

Limit State Capacities - Recommended maximum single spans (m)

Table 1: ROOF BEAMS, JOISTS, RAFTERS, PURLINS

Roof weight 40 kg/m²

EXCLUDING PLASTER BOARD CEILINGS IN RESIDENTIAL - see Table 2

CODE	BEAM SIZE (mm)	SPACING (mm)					
		450	600	900	1200	1800	2400
T257aP10	248 x 71	8.45	7.84	7.06	6.54	5.85	5.30
T257bP10	248 x 71	8.58	7.97	7.19	6.66	6.00	5.47
T259aP10	248 x 88	8.81	8.18	7.36	6.82	6.13	5.61
T259bP10	248 x 88	8.94	8.30	7.48	6.94	6.23	5.74
T259aP12	248 x 88	9.25	8.60	7.73	7.17	6.42	5.95
T259bP12	248 x 88	9.37	8.72	7.84	7.28	6.53	6.06
T307bP10	302 x 71	9.64	8.94	8.03	7.45	6.67	6.16
T309bP10	302 x 88	10.00	9.29	8.34	7.73	6.92	6.39
T309cP10	302 x 88	10.15	9.42	8.47	7.85	7.04	6.50
T309bP12	302 x 88	10.49	9.71	8.72	8.07	7.23	6.68
T309cP12	302 x 88	10.62	9.84	8.85	8.19	7.34	6.79
T357bP10	354 x 71	10.94	10.14	9.11	8.43	7.56	6.98
T357bP12	354 x 71	11.48	10.64	9.55	8.83	7.90	7.30

Table 2: RESIDENTIAL JOISTS, RAFTERS AND PURLINS DIRECTLY SUPPORTING PLASTER BOARD CEILING
Roof weight 40 kg/m²

CODE	BEAM SIZE (mm)	SPACING (mm)					
		450	600	900	1200	1800	2400
T257aP10	248 x 71	7.41	6.87	6.17	5.75	5.16	4.71
T257bP10	248 x 71	7.54	6.99	6.28	5.86	5.28	4.85
T259aP10	248 x 88	7.72	7.16	6.42	5.97	5.37	4.94
T259bP10	248 x 88	7.84	7.28	6.54	6.07	5.49	5.06
T259aP12	248 x 88	8.11	7.52	6.75	6.25	5.63	5.20
T259bP12	248 x 88	8.22	7.63	6.86	6.35	5.74	5.32
T307bP10	302 x 71	8.43	7.82	7.01	6.48	5.82	5.38
T309bP10	302 x 88	8.75	8.11	7.28	6.72	6.01	5.56
T309cP10	302 x 88	8.89	8.24	7.39	6.85	6.13	5.65
T309bP12	302 x 88	9.16	8.48	7.60	7.02	6.28	5.77
T309cP12	302 x 88	9.28	8.60	7.71	7.13	6.39	5.89
T357bP10	354 x 71	9.57	8.86	7.94	7.34	6.55	6.04
T357bP12	354 x 71	10.03	9.28	8.31	7.68	6.85	6.30

NOTES - to Roof Span Tables 1 & 2

1. Spans: Face to face of supports
2. Loading:
 - Dead Load - spans are based on 40 kg/m² (normal metal roof and ceiling load)
 - for higher Dead Loads refer to Tecbeam Australasia or a Structural Engineer.
 - Live Load - to AS/NZS 1170.1, non trafficable roof (maintenance loads only, 0.25 kPa)
 - Wind Load - to AS/NZS 1170.2, strength pressure $W_u = -1.2$ kPa (uplift) & 0.5kPa, serviceability pressure $W_u = -0.82$ kPa (uplift); suitable for a flat roof in Region A rural terrain or sheltered suburban Region B, ht <10m.

For higher wind loads, refer to Tecbeam Australasia or a Structural Engineer
3. Serviceability/deflection criteria

	Table 1	Table 2
To AS1694.1	span/300, max 20mm	span/400, max 12mm
DL,j ₂	span/250, max 15mm	span/300, max 12mm
LL	span/150, max 30mm	span/250, max 20mm
WL		
4. Strongbacks are required to prevent joist rotation or twist, particularly with wind uplift, and for maintaining uniform deflection with a plaster board ceiling. Minimum recommendation:
 - spans up to 7m, install at least one line of strongbacks mid span; at joins lap one joist spacing.
 - spans over 7m, install a minimum of two lines of strongbacks at the one third points

Refer to the Installation Guidelines for details on strongbacks.
Alternatively roof and ceiling battens or other suitable framing can be used to prevent joist rotation
5. Beam CODE: T25, T30, T35 - joist depth (cm); 7 or 9 - joist width (cm); a, b, c - galvanized steel web thickness 0.8, 1.0, 1.2mm respectively; grade G200 Z275; P10, P12 - Pine timber flange MGP grade, equivalent to MGP10 & MGP12 respectively, L13 - LVL flange grade F16
6. Roof bracing, which forms part of the building bracing, should be designed and installed in accordance with AS1684.2 for residential buildings, for commercial buildings refer to a Structural Engineer

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