JUNE 2013

Our apologies

Recently, BRANZ used a photograph of a house at 16 Rapanui Lane, Christchurch, on our website and in Bulletin BU551 *Learnings from the Canterbury earthquakes*. We have been advised that this house was constructed using specific engineering design principles and did not present damage from an earthquake. The photograph was used to demonstrate the type of house that could have presented damage due to its location and design type. BRANZ regrets the use of this photograph in the context provided. An updated BU551 will be available from our website shortly.

H3.1 treated particleboard Appraisal

The May 2013 *Guideline* article covering particleboard and plywood flooring in wet areas stated that particleboard and plywood flooring is required to be protected by an impervious finish or lining with sealed joints. Where the integrity of the impervious finish cannot be assured, the flooring must be H3-treated plywood.

BRANZ Appraisal No 677 Strandfloor™ H3.1 Flooring covers particleboard flooring where the integrity of the impervious finish cannot be assured.

Stair design and handrail requirements

The key design reference for the provision of handrails to stairs is D1/AS1. In Table 6, it categorises four types of stair design based on the use the stair will be put to:

- Accessible – with a maximum 180 mm riser, minimum 310 mm tread and a 32° maximum slope.
- Common and main private – with a maximum 190 mm riser, minimum 280 mm tread and a 37° maximum slope.
- Secondary private – with a maximum 200 mm riser, minimum 250 mm tread and a 41° maximum slope.
- Service and minor private – with a maximum 220 mm riser, minimum 220 mm tread and a 47° maximum slope.

While the above are maximum and minimum tread and riser dimensions, each stair type must be within the appropriate band in the graph in E2/AS1 Figure 11.

All accessible stairways require handrails on **both sides** and are required to be continuous except where there are doors on landings (D1/AS1 6.0.3).

Stairs other than accessible stairs that have two or more risers and are up to 2 metres wide require a single handrail. Where the width is more than 2 metres, a handrail is required on each side of the stair. For stair widths over 4 metres, an intermediate handrail is required along the centre line of the stair.

The handrail must be installed at the same angle or pitch line as the stairs. Handrails are required to be positioned between 900 mm and 1000 mm (measured vertically from the tread) above the pitch line (the pitch line is an imaginary angled line (expressed in degrees) that touches the nosing of each stair tread).

Handrails for **accessible** stairs must begin 300 mm forward of where the pitch line intersects the floor. This means, for accessible stairs, the handrail must start one tread width plus 300 in front of a vertical line projected from the face of the first riser.

At the top and bottom of **accessible** stairs, D1/AS1 clause 6.0.4 specifies the distance the handrail projects beyond the top and bottom risers so that users can continue to grasp the handrail as they exit the stair. A handrail should continue on the pitch line past the top and bottom risers then continue horizontally within the 900–1000 mm height restriction for at least 300 mm. Short stairs that contain no more than three risers that provide access to or within a household unit are not required to have a handrail.

For other than accessible stairs, D1/AS1 requires that "handrails shall have the same slope as the pitch line, begin no further than the second riser from the lower end of the stairway, and extend the full length of the stairway". Continuing the handrail past the past the top and bottom risers is considered to give a safer stair for users.

Suitable graspable handrails are:

- for accessible stairway handrails (E2/AS1 Figure 26 (b)):
  - 32–50 mm diameter round
  - solid timber with a machined 32–50 mm diameter rounded top
  - a 45–50 mm wide section with rounded edges
  - 60 mm maximum and 45 mm minimum clearances from an adjacent vertical surface
- for private and common stairways (E2/AS1 Figure 26 (a)), a machined shape that has a maximum relevant width (RW) of 80 mm – the relevant width is measured around the upper surface perimeter between the vertical tangent contact point on each side.

Direct fixed cladding – capillary breaks are required

A cladding system is defined by E2/AS1 as: "The outside or exterior weather-resistant surface of a building; including roof cladding and roof underlays, wall cladding and wall underlays, and cavity components, rooflights, windows, doors and all penetrations, flashings, seals, joints and junctions."

E2/AS1 clause 9.1.3.3 states:

> "At concrete slab level, the base of the cladding system shall be as shown in Table 18, and: ...
> c) Be offset horizontally by a minimum of 6 mm for direct fixed claddings to prevent capillary action.

