Technical Note 3

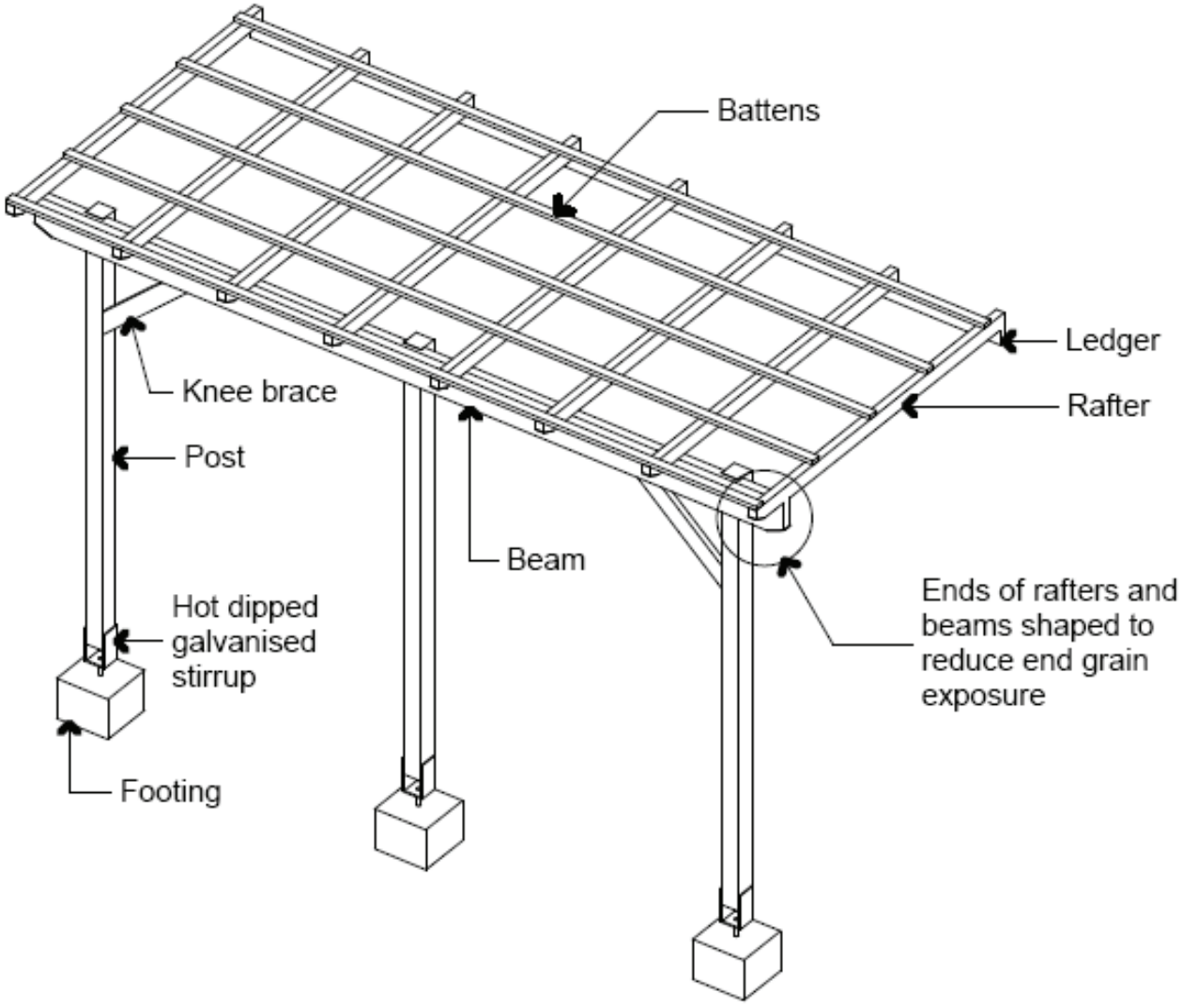
# Seasoned Softwood Pergola Span Tables: With or without lightweight sheet roof

Seasoned softwood is a popular choice for house construction in Australia, particularly when used in pergolas, for a number of important reasons:

- Economical and readily available in lengths of up to 6 m. (For spans over 6 m, check with your supplier)
- Seasoned to minimise movement of the installed timber
- Readily available preservative treated against borers and termites.

The following table provides an easy comparison of popular seasoned softwood grades and sizes for common timber elements used in residential domestic pergola applications. The sizes of timber are suitable for use with or without a lightweight roof material. Maximum roof mass is 10 kg/m$^2$ and timber sizes are adequate for wind speeds up to and including N2.

Where roof material is placed on the rafter, the rafter must be connected to the verandah beam and ledger and the verandah beam and ledger must be bolted to the post or supporting structure. Refer to Residential Timber Frame Construction Standards, AS1684 for appropriate connectors to be used.




