W14

Table 4-1a (continued)
Available Strength in Axial Compression, kips
W-Shapes

F_y = 50 ksi

Shape		W14×											
lb/ft		145		132		120		109		99		90	
Design		P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Effective length, L_c (ft), with respect to least radius of gyration, r_y	0	1280	1920	1160	1750	1060	1590	958	1440	871	1310	793	1190
	6	1250	1880	1130	1700	1030	1550	932	1400	848	1270	772	1160
	7	1240	1860	1120	1680	1020	1530	923	1390	839	1260	764	1150
	8	1230	1840	1110	1660	1010	1510	913	1370	830	1250	755	1140
	9	1210	1820	1090	1640	994	1490	901	1350	819	1230	745	1120
	10	1200	1800	1080	1620	980	1470	888	1340	807	1210	735	1100
	11	1180	1770	1060	1600	965	1450	874	1310	794	1190	723	1090
	12	1160	1750	1040	1570	948	1430	859	1290	780	1170	710	1070
	13	1140	1720	1020	1540	931	1400	843	1270	766	1150	697	1050
	14	1120	1690	1000	1510	912	1370	826	1240	750	1130	682	1030
	15	1100	1650	982	1480	892	1340	808	1210	733	1100	667	1000
	16	1080	1620	960	1440	872	1310	789	1190	716	1080	652	979
	17	1060	1590	937	1410	850	1280	770	1160	698	1050	635	955
	18	1030	1550	913	1370	828	1240	750	1130	680	1020	618	929
	19	1010	1510	888	1330	805	1210	729	1100	661	994	601	903
	20	980	1470	862	1300	782	1180	708	1060	642	964	583	877
	22	927	1390	810	1220	734	1100	664	998	602	904	547	822
	24	872	1310	756	1140	685	1030	620	931	561	843	509	766
	26	816	1230	702	1060	635	955	574	863	519	781	472	709
	28	759	1140	648	974	586	880	529	796	478	719	434	653
	30	703	1060	594	893	537	807	485	729	438	658	397	597
	32	647	973	542	814	489	735	441	663	398	598	361	543
	34	593	891	491	738	443	665	399	600	360	541	326	490
	36	540	812	442	664	398	598	359	539	323	485	292	439
	38	489	735	397	596	357	536	322	484	290	435	262	394
	40	441	663	358	538	322	484	290	437	261	393	237	356
Properties													
P_{wo}, kips		192	287	175	263	151	227	128	192	112	167	96.1	144
P_{wi}, kip/in.		22.7	34.0	21.5	32.3	19.7	29.5	17.5	26.3	16.2	24.3	14.7	22.0
P_{wb}, kips		476	716	407	611	312	469	220	330	173	260	129	194
P_{fb}, kips		222	334	199	298	165	249	138	208	114	171	94.3	142
L_p, ft		14.1		13.3		13.2		13.2		13.5		15.1	
L_r, ft		61.7		55.8		51.9		48.5		45.3		42.5	
A_g, in.^{2}		42.7		38.8		35.3		32.0		29.1		26.5	
I_x, in.^{4}		1710		1530		1380		1240		1110		999	
I_y, in.^{4}		677		548		495		447		402		362	
r_y, in.		3.98		3.76		3.74		3.73		3.71		3.70	
r_x/r_y		1.59		1.67		1.67		1.67		1.66		1.66	
$P_{ex}L_c^2/10^4$, k-in.^{2}		48900		43800		39500		35500		31800		28600	
$P_{ey}L_c^2/10^4$, k-in.^{2}		19400		15700		14200		12800		11500		10400	

ASD	LRFD
$\Omega_c = 1.67$	$\phi_c = 0.90$

F_y = 50 ksi

Table 4-1a (continued)
Available Strength in Axial Compression, kips
W-Shapes

W14

Shape		W14×													
lb/ft		82		74		68		61		53		48		43[c]	
Design		P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Effective length, L_c (ft), with respect to least radius of gyration, r_y	0	719	1080	653	981	599	900	536	805	467	702	422	634	374	562
	6	676	1020	614	922	562	845	503	756	421	633	380	572	339	510
	7	661	993	600	902	550	826	492	739	406	610	366	551	327	491
	8	644	968	585	879	536	805	479	720	389	585	351	527	312	470
	9	626	940	568	854	520	782	465	699	371	557	334	502	297	447
	10	606	910	550	827	503	756	450	676	351	528	316	475	281	422
	11	584	878	531	797	485	729	433	651	331	497	298	447	264	397
	12	562	844	510	767	466	701	416	626	310	465	279	419	247	371
	13	538	809	489	735	446	671	398	599	288	433	259	390	229	345
	14	514	772	467	701	426	640	380	571	267	401	240	360	212	318
	15	489	735	444	667	405	608	361	543	246	369	221	331	194	292
	16	464	697	421	633	384	577	342	514	225	338	202	303	177	267
	17	438	659	398	598	362	544	323	485	205	308	183	276	161	242
	18	413	620	375	563	341	512	304	456	185	278	166	249	145	218
	19	387	582	352	529	320	480	285	428	166	250	149	224	130	196
	20	362	545	329	495	299	449	266	399	150	226	134	202	117	177
	22	314	472	285	428	258	388	229	345	124	186	111	167	97.1	146
	24	267	402	243	365	219	330	195	293	104	157	93.2	140	81.6	123
	26	228	343	207	311	187	281	166	249	88.8	133	79.4	119	69.5	104
	28	197	295	179	268	161	242	143	215	76.6	115	68.5	103	59.9	90.1
	30	171	257	156	234	140	211	125	187	66.7	100	59.7	89.7	52.2	78.5
	32	150	226	137	205	123	185	110	165	58.6	88.1				
	34	133	200	121	182	109	164	97.0	146						
	36	119	179	108	162	97.5	147	86.5	130						
	38	107	160	96.9	146	87.5	131	77.7	117						
	40	96.3	145	87.5	131	79.0	119	70.1	105						
Properties															
P_{wo}, kips		123	185	104	155	90.6	136	77.5	116	77.1	116	67.4	101	56.9	85.4
P_{wi}, kip/in.		17.0	25.5	15.0	22.5	13.8	20.8	12.5	18.8	12.3	18.5	11.3	17.0	10.2	15.3
P_{wb}, kips		201	302	138	207	108	163	80.1	120	76.7	115	59.5	89.5	43.0	64.7
P_{fb}, kips		137	206	115	173	97.0	146	77.8	117	81.5	123	66.2	99.6	52.6	79.0
L_p, ft		8.76		8.76		8.69		8.65		6.78		6.75		6.68	
L_r, ft		33.2		31.0		29.3		27.5		22.3		21.1		20.0	
A_g, in.^{2}		24.0		21.8		20.0		17.9		15.6		14.1		12.6	
I_x, in.^{4}		881		795		722		640		541		484		428	
I_y, in.^{4}		148		134		121		107		57.7		51.4		45.2	
r_y, in.		2.48		2.48		2.46		2.45		1.92		1.91		1.89	
r_x/r_y		2.44		2.44		2.44		2.44		3.07		3.06		3.08	
$P_{ex}L_c^2/10^4$, k-in.^{2}		25200		22800		20700		18300		15500		13900		12300	
$P_{ey}L_c^2/10^4$, k-in.^{2}		4240		3840		3460		3060		1650		1470		1290	

ASD	LRFD
$\Omega_c = 1.67$	$\phi_c = 0.90$

[c] Shape is slender for compression with $F_y = 50$ ksi; tabulated values have been adjusted accordingly.

Note: Heavy line indicates L_c/r_y equal to or greater than 200.