	32.9	35.6	53.5	20.3	30.5	10.5	15.8	9.62	14.5
	4	46.4	69.7	16.4	24.7	26.7	40.1	15.2	22.9	7.90	11.9	7.22	10.8
	5	37.1	55.8	13.1	19.7	21.3	32.1	12.2	18.3	6.32	9.50	5.77	8.68
	6	30.9	46.5	10.9	16.4	17.8	26.7	10.1	15.2	5.27	7.92	4.81	7.23
	7	26.5	39.8	9.38	14.1	15.2	22.9	8.70	13.1	4.52	6.79	4.12	6.20
	8	23.2	34.8	8.21	12.3	13.3	20.0	7.61	11.4	3.95	5.94	3.61	5.42
	9	20.6	31.0	7.29	11.0	11.9	17.8	6.76	10.2	3.51	5.28	3.21	4.82
	10	18.5	27.9	6.56	9.87	10.7	16.0	6.09	9.15	3.16	4.75	2.89	4.34
	11	16.9	25.3	5.97	8.97	9.70	14.6	5.53	8.32	2.87	4.32	2.62	3.94
	12	15.5	23.2	5.47	8.22	8.89	13.4	5.07	7.62	2.63	3.96	2.41	3.62
	13	14.3	21.4	5.05	7.59	8.21	12.3	4.68	7.04	2.43	3.66	2.22	3.34
	14	13.2	19.9	4.69	7.05	7.62	11.5	4.35	6.54	2.26	3.39	2.06	3.10
	15	12.4	18.6	4.38	6.58	7.11	10.7	4.06	6.10	2.11	3.17	1.92	2.89
	16	11.6	17.4	4.10	6.17	6.67	10.0	3.80	5.72	1.98	2.97	1.80	2.71
	17	10.9	16.4	3.86	5.80	6.28	9.43	3.58	5.38	1.86	2.80	1.70	2.55
	18	10.3	15.5	3.65	5.48	5.93	8.91	3.38	5.08	1.76	2.64	1.60	2.41
	19	9.76	14.7	3.46	5.19	5.62	8.44	3.20	4.82	1.66	2.50	1.52	2.28
	20	9.27	13.9	3.28	4.93	5.34	8.02	3.04	4.57	1.58	2.38	1.44	2.17
	21	8.83	13.3	3.13	4.70	5.08	7.64	2.90	4.36	1.51	2.26	1.37	2.07
	22	8.43	12.7	2.98	4.48	4.85	7.29	2.77	4.16	1.44	2.16	1.31	1.97
	23	8.06	12.1	2.85	4.29	4.64	6.97	2.65	3.98	1.37	2.07	1.25	1.89
	24	7.73	11.6	2.74	4.11	4.45	6.68	2.54	3.81	1.32	1.98	1.20	1.81
	25	7.42	11.2	2.63	3.95	4.27	6.42	2.44	3.66	1.26	1.90	1.15	1.74
	26	7.13	10.7	2.52	3.79	4.10	6.17	2.34	3.52	1.22	1.83	1.11	1.67
	27	6.87	10.3	2.43	3.65	3.95	5.94	2.25	3.39	1.17	1.76	1.07	1.61
	28	6.62	9.96	2.34	3.52	3.81	5.73	2.17	3.27	1.13	1.70	1.03	1.55
	29	6.40	9.61	2.26	3.40	3.68	5.53	2.10	3.16	1.09	1.64	0.995	1.50
	30	6.18	9.29	2.19	3.29	3.56	5.35	2.03	3.05	1.05	1.58	0.962	1.45
	32	5.80	8.71	2.05	3.08	3.33	5.01	1.90	2.86	0.988	1.49	0.902	1.36
	34	5.46	8.20	1.93	2.90	3.14	4.72	1.79	2.69	0.930	1.40	0.849	1.28
	36	5.15	7.74	1.82	2.74	2.96	4.46	1.69	2.54	0.878	1.32	0.802	1.21
	38	4.88	7.34	1.73	2.60	2.81	4.22	1.60	2.41	0.832	1.25	0.760	1.14
	40	4.64	6.97	1.64	2.47	2.67	4.01	1.52	2.29	0.790	1.19	0.722	1.08
	42	4.42	6.64	1.56	2.35	2.54	3.82	1.45	2.18	0.753	1.13	0.687	1.03
	44	4.22	6.34	1.49	2.24	2.43	3.65	1.38	2.08	0.719	1.08	0.656	0.986
Beam Properties													
W_c/Ω_b	$\varphi_b W_c$, kip-ft	185	279	65.6	98.7	107	160	60.9	91.5	31.6	47.5	28.9	43.4
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	23.2	34.8	8.21	12.30	13.3	20.0	7.61	11.4	3.95	5.94	3.61	5.42
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	9.36	14.1	6.53	9.82	5.01	7.52	3.57	5.37	1.49	2.24	1.34	2.01
BF/Ω_b	$\varphi_b BF$, kips	0.694	1.04	N/A	N/A	0.380	0.571	0.393	0.591	0.173	0.261	0.181	0.272
V_n/Ω_v	$\varphi_v V_{nx}$, kips	32.3	48.6	21.6	32.4	24.3	36.5	16.2	24.3	10.8	16.2	10.8	16.2
Z_x, in.^{3}		16.4		11.3		8.91		6.20		2.64		2.41	
L_p, ft		4.47		N/A		1.86		6.14		1.24		1.06	
L_r, ft		24.4		18.3		23.8		16.4		15.4		13.6	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-8 is used.