For direct-fixed cladding installations where a suspended timber-framed floor is specified, E2/AS1 clause 9.1.3.5 states:

> "At ground floor level, the base of the cladding system shall:
> b) For walls with direct fixed claddings, be offset horizontally from a concrete foundation wall by a minimum of 6 mm.

E2/AS1 gives no base of wall cladding details that show how the offset detailed above is to be achieved and prevent water being drawn up between the back of the cladding and the foundation. NZS 3604 Figure 7.11 (A) shows the bottom plate projected 6 mm past the edge of the slab to provide this capillary gap.

Bottom edge detailing of claddings

All claddings must finish at least 50 mm below:

- the finished floor slab level for slabs on grade
- the lowest framing member for suspended framed floors.

Equally important is ensuring that the cladding meets the clearance requirements to the finished outside ground level or to any deck, patio or flashing.

Insulating light steel framing

Where multiple steel studs or lintels are used sandwiched together, the design options for Building Code H1 *Energy efficiency* compliance are to:

- insert a water-resistant insulation material into the voids as the frames are manufactured/erected – see BRANZ *Building Basics: Steel Framing*, which recommends doing this
- consider them to be uninsulated areas of wall and calculate the thermal performance of the wall accordingly.

All light steel-framed walls require the installation of a thermal break over all steel framing members to mitigate the effect of thermal bridging through the steel.

Steel ceiling battens on clips fixed to trusses

Where steel ceiling battens are installed to the underside of the roof trusses using a metal clip system, the truss supplier will need to supply (as part of the specific design of the truss) the restraint or lateral support details for the bottom chords. Clipped-in ceiling battens do not provide any lateral support to the bottom chords of all trusses. As all truss design is SED – consult the truss manufacturer for specific requirements.

Calling construction product manufacturers

- Do you know what an Environmental Product Declaration (EPD) is?
- Do you know that an Australasian EPD Scheme is currently being planned for launch in 2014?
- Do you know that EPDs are underpinned by life cycle assessment (LCA), which calculates the environmental performance of products.

LCA and EPDs are already being used internationally as a transparent basis for providing customers with robust information about the environmental performance of construction (and other) products. Establishment of an internationally aligned Australasian EPD scheme provides new opportunities for New Zealand manufacturers who want to differentiate their products in an increasingly competitive marketplace.

If your answer to the above questions is “No” or “Not really”, then you may be interested to learn more by attending a proposed half-day BRANZ workshop about LCA, EPDs and whole-building whole-of-life assessment. This BRANZ workshop will:

- provide you with the fundamentals of LCA, its uses and benefits
- help you to think about what to consider when developing an LCA
- inform you about EPDs and EPD schemes
- introduce how EPDs can feed into the evaluation of building environmental performance.

You can register your interest in attending a BRANZ LCA, EPD and whole-building whole-of-life assessment workshop without commitment by sending an email to lca@branz.co.nz. We will then follow up with you to discuss dates, venue and cost.

BRANZ federated search

BRANZ has just federated its website search engine, making it easier and faster for website visitors to search the huge body of research and information hosted online by BRANZ. The search function incorporates the Level, Renovate and Build online websites. The search results are more detailed and provide an improved breakdown of where the information resides.

Getting the Best Out of Your Building – BRANZ science roadshow

Getting the Best Out of Your Building will use the expertise of BRANZ scientists and their latest research to aid the future performance of well designed and built homes and buildings. Knowledge gained through the scientists’ research projects will be presented on:

- ventilation drying in weathertight structures
- air infiltration and ventilation
- thermal bridging in the building envelope
- the Healthy Housing Index
- current energy performance of homes
- availability and assessment of new technologies.

Hamilton	Thursday 20 June	Claudelands Conference and Exhibition Centre
Masterton	Wednesday 26 June	Gateway Motor Inn
Upper Hutt	Thursday 27 June	Silverstream Retreat
Wellington	Friday 28 June	InterContinental Wellington
Tauranga	Monday 1 July	Trinity Wharf
Rotorua	Tuesday 2 July	Rydges Hotel
Gisborne	Wednesday 3 July	The Emerald Hotel
Napier	Thursday 4 July	War Memorial Conference Centre

All seminars will be held from 1:00—4:00 pm. More details are available on the BRANZ website (www.branz.co.nz/seminars).