



Decking

Building Tips

A Timber deck is natural, warm, will add value to your home and provide a long lasting feature that is visually pleasing and functional at the same time.

Additionally, the deck will provide an opportunity for indoor-outdoor living that effectively increases the floor area of your home at relatively modest cost. Red Stag Timber's sustainable plantation grown radiata pine is a wise choice for the construction materials and offers a pleasing, natural material that will deliver many years of service to the entire family.

Compliance:

The construction of a deck, where it is not possible to fall more than 1.5m to the ground below, does not require a building consent*. Any deck more than 1m above the surrounding ground must have a correctly designed barrier to prevent occupants falling off the deck.

Even where a building consent is not required, the construction must still comply with the Building Code. It is advisable to consult the generous amount of detailed technical information on this subject published online by BRANZ as a supplement to their BUILD magazine. You can find a wealth of information that is published to assist both the DIY builder and the professional builder at www.buildmagazine.org. Once there, search for "deck".

It is important that for any project you understand your obligations under the building code and to ensure at the outset that you are adding value and not creating a compliance headache for you or for a future owner.

The requirement for building consent for some small structures has been further relaxed in 2020 via "Building Controls Update 265". This is also worthy of research. Alternatively, involvement of a Licensed Building Practitioner will answer many questions and may save you time and money in the longer term.

We can, however provide some simple tips that may help the DIY builder to better understand the performance of timber in decks with a view to getting the very best result.



* This exemption is detailed at <https://www.building.govt.nz/projects-and-consents/planning-a-successful-build/scope-and-design/check-if-you-need-consents/building-consent-exemptions-for-low-risk-work/schedule-1-guidance/> and you are advised to check these regulations to confirm that the project you are about to embark on is in fact exempt from consenting regulations

Preservation: Durability:

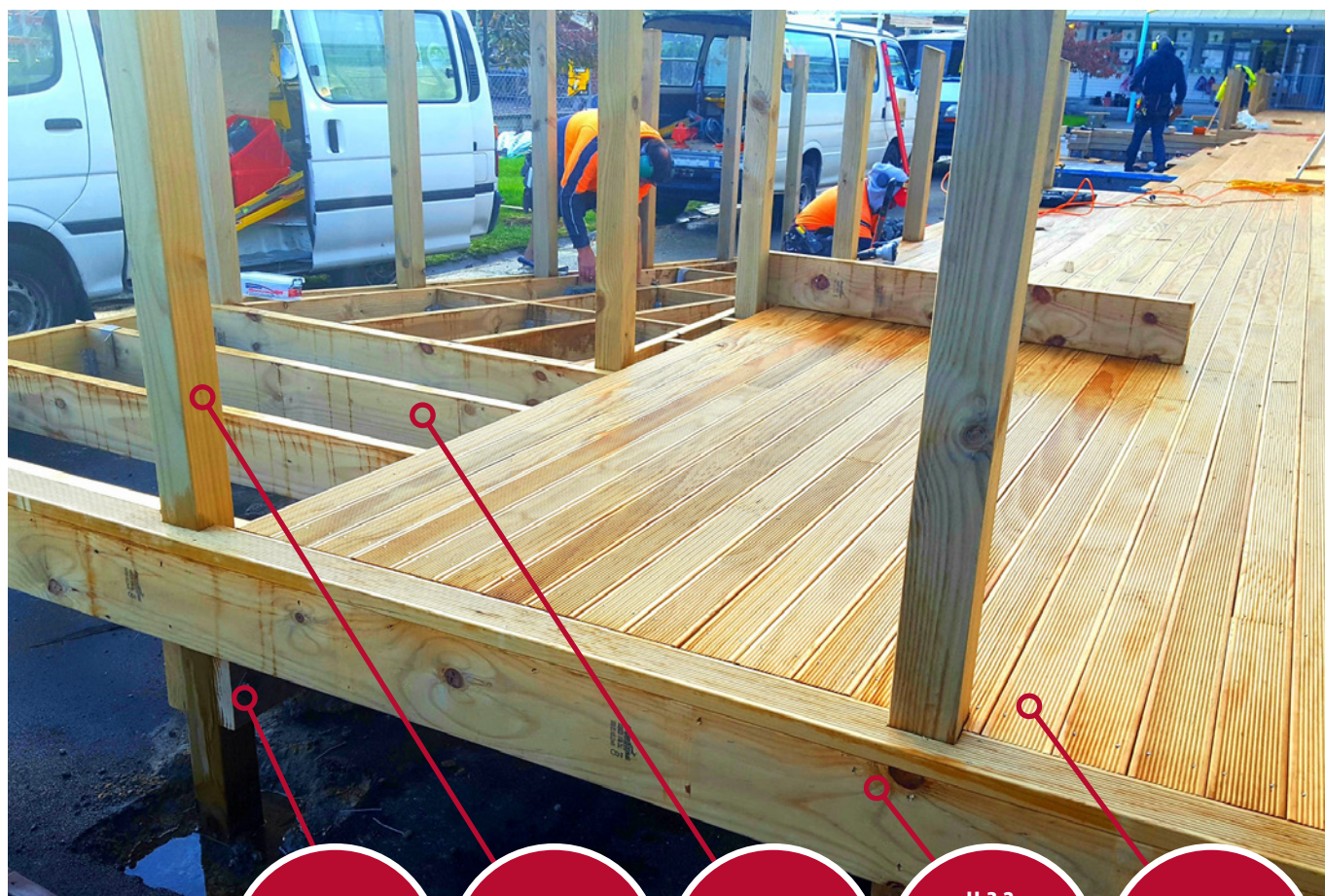
Decks, by their very nature are external structures. They are subject to harsh weather, be it extreme heat and radiation from sunshine, rain, frost, mold spores and the proximity of soil which can promote decay organisms. The timber chosen needs to withstand these elements and must contain a preservative that will cope with this harsh environment and provide long term durability to protect your new asset.

