More on floor joist deflection – updated from April 2011 *Guideline*

For some years, spans given in NZS 3604 *Timber-framed buildings* for timber floor joists have been the maximum span for the specific timber size and spacing, based on the ultimate strength, deflection or stiffness and (for internal joists) floor vibration.

Where noticeable vibration does occur, it is likely to be as a result of the way the floor was designed and built, such as:

- floor joists supported by a beam or lintel
- shrinkage of solid blocking
- the use of trimmer and trimming joists within the floor
- going beyond the maximum spans/spacing of members.

It is more likely to be an issue in buildings built before the mid 1980s. However, there have been calls to the BRANZ helpline regarding buildings built during the 1990s where the floors have a noticeable vibration during normal household activities.

Where floor deflections are particularly critical in new construction or renovation work, designers should discuss with owners the design options available, such as:

- increasing member size or reducing spans or spacing of joists – maximising spans given in the current NZS 3604 may mean that deflection in the floor will be felt by some people
- not taking beam and lintel spans to their maximum
- ensuring framing is dry enough when installed
- ensuring blocking is used and popery installed.

As said in the April *Guideline*, attempting to remedy noticeable floor deflection once a building is completed, particularly for upper floors, can be difficult and costly.

Definitions – open, sheltered and closed

NZS 3604 uses a number of definitions to describe where a component is located:

- An open subfloor is one where the subfloor ventilation is more than 7000 mm^2 of clear opening for each m^2 of floor area.
- A sheltered subfloor is one that has a ventilation area of up to 7000 mm^2 of clear opening for each m^2 of floor area (twice the minimum required).
- A closed space is a dry internal location not subject to airborne salts or rain wetting such as where rafters or wall studs are located.

Interpreting Table 4.1 NZS 3604:2011

When selecting subfloor metal components in zones B and C, you need to first determine the amount of subfloor ventilation that is being provided as this will affect the choice of material that can be used.

For sheltered subfloor spaces in corrosion zones B and C, hot-dip galvanised components and fixings (complying with the requirements of Table 4.2) can be used provided they are more than 600 mm above the ground.

Grade 304 stainless steel components and fixings are required for:

- zone D, whether sheltered or exposed
- any fixing into timber that is within 600 mm of the ground in any zone
- for use with ACQ and CuAZ treated timber in exposed or sheltered locations (Table 4.3 also allows the use of silicon bronze for fixing cladding) – when using ACQ or CuAZ in closed areas hot-dip galvanising is required for fixings and fasteners.

Table 4.1 gives the required weight of galvanising for steel components. To meet the requirements of Table 4.1, fabricated (specifically designed) steel items need to be manufactured from a minimum of 5 mm steel (see note 6) to allow sufficient galvanising to be deposited during the corrosion protection process.

ALF 3.2 forgotten passwords

We can have so many internet and other passwords these days that we can sometimes forget which one we have set up for which program. For ALF users who have forgotten their password, help is at hand. On entering the program, click on 'forgotten password' and then fill in the email address you use for the program. Once you have done this, click on 'send me my password'. If a new password does not arrive in your inbox, check your junk email as your security settings may have directed it there. The password sent will apply only to ALF. You should then access your profile and change it to one you will easily recall.

The same facility is available for those of you who have forgotten your My BRANZ password. The password you use for your My BRANZ access will not apply to your ALF account unless you made them the same when setting up the accounts.

Amendment 7 to B2/AS1

Amendment 7 to B2/AS1, which comes into force in July, applies only to radiata pine and Douglas fir solid timbers that are within a closed space. It requires a minimum treatment of H1.2 boric. H1.2 boric treatment is also the minimum treatment required for

floor joists, bearers, jack studs and solid flooring that is protected from the weather but exposed to ground atmosphere. Ceiling battens and 140 x 35 mm extra top plates are required to be constructed from H1.2 boric framing.

Other key requirements of Amendment 7 include:

- H3.2 treated timber is the minimum required for cantilevered enclosed deck joists and associated framing including joist trimmers, nogs and blocking
- removal of LOSP treatments for H1.2 framing
- H3.1 treated timber remains the minimum allowable for cavity battens
- allowing buildings complying with all of the design parameters of Amendment 7 paragraph 3.2.2.2 to be constructed from untreated Douglas fir wall and roof framing.

To determine the durability requirements for other than solid radiata pine and Douglas fir structural timbers and for appearance or non-framing timbers, designers and builders will need to continue to refer to NZS 3602:2003 *Timber and wood-based products for use in buildings.*

Weathertightness remediation detailing
BRANZ is currently working on the development of a number of detail solutions that can be applied to the remediation of leaky buildings. If you have a particular detail that you believe worked well and was appropriate to the repair of the building, we would like to hear from you.

BRANZ seminars – NZS 3604:2011
The final seminar of this series will be in Christchurch on June 23. Online registration is available for this final seminar on the BRANZ website.

BRANZ seminars – advance notice
The next BRANZ seminar (8 main centre venues in August) will be on domestic sprinkler design. Watch the BRANZ website for details as they become available.

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