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

F_y = 30 ksi

Table 2-8 (continued)
Maximum Total Uniform Load, kips
MC-Shapes (Welded)

MC3-MC2

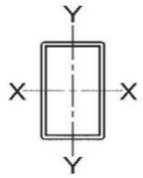
Shape		MC3×				MC2×					
		4.8		3.5		3		2.4		1.6	
Design		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Span, ft	3	5.67	8.52	4.19	6.30	2.31	3.47	1.86	2.79	1.32	1.98
	4	4.25	6.39	3.14	4.73	1.73	2.60	1.39	2.09	0.988	1.49
	5	3.40	5.11	2.51	3.78	1.38	2.08	1.11	1.67	0.790	1.19
	6	2.83	4.26	2.10	3.15	1.15	1.73	0.928	1.40	0.659	0.990
	7	2.43	3.65	1.80	2.70	0.989	1.49	0.796	1.20	0.565	0.849
	8	2.13	3.20	1.57	2.36	0.865	1.30	0.696	1.05	0.494	0.743
	9	1.89	2.84	1.40	2.10	0.769	1.16	0.619	0.930	0.439	0.660
	10	1.70	2.56	1.26	1.89	0.692	1.04	0.557	0.837	0.395	0.594
	11	1.55	2.32	1.14	1.72	0.629	0.946	0.506	0.761	0.359	0.540
	12	1.42	2.13	1.05	1.58	0.577	0.867	0.464	0.698	0.329	0.495
	13	1.31	1.97	0.967	1.45	0.532	0.800	0.428	0.644	0.304	0.457
	14	1.21	1.83	0.898	1.35	0.494	0.743	0.398	0.598	0.282	0.424
	15	1.13	1.70	0.838	1.26	0.461	0.694	0.371	0.558	0.263	0.396
	16	1.06	1.60	0.786	1.18	0.433	0.650	0.348	0.523	0.247	0.371
	17	1.00	1.50	0.740	1.11	0.407	0.612	0.328	0.492	0.232	0.349
	18	0.945	1.42	0.699	1.05	0.385	0.578	0.309	0.465	0.220	0.330
	19	0.895	1.35	0.662	0.995	0.364	0.548	0.293	0.441	0.208	0.313
	20	0.850	1.28	0.629	0.945	0.346	0.520	0.278	0.419	0.198	0.297
	21	0.810	1.22	0.599	0.900	0.330	0.495	0.265	0.399	0.188	0.283
	22	0.773	1.16	0.572	0.859	0.315	0.473	0.253	0.380	0.180	0.270
	23	0.739	1.11	0.547	0.822	0.301	0.452	0.242	0.364	0.172	0.258
	24	0.709	1.07	0.524	0.788	0.288	0.434	0.232	0.349	0.165	0.248
	25	0.680	1.02	0.503	0.756	0.277	0.416	0.223	0.335	0.158	0.238
	26	0.654	0.983	0.484	0.727	0.266	0.400	0.214	0.322	0.152	0.228
	27	0.630	0.947	0.466	0.700	0.256	0.385	0.206	0.310	0.146	0.220
	28	0.607	0.913	0.449	0.675	0.247	0.372	0.199	0.299	0.141	0.212
	29	0.586	0.881	0.434	0.652	0.239	0.359	0.192	0.289	0.136	0.205
	30	0.567	0.852	0.419	0.630	0.231	0.347	0.186	0.279	0.132	0.198
	32	0.531	0.799	0.393	0.591	0.216	0.325	0.174	0.262	0.124	0.186
	34	0.500	0.752	0.370	0.556	0.204	0.306	0.164	0.246	0.116	0.175
	36	0.472	0.710	0.349	0.525	0.192	0.289	0.155	0.233	0.110	0.165
	38	0.448	0.673	0.331	0.497	0.182	0.274	0.147	0.220	0.104	0.156
	40	0.425	0.639	0.314	0.473	0.173	0.260	0.139	0.209	0.099	0.149
	42	0.405	0.609	0.299	0.450	0.165	0.248	0.133	0.199	0.094	0.141
	44	0.386	0.581	0.286	0.430	0.157	0.236	0.127	0.190	0.090	0.135
Beam Properties											
W_c/Ω_b	$\varphi_b W_c$, kip-ft	17.0	25.6	12.6	18.9	6.92	10.4	5.57	8.37	3.95	5.94
M_p/Ω_b	$\varphi_b M_{px}$, kip-ft	2.13	3.20	1.57	2.36	0.865	1.30	0.696	1.05	0.494	0.743
M_r/Ω_b	$\varphi_b M_{rx}$, kip-ft	0.788	1.18	0.588	0.884	0.307	0.462	0.254	0.382	0.186	0.279
BF/Ω_b	$\varphi_b BF$, kips	0.094	0.141	0.102	0.154	0.039	0.058	0.043	0.065	0.047	0.071
V_n/Ω_v	$\varphi_v V_{nx}$, kips	8.08	12.2	6.08	9.14	5.39	8.10	4.05	6.09	2.69	4.05
Z_x, in.^{3}		1.42		1.05		0.578		0.465		0.330	
L_p, ft		0.912		0.845		0.591		0.605		0.619	
L_r, ft		15.2		10.5		15.0		10.9		7.12	