Timber that has ground contact and which performs a structural function must have a minimum preservation Hazard Class of H-5. This would include Piles, Poles and veranda posts. Most often this is achieved with a CCA preservative which is very effective and will offer a minimum service life of 50 years for structural components. This is a requirement under the regulations.

Joists, Bearers, Beams and Bracing that is not in ground contact but which is exposed to the weather must also offer a 50 year service life and this is achieved under the regulations by meeting Hazard Class H-3.2.

The decking surface itself, along with handrails is also not normally in ground contact, but remains exposed to the weather, and equally requires a treatment that meets hazard class H-3.2. Because these components are non-structural and are considered easily accessible (and therefore replaceable), they must provide a minimum of 15 year service life.

“Ground Contact” and “Proximity to Ground” can be confusing terms. It is clear that a pile or post is in ground contact because it is partially buried. A bearer or joist probably will not be touching the soil surface. But if that bearer or joist is within 300-400mm of the ground it may be exposed to prolonged dampness and splashes of soil which heighten the risk factor. For peace of mind and increased durability, the selection of a hazard class of timber higher than H-3.2 in close proximity to the ground is recommended. Alternatively further excavation during preparation will increase the clearance.



H-3.2 Red Stag
Timber Bearers

H-5 Ground
Treated
Structural
Veranda Posts

H-3.2 Externally
Treated Joists

H-3.2
Externally
Treated Red Stag
Timber Boundary
Joist

Red Stag
Timber
Griptread
Decking H-3.2
CCA Treated

Fixings and fastenings:

Fixings must have the same durability as the structure they are attached to. For example a structural member may have an expected durability of 50 years is being attached to any other component, then the fixing must similarly have a durability of 50 years.

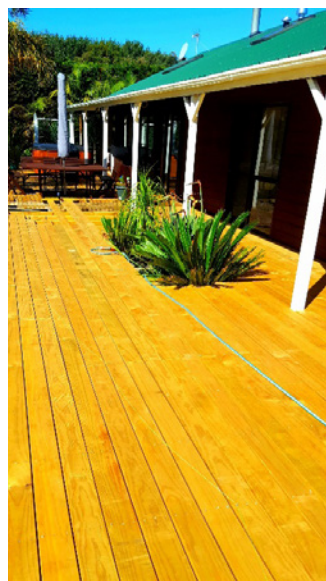
Timber containing copper based preservatives (CCA, Copper quaternary and copper azole) have corrosive properties when in contact with steel. It is essential that galvanized, or preferably stainless steel nails, bolts, washers, nail-plates, brackets and metal components be used for maximum durability. Checking with your local territorial authority whether stainless steel is required in coastal, geothermal areas and close to the ground surface is highly recommended to ensure the finished deck is compliant.

