

Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
333	127	x	6	1612.9	346	46.44	268.7	2.17	34.1	21.7	62.4	84.6	1910	18.7	21.1	22.3	25.9	28.3	32.0
	152	x		1736.1	346	49.99	289.2	2.70	39.6	23.3	77.8	91.1	2060	21.2	23.6	24.8	28.5	30.9	34.5
	152	x	8	2419.4	349	70.32	403.1	4.68	61.5	50.8	136.1	127.0	2320	25.0	27.4	28.6	32.3	34.7	38.3
	152	x	10	2903.2	352	85.18	483.9	5.62	73.7	87.8	164.8	152.4	2340	28.8	31.2	32.4	36.1	38.5	42.1
	178	x		3387.1	352	99.37	564.5	8.92	100.4	102.4	261.7	177.8	2740	32.6	35.0	36.2	39.9	42.3	45.9
	152	x	13	3871	358	115.71	645.7	7.49	98.3	208.1	223.8	203.4	2400	36.4	38.8	40.0	43.7	46.1	49.7
	178	x		4516.1	358	134.99	753.3	11.90	133.8	242.8	355.5	237.3	2800	41.5	43.9	45.1	48.7	51.1	54.8
	203	x		5161.3	358	154.27	860.9	17.76	174.8	277.5	530.6	271.2	3210	46.5	49.0	50.2	53.8	56.2	59.8
	152	x	19	5806.4	371	180.09	970.6	11.24	147.5	702.4	348.2	305.7	2560	51.6	54.0	55.2	58.9	61.3	64.9
	203	x	16	6451.6	365	196.45	1077.2	22.20	218.5	542.0	675.5	339.3	3300	56.7	59.1	60.3	63.9	66.3	69.9
	203	x	19	7741.9	371	240.12	1294.1	26.64	262.2	936.5	825.4	407.6	3420	66.8	69.2	70.4	74.0	76.5	80.1
	254	x		9677.4	371	300.14	1617.6	52.03	409.7	1170.7	1612.1	509.5	4280	82.0	84.4	85.6	89.2	91.7	95.3
	203	x	25	10323	384	332.04	1730.3	35.52	349.6	2219.9	1140.6	545.0	3720	87.1	89.5	90.7	94.3	96.7	100.3
	254	x		12903	384	415.05	2162.8	69.37	546.2	2774.9	2227.7	681.3	4650	107.3	109.7	110.9	114.6	117.0	120.6
	279	x		14194	384	456.55	2379.1	92.33	660.9	3052.4	2965.1	749.4	5110	117.5	119.9	121.1	124.7	127.1	130.7
	305	x		15484	384	498.06	2595.4	119.87	786.6	3329.9	3849.5	817.6	5580	127.6	130.0	131.2	134.8	137.2	140.9
	254	x	32	16129	397	537.82	2712.8	86.71	682.8	5419.7	2884.2	854.5	5110	132.6	135.1	136.3	139.9	142.3	145.9
	330	x	25	16774	384	539.56	2811.7	152.41	923.1	3607.3	4894.3	885.7	6040	137.7	140.1	141.3	145.0	147.4	151.0
	356	x		18064	384	581.07	3028.0	190.36	1070.6	3884.8	6112.8	953.8	6510	147.8	150.3	151.5	155.1	157.5	161.1
	305	x	32	19355	397	645.38	3255.4	149.84	983.2	6503.6	4983.9	1025.4	6130	158.0	160.4	161.6	165.2	167.6	171.2
	406	x	25	20645	384	664.08	3460.5	284.15	1398.4	4439.8	9124.7	1090.1	7440	168.1	170.5	171.7	175.3	177.8	181.4
	356	x	32	22581	397	752.94	3797.9	237.95	1338.3	7587.6	7914.2	1196.4	7160	183.3	185.7	186.9	190.5	192.9	196.6
	406	x		25806	397	860.51	4340.5	355.18	1748.0	8671.5	11813.7	1367.3	8180	208.6	211.0	212.2	215.9	218.3	221.9
	450	x		28575	397	952.82	4806.2	482.20	2143.1	9601.8	16038.4	1513.9	9060	230.3	232.8	234.0	237.6	240.0	243.6

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
333	80.2	121.8	143.5	210.0	249.1	306.5



