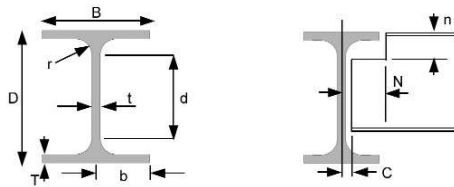


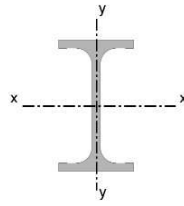
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios for Local Buckling		Dimensions for Detailing		
Size	Mass Per Metre					Flange	Web			Buckling		End Clearance C	Notch	
										Flange b/T	Web d/t			
in (mm)	lb/ft	kg/m	A cm ²	D mm	B mm	T mm	t mm	r mm	d mm			mm	mm	mm
W4 4 X 4 (102 x 102)	13	19.4	25	105.7	103.1	8.8	7.1	6.4	75.5	5.88	10.6	6	58	15
W5 5 x 3 (127 x 76)	9	13.0	17	127.0	76.2	7.6	4.2	6.4	99.1	5.01	23.6	4	46	14
W5 5 x 5 (127 x 127)	16	23.8	30	127.3	127.0	9.1	6.1	7.6	93.8	6.95	15.4	5	70	17
	19	28.3	36	130.8	127.8	10.9	6.9	7.6	93.7	5.85	13.7	5	70	19
W6 6 x 3 1/2 (152 x 89)	11	16.0	20	152.4	88.9	7.7	4.6	6.4	124.3	5.77	27.0	4	52	14
W6 6 x 4 (152 x 102)	9	13.4	17	149.9	100.1	5.5	4.3	6.4	126.3	9.17	29.2	4	58	12
	12	17.9	23	153.2	101.6	7.1	5.8	6.4	126.3	7.14	21.6	5	58	13
	16	23.8	31	159.5	102.4	10.3	6.6	6.4	126.2	4.98	19.1	5	58	17
W6 6 x 6 (152 x 152)	15	22.3	28	152.1	152.1	6.6	5.8	6.4	126.2	11.5	21.7	5	83	13
	15.7	23.0	30	152.4	152.4	6.8	6.1	6.4	126.1	11.21	20.7	5	83	13
	20	29.8	38	157.5	152.9	9.3	6.6	6.4	126.3	8.25	19.1	5	83	16
	25	37.2	47	162.1	154.4	11.6	8.1	6.4	126.3	6.68	15.5	6	83	18
W7 7 x 4 (178 x 102)	13	19.0	24	177.8	101.6	7.9	4.7	7.6	146.8	6.43	31.2	4	58	16
W8 8 x 4 (203 x 102)	10	14.9	19	200.4	100.1	5.2	4.3	7.6	174.7	9.61	40.4	4	58	13
	13	19.4	25	202.9	101.6	6.5	5.8	7.6	174.7	7.84	29.9	5	58	14
	15	22.3	29	206.0	102.0	8.0	6.2	7.6	174.8	6.38	28.1	5	58	16
	15.5	23.0	29	203.2	101.6	9.3	5.2	7.6	169.4	5.46	32.6	5	58	17
W8 8 x 5 1/4 (203 x 133)	17	25.3	32	203.2	133.4	7.8	5.8	7.6	172.4	8.55	29.5	5	74	15
	18	26.8	34	206.8	133.4	8.4	5.8	7.6	174.8	7.96	29.9	5	74	16
	20	30.0	38	206.8	133.8	9.6	6.3	7.6	172.4	6.97	27.4	5	74	17
	21	31.3	40	210.3	133.9	10.2	6.4	7.6	174.7	6.59	27.5	5	74	18
W8 8 x 6 1/2 (203 x 165)	24	35.7	46	201.4	165.0	10.2	6.2	10.2	160.7	8.12	25.8	5	89	20
	28	41.7	53	204.7	166.0	11.8	7.2	10.2	160.7	7.03	22.2	6	89	22
W8 8 x 8 (203 x 203)	31	46.1	59	203.2	203.1	11.1	7.2	10.2	160.7	9.19	22.2	6	108	21
	35	52.1	66	206.2	203.7	12.6	7.9	10.2	160.7	8.10	20.4	6	108	23
	40	59.5	76	209.6	205.0	14.2	9.1	10.2	160.8	7.21	17.6	7	108	24
	48	71.4	91	215.9	206.0	17.4	10.2	10.2	160.7	5.92	15.8	7	108	28
	58	86.3	110	222.2	208.8	20.6	13.0	10.2	160.7	5.08	12.4	8	108	31
W10 10 x 4 (254 x 102)	67	99.7	127	228.6	210.3	23.8	14.5	10.2	160.7	4.43	11.1	9	108	34
	12	17.9	23	250.7	100.6	5.3	4.8	7.6	224.8	9.44	46.5	4	58	13
	15	22.3	28	253.7	101.6	6.9	5.8	7.6	224.7	7.41	38.5	5	58	14
	17	25.3	32	256.8	101.9	8.4	6.1	7.6	224.8	6.08	36.9	5	58	16
	19	28.3	36	260.1	102.1	10.0	6.4	7.6	224.8	5.09	35.4	5	58	18
W10 10 x 5 3/4 (254 x 146)	21	31.3	40	251.5	146.1	8.6	6.1	7.6	219.1	8.49	35.9	5	80	16
	22	32.7	42	258.3	146.0	9.1	6.1	7.6	224.8	7.99	36.8	5	80	17
	25	37.2	47	256	146.4	10.9	6.4	7.6	219.0	6.72	34.2	5	80	19
	26	38.7	49	262.4	146.6	11.2	6.6	7.6	224.8	6.56	34.1	5	80	19
	29	43.0	55	259.6	147.3	12.7	7.3	7.6	219.0	5.80	30.0	6	80	20
	30	44.6	57	265.9	147.6	13.0	7.6	7.6	224.8	5.70	29.5	6	80	21
W10 10 x 8 (254 x 203)	33	49.1	63	247.4	202.2	11.1	7.4	12.7	199.9	9.15	27.1	6	107	24
	39	58.0	74	252.0	202.8	13.5	8.0	12.7	199.7	7.53	25.0	6	107	26
	45	67.0	86	256.5	203.7	15.8	8.9	12.7	199.6	6.47	22.5	6	107	28
W10 10 x 10 (254 x 254)	49	72.9	93	253.5	254.0	14.2	8.6	12.7	199.7	8.93	23.1	6	133	27
	54	80.4	102	256.3	254.8	15.6	9.4	12.7	199.7	8.16	21.2	7	133	28

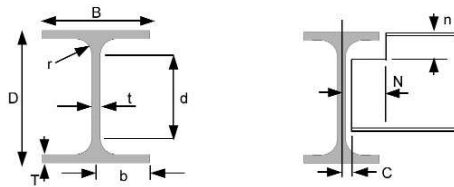
Wide Flange Beams



Imperial Units

Designation		Surface		Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre	Moment of Area	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
in (mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁴	cm ⁴
W4 4 x 4 (102 x 102)	13	19.4	0.60	472	160	4.4	2.5	89	31	103	48	0.836	10.9	0.00377	6.29
W5 5 x 3 (127 x 76)	9	13.0	0.54	473	56	5.3	1.8	74	15	84	23	0.892	16.6	0.00200	2.77
W5 5 x 5 (127 x 127)	16	23.8	0.74	892	312	5.4	3.2	140	49	158	75	0.842	13.0	0.0109	8.00
	19	28.3	0.75	1093	380	5.5	3.3	167	60	190	91	0.845	11.2	0.0137	13.1
W6 6 x 3 1/2 (152 x 89)	11	16.0	0.64	831	90	6.4	2.1	109	20	123	31	0.888	19.9	0.00473	3.45
W6 6 x 4 (152 x 102)	9	13.4	0.68	683	91	6.3	2.3	91	18	102	28	0.859	21.8	0.00477	2.43
	12	17.9	0.69	918	125	6.3	2.3	120	25	136	38	0.869	20.4	0.00665	3.76
	16	23.8	0.70	1338	185	6.6	2.5	168	36	191	56	0.897	16.0	0.0103	8.56
W6 6 x 6 (152 x 152)	15	22.3	0.89	1209	387	6.5	3.7	159	51	176	78	0.838	21.5	0.0205	4.20
	16	23.0	0.89	1251	402	6.5	3.7	164	53	183	80	0.837	20.8	0.0213	4.65
	20	29.8	0.90	1723	553	6.7	3.8	219	72	244	110	0.847	16.3	0.0304	10.0
	25	37.2	0.91	2224	710	6.9	3.9	274	92	310	140	0.848	13.4	0.0402	19.2
W7 7 x 4 (178 x 102)	13	19.0	0.74	1357	138	7.5	2.4	153	27	171	42	0.889	22.6	0.00998	4.38
W8 8 x 4 (203 x 102)	10	14.9	0.78	1284	87	8.2	2.1	128	17	145	27	0.867	36.3	0.00832	1.78
	13	19.4	0.79	1647	114	8.2	2.1	162	22	187	35	0.861	29.0	0.0110	3.63
	15	22.3	0.79	1999	142	8.4	2.2	194	28	222	44	0.869	25.2	0.0139	5.68
	16	23.0	0.79	2091	163	8.5	2.4	206	32	232	49	0.890	22.5	0.0153	6.9
W8 8 x 5 1/4 (203 x 133)	17	25.3	0.92	2351	309	8.5	3.1	231	46	259	71	0.876	25.5	0.02950	6.08
	18	26.8	0.92	2606	332	8.7	3.1	252	50	282	77	0.880	23.0	0.0327	8.22
	20	30.0	0.92	2888	384	8.7	3.2	279	57	313	88	0.882	21.5	0.0373	10.21
	21	31.3	0.93	3133	407	8.9	3.2	298	61	334	93	0.885	20.8	0.0408	11.8
W8 8 x 6 1/2 (203 x 165)	24	35.7	1.03	3446	761	8.7	4.1	342	92	379	141	0.876	19.2	0.0696	14.5
	28	41.7	1.04	4080	901	8.8	4.1	399	109	445	166	0.875	16.8	0.0838	22.4
W8 8 x 8 (203 x 203)	31	46.1	1.19	4576	1544	8.8	5.1	450	152	498	231	0.847	17.6	0.143	22.4
	35	52.1	1.19	5266	1772	8.9	5.2	511	174	568	264	0.849	15.8	0.166	32.1
	40	59.5	1.20	6096	2043	9.0	5.2	582	199	652	303	0.848	14.1	0.195	46.7
	48	71.4	1.22	7652	2537	9.2	5.3	709	246	803	375	0.853	11.9	0.250	81.7
	58	86.3	1.24	9471	3125	9.3	5.3	852	299	980	457	0.850	10.2	0.318	139
	67	99.7	1.25	11313	3687	9.4	5.4	990	351	1150	536	0.852	9.00	0.387	211
W10 10 x 4 (254 x 102)	12	17.9	0.88	2241	91	9.9	2.0	179	18	207	29	0.851	44.0	0.0137	2.28
	15	22.3	0.89	2866	120	10.0	2.1	226	24	262	38	0.855	35.8	0.0183	4.33
	17	25.3	0.90	3409	148	10.3	2.1	265	29	306	46	0.865	31.3	0.0229	6.49
	19	28.3	0.90	4005	179	10.5	2.2	308	35	353	55	0.873	27.4	0.0279	9.68
W10 10 x 5 3/4 (254 x 146)	21	31.3	1.06	4428	448	10.5	3.3	352	61	395	94	0.879	29.5	0.0660	8.66
	22	32.7	1.08	4917	475	10.8	3.4	381	65	426	100	0.882	28.9	0.0737	9.96
	25	37.2	1.07	5548	571	10.8	3.5	433	78	485	119	0.889	24.3	0.0857	15.5
	26	38.7	1.08	6006	588	11.1	3.5	458	80	513	123	0.888	24.3	0.0927	16.8
	29	43.0	1.08	6555	677	10.9	3.5	505	92	568	141	0.890	21.1	0.1032	24.0
	30	44.6	1.09	7068	695	11.1	3.5	532	94	599	145	0.888	21.3	0.111	25.9
W10 10 x 8 (254 x 203)	33	49.1	1.27	7115	1524	10.7	4.9	575	151	637	230	0.873	21.5	0.213	24.3
	39	58.0	1.28	8701	1873	10.8	5.0	691	185	768	281	0.878	18.2	0.266	40.6
	45	67.0	1.29	10322	2221	11.0	5.1	805	218	900	332	0.880	15.9	0.322	62.8
W10 10 x 10 (254 x 254)	49	72.9	1.48	11340	3886	11.0	6.5	895	306	989	464	0.849	17.2	0.556	57.8
	54	80.4	1.49	12603	4309	11.1	6.5	983	338	1092	513	0.849	15.8	0.624	75.9

