



THE OELTM SELECTION TABLE GUIDE

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1. INFORMATION



Purpose

Wood Engineering Technology provide engineered selection tables to assist in the design and specification of joists, lintels, studs and rafters..

These tables are to be used in the same way as those supplied in NZS 3604:2011 but the values have been specifically engineered to account for GL12 OEL™ structural performance.

For design and specification of GL8 and GL10 OEL™ lintels, joists, studs and rafters use the SG8 and SG10 values in NZS 3604:2011.



References

Documents relied on to prepare this guide:

- NZS 3604:2011 *Timber Framed Buildings*
- Reid, D. [CPEng. 121639]. *Lignum Structural Engineering* [19/07/2019]. OEL™ selection charts
- Reid, D. [CPEng. 121639]. *Lignum Structural Engineering* [03/06/2021] Rafter selection tables.



2. FLOOR JOISTS



Notes to Floor Joist Tables

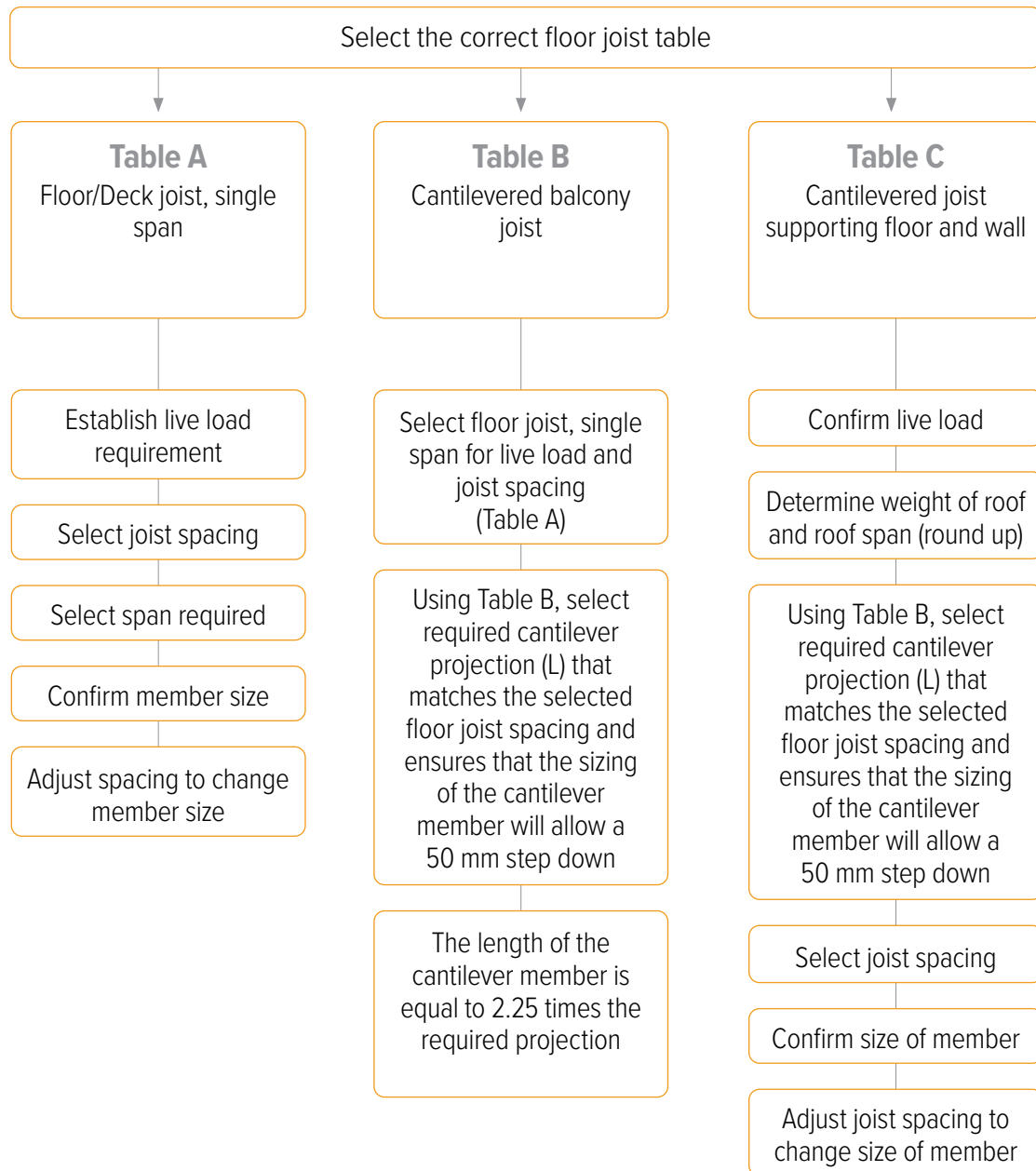
1. GL12 glulam grade timber has been assumed in developing these tables. Refer to AS 1328.2:1998 for performance characteristics.
2. Timber treatment required:
 - H1.2 floor joists (dry in service)
 - H3.2 deck joists (wet in service).
3. Live loads allowed: 1.5k Pa and 2.0 kPa..
4. Refer to NZS 3604:2011, para. 7.1.2 for details with respect to solid blocking.
5. Characteristics of light and heavy weight roofs are as defined in NZS 3604:2011.
6. Floor joists calculation allow for:
 - supporting particle board flooring
 - 12 mm plasterboard ceiling
 - 0.1 kPa non-loadbearing partitions
7. Floor tiling not allowed for in the calculations.
8. Deck joist calculations allow for timber decking (up to 25 mm in thickness).
9. Cantilever joist calculations allow for supporting a 2.4 m light timber framed wall.
10. Cantilever joist calculations allow for up to extra high wind as defined in NZS 3604:2011.
11. Cantilever joist calculations do not allow for supporting girder roof trusses; these require specific design.
12. Calculations allow for a 0.5 kPa snow load. This equates to a 0.9 kPa ground snow load for a roof with a 20° pitch.



