

BRANZ

builder's mate



It's moving!

Almost all building materials move of their own accord. Design and construction must allow for this, or it can affect material durability and even weathertightness.

There are four types of movement to consider:

- Moisture movement when a material absorbs and releases moisture.
- Thermal movement from temperature changes over the day and year.
- Permanent shrinkage from materials curing or drying.
- Settlement, creep, flexing and deflection.

Moisture movement

Materials that absorb and release moisture (such as timber, concrete, cement plaster, mortars and concrete masonry) move as surrounding moisture levels change. Materials can shrink and expand repeatedly, except for wood fibreboard, which swells when wet but won't return to its original dimensions on drying.

How much movement occurs depends on the material, how much temperature and moisture conditions change

and how the material is finished, installed or protected.

Thermal movement

All materials expand when heated and contract when cooled, some more than others. Materials that have significant thermal movement (listed in decreasing severity) include:

- metals – lead, zinc, aluminium, brass, austenitic stainless steel, copper, mild steel, ferritic stainless steel, cast iron – this is why E2/AS1 limits the lengths of some flashings
- plastics – polyethylene, polypropylene, polycarbonate, acrylic, PVC, GRP.

Thermal movement is relatively small for most other materials. ➤



worth \$329!

INDUSTRY NEWS

Absolutely Essential Toolkit

The Absolutely Essential Health and Safety Toolkit for Small Construction Sites has been launched by WorkSafe New Zealand. This helps avoid/manage safety issues on small sites. It is freely downloadable from the WorkSafe website www.business.govt.nz/worksafe/information-guidance/all-guidance-items/toolkit-small-construction-sites

Science seminar

The first BRANZ seminar series for 2015 is on a wide range of BRANZ science activities and runs from 16 to 26 March in eight locations. It will cover recent, current and proposed BRANZ research on durability, ventilation and resilience. Book at www.branz.co.nz

Green Property Summit

The 5th Green Property Summit will be held in Auckland on 26 March. It is a Property Council New Zealand/New Zealand Green Building Council collaboration. Speakers include Jeffrey Holmes (Woods Bagot, New York), Daniel Davis (Case, New York), Nick Ebbs (Igloo Regeneration UK), and John Dalzell (Waterfront Auckland). www.greenpropertysummit.org.nz

WIN!

An Argos 950 w
Rotary Hammer Drill + Breaker

The Tool Shed

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www.thetoolshed.co.nz

HAMMER 'N' NAILS



The amount of movement is influenced by:

- daily and annual temperature ranges – a material's surface temperature will typically be more (or less) than the air temperature
- location – north and west-facing materials get hotter and move more than those facing south
- amount of shading
- material colour – darker colours get hotter so will expand more
- length – the longer the element, the greater the expansion and contraction that must be accommodated.

Permanent shrinkage

Shrinkage from curing is permanent. Materials that show this include:

- concrete
- concrete masonry
- cement plaster, such as stucco
- cement mortars
- adhesives
- timber as it dries down from its fibre saturation point. Initial drying of timber is as a result of water being lost from within the cells. Once water starts being lost from the cell walls (the fibre saturation point is around 30% moisture content for most timbers), shrinkage will occur.

Settlement, creep, flexing and deflection

These types of movement occur from:

- applied loads, such as live load deflection or vibration
- creep, where the material moves under applied loads but does not recover
- earthquakes or settlement, which may result in permanent damage.

Movement can be minimised by ensuring:

- spans of bearers, beams, lintels, floor joists, rafters and wall studs are within appropriate limits
- live and dead loads and spans are within design limits
- buildings are well founded on good ground –

potential liquefaction has been designed for and fill has been properly compacted

- expansive clays are identified and foundations designed appropriately
- the design is appropriate for wind and earthquake loadings.

Reducing movement

Thermal movement can be reduced by:

- providing shading to reduce solar heating
- finishing with a light colour
- not insulating immediately behind the materials
- limiting length.

Moisture movement can be reduced by:

- coating the material and maintaining the coating
- protecting the material from wetting
- using non-absorbent material.