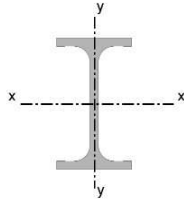
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios For		Dimensions for Detailing			
Size	Mass Per Metre					Flange	Web			Local Buckling	End	Notch			
			A	D	B	T	t	r	d	Flange b/T	Web d/t	Clearance C	N	n	
in (mm)	lb/ft	kg/m	cm²	mm	mm	mm	mm	mm	mm	mm			mm	mm	mm
W10 10 x 10 (254 x 254)	60	89.3	114	259.6	256.0	17.3	10.7	12.7	199.7	7.41	18.7	7	133	30	
	68	101.2	129	264.2	257.3	19.6	11.9	12.7	199.7	6.58	16.7	8	133	32	
	72	107.0	137	266.7	258.3	20.5	13.0	12.7	200.3	6.30	15.4	9	133	33	
	77	114.6	146	269.2	258.8	22.1	13.5	12.7	199.6	5.86	14.8	9	133	35	
	88	131.0	167	275.3	260.7	25.2	15.4	12.7	199.6	5.18	13.0	10	133	38	
	89	132.0	169	276.4	261	25.3	15.6	12.7	200.4	5.16	12.8	10	133	38	
	100	148.8	190	281.9	262.6	28.5	17.3	12.7	199.6	4.62	11.6	11	133	41	
	112	166.7	212	288.5	264.5	31.8	19.2	12.7	199.6	4.17	10.4	12	133	44	
W12 12 x 4 (305 x 102)	14	20.8	27	302.5	100.8	5.7	5.1	7.6	275.8	8.81	54.3	5	58	13	
	16	23.8	30	304.5	101.3	6.7	5.6	7.6	275.8	7.53	49.3	5	58	14	
	16.5	25.0	31	304.8	101.6	6.8	5.8	7.6	276.0	7.47	47.6	5	58	14	
	19	28.3	36	308.9	101.7	8.9	6.0	7.6	275.9	5.72	46.2	5	58	17	
	22	32.7	42	312.7	102.4	10.8	6.6	7.6	275.9	4.74	41.8	5	58	18	
W12 12 x 5 (305 x 127)	25	37.0	47	303.8	123.5	10.7	7.2	7.6	267.2	5.77	37.1	6	68	18	
	28	42.0	53	306.6	124.3	12.1	8.0	7.6	267.2	5.14	33.4	6	68	20	
	32.0	48.0	61	310.4	125.2	14.0	8.9	7.6	267.2	4.47	30.0	6	68	22	
W12 12 x 6 1/2 (305 x 165)	26	38.7	49	310.4	164.8	9.7	5.8	7.6	275.9	8.54	47.2	5	89	17	
	27	40.0	51	303.8	165.1	10.2	6.1	7.6	268.2	8.09	44.0	5	90	18	
	30	44.6	57	313.4	165.6	11.2	6.6	7.6	275.8	7.41	41.8	5	90	19	
	31	46.0	59	307.1	165.7	11.8	6.7	7.6	268.3	7.02	40.0	5	90	19	
	35	52.1	67	317.5	166.6	13.2	7.6	7.6	275.8	6.31	36.2	6	89	21	
	36	54.0	68	310.9	166.8	13.7	7.7	7.6	268.3	6.09	34.8	6	90	21	
W12 12 x 8 (305 x 203)	40	59.5	76	303.3	203.3	13.1	7.5	15.2	246.7	7.77	32.9	6	108	28	
	45	67.0	85	306.3	204.3	14.6	8.5	15.2	246.7	7.00	29.0	6	108	30	
	50	74.4	95	309.6	205.2	16.3	9.4	15.2	246.7	6.31	26.2	7	108	31	
W12 12 x 10 (305 x 254)	53	78.9	100	306.3	253.9	14.6	8.8	15.2	246.7	8.70	28.2	6	133	30	
	58	86.3	110	309.6	254.3	16.3	9.1	15.2	246.7	7.82	27.0	7	133	31	
W12 12 x 12 (305 x 305)	65	96.7	123	307.8	304.8	15.4	9.9	15.2	246.7	9.92	24.9	7	157	31	
	72	107.1	136	311.2	305.8	17.0	10.9	15.2	246.8	8.98	22.6	7	157	32	
	79	117.6	150	314.5	306.8	18.7	11.9	15.2	246.8	8.22	20.7	8	157	34	
	87	129.5	165	318.3	308.0	20.6	13.1	15.2	246.8	7.49	18.9	9	157	36	
	92	137.0	174	320.4	308.7	21.7	13.8	15.2	246.6	7.11	17.9	9	157	37	
	96	142.9	182	322.8	308.9	22.9	14.0	15.2	246.7	6.76	17.7	9	157	38	
	106	157.7	201	327.4	310.4	25.2	15.5	15.2	246.7	6.17	15.9	10	157	40	
	120	178.6	228	333.2	312.9	28.1	18.0	15.2	246.7	5.57	13.7	11	157	43	
	133	198.0	252	339.9	314.1	31.4	19.2	15.2	246.7	5.00	12.8	12	157	47	
	136	202.4	258	340.6	315.0	31.8	20.1	15.2	246.7	4.96	12.3	12	157	47	
	152	226.2	289	348.2	317.0	35.6	22.1	15.2	246.7	4.46	11.2	13	157	51	
	161	240.0	305	352.6	317.9	37.7	23.0	15.2	246.8	4.22	10.7	14	157	53	
	170	253.0	323	356.4	319.3	39.6	24.4	15.2	246.8	4.03	10.1	14	157	55	
	190	282.8	360	365.3	321.8	44.1	26.9	15.2	246.8	3.65	9.2	15	157	59	
	210	312.5	399	373.6	324.9	48.3	30.0	15.2	246.7	3.37	8.2	17	157	63	
	230	342.3	437	382.3	327.5	52.6	32.6	15.2	246.7	3.11	7.6	18	157	68	

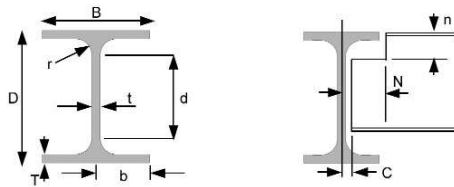
Wide Flange Beams



Imperial Units

Designation		Surface		Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre		Moment of Area		of Gyration		Modulus		Modulus		Parameter	Index	Constant	Constant
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in (mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
W10 10 x 10 (254 x 254)	60	89.3	1.50	14184	4833	11.2	6.5	1093	378	1222	573	0.848	14.4	0.709	103
	68	101.2	1.51	16394	5558	11.3	6.6	1241	432	1398	657	0.849	12.9	0.832	148
	72	107.0	1.52	17499	5894	11.3	6.6	1312	456	1484	695	0.848	12.4	0.893	173
	77	114.6	1.52	18952	6391	11.4	6.6	1408	494	1599	752	0.849	11.6	0.976	213
	88	131.0	1.54	22209	7436	11.5	6.7	1613	570	1850	869	0.850	10.3	1.16	314
	89	132.0	1.54	22552	7506	11.6	6.7	1632	575	1872	877	0.850	10.3	1.183	321
	100	148.8	1.56	25902	8598	11.7	6.7	1838	655	2127	999	0.851	9.3	1.38	452
	112	166.7	1.57	29744	9805	11.9	6.8	2062	741	2406	1132	0.869	8.8	1.62	575
W12 12 x 4 (305 x 102)	14	20.8	0.98	3686	98	11.7	1.9	244	19	286	31	0.842	50.8	0.0216	2.93
	16	23.8	0.99	4274	117	11.9	2.0	281	23	329	37	0.846	45.0	0.0260	4.27
	17	25.0	0.99	4365	119	11.8	2.0	286	24	336	38	0.844	44.1	0.0265	4.57
	19	28.3	1.00	5401	157	12.3	2.1	350	31	405	49	0.860	37.2	0.0352	7.51
	22	32.7	1.01	6502	194	12.5	2.2	416	38	481	60	0.866	31.6	0.0442	12.2
W12 12 x 5 (305 x 127)	25	37.0	1.07	7127	337	12.3	2.7	469	55	538	86	0.871	29.9	0.0724	14.55
	28	42.0	1.08	8124	389	12.4	2.7	530	63	609	98	0.871	26.8	0.0843	20.65
	32	48.0	1.09	9473	460	12.5	2.8	610	73	704	116	0.874	23.5	0.1010	30.85
W12 12 x 6 1/2 (305 x 165)	26	38.7	1.26	8498	720	13.1	3.8	548	87	609	134	0.887	33.8	0.163	12.5
	27	40.0	1.24	8516	766	12.9	3.9	561	93	624	142	0.888	31.3	0.165	14.5
	30	44.6	1.26	9918	847	13.2	3.9	633	102	706	157	0.888	29.5	0.193	19.0
	31	46.0	1.25	9900	896	13.0	3.9	645	108	719	165	0.890	27.4	0.195	21.8
	35	52.1	1.27	11864	1019	13.3	3.9	747	122	838	188	0.889	25.3	0.236	30.8
	36	54.0	1.26	11659	1061	13.1	3.9	750	127	841	195	0.891	23.9	0.234	33.8
W12 12 x 8 (305 x 203)	40	59.5	1.38	12898	1834	13.0	4.9	851	180	942	276	0.890	22.7	0.386	39.6
	45	67.0	1.39	14572	2078	13.1	4.9	952	203	1060	311	0.889	20.6	0.442	54.6
	50	74.4	1.40	16399	2345	13.2	5.0	1059	229	1186	350	0.889	18.8	0.505	74.1
W12 12 x 10 (305 x 254)	53	78.9	1.58	17700	3986	13.3	6.3	1156	314	1276	477	0.876	20.4	0.848	65.6
	58	86.3	1.59	19791	4460	13.4	6.4	1279	351	1415	533	0.879	18.6	0.960	87.3
W12 12 x 12 (305 x 305)	65	96.7	1.79	22169	7258	13.4	7.7	1440	476	1587	722	0.850	19.3	1.55	90.7
	72	107.1	1.80	24847	8117	13.5	7.7	1597	531	1768	806	0.850	17.6	1.76	122
	79	117.6	1.81	27579	8992	13.6	7.8	1754	586	1951	890	0.851	16.2	1.97	160
	87	129.5	1.82	30809	10025	13.7	7.8	1936	651	2164	990	0.851	14.9	2.22	212
	92	137.0	1.82	32743	10648	13.7	7.8	2044	690	2292	1049	0.851	14.2	2.38	249
	96	142.9	1.83	34665	11239	13.8	7.9	2148	728	2413	1106	0.853	13.6	2.53	285
	106	157.7	1.84	38850	12547	13.9	7.9	2373	808	2684	1230	0.853	12.4	2.87	380
	120	178.6	1.86	44561	14349	14.0	7.9	2675	917	3053	1399	0.851	11.2	3.34	537
	133	198.0	1.87	50862	16238	14.2	8.0	2993	1034	3438	1577	0.854	10.2	3.86	735
	136	202.4	1.87	51790	16562	14.2	8.0	3041	1052	3501	1606	0.852	10.1	3.95	771
	152	226.2	1.89	59609	18909	14.4	8.1	3424	1193	3975	1823	0.853	9.17	4.62	1074
	161	240.0	1.90	64152	20220	14.5	8.1	3639	1272	4243	1945	0.854	8.74	5.01	1270
	170	253.0	1.92	68494	21535	14.6	8.2	3844	1349	4502	2064	0.854	8.37	5.40	1480
	190	282.8	1.94	78768	24528	14.8	8.3	4313	1524	5099	2335	0.855	7.66	6.33	2031
	210	312.5	1.96	89266	27655	15.0	8.3	4779	1702	5703	2613	0.855	7.08	7.32	2693
	230	342.3	1.98	100550	30871	15.2	8.4	5260	1885	6331	2897	0.855	6.60	8.39	3488