2. FLOOR JOISTS (CONTINUED)



Using the Floor Joist Tables

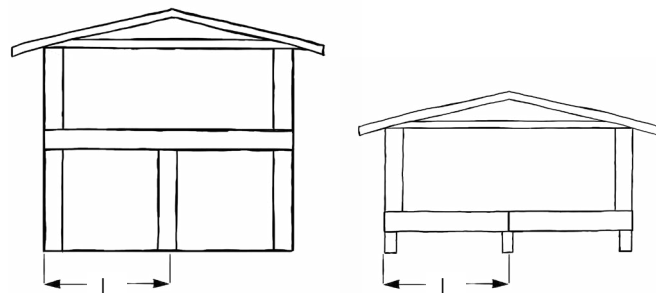


2. FLOOR JOISTS (CONTINUED)



Floor Joist Table A

Floor/Deck joists, single span.



FLOOR/DECK JOISTS, SINGLE SPAN						
GL12 OEL™ structural member (mm)	1.5 kPa floor live load			2.0 kPa floor live load		
	Joist spacing (mm)			Joist spacing (mm)		
	400	450	600	400	450	600
	Maximum span (mm)			Maximum span (mm)		
90 x 45	2140	2060	1880	1820	1760	1600
140 x 45	3210	3120	2910	2810	2710	2480
190 x 45	4000	3900	3650	3770	3640	3340
240 x 45	4730	4610	4330	4710	4550	4180
290 x 45	5420	5280	4960	5450	5320	5000
340 x 45	6060	5920	5560	6100	5950	5600
390 x 45	6670	6520	6140	6710	6560	6180

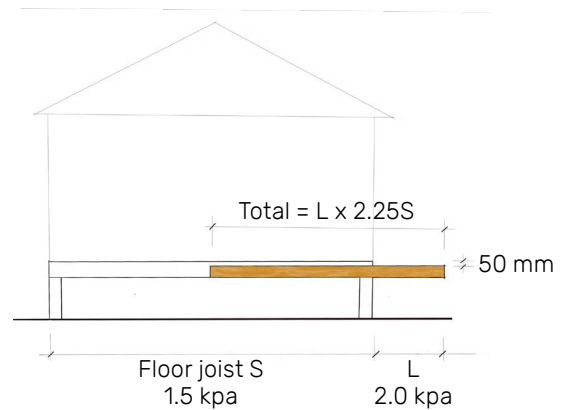


2. FLOOR JOISTS (CONTINUED)



Floor Joist Table B

Cantilevered balcony joists.



CANTILEVERED BALCONY JOISTS			
GL12 OEL™ structural member (mm)	2.0 kPa live load		
	Joist spacing (mm)		
	400	450	600
	Maximum cantilever span (mm)		
90 x 45	800	770	700
140 x 45	1230	1190	1090
190 x 45	1660	1600	1470
240 x 45	2080	2010	1840
290 x 45	2490	2410	2210
340 x 45	2900	2810	2580
390 x 45	3300	3200	2940

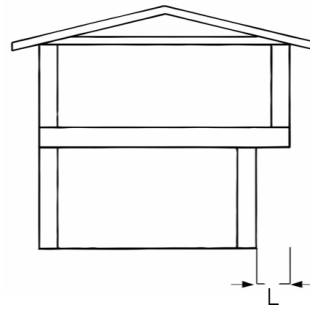


2. FLOOR JOISTS (CONTINUED)



Floor Joist Table C

Cantilevered joist supporting wall and floor.



CANTILEVER JOIST SUPPORTING 2.4 M WALL AND FLOOR Live load 1.5 kPa							
GL12 OEL™ structural member (mm)	Joist spacing (mm)	Light roof span (m)			Heavy roof span (m)		
		4.0	8.0	12.0	4.0	8.0	12.0
		Max cantilever span (L) (mm)			Max cantilever span (L) (mm)		
90 x 45	400	250	220	200	210	170	150
	450	240	210	180	190	160	140
	600	210	180	160	170	140	120
140 x 45	400	480	420	380	400	330	290
	450	450	390	350	370	310	270
	600	390	340	310	320	270	240
190 x 45	400	740	650	590	620	520	450
	450	700	610	550	580	490	430
	600	610	540	480	510	420	370
240 x 45	400	1020	910	820	860	730	640
	450	970	860	780	820	690	600
	600	850	750	680	710	600	520
290 x 45	400	1260	1180	1080	1130	950	840
	450	1260	1120	1020	1070	900	800
	600	1100	980	890	930	790	690
340 x 45	400	1640	1470	1350	1400	1200	1060
	450	1560	1400	1280	1330	1130	1000
	600	1370	1230	1120	1170	990	870
390 x 45	400	1960	1770	1630	1690	1450	1290
	450	1860	1690	1550	1610	1380	1220
	600	1650	1480	1360	1410	1200	1070



