



# HOW-TO-BUILD GUIDE

## INTERNAL WALL AND CEILING LININGS

### WHAT YOU CAN BUILD USING THIS GUIDE

This guide will help you select the timber you want, and then explain how you can build a feature wall of tongue-and-groove timber boarding with a clear finish on a new or existing stud wall.

Timber boarding provides a durable, hard-wearing internal lining material suitable for walls in dry areas subjected to impact. Timber boarding can also provide a feature to enhance the décor of a room.

Timber boarding is not suitable for use where it will be regularly subjected to water splashing.

### TIMBER SELECTION

Timber used for lining is chosen for its colour, surface texture, presence of knots and grain pattern.

Suitable species include:

Fijian kauri, Lawson cypress, macrocarpa, imported redwood, tawa, matai, American oak, rimu, red or silver beech, Douglas fir, western red cedar, Tasmanian oak, radiata pine, salu salu (Pacific rimu), kadumu (Pacific maple) and locally grown redwood. This list does not cover all species, particularly imported timbers, which may be available.

Appearance grades for finishing timber under the New Zealand timber grading rules (NZS 3631) are:

- Native softwoods: clears, premium
- Hardwoods – native, exotic and imported: clears, premium
- Exotic softwoods: clears, select A, select B.

A timber that does not fit into the above grades may be specified to achieve a particular visual effect.

Poorly machined or poor quality timber can have a significant effect on the quality of the finished wall or ceiling.

### Timber moisture content

To minimise the amount of movement occurring in finishing timbers they should be at, or slightly below, the equilibrium moisture content of the room in which they are installed. Materials in intermittently heated buildings such as timber-framed houses should have a moisture content in the 10%-14% range (timber is usually supplied with a moisture content of 8–12%). Timber boarding must be stored in the space for at least five days before being installed to allow its moisture to equalise with room conditions.

### TIMBER PROFILES

The most commonly used internal lining profile has a tongue-and-groove joint. The edges of the joint on the exposed face are chamfered to create a 'V' when the boards are installed (sometimes referred to as TG & V). The V (Figure 1) masks a small amount of movement allowable in the tight joints.

Shiplap boarding has a lapped joint (Figure 2) which can easily accommodate the movement that occurs because the boards are not tightly butted together.

Timber lining can also be installed as board and batten or board on board, both of which accommodate movement readily (Figure 3).

Narrower boards (e.g. 100 mm) are preferred, rather than wider boards (e.g. 150 mm) as they allow movement to be distributed over a greater number of joints.

Quarter-sawn profiles are preferred as the shrinkage across the width will be less than that for flat-sawn timber (Figure 4).

### Board layout

Timber lining can be installed vertically, horizontally or diagonally (Figure 5). The vertical lining of a wall in timber up to a dado height of 900/1000 mm is also a practical solution to provide a hard-wearing surface where most wall damage occurs (Figure 6).

### Board fixing centres

Boarding supported directly on framing or battening should be supported at maximum centres of:

- 400 mm for boards up to 10 mm thick
- 450 mm for boards 11 mm to 15 mm thick
- 600 mm for boards thicker than 15 mm.

Boarding attached over other sheet linings such as an existing wall can use 600 mm centres for support.

### End joints

It is preferable to use full length boards, but where an end or butt joint is necessary, use a splayed or scarfed joint located over a framing member. Stagger end joints so that they are not beside each other. Some proprietary products come with tongue-and-groove end joints.

### Fixings

Boarding can be fixed by face nailing, secret nailing, screwing, adhesive, or proprietary fixing clips. Nail fixing is better able to accommodate the expected seasonal movement in the timber than adhesive or screw fixing. When face nailing or screwing, different nail/screw head options are available. Secret nailing is normally done at 45° through the tongue of the board. The nail is punched below the surface, and is thus hidden by the next board (Figure 7).

### Finishes

After the boards and trim have been installed the surfaces should be lightly sanded to remove small differences in level and machine marks in the finished surface.

Fill fixing holes with a colour-matched filler after the first surface coating has been applied.

Coating options for timber linings are:

- penetrating finishing oils
- stains
- polyurethane
- waxes.

### INSTALLING THE TIMBER BOARDS

#### Planning

Choose a timber and profile that will suit the décor of the room.  
Determine the board layout.  
Calculate and order materials.

#### Materials checklist

Lining boards  
Dwangs  
Skirting boards  
Architraves  
Dado mouldings  
Nails for dwangs  
Panel pins (or decorative head nails) for boarding  
Construction adhesive (if required)  
Clear finish/stain

#### Preparing the surface

Check that the surface of the framing is even. A suggested maximum tolerance is 3–4 mm in a 3 m length. Larger deviation may require the use of battens and packing to level the surface.