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

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

Note 1: Beams must be laterally supported if Table 2-8 is used.

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



HSS16-HSS8

Table 2-9
Available Flexural Strength, kip-ft
Rectangular HSS (Roll Formed)

F_y = 30 ksi

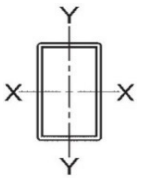
Shape		X-Axis		Y-Axis		Shape		X-Axis		Y-Axis	
		M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$			M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD	ASD	LRFD			ASD	LRFD	ASD	LRFD
HSS16×8×	0.500	168	252	103	155	HSS10×8×	0.500	81.1	122	69.6	105
	0.375	131	197	71.3	107		0.375	64.5	97.0	55.4	83.3
	0.312	110	165	54.1	81.3		0.312	54.3	81.7	46.7	70.2
	0.250	90.3	136	38.4	57.8		0.250	44.9	67.5	36.3	54.6
HSS14×10×	0.500	156	234	124	186	HSS10×6×	0.500	66.9	101	47.0	70.7
	0.375	122	183	97.0	146		0.375	53.7	80.8	37.7	56.7
	0.312	102	154	69.7	105		0.312	45.4	68.2	31.9	47.9
	0.250 [f1]	77.5	116	50.0	75.1		0.250	37.6	56.5	25.0	37.5
							0.180	27.7	41.6	14.7	22.2
HSS14×8×	0.500	136	204	92.1	138						
	0.375	107	160	72.6	109	HSS10×4×	0.500	52.7	79.2	27.2	41.0
	0.312	89.7	135	52.5	79.0		0.375	43.0	64.6	22.3	33.5
	0.250	73.7	111	37.4	56.3		0.312	36.2	54.5	19.0	28.6
							0.250	30.2	45.5	15.0	22.5
HSS14×6×	0.500	115	173	63.5	95.4						
	0.375	91.5	137	50.3	75.6	HSS10×2×	0.375	32.2	48.4	9.06	13.6
	0.312	76.8	115	36.6	55.1		0.250	23.1	34.7	6.26	9.41
	0.250	63.3	95.2	26.0	39.1		0.180	17.2	25.9	3.69	5.54
HSS12×10×	0.500	124	187	110	165	HSS9×5×	0.500	50.3	75.6	33.4	50.2
	0.375	97.6	147	86.2	130		0.375	40.9	61.4	27.1	40.7
	0.312	82.0	123	72.5	109		0.250	28.9	43.4	19.2	28.8
	0.250 [f1]	62.4	93.8	48.2	72.5						
						HSS9×3×	0.500	37.6	56.5	16.6	25.0
HSS12×8×	0.500	107	161	80.8	122		0.375	31.3	47.0	13.9	20.9
	0.375	84.6	127	63.9	96.1		0.250	22.3	33.5	10.1	15.1
	0.312	71.1	107	53.9	81.0		0.180	16.6	25.0	6.01	9.04
	0.250	58.5	88.0	36.2	54.4						
						HSS8×6×	0.500	47.2	70.9	38.8	58.3
HSS12×6×	0.500	89.7	135	55.2	83.0		0.375	38.3	57.6	31.4	47.3
	0.375	71.4	107	44.0	66.2		0.312	32.3	48.6	26.6	40.1
	0.312	60.2	90.5	37.3	56.0		0.250	26.9	40.5	22.2	33.3
	0.250	49.7	74.7	25.2	37.9		0.180	19.9	29.9	14.0	21.0
HSS12×4×	0.500	72.5	109	32.5	48.8	HSS8×4×	0.500	35.9	54.0	22.0	33.1
	0.375	58.4	87.8	26.3	39.6		0.375	29.8	44.8	18.3	27.5
	0.312	49.3	74.0	22.5	33.8		0.312	25.1	37.8	15.6	23.4
	0.250	40.9	61.4	15.2	22.8		0.250	21.1	31.7	13.1	19.6
	0.180	30.2	45.5	9.14	13.7		0.180	15.7	23.6	8.37	12.6
							0.120	10.9	16.4	4.51	6.78

