



September 2021

GUIDELINE

Welcome to the BRANZ monthly technical update



COVID-19 and construction

Where to find reliable up-to-date details

Varying alert levels for COVID-19 mean different requirements for construction work and building sites around the country. Find details on the [CHASNZ website](#). If you have a work mate who is feeling stressed, get help from [MATES in Construction](#), or call 0800 111 315. ▶

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Site security

Big jump in reported thefts from building sites

A combination of building supply shortages, steep price increases and COVID-19 lockdowns has led to dozens of thefts from building sites and contractors' vehicles around the country in recent weeks. No longer are thieves just after tools and equipment - recent thefts have included plywood sheets and timber framing, gas-powered water heaters and other newly installed appliances.

Insurance can help, but some items have deductibles of up to \$1,000 or more. Here are steps you can take to protect your site(s), your vehicle and your wallet.

Keeping tools and materials safe on site:

- Install good-quality locks on site container lock-ups.
- Consider employing security on construction sites.
- Consider installing security cameras on construction sites.
- Write down the serial numbers of all your power tools and equipment and any appliances installed on a site.

- Buy an identification kit to put hidden marks on all your tools - Police have special lights that can see the ID marks.
- Keep photographs of your tools and equipment, materials deliveries and work in progress.

Keeping the truck secure:

- Get a lockable purpose-built tool box and securely fix it in the vehicle.
- Install a good vehicle alarm.
- Connect tool lock boxes to the alarm system.
- Remove expensive tools and equipment from the vehicle during evenings/ weekends.
- Lock vehicles on worksites when unattended.
- Consider installing dark tinted window film to keep tools out of sight.
- If possible, avoid parking your vehicle on the street at night. ▶



Securing exterior hot water systems

Getting the restraints right is crucial

With their high levels of energy efficiency, heat pump water heaters are growing in popularity. They often have an outside storage cylinder, either as part of an integrated heat exchanger/cylinder unit or a split system where the cylinder is outside by choice.

In either case, restraining the cylinder against earthquakes is crucial. A 25 x 1 mm galvanised or stainless steel strap with tensioning device can be installed around the top and bottom. Cylinders over 200 litres require a third strap in the centre (see G12/AS1 Figure 14).

The ideal is to directly fix the straps to the wall framing with coach screws a minimum 50 mm into the studs. Fixings can be slightly tricky

with brick veneer, however. Fixing the cylinder to the veneer itself is not desirable because veneer is generally not designed to cope with additional lateral point loads such as this. There is one answer that requires careful planning: screw stainless steel straps to the studs on both sides of where the cylinder will stand, passing the straps through the brick perpend joints as the veneer is constructed. Durable packing will be required between the heater and veneer to allow the straps to be properly tensioned (Figure 1).

As with any installation work, always check you comply with the manufacturer's own installation instructions. ▶

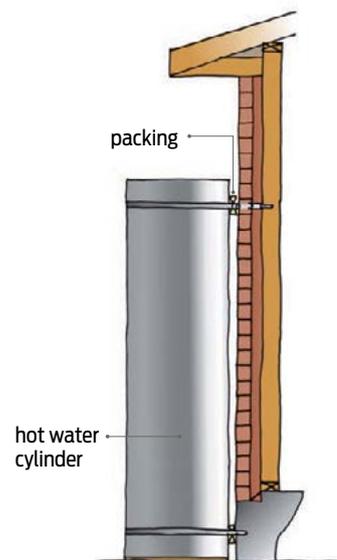


Figure 1. Anchor an exterior hot water cylinder to wall framing THROUGH a veneer. Do not fix to the veneer.

Construction moisture

Keep it dry!



Materials supply shortages and price hikes have led to some builders stocking up on construction materials well before they are needed. Materials not required for a few weeks or even months must be stored properly to remain in good condition. We have heard of new plasterboard linings having to be dumped after they became damp, mouldy and damaged in storage and packets of plastic-wrapped framing timber, obviously not properly dry before wrapping, that have gone black with mould waiting for the job to start.

If you've stocked up early on materials for a future job, here are a few storage tips:

- **Kiln-dried framing** should be stored under cover on even dunnage on a level base clear of the ground. Don't allow it to sweat under cover. Removing covers temporarily in dry conditions will help allow any treatment solvents to escape.
- **Timber weatherboards** must be stored laid flat on a smooth level dry surface, clear of a floor. Store on slats to allow

air movement and under cover. While most timber weatherboards come with a primer or sealer coat, any uncoated boards that will be painted should be coated immediately in dry conditions to seal them and minimise the risk of water absorption.

