Table F7s.bend.1

F7

Seasoned

$$(\phi M_x) = \phi k_1 k_4 k_6 k_9 [M_{Tx}]$$
$$(\phi M_y) = \phi k_1 k_4 k_6 k_9 [M_{Ty}]$$
$$(\phi V) = \phi k_1 k_4 k_6 [V_T]$$

GENERAL INFORMATION

Size	Area	major axis		minor axis		major axis			minor axis	shear
		$EI_{average}$	$EI_{5\%}$	$EI_{average}$	$EI_{5\%}$	$[M_{Tx}]$ (k_{12}=1)	L_{ay} (FLR)	$L_{a\phi}$ (FTR)	$[M_{Ty}]$	$[V_T]$
	(mm^2)	($10^9 Nmm^2$)	($10^9 Nmm^2$)	($10^9 Nmm^2$)	($10^9 Nmm^2$)	(kNm)	(m)	(m)	(kNm)	(kN)
70x35	2450	7.90	3.95	1.98	.988	0.572	1.35	any	0.286	3.43
90x35	3150	16.8	8.40	2.54	1.27	0.945	1.05	any	0.368	4.41
120x35	4200	39.8	19.9	3.39	1.69	1.68	0.789	any	0.490	5.88
140x35	4900	63.2	31.6	3.95	1.98	2.29	0.676	any	0.572	6.86
190x35	6650	158.	79.0	5.36	2.68	4.21	0.498	1.55	0.776	9.31
240x35	8400	319.	159.	6.77	3.39	6.72	0.394	1.09	0.980	11.8
290x35	10150	562.	281.	8.19	4.09	9.81	0.326	0.97	1.18	14.2
70x45	3150	10.2	5.08	4.20	2.10	0.735	2.24	any	0.473	4.41
90x45	4050	21.6	10.8	5.40	2.70	1.22	1.74	any	0.608	5.67
120x45	5400	51.2	25.6	7.20	3.60	2.16	1.3	any	0.810	7.56
140x45	6300	81.3	40.6	8.40	4.20	2.94	1.12	any	0.945	8.82
190x45	8550	203.	102.	11.4	5.70	5.42	0.824	any	1.28	12.0
240x45	10800	410.	205.	14.4	7.20	8.64	0.652	2.09	1.62	15.1
290x45	13050	723.	361.	17.4	8.70	12.6	0.54	1.49	1.96	18.3
70x70	4900	15.8	7.90	15.8	7.90	1.14	5.41	any	1.14	6.86
90x90	8100	43.2	21.6	43.2	21.6	2.43	6.96	any	2.43	11.3

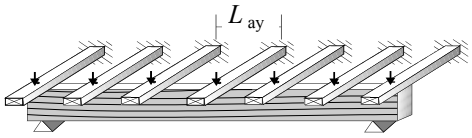
Notes:

1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together ($k_9 > 1$)
   90 mm wide sections are made by nailing two 45 mm sections together ($k_9 > 1$)

BENDING
comp edge

Table F7s.bend.2

F7
Seasoned



MAJOR AXIS BENDING
LATERAL RESTRAINT ON COMPRESSION EDGE AT L_{ay}

$$(\phi M_x) = \phi k_1 k_4 k_6 k_9 [M_{Tx}]$$

[M_{Tx}] Bending Capacity (kNm)