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

Table 2-9 (continued)
Available Flexural Strength, kip-ft
Rectangular HSS (Roll Formed)

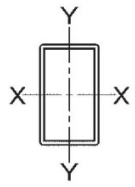


HSS8-HSS3

Shape		X-Axis		Y-Axis		Shape		X-Axis		Y-Axis	
		M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$			M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD	ASD	LRFD			ASD	LRFD	ASD	LRFD
HSS8×2×	0.375	21.3	32.0	7.23	10.9	HSS5×4×	0.500	16.5	24.8	14.1	21.2
	0.312	18.0	27.0	6.29	9.45		0.375	14.1	21.2	12.1	18.2
	0.250	15.4	23.2	5.43	8.17		0.312	12.1	18.1	10.3	15.5
	0.180	11.6	17.4	3.51	5.27		0.250	10.3	15.5	8.83	13.3
	0.120	8.04	12.1	1.88	2.83		0.180	7.77	11.7	6.68	10.0
							0.120	5.42	8.15	4.07	6.11
HSS7×5×	0.500	33.7	50.6	26.6	40.1						
	0.375	27.7	41.6	21.9	32.9	HSS5×3×	0.500	13.1	19.7	9.10	13.7
	0.250	19.8	29.7	15.6	23.4		0.375	11.5	17.3	8.01	12.0
	0.180	14.7	22.1	11.5	17.2		0.312	9.87	14.8	6.90	10.4
							0.250	8.53	12.8	5.96	8.96
HSS7×4×	0.500	28.7	43.2	19.3	29.0		0.180	6.47	9.72	4.55	6.84
	0.375	24.0	36.0	16.2	24.3		0.120	4.55	6.84	2.83	4.25
	0.250	17.2	25.9	11.6	17.5						
						HSS5×2×	0.250	6.75	10.1	3.47	5.22
HSS7×3×	0.500	24.0	36.0	12.8	19.3		0.180	5.18	7.79	2.68	4.03
	0.375	20.2	30.4	11.0	16.5		0.120	3.67	5.51	1.70	2.56
	0.250	14.7	22.0	8.02	12.1						
	0.180	11.0	16.5	5.97	8.97	HSS4×3×	0.250	6.03	9.07	4.94	7.43
							0.180	4.61	6.93	3.79	5.69
HSS6×4×	0.500	22.3	33.5	16.8	25.2		0.120	3.26	4.91	2.68	4.03
	0.375	18.7	28.1	14.1	21.2		0.080	2.25	3.38	1.47	2.20
	0.312	16.0	24.1	12.1	18.1						
	0.250	13.6	20.4	10.2	15.4	HSS4×2×	0.375	5.99	9.00	3.58	5.38
	0.180	10.2	15.3	7.69	11.6		0.312	5.18	7.79	3.14	4.73
	0.120	7.07	10.6	4.26	6.40		0.250	4.63	6.95	2.81	4.23
							0.180	3.58	5.38	2.20	3.31
HSS6×3×	0.500	18.1	27.2	11.0	16.5		0.120	2.56	3.85	1.59	2.39
	0.375	15.6	23.4	9.49	14.3		0.080	1.78	2.68	0.874	1.31
	0.312	13.3	20.0	8.16	12.3						
	0.250	11.4	17.1	6.99	10.5	HSS4×1.5×	0.250	3.92	5.90	1.89	2.84
	0.180	8.59	12.9	5.30	7.97		0.180	3.07	4.61	1.50	2.25
	0.120	6.00	9.02	2.96	4.44		0.120	2.22	3.33	1.10	1.65
							0.083	1.60	2.41	0.644	0.968
HSS6×2×	0.375	12.5	18.7	5.40	8.12		0.063	1.22	1.84	0.417	0.627
	0.312	10.7	16.0	4.72	7.09						
	0.250	9.25	13.9	4.12	6.19	HSS3×2×	0.250	2.87	4.32	2.16	3.24
	0.180	7.04	10.6	3.17	4.77		0.180	2.26	3.40	1.71	2.57
	0.120	4.94	7.43	1.77	2.67		0.120	1.65	2.48	1.24	1.87
							0.080	1.15	1.73	0.873	1.31

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



HSS3-HSS1.5

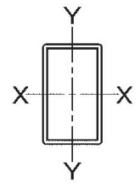
Table 2-9 (continued)
Available Flexural Strength, kip-ft
Rectangular HSS (Roll Formed)