Accommodating movement

Typical strategies used to accommodate movement include:

- using expansion joints
- over-drilling fixing holes
- using slotted fixing holes
- providing clearances or gaps between elements/materials (Figure 1)
- using sliding clips (Figure 2)
- overlapping materials to create a sliding joint
- using single fixing for materials such as timber weatherboards
- using properly designed sealant joints and using the right sealant for the materials and expected amount of movement.

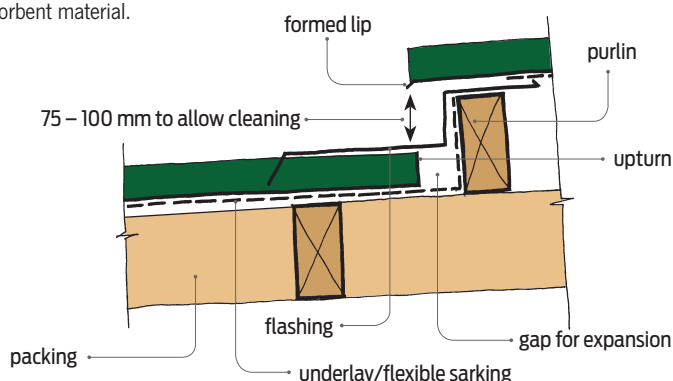


Figure 1. Gap between materials to allow for thermal expansion.

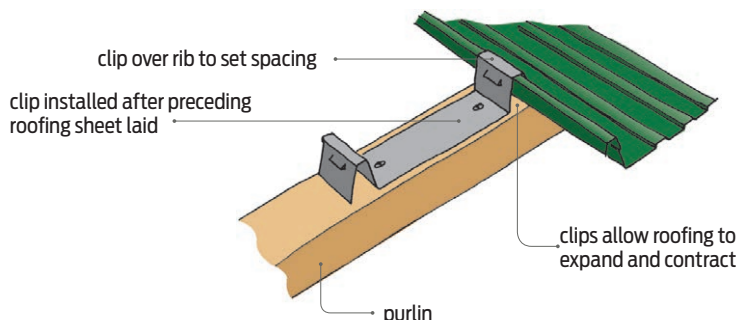


Figure 2. Clips allow thermal expansion and contraction.

Builders, it's time to get ready.

Did your Christmas wishes come true? Did you get a checklist, a disclosure statement, a written contract and a hot link to MBIE's website? www.dbh.govt.nz/building-amendment-act-2013#consumer-protection

Under the Building Amendment Act 2013, building contractors are now required to have written contracts, provide information on their relevant skills, experience and qualifications, and disclose their insurance and warrant cover for residential building work valued at over \$30,000 (including GST).

Who is a building contractor? Any person who holds a contract for building work directly with a client for \$30,000 or more. You may, for example, build and install kitchen cabinets, but if the installed cost is more than \$30,000, the regulations apply to you.

What do you need?

1. Checklist: must be provided to prospective clients. You can download this from MBIE's website.

2. Disclosure statement: is prepared by you and contains information about your company, including relevant insurance policies and the people involved in the project. It must be accurate and provided before

signing a contract. Don't forget to include examples of your work and testimonials. And it's a good idea to contact your insurance broker to make sure you have the right policies.

3. Building contract: you must provide a written contract to your client for building work over \$30,000 (including GST) or when the client requests it. If you are not a member of a trade association with standard contracts, it is best to seek legal advice.

4. Post-completion information: on hand-over, you must provide details of any relevant insurance policies that run on plus information about maintenance needed to meet Building Code durability requirements. Try www.maintenanceschedules.co.nz

And remember: for 12 months following completion of the building work, you will have to fix any defects brought to your attention by your client. Keep watching MBIE's website for a guidance document due to be published in early 2015.

David Sharp
Adviser
BRANZ



Mouthpiece

Maintenance isn't just up to homeowners

Builders need to think harder about the maintenance of the buildings they construct following changes to the Building Act that came into force on 1 January. A new requirement is that, when a job is complete, the contractor must give clients copies of guarantees/warranties that apply to materials and appliances and inform them of the building's maintenance requirements.

Information about the maintenance needed for any element of the building is required to:

- ensure that Building Code durability requirements continue to be met
- fulfil any conditions set out in product/system guarantees and warranties.

