HOW DO I BUILD A DECK?

A deck can transform a dull backyard into a relaxing destination for your family and friends. And if you’re feeling handy, you can do the job yourself without hiring an expensive contractor. Learn how to:

- Assemble all the tools, supplies, and timber you’ll need for the job.
- Create a solid foundation and a sturdy structure of posts, bearers, and joists.
- Install decking.
How a Deck Works

Providing an outdoor living and entertaining area for all to enjoy. Typically built from timber on concrete footing. Marvelous structures from the basic flat deck that anyone can construct through to more advance elevated deck that a professional should undertake.

Deck Terminology

A. Top rail
B. Post top
C. Baluster
D. Post
E. Bottom rail
F. Post base
G. Decking
H. Joist
I. Trim Joist
J. Lead Joist
K. Bearer beam
L. Post
M. Footing
N. Stair Tread
O. Stair Riser
P. Stringer
Deck-Building Materials

Arrive prepared at the hardware where you’ll be buying materials for your deck, and solicit the help of store workers who can listen to your needs and guide you accordingly. If you can, come prepared with a break down list of the timber and hardware you require.

Framework

Treated Pine

Treated pine framework is the most common with having around 80% of the market share, a dense softwood timber with a chemical preservative forced into its wood fibers; it’s a less expensive alternative to the others. Available in many different chemical grades for use in and out of ground. Available in all sizes to meet Australian Standards required for spans, consult with your local hardware or council for the required size.

Hardwood

Hardwood framework is being seen less and less on building sites, mainly due to its cost being quite expensive. Nailing and general construction is also more labour intensive. However, hardwood does come with many benefits, larger spans are available and a feel of quality is apparent.

Steel

Steel has become a user friendly solution for many more people in recent times, although quite expensive, larger spans are achieved with joists and bearers, steel is true and straight, and now many brands have connector plates to prevent the need for welding. However steel does need to be engineered and generally cut to size prior to delivery on site. It has also become part of the approval process in many fires rated areas around bushland.
Decking

Hardwood

When properly installed and maintained, hardwood performs well. Hardwood has been used to build outdoor structures for centuries because it’s naturally rot resistant. Its high cost, however, so most people use these boards only for visible surfaces, such as deck boards, railings, and stairs.

Treated Pine

Treated pine, a dense softwood timber with a chemical preservative forced into its wood fibers, is a less expensive alternative. It can be used for hidden structural components such as posts, beams, and joists. It also makes for a great decking board and if maintained well will last for years.

Treated Pine Precautions

Be careful when handling pressure-treated wood:

- Wear gloves, long pants, and a long-sleeved shirt.
- Wear safety glasses.
- Cover your mouth with a mask.
- If you have leftover scraps, don’t burn them.
- Don’t let children play with scraps.
- Dispose of the wood according to local regulations for handling toxic materials.
Composite Timber

Composite decking is made by combining recycled plastic, waste wood, and various chemical binders. It is both rot and insect resistant and virtually maintenance free. If you like the natural color of the boards, you’ll never have to paint or stain them. Periodic washing is all that’s required.

Composite decking is cut, drilled, and installed just like timber, composite decking isn’t meant for structural components such as bearers and joists. It is strong enough only for decking and trim boards. Costing is generally more than all of the wood alternatives.

Concrete

‘Quick-set’. Any use where strength of up to 15mpa is sufficient and quick setting is required. For instance for fencing, pergola posts, clothes hoists and general landscaping needs. (Not suitable for structural use).

‘Builders Concrete mix’ Ideal for making pathways, mower strips small concrete slabs as well as securing clothes hoists and fence posts. It’s also ideal for concrete footings in decks and small garden sheds and repair work to concrete and brickwork footings on small projects.
Deck-Building Tools

**8m and 25m tape measures**: Handle every measuring need. The 8m model is the default measuring tool and should feature a blade that’s 25mm wide (not 18mm).

![8m and 25m tape measures](image1)

**Mason’s string and line level**: Allow leveling over long distances, such as the span of one end of the deck to the other. The level hooks on the string, and the string is adjusted until the bubble reads level.

![Mason’s string and line level](image2)

**Shovel**: Indispensable for digging holes, moving soil, and mixing concrete for foundation footings and piers.

![Shovel](image3)
**Posthole digger:** For hand-digging post and pier holes. These tools work very well in sandy and loamy soils.

**Sawhorse:** Supports all materials for cutting and measuring.

**Extension cord:** Brings power from the house to where you need it.
Electric drill and portable circular saw: Drills holes and cuts lumber to size. A 7 1/4" circular saw is the most versatile model.

Square: A basic carpentry tool that’s required for just about every job. The large framing square is used for making stairs, and the smaller combination square is used for marking cut lines.