F_y = 30 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
HSS3×1.5×	0.250	2.37	3.56	1.42	2.14
	0.180	1.89	2.84	1.15	1.73
	0.120	1.39	2.09	0.850	1.28
	0.083	1.01	1.52	0.623	0.936
	0.060	0.747	1.12	0.371	0.558
HSS3×1×	0.180	1.51	2.27	0.656	0.986
	0.120	1.13	1.70	0.503	0.756
	0.080	0.802	1.21	0.362	0.545
	0.060	0.615	0.925	0.223	0.335
HSS2.5×1.5×	0.250	1.72	2.59	1.19	1.78
	0.180	1.39	2.09	0.970	1.46
	0.120	1.04	1.56	0.728	1.09
	0.083	0.763	1.15	0.536	0.806
	0.063	0.587	0.882	0.390	0.586
HSS2.5×1×	0.120	0.826	1.24	0.424	0.637
	0.083	0.612	0.920	0.317	0.477
	0.063	0.473	0.711	0.234	0.352
HSS2×1.5×	0.120	0.737	1.11	0.603	0.907
	0.080	0.527	0.792	0.433	0.650
	0.060	0.406	0.610	0.334	0.502
HSS2×1×	0.180	0.725	1.09	0.436	0.655
	0.120	0.569	0.855	0.344	0.518
	0.080	0.412	0.619	0.253	0.380
	0.060	0.319	0.479	0.196	0.295
HSS1.5×1×	0.120	0.355	0.533	0.266	0.401
	0.080	0.262	0.394	0.198	0.297
	0.060	0.204	0.306	0.154	0.232

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



HSS32-HSS12

Table 2-10
Available Flexural Strength, kip-ft
Rectangular HSS (Press Braked)

F_y = 30 ksi

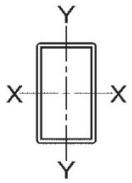
Shape		X-Axis		Y-Axis		Shape		X-Axis		Y-Axis	
		M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$			M_n/Ω_b	$\varphi_b M_n$	M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD	ASD	LRFD			ASD	LRFD	ASD	LRFD
HSS32×16×	0.375 [f1]	454	682	201	302	HSS16×12×	0.625	259	389	213	320
							0.500	213	320	175	263
HSS32×8×	0.375 [f1]	370	556	81.9	123		0.375	165	248	120	180
							0.312 [f1]	139	209	91.2	137
HSS28×8×	0.375	322	484	80.5	121		0.250 [f1]	91.1	137	65.8	98.8
	0.312 [f1]	234	352	60.0	90.2						
						HSS16×4×	0.375	94.6	142	30.2	45.4
HSS24×16×	0.375 [f1]	301	453	190	286		0.312	80.5	121	22.8	34.3
	0.312 [f1]	233	350	145	217		0.250	66.0	99.2	16.2	24.3
							0.180 [f1]	42.3	63.6	9.58	14.4
HSS24×8×	0.375	249	374	78.3	118						
	0.312	210	315	58.6	88.1	HSS14×10×	0.625	187	281	149	224
							0.500	156	234	124	186
HSS20×16×	0.625	434	653	374	563		0.375	121	182	96.1	144
	0.500	356	536	297	447		0.312	102	154	69.9	105
	0.375 [f1]	234	352	183	276		0.250 [f1]	80.6	121	50.4	75.7
	0.312 [f1]	180	270	140	210						
						HSS14×6×	0.625	137	206	75.1	113
HSS20×12×	0.625	362	545	254	383		0.500	115	173	63.2	95.0
	0.500	298	448	204	307		0.375	90.1	135	49.9	74.9
	0.375	229	344	126	190		0.312	76.6	115	36.7	55.2
	0.312 [f1]	193	290	95.5	144		0.250	62.7	94.3	26.2	39.4
	0.250 [f1]	124	187	68.5	103		0.180 [f1]	46.3	69.5	15.8	23.7
HSS20×8×	0.625	289	434	151	227	HSS12×8×	0.625	127	191	96.3	145
	0.500	240	360	123	184		0.500	107	160	80.7	121
	0.375	186	279	75.4	113		0.375	83.4	125	63.3	95.2
	0.312	156	234	56.8	85.4		0.312	71.0	107	53.7	80.8
	0.250 [f1]	126	189	40.2	60.4		0.250	58.1	87.3	36.3	54.6
							0.180 [f1]	35.3	53.1	22.4	33.6
HSS20×4×	0.375	141	212	31.6	47.5						
	0.312	119	180	23.9	35.9	HSS12×4×	0.375	57.3	86.2	25.9	38.9
	0.250 [f1]	96.0	144	16.8	25.2		0.312	49.1	73.8	22.3	33.5
							0.250	40.4	60.8	15.3	22.9
HSS18×6×	0.625	211	317	95.2	143		0.180	29.9	45.0	9.20	13.8
	0.500	175	263	79.6	120						
	0.375	136	205	51.6	77.5						
	0.312	116	174	38.9	58.4						
	0.250	94.3	142	27.5	41.3						

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

Table 2-10 (continued)
Available Flexural Strength, kip-ft
Rectangular HSS (Press Braked)