3. LINTELS

Notes to Lintel Tables

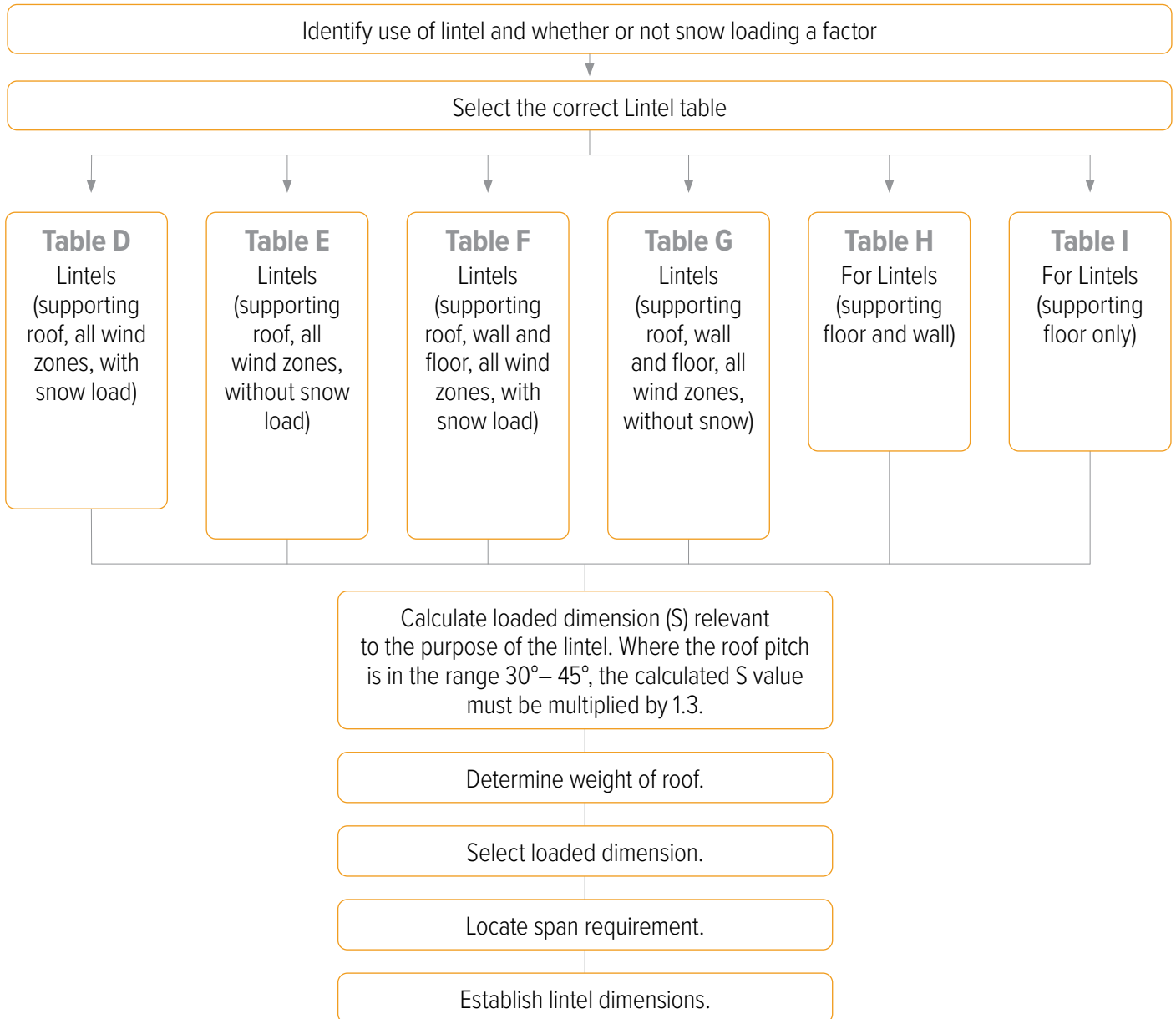
1. GL12 glulam grade timber has been assumed in developing the tables used. Refer to AS 1328.2:1998 for performance characteristics.
2. Timber treatment required:
 - H1.2 floor joists (dry in service)
 - H3.2 deck joists (wet in service).
3. Live loads allowed: 1.5k Pa and 2.0 kP.
4. Refer to NZS 3604:2011, para. 7.1.2 for details with respect to solid blocking.
5. Characteristics of light and heavy weight roofs are as defined in NZS 3604:2011.
6. Floor joists calculation allows for:
 - supporting particle board flooring
 - 12 mm plasterboard ceiling
 - 0.1 kPa non-loadbearing partitions
7. Floor tiling not allowed for in the calculations
8. Charts assume up to 600 mm roof eave overhang.
9. Calculations allow for a 1.0 kPa snow load. This is equivalent to a 1.8 kPa ground snow load for a roof with a 20° pitch.



3. LINTELS (CONTINUED)



Using the Lintel tables

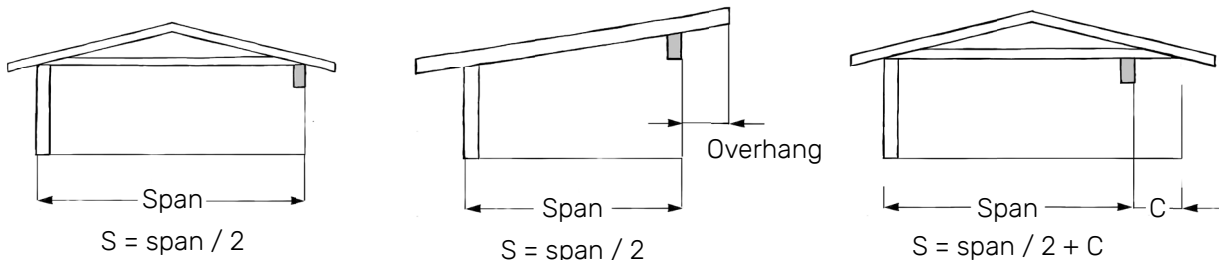


3. LINTELS (CONTINUED)



Lintel Table D

Lintel supporting roof, all wind zones, 1 kPa snow load.