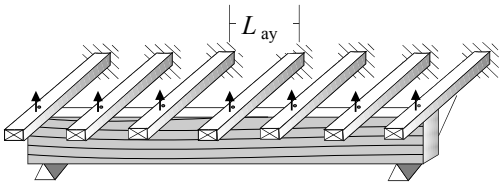
Size	Area	Max L_{ay}	for lat. restraint of compression edge @ L_{ay} (m)										
	(mm^2)	*FLR* (m)	0	0.34	0.45	0.6	0.9	1.2	2.4	3.6	4.8	6	7.2
70x35	2450	1.35	0.572	0.572	0.572	0.572	0.572	0.572	0.477	0.391	0.319	0.258	0.215
90x35	3150	1.05	0.945	0.945	0.945	0.945	0.945	0.913	0.704	0.543	0.414	0.331	0.276
120x35	4200	0.789	1.68	1.68	1.68	1.68	1.62	1.48	1.05	0.736	0.552	0.442	0.368
140x35	4900	0.676	2.29	2.29	2.29	2.29	2.11	1.91	1.28	0.859	0.644	0.515	0.430
190x35	6650	0.498	4.21	4.21	4.21	4.01	3.49	3.05	1.75	1.17	0.874	0.700	0.583
240x35	8400	0.394	6.72	6.72	6.49	5.94	5.00	4.22	2.21	1.47	1.10	0.884	0.736
290x35	10150	0.326	9.81	9.71	8.96	8.07	6.57	5.31	2.67	1.78	1.33	1.07	0.890
70x45	3150	2.24	0.735	0.735	0.735	0.735	0.735	0.735	0.722	0.636	0.564	0.500	0.443
90x45	4050	1.74	1.22	1.22	1.22	1.22	1.22	1.22	1.11	0.948	0.813	0.694	0.587
120x45	5400	1.30	2.16	2.16	2.16	2.16	2.16	2.16	1.77	1.45	1.17	0.939	0.783
140x45	6300	1.12	2.94	2.94	2.94	2.94	2.94	2.89	2.26	1.77	1.37	1.10	0.913
190x45	8550	0.824	5.42	5.42	5.42	5.42	5.29	4.85	3.50	2.48	1.86	1.49	1.24
240x45	10800	0.652	8.64	8.64	8.64	8.64	7.88	7.10	4.67	3.13	2.35	1.88	1.57
290x45	13050	0.540	12.6	12.6	12.6	12.3	10.8	9.52	5.67	3.78	2.84	2.27	1.89
70x70	4900	5.41	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.11	1.06
90x90	8100	6.96	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.41

Notes:
1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together ($k_9 > 1$)
   90 mm wide sections are made by nailing two 45 mm sections together ($k_9 > 1$)

Table F7s.bend.3

F7

Seasoned



MAJOR AXIS BENDING

LATERAL RESTRAINT ON TENSION EDGE AT L_{ay}

$$(\phi M_x) = \phi k_1 k_4 k_6 k_9 [M_{Tx}]$$

[M_{Tx}] Bending capacity (kNm)

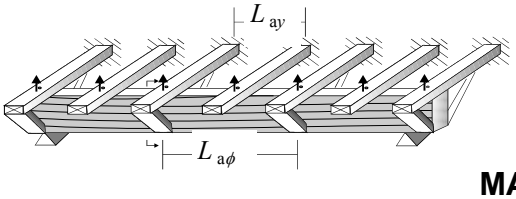
Size	Area (mm^2)	for lateral restraint of tension edge @ L_{ay} (m)											
		0	0.34	0.45	0.6	0.9	1.2	1.8	2.4	3.6	4.8	6	7.2
70x35	2450	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572
90x35	3150	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
120x35	4200	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.67	1.58	1.51	1.45	1.40
140x35	4900	2.29	2.29	2.29	2.29	2.29	2.27	2.15	2.05	1.91	1.79	1.70	1.62
190x35	6650	3.98	3.98	3.98	3.81	3.54	3.34	3.02	2.77	2.39	2.10	1.88	1.72
240x35	8400	5.36	5.36	5.27	4.91	4.36	3.93	3.27	2.84	2.32	2.01	1.79	1.64
290x35	10150	6.39	6.39	6.06	5.42	4.46	3.86	3.15	2.73	2.23	1.93	1.73	1.58
70x45	3150	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
90x45	4050	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
120x45	5400	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16
140x45	6300	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.91	2.83	2.75
190x45	8550	5.42	5.42	5.42	5.42	5.42	5.39	5.10	4.88	4.53	4.26	4.04	3.85
240x45	10800	8.24	8.24	8.24	8.24	7.72	7.33	6.73	6.26	5.55	4.99	4.54	4.15
290x45	13050	10.6	10.6	10.6	10.4	9.50	8.80	7.71	6.88	5.65	4.89	4.38	4.00
70x70	4900	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
90x90	8100	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43