For horizontal fixing, the linings may be fixed directly to the studs. For vertical fixing, it may be necessary to fit extra dwangs for nailing.

#### Fixing panelling

For vertical panelling, start in a corner and position it with the groove towards the corner. Leave an expansion gap (Figure 8). If the wall is not square, scribe and cut or plane the first board along its length so that the rest of the boards will be vertical. Check boards are vertical every five boards during installation. The last vertical board may need to be scribed and cut/planed to fit accurately to the adjacent surface.

When installing horizontal panelling, it is normally best to start at the bottom with the groove towards the floor. Where the height of the panelling is not an exact number of boards, start at the top. This means that the make-up board can be hidden behind the skirting. Ensure the first board installed is level or horizontal before nailing off (check for level every five boards during fixing).

Select individual boards to minimise colour variation between them.

Each successive board should be tapped into place using a block cut from a scrap piece of the lining to protect the tongue.

End joints should be avoided where possible, but when necessary, should be made over a batten, stud or dwang and tightly splayed.

Fix boards to each stud/dwang by:

- face nailing where the nail is punched below the surface and stopped
- face nailing using a decorative head nail (accurate setout of fixings is required to maintain a good appearance)
- secret nailing (for boards up to 100 mm maximum), where the nail goes in wide at 45° next to the tongue of the board. Secret nailing is recommended as the nail is covered when the next board is fixed
- proprietary concealed clips.

Pre-drilling before nailing is recommended to avoid timber splitting.

## Attaching trim

Fix any trim that needs to be attached such as skirting, architraves, dado mouldings or corner quadrants.

## Finishing

Fine sand with 150 grit paper along the grain before any finish is added. Follow the manufacturer's instructions for application of any finish. Test the selected finish and application method on a piece of scrap lining in order to check what the finished result will look like.