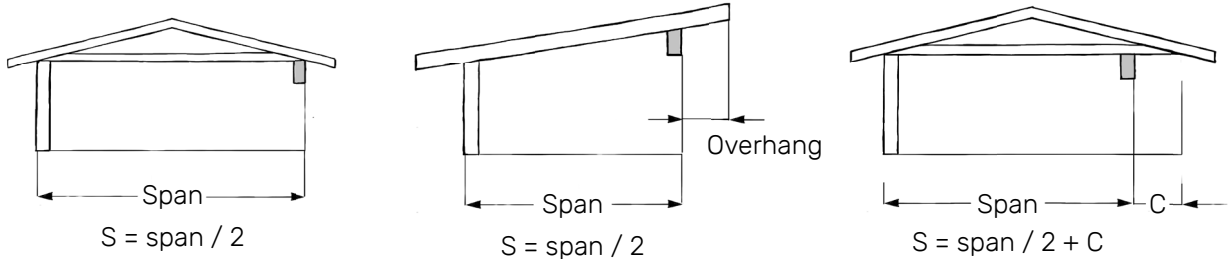
LINTEL SUPPORTING ROOF ONLY All wind zones, 1.0 kPa snow, GL12 OEL™ timber								
		Maximum span for lintel size (mm)						
	Loaded dimension S (m)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
Light roof	2	1630	2520	3410	4300	5180	6060	6930
	3	1390	2170	2930	3700	4460	5210	5970
	4	1240	1930	2610	3290	3970	4650	5320
	6	1040	1620	2190	2770	3340	3910	4480
Heavy roof	2	1420	2210	2990	3770	4540	5310	6080
	3	1220	1890	2560	3230	3900	4570	5230
	4	1080	1680	2280	2880	3470	4070	4660
	6	910	1410	1920	2420	2920	3420	3920

3. LINTELS (CONTINUED)



Lintel Table E

Lintel supporting roof, all wind zones, no snow load.



LINTEL SUPPORTING ROOF ONLY All wind zones, no snow, GL12 OEL™ timber								
		Maximum span for lintel size (mm)						
	Loaded dimension S (m)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
Light roof	2	1800	2800	3800	4800	5800	6800	7800
	3	1620	2530	3430	4330	5230	6140	7040
	4	1500	2330	3170	4000	4840	5670	6500
	6	1280	1990	2710	3430	4150	4870	5590
Heavy roof	2	1500	2330	3150	3970	4780	5580	6390
	3	1360	2100	2850	3590	4330	5060	5800
	4	1250	1950	2640	3330	4010	4700	5380
	6	1090	1690	2300	2890	3490	4080	4760

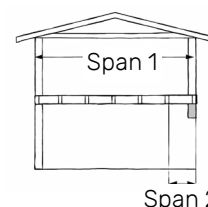
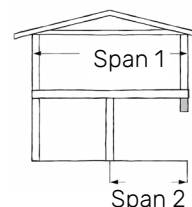
3. LINTELS (CONTINUED)



Lintel Table F

Lintel supporting roof, wall and floor, all wind zones, 1 kPa snow load.

S = Span 1 / 2
F = Span 2 / 2



LINTEL SUPPORTING ROOF+WALL+FLOOR ONLY All wind zones, 1.0kPa snow, GL12 OEL™ timber									
			Maximum span for lintel size (mm)						
	Loaded dimension S (m)	Loaded dimension F (mm)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
Light roof Light wall	2	300	1370	2130	2890	3640	4390	5140	5880
	2	1000	1290	2010	2720	3430	4140	4840	5540
	2	2000	1200	1860	2520	3180	3840	4490	5150
	2	3000	1040	1610	2190	2760	3330	3900	4470
	3	300	1230	1900	2580	3250	3920	4590	5260
	3	1000	1170	1810	2460	3100	3740	4380	5010
	3	2000	1100	1700	2310	2910	3510	4110	4710
	3	3000	1020	1580	2140	2700	3260	3820	4380
	4	300	1120	1730	2350	2970	3580	4190	4800
	4	1000	1070	1670	2260	2850	3440	4020	4610
	4	2000	1020	1580	2140	2700	3260	3820	4370
	4	3000	970	1510	2040	2580	3110	3640	4170
	6	300	960	1500	2030	2570	3100	3630	4160
	6	1000	940	1450	1970	2490	3000	3520	4030
	6	2000	900	1400	1890	2390	2880	3380	3870
	6	3000	860	1340	1820	2300	2780	3250	3730
Light roof Medium wall	2	300	1240	1930	2620	3300	3980	4660	5340
	2	1000	1180	1840	2490	3140	3790	4440	5080
	2	2000	1110	1720	2340	2950	3560	4170	4770
	2	3000	980	1520	2060	2600	3140	3680	4220
	3	300	1130	1760	2380	3000	3620	4240	4860
	3	1000	1080	1680	2280	2880	3480	4070	4660
	3	2000	1030	1600	2160	2730	3290	3860	4420
	3	3000	960	1490	2030	2560	3090	3610	4140
	4	300	1040	1620	2200	2770	3350	3920	4490
	4	1000	1010	1560	2120	2680	3230	3780	4330
	4	2000	960	1490	2020	2550	3080	3610	4140
	4	3000	920	1430	1940	2450	2950	3460	3970
	6	300	920	1420	1930	2440	2940	3450	3950
	6	1000	890	1390	1880	2370	2860	3350	3840
	6	2000	860	1330	1810	2280	2760	3230	3700
	6	3000	830	1290	1750	2210	2660	3120	3580
Heavy roof Light wall	2	300	1240	1930	2620	3300	3980	4660	5330
	2	1000	1180	1840	2490	3140	3790	4430	5080
	2	2000	1110	1720	2340	2950	3560	4160	4770
	2	3000	980	1520	2060	2600	3140	3680	4220
	3	300	1100	1710	2320	2920	3530	4130	4730
	3	1000	1060	1640	2230	2810	3390	3970	4550
	3	2000	1000	1560	2120	2670	3220	3770	4320
	3	3000	940	1470	1990	2510	3030	3540	4060
	4	300	1000	1550	2100	2650	3200	3750	4300
	4	1000	970	1500	2030	2570	3100	3630	4160
	4	2000	920	1440	1950	2460	2970	3480	3980
	4	3000	890	1380	1870	2360	2850	3340	3830
	6	300	860	1330	1810	2280	2750	3230	3700
	6	1000	840	1300	1760	2230	2690	3150	3610
	6	2000	810	1260	1710	2150	2600	3050	3490
	6	3000	780	1220	1650	2090	2520	2950	3390
Heavy roof Medium wall	2	300	1150	1780	2410	3040	3670	4300	4920
	2	1000	1100	1700	2310	2910	3520	4120	4720
	2	2000	1040	1610	2190	2760	3330	3900	4470
	2	3000	930	1440	1960	2470	2980	3490	4000
	3	300	1030	1600	2170	2740	3310	3870	4440
	3	1000	1000	1550	2100	2650	3190	3740	4290
	3	2000	950	1480	2000	2530	3050	3570	4090
	3	3000	900	1400	1890	2390	2880	3380	3870
	4	300	950	1470	1990	2510	3030	3550	4070
	4	1000	920	1430	1930	2440	2950	3450	3950
	4	2000	880	1370	1860	2350	2830	3320	3800
	4	3000	850	1320	1790	2260	2730	3200	3670
	6	300	820	1280	1730	2190	2640	3100	3550
	6	1000	800	1250	1700	2140	2590	3030	3470
	6	2000	780	1210	1650	2080	2510	2940	3370
	6	3000	760	1180	1600	2020	2440	2860	3270