- **Plywood** must be kept dry and protected from sun, rain and wind. Keep the stack clear of the ground in a well ventilated area to allow remaining solvent to evaporate.
- **Fibre-cement sheets**, weatherboards, planks and trims must be stored under cover, laid flat on a smooth level surface and edges protected from chipping. Support the sheets at both ends and the middle to avoid distortion - align bearers in packs over bearers in packs below.
- **Plasterboard** sheet linings should be stored in flat stacks, clear of the floor (or on a waterproof polythene sheet), protected from rain and protected to avoid damage to corners, edges and surfaces. ▶

Construction moisture #2

Let it dry!

A reasonably new (5-year-old) house had a nasty surprise in store when a building team recently opened up some enclosed exterior beams, boxed/framed out with enclosed voids. Everything was watertight, yet there was mould inside and the linings (the substrate to a plaster exterior) were damp and soft. Some of the timber beams had bowed. This wasn't the result of leaks getting in but retained construction moisture from 5 years ago not able to get out. The original builder had not let the timber dry sufficiently before enclosing it. This seemingly minor oversight has led to a very expensive problem for the homeowner today.

If timber, concrete and other building products are enclosed before they have had time to dry properly, this can result in high relative humidity, condensation, mould growth and more serious damage. [NZS 3602:2003 Timber and wood-based products for use in building](#) says that timber must have a moisture content below 20% before it is enclosed with internal linings. Some timber manufacturers have specific requirements below 20% for their products. Concrete floor slabs contain thousands of litres of water and must dry out over several months before being covered with vinyl or similar flooring. You can find more information in BRANZ Bulletin [BU587 Dealing with construction moisture in new buildings](#). ▶

Tornadoes bring big losses

We're not in Kansas, Toto, but we still need to tie down

The tornado that hit Papatoetoe in June this year resulted in more than 1,200 house and contents insurance claims totalling over \$24 million. It is a clear reminder of the damage that wind uplift can cause and the need to secure all roofs, including veranda roofs, in both new builds and renovations.

In new builds, double-check that:

- lintels are tied to trimming studs and top plate (NZS 3604:2011 *Timber-framed buildings*, including Figure 8.12 and Table 8.14)
- rafters or trusses are tied to the top plate and wall studs (section 8 and Table 10.1 and Figures 10.6 and 10.21 for rafter connections)
- veranda posts have sufficient mass and a strong enough connection at the base and the posts have a strong enough connection to any veranda beam they support (section 9)

- ridge beams are anchored within the framing (Table 10.2 and Figure 10.8) and rafters are anchored to the beam (Figure 10.5)
- purlins are properly secured to the rafters (Tables 10.10 or 10.11)
- for profiled long-run metal roof cladding, crest fixings may need to incorporate load-spreading washers to accommodate uplift.

The worst weather damage is often to older buildings. Fixings can corrode and lose holding power over time, particularly on the coast, and older buildings may have been designed and built to lower standards than apply today. If you're carrying out maintenance on older buildings, check the condition of roof framing connections and cladding fixings. If you're carrying out renovation work, include upgrading of fixings as part of the work brief. It's worth it - NIWA reports 7-10 moderate to strong tornadoes in an average year. Tornadoes have killed six New Zealanders in the last couple of decades. ▶

Cash for carbon-friendly construction

Do your clients know how to cash in?

High-spec glazing and thermal insulation and other elements/materials are good things to include in a new or renovated home, but the cost makes some clients wary. You could help by pointing them towards cash grants or loans (often with no or low interest rates) for these types of carbon-friendly construction.

A few examples:

- **Banks** offer a host of special loans and cash handouts. ANZ offers interest-free home loan top-ups for 4 years of up to \$5,000 for insulation and up to \$5,000 for heat pumps. ASB gives \$3,000 cash to customers who finance their new home with a Back My Build loan and build a 6 Homestar rated home (or higher). If homeowners top up a Kiwibank home loan to install an eligible sustainable energy system, the bank will contribute up to \$2,000 to the cost of the system. Westpac offers a loan up to \$10,000 interest free for 5 years for heat pumps, insulation, double glazing etc.
- **Councils** - Marlborough District Council loans money for the cost of solar water heating and certain other energy efficiency improvements. Hawke's Bay Regional Council loans eligible ratepayers up to \$20,000 to install double glazing, a solar water heating system or photovoltaic electricity generation.



- **Local trusts and associations** - organisations around the country provide interest-free or low-interest loans for insulation, heating, LED lights and ventilation. If your council supports the [Eco Design Advisor](#) service, an advisor may be able to point them out.

Some funding is available only for people on lower incomes. A good example is the [EECA funding](#) for up to 80% of the cost of ceiling and underfloor insulation, heat pumps or efficient wood/pellet burners. ▶

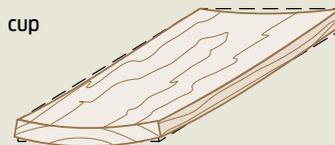
Cups, bows and twists in timber

Quite different things

A conversation on a house renovation site earlier this year showed that not everyone understood the different terms for the ways timber can change shape (Figure 2). The terms are important because the different shapes can be the result of different causes and may require different solutions to put them right. For example, some timber weatherboard manufacturers say excessive overlapping may cause cupping of the weatherboard at the bottom of the lap. The back of a weatherboard not being primed is another potential cause of cupping. The terms are also used very specifically in some building standards.

