

BUILDING A TIMBER DECK

BEFORE YOU BEGIN

A timber deck is an asset to any home and building one is a classic summer project.

With only a few tools, a measure of patience and the right knowledge, a competent handyperson can achieve a result to be proud of. This booklet contains instructions and information to help you build your own timber deck.

Ideas & Inspiration



Decking Options

MERCH DECKING

NZ grown Radiata pine. Standard decking where cost is more important than appearance. Contains some knots and may be liable to distortion.

- Graded best face to grip tread profile
- H3.2 treated Radiata
- Available dimensions 100 x 25mm or 100 x 40mm



PREMIUM DECKING

NZ grown radiata pine. Quality product with minimal defects, specially selected for a high-class finish.

- Graded best face to grip tread profile
- H3.2 treated Radiata
- Dimensions 100 x 25mm, 100 x 40mm or 150 x 40mm



GRAPA DECKING

South American origin. Attractive golden colour, kiln dried, smooth both sides, very durable, doesn't bleed.

- Dimensions 100 x 25mm or 150 x 25mm



VITEX DECKING

A medium-density, naturally stable and durable hardwood harvested as "community production" from the Solomon Islands, it silvers off to a fine even finish.

- Dimensions 100 x 25mm or 150 x 25mm



PURPLE HEART DECKING

Purple Heart hardwood is superior quality decking. It provides class 1 durability for decking, with minimal leaching/bleeding.

- Dimensions 100 x 25mm or 150 x 25mm



KWILA DECKING

Redish brown timber that has been used and proven in NZ for a number of years.

- Available in ex 100 x 25mm and ex 150 x 25mm
- Available with a grip tread or smooth surface for the 150 x 25mm and just grip tread for the 100 x 25mm
- Also available in finger-jointed where consistent long lengths are required

See PlaceMakers website for more on VLO sourced timber



COMPOSITE DECKING

This new generation composite decking is very stylish, looks and feels like timber. Made from recycled wood and plastic materials, it won't warp, crack or splinter.

- Dimensions 130 x 19mm or 140 x 25mm

Decking Styles and Uses

Decking comes with two main faces. The top is commonly grooved, and the back is usually smooth. When planning a deck you must take the location into consideration.

TIP

WHEN LAYING YOUR DECKING IT IS BEST IF THE DECKING IS NOT TOO WET OR TOO DRY. BEFORE YOU LAY YOUR DECKING, STACK IT IN A MANNER THAT ALLOWS GOOD AIRFLOW BETWEEN THE BOARDS. THIS WILL LET THE DECKING EQUALIZE TO AN AVERAGE MOISTURE CONTENT.

If your deck is near the coast and you have the grooved side up, the grooves will fill with sand and debris over time, so it may be better to have the smooth side up. If your deck will be shadowed by trees, falling leaves and wet weather can make for a slippery surface, so it would be better to have the grooved side up.

NOTE: If it is necessary for visitors to your property to cross the deck to access the front door from the street, there is a slip resistance requirement in the NZBC. This requires the grooved side to be facing up and at a right angle to the direction of travel to the house.

NOTE: When ordering timber be aware that the sizes supplied can be different to those stated. If rough sawn then the sizes will be the same eg 125 x 125 rough sawn measures 125 x 125mm. If gauged or profiled the sizes will be smaller eg 100 x 40mm decking actually measures 90 x 32mm.

THE LAW

The deck described in this publication is rectangular, 2.0M wide by 4.0M long and less than 1.0M above the ground.

It is built at ground level and attached to the house on the long side. Of course, your deck may differ considerably. While construction techniques usually remain much the same, larger or higher decks will require mandatory handrails and/or bracing to the foundations. Before doing anything else, familiarise yourself with the materials and techniques involved by reading the complete booklet. Then use it to help you plan your project. The deck featured in this brochure is less than 1.5M above ground level therefore does not require a building consent.

In all cases, check with your council to find out the legal requirements. Deck construction is governed by two separate laws in New Zealand.

The Resource Management Act

This controls the use of land. Whether and where you can build a deck will be dictated by your local district plan. Always check with your council. If someone complains about your deck and it contravenes the plan, you may have to remove it.