Wall cladding and coating systems, in particular, are likely to need regular maintenance to remain waterproof and durable. Some cladding systems also incorporate functional components (such as drained and vented cavity drainage outlets) that require maintenance and, in some cases, protection to ensure that they continue to function.

The best way to help the new owners of a building keep it in top condition is to provide a maintenance schedule that lists the specific materials used and the maintenance they require. Frequency of tasks is typically described: washing down painted

weatherboard cladding at least once a year, for example, and repainting every 8–10 years.

A maintenance schedule can:

- help property owners know what they should do to keep the property in good condition and avoid potential problems
- let builders and property owners find the details of a building material years after the property was built
- reduce a builder's potential liability if lack of maintenance leads to issues such as weathertightness problems.

BRANZ provides a considerable number of resources around maintenance, from *Build* articles to sections in books, bulletins and websites. BRANZ also has a maintenance schedule tool (www.maintenanceschedules.co.nz) that lets you put together a customised schedule for each new property.

build

"Do you get your free Build magazine?"



All building contractors who are in the business of building and have paid a Building Research Levy in the current year can receive BRANZ's *Build* magazine for free. This Levy is paid as part of the building consent fee on all construction projects over \$20,000. If you are missing out on your free copy of *Build*, call 0800 80 80 85 (press 2) or email vera.chan@branz.co.nz.





ADVISORY HELPLINES

For the building and construction industry:
0800 80 80 85

For the homeowner and public enquiries:
0900 5 90 90

Calls cost \$1.99 per minute plus GST

WWW.BRANZ.CO.NZ

Competition

Here's a tool.



What is it?

Win!

An Arges 950 w
Rotary Hammer
Drill + Breaker



Worth \$329!

This 32 mm rotary hammer for concrete can be switched between rotating (for drilling) and straight hammering for chipping and demolition work. It has 7 joules of power. An anti-vibration suspended handle provides superior comfort.

The prize is provided courtesy of The ToolShed.

All you need to do to win is tell us the name of the mystery tool (above).

Email your answer to buildersmate@branz.co.nz. Put "February Competition" in the subject line. The message should include your answer, your name, postal address and phone number. One entry per entrant please.

Don't forget to tell us where you picked up your copy of *Builder's Mate*! The winner will be the first correct entry drawn at 9 am on Friday 6 March 2015. Details will be posted on the BRANZ Ltd website (www.branz.co.nz) and in the next edition of *Builder's Mate* due out on 1 April 2015.



The winner of the December competition was Jordyn Walters of Farm Cove, Auckland. Jordyn wins a Hitachi worksite fan. The mystery tool was a bender/cutter for reinforcing steel.

Terms and conditions:

Entry is open to all New Zealand residents except employees and immediate families of BRANZ and The ToolShed shops. The competition will close at 9 am on Friday 6 March 2015. The prize is not transferable for cash. The judge's decision is final. No correspondence will be entered into.

What's wrong in these PICTURES?



1 BOTTOM PLATE ANCHOR



2 RETAINING WALL REINFORCING

2. No protective caps to top of exposed reinforcing, and warning tape lying on ground.

1. Incorrect washer size to bottom plate anchor. It should be 50 x 50 x 3 mm or 55 mm diameter x 3 mm.

ANSWERS

NEW

timber floorboards

GOOD REPAIR GUIDE

BRANZ

Book and Epub Combo
\$27.12 each
+ \$8 p&p

Good Repair Guide: Timber Floorboards

A new title in the essential Good Repair Guide series is now available in electronic and hard copy formats.

This new guide describes the types of repairs that can be made where damage to floorboards is localised. It covers common problems, causes of damage, and options for repairing timber floorboards and finishes. This guide continues to be packed with drawings and photos. It also provides the building professional with practical, hands-on advice on how to repair New Zealand homes.

Order this and other titles in the series online:

www.branz.co.nz/grg or call **0800 80 80 85** (press 2)

Although BRANZ has made every attempt to ensure the accuracy of its information, it provides generic advice only, and BRANZ accepts no liability for any loss or damage incurred. Opinions expressed in *Builder's Mate* do not necessarily reflect the views of BRANZ.

Standards referred to can be purchased from Standards New Zealand. Tel: 04 498 5991 or www.standards.co.nz.

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