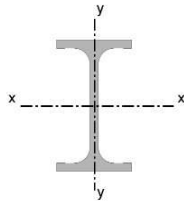
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios For		Dimensions for Detailing		
Size	Mass Per Metre					Flange	Web			Local Buckling	End Clearance C	Notch		
		A	D	B	T	t	r	d	Flange b/T	Web d/t		N	n	
in (mm)	lb/ft	kg/m	cm ²	mm	mm	mm	mm	mm	mm			mm	mm	mm
W12 12 x 12 (305 x 305)	252	375.0	478	391.4	330.3	57.2	35.4	15.2	246.7	2.89	7.0	20	157	72
	279	415.2	529	402.6	333.8	62.7	38.9	15.2	246.7	2.66	6.3	21	157	78
	305	453.9	578	414.5	336.2	68.7	41.3	15.2	246.7	2.45	6.0	23	157	84
	336	500.0	637	427.2	340.0	75.1	45.1	15.2	246.7	2.26	5.5	25	157	90
W14 14 x 5 (356 x 127)	22	32.7	42	349.0	127.0	8.5	5.8	10.2	311.6	7.46	53.4	5	71	19
	26	38.7	50	353.3	127.6	10.7	6.5	10.2	311.6	5.98	48.1	5	71	21
W14 14 x 6 3/4 (356 x 171)	30	44.6	57	351.5	170.9	9.8	6.9	10.2	311.5	8.74	45.4	5	92	20
	34	50.6	65	355.1	171.3	11.6	7.2	10.2	311.6	7.41	43.0	6	92	22
	38	56.6	72	358.1	172.0	13.1	7.9	10.2	311.5	6.57	39.6	6	92	23
	45	67.0	86	364	173.2	15.7	9.1	10.2	312.2	5.52	34.3	7	92	26
W14 14 x 8 (356 x 203)	43	64.0	81	347.0	203.1	13.5	7.8	15.2	289.7	7.54	37.4	6	108	29
	48	71.4	91	350.3	204.0	15.1	8.6	15.2	289.7	6.75	33.5	6	108	30
	53	78.9	101	356.6	204.7	16.8	9.4	15.2	292.7	6.11	31.1	7	108	32
W14 14 x 10 (356 x 254)	61	90.8	119	385.8	253.9	16.4	9.5	15.2	322.6	7.75	33.9	7	132	32
	68	101.2	129	356.6	254.9	18.3	10.5	15.2	289.6	6.97	27.5	7	132	33
	74	110.1	141	359.9	255.8	19.9	11.4	15.2	289.6	6.41	25.3	8	132	35
	82	122.0	155	363.5	257.3	21.7	13.0	15.2	289.7	5.92	22.4	8	132	37
W14 14 x 14 1/2 (356x368)	87	129.0	165	355.6	368.3	17.5	10.7	15.2	290.2	10.52	27.1	7	189	33
	90	133.9	171	356.1	368.8	18.0	11.2	15.2	289.6	10.23	25.9	8	189	33
	99	147.3	188	359.7	370.0	19.8	12.3	15.2	289.7	9.34	23.5	8	189	35
	103	153.0	196	362.0	370.2	20.7	12.6	15.2	290.2	8.94	23.0	8	189	36
	109	162.2	207	363.7	371.0	21.8	13.3	15.2	289.6	8.49	21.7	9	189	37
	119	177.0	226	368.3	372.1	23.8	14.5	15.2	290.3	7.82	20.0	9	189	39
	120	178.6	228	367.8	372.6	23.9	15.0	15.2	289.6	7.80	19.3	9	189	39
	132	196.4	250	372.4	374.0	26.2	16.4	15.2	289.7	7.15	17.7	10	189	41
	136	202.0	258	374.7	374.4	27.0	16.8	15.2	290.3	6.93	17.3	10	189	42
W14 14 x 16 (356 x 406)	145	215.8	275	375.4	393.7	27.7	17.3	15.2	289.6	7.11	16.8	11	198	43
	158	235.0	315	381.0	395.0	32.2	18.5	15.2	286.2	6.13	15.5	11	198	47
	159	236.6	302	380.5	395.4	30.2	18.9	15.2	289.6	6.54	15.3	11	198	45
	176	261.9	334	386.6	397.5	33.3	21.1	15.2	289.7	5.97	13.7	13	198	48
	193	287.2	366	393.2	399.0	36.6	22.6	15.2	289.6	5.45	12.8	13	198	52
	211	314.0	400	399.3	401.3	39.6	24.9	15.2	289.7	5.06	11.6	14	198	55
	228	340.0	433	406.4	403	42.9	26.5	15.2	290.2	4.70	11.0	15	198	58
	233	346.7	441	407.4	403.3	43.7	27.2	15.2	289.6	4.62	10.7	16	198	59
	257	382.5	488	416.1	406.3	48.0	29.8	15.2	289.7	4.23	9.7	17	198	63
	264	393.0	501	419.1	407	49.2	30.6	15.2	290.3	4.14	9.5	17	198	64
	283	421.1	537	425.2	409.2	52.6	32.8	15.2	289.6	3.89	8.8	18	198	68
	311	462.8	590	434.8	412.2	57.4	35.8	15.2	289.6	3.59	8.1	20	198	73
	314	467.0	595	436.6	412.4	58.0	35.9	15.2	290.2	3.56	8.1	20	198	73
	342	509.0	649	445.5	415.5	62.7	39.1	15.2	289.6	3.31	7.4	22	198	78
	370	550.6	702	455.2	418.5	67.6	42.0	15.2	289.7	3.10	6.9	23	198	83
	398	592.3	755	464.6	421.4	72.3	45.0	15.2	289.7	2.92	6.4	24	198	87

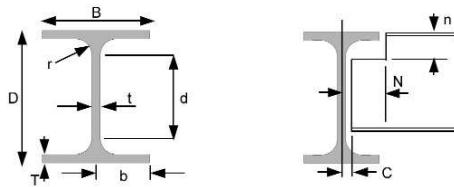
Wide Flange Beams



Imperial Units

Designation			Surface Area per Metre	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H	Torsional Constant J
Size		Mass Per Metre		Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in (mm)	lb/ft														
W12 12 x 12 (305 x 305)	252	375.0	2.01	113120	34436	15.4	8.5	5780	2085	7016	3209	0.856	6.17	9.62	4487
	279	415.2	2.04	129577	39038	15.7	8.6	6437	2339	7890	3604	0.857	5.73	11.3	5953
	305	453.9	2.07	147604	43692	16.0	8.7	7122	2599	8807	4006	0.860	5.36	13.1	7720
	336	500.0	2.10	168980	49395	16.3	8.8	7911	2906	9879	4484	0.861	5.01	15.3	10097
W14 14 x 5 (356 x 127)	22	32.7	1.18	8286	291	14.1	2.6	475	46	544	72	0.865	42.4	0.0845	8.66
	26	38.7	1.19	10209	371	14.3	2.7	578	58	660	91	0.873	35.4	0.109	14.9
W14 14 x 6 3/4 (356 x 171)	30	44.6	1.36	12092	815	14.6	3.8	688	95	775	147	0.876	36.7	0.238	15.8
	34	50.6	1.36	14137	970	14.8	3.9	796	113	894	174	0.882	32.1	0.286	23.7
	38	56.6	1.37	16035	1111	14.9	3.9	896	129	1008	199	0.885	28.7	0.331	33.2
	45	67.0	1.39	19536	1362	15.1	4.0	1073	157	1213	243	0.886	24.4	0.413	55.7
W14 14 x 8 (356 x 203)	43	64.0	1.46	17820	1882	14.8	4.8	1027	185	1141	284	0.891	25.8	0.524	43.7
	48	71.4	1.47	20176	2141	14.9	4.8	1152	210	1286	322	0.891	23.3	0.602	60.5
	53	78.9	1.49	22966	2400	15.1	4.9	1288	234	1443	360	0.892	21.5	0.693	80.9
W14 14 x 10 (356 x 254)	61	90.8	1.74	32483	4473	16.5	6.1	1684	352	1867	538	0.889	23.7	1.53	92.3
	68	101.2	1.69	30072	5054	15.3	6.3	1687	397	1878	605	0.886	19.4	1.45	126
	74	110.1	1.69	33117	5569	15.3	6.3	1840	435	2058	665	0.886	18.0	1.61	161
	82	122.0	1.70	36710	6175	15.4	6.3	2020	480	2273	734	0.884	16.6	1.80	211
W14 14 x 14 1/2 (356 x 368)	87	129.0	2.14	40298	14576	15.6	9.4	2267	792	2485	1198	0.843	19.8	4.17	154
	90	133.9	2.14	41576	15080	15.6	9.4	2335	818	2565	1238	0.842	19.2	4.31	169
	99	147.3	2.15	46240	16731	15.7	9.4	2571	904	2838	1370	0.842	17.7	4.83	223
	103	153.0	2.15	48636	17511	15.8	9.5	2687	946	2970	1433	0.844	17.0	5.10	252
	109	162.2	2.16	51542	18597	15.8	9.5	2834	1003	3143	1519	0.843	16.2	5.43	296
	119	177.0	2.17	57110	20447	15.9	9.5	3101	1099	3455	1667	0.844	15.0	6.07	382
	120	178.6	2.17	57288	20600	15.9	9.5	3115	1106	3475	1678	0.842	14.9	6.09	390
	132	196.4	2.18	63720	22824	16.0	9.6	3422	1221	3838	1853	0.843	13.7	6.84	511
	136	202.0	2.19	66335	23633	16.0	9.6	3541	1262	3978	1917	0.843	13.4	7.14	561
	145	215.8	2.26	71244	28180	16.1	10.1	3796	1432	4264	2172	0.832	13.0	8.52	632
W14 14 x 16 (356 x 406)	158	235.0	2.28	82959	33095	16.2	10.3	4355	1676	4931	2542	0.834	11.3	10.07	962
	159	236.6	2.28	79162	31168	16.2	10.2	4161	1577	4702	2394	0.833	12.0	9.56	822
	176	261.9	2.29	89041	34856	16.3	10.2	4606	1754	5244	2667	0.833	11.0	10.9	1101
	193	287.2	2.31	99800	38762	16.5	10.3	5076	1943	5815	2956	0.834	10.1	12.3	1449
	211	314.0	2.33	110549	42721	16.6	10.3	5537	2129	6387	3243	0.834	9.45	13.8	1854
	228	340.0	2.35	122516	46853	16.8	10.4	6029	2325	6997	3543	0.836	8.85	15.5	2340
	233	346.7	2.35	125015	47826	16.8	10.4	6137	2372	7136	3616	0.836	8.69	15.8	2477
	257	382.5	2.37	141538	53747	17.0	10.5	6803	2646	7975	4038	0.837	8.02	18.2	3292
	264	393.0	2.38	146701	55368	17.1	10.5	7001	2721	8225	4154	0.837	7.87	18.9	3545
	283	421.1	2.40	159799	60147	17.2	10.6	7516	2940	8887	4492	0.837	7.42	20.9	4336
	311	462.8	2.42	180062	67134	17.5	10.7	8283	3257	9877	4983	0.838	6.90	23.9	5655
	314	467.0	2.42	183115	67934	17.5	10.7	8388	3295	10009	5040	0.839	6.86	24.3	5817
	342	509.0	2.45	203840	75179	17.7	10.8	9151	3619	11011	5543	0.840	6.41	27.5	7401
	370	550.6	2.47	226555	82743	18.0	10.9	9954	3954	12068	6063	0.841	6.04	31.1	9255
	398	592.3	2.50	249786	90378	18.2	10.9	10753	4289	13130	6583	0.842	5.73	34.8	11350