Hammer: Designed for driving nails and moving boards into alignment.
**Level:** Best for determining what’s level and/or plumb in a wide variety of situations.

**Chalk line:** Like a mason’s string, with powdered chalk attached to it. When the line is pulled tight and snapped, it leaves a line of chalk on the surface.

**Utility knife:** Cuts just about everything on a construction site and never needs sharpening. Just replace the blade.
**Tin snips:** Cut the aluminum flashing that protects ledger boards.

![Tin snips](image)

**Flat pry bar:** The tool of choice for gently prying a deck board until it’s properly aligned.

![Flat pry bar](image)

**Ratchet spanner:** Loosens or tightens all kinds of nuts and bolts. In deck work, this usually means mounting the ledger board and attaching railing posts.

![Ratchet spanner](image)

**Caulking gun:** Dispenses tube glue and silicone. The best all-around choice for exterior work is silicone. It’s flexible, durable, and long-lasting.

![Caulking gun](image)
Deck-Building Hardware

Following are hardware imperatives that will literally help bring your deck together.

Nails

Hot-dipped galvanized nails are the basic fastener for all deck-building chores. The heavy zinc coating won’t rust or stain the boards. Try and purchase the ring shank type, these give you a better hold into pine joists.

Deck Screws

Galvanized or stainless steel deck screws are the best choice for attaching the deck boards. The screws hold better than nails, and the square drive makes driving them with an electric drill easy. They won’t rust or stain the wood.
Coach Screws

Coach screws and washers are the preferred way to attach a ledger board to a timber clad house. Clearance holes must first be drilled through the ledger and into timber frame. These screws should be tightened with a ratchet or an open-end wrench.

Dyna Bolts

These are used to attach ledger boards to masonry walls. First holes are drilled in the masonry, then the anchors are hammered into these holes, and the board is attached when tightened.

Flashing

Aluminum flashing prevents water from leaking behind ledger boards and damaging the house structure. Preformed pieces for this job are available, or you can cut and shape your own from a piece of rolled aluminum flashing.
Joist Hangers

Joist hangers are used to support the ends of joists that aren’t resting on bearers. This usually happens at the house ledger board. The hangers are nailed to the outside face of the ledger and to both sides of the joists.

Post Supports

Post supports are used to connect the post to the footing, not only are they bolted to stop side way movement; they also tether the deck to the ground.
Deck Design Basics

There are almost as many different decks as there are different houses. Most feature one of three basic designs.

Decks on Ground

A deck on ground is the easiest type of deck to build. Because it’s built close to the ground and normally doesn’t require railings and stairs. The ledger boards are all at the same height, the top of each post is cut level with the tops of all the other posts, and the top edge of every bearer is level with the bottom edge of all the ledger boards. For flat yards, this deck is pretty much the only option. Without a sloping grade, it’s impractical to create an elevated deck or one with multiple levels.
Multilevel Decks

A multilevel deck can turn a difficult sloping site into the centerpiece of your family’s outdoor activities. Planning one of these large decks is a challenge because its different levels require different post, beam, and ledger heights. The job is further complicated by railings, steps between levels, and exit stairs that run down to the ground.
Elevated Decks

An elevated deck is almost always a problem solver. It provides deck access for rooms on the second floor of a two-story house and can also be added on to a house built on the side of a steep hill. Elevated decks are usually flat, which simplifies the construction somewhat, but the need for completely solid and safe railings, as well as a sturdy stairway to the ground, complicates the job. While it is certainly possible to build large, multilevel decks that are elevated high off the ground, it’s also very costly.
Deck Planning and Site Preparation

Good planning can make any job turn out better. Here are 10 ways to keep ahead of the problems.

1. Start with a site inspection. For most houses, the best spot for a deck is along the back wall next to a door. This provides easy access to the house. Convenience isn’t the only matter to consider. Factor in natural elements such as prevailing winds in your area and how the sun will hit the deck. Also consider how much privacy from your neighbors you’d like to have.

2. Draw a set of plans showing where you want the deck, what size and shape it will be, and what materials will be used. These drawings are a great way to refine your ideas, and a finished set is necessary when applying for development approval.

3. Check the availability of materials and if needed, builders. Shop around for good prices on timber, and find suppliers for specialty items (such as stainless steel screws) that may not be available locally. Also find out how much lead time your contractors (excavator and electrician, for example) will need. It’s not uncommon for them to be already booked for many months.

4. Get approval from your local council if required. Decks are relatively simple structures, but they still require a full set of plans showing exactly what you intend to do. The approval will include an inspection schedule that stipulates when the inspector must visit the site and approve the work.

5. Lay out the location of your deck with stakes and string to give you an idea of size and shape, this will also assist if council needs a site inspection prior to development.

6. Install outdoor electrical outlets on the house wall next to the deck location, and make plans for adding low-voltage deck lighting.

