

HOW to **BUILD** YOUR OWN DIY

treated pine **PERGOLA**



www.penrosepine.com.au

1 Plan

Draw the pergola out in plan on graph paper and to a scale (e.g. 1m = 5 squares). Use a grid of 3.6m or less. Support posts will be located at grid line intersections. Remember to allow for the overhangs of the rafters and their supporting beams.

2 Footings

If the pergola is not constructed over a concrete slab then a concrete pad is required to support brackets. These are placed at the grid intersections. Holes for this concrete pad are dug 300 x 300 x 300mm deep.

3 Posts

The minimum size of posts shall be F7 – 100 x 100mm, F7 – 90 x 90mm. These sizes are suitable for post heights not exceeding 2.7m.

4 Beams

These members are attached to the posts, and support the rafters. Their size shall be determined from the table as follows:

- Select the type of timber to be used (stress grade).
- Determine the post spacing (beam span).
- Determine the rafter span, enter the table, and derive beam size.

NOTE: Seasoned treated pine sizes 70mm or thicker, may be made up by vertical lamination using 3.75 x 75mm galvanized nails every 450mm.

Stress Grade	Post Spacing	Beam Size (mm)	
		Rafter span up to (m)	
		3.0	4.8
*5	2.4	150 x 38	175 x 50
	3.0	175 x 50	200 x 50
	3.6	200 x 75	250 x 75
F5	2.4	140 x 35	170 x 45
	3.0	170 x 35	170 x 45
	3.6	190 x 45	190 x 70

*Note: Maximum overhang for beams is 900mm

5 Rafters

These members are supported by the beam and they in turn support battens, shade cloth or lightweight roofing material. Their size shall be determined from the table as follows:

- Select the type of timber to be used (stress grade).
- Determine the rafter spacing.
- Determine the rafter span, enter the table, and derive rafter size.

Stress Grade	Rafter Spacing (m)	Beam Size (mm)				
		Rafter span (m)				
		2.4	3.0	3.6	4.2	4.8
*F5	600	100 x 38	125 x 38	150 x 50	175 x 38	200 x 38
	900	100 x 50	150 x 38	150 x 50	175 x 50	225 x 50
	1200	125 x 38	150 x 38	175 x 38	200 x 38	225 x 50
F5	600	90 x 35	120 x 35	120 x 35	140 x 45	190 x 35
	900	90 x 45	120 x 35	140 x 45	190 x 35	190 x 35
	1200	120 x 35	140 x 45	190 x 35	190 x 45	240 x 35

*Note: Maximum overhang for beams is 900mm

6 Battens

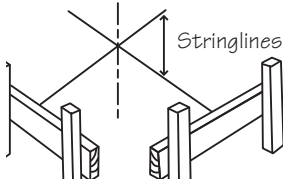
The size of battens required to support shade cloth or lightweight sheet roofing material may be determined from the table.

Stress Grade	Batten Spacing	Batten Size (mm)		
		Rafter Spacing (mm)		
		600	900	1200
*F5	600	38 x 75	50 x 75	50 x 100
	900	50 x 75	50 x 100	n.s
F5	600	45 x 70	45 x 70	70 x 35
	900	45 x 70	45 x 90	70 x 35

7 Bracing

Where the pergola is attached to a well supported existing structure such as a house or garage, additional bracing may not be required.

Where the pergola is free standing, bracing is required in both directions. This bracing can be achieved by either infill screens, such as diagonal lattice work or knee bolted to the posts beams and rafters.



1 Setting Out

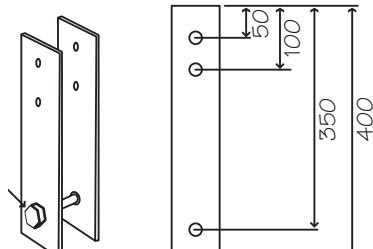
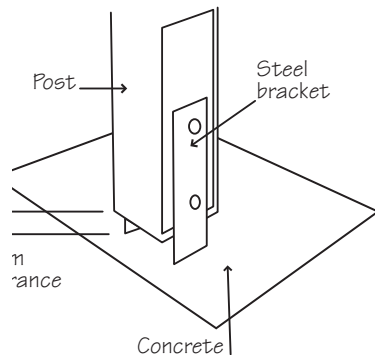
Set out on the ground with a string line tape and level. Locate post positions of pergola, measure diagonals and check that the structure is square. Diagonals should be equal. Use a line level and a string line to obtain the heights of the slab or concrete pad footing. If the area is to be paved allow a fall of 1 in 50 away from the house. Peg the positions and note from the forms the height to which concrete should be placed.

