Guideline

March 2021

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.

Timber, steel and DPCs

Is a DPC always necessary?

The BRANZ helpline has received quite a few calls recently around fixing timber to structural steel. A common question is whether or not a DPC (damp-proof course) is required under the timber. If you can be certain that the timber will always remain dry in service, a DPC is not necessary.

However, some of the questions apply to the new trend for large imitation columns formed with timber around steel SHS (square hollow section) posts. There is the potential for these to become wet from the weather. The copper in the timber treatment produces a greater corrosion risk for the metal when moisture is present. In these cases, a DPC should be inserted between the steel and timber to keep them separated.

Of course, E2/AS1 also requires separation between metal claddings and timber cavity battens with copper-based treatment such as CCA or ACQ.

Specifying custom windows in ALF 4.0

Don't forget the solar heat gain coefficient

The BRANZ helpline has also been getting a few queries about problems with specifying custom windows in the BRANZ thermal modelling tool ALF 4.0. A common problem seems to be getting no window solar gains when custom windows are used. This seems to be due to users forgetting to enter a value for the solar heat gain coefficient (SHGC) of the window at the input stage.

For a custom window in ALF 4.0, both a total window R-value and an SHGC value need to be entered. This information must relate specifically to the installed window and be verified and should be sourced from the window manufacturer's product specifications. Be careful when using R-values from promotional material as these may be in American units (i.e. not SI) and are often centre of glazing R-values (a higher figure) and not the total R-value for the window.

The low-down on downlights

Look for models that stop airflow into the roof

Recessed downlights remain enormously popular in New Zealand houses. Older models that required gaps in the ceiling insulation and also had gaps within the light fixture itself led to huge heat loss from living spaces, but new models rated IC, IC-F or IC-4 can be covered with insulation following the manufacturer's instructions. (You can also find installation guidance in NZS 4246:2016 *Energy efficiency – Installing bulk thermal insulation in residential buildings*, freely downloadable from here.)

Heat loss is only part of the issue with recessed downlights. Some types (including a few cheap imported models) still allow movement of potentially moisture-laden air from inside the house to the roof space. BRANZ has inspected recently completed houses where downlights allowing air/moisture movement have been a contributing factor to condensation and mould growth in the roof.

There are recessed downlights on the market today that have been specifically designed to greatly reduce or prevent air movement from living spaces into the roof cavity. We recommend that architects and designers specify only these types of products.

Building form and efficiency

Shape up for better performance

A company that provides energy modelling services recently told us that many architects and designers aiming for energy-efficient houses are forgetting the huge impact the shape of a house plays. "I model dozens of houses a year from designers all over the country and the vast majority of them are very spread-out designs with very poor form," one of the modellers told us.

Concrete floor slabs of regular shape – something like a simple square or rectangle (Figure 1) – have much higher thermal performance than very irregular or complicated designs (Figure 2). The higher the ratio of net floor area to perimeter wall length, the better.

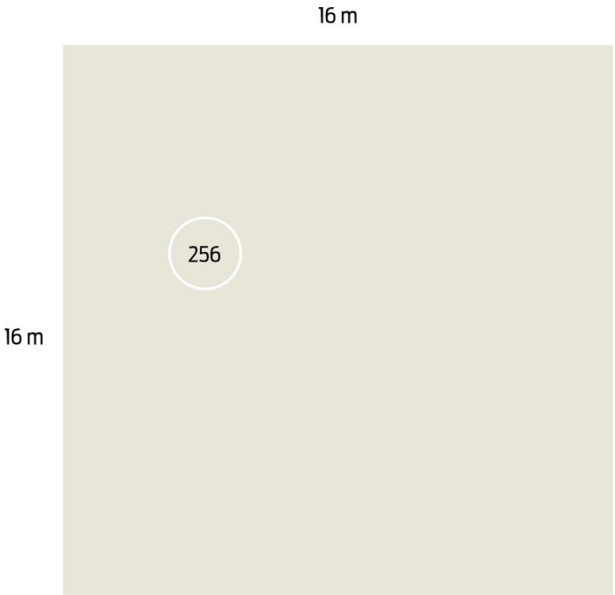

Figure 1. Regular floor plan (area:perimeter ratio of 4).