Notes:

1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together ($k_9 > 1$)
   90 mm wide sections are made by nailing two 45 mm sections together ($k_9 > 1$)

Table F7s.bend.4

F7
Seasoned



MAJOR AXIS BENDING

FLR ON TENSION EDGE PLUS TORSIONAL RESTRAINT AT $L_{a\phi}$

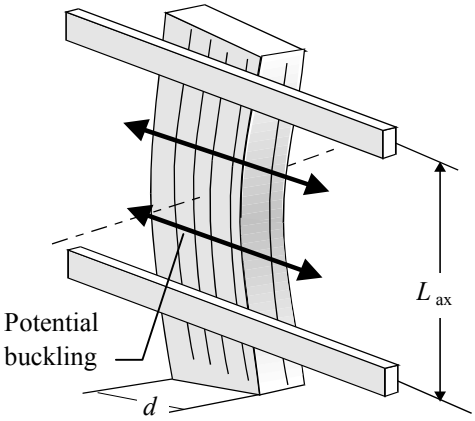
$$(\phi M_x) = \phi k_1 k_4 k_6 k_9 [M_{Tx}]$$

[M_{Tx}] Bending capacity (kNm)

Size	Area	MaxL_{ay}	Max $L_{a\phi}$	for *FLR* (tension edge) plus torsional restraint @ $L_{a\phi}$ (m)									
	(mm^2)	*FLR* (m)	*FTR* (m)	0.6	0.9	1.2	2.4	3.6	4.8	6	7.2	12	none
70x35	2450	1.35	any	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572	0.572
90x35	3150	1.05	any	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
120x35	4200	0.789	any	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
140x35	4900	0.676	any	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
190x35	6650	0.498	1.55	4.21	4.21	4.21	4.02	3.98	3.98	3.98	3.98	3.98	3.98
240x35	8400	0.394	1.09	6.72	6.72	6.55	5.63	5.36	5.36	5.36	5.36	5.36	5.36
290x35	10150	0.326	0.972	9.81	9.81	9.10	7.20	6.57	6.39	6.39	6.39	6.39	6.39
70x45	3150	2.24	any	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
90x45	4050	1.74	any	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
120x45	5400	1.30	any	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16
140x45	6300	1.12	any	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94
190x45	8550	0.824	any	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
240x45	10800	0.652	2.09	8.64	8.64	8.64	8.51	8.24	8.24	8.24	8.24	8.24	8.24
290x45	13050	0.540	1.49	12.6	12.6	12.6	11.4	10.8	10.6	10.6	10.6	10.6	10.6
70x70	4900	5.41	any	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
90x90	8100	6.96	any	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43

Notes:

1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together ($k_9 > 1$)
   90 mm wide sections are made by nailing two 45 mm sections together ($k_9 > 1$)



COMPRESSION
major

Table F7s.comp.1

F7
Seasoned

MAJOR AXIS BUCKLING

$$\left(\phi N_{cx}\right) = \phi k_1 k_4 k_6 [N_{Tcx}]$$

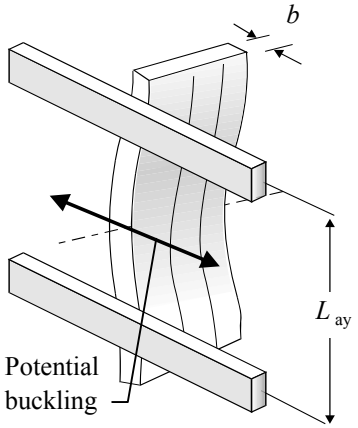
[N_{Tcx}] Compression capacity (kN)