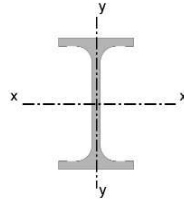
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios For Local Buckling		Dimensions for Detailing		
Size	Mass Per Metre					Flange	Web			End Clearance C	Notch			
											T	t	r	d
in (mm)	lb/ft	kg/m	cm²	mm	mm	mm	mm	mm	mm	mm				
W14 14 x 16 (356 x 406)	426	634.0	808	474.2	424.1	77.1	47.6	15.2	289.6	2.75	6.1	26	198	92
	455	677.1	863	483.1	427.6	81.5	51.2	15.2	289.6	2.62	5.7	28	198	97
	500	744.1	948	497.8	432.1	88.9	55.6	15.2	289.6	2.43	5.2	30	198	104
	550	818.5	1043	514.1	436.9	97.0	60.5	15.2	289.6	2.25	4.8	32	198	112
	605	900.3	1148	531.4	442.3	105.7	65.9	15.2	289.7	2.09	4.4	35	198	121
	665	989.6	1261	549.7	448.3	114.8	71.9	15.2	289.7	1.95	4.0	38	198	130
	730	1086.0	1385	569.5	454.4	124.7	78.0	15.2	289.7	1.82	3.7	41	198	140
W16 16 x 5 1/2 (406 x 140)	26	38.7	50	398.5	139.7	8.8	6.4	10.2	360.6	7.97	56.8	5	77	19
	31	46.1	59	403.4	140.3	11.2	7.0	10.2	360.6	6.27	51.7	5	77	21
W16 16 x 7 (406 x 178)	36	53.6	68	402.8	177.4	10.9	7.5	10.2	360.6	8.12	48.1	6	95	21
	40	59.5	76	406.7	177.7	12.8	7.8	10.2	360.6	6.93	46.5	6	95	23
	45	67.0	86	409.7	178.7	14.4	8.8	10.2	360.6	6.23	41.2	6	95	25
	50	74.4	95	413.0	179.6	16.0	9.7	10.2	360.6	5.61	37.4	7	95	26
	57	84.8	108	417.3	180.8	18.2	10.9	10.2	360.6	4.98	33.0	7	95	28
W16 16 x 10 1/4 (406x260)	67	99.7	127	414.8	260.0	16.9	10.0	10.2	360.6	7.70	36.0	7	135	27
	77	114.6	146	419.6	261.5	19.3	11.6	10.2	360.6	6.77	31.2	8	135	30
	89	132.4	169	425.4	263.3	22.2	13.3	10.2	360.6	5.92	27.0	9	135	32
	100	148.8	190	431.0	264.8	25.0	14.9	10.2	360.6	5.29	24.3	9	135	35
W18 18 x 6 (457 x 152)	35	52.1	66	449.6	152.4	10.8	7.6	10.2	407.6	7.06	53.5	6	82	21
	40	59.5	76	454.7	152.8	13.3	8.0	10.2	407.6	5.73	51.0	6	82	24
	45	67.0	85	457.2	151.9	15.0	9.1	10.2	406.8	5.06	44.7	7	81	25
	46	68.5	87	458.7	153.9	15.4	9.1	10.2	407.6	5.01	44.6	7	82	26
	50	74.0	95	461.3	152.7	17.0	9.9	10.2	406.9	4.49	41.1	7	81	27
	55	82.0	105	465.1	153.5	18.9	10.7	10.2	406.9	4.06	38.0	7	81	29
W18 18 x 7 1/2 (457 x 191)	45	67.0	86	453.6	189.9	12.7	8.5	10.2	407.8	7.48	48.0	6	101	23
	50	74.4	95	456.9	190.4	14.5	9.0	10.2	407.5	6.57	45.2	7	101	25
	55	81.9	105	460.0	191.3	16.0	9.9	10.2	407.6	5.98	41.1	7	101	26
	60	89.3	114	463.3	191.9	17.7	10.5	10.2	407.6	5.44	38.7	7	101	28
	65	96.7	123	466.1	192.8	19.1	11.4	10.2	407.6	5.06	35.7	8	101	29
	66	98.0	125	467.4	192.8	19.6	11.4	10.2	407.8	4.92	35.8	8	101	30
	71	105.7	134	469.1	193.9	20.6	12.6	10.2	407.6	4.71	32.4	8	101	31
W18 18 x 11 (457 x 279)	76	113.1	144	462.5	280.3	17.3	10.8	10.2	407.6	8.12	37.7	7	145	27
	86	128.0	163	467.1	281.7	19.6	12.2	10.2	407.6	7.20	33.4	8	145	30
	97	144.4	184	472.2	283.1	22.1	13.6	10.2	407.6	6.40	30.0	9	145	32
	106	157.7	201	475.7	284.5	23.9	15.0	10.2	407.5	5.96	27.2	9	145	34
	119	177.1	226	481.8	286.1	26.9	16.6	10.2	407.6	5.31	24.5	10	145	37
W21 21 x 6 1/2 (533 x 165)	44	65.5	84	524.8	165.1	11.4	8.9	12.7	476.5	7.22	53.6	6	88	24
	50	74.7	95	529.1	165.9	13.6	9.7	12.7	476.5	6.10	49.4	7	88	26
	57	84.8	108	534.9	166.5	16.5	10.3	12.7	476.5	5.04	46.3	7	88	29
W21 21 x 8 1/4 (533 x 210)	55	82.0	105	528.3	208.7	13.2	9.6	12.7	476.5	7.91	49.6	7	110	26
	62	92.3	118	533.4	209.3	15.6	10.2	12.7	476.8	6.70	46.9	7	110	28
	68	101.2	129	536.7	210.1	17.4	10.9	12.7	476.5	6.04	43.6	7	110	30