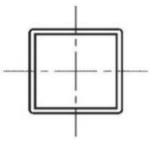


HSS10-HSS6

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
HSS10×6×	0.625	78.6	118	54.9	82.6
	0.500	66.6	100	46.7	70.2
	0.375	52.8	79.4	37.1	55.8
	0.312	45.2	68.0	31.9	47.9
	0.250	37.1	55.8	25.6	38.4
	0.180	27.5	41.4	14.8	22.3
	0.120 [f1]	14.7	22.1	8.05	12.1
HSS8×4×	0.375	29.0	43.7	17.8	26.8
	0.312	25.1	37.8	15.4	23.2
	0.250	20.8	31.3	12.9	19.4
	0.180	15.6	23.4	8.40	12.6
	0.120	10.8	16.2	4.55	6.85
HSS7×4×	0.375	23.4	35.1	15.9	23.9
	0.312	20.2	30.4	13.7	20.7
	0.250	16.9	25.4	11.5	17.3
	0.180	12.7	19.1	8.67	13.0
	0.120	8.79	13.2	4.43	6.66
HSS6×3×	0.250	11.2	16.8	6.87	10.3
	0.180	8.49	12.8	5.25	7.90
	0.120	5.93	8.91	2.98	4.48
HSS6×2×	0.250	9.01	13.5	4.04	6.08
	0.180	6.93	10.4	3.14	4.73
	0.120	4.87	7.31	1.80	2.70

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



HSS12-HSS1.5

Table 2-11
Available Flexural Strength, kip-ft
Square HSS (Roll Formed)

F_y = 30 ksi

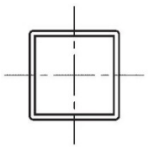
Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS12×12×	0.500	141	212	HSS4×4×	0.500	11.5	17.3
	0.375	111	166		0.375	10.1	15.1
	0.312	93.0	140		0.312	8.62	13.0
	0.250 [f1]	61.5	92.4		0.250	7.44	11.2
					0.180	5.64	8.48
HSS10×10×	0.500	95.4	143		0.120	3.97	5.96
	0.375	75.4	113		0.083 [f1]	2.26	3.39
	0.312	63.5	95.4				
	0.250 [f1]	48.8	73.4	HSS3.5×3.5×	0.250	5.52	8.30
					0.180	4.24	6.37
HSS9×9×	0.500	75.7	114		0.120	2.99	4.50
	0.375	60.3	90.7		0.083 [f1]	1.83	2.76
	0.312	50.7	76.3				
	0.250	41.9	63.0	HSS3×3×	0.375	5.06	7.61
					0.250	3.91	5.87
HSS8×8×	0.500	58.4	87.8		0.180	3.02	4.55
	0.375	46.9	70.4		0.120	2.17	3.26
	0.312	39.5	59.4		0.080	1.50	2.25
	0.250	32.8	49.3				
	0.180 [f1]	20.3	30.6	HSS2.5×2.5×	0.250	2.56	3.85
					0.180	2.02	3.04
HSS7×7×	0.500	43.4	65.3		0.120	1.47	2.21
	0.375	35.2	52.9		0.080	1.03	1.54
	0.312	29.6	44.6		0.060 [f1]	0.689	1.04
	0.250	24.7	37.1				
				HSS2×2×	0.250	1.50	2.25
HSS6×6×	0.500	30.5	45.9		0.180	1.22	1.83
	0.375	25.1	37.8		0.120	0.906	1.36
	0.312	21.3	32.0		0.080	0.642	0.965
	0.250	17.8	26.8		0.060	0.493	0.740
	0.180	13.3	20.0				
	0.120 [f1]	7.24	10.9	HSS1.75×1.75×	0.180	0.889	1.34
					0.120	0.675	1.01
HSS5×5×	0.500	19.9	29.9		0.083	0.500	0.752
	0.375	16.8	25.2		0.063	0.386	0.581
	0.312	14.3	21.4				
	0.250	12.1	18.2	HSS1.5×1.5×	0.250	0.720	1.08
	0.180	9.07	13.6		0.180	0.614	0.923
	0.120 [f1]	5.44	8.17		0.120	0.479	0.720
					0.080	0.347	0.522
					0.060	0.268	0.403

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.

F_y = 30 ksi

Table 2-11 (continued)
Available Flexural Strength, kip-ft
Square HSS (Roll Formed)

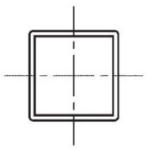


HSS1.25-HSS1

Shape		M_n/Ω_b	$\varphi_b M_n$
		ASD	LRFD
HSS1.25×1.25×	0.180	0.389	0.585
	0.120	0.316	0.475
	0.080	0.234	0.351
	0.060	0.183	0.275
HSS1×1×	0.180	0.214	0.322
	0.120	0.187	0.281
	0.080	0.143	0.214
	0.060	0.112	0.168