Timber Handling:

Timber used in external structures will continually adjust to the climatic conditions. Moisture will be absorbed and released by the wood fibre as the weather changes - the piece of timber will expand and contract in accordance with the varying moisture content. The variation in size can be up to 5% across the grain of a piece of timber and 0.1% along the grain. If the timber components are wet when fixed to the structure it is likely they will dry to meet the EMC (Equilibrium Moisture Content) and will reduce slightly in cross section and length leaving gaps. If they are dry when installed, they will swell when humid conditions or rain encourages moisture uptake. These changes must be allowed for in the design and construction phases of the deck. The movement inherent in timber structures will be magnified as the dimensions of each piece of timber increase and also as the total deck size increases.

Span Tables:

Span and bracing tables are available in NZS 3604 and will vary according to the dimension of the timber used in the deck, the height of the deck, its size and whether it is freestanding or receiving some bracing function from attachment to an existing dwelling. Even an experienced builder may not realise that the structure cannot be designed as per a normal domestic floor. Decks are considered quite separately. The design tables must be consulted during the design phase, as the loadings required for a deck exceed those required for a normal domestic floor – 2.0kPa instead of 1.5kPa. If a spa pool is part of the structure, then specific engineering design is required. Failure to identify such requirements may cause costly issues should you decide to sell the property at a later date and the buyer or the council recognize that the deck has not been constructed according to the Building Code. The regulations also contain information on slip resistance and even go so far as to specify the orientation of the grip-tread in access ways, and where the smooth surface is or is not permitted to be used.



Spacing between deck-boards:

If the decking surface is applied as freshly “treated wet” timber it will have a high moisture content and will be at maximum dimension. As the decking surface dries it will shrink leaving gaps at the ends of each piece and the gap between adjacent boards will also increase. Conversely, if the decking is fixed while dry, and no allowance is made for swelling, subsequent wetting will cause the boards to swell and contact will be made with the board adjacent. If swelling continues the resulting pressure can cause boards to dislodge, buckle or rise. This will make an otherwise perfect deck look uneven and can cause water ponding and even cause boards to pop off.

Sub-Structure:

The same principles can apply to the sub-structure. Especially in close proximity (< 300/400mm) to the ground with low airflow, the joists, bearers and piles will be slow to dry out after a period of wet weather. This moisture differential may even cause the decking surface where exposed to wind and sunshine to be dry on the top surface and wet on the lower surface which will cause cupping of the decking.

The differential rate of drying can cause parts of the deck to change physical dimension faster than other parts. This can lead to stresses in the structure that cause minor deformation such as bow or crook within some of the supporting members. While these dimensional changes may not be entirely eliminated they can be allowed for to some extent in the design by providing boards adequate clearance and for good airflow under the deck to ensure everything is maintained at a uniform moisture content.

Checking:

Timber is a natural product. It is natural and pleasing to the feel, and these natural features are some of its main attractions. The uptake and release of moisture will, in addition to dimensional change sometimes cause checking, which is a minor split in the surface of the timber along the grain. This is to be expected, and will be most prominent in areas where the uptake and release of moisture is extreme and where rapid drying takes place such as in a sunny spot or an area exposed to wind. Sheltered areas of the deck protected from sunlight, temperature change and moisture change will be least affected. A wood sealant will help maintain the appearance and surface finish.

To minimize the effect of timber dimensional change during construction it is recommended that the timber be purchased well in advance and be properly stacked well clear of the ground surface in fillet (with air able to circulate between the pieces, but protected from the weather) for a period of 1-2 months before construction commences. This will permit the timber to adapt to the local climatic conditions and adjust to the correct equilibrium moisture content.

Deck maintenance:

House maintenance is important and your deck is no exception. We recommend the deck be cleaned with a product like 30 Seconds Off, Hit the Deck or similar on a regular basis. Do not waterblast as this may lift the wood fibres and give the wood a “furry” look. To reduce the absorption and release of moisture, and thus reduce dimensional change, it is recommended that a good quality wood sealer be applied, and reapplied on a regular basis. This will improve the deck's appearance and keep it looking good over the longer term.



Good spacing to allow for moisture uptake and resulting size differential

Red Stag Timber smooth profile H-3.2 Externally Treated 150x40mm Decking

Where less than 300mm from ground level, higher treatment levels for joists should be considered

Some careful forethought into the design of the deck in relation to the local climate will allow a deck to be constructed that will give many years of good service as an entertaining area or for simple relaxation and outdoor activities. Red Stag Decking together with the structural timber used to support the deck are all produced from logs sourced from renewable plantation forests. This provides you with a sustainable product that sequesters carbon and benefits the environment as well as enriching the lifestyle of you and your family.

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