

DESIGN  
RIGHT



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# Veranda design and construction

The BRANZ helpline often receives questions about veranda design and construction. Here, we answer some of those questions.

**A VERANDA IS** defined in the MBIE 2014 document *Guidance: Building work that does not require a building consent* as 'a long porch [that] can extend along the full length, or even around more than one side, of a building.'

Porches are defined as 'roofed structures which project from the face of a building [that] may have sides but ... are open at the front [and] generally used to protect a building entrance and to provide shelter.'

Both verandas and porches 'often extend over raised decks or patios'.

## Is a building consent required?

Schedule 1 of the Building Act 2004 lists 43 exemptions of building work, including construction, alteration and demolition work, that may be carried out without a building consent.

Exemption 15 allows the enclosing of an existing veranda without a building consent when the floor area of the veranda is no more than 5 m<sup>2</sup>.

Exemption 17 states that a building consent is not required for building work in connection with a porch or a veranda that:

- is on or attached to an existing building
- is on the ground or first floor level
- does not exceed 20 m<sup>2</sup>
- does not overhang any area accessible by the public, including private areas with limited public access such as restaurants and bars
- is not going to be closed in.

In addition, exemption 24 allows the construction of a deck without a building consent if it is no more than 1.5 m above the ground.

## All work must be Code compliant

Regardless of whether a building consent is required, all construction work must comply with the New Zealand Building Code (NZBC). For verandas, this means compliance with NZS 3604:2011 *Timber-framed buildings* which is cited by NZBC clauses B1 *Structure* and B2 *Durability*.

The only references in NZS 3604:2011 to veranda design are in:

- section 9, which contains tables for concrete post footing sizes (Table 9.1) and connections between posts and beams (Table 9.2)
- Table 10.8, which provides veranda beam sizes and fixings.

All work must also be within the constraints of the Resource Management Act 1991 for site coverage, distance to the boundary and so on.

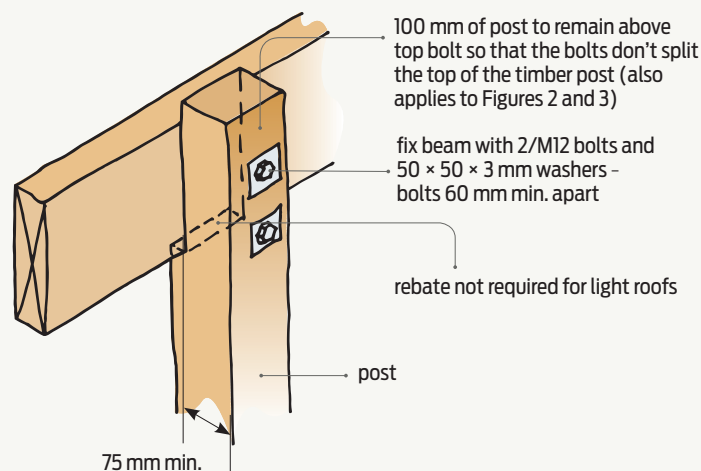
## Connections to resist uplift

Wind forces on a veranda roof, which increase the pressure on the underside of the roof and decrease the pressure on the top side, can be considerable. Connections between the posts and beams and the posts and concrete footings must be able to withstand the uplift forces generated.

NZS 3604:2011 Table 9.1 sets out the concrete volumes required for post footings depending on:

- roof type (light/heavy)
- wind zone (EH, VH, H, M, L)
- area of roof being supported (m<sup>2</sup>).

NZS 3604:2011 Table 9.2 sets out the connection capacity required between posts and beams to resist uplift. These connections are also based on roof type, wind zone and area of roof being supported.



- Notes:
- See section 4 of NZS 3604:2011 for durability requirements
  - Capacity of fixings shown is 9.8 kN

**Figure 1** Veranda post-to-beam connection – option 1.

NZS 3604:2011 Figure 9.1 describes how to calculate the area of roof supported by each post, and Figure 9.3 shows how connections may be made.

### Determining beam size

NZS 3604:2011 Table 10.8 gives veranda beam sizes and fixings for all wind zones based on span and loaded dimension of the beam. If the proposed beam span is beyond the scope of Table 10.8, the beam requires specific engineering design. Alternatively, it may be able to be sized using the BRANZ Lintels and Beams Calculator tool.

The post connections are given in NZS 3604:2011 Tables 9.1 and 9.2. Note that the veranda beam table applies only to verandas.

The lintel tables given in NZS 3604:2011 **must not** be used to calculate veranda beam sizes.