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
440	127	x	6	1612.9	453	80.34	354.9	2.17	34.1	21.7	108.0	111.8	1900	20.6	23.8	25.4	30.2	33.4	38.2
	152	x		1736.1	453	86.48	382.0	2.70	39.6	23.3	134.7	120.3	2050	23.2	26.4	28.0	32.7	35.9	40.7
	152	x	8	2419.4	456	121.37	532.5	4.68	61.5	50.8	234.9	167.7	2290	27.0	30.2	31.8	36.5	39.7	44.5
	152	x	10	2903.2	459	146.69	639.1	5.62	73.7	87.8	283.9	201.3	2310	30.8	33.9	35.5	40.3	43.5	48.3
	178	x		3387.1	459	171.14	745.6	8.92	100.4	102.4	450.8	234.9	2700	34.6	37.7	39.3	44.1	47.3	52.1
	152	x	13	3871	465	198.38	852.5	7.49	98.3	208.1	383.9	268.5	2350	38.4	41.5	43.1	47.9	51.1	55.9
	178	x		4516.1	465	231.44	994.6	11.90	133.8	242.8	609.5	313.3	2740	43.4	46.6	48.2	53.0	56.2	61.0
	203	x		5161.3	465	264.50	1136.7	17.76	174.8	277.5	909.9	358.1	3130	48.5	51.7	53.3	58.1	61.2	66.0
	152	x	19	5806.4	478	306.07	1280.4	11.24	147.5	702.4	592.1	403.3	2440	53.5	56.7	58.3	63.1	66.3	71.1
	203	x	16	6451.6	472	335.33	1421.6	22.20	218.5	542.0	1153.4	447.8	3190	58.6	61.8	63.4	68.2	71.4	76.2
	203	x	19	7741.9	478	408.09	1707.1	26.64	262.2	936.5	1403.4	537.7	3260	68.7	71.9	73.5	78.3	81.5	86.3
	254	x		9677.4	478	510.11	2133.9	52.03	409.7	1170.7	2741.0	672.2	4070	83.9	87.1	88.7	93.5	96.7	101.5
	203	x	25	10323	491	559.51	2280.0	35.52	349.6	2219.9	1923.3	718.2	3430	89.0	92.2	93.8	98.6	101.8	106.5
	254	x		12903	491	699.39	2850.0	69.37	546.2	2774.9	3756.4	897.8	4290	109.3	112.4	114.0	118.8	122.0	126.8
	279	x		14194	491	769.33	3135.0	92.33	660.9	3052.4	4999.8	987.5	4710	119.4	122.6	124.2	129.0	132.1	136.9
	305	x		15484	491	839.27	3420.0	119.87	786.6	3329.9	6491.1	1077.3	5140	129.5	132.7	134.3	139.1	142.3	147.1
	254	x	32	16129	504	898.72	3569.9	86.71	682.8	5419.7	4824.6	1124.5	4560	134.6	137.8	139.4	144.2	147.3	152.1
	330	x	25	16774	491	909.21	3705.0	152.41	923.1	3607.3	8252.9	1167.1	5570	139.6	142.8	144.4	149.2	152.4	157.2
	356	x		18064	491	979.15	3990.0	190.36	1070.6	3884.8	10307.7	1256.9	6000	149.8	153.0	154.6	159.3	162.5	167.3
	305	x	32	19355	504	1078.47	4283.9	149.84	983.2	6503.6	8336.8	1349.4	5470	159.9	163.1	164.7	169.5	172.7	177.4
	406	x	25	20645	491	1119.03	4560.0	284.15	1398.4	4439.8	15386.4	1436.4	6860	170.0	173.2	174.8	179.6	182.8	187.6
	356	x	32	22581	504	1258.21	4997.9	237.95	1338.3	7587.6	13238.6	1574.3	6380	185.2	188.4	190.0	194.8	198.0	202.8
	406	x		25806	504	1437.96	5711.9	355.18	1748.0	8671.5	19761.4	1799.2	7290	210.5	213.7	215.3	220.1	223.3	228.1
	450	x		28575	504	1592.23	6324.6	482.20	2143.1	9601.8	26828.3	1992.3	8080	232.3	235.5	237.1	241.9	245.0	249.8

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
440	103.5	158.3	186.8	274.7	329.1	405.0