The Building Act

Under the Building Act, if a deck is less than 1.5M above the finished ground level, you do not need a Building Consent or to produce plans. It is however helpful to draw out a plan to work out the bearers, joints, spacing and lengths. Before planning your deck always check with your local authority on any planning restrictions, as some councils require a consent for any deck partly supported by a house regardless of its height.

Even though a consent may not be required all work must comply with the performance requirements of the New Zealand Building Code (NZBC).

Decks from which it is possible to fall 1M or more require a barrier complying with NZBC clause F4.

Resources

www.mfe.govt.nz/rma
www.building.nz/building-code-compliance

MATERIALS

The materials specified in the following chart are all based on the example deck illustrated here. Use this chart to select the materials suitable for your deck.

		Qty
Profile Pegs	50 x 50mm or 75 x 25mm Timber	
Decking	100 x 40mm or 100 x 25mm or 150 x 40mm Premium H3.2 Timber	
Joists	140 x 45mm Radiata SG8 planer gauged H3.2 Timber	
Bearer options	150 x 50mm or 100 x 100mm Radiata SG8 planer gauged H3.2 Timber	
Piles	125 x 125mm Radiata Rough Sawn H5 Timber	
Stringers	100 x 50mm Radiata SG8 planer gauged SG8 H3.2 Timber	
Fixing options nails, screws	100 x 3.75mm Galv Jolt Head Nails 75mm decking nails (for 40mm decking) 60mm decking nails (for 25mm decking) Ask at branch for stainless steel and deck screwing alternatives	
Concrete	Dricon RapidSet	
Fixings & brackets	Stainless Steel M12 bolts, Coach Screws, Stainless Nailon® Plate, Z nails, Joist Hangers	

TIP IF IN A COAST REGION YOU WILL NEED TO USE STAINLESS STEEL FITTINGS AND FIXTURES.

TOOLS

Like any DIY project, having the right tools that comply with NZ standards makes building your deck a lot easier (hint: these days buying is almost as cheap as hiring).

- Spade
- Stringline
- Tape measure
- Spirit level
- Circular saw
- Hand saw
- Electric drill
- Set square
- Adjustable wrench
- Hammer
- Safety equipment

An electric circular saw makes the job considerably easier but is not essential. You could hire one, but electric saws have become very cheap to buy. However it is advisable to read the instructions first for its safe use.

PREPARATION

Accurately mark out the site and consider what, if anything, you are going to do with the area under the deck. You might want to spray the area under a low deck with weedkiller and lay weed mat.

When your timber arrives it should be stacked 100–150mm off the ground. Make sure the longer lengths are at the bottom and the stack is level and straight. You don't want any warping. Cover the stack to prevent damage from both sun and rain, but leave a gap beneath for air to circulate.

Hardware, such as bolts and nail-plates, should be stored away from moisture.

GETTING STARTED

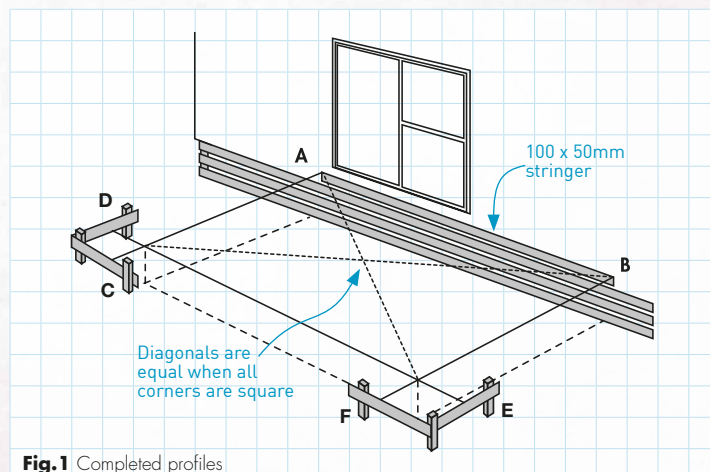
Setting Out

Why set out? Correct setting out ensures your deck will be straight, level and square. Care taken at this early stage will be well worth your trouble because it will make construction easier and more accurate.

