DESIGN **RIGHT**

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New-look Lintels and Beams Calculator

IN A MAJOR OVERHAUL OF THE BRANZ LINTELS AND BEAMS CALCULATOR, AN UPDATED PRODUCER STATEMENT, ADDITIONAL DRAWINGS AND MORE OPTIONS FOR TYPES OF BEAMS AND FIXINGS ARE NOW AVAILABLE.

THE BRANZ LINTELS AND BEAMS CALCULATOR is a tool for the design of lintels and beams in timber-framed buildings generally within the scope of NZS 3604:2011 *Timber-framed buildings* (see Figure 1). Lintel and beam options in the tool are not covered in NZS 3604:2011 itself. The calculator is available at www.branz.co.nz/lintels_and_beams.

Range of options shown

For each beam design, a range of options is presented so the user can select the most suitable beam to fit within the overall design and details for the building. The options include MSG/VSG8 sawn timber, laminated veneer lumber (LVL), glulam, hot rolled steel sections and flitch beams.

The choice of applications include:

- lintel supporting a roof only
- lintel supporting roof and wall
- lintel supporting roof, wall and floor
- veranda beam
- floor beam
- deck support beam
- roof beam – ridge or intermediate
- garage door lintel
- cantilever lintel.

Users can buy the calculations to present to the building consent authority (BCA). This includes a PS1 and accompanying calculation sheet and drawings.

Revised producer statement

One of the main changes is a revised producer statement (PS). The PS1 now includes:

- the date the calculation was done (some BCAs require each PS1 to be no older than 90 days from submission of a consent application)

Figure 1 New calculation table.

- the name of the BCA
- the project reference
- the software version number.

The calculation sheet accompanying the PS1 now also highlights the output fields that need to be checked by the BCA.

There's more

Other key changes include:

- revised drawings, including cantilever fixings
- more options for deck beam supports
- additional LVL properties based on available products ➤

- updated fixings to match NZS 3604:2011
- an updated engineering basis document, which should be submitted along with the PS1.

Using the calculator

There are a few important points to know:

- The project must be a timber-framed building. The calculator makes assumptions about loading that are only relevant for light timber-framed buildings broadly within the scope of NZS 3604:2011.
- Don't mix and match. Each application has its own unique layout and load criterion. If your situation doesn't match one of the pop-up diagrams, specific engineering design (SED) is probably required.

Lintels and garage doors

The essential feature of a lintel is that it spans over a door or window opening in a wall. The deflection of the lintel is tightly controlled to protect the door or window and avoid jamming or other damage.

The only exception to this is a garage door lintel. Because most garage doors slide up or roll up behind the lintel, deflection is not so tightly controlled.

Garage door lintels are not interchangeable with ones calculated for other situations.

Garage doors that slide horizontally and are suspended from an overhead track attached to the lintel may not be suitable unless there is a generous tolerance for deflection in the door installation.

Deck and floor beams

These are similar to each other, but the floor beam has no allowance for snow load. However, it can be susceptible to liveliness, so vibration is considered. A deck beam does not include vibration.

Both options can have concentrated loads – generally from intersecting beams – but the user does need to input position and magnitude of the load. This can be tricky for some structures, and often the only option is SED.

Cantilever lintels

There are four configurations for cantilever lintels, as the load distribution on the cantilevers for each option is very different.

Study the pop-up diagrams carefully when inputting the loaded dimension data.

Roof beams

Roof beams are susceptible to wind uplift, and there is no option for concentrated load.

Ceiling loads are allowed for except under wind uplift.

Deflection limits are more relaxed than for lintels, as there is no critical construction to be damaged by beam deflection.

Veranda beams

Veranda beams are a special case because of the higher wind uplift under the projecting roof and can't be substituted for any other application. To include the worst-case load, no ceilings are allowed for, which will often be the case.

Concentrated loads

The calculator has a limited ability to include concentrated loads, generally from intersecting beams or girder roof trusses. Because of the variety of possible situations, the user needs to input the relevant data – the position and magnitude of the load.

You can either enter the individual components of the load, such as the dead load and wind load if you know what they are, or just enter the total ULS load (see Figure 2).

For more Lintels and beams calculations are available to purchase singly or in multiples. One calculation costs $35, two cost $34 each, three cost $33 each – up to 100 at $15 each. See www.branz.co.nz/lintels_and_beams.