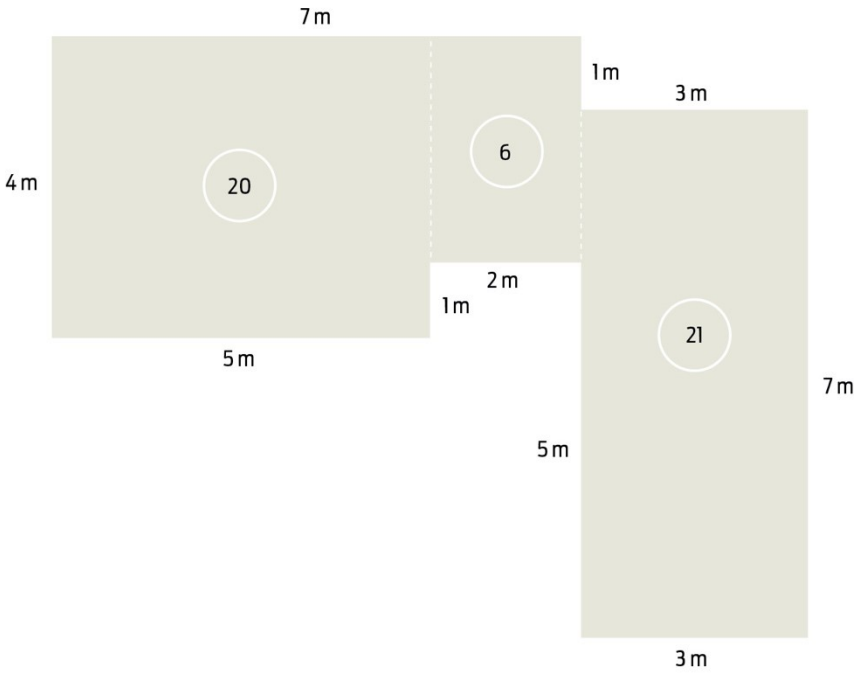

Figure 2. Irregular floor shape (area:perimeter ratio of approximately 1.24).

Considering volume, compact 2-storey houses (Figure 3) also have better thermal performance than very spread-out shapes (Figure 4) as they have the lowest surface area to volume ratios. This approach limits heat losses, which is the main concern for most of New Zealand.

Figure 3. Minimal surface area reduces heat loss.

Figure 4. Increased surface area produces greater heat loss.

A compact form is recognised in many home rating/certification tools, such as those operated by the New Zealand Green Building Council and Te Tōpūtanga o te Whare Korou ki Aotearoa/Passive House Institute.

Building Act amendment update
Support for off-site construction

The draft Building (Building Products and Methods, Modular Components, and Other Matters) Amendment Bill came out of a parliamentary select committee in early March. The Bill sets up a new manufacturer certification scheme for things such as prefabrication, strengthens the CodeMark scheme, allows for more information to be required about building products, updates

maximum penalties and allows the Ministry of Business, Innovation and Employment (MBIE) to use the Building Levy for wider purposes.

Recommended changes to the Bill while it was in select committee include:

- extending the commencement date for most of the changes from 12 to 15 months after the law gets Royal assent to allow more time for regulations to be developed
- clarifying that the reduced time limit for decisions on building consent applications, from the standard 20 working days down to 10 working days, applies when the building consists entirely of a single modular component manufactured by a single certified manufacturer
- allowing for a manufacturer's certificate for a modular component to be considered or accepted as proof of compliance with the building consent
- making it clear that the 10-year time limit for civil proceedings would include building work associated with the manufacture of a modular component.

Catching the cowboys
How you can check someone out?