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
500	127	x	6	1612.9	513	103.39	403.3	2.17	34.1	21.7	139.0	127.0	1900	21.7	25.3	27.2	32.6	36.2	41.6
	152	x		1736.1	513	111.29	434.1	2.70	39.6	23.3	173.3	136.7	2040	24.2	27.9	29.7	35.1	38.7	44.2
	152	x	8	2419.4	516	156.06	605.0	4.68	61.5	50.8	302.0	190.6	2290	28.0	31.7	33.5	38.9	42.5	48.0
	152	x	10	2903.2	519	188.45	726.1	5.62	73.7	87.8	364.7	228.7	2300	31.8	35.5	37.3	42.7	46.3	51.8
	178	x		3387.1	519	219.86	847.2	8.92	100.4	102.4	579.1	266.9	2680	35.6	39.3	41.1	46.5	50.1	55.6
	152	x	13	3871	525	254.43	968.5	7.49	98.3	208.1	492.4	305.1	2330	39.4	43.1	44.9	50.3	53.9	59.4
	178	x		4516.1	525	296.84	1130.0	11.90	133.8	242.8	781.8	355.9	2720	44.5	48.1	50.0	55.4	59.0	64.4
	203	x		5161.3	525	339.24	1291.4	17.76	174.8	277.5	1167.1	406.8	3100	49.6	53.2	55.0	60.4	64.1	69.5
	152	x	19	5806.4	538	391.26	1454.2	11.24	147.5	702.4	756.9	458.1	2400	54.6	58.3	60.1	65.5	69.1	74.6
	203	x	16	6451.6	532	429.37	1614.9	22.20	218.5	542.0	1476.9	508.7	3150	59.7	63.3	65.1	70.6	74.2	79.6
	203	x	19	7741.9	538	521.68	1939.0	26.64	262.2	936.5	1794.2	610.8	3200	69.8	73.5	75.3	80.7	84.3	89.8
	254	x		9677.4	538	652.10	2423.7	52.03	409.7	1170.7	3504.3	763.5	4010	85.0	88.6	90.5	95.9	99.5	105.0
	203	x	25	10323	551	712.93	2588.7	35.52	349.6	2219.9	2451.2	815.4	3340	90.1	93.7	95.5	101.0	104.6	110.0
	254	x		12903	551	891.16	3235.9	69.37	546.2	2774.9	4787.4	1019.3	4180	110.3	114.0	115.8	121.2	124.8	130.3
	279	x		14194	551	980.28	3559.5	92.33	660.9	3052.4	6372.1	1121.2	4590	120.5	124.1	125.9	131.3	135.0	140.4
	305	x		15484	551	1069.39	3883.1	119.87	786.6	3329.9	8272.7	1223.2	5010	130.6	134.2	136.0	141.5	145.1	150.5
	254	x	32	16129	564	1141.51	4051.5	86.71	682.8	5419.7	6129.8	1276.2	4390	135.7	139.3	141.1	146.5	150.2	155.6
	330	x	25	16774	551	1158.51	4206.6	152.41	923.1	3607.3	10518.0	1325.1	5430	140.7	144.4	146.2	151.6	155.2	160.7
	356	x		18064	551	1247.62	4530.2	190.36	1070.6	3884.8	13136.7	1427.0	5850	150.9	154.5	156.3	161.7	165.4	170.8
	305	x	32	19355	564	1369.81	4861.8	149.84	983.2	6503.6	10592.4	1531.5	5270	161.0	164.6	166.4	171.9	175.5	180.9
	406	x	25	20645	551	1425.86	5177.4	284.15	1398.4	4439.8	19609.4	1630.9	6680	171.1	174.7	176.6	182.0	185.6	191.1
	356	x	32	22581	564	1598.11	5672.1	237.95	1338.3	7587.6	16820.3	1786.7	6140	186.3	189.9	191.8	197.2	200.8	206.2
	406	x		25806	564	1826.41	6482.4	355.18	1748.0	8671.5	25107.8	2041.9	7020	211.6	215.3	217.1	222.5	226.1	231.6
	450	x		28575	564	2022.35	7177.8	482.20	2143.1	9601.8	34086.7	2261.0	7780	233.4	237.0	238.8	244.2	247.9	253.3

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
500	116.4	178.7	211.0	311.0	374.0	460.2



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
610	127	x	6	1612.9	622	152.99	491.7	2.17	34.1	21.7	205.6	154.9	1890	23.7	28.1	30.3	37.0	41.4	48.0
	152	x		1736.1	622	164.67	529.2	2.70	39.6	23.3	256.4	166.7	2040	26.2	30.7	32.9	39.5	43.9	50.5
	152	x	8	2419.4	625	230.67	737.6	4.68	61.5	50.8	446.4	232.3	2280	30.0	34.5	36.7	43.3	47.7	54.3
	152	x	10	2903.2	629	278.23	885.2	5.62	73.7	87.8	538.5	278.8	2290	33.8	38.3	40.5	47.1	51.5	58.1
	178	x		3387.1	629	324.61	1032.7	8.92	100.4	102.4	855.1	325.3	2670	37.6	42.0	44.3	50.9	55.3	61.9
	152	x	13	3871	635	374.82	1180.5	7.49	98.3	208.1	725.3	371.9	2310	41.4	45.8	48.1	54.7	59.1	65.7
	178	x		4516.1	635	437.29	1377.3	11.90	133.8	242.8	1151.8	433.8	2690	46.5	50.9	53.1	59.8	64.2	70.8
	203	x		5161.3	635	499.76	1574.0	17.76	174.8	277.5	1719.3	495.8	3080	51.6	56.0	58.2	64.8	69.2	75.9
	152	x	19	5806.4	648	573.85	1772.0	11.24	147.5	702.4	1110.3	558.2	2360	56.6	61.0	63.3	69.9	74.3	80.9
	203	x	16	6451.6	641	631.13	1968.1	22.20	218.5	542.0	2171.2	620.0	3110	61.7	66.1	68.3	74.9	79.4	86.0
	203	x	19	7741.9	648	765.14	2362.6	26.64	262.2	936.5	2631.9	744.2	3150	71.8	76.2	78.5	85.1	89.5	96.1
	254	x		9677.4	648	956.42	2953.3	52.03	409.7	1170.7	5140.5	930.3	3930	87.0	91.4	93.6	100.3	104.7	111.3
	203	x	25	10323	660	1041.13	3153.0	35.52	349.6	2219.9	3580.5	993.2	3240	92.1	96.5	98.7	105.3	109.8	116.4
	254	x		12903	660	1301.42	3941.3	69.37	546.2	2774.9	6993.1	1241.5	4050	112.3	116.8	119.0	125.6	130.0	136.6
	279	x		14194	660	1431.56	4335.4	92.33	660.9	3052.4	9307.8	1365.7	4460	122.5	126.9	129.1	135.7	140.1	146.8
	305	x		15484	660	1561.70	4729.6	119.87	786.6	3329.9	12084.1	1489.8	4860	132.6	137.0	139.2	145.8	150.3	156.9
	254	x	32	16129	673	1659.94	4932.2	86.71	682.8	5419.7	8917.1	1553.7	4190	137.7	142.1	144.3	150.9	155.3	162.0
	330	x	25	16774	660	1691.84	5123.7	152.41	923.1	3607.3	15363.9	1614.0	5270	142.7	147.1	149.4	156.0	160.4	167.0
	356	x		18064	660	1821.98	5517.8	190.36	1070.6	3884.8	19189.1	1738.1	5670	152.8	157.3	159.5	166.1	170.5	177.1
	305	x	32	19355	673	1991.93	5918.7	149.84	983.2	6503.6	15408.8	1864.4	5030	163.0	167.4	169.6	176.2	180.7	187.3
	406	x	25	20645	660	2082.27	6306.1	284.15	1398.4	4439.8	28643.8	1986.4	6480	173.1	177.5	179.7	186.4	190.8	197.4
	356	x	32	22581	673	2323.92	6905.1	237.95	1338.3	7587.6	24468.5	2175.1	5870	188.3	192.7	194.9	201.6	206.0	212.6
	406	x		25806	673	2655.90	7891.6	355.18	1748.0	8671.5	36524.5	2485.8	6710	213.6	218.0	220.3	226.9	231.3	237.9
	450	x		28575	673	2940.84	8738.2	482.20	2143.1	9601.8	49586.1	2752.5	7440	235.4	239.8	242.0	248.6	253.0	259.7