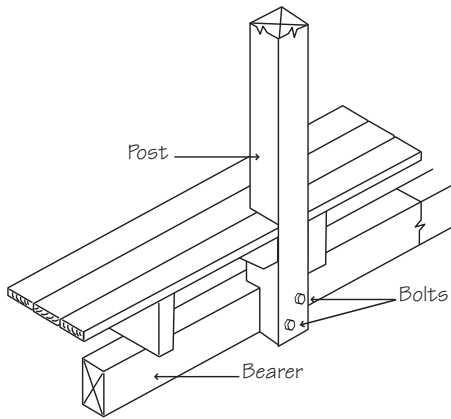
2 Footings

Dig holes to take the footings illustrated 300 x 300 x 300mm deep. If necessary box the hole with scrap plywood or the like. Using lengths of timber and the string lines, position the steelwork. Check the height and allow for 12mm clearance between the concrete and the posts. Proprietary brands of footings are available, but if you prefer you can get the type shown made up. Footings should be galvanized.

3 Posts to Footings

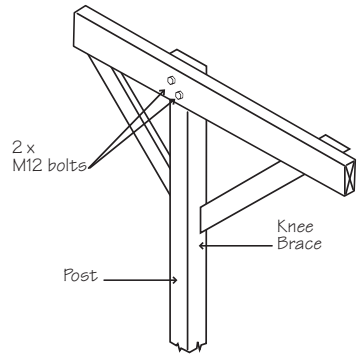
Posts are bolted to the steel post brackets when the concrete is at least four days old. The bolts used should be M12 hexagonal headed galvanized mild steel. Allow 12mm clearance from the concrete to the underside of the post. Alternatively treated pine posts maybe in direct ground contact. Ensure from your supplier that all posts which are to be set in ground are treated to a suitable level (H5).





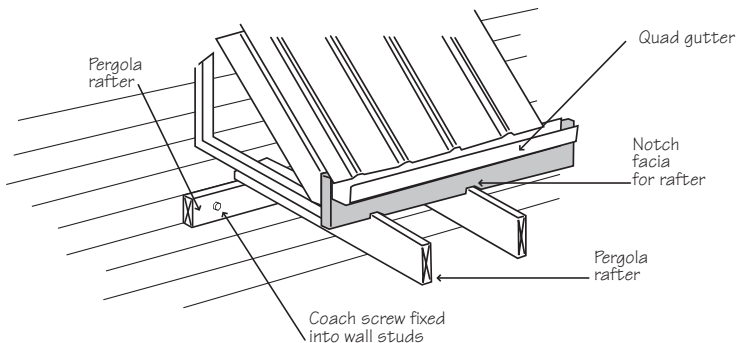
4 Posts to Timber Deck

Where a timber deck exists, the post should be halved checked and bolted to the bearer using two M12 galvanized bolts or coach screws. A blocking piece nailed to the post will support the end of the decking.



5 Beams

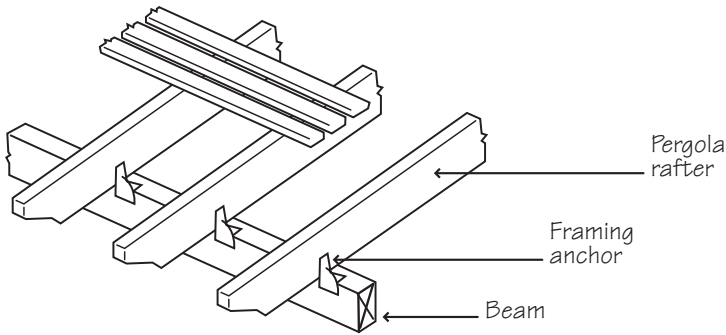
The top of the post should be halved to take the beam that supports the rafters. The beam is bolted to the post with 2 – M12 galvanized cup head bolts. Cut top of the post 12mm lower than top of beam. If the pergola is not to be attached to a substantial structure, 100 x 38mm knee braces may be bolted to the posts and beams to provide bracing. Ends of brace should be 600mm from post/beam junction.



6 Ledgers

Where an adjacent structure is sufficiently substantial to support the loading, a ledger can be bolted to it with masonry expanding bolts or coach screws. The bolts or coach

screws should be galvanized and a minimum of 10mm in diameter and fixed at 1200mm centres.