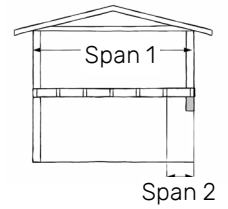
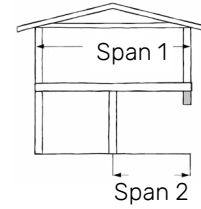
3. LINTELS (CONTINUED)



Lintel Table G

Lintel supporting roof, floor and wall.

S = Span 1 / 2
F = Span 2 / 2



LINTEL SUPPORTING ROOF+WALL+FLOOR ONLY GL12 OEL™ timber

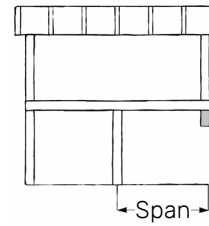
			Maximum span for lintel size (mm)							
	Loaded dimension S (m)	Loaded dimension F (mm)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45	
Light roof Light wall	2	300	1430	2210	2990	3770	4550	5320	6080	
	2	1000	1310	2040	2760	3480	4200	4910	5620	
	2	2000	1200	1860	2520	3180	3840	4490	5150	
	2	3000	1040	1610	2190	2760	3330	3900	4470	
	3	300	1360	2110	2860	3610	4350	5090	5820	
	3	1000	1270	1970	2660	3360	4050	4740	5430	
	3	2000	1170	1810	2450	3100	3730	4370	5010	
	3	3000	1020	1580	2140	2700	3260	3820	4380	
	4	300	1310	2030	2750	3470	4180	4890	5600	
	4	1000	1230	1900	2580	3250	3920	4590	5260	
	4	2000	1140	1760	2390	3020	3640	4260	4880	
	4	3000	1000	1550	2100	2650	3200	3750	4290	
	6	300	1220	1900	2570	3240	3910	4580	5240	
	6	1000	1160	1800	2440	3070	3710	4340	4970	
	6	2000	1080	1680	2280	2870	3470	4060	4650	
	6	3000	960	1490	2020	2550	3080	3610	4140	
	Light roof Medium wall	2	300	1260	1960	2660	3350	4050	4730	5420
		2	1000	1190	1850	2510	3160	3820	4470	5120
2		2000	1110	1720	2340	2950	3560	4170	4770	
2		3000	980	1520	2060	2600	3140	3680	4220	
3		300	1220	1900	2580	3250	3920	4590	5250	
3		1000	1160	1800	2440	3080	3710	4350	4980	
3		2000	1080	1680	2280	2880	3470	4070	4660	
3		3000	960	1490	2030	2560	3090	3610	4140	
4		300	1190	1850	2500	3150	3800	4450	5100	
4		1000	1130	1760	2380	3000	3620	4240	4860	
4		2000	1060	1650	2230	2810	3400	3980	4560	
4		3000	940	1470	1990	2510	3030	3550	4070	
6		300	1130	1750	2370	2990	3600	4220	4830	
6		1000	1080	1680	2270	2870	3460	4050	4650	
6		2000	1020	1580	2140	2700	3260	3810	4370	
6		3000	910	1420	1920	2430	2930	3430	3930	
Heavy roof Light wall		2	300	1260	1960	2660	3350	4040	4730	5420
		2	1000	1190	1850	2510	3160	3810	4460	5110
	2	2000	1110	1720	2340	2950	3560	4160	4770	
	2	3000	980	1520	2060	2600	3140	3680	4220	
	3	300	1180	1840	2490	3150	3790	4440	5090	
	3	1000	1130	1750	2370	2990	3610	4230	4850	
	3	2000	1060	1640	2230	2810	3390	3970	4550	
	3	3000	940	1470	1990	2510	3030	3540	4060	
	4	300	1120	1740	2360	2970	3580	4190	4800	
	4	1000	1080	1670	2270	2860	3450	4040	4630	
	4	2000	1010	1570	2130	2690	3250	3800	4360	
	4	3000	910	1410	1920	2420	2920	3420	3920	
	6	300	980	1520	2060	2600	3140	3670	4200	
	6	1000	960	1480	2010	2540	3060	3580	4110	
	6	2000	930	1440	1950	2460	2960	3470	3980	
	6	3000	850	1330	1800	2270	2740	3210	3680	
	Heavy roof Medium wall	2	300	1160	1800	2440	3070	3710	4340	4970
		2	1000	1110	1720	2330	2940	3540	4150	4750
2		2000	1040	1610	2190	2760	3330	3900	4470	
2		3000	930	1440	1960	2470	2980	3490	4000	
3		300	1090	1690	2280	2880	3470	4060	4650	
3		1000	1050	1640	2220	2800	3370	3950	4520	
3		2000	990	1550	2100	2640	3190	3740	4280	
3		3000	900	1400	1890	2390	2880	3380	3870	
4		300	1020	1580	2140	2690	3250	3800	4360	
4		1000	990	1540	2080	2620	3170	3710	4250	
4		2000	960	1480	2010	2540	3060	3580	4100	
4		3000	870	1350	1830	2310	2790	3270	3750	
6		300	910	1410	1910	2410	2910	3400	3900	
6		1000	890	1380	1870	2360	2850	3330	3820	
6		2000	860	1340	1820	2290	2770	3240	3710	
6		3000	820	1270	1730	2180	2630	3090	3540	