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
610	139.9	215.8	255.0	377.0	456.0	561.1



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
750	127	x	6	1612.9	763	230.68	604.9	2.17	34.1	21.7	310.0	190.5	1890	26.2	31.7	34.4	42.6	48.0	56.1
	152	x		1736.1	763	248.30	651.1	2.70	39.6	23.3	386.6	205.1	2030	28.8	34.2	36.9	45.1	50.5	58.7
	152	x	8	2419.4	766	347.47	907.4	4.68	61.5	50.8	672.5	285.8	2270	32.6	38.0	40.7	48.9	54.3	62.5
	152	x	10	2903.2	769	418.72	1088.9	5.62	73.7	87.8	810.4	343.0	2280	36.4	41.8	44.5	52.7	58.1	66.3
	178	x		3387.1	769	488.51	1270.4	8.92	100.4	102.4	1286.9	400.2	2660	40.2	45.6	48.3	56.5	61.9	70.1
	152	x	13	3871	775	563.00	1452.1	7.49	98.3	208.1	1089.6	457.4	2290	44.0	49.4	52.1	60.3	65.7	73.9
	178	x		4516.1	775	656.83	1694.2	11.90	133.8	242.8	1730.2	533.7	2670	49.0	54.5	57.2	65.3	70.8	78.9
	203	x		5161.3	775	750.66	1936.2	17.76	174.8	277.5	2582.7	609.9	3060	54.1	59.5	62.3	70.4	75.8	84.0
	152	x	19	5806.4	788	858.71	2179.2	11.24	147.5	702.4	1661.7	686.4	2330	59.2	64.6	67.3	75.5	80.9	89.1
	203	x	16	6451.6	782	946.21	2420.7	22.20	218.5	542.0	3255.3	762.5	3080	64.2	69.7	72.4	80.5	86.0	94.1
	203	x	19	7741.9	788	1144.95	2905.6	26.64	262.2	936.5	3938.8	915.3	3100	74.4	79.8	82.5	90.7	96.1	104.3
	254	x		9677.4	788	1431.19	3632.0	52.03	409.7	1170.7	7693.0	1144.1	3880	89.6	95.0	97.7	105.9	111.3	119.4
	203	x	25	10323	801	1552.15	3876.5	35.52	349.6	2219.9	5338.8	1221.1	3170	94.6	100.1	102.8	110.9	116.4	124.5
	254	x		12903	801	1940.19	4845.6	69.37	546.2	2774.9	10427.4	1526.4	3960	114.9	120.3	123.0	131.2	136.6	144.8
	279	x		14194	801	2134.21	5330.2	92.33	660.9	3052.4	13878.8	1679.0	4360	125.0	130.4	133.2	141.3	146.8	154.9
	305	x		15484	801	2328.23	5814.8	119.87	786.6	3329.9	18018.5	1831.6	4750	135.1	140.6	143.3	151.4	156.9	165.0
	254	x	32	16129	814	2465.60	6061.7	86.71	682.8	5419.7	13248.6	1909.4	4060	140.2	145.6	148.4	156.5	161.9	170.1
	330	x	25	16774	801	2522.25	6299.3	152.41	923.1	3607.3	22909.0	1984.3	5150	145.3	150.7	153.4	161.6	167.0	175.2
	356	x		18064	801	2716.27	6783.9	190.36	1070.6	3884.8	28612.7	2136.9	5550	155.4	160.8	163.6	171.7	177.1	185.3
	305	x	32	19355	814	2958.72	7274.0	149.84	983.2	6503.6	22893.6	2291.3	4870	165.5	171.0	173.7	181.8	187.3	195.4
	406	x	25	20645	801	3104.30	7753.0	284.15	1398.4	4439.8	42710.6	2442.2	6340	175.6	181.1	183.8	192.0	197.4	205.5
	356	x	32	22581	814	3451.83	8486.4	237.95	1338.3	7587.6	36354.1	2673.2	5680	190.8	196.3	199.0	207.2	212.6	220.7
	406	x		25806	814	3944.95	9698.7	355.18	1748.0	8671.5	54266.2	3055.1	6500	216.2	221.6	224.3	232.5	237.9	246.1
	450	x		28575	814	4368.18	10739.2	482.20	2143.1	9601.8	73672.6	3382.9	7190	237.9	243.3	246.1	254.2	259.6	267.8

