Guideline

March 2017

Welcome to this update on technical and informative advice for the building and construction industry on issues relating to building controls and good construction practices.

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Bracing lines

A clarification

As a result of a question regarding wall bracing lines at the recent *BRANZ Answers: Bracing* seminar, these are the rules in NZS 3604:2011 *Timber-framed buildings* for wall bracing:

- 6 m centres for bracing lines above the floor level (5 m for subfloors). The rider to this is that the ceiling lining must have a density of 600 kg/m^3 or the walls must have an additional 140 x 35 mm top plate.
- Bracing lines are parallel to external walls in each direction.
- Parallel bracing elements within 1 m of a bracing line contribute to that line. This means that a bracing line down the centre of a 1.9 m wide corridor can utilise bracing elements placed in each wall of the corridor.
- Evenly distributed bracing capacity along lines as far as possible. Studies of buildings after the Christchurch earthquakes have shown that an even distribution of bracing resulted in better performance.

Flashing hems and hooks

Building – not dressmaking

Acceptable Solution E2/AS1 specifies the requirements for hems and hooks to flashing upstands. In all wind zones except extra high, the hook or hem can be omitted provided the flashing upstand is increased in height by 25 mm. For the EH wind zone, a hook or hem is mandatory, plus the upstand height must be increased by 25 mm.

Anchor piles – minimum heights

Height fixing dependent

NZS 3604:2011 section 6 specifies the requirements for anchor piles. The maximum permitted height of 600 mm from cleared ground is measured to:

- the centre of the **bolt fixing the joist** to the pile where both bearer and joist are connected (NZS 3604:2011 Figure 6.9)
- the centre of the bolt for a bearer fixed to a rebated pile (NZS 3604:2011 Figure 6.10).

Where a bearer is attached to the anchor pile using a proprietary bracket, the 600 mm height to cleared ground is measured to the top of the pile.

Bearers and loaded dimensions

Allowing for the loads in external walls

We have had several enquiries regarding the interpretation of loaded dimensions for bearers under external loadbearing walls.

Figure 1.3(G) of NZS 3604:2011 shows joists supported by a foundation wall. However, it is silent for bearers under external loadbearing walls, although it does make provision for the pile footings under external loadbearing walls.

A bearer under an external wall of a single-storey building could be supporting the roof and the wall and even a suspended upper floor in a 2-storey building. A 2-storey building will often have a continuous foundation wall around the exterior, so the floor joists will be continuously supported on a wall plate or stringer.

The situation is complicated, as the roof could be light or heavy with rafters propped off an internal wall, or it could be trusses spanning the full building width. However, the external wall will stiffen the bearer to some extent if it does not have too many openings.

For a bearer under an external wall of a single-storey building, use the following to determine the loaded dimension:

- For a light roof, use joist span (in m) plus 1 m divided by 2.
- For a heavy roof, use joist span (in m) plus 1.8 m divided by 2.

If the building is 2-storey and has no perimeter foundation wall (common in some parts of the country), it is advisable to have the bearers specifically designed by a structural engineer. The loading can be quite high, perhaps necessitating additional piles or larger bearer sizes.

For a pile-supported bearer within the floor area, the loaded dimension is half the sum of the joist span on each side of the bearer.

Drawings to accompany the above description can be found in this *Build* article.

Floor joist blocking

Not required everywhere

Solid blocking to floor joists is required at lines of lateral support in these situations:

- As individual blocks at 1800 mm maximum centres above lines of subfloor bracing at right angles to the joist (above concrete or concrete masonry foundation walls and bearers on subfloor bracing lines).
- For intermediate floors, as full depth blocking at 1800 mm centres (or continuous full depth) along the lines of internal walls containing a bracing element in the floor below.
- As individual blocks at 1800 mm centres to the ends of joists (or use a 25 mm minimum thick continuous boundary joist). Blocking must be provided between each end pair of joists (parallel to an external wall).
- At mid span of joists deeper than four times the joist thickness and where the span exceeds 2.5 m.

Lines of lateral support are defined as lines that provide horizontal support to bearers or to top plates (typically, they coincide with bracing lines). Also, subfloor bracing lines are not required to align with those of the walls above.