## FURTHER INFORMATION

BRANZ Good Practice Guide, *Internal lining*

BRANZ Bulletin 380 *Timber internal linings*

Figure 1

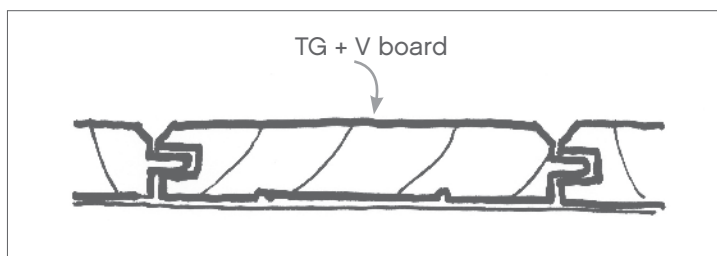


Figure 2

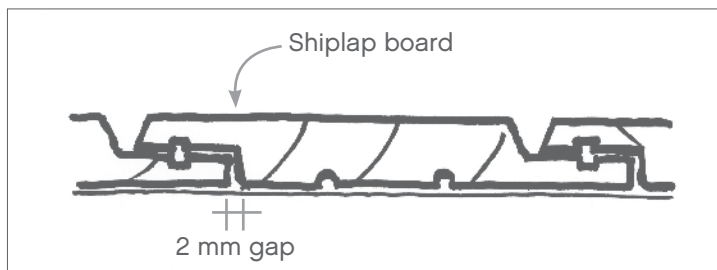


Figure 3

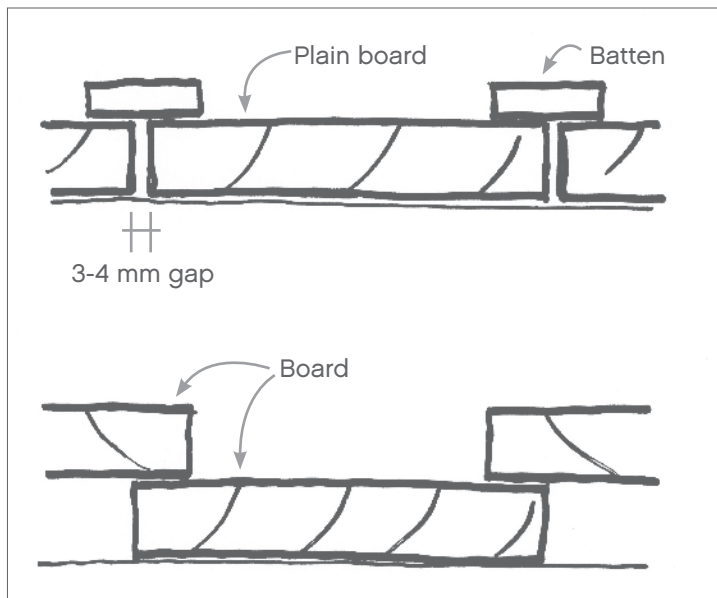


Figure 4