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



HSS20-HSS5

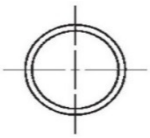
Table 2-12
Available Flexural Strength, kip-ft
Square HSS (Press Braked)

F_y = 30 ksi

Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS20×20×	0.625	507	763	HSS6×6×	0.500	30.2	45.5
	0.500 [f1]	403	605		0.375	24.6	36.9
	0.375 [f1]	245	369		0.312	21.3	32.0
					0.250	17.7	26.6
HSS16×16×	0.625	316	475		0.180	13.2	19.8
	0.500	259	389		0.120 [f1]	7.26	10.9
	0.375 [f1]	175	263				
	0.312 [f1]	133	200	HSS5×5×	0.250	11.9	17.9
					0.180	8.98	13.5
HSS14×14×	0.625	238	358		0.120 [f1]	5.67	8.52
	0.500	196	295				
	0.375	151	227				
	0.312 [f1]	108	162				
HSS12×12×	0.625	169	254				
	0.500	141	212				
	0.375	110	165				
	0.312	92.8	140				
	0.250 [f1]	61.8	92.8				
HSS10×10×	0.625	114	171				
	0.500	95.1	143				
	0.375	74.4	112				
	0.312	63.3	95.2				
	0.250 [f1]	50.3	75.5				
HSS8×8×	0.625	68.7	103				
	0.500	58.2	87.5				
	0.375	46.1	69.3				
	0.312	39.5	59.4				
	0.250	32.5	48.8				
	0.180 [f1]	20.4	30.7				
HSS7×7×	0.500	43.1	64.8				
	0.375	34.4	51.8				
	0.312	29.6	44.6				
	0.250	24.4	36.7				
	0.180	18.3	27.5				

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.



HSS7.5-HSS2.5

Table 2-13
Available Flexural Strength, kip-ft
Round HSS

F_y = 30 ksi

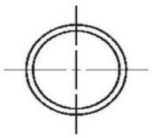
Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD
HSS7.5×	0.375	28.6	43.0	HSS3.125×	0.250	3.10	4.66
	0.250	19.6	29.5		0.180	2.34	3.51
	0.180	14.4	21.7		0.120	1.62	2.43
	0.120	9.79	14.7		0.109	1.49	2.23
					0.083	1.15	1.73
HSS6.25×	0.375	19.5	29.3		0.063	0.877	1.32
	0.250	13.5	20.3				
	0.180	9.93	14.9	HSS3×	0.250	2.84	4.28
	0.120	6.75	10.1		0.180	2.14	3.22
					0.148	1.80	2.70
HSS5×	0.250	8.46	12.7		0.120	1.49	2.24
	0.180	6.26	9.41		0.109	1.36	2.05
	0.120	4.28	6.44		0.083	1.06	1.59
	0.109	3.91	5.87		0.063	0.807	1.21
	0.083	3.01	4.52		0.049	0.639	0.961
HSS4.5×	0.250	6.77	10.2	HSS2.875×	0.180	1.96	2.95
	0.180	5.03	7.56		0.120	1.36	2.05
	0.148	4.19	6.30		0.109	1.25	1.88
	0.120	3.44	5.18		0.083	0.969	1.46
	0.109	3.14	4.73				
	0.083	2.43	3.65	HSS2.75×	0.250	2.35	3.53
					0.180	1.78	2.68
HSS4×	0.120	2.71	4.07		0.148	1.50	2.25
	0.109	2.47	3.71		0.120	1.24	1.87
	0.083	1.90	2.86		0.109	1.14	1.71
					0.083	0.885	1.33
HSS3.75×	0.250	4.60	6.91		0.065	0.702	1.06
	0.180	3.44	5.18				
	0.148	2.87	4.32	HSS2.5×	0.250	1.90	2.86
	0.120	2.37	3.56		0.180	1.45	2.18
	0.109	2.17	3.26		0.148	1.23	1.85
	0.083	1.68	2.52		0.120	1.02	1.53
					0.109	0.934	1.40
HSS3.5×	0.180	2.98	4.48		0.083	0.726	1.09
	0.148	2.49	3.74		0.063	0.555	0.835
	0.120	2.05	3.08		0.049	0.440	0.662
	0.109	1.87	2.81				
	0.083	1.45	2.18				
	0.063	1.11	1.66				
	0.049 [f1]	0.862	1.30				

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 65 ksi.