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
750	169.9	263.2	311.3	461.5	561.0	690.3



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion	Warping	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
900	127	x	6	1612.9	913	331.24	725.9	2.17	34.1	21.7	445.2	228.6	1880	29.0	35.5	38.8	48.5	55.1	64.8
	152	x		1736.1	913	356.54	781.3	2.70	39.6	23.3	555.2	246.1	2030	31.5	38.0	41.3	51.1	57.6	67.4
	152	x	8	2419.4	916	498.61	1088.8	4.68	61.5	50.8	965.0	343.0	2270	35.3	41.8	45.1	54.9	61.4	71.2
	152	x	10	2903.2	919	600.43	1306.6	5.62	73.7	87.8	1162.1	411.6	2270	39.1	45.6	48.9	58.7	65.2	75.0
	178	x		3387.1	919	700.51	1524.4	8.92	100.4	102.4	1845.3	480.2	2650	42.9	49.4	52.7	62.5	69.0	78.8
	152	x	13	3871	925	806.20	1742.4	7.49	98.3	208.1	1560.3	548.9	2280	46.7	53.2	56.5	66.3	72.8	82.6
	178	x		4516.1	925	940.57	2032.8	11.90	133.8	242.8	2477.7	640.3	2660	51.8	58.3	61.5	71.3	77.9	87.6
	203	x		5161.3	925	1074.93	2323.2	17.76	174.8	277.5	3698.4	731.8	3040	56.8	63.3	66.6	76.4	82.9	92.7
	152	x	19	5806.4	938	1226.28	2614.4	11.24	147.5	702.4	2373.1	823.5	2310	61.9	68.4	71.7	81.5	88.0	97.8
	203	x	16	6451.6	932	1353.08	2904.4	22.20	218.5	542.0	4655.3	914.9	3060	66.9	73.5	76.7	86.5	93.0	102.8
	203	x	19	7741.9	938	1635.04	3485.9	26.64	262.2	936.5	5625.1	1098.0	3080	77.1	83.6	86.9	96.6	103.2	112.9
	254	x		9677.4	938	2043.80	4357.3	52.03	409.7	1170.7	10986.6	1372.6	3850	92.3	98.8	102.1	111.8	118.4	128.1
	203	x	25	10323	951	2210.53	4649.8	35.52	349.6	2219.9	7604.2	1464.7	3120	97.3	103.9	107.1	116.9	123.4	133.2
	254	x		12903	951	2763.16	5812.3	69.37	546.2	2774.9	14851.9	1830.9	3910	117.6	124.1	127.4	137.2	143.7	153.5
	279	x		14194	951	3039.47	6393.5	92.33	660.9	3052.4	19767.9	2014.0	4300	127.7	134.2	137.5	147.3	153.8	163.6
	305	x		15484	951	3315.79	6974.7	119.87	786.6	3329.9	25664.1	2197.0	4690	137.8	144.4	147.6	157.4	163.9	173.7
	254	x	32	16129	964	3501.99	7269.3	86.71	682.8	5419.7	18820.6	2289.8	3980	142.9	149.4	152.7	162.5	169.0	178.8
	330	x	25	16774	951	3592.10	7556.0	152.41	923.1	3607.3	32629.7	2380.1	5080	148.0	154.5	157.8	167.6	174.1	183.9
	356	x		18064	951	3868.42	8137.2	190.36	1070.6	3884.8	40753.7	2563.2	5470	158.1	164.6	167.9	177.7	184.2	194.0
	305	x	32	19355	964	4202.38	8723.2	149.84	983.2	6503.6	32521.9	2747.8	4770	168.2	174.8	178.0	187.8	194.3	204.1
	406	x	25	20645	951	4421.05	9299.6	284.15	1398.4	4439.8	60833.5	2929.4	6250	178.4	184.9	188.2	197.9	204.5	214.2
	356	x	32	22581	964	4902.78	10177.0	237.95	1338.3	7587.6	51643.6	3205.8	5570	193.6	200.1	203.4	213.1	219.7	229.4
	406	x		25806	964	5603.18	11630.9	355.18	1748.0	8671.5	77089.0	3663.7	6360	218.9	225.4	228.7	238.5	245.0	254.8
	450	x		28575	964	6204.30	12878.7	482.20	2143.1	9601.8	104657.1	4056.8	7050	240.6	247.1	250.4	260.2	266.7	276.5

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
900	201.7	313.7	371.3	551.7	673.2	828.4