SET THE LEVEL OF THE DECK

This is your first step. Where the deck is being attached to a house as pictured (Fig.1), the deck height will be a step down from the bottom of a ranch slider or other external door. The height of that step is a matter of choice, but to prevent water entry, a minimum of 150mm to the top of the decking is recommended. The exact level of the framing then depends on the decking thickness.

SET THE DECK LENGTH AND THE BUILD PROFILE



1. Begin by marking the length of the deck on the house (A TO B IN **Fig.1**).
2. At the deck height, drive a 75mm nail at point A and stretch a string line to point B.
3. Using your spirit level and straight edge, establish point B is level with point A.
4. Establish the approximate outer corners of the deck which in our case is 2M from the house, and mark the positions with pegs.
5. Drive profile pegs (50 x 50mm or 75 x 25mm timber) at the outer corners (3 per corner), 1M clear of the proposed finished deck lines. Make sure that the pegs are high enough so that the deck height (which will have been established in relation to line A-B) can be transferred to the profile pegs (see **Fig.2**).
6. Fix profile boards (100–150 x 25mm) to the pegs, with the top of the board on the level mark transferred from the house.
7. Run line A-C and temporarily secure it to the profile using the 3:4:5 rule, or multiples of the rule in our case (see **Fig.2**) 12:16:20. Square line A-C to line A-B.

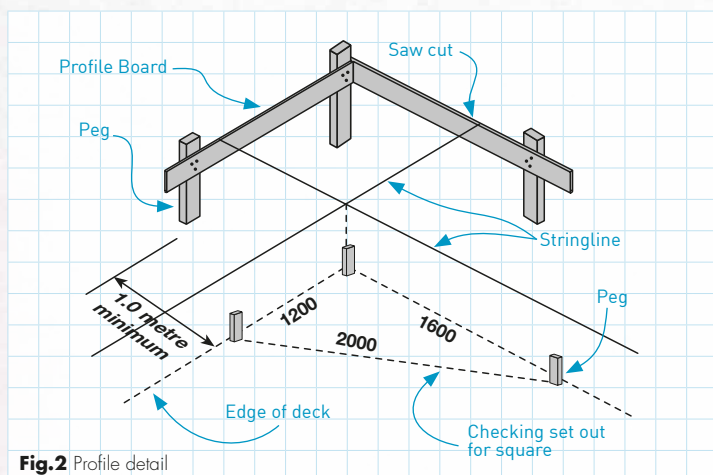
MATERIALS REQUIRED FOR PROFILES

50 x 50mm or 75 x 25mm timber for pegs.

100 x 25mm or 150 x 25mm timber for profile boards.

75mm nails (any sort) for constructing profiles and fixing stringlines.

At the end of this stage, you will have stringlines set out showing the position of your finished deck. Take care during construction that your lines are not moved or damaged. Stringlines should always be set at a known and consistent distance above the finished deck level.



When the concrete has set, install the floor joist and nail down the decking, removing the temporary props at any stage.

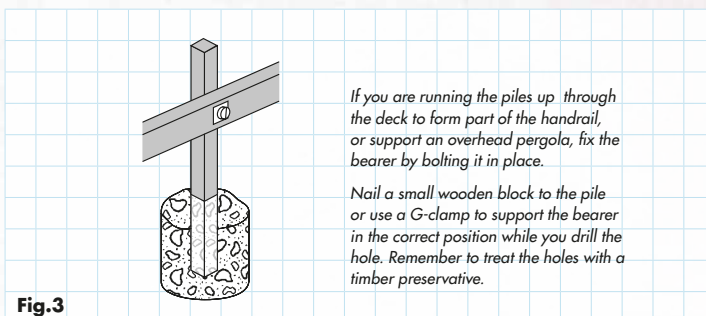
PILES & BEARERS

Cut a stringer (100 x 50mm) the length of A to B (**Fig.1**), and fix to the building using M12 bolts or coach screws. Pack the stringer off the wall with a H3.2 12mm packer to prevent moisture being trapped between it and the house cladding. This protects both cladding and stringer from decay.