Size	Area (mm^2)	$E\,A_{avg}$ (10^6 N)	$EA_{5\%}$ (10^6 N)	for restraint against major axis buckling @ L_{ax} 0	0.34	0.45	0.6	0.9	1.2	2.4	3.6	4.8	6
70x35	2450	19.4	9.68	36.8	36.8	36.8	36.8	32.0	24.3	6.51	2.89	1.63	1.04
90x35	3150	24.9	12.4	47.3	47.3	47.3	47.3	47.3	40.0	13.8	6.15	3.46	2.21
120x35	4200	33.2	16.6	63.0	63.0	63.0	63.0	63.0	63.0	32.8	14.6	8.20	5.25
140x35	4900	38.7	19.4	73.5	73.5	73.5	73.5	73.5	73.5	48.5	23.1	13.0	8.33
190x35	6650	52.5	26.3	99.8	99.8	99.8	99.8	99.8	99.8	87.9	57.0	32.5	20.8
240x35	8400	66.4	33.2	126.	126.	126.	126.	126.	126.	126.	96.4	65.5	42.0
290x35	10200	80.2	40.1	152.	152.	152.	152.	152.	152.	152.	136.	105.	74.1
70x45	3150	24.9	12.4	47.3	47.3	47.3	47.3	41.1	31.2	8.37	3.72	2.09	1.34
90x45	4050	32.0	16.0	60.8	60.8	60.8	60.8	60.8	51.4	17.8	7.91	4.45	2.85
120x45	5400	42.7	21.3	81.0	81.0	81.0	81.0	81.0	81.0	42.1	18.7	10.5	6.75
140x45	6300	49.8	24.9	94.5	94.5	94.5	94.5	94.5	94.5	62.4	29.8	16.7	10.7
190x45	8550	67.5	33.8	128.	128.	128.	128.	128.	128.	113.	73.3	41.8	26.8
240x45	10800	85.3	42.7	162.	162.	162.	162.	162.	162.	162.	124.	84.2	54.0
290x45	13100	103.	51.5	196.	196.	196.	196.	196.	196.	196.	175.	135.	95.2
70x70	4900	38.7	19.4	73.5	73.5	73.5	73.5	63.9	48.5	13.0	5.79	3.26	2.08
90x90	8100	64.0	32.0	122.	122.	122.	122.	122.	103.	35.6	15.8	8.90	5.69

Notes:

1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together
   90 mm wide sections are made by nailing two 45 mm sections together

Table F7s.comp.2



F7
Seasoned

MINOR AXIS BUCKLING

$$(\phi N_{cy}) = \phi k_1 k_4 k_6 [N_{Tcy}]$$

[N_{Tcy}] Compression Capacity (kN)

Size	Area (mm^2)	EA_{avg} (10^6 N)	$EA_{5\%}$ (10^6 N)	for restraint against minor axis buckling @ L_{ay} 0.0	0.3	0.45	0.6	0.9	1.2	1.5	1.8	2.4	3.0
70x35	2450	19.4	9.68	36.8	36.8	32.0	24.3	11.6	6.51	4.17	2.89	1.63	1.04
90x35	3150	24.9	12.4	47.3	47.3	41.1	31.2	14.9	8.37	5.36	3.72	2.09	1.34
120x35	4200	33.2	16.6	63.0	63.0	54.8	41.6	19.8	11.2	7.14	4.96	2.79	1.79
140x35	4900	38.7	19.4	73.5	73.5	63.9	48.5	23.1	13.0	8.33	5.79	3.26	2.08
190x35	6650	52.5	26.3	99.8	99.8	86.8	65.8	31.4	17.7	11.3	7.85	4.42	2.83
240x35	8400	66.4	33.2	126.	126.	110.	83.2	39.7	22.3	14.3	9.92	5.58	3.57
290x35	10200	80.2	40.1	152.	152.	132.	100.	47.9	27.0	17.3	12.0	6.74	4.32
70x45	3150	24.9	12.4	47.3	47.3	47.3	40.0	24.6	13.8	8.86	6.15	3.46	2.21
90x45	4050	32.0	16.0	60.8	60.8	60.8	51.4	31.6	17.8	11.4	7.91	4.45	2.85
120x45	5400	42.7	21.3	81.0	81.0	81.0	68.6	42.1	23.7	15.2	10.5	5.93	3.80
140x45	6300	49.8	24.9	94.5	94.5	94.5	80.0	49.1	27.7	17.7	12.3	6.92	4.43
190x45	8550	67.5	33.8	128.	128.	128.	109.	66.7	37.6	24.0	16.7	9.39	6.01
240x45	10800	85.3	42.7	162.	162.	162.	137.	84.2	47.4	30.4	21.1	11.9	7.59
290x45	13100	103.	51.5	196.	196.	196.	166.	102.	57.3	36.7	25.5	14.3	9.17
70x70	4900	38.7	19.4	73.5	73.5	73.5	73.5	63.9	48.5	33.3	23.1	13.0	8.33
90x90	8100	64.0	32.0	122.	122.	122.	122.	122.	103.	83.0	63.2	35.6	22.8