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
1000	127	x	6	1612.9	1013	408.37	806.5	2.17	34.1	21.7	548.9	254.0	1880	30.8	38.0	41.7	52.5	59.8	70.6
	152	x		1736.1	1013	439.56	868.1	2.70	39.6	23.3	684.5	273.4	2030	33.3	40.6	44.2	55.1	62.3	73.2
	152	x	8	2419.4	1016	614.49	1209.8	4.68	61.5	50.8	1189.3	381.1	2260	37.1	44.4	48.0	58.9	66.1	77.0
	152	x	10	2903.2	1019	739.72	1451.8	5.62	73.7	87.8	1431.7	457.3	2270	40.9	48.2	51.8	62.7	69.9	80.8
	178	x		3387.1	1019	863.01	1693.7	8.92	100.4	102.4	2273.4	533.5	2650	44.7	51.9	55.6	66.4	73.7	84.6
	152	x	13	3871	1025	992.53	1935.9	7.49	98.3	208.1	1920.9	609.8	2280	48.5	55.7	59.4	70.2	77.5	88.4
	178	x		4516.1	1025	1157.95	2258.5	11.90	133.8	242.8	3050.3	711.4	2660	53.6	60.8	64.4	75.3	82.6	93.4
	203	x		5161.3	1025	1323.37	2581.2	17.76	174.8	277.5	4553.3	813.1	3040	58.6	65.9	69.5	80.4	87.6	98.5
	152	x	19	5806.4	1038	1507.62	2904.6	11.24	147.5	702.4	2917.6	914.9	2300	63.7	70.9	74.6	85.4	92.7	103.6
	203	x	16	6451.6	1032	1664.65	3226.9	22.20	218.5	542.0	5727.4	1016.5	3050	68.8	76.0	79.6	90.5	97.8	108.6
	203	x	19	7741.9	1038	2010.16	3872.8	26.64	262.2	936.5	6915.9	1219.9	3070	78.9	86.1	89.8	100.6	107.9	118.7
	254	x		9677.4	1038	2512.70	4841.0	52.03	409.7	1170.7	13507.5	1524.9	3830	94.1	101.3	105.0	115.8	123.1	133.9
	203	x	25	10323	1051	2713.96	5165.5	35.52	349.6	2219.9	9336.4	1627.1	3100	99.1	106.4	110.0	120.9	128.1	139.0
	254	x		12903	1051	3392.45	6456.9	69.37	546.2	2774.9	18235.2	2033.9	3880	119.4	126.7	130.3	141.2	148.4	159.3
	279	x		14194	1051	3731.69	7102.6	92.33	660.9	3052.4	24271.0	2237.3	4270	129.5	136.8	140.4	151.3	158.5	169.4
	305	x		15484	1051	4070.93	7748.3	119.87	786.6	3329.9	31510.4	2440.7	4660	139.7	146.9	150.5	161.4	168.7	179.5
	254	x	32	16129	1064	4293.72	8074.7	86.71	682.8	5419.7	23077.2	2543.5	3940	144.7	152.0	155.6	166.5	173.7	184.6
	330	x	25	16774	1051	4410.18	8393.9	152.41	923.1	3607.3	40062.7	2644.1	5050	149.8	157.0	160.7	171.5	178.8	189.6
	356	x		18064	1051	4749.42	9039.6	190.36	1070.6	3884.8	50037.4	2847.5	5440	159.9	167.2	170.8	181.7	188.9	199.8
	305	x	32	19355	1064	5152.46	9689.6	149.84	983.2	6503.6	39877.4	3052.2	4730	170.0	177.3	180.9	191.8	199.0	209.9
	406	x	25	20645	1051	5427.91	10331.0	284.15	1398.4	4439.8	74691.3	3254.3	6210	180.2	187.4	191.1	201.9	209.2	220.0
	356	x	32	22581	1064	6011.20	11304.6	237.95	1338.3	7587.6	63323.8	3560.9	5520	195.4	202.6	206.3	217.1	224.4	235.2
	406	x		25806	1064	6869.95	12919.5	355.18	1748.0	8671.5	94524.1	4069.6	6310	220.7	227.9	231.6	242.4	249.7	260.6
	450	x		28575	1064	7606.98	14305.6	482.20	2143.1	9601.8	128327.3	4506.3	6980	242.4	249.7	253.3	264.2	271.4	282.3

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
1000	222.9	347.3	411.2	611.8	748.0	920.4