F_y = 30 ksi

Table 2-13 (continued)
Available Flexural Strength, kip-ft
Round HSS

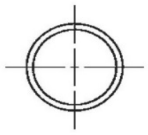


HSS2.375-HSS1

Shape		M_n/Ω_b ASD	$\varphi_b M_n$ LRFD	Shape		M_n/Ω_b	$\varphi_b M_n$
HSS2.375×	0.180	1.30	1.96	HSS1.66×	0.148	0.507	0.763
	0.148	1.10	1.65		0.120	0.427	0.641
	0.120	0.915	1.37		0.109	0.394	0.592
	0.109	0.838	1.26		0.083	0.310	0.466
	0.083	0.653	0.981		0.063	0.240	0.360
	0.063	0.500	0.752				
	0.049	0.397	0.596	HSS1.5×	0.120	0.343	0.515
					0.109	0.316	0.475
HSS2.25×	0.180	1.16	1.74		0.083	0.250	0.376
	0.148	0.981	1.47		0.063	0.193	0.290
	0.120	0.816	1.23		0.049	0.154	0.232
	0.109	0.749	1.13		0.035	0.112	0.169
	0.083	0.584	0.878				
	0.063	0.448	0.673	HSS1.25×	0.120	0.231	0.347
					0.109	0.213	0.320
HSS2×	0.180	0.895	1.35		0.083	0.169	0.254
	0.148	0.762	1.15		0.063	0.132	0.198
	0.120	0.636	0.956		0.049	0.106	0.159
	0.109	0.584	0.878		0.035	0.077	0.116
	0.083	0.457	0.686				
	0.063	0.352	0.529	HSS1×	0.120	0.140	0.210
	0.049	0.280	0.421		0.109	0.130	0.196
	0.035	0.202	0.304		0.083	0.105	0.158
					0.065	0.085	0.128
HSS1.9×	0.148	0.681	1.02		0.063	0.082	0.124
	0.120	0.570	0.857		0.049	0.067	0.100
	0.109	0.524	0.788		0.042	0.058	0.087
	0.083	0.410	0.617		0.035	0.049	0.073
	0.063	0.316	0.475		0.032	0.045	0.068
	0.049	0.251	0.378				
	0.035	0.183	0.275				
HSS1.75×	0.120	0.478	0.718				
	0.109	0.440	0.662				
	0.083	0.346	0.520				
	0.063	0.266	0.401				
	0.049	0.213	0.320				
	0.035	0.154	0.232				

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 65 ksi.



PIPE 12-PIPE 1

Table 2-14
Available Flexural Strength, kip-ft
Pipe

F_y = 30 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	86.7	130	Pipe 2 Std. 80S	1.53	2.30
Pipe 12 Std. 10S [f1]	42.4	63.7	Pipe 2 Std. 40S	1.14	1.72
			Pipe 2 Std. 10S	0.843	1.27
Pipe 10 Std. 40S	59.6	89.6	Pipe 2 Std. 5S	0.521	0.783
Pipe 10 Std. 10S [f1]	28.0	42.1			
			Pipe 1½ Std. 80S	0.870	1.31
Pipe 8 Std. 80S	49.6	74.5	Pipe 1½ Std. 40S	0.671	1.01
Pipe 8 Std. 40S	33.2	50.0	Pipe 1½ Std. 10S	0.524	0.788
Pipe 8 Std. 10S	15.9	23.9	Pipe 1½ Std. 5S	0.328	0.493
Pipe 8 Std. 5S [f1]	11.5	17.2			
			Pipe 1¼ Std. 80S	0.620	0.932
Pipe 6 Std. 80S	24.9	37.4	Pipe 1¼ Std. 40S	0.485	0.729
Pipe 6 Std. 40S	16.9	25.4	Pipe 1¼ Std. 10S	0.394	0.592
Pipe 6 Std. 10S	8.47	12.7	Pipe 1¼ Std. 5S	0.247	0.371
Pipe 6 Std. 5S	6.95	10.4			
			Pipe 1 Std. 80S	0.352	0.529
Pipe 5 Std. 80S	15.1	22.7	Pipe 1 Std. 40S	0.281	0.423
Pipe 5 Std. 40S	10.9	16.3	Pipe 1 Std. 10S	0.240	0.360
Pipe 5 Std. 10S	5.91	8.89	Pipe 1 Std. 5S	0.153	0.230
Pipe 5 Std. 5S	4.85	7.29			
Pipe 4 Std. 80S	8.76	13.2			
Pipe 4 Std. 40S	6.45	9.70			
Pipe 4 Std.10S	3.44	5.18			
Pipe 4 Std. 5S	2.43	3.65			
Pipe 3½ Std. 80S	6.47	9.72			
Pipe 3½ Std. 40S	4.82	7.25			
Pipe 3½ Std. 10S	2.71	4.07			
Pipe 3½ Std. 5S	1.90	2.86			
Pipe 3 Std. 80S	4.61	6.93			
Pipe 3 Std. 40S	3.49	5.24			
Pipe 3 Std. 10S	2.05	3.08			
Pipe 3 Std. 5S	1.45	2.18			
Pipe 2½ Std. 80S	2.81	4.23			
Pipe 2½ Std. 40S	2.19	3.29			
Pipe 2½ Std. 10S	1.37	2.06			
Pipe 2½ Std. 5S	0.973	1.46			

ASD	LFRD
Ω_b = 1.67	φ_b = 0.90

[f1] Shape exceeds compact limit for flexure with F_y = 30 ksi.