Notes:

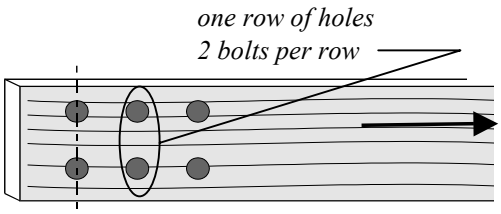
1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together
   90 mm wide sections are made by nailing two 45 mm sections together

TENSION
Softwood

Table F7s.tens

F7

Seasoned
Softwood



$$(\phi N_t) = \phi k_1 k_4 k_6 [N_{Tt}]$$

[N_{Tt}] Tensile capacity - allowing for bolt holes (kN)

Size	Area	$E A_{avg}$	$EA_{5\%}$		M10 (11)	M10 (11)	M10 (11)	M12 (13.2)	M12 (13.2)	M12 (13.2)	M16 (17.6)	M16 (17.6)	M16 (17.6)
	(mm^2)	(10^6 N)	(10^6 N)	No bolts	1 bolt	2 bolts	3 bolts	1 bolt	2 bolts	3 bolts	1 bolt	2 bolts	3 bolts
70x35	2450	19.4	9.68	24.5	20.7			19.9			18.3		
90x35	3150	24.9	12.4	31.5	27.7	23.8		26.9			25.3		
120x35	4200	33.2	16.6	42.0	38.2	34.3	30.5	37.4	32.8		35.8		
140x35	4900	38.7	19.4	49.0	45.2	41.3	37.5	44.4	39.8		42.8	36.7	
190x35	6650	52.5	26.3	63.9	60.2	56.5	52.8	59.5	55.0	50.6	58.0	52.1	
240x35	8400	66.4	33.2	77.7	74.1	70.5	67.0	73.4	69.1	64.8	72.0	66.3	60.6
290x35	10200	80.2	40.1	90.9	87.5	84.0	80.6	86.8	82.6	78.5	85.4	79.9	74.4
70x45	3150	24.9	12.4	31.5	26.6			25.6			23.6		
90x45	4050	32.0	16.0	40.5	35.6	30.6		34.6			32.6		
120x45	5400	42.7	21.3	54.0	49.1	44.1	39.2	48.1	42.1		46.1		
140x45	6300	49.8	24.9	63.0	58.1	53.1	48.2	57.1	51.1		55.1	47.2	
190x45	8550	67.5	33.8	82.2	77.4	72.7	67.9	76.5	70.8	65.1	74.6	67.0	
240x45	10800	85.3	42.7	99.8	95.3	90.7	86.1	94.4	88.9	83.4	92.5	85.2	77.9
290x45	13100	103.	51.5	117.	112.	108.	104.	112.	106.	101.	110.	103.	95.6
70x70	4900	38.7	19.4	49.0	41.3			39.8			36.7		
90x90	8100	64.0	32.0	81.0	71.1	61.2		69.1			65.2		

Notes:
1. Check local availability of sizes in the grade
2. 70 mm wide sections are made by nailing two 35 mm sections together
   90 mm wide sections are made by nailing two 45 mm sections together
3. Recommended hole size shown in brackets under bolt designation