7 Rafters and Battens

Rafters should be skew nailed to the beams or ledger. If the roof is to be sheeted, one framing anchor at each joint should also be provided.

If battens are used at close intervals they may be nailed to the rafters.

If battens are to support sheet roofing they should be secured with one 75mm long 4.5mm diameter screw of each crossing.

Timber care



Cutting, notching or boring may expose untreated heartwood.

A liberal coating of PROTIM® RESEAL is recommended to restore the protective envelope. For more details refer to the PROTIM® Timber care product literature. Raincoat UV Plus should be used to reduce the effects of weathering & maintain the appearance of your timber project.

Osmose Australia. makes no warranties expressed or implied or as to the fitness for a particular purpose of this plan. Check with an architect, building expert or soil engineer to make sure that this plan is appropriate for your situation and meets local building codes. A permit may be required. Read carefully the important timber information on www.osmose.com.au <<http://www.osmose.com.au>> regarding pressure treated wood before starting construction.

Important Information

1. Do not burn preserved wood.
2. Wear dust mask & goggles when cutting or sanding wood.
3. Wear gloves when working with wood.
4. Some preservative may migrate from the treated wood into soil/water or may dislodge from the treated wood surface upon contact with skin. Wash exposed skin areas thoroughly.
5. All sawdust and construction debris should be cleaned up and disposed of after construction.
6. Wash work clothes separately from other household clothing before re-use.
7. Preserved wood should not be used where it may come into direct or indirect contact with drinking water, except for uses involving incidental contact such as fresh water docks and bridges.
8. Do not use preserved wood under circumstances where the preservative may become a component of food, animal feed or beehives.
9. Do not use preserved wood as mulch.
10. Only preserved wood that is visibly clean and free of surface residue should be used.
11. Do not use preserved wood in direct contact with aluminum.
12. If the wood is to be used in an interior application and becomes wet during construction, it should be allowed to dry before being covered or enclosed.
13. Disposal Recommendations: Preserved wood may be disposed of in landfills or burned in commercial or industrial incinerators or boilers in accordance with federal, state and local regulations.
14. If you desire to apply a paint, stain, clear water repellent or other finish to your preservative treated wood, we recommend following the manufacturer's instructions and label of the finishing product. Before you start, we recommend you apply the finishing product to a small exposed test area before finishing the entire project to insure it provides the intended result before proceeding.
15. Certain metal products (including fasteners, hardware and flashing) may corrode when in direct contact with wood treated with copper-based preservatives. To prevent premature corrosion and failure it is important to follow the recommendations of the manufacturers for all metal products.
16. Mould growth can and does occur on the surface of many products, including untreated and treated wood, during prolonged surface exposure to excessive moisture conditions. To remove mould from the treated wood surface, wood should be allowed to dry. Typically, mild soap and water can be used to remove remaining surface mould. For more information visit www.epa.gov.
17. For more information visit www.osmose.com.au / www.osmose.co.nz.

guide to the HAZARD CLASSES

HAZARD CLASS	CONDITIONS	HAZARD	EXAMPLES
H1	Completely protected from the weather and well-ventilated	Lyctid borers	Susceptible framing, flooring, furniture and interior joinery
H2	Protected from wetting	Borers including termites	Framing, flooring and similar, used in dry conditions
H2F - Conditions and biological hazard as for H2 although approved for use Souther of the Tropic of Capricorn only. Example: Envelope Treatment			
H2S - Conditions and biological hazard as for H2 although approved for use Souther of the Tropic of Capricorn only. Example: LVL/Plywood (glue-line treatment)			
H3	Subject to periodic moderate wetting	Moderate decay fungi, borers and termites	Weatherboard, fascia, pergolas (above ground), joinery, decking & laminated verandah posts
H3**	Products predominantly in vertical exposed situations and intended to have the supplementary paint coat system that is regularly maintained.	Moderate decay fungi, borers and termites	Fascia, barge boards, exterior cladding, window joinery, door joinery and non laminated verandah posts
H4	Subject to severe wetting	Severe decay fungi, borers and termites	Fence posts, garden walls less than 1 m high
H5	Subject to extreme wetting and/or where the critical use requires a higher degree of protection	Very severe decay fungi, borers and termites	Retaining walls, piling, house stumps, building poles and cooling tower fill
H6	Subject to prolonged immersion in sea water	Marine wood borers and decay fungi	Boat hulls, marine piles, jetty cross bracing and landing steps etc

Note: Please refer to the complete standards for more detailed information.

** as per AS1604 and NSW TMA

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