3. LINTELS (CONTINUED)



Lintel Table H

Lintel supporting wall & floor only.



$F = \text{Span} / 2$

LINTEL SUPPORTING WALL + FLOOR ONLY GL12 OEL™ timber								
		Maximum span for lintel size (mm)						
	Loaded dimension F (m)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
Light wall	1	1330	2060	2790	3510	4240	4960	5680
	2	1210	1880	2540	3210	3870	4530	5180
	3	1040	1620	2200	2780	3350	3920	4500
	4	930	1450	1970	2480	3000	3510	4030
Medium wall	1	1200	1870	2530	3190	3840	4500	5150
	2	1120	1740	2350	2970	3580	4190	4800
	3	980	1530	2070	2620	3160	3700	4240
	4	890	1380	1880	2370	2860	3350	3840

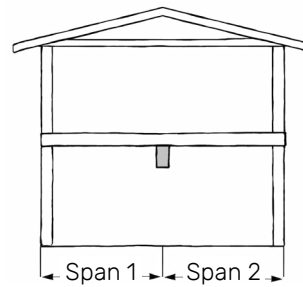


3. LINTELS (CONTINUED)



Lintel Table I

Lintel supporting floor.



$$F = (\text{Span 1} + \text{Span 2}) / 2$$

LINTEL SUPPORTING FLOOR ONLY GL12 OEL™ timber							
Loaded dimension F (m)	Maximum span for lintel size (mm)						
	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
2	1470	2280	3080	3890	4690	5480	6270
3	1200	1860	2530	3190	3840	4500	5150
4	1040	1620	2190	2760	3340	3910	4480
5	930	1450	1960	2470	2990	3500	4010
6	850	1320	1790	2260	2730	3200	3670



4. STUDS



Notes to Stud Tables

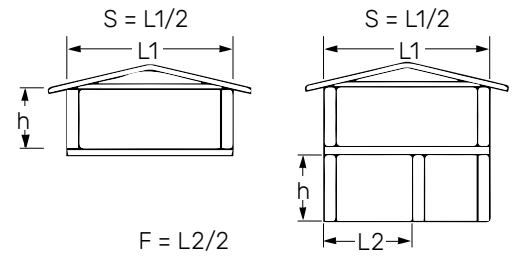
1. GL12 glulam grade timber has been assumed in developing the tables. Refer to AS 1328.2:1998 for performance characteristics.
2. Timber treatment, holes in stud and fixings to be in accordance with the requirements that would apply to solid lumber.
3. Light and heavy roofs, as defined in NZS3604:2011, have been accounted for.
4. Floor loads allowed: 1.5k Pa.
5. Calculations allow for a 0.5kPa snow load. This is equivalent to a 0.9 kPa ground snow load for a roof with a 20° pitch.
6. Light and medium cladding, as defined in NZS3604:2011, have been allowed for.
7. Wind zones are as defined in NZS3604:2011.
8. Stud requirements @300 mm centres may be substituted for double members @600 mm centres.



4. STUDS (CONTINUED)

Stud Table J

Single level or upper storey



SINGLE LEVEL OR UPPER STOREY										
Wind zone	Roof Dimension S	Studs sizes for maximum height of h (m)								
		2.4 m			2.7 m			3.0 m		
		Max Stud spacing (mm)			Max Stud spacing (mm)			Max Stud spacing (mm)		
		300	400	600	300	400	600	300	400	600
Extra high	3	90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
		90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
	6	90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
		90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
Very High	3	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
	6	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
High	3	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
		90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
	6	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
		90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
Medium	3	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45
		90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45
	6	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45
		90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45

Wind zone	Roof Dimension S	Studs sizes for maximum height of h (m)								
		3.6 m			4.2 m			4.8 m		
		Max Stud spacing (mm)			Max Stud spacing (mm)			Max Stud spacing (mm)		
		300	400	600	300	400	600	300	400	600
Extra high	3	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
		140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
	6	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
		140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
Very High	3	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
		140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
	6	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
		140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
High	3	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
		90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
	6	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
		90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
Medium	3	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
		90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
	6	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
		90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45



