

# Testing deck details

BRANZ engineers have been looking at timber deck details in a project to define verified solutions for attaching decks and building safe handrails and barriers.



Figure 1: Test specimen weathering outside. The deck joists are attached to a ribbon board coach screwed to the wall framing.

**NEW ZEALANDERS** like decks around their houses to add outdoor living spaces. Consequently, much is published about how to build them including proprietary how-to guides, numerous *Build* articles and the Ministry of Business, Innovation and Employment *Guidance on barrier design* published in March 2012.

## Two areas of concern

BRANZ identified two areas of timber deck design where current information is lacking or confusing:

- Cantilevered handrails or barriers.
- The attachment of decks to the building.

A BRANZ Building Research Levy-funded project set out to provide industry with verified solutions for these areas.

## Some NZS 3604:2011 details confusing

Generally, timber deck construction is covered by clause 7.4 of NZS 3604:2011 *Timber-framed buildings*. Where the deck is greater than 1 m above ground, the New Zealand Building Code requires a barrier or handrail to safeguard people from falling.

The barrier is required to resist horizontal and vertical loads from people, so this is a critical consideration in its design. A 140 × 50 mm top rail on its flat can span

horizontally between lateral supports up to 1.8 m, for example, between a house wall or return railings.

If there are no suitable supports within that distance, the barrier must be designed to cantilever up from its attachment to the deck structure. NZS 3604:2011 provides details for this cantilevered connection to the deck, but these are confusing and conflicting.

Where the height of the deck is greater than 3 m above ground, its support structure is outside the scope of NZS 3604:2011 and specific engineering design is required.

## Proposed BRANZ deck details

*No strings attached* on pages 36-37 of this *Build* shows the proposed BRANZ deck details. These construction details have been verified by calculation against New Zealand Building Code requirements or have been tested.

## Complete barrier construction details tested

Generally, cantilevered deck barriers are supported against lateral crowd loading by posts connected at their base to the edge of the deck structure. This is a demanding