- Cupping is where the long sides of a weatherboard or similar timber member curl up.
- Bowing is where the ends of the timber curl round.
- Twisting is where two diagonally opposite corners of timber twist around.

cup



bow



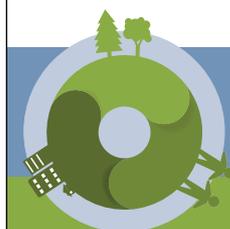
twist



Figure 2. The terms for changing shapes in timber.



Towards sustainable materials



20th October
Live webinar

Register now branz.arlo.co/w/

Pipe insulation

Go beyond the basics with hot water pipe insulation

Certain hot water pipes in a new build must be insulated. For example, NZS 4305:1996 *Energy efficiency - Domestic type hot water systems* requires thermal insulation for hot water pipes:

- to 300 mm above the standing water level in a vent pipe and the first 2 m of the hot water distribution pipe
- from the water heater to the kitchen sink
- acting as distribution systems with hot water continuously circulating in a loop
- embedded in concrete or buried underground (these pipes must run through a duct)

- outside the thermal envelope.

In BRANZ's view, for good energy efficiency, all hot water pipes should be insulated for their full length. This is easy to do and inexpensive. Pre-formed closed cell foam insulation around 13 mm thick is readily available and is just pushed over the pipe (Figure 3). Check the inner diameter of the insulation matches the pipe diameter. At right-angle bends, you can butt two lengths of insulation together, with the ends cut at 45° angles. Pipe lagging made from materials such as sheep's wool is also available. ▶

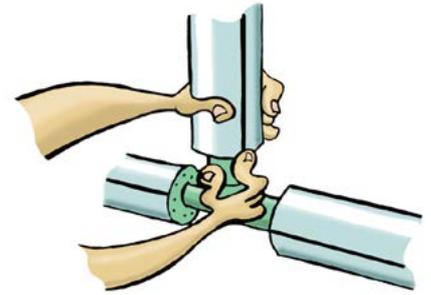


Figure 3. Fixing closed-cell thermal insulation to hot water pipes.

News

BCITO transitions to Te Pūkenga in October

The Tertiary Education Commission (TEC) has approved the [transition of the Building and Construction Industry Training Organisation](#) (BCITO) to Te Pūkenga. The transition is planned for 4 October 2021. All of BCITO's learners and most of BCITO's employees will transfer to Te Pūkenga subsidiary Work-Based Learning Ltd (WBL) as a separate business division.



\$1.2b Sleepyhead development not so sleepy

The large factory and housing development at Ōhinewai in Waikato has [secured fast-track resources consents](#) for five factory buildings and associated infrastructure under the COVID-19 fast-track consenting process. The site will eventually include up to 1,100 homes.

Homestar v5 tool launched

An [updated version of Homestar](#), the home certification scheme, was launched in early August with a new measure of carbon. The New Zealand Green Building Council's updated tool covers both the embodied carbon in building materials and the operational carbon from building use - for example, in heating, hot water and lighting systems.

Almost a third of new home consents are now for MDH

Of the [45,119 new home consents](#) issued in the year ending July 2021, over 30% were for townhouses, flats and units. This compares with 26% in the 2020 year and 20% in 2019.

Building activity stats and a forecast

[Stats NZ figures](#) show that the estimated value of residential building activity in the June 2021 year was over \$18 billion, up 21% from the June 2020 year. Residential work is at historically high levels. BRANZ is forecasting that new residential building consents are likely to stay at over 40,000 per year for the next 4 years.



Hiring women in the trade sector

A [survey of trade employers](#) found that 79% would like to hire female employees into their businesses but say they need support to do so. At present, only 2.6% of the building, construction and infrastructure sector employees are women.

2021 construction sector report

The fourth annual BDO construction sector report [Rethinking construction](#) has been released. It has a particular focus on supply, labour and inflation.

Construction supply chain report 2021

EBOSS has released its [2021 report](#) on the building product supply chain.

Human Rights Commission housing report

The NZ Human Rights Commission has released [a report](#), *Aratohu tika tangata ki te whai whare rawaka i Aotearoa/Framework guidelines on the right to a decent home in Aotearoa*.

The report includes eight key features of the right to a decent home.



Goodbye dark roofs, hello trees

Across the ditch, there are [proposed new rules](#) for new homes in Sydney's fast-growing southwest to feature only lighter-coloured roofs and for every section to be big enough to have a substantial tree in the back yard. The proposals aim to reduce the heat problems that result from dark roofs very close to each other on tiny, bare sections.