4. STUDS (CONTINUED)

Stud Table K

Lower of 2 Storeys

LOWER OF 2 STOREYS											
Wind zone	Roof Dimension S	Floor dimension F	Studs sizes for maximum height of h (m)								
			2.4			2.7			3.0		
			Max Stud spacing (mm)			Max Stud spacing (mm)			Max Stud spacing (mm)		
			300	400	600	300	400	600	300	400	600
Extra high	3	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
		4	90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
	6	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	140x45	140x45
		4	90x45	90x45	140x45	90x45	90x45	140x45	90x45	140x45	140x45
Very High	3	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		4	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
	6	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		4	90x45	90x45	140x45	90x45	90x45	140x45	90x45	90x45	140x45
High	3	2	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
		4	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	140x45
	6	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		4	90x45	90x45	140x45	90x45	90x45	140x45	90x45	90x45	140x45
Medium	3	2	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45
		4	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45	90x45
	6	2	90x45	90x45	90x45	90x45	90x45	140x45	90x45	90x45	140x45
		4	90x45	90x45	140x45	90x45	90x45	140x45	90x45	90x45	140x45

Wind zone	Roof Dimension S	Floor dimension F	Studs sizes for maximum height of h (m)								
			3.6			4.2			4.8		
			Max Stud spacing (mm)			Max Stud spacing (mm)			Max Stud spacing (mm)		
			300	400	600	300	400	600	300	400	600
Extra high	3	2	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
		4	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
	6	2	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
		4	140x45	140x45	140x45	140x45	140x45	190x45	190x45	190x45	190x45
Very High	3	2	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
		4	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
	6	2	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
		4	140x45	140x45	140x45	140x45	140x45	190x45	140x45	190x45	190x45
High	3	2	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
		4	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
	6	2	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
		4	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45	190x45
Medium	3	2	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
		4	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
	6	2	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45
		4	90x45	90x45	140x45	140x45	140x45	140x45	140x45	140x45	140x45



5. RAFTERS

Notes to Rafter Tables

1. GL12 glulam grade timber has been assumed in developing the tables used. Refer to AS 1328.2:1998 for performance characteristics.
2. Light and heavy roofs, as defined in NZS 3604:2011, have been accounted for.
3. Calculations allow for up to and including extra high wind zones, as defined by NZS 3604:2011.
4. Calculations allow for a 1.0kPa snow load.
5. Charts assume roof pitch of between 15 - 40°.
6. Timber treatment required H1.2 rafters (dry in service)
7. For simply supported spans without overhang, fix with two Lumberlok wire dogs each end. For spacings shown with a * in the selection tables, fix with two Lumberlok CPC40 cleats each end.
8. For multispan rafters, fix with two Lumberlok CPC40 cleats at each end. For spacings shown with a * in the selection tables, fix with two Lumberlok CPC80 cleats.



5. RAFTERS (CONTINUED)



Rafter Table L

LOW TO HIGH WIND ZONES						
Rafter Size	Lightweight roof with ceiling			Heavy roof with ceiling		
	Rafter spacing (mm)			Rafter spacing (mm)		
	600	900	1200	600	900	1200
	Maximum span for rafter size (m)			Maximum span for rafter size (m)		
90 x 45	1.99	1.74	1.58	1.71	1.50	1.36
140 x 45	3.09	2.70	2.45	2.64	2.32	2.11
190 x 45	4.19	3.66	3.33	3.56	3.13	2.86
240 x 45	5.27	4.63	4.20	4.47	3.94	3.60
290 x 45	6.33	5.59	5.08	5.37	4.75	4.34
340 x 45	7.37	6.54	5.96	6.26	5.54	5.07
J390 x 45	8.39	7.47	6.85	7.14	6.33	5.80

VERY HIGH TO EXTRA HIGH WIND ZONES						
Rafter Size	Lightweight roof with ceiling			Heavy roof with ceiling		
	Rafter spacing (mm)			Rafter spacing (mm)		
	600	900	1200	600	900	1200
	Maximum span for rafter size (m)			Maximum span for rafter size (m)		
90 x 45	1.71	1.50	1.36	1.56	1.36	1.23
140 x 45	2.66	2.33	2.11	2.42	2.11	1.92
190 x 45	3.61	3.16	2.87	3.28	2.87	2.61
240 x 45	4.56	3.99	3.62*	4.15	3.62	3.29
290 x 45	5.52	4.82	4.38*	5.01	4.38	3.98
340 x 45	6.47	5.65*	5.13*	5.87	5.13	4.66
J390 x 45	7.42	6.48*	5.89*	6.74	5.89	5.35



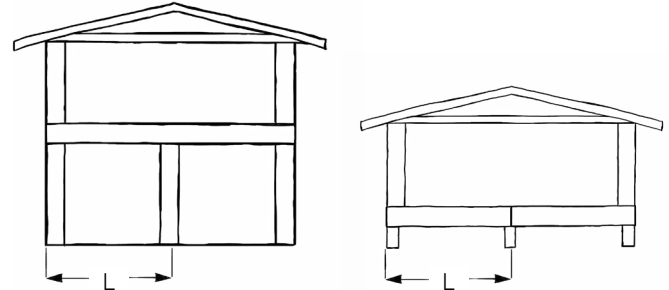
APPENDIX A



Worked Examples – Floor Joist Tables

Example 1: Floor Joist Single Span

Selecting the floor joist for live load 1.5 kPa, span 3950 mm.