In many areas of construction, a practitioner needs to be certified or registered before they can legally carry out certain work, but there are unregistered 'cowboys' around. How can you tell if someone can legally do the work? These links to registers of licensed/certified practitioners will help:

Licensed building practitioners

Plumbers, gasfitters and drainlayers

PGDB Report-a-Cowboy app

Electrical workers

Asbestos licence holders

Scaffolding certificate of competence holders

Architects

Chartered professional engineers

Industry's response to MBIE's climate change proposals
Supportive, but many see barriers to change

MBIE issued two consultation documents as part of its *Building for climate change* programme. One covered embodied carbon emissions, and another covered operational efficiency (such as heating, cooling and lighting). The Ministry received 360 responses, including 299 responses to a survey. An outline of the feedback has just been published:

- 95% agreed or strongly agreed that measures to improve operational efficiency in buildings were required.
- 92% agreed the industry needs to take action to reduce emissions.

- 87% thought there should be incentives to reduce whole-of-life embodied carbon in New Zealand buildings.
- 86% thought operational efficiency requirements should be introduced gradually over time.
- 79% said there were barriers preventing them or their business taking such action.
- 74% supported a cap on whole-of-life embodied carbon for new building projects.

News

Construction costs continue climbing
Stats NZ data shows building construction costs grew by almost 1% in the December 2020 quarter, continuing a steady upwards path.

BERL forecast slight tail off in house building
In its *Bird's Eye View* summer 2021 report, economic researcher BERL says that investment in residential construction peaked in late 2020. While this is expected to tail off slightly in the next few years, it says demand for residential investment will remain strong. BERL notes risks from capacity constraints and supply chain disruptions.

Government/Reserve Bank moves support construction
In its quarterly predictions for March 2021, economic researcher NZIER is also optimistic about future building work: "The pipeline of construction is growing in response to the significant amount of stimulus injected into the economy by the Government and the Reserve Bank."

House builders expect higher activity
In ANZ's New Zealand Business Outlook survey for February, residential construction intentions increased 32 points, with a net 52.2% of firms now expec`ting higher activity in the next 12 months. A net 27.3% of commercial construction firms expect higher activity.

Supply chain problems likely to continue
Transport Minister Michael Wood told the Transport Select Committee that supply chain delays involving ports and international shipping are likely to continue for much of the year.

Residential work up, commercial work down
Stats NZ says the estimated volume of residential building work in the December 2020 quarter was up 0.7 percent, following a strong bounce-back in the September quarter. Total building activity has fallen slightly since the September 2019 quarter but remains at historically high levels. The growing residential work has been partly offset by a fall in non-residential work.

Supply pressures hit home building
About 6 out of 10 home building projects in Auckland have been hit by problems with materials and/or equipment availability. This was the most common issue in Stats NZ's Quarterly Building Activity Survey for December 2020. The survey covered 5,119 building projects

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BRANZ seminar: Answers 2021

This nationwide BRANZ Answers seminar series gives answers to a wide range of practical questions relating to new ways of doing things in the residential building and construction industry. We cover new types of buildings, new types of products and systems, new ways to increase the performance of buildings and upcoming regulatory changes.

Seminars run 1–4pm. BRANZ will follow government guidelines around COVID-19. Should the seminars be cancelled due to COVID-19 restrictions, online seminars will be made available as an alternative or refunds issued as required.

The presenter is Greg Burn – NZCD (Arch), Diploma in Business (Marketing) – Structure Ltd.

You can register and pay online here.

See dates below:

Day	Date	Location	Venue
Wed	24-Mar	Timaru	Comfort Hotel Benvenue
Thurs	25-Mar	Christchurch 2	Addington Events Centre
Fri	26-Mar	Blenheim	Scenic Hotel Marlborough
Tues	30-Mar	New Plymouth	The Devon Hotel & Conference Centre
Wed	31-Mar	Palmerston North	Distinction Hotel & Conference Centre Palmerston North
Thurs	1-Apr	Wellington	InterContinental Wellington
Thurs	1-Apr	Live Webstream	
Wed	7-Apr	Tauranga	Trinity Wharf Tauranga
Thurs	8-Apr	Hamilton	FMG Stadium Waikato
Fri	9-Apr	Taupo	Millennium Hotel & Resort Manuels Taupo
Thurs	15-Apr	Auckland-North Shore	North Harbour Stadium
Fri	16-Apr	Whangarei	Barge Showgrounds Events Centre