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
1219	127	x	6	1612.9	1232	605.64	983.3	2.17	34.1	21.7	814.0	309.7	1880	34.7	43.6	48.0	61.3	70.1	83.3
	152	x		1736.1	1232	651.90	1058.4	2.70	39.6	23.3	1015.1	333.4	2020	37.3	46.1	50.5	63.8	72.6	85.9
	152	x	8	2419.4	1235	910.82	1474.9	4.68	61.5	50.8	1762.8	464.6	2260	41.1	49.9	54.3	67.6	76.4	89.7
	152	x	10	2903.2	1238	1095.82	1769.9	5.62	73.7	87.8	2120.9	557.5	2260	44.9	53.7	58.1	71.4	80.2	93.5
	178	x		3387.1	1238	1278.45	2064.9	8.92	100.4	102.4	3367.9	650.5	2640	48.7	57.5	61.9	75.2	84.0	97.3
	152	x	13	3871	1245	1468.67	2360.1	7.49	98.3	208.1	2842.5	743.4	2270	52.5	61.3	65.7	79.0	87.8	101.1
	178	x		4516.1	1245	1713.45	2753.4	11.90	133.8	242.8	4513.8	867.3	2650	57.5	66.4	70.8	84.0	92.9	106.1
	203	x		5161.3	1245	1958.23	3146.8	17.76	174.8	277.5	6737.7	991.2	3030	62.6	71.4	75.9	89.1	98.0	111.2
	152	x	19	5806.4	1257	2225.88	3540.7	11.24	147.5	702.4	4307.8	1115.3	2290	67.7	76.5	80.9	94.2	103.0	116.3
	203	x	16	6451.6	1251	2460.47	3933.8	22.20	218.5	542.0	8465.6	1239.1	3040	72.7	81.6	86.0	99.2	108.1	121.3
	203	x	19	7741.9	1257	2967.83	4721.0	26.64	262.2	936.5	10211.1	1487.1	3050	82.9	91.7	96.1	109.4	118.2	131.5
	254	x		9677.4	1257	3709.79	5901.2	52.03	409.7	1170.7	19943.5	1858.9	3810	98.0	106.9	111.3	124.6	133.4	146.6
	203	x	25	10323	1270	3998.04	6296.1	35.52	349.6	2219.9	13754.8	1983.3	3080	103.1	112.0	116.4	129.6	138.5	151.7
	254	x		12903	1270	4997.55	7870.2	69.37	546.2	2774.9	26864.8	2479.1	3850	123.4	132.2	136.6	149.9	158.7	172.0
	279	x		14194	1270	5497.31	8657.2	92.33	660.9	3052.4	35757.0	2727.0	4230	133.5	142.3	146.8	160.0	168.9	182.1
	305	x		15484	1270	5997.06	9444.2	119.87	786.6	3329.9	46422.3	2974.9	4620	143.6	152.5	156.9	170.1	179.0	192.2
	254	x	32	16129	1283	6311.33	9840.7	86.71	682.8	5419.7	33924.5	3099.8	3890	148.7	157.5	162.0	175.2	184.0	197.3
	330	x	25	16774	1270	6496.82	10231.2	152.41	923.1	3607.3	59021.9	3222.8	5000	153.8	162.6	167.0	180.3	189.1	202.4
	356	x		18064	1270	6996.57	11018.2	190.36	1070.6	3884.8	73716.9	3470.7	5390	163.9	172.7	177.2	190.4	199.2	212.5
	305	x	32	19355	1283	7573.59	11808.8	149.84	983.2	6503.6	58621.5	3719.8	4670	174.0	182.9	187.3	200.5	209.4	222.6
	406	x	25	20645	1270	7996.08	12592.3	284.15	1398.4	4439.8	110038.1	3966.6	6160	184.1	193.0	197.4	210.7	219.5	232.7
	356	x	32	22581	1283	8835.86	13777.0	237.95	1338.3	7587.6	93088.8	4339.7	5440	199.3	208.2	212.6	225.9	234.7	247.9
	406	x		25806	1283	10098.12	15745.1	355.18	1748.0	8671.5	138954.8	4959.7	6220	224.7	233.5	237.9	251.2	260.0	273.3
	450	x		28575	1283	11181.48	17434.3	482.20	2143.1	9601.8	188647.0	5491.8	6890	246.4	255.2	259.7	272.9	281.7	295.0

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
1219	269.1	420.9	498.7	743.4	911.2	1110.6



Table 3.2a
(metric)



SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange Thickness		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m	
	Width b_f (mm)	t_f (mm)			Strong Axis		Weak Axis		Torsion J	Warping C_w	M_r kN m	L_u mm							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u
1500	127	x	6	1612.9	1513	914.96	1209.7	2.17	34.1	21.7	1229.8	381.1	1880	39.8	50.7	56.2	72.5	83.3	99.6
	152	x		1736.1	1513	984.84	1302.1	2.70	39.6	23.3	1533.6	410.2	2020	42.4	53.2	58.7	75.0	85.9	102.2
	152	x	8	2419.4	1516	1375.34	1814.6	4.68	61.5	50.8	2661.9	571.6	2260	46.2	57.0	62.5	78.8	89.7	105.9
	152	x	10	2903.2	1519	1653.89	2177.5	5.62	73.7	87.8	3201.0	685.9	2260	50.0	60.8	66.3	82.6	93.5	109.7
	178	x		3387.1	1519	1929.54	2540.5	8.92	100.4	102.4	5083.1	800.2	2640	53.8	64.6	70.1	86.4	97.3	113.5
	152	x	13	3871	1525	2214.49	2903.5	7.49	98.3	208.1	4286.0	914.6	2260	57.6	68.4	73.9	90.2	101.1	117.3
	178	x		4516.1	1525	2583.58	3387.4	11.90	133.8	242.8	6806.0	1067.0	2640	62.6	73.5	78.9	95.2	106.1	122.4
	203	x		5161.3	1525	2952.66	3871.3	17.76	174.8	277.5	10159.4	1219.5	3020	67.7	78.6	84.0	100.3	111.2	127.5
	152	x	19	5806.4	1538	3349.78	4355.7	11.24	147.5	702.4	6483.1	1372.1	2280	72.7	83.6	89.1	105.4	116.2	132.5
	203	x	16	6451.6	1532	3706.38	4839.4	22.20	218.5	542.0	12752.6	1524.4	3030	77.8	88.7	94.1	110.4	121.3	137.6
	203	x	19	7741.9	1538	4466.38	5807.7	26.64	262.2	936.5	15367.4	1829.4	3040	87.9	98.8	104.3	120.6	131.4	147.7
	254	x		9677.4	1538	5582.97	7259.6	52.03	409.7	1170.7	30014.4	2286.8	3800	103.1	114.0	119.5	135.8	146.6	162.9
	203	x	25	10323	1551	6005.30	7744.8	35.52	349.6	2219.9	20661.5	2439.6	3060	108.2	119.1	124.5	140.8	151.7	168.0
	254	x		12903	1551	7506.63	9681.0	69.37	546.2	2774.9	40354.4	3049.5	3820	128.5	139.3	144.8	161.1	172.0	188.2
	279	x		14194	1551	8257.29	10649.1	92.33	660.9	3052.4	53711.7	3354.5	4200	138.6	149.5	154.9	171.2	182.1	198.4
	305	x		15484	1551	9007.96	11617.2	119.87	786.6	3329.9	69732.4	3659.4	4590	148.7	159.6	165.0	181.3	192.2	208.5
	254	x	32	16129	1564	9462.05	12103.7	86.71	682.8	5419.7	50863.9	3812.7	3850	153.8	164.7	170.1	186.4	197.3	213.6
	330	x	25	16774	1551	9758.62	12585.3	152.41	923.1	3607.3	88658.7	3964.4	4970	158.8	169.7	175.2	191.5	202.3	218.6
	356	x		18064	1551	10509.28	13553.4	190.36	1070.6	3884.8	110732.5	4269.3	5350	169.0	179.8	185.3	201.6	212.5	228.8
	305	x	32	19355	1564	11354.46	14524.4	149.84	983.2	6503.6	87892.8	4575.2	4620	179.1	190.0	195.4	211.7	222.6	238.9
	406	x	25	20645	1551	12010.61	15489.6	284.15	1398.4	4439.8	165291.7	4879.2	6120	189.2	200.1	205.6	221.9	232.7	249.0
	356	x	32	22581	1564	13246.88	16945.2	237.95	1338.3	7587.6	139570.5	5337.7	5390	204.4	215.3	220.8	237.0	247.9	264.2
	406	x		25806	1564	15139.29	19365.9	355.18	1748.0	8671.5	208338.4	6100.3	6160	229.7	240.6	246.1	262.4	273.2	289.5
	450	x		28575	1564	16763.48	21443.5	482.20	2143.1	9601.8	282843.2	6754.7	6820	251.5	262.4	267.8	284.1	295.0	311.3

Factored Shear Resistance V_r (kN)						
Depth	WTA	WTB	WTC	WTF	WTH	WTK
aa	cc	dd	ee	ff	gg	hh
1500	290.1	433.2	577.8	749.5	858.8	1016.5





SIN Beam Bending Properties

Metric

Depth of Web h_w (mm)	Flange		Area (mm ²)	Overall Depth d (mm)	Section Properties						Moment Resistance		WTA kg / m	WTB kg / m	WTC kg / m	WTF kg / m	WTH kg / m	WTK kg / m
	Width b_f (mm)	Thickness t_f (mm)			Strong Axis		Weak Axis		Torsion	Warping	M_r kN m	L_u mm						
a	b	c	d	e	I_x 10 ⁶ mm ⁴	S_x 10 ³ mm ³	I_y 10 ⁶ mm ⁴	S_y 10 ³ mm ³	J 10 ³ mm ⁴	C_w 10 ⁹ mm ⁶	m	n	p	q	r	s	t	u

Notes

- SIN Beam sizes are indicated as WT[WEB THICKNESS] [WEB DEPTH] / [FLANGE WIDTH] x [FLANGE THICKNESS] - [WEIGHT]
i.e. For a 914mm x 2.5mm web with 254mm x 16mm Flanges and a Weight of 86.5 kg/m the designation is WTB915 / 254x16 - 86.5
- Flanges and Webs are all fabricated from W350 Material (Fy = 350MPa)
- Flanges of over 16mm in thickness will include a premium due to the required splicing of the flat bar
- ** 152x6 Section Properties and Moment resistance based on a flange width of 136mm to be Class 3

- a Depth of the Beam web, i.e. Inside of flanges
- b Width of top and bottom flange
- d Thickness of top and bottom flange
- e Cross sectional area of flanges only (web is neglected)
- f Overall depth of section
- g Strong Axis Moment of Inertia computed using flange properties only
- h Strong Axis Section Modulus computed using flange properties only
- i Weak Axis Moment of Inertia computed using flange properties only
- j Weak Axis Section Modulus computed using flange properties only
- k Torsional Constant J computed using flange properties only
- l Warping Constant C_w - computed using flange properties only
- m Strong Axis Factored Moment Resistance assuming compression flange is fully braced based on CSA S16-09
- n Maximum unbraced length for which M_r is applicable
- o - u Mass of member per unit length with a web thickness of 16ga (1.519mm); 14ga (1.897mm); 12ga; 11ga; 8ga; 6ga; 3ga
- aa Depth of Beam web
- bb - hh Shear Capacity for a 16 ga (1.519mm); 14ga; 12ga; 11ga; 8ga; 6ga; 3ga web