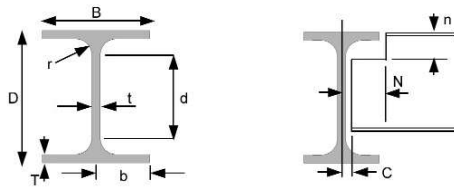
Wide Flange Beams



Imperial Units

Designation			Surface Area per Metre	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H	Torsional Constant J
Size		Mass Per Metre		Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in (mm)	lb/ft														
W14 14 x 16 (356 x 406)	426	634.0	2.52	274516	98309	18.4	11.0	11578	4636	14233	7120	0.843	5.45	38.8	13768
	455	677.1	2.55	299422	106613	18.6	11.1	12396	4987	15341	7669	0.843	5.21	43.0	16455
	500	744.1	2.59	341875	120016	19.0	11.3	13735	5555	17163	8553	0.844	4.87	50.2	21388
	550	818.5	2.63	392355	135478	19.4	11.4	15264	6202	19260	9560	0.846	4.57	58.9	27869
	605	900.3	2.67	450726	153164	19.8	11.6	16964	6926	21615	10690	0.848	4.29	69.4	36184
	665	989.6	2.72	518155	173421	20.3	11.7	18852	7737	24256	11958	0.849	4.04	82.0	46770
	730	1086.0	2.77	597043	196315	20.8	11.9	20967	8641	27234	13370	0.851	3.82	97.1	60245
W16 16 x 5 1/2 (406 x 140)	26	38.7	1.33	12539	399	15.9	2.8	629	57	724	90	0.859	47.1	0.15	10.9
	31	46.1	1.34	15603	516	16.3	3.0	774	74	885	115	0.868	38.9	0.20	19.2
W16 16 x 7 (406 x 178)	36	53.6	1.48	18646	1018	16.5	3.9	926	115	1048	178	0.873	38.5	0.39	22.7
	40	59.5	1.49	21580	1202	16.8	4.0	1061	135	1196	209	0.881	33.8	0.47	33.1
	45	67.0	1.50	24403	1367	16.9	4.0	1191	153	1349	237	0.880	30.4	0.53	46.3
	50	74.4	1.51	27422	1548	17.0	4.0	1328	172	1508	268	0.881	27.5	0.61	63.4
	57	84.8	1.52	31520	1794	17.1	4.1	1511	198	1724	309	0.881	24.5	0.71	92.2
W16 16 x 10 1/4 (406 x 260)	67	99.7	1.83	39726	4951	17.7	6.2	1915	381	2128	581	0.888	25.4	1.96	99.4
	77	114.6	1.84	46112	5758	17.8	6.3	2198	440	2457	673	0.887	22.4	2.31	149
	89	132.4	1.86	54058	6768	17.9	6.3	2541	514	2859	788	0.887	19.7	2.75	227
	100	148.8	1.87	61831	7754	18.0	6.4	2869	586	3246	899	0.887	17.7	3.20	322
W18 18 x 6 (457 x 152)	35	52.1	1.48	21228	639	17.9	3.1	944	84	1090	132	0.858	44.1	0.31	21.1
	40	59.5	1.49	25488	795	18.3	3.2	1121	104	1285	163	0.869	37.5	0.39	33.7
	45	67.0	1.49	28597	879	18.3	3.2	1251	116	1442	183	0.867	33.5	0.43	47.6
	46	68.5	1.50	29625	937	18.4	3.3	1292	122	1486	192	0.869	32.9	0.46	50.9
	50	74.0	1.50	32470	1013	18.5	3.3	1408	133	1624	209	0.870	30.0	0.50	66.8
	55	82.0	1.51	36253	1144	18.6	3.3	1559	149	1802	236	0.872	27.3	0.57	89.5
W18 18 x 7 1/2 (457 x 191)	45	67.0	1.63	29410	1452	18.5	4.1	1297	153	1472	237	0.872	37.9	0.71	37.1
	50	74.4	1.64	33283	1669	18.8	4.2	1457	175	1652	272	0.877	33.9	0.82	51.7
	55	81.9	1.65	37058	1871	18.8	4.2	1611	196	1832	304	0.877	30.9	0.92	69.3
	60	89.3	1.66	40938	2084	19.0	4.3	1767	217	2011	338	0.879	28.3	1.03	90.3
	65	96.7	1.66	44592	2281	19.0	4.3	1913	237	2184	369	0.879	26.3	1.14	114
	66	98.0	1.67	45772	2347	19.1	4.3	1959	243	2234	379	0.881	25.8	1.18	121
	71	105.7	1.67	48759	2507	19.0	4.3	2079	259	2383	404	0.877	24.4	1.26	145
W18 18 x 11 (457 x 279)	76	113.1	2.01	55458	6344	19.6	6.6	2398	453	2669	692	0.885	27.9	3.14	118
	86	128.0	2.02	63580	7295	19.7	6.7	2722	518	3043	793	0.885	24.8	3.65	171
	97	144.4	2.03	72706	8367	19.9	6.7	3079	591	3457	906	0.886	22.1	4.24	244
	106	157.7	2.04	79600	9178	19.9	6.8	3347	645	3775	991	0.884	20.5	4.68	311
	119	177.1	2.06	91044	10525	20.1	6.8	3779	736	4284	1132	0.885	18.4	5.44	442
W21 21 x 6 1/2 (533 x 165)	44	65.5	1.67	35093	861	20.5	3.2	1337	104	1563	167	0.847	47.0	0.57	32.1
	50	74.7	1.68	40986	1039	20.8	3.3	1549	125	1804	200	0.853	41.2	0.69	47.6
	57	84.8	1.69	48641	1276	21.2	3.4	1819	153	2107	243	0.862	35.5	0.86	73.8
W21 21 x 8 1/4 (533 x 210)	55	82.0	1.85	47522	2005	21.3	4.4	1799	192	2058	300	0.864	41.6	1.33	51.5
	62	92.3	1.86	55412	2392	21.7	4.5	2078	229	2368	356	0.871	36.4	1.60	76.2
	68	101.2	1.87	61669	2696	21.8	4.6	2298	257	2620	400	0.874	33.1	1.82	102

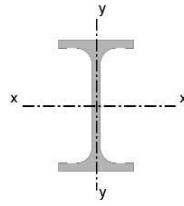
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios For Local Buckling		Dimensions for Detailing		
Size	Mass Per Metre					Flange	Web			Buckling		End Clearance C	Notch	
										Flange b/T	Web d/t			
in (mm)	lb/ft	kg/m	cm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
W21 21 x 8 1/4 (533 x 210)	73	108.6	139	539.5	210.7	18.8	11.6	12.7	476.5	5.60	41.2	8	110	32
	82	122.0	156	544.6	211.9	21.3	12.8	12.7	476.6	4.97	37.2	8	110	34
	83	123.5	157	544.3	212.2	21.2	13.1	12.7	476.5	5.00	36.4	9	110	34
	93	138.4	176	549.1	213.9	23.6	14.7	12.7	476.5	4.53	32.3	9	110	36
W21 21 x 12 1/4 (533x311)	101	150.3	192	542.5	312.2	20.3	12.7	12.7	476.5	7.68	37.5	8	160	33
	111	165.2	211	546.4	313.4	22.2	14.0	12.7	476.6	7.05	34.1	9	160	35
	122	181.6	231	550.7	314.7	24.4	15.2	12.7	476.5	6.45	31.3	10	160	37
	132	196.4	250	554.5	316.0	26.3	16.5	12.7	476.5	6.01	28.9	10	160	39
	147	218.8	279	560.3	317.8	29.2	18.3	12.7	476.5	5.44	26.1	11	160	42
W24 24 x 7 (610 x 178)	55	81.9	105	598.7	177.9	12.8	10.0	12.7	547.6	6.93	54.6	7	94	26
	61	91.0	116	602.5	178.4	15.0	10.6	12.7	547.1	5.95	51.6	7	94	28
	62	92.3	118	603.0	178.8	15.0	10.9	12.7	547.6	5.96	50.1	7	94	28
W24 24 x 9 (610 x 229)	68	101.2	129	602.7	227.7	14.9	10.5	12.7	547.6	7.66	52.0	7	119	28
	76	113.1	144	607.6	228.3	17.3	11.2	12.7	547.7	6.61	49.0	8	119	30
	84	125.0	159	612.1	229.1	19.6	11.9	12.7	547.6	5.86	45.9	8	119	32
	94	139.9	179	617.5	230.3	22.2	13.1	12.7	547.7	5.18	41.9	9	119	35
W24 24 x 12 (610 x 305)	100	147.0	191	609.6	304.8	19.7	11.9	17.8	534.6	7.74	44.9	8	156	38
	120	179.0	228	617.5	307	23.6	14.1	17.8	534.7	6.50	37.9	9	156	41
	160	238.0	304	633	311.5	31.4	18.6	17.8	534.6	4.96	28.7	11	156	49
W24 24 x 12 3/4 (610x324)	104	154.8	198	611.1	323.8	19.1	12.7	12.7	547.6	8.50	43.1	8	166	32
	117	174.1	222	616.2	325.1	21.6	14.0	12.7	547.6	7.53	39.2	9	166	34
	131	194.9	249	621.8	326.5	24.4	15.4	12.7	547.6	6.70	35.6	10	166	37
	146	217.3	277	628.4	327.7	27.7	16.5	12.7	547.6	5.92	33.2	10	166	40
	162	241.1	308	635.0	329.1	31.0	17.9	12.7	547.6	5.31	30.6	11	166	44
W27 27 x 10 (686 x 254)	84	125.0	160	678.4	253.0	16.3	11.7	15.2	615.5	7.78	52.7	8	131	31
	94	139.9	178	683.8	253.7	18.9	12.5	15.2	615.6	6.70	49.4	8	131	34
	102	151.8	194	688.1	254.4	21.1	13.1	15.2	615.5	6.03	47.1	9	131	36
	114	169.7	216	693.2	255.8	23.6	14.5	15.2	615.6	5.41	42.5	9	131	39
W27 27 x 14 (686 x 356)	146	217.3	277	695.5	354.7	24.8	15.4	15.2	615.6	7.16	40.1	10	180	40
	161	239.6	306	700.8	356.1	27.4	16.8	15.2	615.5	6.49	36.7	10	180	43
	178	264.9	337	706.4	357.8	30.2	18.4	15.2	615.5	5.92	33.4	11	180	45
W30 30 x 10 1/2 (762x267)	99	147.3	188	753.1	265.4	17.0	13.2	16.5	686.1	7.80	51.9	9	136	34
	108	160.7	205	757.7	266.1	19.3	13.8	16.5	686.1	6.89	49.6	9	136	36
	116	172.6	221	762.3	266.6	21.6	14.4	16.5	686.1	6.17	47.8	9	136	38
	124	184.5	235	766.3	267.1	23.6	14.9	16.5	686.1	5.65	46.2	9	136	40
	132	196.4	251	769.9	267.8	25.4	15.6	16.5	686.1	5.27	43.9	10	136	42
W30 30 x 15 (762 x 381)	173	257.5	328	773.2	380.6	27.1	16.6	16.5	686.1	7.04	41.2	10	192	44
	191	384.2	362	779.2	382.0	30.1	18.0	16.5	686.0	6.35	38.0	11	192	47
	211	314.0	400	785.9	383.7	33.4	19.7	16.5	686.1	5.74	34.9	12	192	50
W33 33 x 11 1/2 (838x292)	118	175.6	224	834.6	291.6	18.8	14.0	17.8	761.4	7.76	54.5	9	149	37
	130	193.5	247	840.5	292.4	21.7	14.7	17.8	761.5	6.73	51.7	9	149	40
	141	209.8	268	845.8	293.0	24.4	15.4	17.8	761.4	6.01	49.5	10	149	42
	152	226.2	289	850.6	293.8	26.8	16.1	17.8	761.4	5.48	47.2	10	149	45

