Metal roof cladding selection
Exercise care when specifying metal roof claddings and fixings to ensure use of the product will be within the terms and conditions of the warranties offered as some local conditions, particularly in coastal regions, may not conform exactly to the corrosion zone definitions (industrial, geothermal marine, severe marine and very severe marine). Note the lack of alignment of corrosion zone definitions given in NZS 3604, AS/NZS 1170 and AS/NZS 2312 (which is based on ISO 9223 and used by steel cladding manufacturers).

Contact the manufacturer/supplier to confirm they will warrant the product in the specific situation and clarify what is warranted. Most metal claddings are warranted to not perforate within a given time. The resistance of a metal coating to excessive fading and peeling may be warranted for a lesser period. Warranties for fascias, gutters and downpipes may be different to the roof cladding. Note that fasteners are an integral part of the system, and specifying the wrong fasteners may compromise the life and the warranty of the roof cladding.

Stand-alone garage floors
Minimum permitted heights above finished ground level for concrete slab floors for habitable buildings are given in NZS 3604 (1999), Section 7, Figure 7.10 and Table 18 of E2/AS1. These requirements do not apply to the garage floor slab – E2/AS1 Figure 65 permits the garage floor (shown as being attached to the dwelling) to be a minimum of 50 mm above the outside ground level, while NZS 4229 permits a reduction to 40 mm.

Although there is no requirement for a garage to have a damp-proof membrane under the slab, BRANZ recommends that one is always installed so the garage interior does not become damp. A DPM will be required where the garage slab is poured at the same time and/or is at the same finished level as the inside of the dwelling.

Difficulties can arise when a garage is converted to a habitable space, as this means the minimum ground clearances required for a habitable space are not able to be achieved. For this reason, BRANZ believes it is good practice to design and detail garages that meet the minimum slab height above ground requirements for a habitable space.

Where a garage slab is constructed close to the outside ground, designers need to consider:

- the cladding manufacturer's required minimum clearances between the bottom of the cladding and ground – failure to provide sufficient clearance may negate any product warranty
- the required overlap of the cladding to the slab to provide sufficient weathertightness – typically 50 mm is required, which means cladding clearances can't be achieved where the slab is only 50 mm above the adjacent (even paved) ground unless nib walls are constructed around the perimeter of the slab
- the treatment of the bottom plate and the fixing specification to provide sufficient durability when used in close proximity to the ground
- the potential impact on durability of owners building up the ground level adjacent to the garage
- how surface water is drained away from the building – the risk of surface water getting into the garage is much greater where the slab is close to the ground.

Low-E glass
Single panes of clear low-E glass seem a tempting option for achieving H1 compliance. Low-E glasses can have many different R-values, and in aluminium frames can achieve R0.21 for the whole window and R0.3 when used in PVC or timber frames (values are given in Tables C1 and C4 of NZS 4218:2009). However, low-E glass is **not** recommended as a single glazing option. If it is not protected within an insulated glazing unit (IGU), the low-E surface coating may be scratched or damaged when cleaned and it is difficult to remove finger marks from the coated surface of the glass. In some situations, increased condensation may form on the glass, since the low-E coating can become colder than normal single glazing, removing the benefits of the low-E coating.

When used in an IGU, the low-E coating must be on the inside pane and face towards the outside to maximises winter heat retention. See Build 108 (Oct/Nov 2008) *Pitfalls of avoiding double glazing* available on the BRANZ website.

Underfloor insulation
Insulation installed under suspended timber floors is likely to create cooler subfloor airspace temperatures beneath the house. If the ground beneath the house is damp, in extreme cases, condensation may form on the underside of the insulation around the perimeter of the floor where it is likely to be at its coldest – the amount will depend on the type of insulation installed. BRANZ recommends the use of polythene over the whole subfloor ground to prevent moisture from subfloor ground migrating into or onto the surface of the insulation around the perimeter edge. This will also help maintain a constant moisture content in the subfloor framing and flooring

Exterior walls that run at right angles to the line of the joists can be particularly vulnerable to condensation where there is no boundary joist or solid blocking and the underfloor insulation is installed hard against the back of the cladding. The cladding may transmit the much colder exterior air temperatures on frosty nights into the insulation and lower the edge temperature of the insulation so that water droplets form from the vapour coming from the earth (if not covered with a DPM). BRANZ does not recommend using foil to provide insulation under a suspended floor – it is almost impossible to achieve a still enough air space between the foil and the underside of the flooring, which gives the foil its insulation properties.

Product substitution risk to BCAs
BRANZ is aware of situations where building consent applications have been made based on proprietary information **NOT** belonging to the particular product that is the subject of the application. The case is usually made that the product is similar to that covered by the proprietary information, i.e. a BRANZ Appraisal or supporting literature or manual.

BCAs need to be aware of the risks and possible exposure to liability that they are exposing themselves to. In these situations, BRANZ would be unable to provide any technical support to BCAs should things go wrong with the untested substituted product.

BCAs can reject substituted products on the basis of lack of evidence demonstrating compliance with the NZBC.

Remediation Design seminar
This seminar for designers and BCAs is to be held in the areas most affected by weathertightness issues and will introduce you to the complexities of working in this area. Note that this 2-hour seminar is run in morning and afternoon sessions:

Waitakere	Monday	29 Nov	9.00 am
Albany	Monday	29 Nov	2.30 pm
Ellerslie	Tuesday	30 Nov	9.00 am
Manukau	Tuesday	30 Nov	2.30 pm
Hamilton	Wednesday	1 Dec	9.00 am
Tauranga	Wednesday	1 Dec	3.00 pm
Queenstown	Monday	6 Dec	2.00 pm
Christchurch	Tuesday	7 Dec	2.00 pm
Wellington	Wednesday	8 Dec	2.00 pm

More information available at www.branz.co.nz

Distance learning CPD
New distance learning courses from the Open Polytechnic of New Zealand and BRANZ are open for enrolment now:

- Building Controls
- Weathertight Design
- Plumbing Inspection
- Domestic Sprinkler Design

Full details are available at
www.openpolytechnic.ac.nz/buildingcpd/

Guideline *is a free monthly update on building issues prepared by BRANZ and funded by the Building Research Levy.*

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