7. Finish any and all landscaping jobs around the deck site—planting trees, for example—before you start work on the deck, as some areas may become inaccessible once you start building.

8. To give you the most room in which to work, excavate for the foundation before the timber is delivered. Keep soil from the holes close by so that it’s easy to backfill the holes later.

9. If possible, have the timber delivered in one load to reduce any possible damage to your lawn. Cover the timber with a tarp to keep it dry.
ELEVATION DETAIL

Although treated pine can be put into ground, it’s not recommended for the long jeopardy of the decks life, whether steel, hardwood or treated pine always place posts on supports. Concrete absorbs a certain amount of water, keeping posts (if in concrete) moist most the time, this brings on premature rotting or rusting causing a break down the structural integrity of the post. Also placing the post on a support helps prevent termites attacking the timber. Also where possible house (cut) the bearer into the post, this adds greatly to the structural integrity of deck.
Ledger and Layout

Ledger Board

A good foundation will keep a deck from moving up and down, but it won’t necessarily keep it from moving sideways. To prevent this, the deck should be attached to the house with a ledger board.

Ledger boards are usually the same width as the deck joists—90mm x 45mm, 140mm x 45mm, 190mm x 45mm or 240mm x 45mm. The boards are then bolted either to the first-floor rim joists or to a brick skin of the house. To prevent water leaks within the existing structure always remember to flash correctly using a aluminum flashing installed behind the cladding and over the top of the ledger, Galvanized joist hangers are then nailed to the outside face to receive the ends of the deck joists. Once these joists are nailed to the hangers on one end and the beams on the other, the deck structure can’t move.

Before building anything, lay out the site accurately so that you know exactly where the deck will be located. Start by installing the ledger and marking the joist locations on it. Then install set out horses—layout devices that are designed to hold the mason’s strings—at the approximate corners of the deck. Run level and square strings from the ledger to and between these batter boards.

1. Attach the ledger board to the house. Then mark the deck joist and post locations on the face of the ledger.
2. Install set out horses at the approximate corners of the deck. Then attach a mason’s string to the ledger.

3. Hook a line level on the mason’s string to check that its level. Move the set out horse up or down until the bubble is in the middle.
4. Once the strings are level, check for square by comparing diagonal measurements. If these are the same (for example, in the image here, if AD=BC), the strings are square.

Foundation/Footings

A foundation is a stable surface, usually starting below level ground, this supports the structure. To create a stable base for a deck, the foundation has to begin below the ground level, the point of stable ground penetration in your area. This can be vary dramatically from area to area and the type of ground, Your local council will stipulate how deep each footing need to be, guidance can also be obtained through a structural engineer.

Digging a Footing

This requires excavation. In areas where deeper footings are required, this is a job best left to an auger which can be hired. Shallow holes can be dug by hand using a posthole digger or shovel especially if the soil is mostly sand.

You can get from the bottom of these holes to the bottom of your deck in two ways: by installing either treated wood posts or solid concrete footings. The concrete approach is better, but wood posts are much easier to handle. Concrete footings with post supports will add countless years to your deck.
How to Build a Deck Foundation

The best deck foundation consists of a series dug out holes filled with concrete, called footings, one under each deck post. Dig shallow holes with a posthole digger. Stab the soil with the blades, then squeeze the handles together and lift out the soil.

1. Place a circular or square timber form work over the top of the hole, mix concrete and completely fill the hole. Remove excess concrete by pulling a board across the top of the form.
Posts and Bearers

Posts and bearers work together to create an efficient system for adequately supporting joists:

- The posts sit on the foundation.
- The bearers sit on the posts.
- The joists sit on the bearers.

Without the bearers, a post would have to be installed under each joist.

How Bearers/Beams Work

Bearers are generally made of treated timber that can span sufficiently between the posts to support the joists. Once the bearers are installed, the top of each one should be level with all other bearers and with the bottom edge of the ledger board. This way, when the joists rest in the hangers they will sit level on the bearers.

Before the bearers are installed, look down the top of both edges to see which side has a crown, a convex curve along the length of the board. Then place each bearer so the crown points up. Once the joists and decking boards are in place, their weight will push the beams down and flatten them. If you place the crowned edge down, this weight will create a sag in the deck.

How to Install Deck Posts

The posts are the primary vertical members of any deck. They support the bearers and joists above and transfer this weight to the concrete footings (and ultimately to the ground below). To perform properly, posts must be:

- Installed plumb
- Placed on post supports
- Supports bolted with Dyna bolts to the footing, or set into concrete.
- Post supports bolted to the post.

In most cases, 90mm x 90mm posts are big enough to carry the load. Occasionally 140mm x 140mm posts are used.
1. Attach the post to its post support with galvanized nails or screws. Make sure to fill every anchor hole with a fastener, if bolt holes are provided in support we recommend there used.