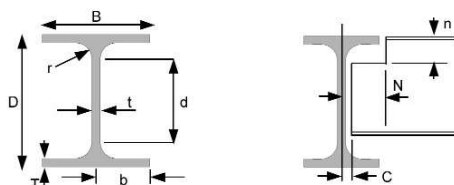
Wide Flange Beams



Imperial Units

Designation		Surface		Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre	Moment of Area	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
in (mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁴	cm ⁴
W21 21 x 8 1/4 (533 x 210)	73	108.6	1.88	66755	2939	21.9	4.6	2475	279	2825	435	0.875	30.9	1.99	126
	82	122.0	1.89	76180	3388	22.1	4.7	2798	320	3203	500	0.876	27.6	2.32	179
	83	123.5	1.89	76241	3389	22.0	4.6	2801	319	3212	500	0.874	27.6	2.32	181
	93	138.4	1.90	86170	3868	22.1	4.7	3139	362	3617	569	0.873	24.9	2.67	251
W21 21 x 12 1/4 (533 x 311)	101	150.3	2.29	100764	10316	22.9	7.3	3715	661	4147	1012	0.885	27.8	7.03	217
	111	165.2	2.30	111304	11413	23.0	7.4	4074	728	4565	1117	0.885	25.6	7.84	284
	122	181.6	2.31	123257	12681	23.1	7.4	4476	806	5032	1238	0.885	23.4	8.78	373
	132	196.4	2.32	134239	13847	23.2	7.4	4842	876	5462	1348	0.884	21.8	9.66	469
	147	218.8	2.33	151168	15654	23.3	7.5	5396	985	6116	1519	0.884	19.8	11.0	643
W24 24 x 7 (610 x 178)	55	81.9	1.87	56021	1210	23.2	3.4	1871	136	2200	219	0.843	48.3	1.04	49.2
	61	91.0	1.88	63879	1426	23.5	3.5	2120	160	2480	256	0.850	43.2	1.23	68.6
	62	92.3	1.88	64581	1436	23.4	3.5	2142	161	2512	258	0.848	42.8	1.24	71.0
W24 24 x 9 (610 x 229)	68	101.2	2.07	76111	2931	24.2	4.8	2526	257	2893	402	0.864	42.9	2.53	77.9
	76	113.1	2.08	87368	3433	24.6	4.9	2876	301	3285	469	0.869	38.0	2.99	112
	84	125.0	2.09	98528	3930	24.9	5.0	3219	343	3675	535	0.873	34.1	3.45	154
	94	139.9	2.11	112337	4536	25.1	5.0	3638	394	4159	615	0.875	30.4	4.02	219
W24 24 x 12 (610 x 305)	100	147.0	2.38	125048	9309	25.6	7.0	4103	611	4586	938	0.886	32.3	8.1	203
	120	179.0	2.40	151789	11399	25.8	7.1	4916	743	5526	1143	0.886	27.4	10.1	343
	160	238.0	2.44	208047	15855	26.1	7.2	6573	1018	7473	1576	0.886	21.1	14.3	796
W24 24 x 12 3/4 (610 x 324)	104	154.8	2.47	129171	10790	25.6	7.4	4227	666	4734	1023	0.880	33.6	9.46	196
	117	174.1	2.48	147154	12378	25.8	7.5	4776	762	5360	1170	0.882	30.0	10.9	280
	131	194.9	2.50	167347	14162	25.9	7.5	5383	867	6057	1335	0.883	26.8	12.6	395
	146	217.3	2.51	190836	16264	26.2	7.7	6074	993	6845	1527	0.886	23.9	14.7	559
	162	241.1	2.53	215400	18440	26.4	7.7	6784	1121	7670	1726	0.888	21.6	16.8	770
W27 27 x 10 (686 x 254)	84	125.0	2.32	118449	4400	27.2	5.2	3492	348	4005	544	0.862	43.8	4.82	117
	94	139.9	2.33	136115	5162	27.6	5.4	3981	407	4554	636	0.868	38.8	5.70	168
	102	151.8	2.34	150741	5799	27.9	5.5	4381	456	5005	712	0.872	35.4	6.45	220
	114	169.7	2.35	170049	6608	28.0	5.5	4906	517	5619	809	0.872	31.9	7.41	305
W27 27 x 14 (686 x 356)	146	217.3	2.75	234198	18438	29.1	8.2	6735	1040	7558	1598	0.884	29.7	20.7	454
	161	239.6	2.77	261240	20673	29.2	8.2	7455	1161	8389	1787	0.885	27.0	23.4	610
	178	264.9	2.78	290824	23116	29.4	8.3	8234	1292	9298	1992	0.884	24.6	26.4	814
W30 30 x 10 1/2 (762 x 267)	99	147.3	2.51	166281	5320	29.8	5.3	4416	401	5116	633	0.854	45.6	7.21	157
	108	160.7	2.52	185888	6080	30.1	5.5	4907	457	5665	720	0.859	41.5	8.29	208
	116	172.6	2.53	205375	6840	30.5	5.6	5388	513	6202	807	0.864	38.1	9.38	268
	124	184.5	2.54	223050	7525	30.8	5.7	5821	563	6689	885	0.867	35.4	10.4	333
	132	196.4	2.55	239950	8157	30.9	5.7	6233	609	7167	957	0.869	33.2	11.3	405
W30 30 x 15 (762 x 381)	173	257.5	3.01	341237	24887	32.3	8.7	8827	1308	9916	2012	0.883	30.3	34.6	635
	191	384.2	3.02	381592	28004	32.5	8.8	9794	1466	11027	2258	0.885	27.5	39.3	859
	211	314.0	3.04	427027	31497	32.7	8.9	10867	1642	12271	2531	0.886	25.0	44.6	1161
W33 33 x 11 1/2 (838 x 292)	118	175.6	2.78	245628	7792	33.1	5.9	5886	534	6798	841	0.856	46.5	13.0	221
	130	193.5	2.79	279326	9076	33.6	6.1	6647	621	7647	975	0.862	41.6	15.2	307
	141	209.8	2.80	310151	10250	34.0	6.2	7334	700	8416	1097	0.867	37.9	17.3	404
	152	226.2	2.81	339556	11361	34.3	6.3	7984	773	9155	1212	0.870	34.9	19.3	514

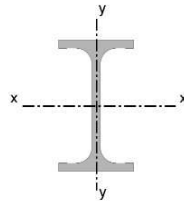
Wide Flange Beams



Imperial Units

Designation			Area of Sect.	Depth of Sect.	Width of Sect.	Thickness		Root Radius	Depth between Fillet	Ratios For		Dimensions		
Size	Mass Per Metre					Flange	Web			Local Buckling	for Detailing			
											End	Notch		
			A	D	B	T	t	r	d	Flange b/T	Web d/t	Clearance C	N	n
in (mm)	lb/ft	kg/m	cm ²	mm	mm	mm	mm	mm	mm			mm	mm	mm
W33 33 x 15 3/4 (838x400)	201	299.1	381	855.5	399.9	29.2	18.2	17.8	761.5	6.85	41.9	11	201	47
	221	328.9	420	861.8	401.4	32.4	19.7	17.8	761.4	6.20	38.7	12	201	50
	241	358.6	457	868.2	402.8	35.6	21.1	17.8	761.5	5.66	36.1	13	201	53
W36 36 x 12 (914 x 305)	135	200.9	256	903.0	303.5	20.1	15.2	19.0	824.9	7.56	54.1	10	154	39
	150	223.2	285	910.6	304.2	23.9	15.9	19.0	824.8	6.37	51.9	10	154	43
	160	238.1	304	914.7	304.8	25.9	16.5	19.0	824.9	5.88	50.0	10	154	45
	170	253.0	323	918.7	305.6	27.9	17.3	19.0	824.8	5.47	47.8	11	154	47
	182	270.8	346	922.8	306.7	30.0	18.4	19.0	824.9	5.12	44.8	11	154	49
	194	288.7	368	926.8	307.7	32.0	19.4	19.0	824.8	4.81	42.4	12	154	51
	210	312.5	399	931.9	309.4	34.5	21.1	19.0	824.8	4.48	39.1	13	154	54
W36 36 x16 1/2 (914 x419)	230	342.3	436	911.9	418.3	32.0	19.3	24.1	799.7	6.54	41.4	12	210	56
	245	364.6	465	916.4	419.4	34.3	20.3	24.1	799.6	6.12	39.4	12	210	58
	260	386.9	493	921.0	420.4	36.6	21.3	24.1	799.6	5.75	37.5	13	210	61
	280	416.7	532	927.6	421.5	39.9	22.5	24.1	799.6	5.28	35.6	13	210	64
	300	446.4	569	933.2	423.0	42.7	24.0	24.1	799.7	4.96	33.3	14	210	67
W40 40x12 (1016 x 305)	149	222.0	283	970.3	300	21.1	16.0	30.0	868.1	7.11	54.3	10	152	51
	167	249.0	317	980.2	300	26.0	16.5	30.0	868.2	5.77	52.6	10	152	56
	183	272.0	347	990.1	300	31.0	16.5	30.0	868.1	4.84	52.6	10	152	61
	211	314.0	400	1000	300	35.9	19.1	30.0	868.2	4.18	45.5	12	150	66
	235	349.0	445	1008	302	40.0	21.1	30.0	868.1	3.78	41.1	13	150	70
	264	393.0	500	1016	303	43.9	24.4	30.0	868.2	3.45	35.6	14	149	74
	278	415.0	529	1020	304	46.0	26.0	30.0	868.0	3.30	33.4	15	149	76
	294	438.0	557	1026	305	49.0	26.9	30.0	867.9	3.12	32.3	15	149	79
	327	487.0	620	1036	309	54.1	30.0	30.0	867.9	2.85	28.9	17	149	84
	331	494.0	629	1036	309	54.0	31.0	30.0	868.0	2.86	28.0	18	149	84
	359	535.0	681	1046	311	58.9	33.0	30.0	868.2	2.64	26.3	19	149	89
	392	584.0	744	1056	314	64.0	36.0	30.0	868.0	2.45	24.1	20	149	94
W40 40x16 (1016 x 406)	199	296.0	378	982	400	27.1	16.5	30.0	867.8	7.38	52.6	10	202	57
	215	321.0	409	990	400	31.0	16.5	30.0	868.0	6.45	52.6	10	202	61
	249	371.0	473	1000	400	36.1	19.0	30.0	867.8	5.54	45.7	12	201	66
	277	412.0	524	1008	402	40.0	21.0	30.0	868.0	5.03	41.3	13	201	70
	297	443.0	564	1012	402	41.9	23.6	30.0	868.2	4.80	36.8	14	199	72
	324	483.0	615	1020	404	46.0	25.4	30.0	868.0	4.39	34.2	15	199	76
	362	539.0	687	1030	407	51.1	28.4	30.0	867.8	3.98	30.6	16	199	81
	397	591.0	753	1040	409	55.9	31.0	30.0	868.2	3.66	28.0	18	199	86
	431	642.0	818	1048	412	60.0	34.0	30.0	868.0	3.43	25.5	19	199	90
	503	748.0	953	1068	417	70.0	39.0	30.0	868.0	2.98	22.3	22	199	100
	593	883.0	1125	1092	424	82.0	45.5	30.0	868.0	2.59	19.1	25	199	112
	W44 44x16 (1118 x 406)	230	343.0	436	1090	400	31.0	18.0	20.0	988.0	6.45	54.9	11	201
262		390.0	497	1100	400	36.0	20.0	20.0	988.0	5.56	49.4	12	200	56
290		433.0	551	1108	402	40.0	22.0	20.0	988.0	5.03	44.9	13	200	60
335		499.0	635	1118	405	45.0	26.0	20.0	988.0	4.50	38.0	15	200	65