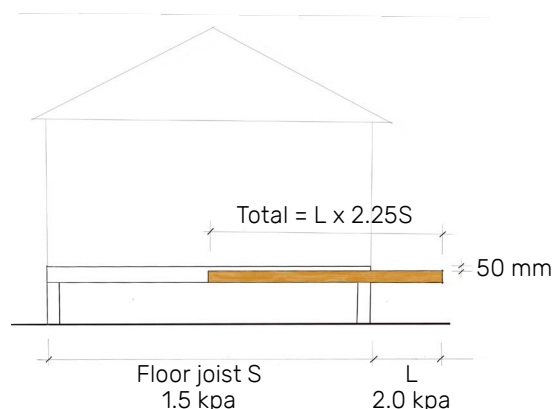
FLOOR/DECK JOISTS, SINGLE SPAN						
GL12 OEL™ structural member (mm)	1.5 kPa floor live load			2.0 kPa floor live load		
	Joist spacing (mm)			Joist spacing (mm)		
	400	450	600	400	450	600
	Maximum span (mm)			Maximum span (mm)		
90 x 45	2140	2060	1880	1820	1760	1600
140 x 45	3210	3120	2910	2810	2710	2480
190 x 45	4000	3900	3650	3770	3640	3340
240 x 45	4730	4610	4330	4710	4550	4180
290 x 45	5420	5280	4960	5450	5320	5000
340 x 45	6060	5920	5560	6100	5950	5600
390 x 45	6670	6520	6140	6710	6560	6180



APPENDIX A (CONTINUED)

Example 2: Cantilever Balcony Joists

Selecting the cantilever balcony joist where L is 1500 mm, and the floor joist span is 3950 mm.



STEP 1

Step 1. Choose floor joist.

From worked example 1: three options

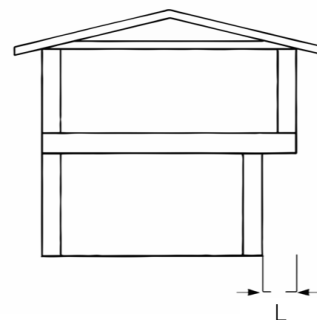
- a) 190 x 45 fixed at 400 mm centres
- b) 240 x 45 fixed at 450 mm centres
- c) 240 x 45 fixed at 600 mm centres

CANTILEVERED BALCONY JOISTS			
GL12 OEL™ structural member (mm)	2.0 kPa live load		
	Joist spacing (mm)		
	400	450	600
	Maximum cantilever span (mm)		
90 x 45	800	770	700
140 x 45	1230	1190	1090
190 x 45	1660	1600	1470
240 x 45	2080	2010	1840
290 x 45	2490	2410	2210
340 x 45	2900	2810	2580
390 x 45	3300	3200	2940

APPENDIX A (CONTINUED)

Example 3: Cantilever supporting wall and floor

Selecting cantilever joist for heavy roof, with roof span of 7.5 m, and an L of 430 mm.

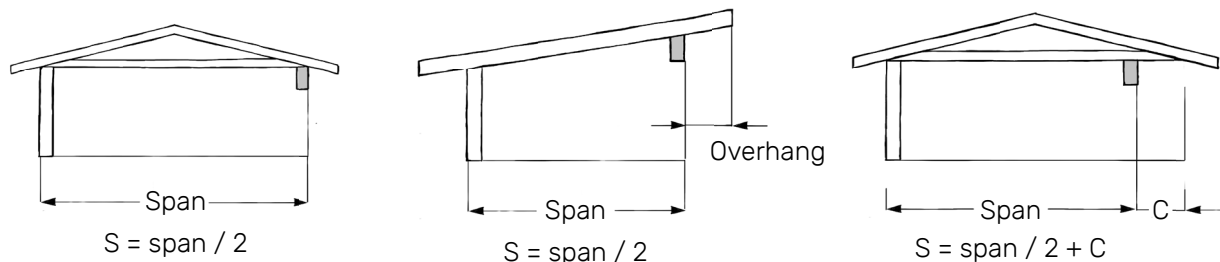


CANTILEVER JOIST SUPPORTING 2,4 M WALL AND FLOOR Live load 1.5 kPa							
GL12 OEL™ Structural member size (mm)	Joist spacing	Light roof span (m)			Heavy roof span (m)		
		4.0	8.0	12.0	4.0	8.0	12.0
		Max cantilever span (L) (mm)			Max cantilever span (L) (mm)		
90 x 45	400	250	220	200	210	170	150
	450	240	210	180	190	160	140
	600	210	180	160	170	140	120
140 x 45	400	480	420	380	400	330	290
	450	450	390	350	370	310	270
	600	390	340	310	320	270	240
190 x 45	400	740	650	590	620	520	450
	450	700	610	550	580	490	430
	600	610	540	480	510	420	370
240 x 45	400	1020	910	820	860	730	640
	450	970	860	780	820	690	600
	600	850	750	680	710	600	520
290 x 45	400	1260	1180	1080	1130	950	840
	450	1260	1120	1020	1070	900	800
	600	1100	980	890	930	790	690
340 x 45	400	1640	1470	1350	1400	1200	1060
	450	1560	1400	1280	1330	1130	1000
	600	1370	1230	1120	1170	990	870
390 x 45	400	1960	1770	1630	1690	1450	1290
	450	1860	1690	1550	1610	1380	1220
	600	1650	1480	1360	1410	1200	1070

APPENDIX A (CONTINUED)

Worked Examples – Lintel Tables

Example 1: Lintel supporting roof only



LINTEL SUPPORTING ROOF ONLY. All wind zones, no snow, GL12 OEL™ timber.								
		Maximum span for lintel size (mm)						
	Loaded dimension S (m)	2/90x45	2/140x45	2/190x45	2/240x45	2/290x45	2/340x45	2/390x45
Light roof	2	1800	2800	3800	4800	5800	6800	7800
	3	1620	2530	3430	4330	5230	6140	7040
	4	1500	2330	3170	4000	4840	5670	6500
	6	1280	1990	2710	3430	4150	4870	5590
Heavy roof	2	1500	2330	3150	3970	4780	5580	6390
	3	1360	2100	2850	3590	4330	5060	5800
	4	1250	1950	2640	3330	4010	4700	5380
	6	1090	1690	2300	2890	3490	4080	4760