### Veranda deck construction

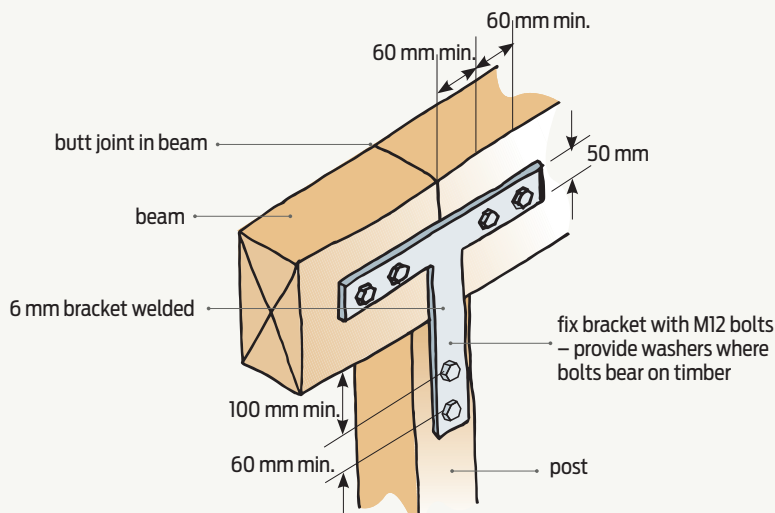
Veranda deck construction should be according to the requirements of NZS 3604:2011, section 7.4. Paragraph 7.4.1.2 identifies the relevant sections of the standard that cover timber deck design for 2 kPa floor loads (see Table 1).

#### Subfloor bracing

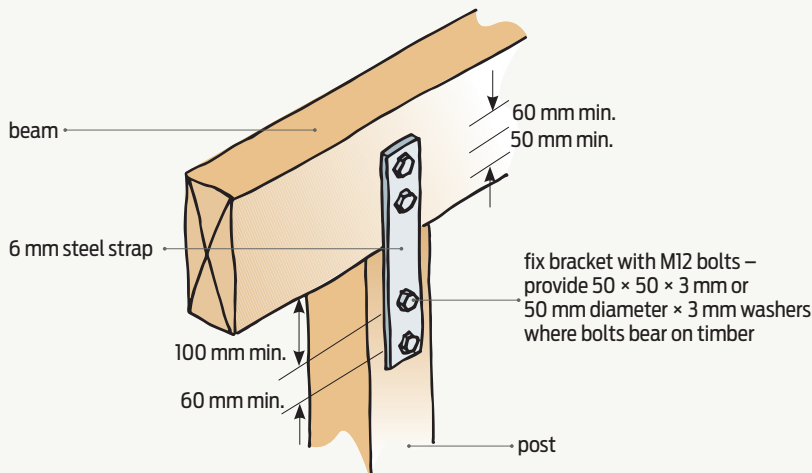
Where decks do not project more than 2 m from the building and are bolted to the solid framing of the building on one or more sides with stringers or joists, no subfloor bracing is required. If the deck projects more than 2 m, subfloor bracing is required from NZS 3604:2011, paragraph 7.4.2.2.

#### Veranda rafters

Rafter sizes for veranda roofs are selected from NZS 3604:2011 Table 10.1, which gives sizes, spans and fixings based on rafter spacing and applies to all wind zones. ➤



**Figure 2** Veranda post-to-beam connection – option 2.



**Figure 3** Veranda post-to-beam connection – option 3.

### Veranda roof bracing

Veranda roof bracing is not provided in NZS 3604:2011.

A veranda roof is unlikely to project more than 2 m from the building or be steeply pitched as this would block a considerable amount of light from the building interior. Roof bracing is unlikely to have any effect if veranda roofs up to 2 m wide are fixed to the structure of the building.

BRANZ structural engineers suggest a rule of thumb that, where a lightweight veranda roof:

- projects 2 m or less from the building, it does not need to have roof bracing
- projects over 2 m from the building, it should be a specific engineering design.

A heavy veranda roof should always be braced and this needs to be a specific engineering design. ◀

**Table 1**

## **TIMBER DECK DESIGN ACCORDING TO NZS 3604:2011 REQUIREMENTS**

DECK COMPONENT	NZS 3604 REFERENCE
PILES AND FOOTINGS	Section 6.0
BEARERS	Table 6.4(b)
JOISTS	Table 7.1(b) for 2 kPa wet-in-service timber (or Table 14.8 for 3 kPa floor load) and section 7.1
STRINGERS SUPPORTING JOISTS AND RAFTERS	Paragraph 6.13, and Table 6.5 for stringer sizes and fixings (or Table 14.7 for 3 kPa floors)
DECKING	Paragraph 7.4.3
BRACING	Paragraph 7.4.2