MAXIMUM SPAN OF JOIST	MAXIMUM SPACING OF M12 BOLTS
2M	1.25M
3M	0.90M
4M	0.70M
6M	0.50M

Spacing the Piles

The piles in this example deck are 125 x 125mm H5 radiata pine piles, spaced at a maximum of 1200mm along the length of the deck to directly support the bearers. There is only one row of piles which is set back from the front edge of the deck to allow it to overhang the piles and bearers. This provides a neater finish to the front of the deck, but the construction details used and the 'best' way are ultimately a personal preference. The piles themselves can also continue up through the deck to support a handrail or overhead pergola, where there is no cantilever (i.e. the piles are flush with the outside edge of the deck). A pergola may require a building consent. The construction methods used at this stage must be modified to suit any of these alternatives (see **Fig.3**).



Digging the Holes

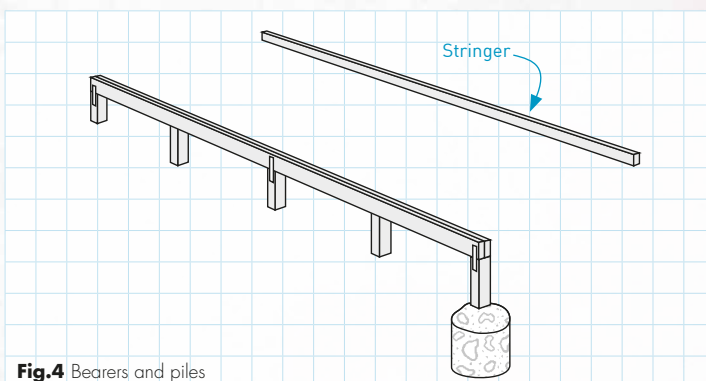
The concrete pads need to be at least 200 x 200mm square and, a minimum of 200mm deep. After you've dug the holes, insert the piles ensuring there is at least 100mm of concrete underneath the pile.

Concreting the Piles

You have a choice about when to set the piles in concrete.

Option 1 : Cover the bottom of the hole with 100mm of concrete. Place the pile back in the hole with the cut end up. Pour a further 100mm minimum of concrete and position the pile. Brace the pile in the correct position and leave to set for at least 24 hours. Then trim the piles to height and continue building the deck on top. This option requires you to set the posts exactly in place before the bearers are there to give you a line to work to.

Option 2 : Secure the piles 100mm above the bottom of the holes, and brace them in all directions very firmly while the concrete is poured into the holes.



Option 3 : Lay a ground plate(s) along the pile line to support/suspend the piles over the holes while the concrete is poured. (Leave your concrete slightly lower than the top of the hole to allow lawn or topsoil to cover it up.)

When the concrete has set, install the floor joist and nail down the decking, removing the temporary props at any stage.

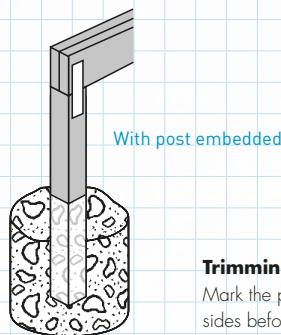


Fig.5 Post setting detail

Trimming the Piles (If using Option 1)

The piles are trimmed off to the underside of the bearers (see **Fig.4 & 5**). The stringer on the wall is actually a bearer. Level a stringline from under that, or a straight bearer held against it, to give you the trim-off height of the piles. Mark the cut around three sides of the pile with your square before cutting.

Fixing the Bearers

This deck uses two 100 x 50mm pieces of timber nailed together as bearers at 300mm centres from opposite faces. Fix to each pile with two 100 x 3.75 hot-dipped galvanised nails skewed (angle nailed) from each face. The piles at each end should also be connected to the bearer with a stainless steel 'Nailon' plate on each face.

NOTE: Decking performs better and lasts longer if it has good ventilation under it. Where possible the design should allow for as much airflow as possible. This will allow the decking and substrate to dry out.

JOISTS & DECKING

SPACING BETWEEN PILES ALONG THE BEARER

MAXIMUM SPAN OF PILES	BEARER SIZE
1.45M	100 x 75mm
2.35M	100 x 100mm or two 100 x 50mm
3.45M	125 x 100mm or two 125 x 50mm
4.65M	150 x 100mm or two 150 x 50mm

Fitting the Joists

You can see from **Fig.6** that the deck cantilevers over the last bearer to produce an overhanging deck.