**Typical Seasoned Softwood Pergola Layout**

## Pergola Rafter Spans for 600 mm and 900 mm Spacing - (Wind Classification N1 & N2)

| Size D×B (mm) | Single Span | | | | | | Continuous Span | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rafter Spacing 600 mm | | | Rafter Spacing 900 mm | | | Rafter Spacing 600 mm | | | Rafter Spacing 900 mm | | |
| | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 |
| **90×35** | 1800 | 1900 | 2200 | 1500 | 1800 | 1700 | 2200 | 2400 | 2800 | 2000 | 2200 | 2200 |
| **90×45** | 2100 | 2200 | 2700 | 1900 | 2100 | 2300 | 2700 | 2900 | 3300 | 2300 | 2500 | 2700 |
| **120×35** | 3000 | 3300 | 3800 | 2800 | 3000 | 3000 | 3500 | 4000 | 3800 | 2800 | 3100 | 3000 |
| **120×45** | 3600 | 3900 | 4300 | 3200 | 3400 | 3700 | 4100 | 4500 | 4700 | 3200 | 3600 | 3700 |
| **140×35** | 4000 | 4300 | 4500 | 3300 | 3700 | 3500 | 4200 | 4700 | 4500 | 3300 | 3700 | 3500 |
| **140×45** | 4500 | 4700 | 5100 | 3800 | 4100 | 4400 | 4800 | 5300 | 5500 | 3800 | 4200 | 4400 |
| **190×35** | 5600 | 5800 | 5900 | 4600 | 5100 | 4700 | 5700 | 6400 | 5900 | 4600 | 5100 | 4700 |
| **190×45** | 6000 | 6200 | 6800 | 5200 | 5600 | 5800 | 6500 | 7200 | 7200 | 5200 | 5900 | 5800 |
| **240×35** | 7000 | 7200 | 7200 | 5800 | 6400 | 5800 | 7200 | 7200 | 7200 | 5800 | 6500 | 5800 |
| **240×45** | 7200 | 7200 | 7200 | 6700 | 7000 | 7200 | 7200 | 7200 | 7200 | 6700 | 7200 | 7200 |

**Notes:**
1. Refer to General Notes for information that is relevant for all Span Tables.
2. For design parameters, refer to Figure 7.26, AS1684.2 and 3.
3. Where rafters are equal to or exceed four times their breath, blocking should be used to reduce member distortion.

## Pergola Beam Spans - (Wind Classification N1 & N2)

| Size D×B (mm) | Roof Load Width (RLW) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1800 | | | 2400 | | | 3000 | | |
| | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 |
| | Single Span | | | | | | | | |
| **120×45** | 1700 | 2000 | 2200 | 1600* | 1700 | 1700 | NS | 1700 | 1700* |
| **140×45** | 2200 | 2600 | 2700 | 1900 | 2200 | 2200 | 1700* | 1900 | 2000 |
| **190×45** | 3100 | 3500 | 3500 | 2700 | 3000 | 3000 | 2400 | 2800 | 2700 |
| **240×45** | 3900 | 4500 | 4300 | 3400 | 3800 | 3700 | 3000 | 3400 | 3300 |
| | Continuous Span | | | | | | | | |
| **120×45** | 1900 | 2200 | 2300 | 1700 | 1900 | 1900 | 1500* | 1700 | 1700 |
| **140×45** | 2300 | 2600 | 2700 | 1900 | 2200 | 2300 | 1800 | 1900 | 2000 |
| **190×45** | 3200 | 3500 | 3500 | 2800 | 3100 | 3100 | 2500 | 2800 | 2800 |
| **240×45** | 4100 | 4500 | 4400 | 3400 | 3900 | 3800 | 3100 | 3400 | 3300 |

**Notes:**
1. Refer to General Notes for information that is relevant for all Span Tables.
2. * denotes 600 mm rafter spacing only. Member span is not suitable for rafter spacing greater than 600 mm.
3. For design parameters, refer to Figure 6.22, AS1684.2 and 3.
4. For the pergola beams shown in illustration, the Roof Load Width is the dimension representing half the rafter span plus any rafter overhang. Refer to AS1684.2 and 3 Clause 2.6.4 for other configurations.
5. NS = Not Suitable

## Batten Spans - (Wind Classification N1 & N2)

| Size D×B (mm) | Batten Spacing 600 mm | | | Batten Spacing 900 mm | | | Batten Spacing 1200 mm | | |
|---|---|---|---|---|---|---|---|---|---|
| | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 | F5 | F7 | MGP 10 |
| **35x70** | 650 | 850 | 800 | 500 | 650 | 600 | NS | 650 | 600 |
| **45x70** | 850 | 1050 | 1000 | 650 | 850 | 800 | 650 | 850 | 800 |
| **35x90** | 1100 | 1200 | 1200 | 850 | 1050 | 1200 | 850 | 1050 | 1200 |
| **45x90** | 1200 | 1200 | 1200 | 1100 | 1200 | 1200 | 1100 | 1200 | 1200 |

**Notes:**
1. Refer to General Notes for information that is relevant for all Span Tables.
2. Maximum overhang of batten is 250 mm. Refer to AS1684 tables for other overhang spans.
3. NS = Not Suitable

**General Notes**

1. All Tables have been reproduced from AS1684 – 2006 Residential Timber Framed Construction Standard and assumes that a roof sheet mass of 10 kg/m$^2$ is added.
2. Maximum wind speed N2, refer to AS4055 for site wind classification.
3. These tables assume the building practice contained in AS1684 – 2006 Residential Timber Framed Construction Standard and the tables should be read in conjunction with that standard.
4. For design parameters, refer to Figure 4.9, AS1684.2 and 3.
5. NS = Not Suitable

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