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Isolating lightweight steel framing to prevent corrosion

Lightweight steel framing must be isolated from materials that could potentially cause corrosion of the steel. The most common situations where an isolating layer is required are between the steel and:

- any timber treated with a copper-based timber treatment
- CCA-treated plywood flooring
- concrete or concrete masonry
- brass or copper plumbing fittings or pipework.

A suitable isolating layer is DPC between the steel and timber, plywood or masonry. Wrapping the steel with PVC self-adhesive tape is a common practice with plumbing fittings.

Roof underlay and concrete tiles

Under E2/AS1, roof underlays are required for all concrete tile roofs in sites with very high and extra high wind conditions, irrespective of roof pitch. All Type II (single pan) tiles and Type III (flat profile) tiles require roof underlays, irrespective of roof pitch or site wind speed. Also, an underlay is required where a downpipe discharges (via a spreader) onto the tiled roof.

BRANZ recommends that an underlay is used as good practice, regardless of E2/AS1 minimum requirements. Tile manufacturers' literature may also recommend the use of an underlay.

Lapping of steel mesh slab reinforcing

Acceptable Solution B1/AS1 clause 3.1.9 replaces NZS 3604:2011 clause 7.5.8.3 by requiring a lap of 225 mm or the welded wire manufacturer's requirements, whichever is greater. All slab-on-ground reinforcing shall extend to within 75 mm of the outside edge of the slab (including the foundation wall) and shall consist of a minimum 2.27 kg/ m^2 welded reinforcing mesh sheets (1.15 kg/ m^2 in each direction).

New standards for efficient CFL lighting

Electricians and lighting retailers are being advised that compact fluorescent lamps (CFLs) imported for sale in New Zealand must now meet minimum energy performance standards (MEPS). The new standards mean all CFLs must perform to defined criteria including guaranteed minimum lifespan, maximum start-up time, maximum run-up time to reach 60% full brightness and limits on mercury content.

All packaging for CFLs must also feature information on lumens, wattage lifetime and mercury content.

CFLs may also qualify for ENERGY STAR, which sets a higher bar than MEPS. If a product carries the blue ENERGY STAR mark, it means it is one of the most efficient, high-performing products on the market.

Subfloor braces

Subfloor braces as required by Section 6 in NZS 3604:2011 must be 100 x 100 mm for braces up to 5 m long or 100 x 75 mm for braces up to 3 m long. Clause 6.8.3.2 says that: "A diagonal timber subfloor brace shall consist of one continuous length of timber."

Clause 2.4.4.7 does not exclude the use of built-up members (say 2 x 100 x 50 mm members to give the 100 x 100 mm member) for diagonal subfloor braces. However, when two or three built-up members are used, they must be fixed together with:

- nails spaced at not more than six times the thickness of the thinnest framing member along its length – so for a 50 mm thick member, nails at 300 mm maximum centres
- nails must have a penetration into the adjacent framing member of three-quarters of its depth – for a 50 mm member, the required penetration is 37 mm and the nails shall be driven alternatively from each side
- for members 140 mm or wider, there shall be a minimum of two nails at the centres given above.

The minimum timber grade for subfloor braces is SG8, and the minimum treatment required can be found in B2/AS1 Amendment 7 Table 1A, which is available free on the Building section of the MBIE website.

E2/AS1 cladding fixing requirements

For cladding installations using E2/AS1 as a means of compliance, Table 24 specifies the:

- nail type, e.g. annular grooved shank
- nail size – diameter and length
- fixing penetration into the framing.

The exception is horizontal profiled metal claddings, where clause 9.6.6 gives the fixing requirements for the cladding. There are no clear fixing centres specified in E2/AS1 for vertical profiled metal to dwangs. However, we believe it is prudent to use the maximum spacing given for horizontal material, namely 600 mm maximum centres.

Where stainless steel components must be used

Note 4 to Table 4.3 of NZS 3604:2011 requires that grade 304 (or grade 316) stainless steel fixings are used when in contact with exterior timber, timber piles or subfloor framing treated with either copper azole (CuAz – preservative code 58) or alkaline copper quaternary (ACQ – preservative code 90) where the timber is in sheltered or exposed locations. BRANZ considers it good practice to specify stainless steel fixings for all external timber treated with a copper-based treatment if the timber will be damp in service.