2. Attach a temporary brace to the post and to a stake driven in the ground. Then level the post and nail the brace to hold it in place.
3. With the posts braced, place a long straight board with a level on top, support one side on the ledger and then mark a level line on the side of each post.
How to Install Deck Bearers

Once all the posts are marked with a level line, measure down from this line a distance equal to the depth of the bearer.

1. Using a square, mark all the sides of each post and cut off the waste with a circular saw. Alternately you can house the bearer into the post with a half house joint as per elevation drawing on page 18. Be careful when using this saw on the side of a post. Make sure you are standing or kneeling in a stable position, and wear eye and breathing protection when making the cut.

2. Because the bearers support all the weight of the joists and the decking above, they tend not to move particularly when housed. But they should be nailed and bolted to the posts nonetheless.
3. Using a combination square, lay out the joist positions on the top of the bearers. Mark with an “X” the side of the line where the joist should go.

4. Joining the deck components with hot-dipped galvanized nails yields very sturdy joints. In coastal areas and other high-wind locations, however, some people add galvanized reinforcing plates to the joints for added protection. This bearer-to-post bracket is one of the many pieces of specialized hardware that’s available.
Joists

Joists tie both the bearer beams and the ledger together, whilst supporting the deck boards to form a solid, flat surface for comfortable living. Joists are usually spaced 450mm apart, from the center of one to the center of the next. The joists are kept upright at one side of the deck by the joist hangers on the ledger, and on the other side of the deck with the rim joists that go around the deck perimeter. If two rows of joists meet over a beam in the middle of the deck, the ends of each row are nailed together so both stay upright.

As with bearers, look down both edges of each joist to find out which one is crowned. The joists should be installed so the crowned edges point up. When the deck settles over time, it will tend to flatten out, not sag.

How to Install Deck Joists

Though joists are very strong and don’t deflect much under load, they can easily move from side to side. If two adjacent joists bend away from each other, the unsupported span between them can increase and make the decking board above feel springy when walked on. To prevent this, always maintain proper joist spacing.

1. Draw lines for joist hangers on the ledger using a framing or combination square. These lines should 45mm apart and have a center spacing of 450mm to the next hanger.
2. Nail the joist hangers to the ledger, using your layout lines as a guide. Special galvanized hanger nails are made for this job.

3. Slide each joist into a hanger until it butts against the ledger. Then nail both sides of the hanger to the joist. Repeat for all joists.
4. Once all the joists are nailed to the ledger and the bearers, nail a length of joist material across the exposed joist ends, using galvanized nails or coach screw if you intend fixing handrail post to it.
Decking

Decking boards span the joists and create the deck. The deck boards should be flat and free of obvious splinters, cracks, and loose knots. If any of these defects are present, they should be cut off. Only sound board sections should be used.

You can install deck boards in several ways, the easiest and cheapest being to nail them to the joists with rust-resistant, hot-dipped galvanized nails. The best—but most expensive—option is to use stainless steel screws, either through specially designed secret fixings or through a more conventional top fix.

How to Install Decking

As mentioned earlier, you have a lot of choice when it comes to decking boards. Hardwood, Treated pine and composite decking, all do a good job. Ever since the deck boom began in the early 1970s, though, treated pine has taken the lion’s share of the market.

Dealing with Crooked Boards

Treated pine decking does have one big drawback: it isn’t very straight. And installing crooked boards so they stay flat is a lot of work. The best approach is to cut defective boards into smaller, more manageable pieces. Having more joints is better than using boards that may stay straight for only a couple of months.

Installing Decking

1. Attaching decking with screws is better than using nails, but it takes longer. Each screw needs a clearance hole drilled in the board.
2. Place the boards down leaving spacing, the spacing depend highly on the type and species of the timber used, so check will the hardware on purchase. Use an electric drill with a screw bit to install the deck screws. Drive the screw heads just below the surface of the board.

3. Allow the ends of the decking boards to hang over the rim joists. Then snap a chalk line and cut off all the boards at once.
Print this page to put together your order.

MY DECK MATERIAL ORDER

DATE: ____________  

ORDER No.: ____________

TO: ____________________________________  

JOB ADDRESS: ________________________________  

☐ DELIVER  

☐ PICK UP

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

003883_Decking INA v3 1  

24/03/2020 13:03:03 PM
Summary

1. Always plan your deck for maximum enjoyment and use.
2. Make sure all building approvals are undertaken.
3. If tradesmen are required, only use licenced experienced tradesmen that have built many decks before.
4. Order materials from a known quality hardware.
5. Always use safety and protective equipment, make sure all hand tools are sharp and all electrical tools are in as new condition.
6. Take your time throughout construction and enjoy the experience.

GOOD LUCK