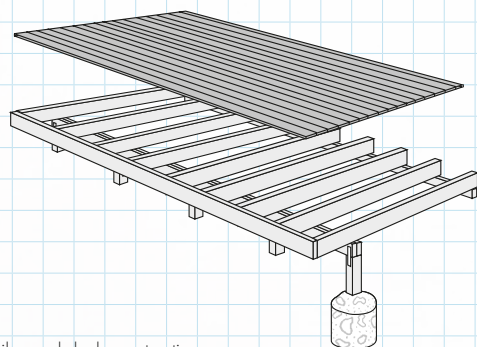


Fig.6 Cantilevered deck construction

The joists should be spaced at maximum centres according to the table below. The spacing depends on the thickness of decking used.

JOIST SELECTION CHART

Joist Size	Maximum joist span between bearers at specified joist spacing	
	450mm	600mm
90 x 45mm	1.15M	1.00M
140 x 45mm	1.85M	1.60M
190 x 45mm	2.50M	2.15M
240 x 45mm	3.15M	2.70M
290 x 45mm	3.80M	3.30M

When you rest each joist on the stringer on the side of the house foundation wall, leave a 12mm gap between the end of each stringer and the wall. That stops moisture becoming trapped and causing decay. Fix each joist to every bearer with two 100 x 3.75 hot-dipped galvanised nails through each face at every crossing. Joist hangers and Z nails can also be used to attach the joists. Let the end of each joist overlap your profile strings. Trim them all at once later, using the line and a square to accurately mark each joist. Fit a boundary joist to the ends of the main joists to give the edge of your deck a neat finish.

NOTE: Boundary joists must be at least 140mm if balustrade is to be attached.

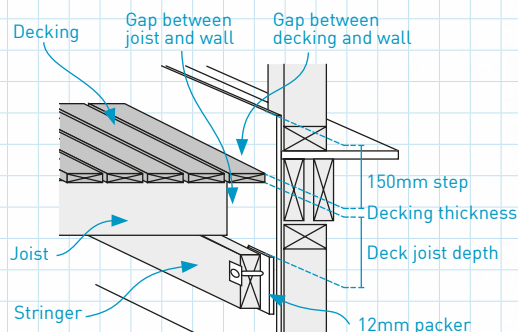


Fig.7

NOTE: How the stringer is attached to the house will vary depending on what cladding system you have.

DECKING MATERIAL SELECTION CHART

JOIST SPACING	DECKING MATERIAL
450mm	Ex 25mm (19mm) Timber Decking
600mm	Ex 40mm (32mm) Timber Decking

Fitting the Deck

Start laying timber decking from the house in a full length board. Make sure that, like the joists, there's a 12mm gap left between the first board and the wall. If joins are necessary they should be made on the joists and staggered at random between rows.

An overhang of 10mm to 20mm at each end is usually preferred. The first two boards should be cut to this size before fixing with either hot-dipped galvanised nails or stainless steel decking screws.

60mm hot-dipped galvanised nails or 50mm stainless steel screws for 19mm decking

75mm hot-dipped galvanised nails or 65mm stainless steel screws for 32mm decking

Check the boards are true and in a straight line as you fix. Where corrosion levels are high as in the case of a coastal environment subject to sea spray, stainless steel nails should be used. Also check the distance to the outside bearer remains constant.

Timber decking will swell when it gets wet and shrink when it dries, the decking should be spaced to allow for this. Laying the decking across the joists without fixing them and adjusting the gap size so that they are even is a good way of determining the gap size. Small variations can be adjusted slightly as each board is fixed. Don't cut the rest of the decking to length (apart from the first two). Let them overhang the end joists. Then trim them all off together by nailing a board to the deck as a guide for your circular saw.

Steps

Kitset steps of various lengths and widths are available from PlaceMakers. These are easily fitted to your deck. If the deck gives access to a building the steps must comply with the New Zealand Building Code access requirements.



For more 'Know How' guides & projects visit
www.placemakers.co.nz

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