Table 4.1 of NZS 3604:2011, covering fixings and fastenings except screws and nails, allows the use of galvanised fixings in a limited number of circumstances such as:

- sheltered subfloors with less than 7000 m m^2 clear area of ventilation for fixings connecting to treated piles and all other fixings more than 600 mm from the ground for corrosion zones B and C
- nail plates and wire dogs in closed and roof spaces in all corrosion zones
- structural fixings except fabricated brackets that are a minimum of 5 mm thick in a sheltered environment in corrosion zones B and C.

Table 4.3, covering nails and screws, allows the use of unprotected galvanised fixings in corrosion zones B and C for:

- framing in sheltered areas
- framing in exposed areas
- fixing a non-structural cladding
- fixing a cladding that acts as bracing.

Unprotected galvanised fixings may also be used to fix a non-structural cladding in corrosion zone D unless the cladding is CuAZ or ACQ-treated timber, cedar or redwood.

Some cladding suppliers may require stainless steel fixings as a component of their cladding system, especially when used as bracing.

Permitted bending radii for steel reinforcing

Incorrect bending can severely affect the performance of steel reinforcement in service. Results can be premature fracture, which will affect the capacity of the building elements to carry design loads. Of particular concern is the practice of bending steel reinforcing to too small a diameter. Bending then straightening (rebending) the reinforcing on site is of even greater concern.

More information is given in MBIE Building and Housing Practice Advisory 1 or in the *Build* article Reinforcing steel (*Build* 118 June/July 2010, pages 20–22).

Cantilevered joists for decks

The maximum cantilever length for deck joists that project beyond a support such as a bearer should be determined using Section 7.5.1 of NZS 3604:2011. The amount of cantilever permitted is determined using Table 7.2 (far right column) for members that will be wet in service. Note that 90 mm and 140 mm deep joists have insufficient depth where a cantilevered balustrade is required (e.g. a fall distance of more than 1 m from the finished deck surface). More detail is given in Figure 2 of the *Build* article Cantilevered joists (*Build* 127 December 2011/January 2012, pages 21–22).

This construction is different from the lapped and bolted cantilevered balcony joists in Figure 7.6 of NZS 3604:2011.

H1 compliance for glazing using the calculation method

When using the calculation method, the values determined for glazing in the reference building will default to 30% glazed area and 70% wall area if the glazing in the proposed building is less than 30% of the total wall area. The total wall areas for the proposed building and the reference building must be the same.

If the proposed building has 20 m^2 of glazing and 80 m^2 of wall, the total wall area is 100 m^2. The reference building will default to 30 m^2 glazing and 70 m^2 of wall to still give a total wall area of 100 m^2.

When glazed areas are equal to or exceed 30% of the wall area, the reference building and the proposed building will have the same areas of glazing and walls.

BRANZ seminars: *Residential Retrofit and Renovation*

Housing renovation is a significant part of the building industry's work in New Zealand as the housing stock ages. Large numbers of dwellings requiring renovation and repairs to extend their physical life or to be adapted to incorporate the amenities required by changing family types and lifestyles. Compliance is a major issue that needs addressing along with insulation, glazing, weathertightness, incorporating modern facilities, energy efficiency and incorporating the new with the old. The seminar will give guidance on:

- what a good renovation incorporates
- energy efficiency in renovated houses
- eliminating existing building inefficiencies
- historical construction methods
- the renovation design and construction process to incorporate modern living
- what is involved in a residential renovation.

The seminar will be presented by Rosalie Stanley ANZIA alternating with Lloyd Macomber ANZIA, both directors of Salmond Reed Architects (a 20-strong architectural firm specialising in conservation, restoration and adaptive reuse and renovation of old buildings) and BRANZ resident architect Trevor Pringle ANZIA.

Seminar dates and locations for the remaining three seminars are:

3 December	Hamilton	Claudelands Conference and Exhibition Centre
4 December	Rotorua	Rydges Hotel
5 December	Tauranga*	Trinity Wharf

Seminars run from 1–4pm, except Tauranga which will run from 12.30–3.30 pm.

Online registration and more content detail are available on the BRANZ website.