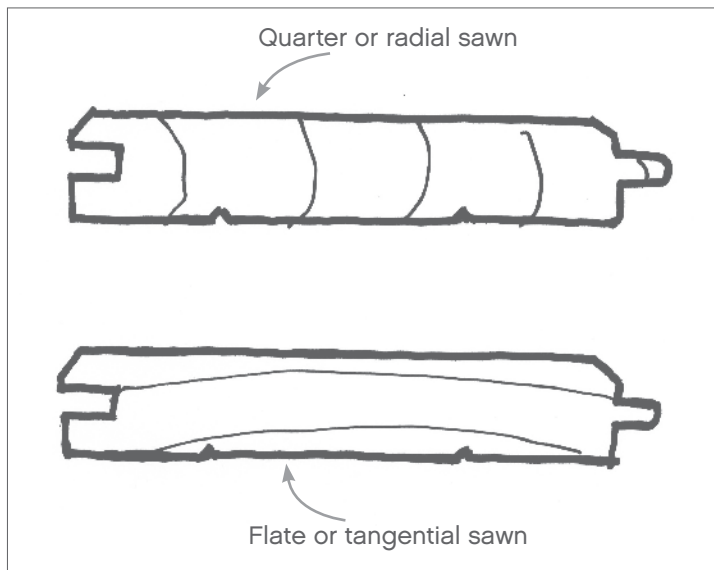


Figure 5

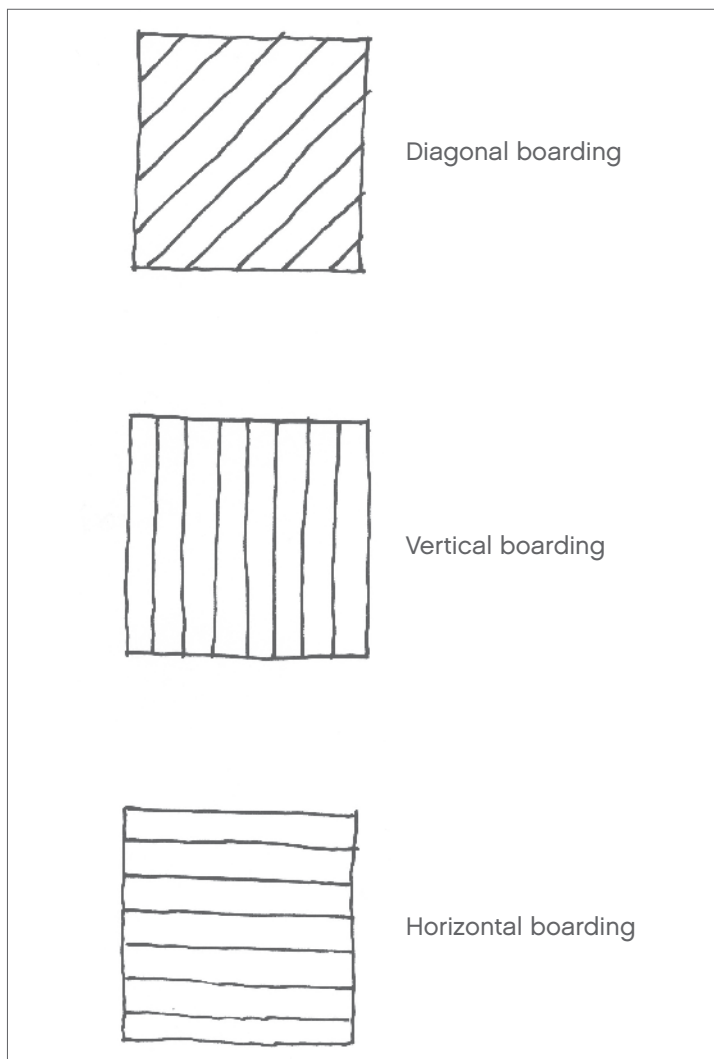


Figure 6

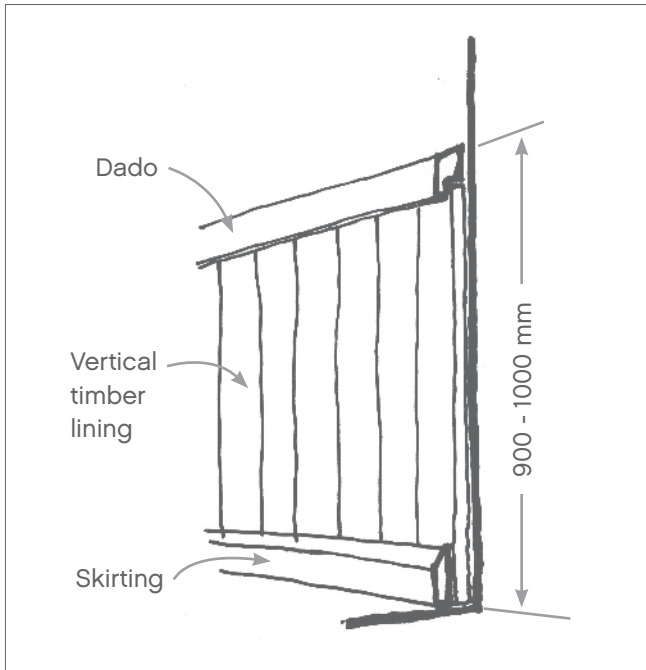


Figure 7

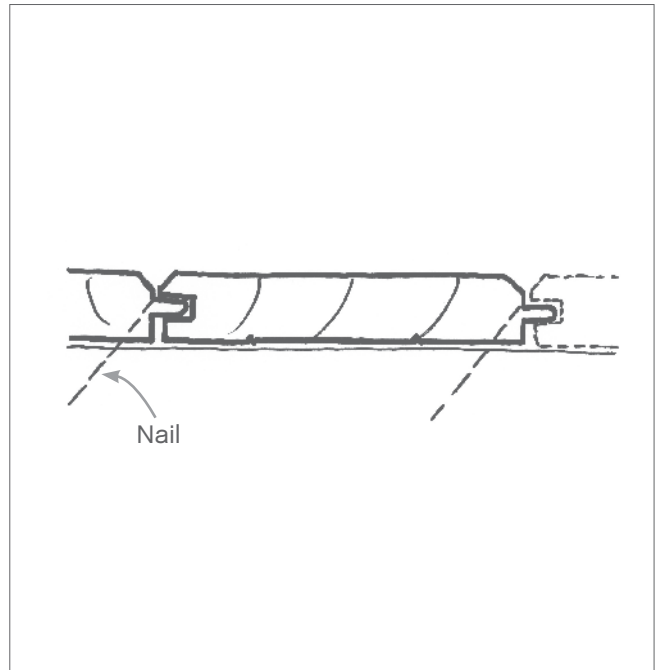
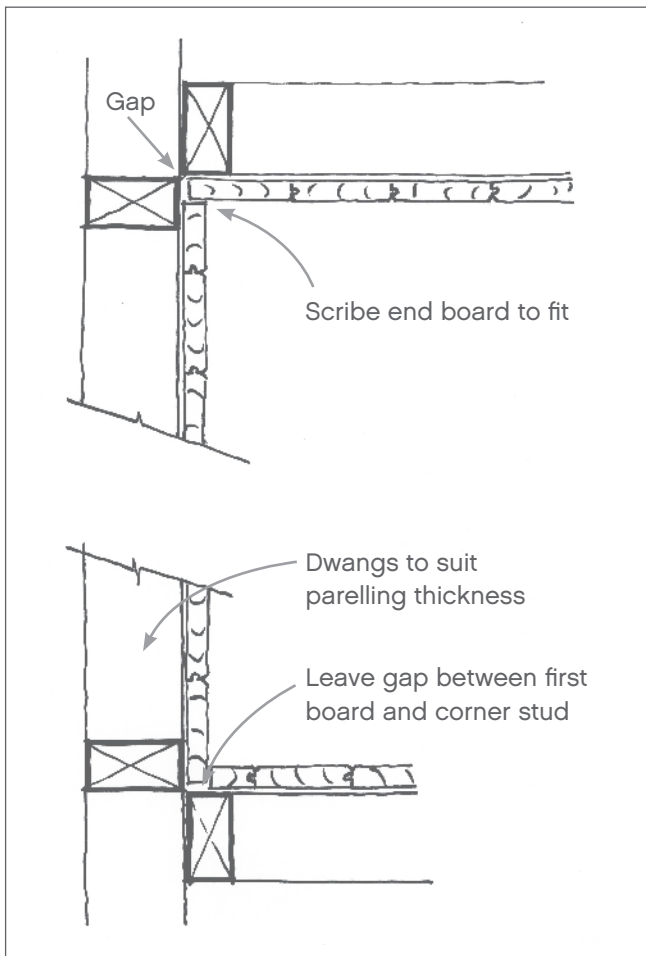


Figure 8



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