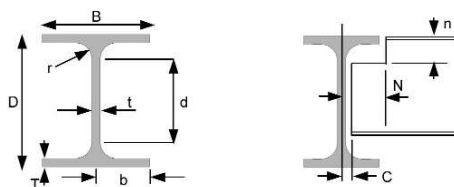
Wide Flange Beams



Imperial Units

Designation		Surface		Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre		Moment of Area		of Gyration		Modulus		Modulus		Parameter u	Index x	Constant H	Constant J
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in (mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁴	cm ⁴
W33 33 x 15 3/4 (838 x 400)	201	299.1	3.24	479805	31180	35.5	9.0	11217	1559	12644	2405	0.881	31.2	53.2	855
	221	328.9	3.26	534569	34960	35.7	9.1	12406	1742	14013	2689	0.882	28.4	60.1	1145
	241	358.6	3.27	590016	38802	35.9	9.2	13592	1927	15382	2977	0.884	26.1	67.3	1491
W36 36 x 12 (914 x 305)	135	200.9	2.96	324711	9383	35.6	6.0	7192	618	8347	978	0.852	46.9	18.3	291
	150	223.2	2.97	376319	11239	36.3	6.3	8265	739	9529	1163	0.861	41.3	22.1	421
	160	238.1	2.98	406063	12267	36.6	6.4	8879	805	10225	1266	0.864	38.6	24.2	515
	170	253.0	2.99	436953	13334	36.8	6.4	9512	873	10952	1373	0.866	36.2	26.4	627
	182	270.8	3.00	470766	14462	36.9	6.5	10203	943	11768	1487	0.866	33.9	28.8	768
	194	288.7	3.01	504005	15598	37.0	6.5	10876	1014	12559	1601	0.867	32.0	31.2	923
	210	312.5	3.03	548980	17126	37.1	6.6	11782	1107	13645	1754	0.866	29.7	34.5	1164
W36 36 x 16 1/2 (914 x 419)	230	342.3	3.42	625181	39102	37.9	9.5	13712	1870	15456	2886	0.883	30.2	75.7	1189
	245	364.6	3.43	671727	42235	38.0	9.5	14660	2014	16546	3111	0.884	28.3	82.2	1442
	260	386.9	3.44	718904	45384	38.2	9.6	15611	2159	17644	3337	0.885	26.7	88.7	1729
	280	416.7	3.45	785685	49871	38.4	9.7	16940	2366	19171	3658	0.887	24.8	98.3	2188
	300	446.4	3.47	846884	53943	38.6	9.7	18150	2550	20595	3948	0.887	23.3	107	2671
W40 40 x 12 (1016 x 305)	149	222.0	3.06	407968	9553	38.0	5.8	8409	637	9807	1020	0.850	45.7	21.5	390
	167	249.0	3.08	481313	11761	39.0	6.1	9821	784	11350	1245	0.861	39.9	26.8	582
	183	272.0	3.10	553981	14011	40.0	6.4	11190	934	12826	1470	0.873	35.0	32.2	835
	211	314.0	3.11	644218	16239	40.1	6.4	12884	1083	14851	1713	0.872	30.7	37.7	1264
	235	349.0	3.13	723138	18467	40.3	6.4	14347	1223	16592	1941	0.872	27.9	43	1718
	264	393.0	3.14	807696	20503	40.2	6.4	15900	1353	18539	2168	0.868	25.5	48.4	2330
	278	415.0	3.15	853128	21714	40.2	6.4	16728	1429	19571	2298	0.866	24.4	51.5	2704
	294	438.0	3.17	909913	23454	40.4	6.5	17739	1536	20762	2469	0.868	23.1	56.0	3185
	327	487.0	3.19	1021427	26728	40.6	6.6	19717	1733	23200	2800	0.867	21.1	64.4	4299
	331	494.0	3.19	1027966	26831	40.4	6.5	19845	1737	23413	2818	0.865	21.0	65	4396
	359	535.0	3.22	1130714	29972	40.8	6.6	21620	1925	25566	3126	0.866	19.5	73.0	5576
	392	584.0	3.24	1246078	33440	40.9	6.7	23600	2130	28039	3475	0.866	18.1	82.3	7154
W40 40 x 16 (1016 x 406)	199	296.0	3.48	620321	28968	40.5	8.8	12634	1448	14255	2243	0.879	38.0	66.0	764
	215	321.0	3.50	696453	33128	41.3	9.0	14070	1656	15797	2555	0.887	34.1	76.2	1033
	249	371.0	3.51	813739	38589	41.5	9.0	16275	1929	18361	2984	0.887	29.8	89.6	1588
	277	412.0	3.53	909818	43414	41.7	9.1	18052	2160	20440	3348	0.887	27.1	101.7	2140
	297	443.0	3.53	966519	45505	41.4	9.0	19101	2264	21777	3529	0.882	25.8	107	2543
	324	483.0	3.55	1067490	50719	41.7	9.1	20931	2511	23923	3919	0.883	23.8	120.3	3307
	362	539.0	3.58	1202545	57639	41.8	9.2	23350	2832	26824	4436	0.882	21.6	138.1	4530
	397	591.0	3.60	1331043	64021	42.1	9.2	25597	3131	29530	4916	0.882	19.9	155.0	5896
	431	642.0	3.62	1450597	70291	42.1	9.3	27683	3412	32097	5379	0.880	18.6	171.5	7382
	503	748.0	3.67	1731950	85118	42.6	9.4	32434	4082	37881	6459	0.881	16.2	212	11555
	593	883.0	3.74	2096426	104979	43.2	9.7	38396	4952	45265	7874	0.881	14.1	267.7	18518
W44 44 x 16 (1118 x 406)	230	343.0	3.71	867389	33125	44.6	8.7	15915	1656	18062	2568	0.875	38.9	92.9	1034
	262	390.0	3.73	1005399	38478	45.0	8.8	18280	1924	20780	2988	0.878	34.0	108.9	1559
	290	433.0	3.75	1125575	43411	45.2	8.9	20317	2160	23161	3362	0.878	30.8	123.8	2121
	335	499.0	3.77	1294061	49985	45.1	8.9	23150	2468	26599	3870	0.875	27.4	143.9	3112

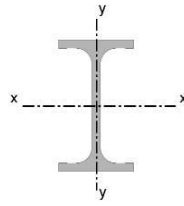
Wide Flange Beams



Metric Units

Designation		Area of Sect. A	Depth of Sect. D	Width of Sect. B	Thickness		Root Radius r	Depth between Fillet d	Ratios For Local Buckling		Dimensions for Detailing		
Size	Mass Per Metre				Flange T	Web t			End		Notch		
									Clearance C	N	n		
												Flange b/T	Web d/t
mm	kg/m	cm ²	mm	mm	mm	mm	mm	mm			mm	mm	mm
100 x 50	9.3	11.8	100	50	7	5	8	70	3.57	14.0	5	33	15
100 x 100	17.2	21.9	100	100	8	6	10	64	6.25	10.7	5	57	18
125 x 60	13.2	16.8	125	60	8	6	9	91	3.75	15.2	5	37	17
125 x 125	23.8	30.3	125	125	9	6.5	10	87	6.94	13.4	5	69	19
150 x 75	14	17.8	150	75	7	5	8	120	5.36	24.0	5	45	15
150 x 100	21.1	26.8	148	100	9	6	11	108	5.56	18.0	5	57	20
150 x 150	31.5	40.1	150	150	10	7	11	108	7.50	15.4	6	82	21
175 x 90	18.1	23.0	175	90	8	5	9	141	5.63	28.2	5	53	17
175 x 175	40.2	51.2	175	175	11	7.5	12	129	7.95	17.2	6	94	23
200 x 100	18.2	23.2	198	99	7	4.5	11	162	7.07	36.0	4	57	18
	21.3	27.2	200	100	8	5.5	11	162	6.25	29.5	5	57	19
200 x 150	30.6	39.0	194	150	9	6	13	150	8.33	25.0	5	82	22
200 x 200	49.9	63.5	200	200	12	8	13	150	8.33	18.8	6	106	25
	56.2	71.5	200	204	12	12	13	150	8.50	12.5	8	106	25
	65.7	83.7	208	202	16	10	13	150	6.31	15.0	7	106	29
250 x 125	25.7	32.7	248	124	8	5	12	208	7.75	41.6	5	70	20
	29.6	37.7	250	125	9	6	12	208	6.94	34.7	5	70	21
250 x 175	44.1	56.2	244	175	11	7	16	190	7.95	27.1	6	94	27
250 x 250	64.4	82.1	244	252	11	11	16	190	11.45	17.3	8	131	27
	66.5	84.7	248	249	13	8	16	190	9.58	23.8	6	131	29
	72.4	92.2	250	250	14	9	16	190	8.93	21.1	7	131	30
	82.2	105	250	255	14	14	16	190	9.11	13.6	9	131	30
300 x 150	32.0	40.8	298	149	8	5.5	13	256	9.31	46.5	5	82	21
	36.7	46.8	300	150	9	6.5	13	256	8.33	39.4	5	82	22
300 x 200	56.8	72.4	294	200	12	8	18	234	8.33	29.3	6	106	30
	65.4	83.4	298	201	14	9	18	234	7.18	26.0	7	106	32
300 x 300	84.5	108	294	302	12	12	18	234	12.58	19.5	8	155	30
	87.0	111	298	299	14	9	18	234	10.68	26.0	7	155	32
	94.0	120	300	300	15	10	18	234	10.00	23.4	7	155	33
	106	135	300	305	15	15	18	234	10.17	15.6	10	155	33
	106	135	304	301	17	11	18	234	8.85	21.3	8	155	35
350 x 175	41.4	52.7	346	174	9	6	14	300	9.67	50.0	5	94	23
	49.6	63.1	350	175	11	7	14	300	7.95	42.9	6	94	25
350 x 250	69.2	88.2	336	249	12	8	20	272	10.38	34.0	6	131	32
	79.7	102	340	250	14	9	20	272	8.93	30.2	7	131	34
350 x 350	106	135	338	351	13	13	20	272	13.50	20.9	9	179	33
	115	146	344	348	16	10	20	272	10.88	27.2	7	179	36
	131	167	344	354	16	16	20	272	11.06	17.0	10	179	36
	137	174	350	350	19	12	20	272	9.21	22.7	8	179	39
	156	198	350	357	19	19	20	272	9.39	14.3	12	179	39
	159	202	356	352	22	14	20	272	8.00	19.4	9	179	42

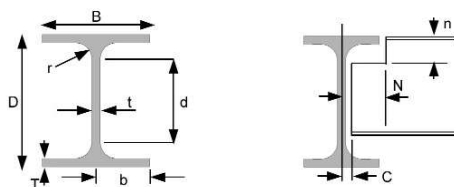
Wide Flange Beams



Metric Units

Designation		Surface	Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre	Moment of Area		of Gyration		Modulus		Modulus		Parameter	Index	Constant	Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁶	cm ⁴
100 x 50	9.3	0.38	188	15	3.98	1.12	37.5	5.93	44.1	9.52	0.876	12.7	0.000320	2.03
100 x 100	17.2	0.57	383	134	4.18	2.47	76.5	26.8	87.6	41.2	0.837	10.7	0.00283	5.17
125 x 60	13.2	0.46	413	29	4.95	1.32	66.1	9.75	77.6	15.7	0.872	14.0	0.00100	3.75
125 x 125	23.8	0.72	847	294	5.29	3.11	136	47.0	154	71.9	0.840	12.5	0.00988	8.43
150 x 75	14	0.58	666	50	6.11	1.67	88.8	13.2	102	20.8	0.876	20.4	0.00253	2.81
150 x 100	21.1	0.67	1021	151	6.17	2.37	138	30.1	157	46.7	0.881	15.0	0.00728	7.37
150 x 150	31.5	0.87	1641	563	6.39	3.75	219	75.1	246	115	0.842	13.7	0.0276	13.5
175 x 90	18.1	0.68	1214	98	7.26	2.06	139	21.7	157	33.7	0.885	21.4	0.00680	4.50
175 x 175	40.2	1.01	2884	984	7.50	4.38	330	112	369	171	0.844	14.7	0.0662	20.4
200 x 100	18.2	0.76	1582	114	8.26	2.22	160	23.0	180	35.7	0.884	26.5	0.0104	3.86
	21.3	0.77	1844	134	8.24	2.22	184	26.8	209	41.9	0.880	23.6	0.0124	5.77
200 x 150	30.6	0.95	2690	507	8.30	3.61	277	68	309	104	0.878	19.8	0.0434	10.9
200 x 200	49.9	1.16	4716	1602	8.62	5.02	472	160	525	244	0.846	15.5	0.142	29.8
	56.2	1.17	4983	1702	8.35	4.88	498	167	565	257	0.826	14.3	0.150	39.6
	65.7	1.18	6531	2201	8.83	5.13	628	218	710	332	0.848	12.2	0.203	66.7
250 x 125	25.7	0.96	3537	255	10.4	2.79	285	41.1	319	63.6	0.886	29.9	0.0367	6.74
	29.6	0.97	4052	294	10.4	2.79	324	47.0	366	73.1	0.881	26.9	0.0427	9.68
250 x 175	44.1	1.15	6122	985	10.4	4.19	502	113	558	173	0.884	20.5	0.134	23.2
250 x 250	64.4	1.45	8787	2939	10.3	5.98	720	233	805	358	0.829	19.0	0.399	39.5
	66.5	1.45	9931	3348	10.8	6.29	801	269	883	408	0.850	17.9	0.462	46.7
	72.4	1.45	10833	3649	10.8	6.29	867	292	960	444	0.848	16.7	0.508	58.7
	82.2	1.46	11484	3877	10.5	6.09	919	304	1039	468	0.827	15.4	0.540	79.0
300 x 150	32	1.16	6318	442	12.4	3.29	424	59.4	475	91.8	0.880	35.6	0.0930	8.65
	36.7	1.16	7210	508	12.4	3.29	481	67.7	542	105	0.876	32.0	0.107	12.4
300 x 200	56.8	1.34	11339	1604	12.5	4.71	771	160	859	247	0.883	22.7	0.319	35.8
	65.4	1.35	13312	1900	12.6	4.77	893	189	1000	291	0.884	20.1	0.383	53.4
300 x 300	84.5	1.74	16865	5517	12.5	7.16	1147	365	1277	560	0.831	21.1	1.10	61.4
	87	1.74	18850	6242	13.0	7.51	1265	418	1389	634	0.850	20.0	1.26	71.3
	94	1.75	20411	6756	13.1	7.51	1361	450	1501	684	0.848	18.8	1.37	88.1
	106	1.76	21536	7106	12.6	7.26	1436	466	1614	716	0.829	17.4	1.44	116
	106	1.76	23381	7733	13.2	7.57	1538	514	1705	781	0.849	16.9	1.59	125
350 x 175	41.4	1.35	11095	792	14.5	3.88	641	91.0	716	140	0.882	37.5	0.225	13.6
	49.6	1.36	13559	985	14.7	3.95	775	113	868	174	0.884	31.8	0.283	23.0
350 x 250	69.2	1.62	18506	3093	14.5	5.92	1102	248	1215	380	0.881	25.8	0.812	44.6
	79.7	1.63	21678	3652	14.6	6.00	1275	292	1412	447	0.882	22.8	0.970	66.3
350 x 350	106	2.02	28192	9381	14.4	8.33	1668	535	1851	818	0.829	22.5	2.48	90.3
	115	2.03	33296	11246	15.1	8.78	1936	646	2122	980	0.849	20.4	3.02	121
	131	2.04	35332	11848	14.6	8.43	2054	669	2299	1027	0.828	18.7	3.19	164
	137	2.04	40296	13587	15.2	8.84	2303	776	2545	1179	0.849	17.5	3.72	199
	156	2.06	42798	14434	14.7	8.53	2446	809	2760	1244	0.827	16.1	3.95	270
	159	2.06	47591	16005	15.3	8.90	2674	909	2979	1382	0.848	15.4	4.46	305