Room height regulations old and new

Oft forgotten documents

One old legislative document that is still current is the Housing Improvement Regulations 1947 (as amended in 1975). These are some of the rules it contains:

- Section 10: "Every habitable room shall have a height from finished floor to finished ceiling of at least 2.1 m in the case of an existing house and of at least 2.4 m in the case of a new house: provided that where a habitable room has a sloping ceiling it shall have that height over at least one half of its floor area, and in computing that area no regard shall be had to any portion of the room the height of which from finished floor to finished ceiling is less than 1.5 m."
- Section 8(1): "Every bedroom shall have a minimum width of 1.8 m: provided that for the purpose of computing such width in a room with a sloping ceiling no regard shall be had to any part of the room the height of which from finished floor to finished ceiling is less than 1.5 m."
- Section 8(2): "Every bedroom shall have an area of not less than 6 sq m: provided that in an existing house a room with an area of less than 6 sq m but not less than 4.5 sq m may be occupied as a bedroom by a person under 10 years of age."

The City of Auckland District Plan Central Area Section Appendix 12 Minimum residential apartment standards (updated 06/09/2011) states the following:

- B(i): "The minimum floor to ceiling height for habitable rooms (including servicing) shall be 2.4 m except that the consent authority may consider a lower floor to ceiling height for part of an apartment to accommodate multi-level or split-level apartments, mezzanines and the like. In such cases at least 50% of the apartment floor area must comply with the minimum 2.4 m floor to ceiling height requirements."
- B(ii): Kitchens, bathrooms, hallways, toilets, lobbys, laundries and service areas: 2.3 m minimum floor to ceiling height.

BRANZ Maintenance Schedules

Big facelift

The free BRANZ Maintenance Schedules online tool has had a significant facelift. The aim of the changes is to make the tool easier for you to use. The enhancements will give users the following benefits:

- The ability to make copies of saved schedules and use these in the form of templates.
- A new fully searchable workspace in which to manage saved schedules and favourite schedules.
- The ability to send completed schedules to other users of the Maintenance Schedules tool and to also receive schedules from other Maintenance Schedules users.

As a result of feedback from current users, the new 'make a copy' functionality has been implemented, and the site look and feel and navigation around the site have been refreshed.

BRANZ seminars

BRANZ Answers 17 – advance notice

Following on from the successful BRANZ Answers 2016, this 2017 seminar will cover a wide range of new topics that have been developed from common questions asked of the BRANZ helpline. This is important technical information everyone needs to know.

As we said in 2016, the key to any question is getting the right answer.

This seminar aims to give you the answers to a wide range of practical questions. The topics covered will range from the new requirements for fencing of swimming pool to specific topics covered under these general headings:

- Concrete slab design and construction – free joints, shrinkage control joints, floor tile movement control joints, reinforcing steel cover, edge distances, slab moisture content, screw bolt installation.
- Flashings – proprietary flashings and large roof flashings.
- Access – level entries, stair design.
- Building exterior – timber finishes, timber profiles.
- Verandas and sunshades – uplift, fixings/connections, bracing.
- Corrosion – protection to structural steel, dissimilar metals.
- Compliance – notices to fix, certificates of acceptance, outbuilding exemptions, acoustic wall principles, NZS 4246:2016 *Energy efficiency – Installing bulk thermal insulation in residential buildings*.
- Innovation – prefabrication/panellisation, CLT, LVL.
- General – mitigating bush fire risk, earthquake damage prevention, wet room drainage channels.

This seminar is a must for BCAs, architects, designers and builders.

The seminar will be delivered by:
Greg Burn – NZCD(Arch), DipBus (Marketing) – Structures Ltd
Des Molloy – the 'Old Geezer' returns

The seminar will come to 21 centres during June and July. Specific dates will be announced when planning and venue booking have been completed.

BRANZ seminars – webstreaming

BRANZ presents two major seminars at 21 locations around New Zealand twice a year. In addition, BRANZ also presents two or three seminars a year that are typically limited to main centres.

All BRANZ seminars are recorded, and a webstream of each seminar will be available approximately 3 months after the seminar series is completed. The backlog of seminars awaiting release as a webstream has been addressed, and these (except the recent Ventilation and Bracing seminars) will be available for purchase soon.

These webstreamed videos can be used for CPD points. Questions to be answered are provided at the end of the video.

BRANZ seminars – stop press

Subject to staff availability, BRANZ plans to bring a seminar covering the key elements of the recent Bracing and Ventilation seminars to regional centres later this year.