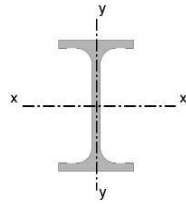
Wide Flange Beams



Metric Units

Designation		Area of Sect. A	Depth of Sect. D	Width of Sect. B	Thickness		Root Radius r	Depth between Filletts d	Ratios For Local Buckling		Dimensions for Detailing		
Size	Mass Per Metre				Flange T	Web t			Flange b/T	Web d/t	End Clearance C	Notch	
												N	n
mm	kg/m	cm²	mm	mm	mm	mm	mm	mm			mm	mm	mm
400 x 200	56.6	72.2	396	199	11	7	16	342	9.05	48.9	6	106	27
	66.0	84.1	400	200	13	8	16	342	7.69	42.8	6	106	29
400 x 300	94.3	120	386	299	14	9	22	314	10.68	34.9	7	155	36
	107	136	390	300	16	10	22	314	9.38	31.4	7	155	38
400 x 400	140	178	388	402	15	15	22	314	13.40	20.9	10	204	37
	147	187	394	398	18	11	22	314	11.06	28.5	8	204	40
	168	214	394	405	18	18	22	314	11.25	17.4	11	204	40
	172	219	400	400	21	13	22	314	9.52	24.2	9	204	43
	197	251	400	408	21	21	22	314	9.71	15.0	13	204	43
	200	255	406	403	24	16	22	314	8.40	19.6	10	204	46
	232	295	414	405	28	18	22	314	7.23	17.4	11	204	50
	283	361	428	407	35	20	22	314	5.81	15.7	12	204	57
	415	529	458	417	50	30	22	314	4.17	10.5	17	204	72
	605	770	498	432	70	45	22	314	3.09	7.0	25	204	92
450 x 200	66.2	84	446	199	12	8	18	386	8.29	48.3	6	106	30
	76.0	96.8	450	200	14	9	18	386	7.14	42.9	7	106	32
450 x 300	106	135	434	299	15	10	24	356	9.97	35.6	7	155	39
	124	157	440	300	18	11	24	356	8.33	32.4	8	155	42
500 x 200	79.5	101	496	199	14	9	20	428	7.11	47.6	7	105	34
	89.6	114	500	200	16	10	20	428	6.25	42.8	7	105	36
	103	131	506	201	19	11	20	428	5.29	38.9	8	105	39
500 x 300	114	146	482	300	15	11	26	400	10.00	36.4	8	155	41
	128	164	488	300	18	11	26	400	8.33	36.4	8	155	44
600 x 200	94.6	120	596	199	15	10	22	522	6.63	52.2	7	105	37
	106	134	600	200	17	11	22	522	5.88	47.5	8	105	39
	120	152	606	201	20	12	22	522	5.03	43.5	8	105	42
	134	171	612	202	23	13	22	522	4.39	40.2	9	105	45
600 x 300	137	174	582	300	17	12	28	492	8.82	41.0	8	154	45
	151	192	588	300	20	12	28	492	7.50	41.0	8	154	48
	175	222	594	302	23	14	28	492	6.57	35.1	9	154	51
700 x 300	166	211	692	300	20	13	28	596	7.50	45.8	9	154	48
	185	235	700	300	24	13	28	596	6.25	45.8	9	154	52
	215	274	708	302	28	15	28	596	5.39	39.7	10	154	56
800 x 300	191	243	792	300	22	14	28	692	6.82	49.4	9	153	50
	210	267	800	300	26	14	28	692	5.77	49.4	9	153	54
	241	308	808	302	30	16	28	692	5.03	43.3	10	153	58
900 x 300	213	271	890	299	23	15	28	788	6.50	52.5	10	152	51
	243	310	900	300	28	16	28	788	5.36	49.3	10	152	56
	286	364	912	302	34	18	28	788	4.44	43.8	11	152	62

Wide Flange Beams



Metric Units

Designation		Surface	Second		Radius		Elastic		Plastic		Buckling	Torsional	Warping	Torsional
Size	Mass Per Metre	Area per Metre	Moment of Area		of Gyration		Modulus		Modulus		Parameter	Index	Constant	Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁶	cm ⁴
400 x 200	56.6	1.55	20019	1448	16.7	4.48	1011	145	1128	224	0.884	35.6	0.536	27.1
	66	1.56	23705	1737	16.8	4.54	1185	174	1326	268	0.886	30.9	0.650	42.2
400 x 300	94.3	1.91	33680	6246	16.7	7.21	1745	418	1918	637	0.880	25.8	2.16	79.9
	107	1.92	38676	7210	16.9	7.28	1983	481	2188	733	0.881	23.2	2.52	114
400 x 400	140	2.32	48967	16260	16.6	9.55	2524	809	2802	1237	0.830	22.5	5.66	156
	147	2.32	56147	18925	17.3	10.1	2850	951	3118	1441	0.850	20.9	6.69	194
	168	2.33	59715	19957	16.7	9.65	3031	986	3390	1511	0.828	19.2	7.05	264
	172	2.34	66623	22415	17.5	10.1	3331	1121	3672	1700	0.850	18.2	8.05	303
	197	2.35	70890	23811	16.8	9.75	3545	1167	3992	1794	0.828	16.7	8.55	415
	200	2.35	78041	26202	17.5	10.1	3844	1300	4280	1977	0.846	16.1	9.56	462
	232	2.37	92773	31029	17.7	10.2	4482	1532	5026	2331	0.848	14.1	11.6	714
	283	2.41	119206	39364	18.2	10.4	5570	1934	6311	2941	0.854	11.6	15.2	1317
	415	2.49	187140	60526	18.8	10.7	8172	2903	9540	4436	0.853	8.5	25.2	3885
	605	2.60	297912	94364	19.7	11.1	11964	4369	14457	6724	0.852	6.4	43.2	11063
	66.2	1.64	28698	1581	18.5	4.33	1287	159	1450	247	0.878	36.5	0.74	38
450 x 200	76	1.65	33452	1872	18.6	4.40	1487	187	1679	291	0.879	32.2	0.890	56.9
	106	2.00	46797	6695	18.6	7.04	2157	448	2384	686	0.883	27.0	2.94	104.1
450 x 300	124	2.02	56072	8114	18.9	7.18	2549	541	2825	828	0.887	23.4	3.61	163.4
	79.5	1.74	41870	1846	20.3	4.27	1688	186	1914	290	0.876	35.2	1.07	60.8
500 x 200	89.6	1.75	47847	2142	20.5	4.33	1914	214	2175	335	0.877	31.6	1.25	85.9
	103	1.76	56517	2582	20.7	4.43	2234	257	2541	401	0.881	27.5	1.53	132
500 x 300	114	2.10	60371	6768	20.4	6.82	2505	451	2791	695	0.880	29.4	3.69	118
	128	2.11	70956	8118	20.8	7.05	2908	541	3228	830	0.889	25.9	4.48	172
600 x 200	94.6	1.93	68718	1982	23.9	4.06	2306	199	2651	315	0.864	39.7	1.67	82.4
	106	1.94	77634	2280	24.0	4.12	2588	228	2979	361	0.865	36.0	1.94	113
	120	1.95	90397	2723	24.3	4.23	2983	271	3432	429	0.870	31.7	2.34	167
	134	1.97	103489	3178	24.6	4.32	3382	315	3893	498	0.873	28.3	2.76	237
600 x 300	137	2.29	102715	7675	24.3	6.63	3530	512	3963	793	0.879	32.1	6.13	173
	151	2.30	118116	9025	24.8	6.85	4018	602	4489	928	0.888	28.8	7.28	241
	175	2.32	137326	10590	24.9	6.90	4624	701	5197	1085	0.887	25.5	8.63	356
700 x 300	166	2.51	172429	9030	28.6	6.53	4984	602	5629	936	0.878	34.3	10.2	260
	185	2.53	201495	10830	29.3	6.78	5757	722	6464	1116	0.889	30.0	12.4	383
	215	2.55	237147	12892	29.4	6.86	6699	854	7559	1323	0.889	26.3	14.9	588
800 x 300	191	2.71	253645	9936	32.3	6.39	6405	662	7288	1036	0.873	36.8	14.7	341
	210	2.72	291662	11736	33.0	6.62	7292	782	8243	1216	0.883	32.5	17.6	486
	241	2.74	339239	13818	33.2	6.70	8397	915	9534	1426	0.883	28.7	20.9	726
900 x 300	213	2.90	345320	10290	35.7	6.16	7760	688	8913	1085	0.865	40.2	19.3	403
	243	2.92	411272	12650	36.4	6.39	9139	843	10454	1324	0.873	34.5	24.0	633
	286	2.95	497791	15672	37.0	6.56	10916	1038	12501	1629	0.877	29.3	30.2	1050