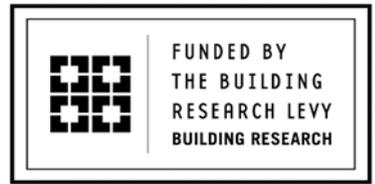


# GUIDELINE

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## BRACING OF HEAVY HIP ROOFS

Clause 10.3.3.3 of NZS 3604: 1999 covers lateral support of top plates supporting heavy hip roofs. The intention of this clause is to provide earthquake bracing for the triangle of tiles at the hip end.

Three alternatives are provided for:

- Ceiling framing members spaced at 2.5m and connected to a bracing wall parallel to the ridge line
- Specific ceiling plane braces spaced at 2.5m and directly connected to a bracing wall
- A ceiling diaphragm complying with clause 13.5.

A recent BRANZ Helpline enquiry asked if dragon ties could be used as a ceiling plane brace. The answer was **no**, because the plan angle of a dragon tie is around 45 degrees and there is no direct connection to a bracing element. This means that the forces generated require specific engineering consideration.

## MOISTURE METER READINGS AND TIMBER PRESERVATIVES

The presence of timber preservatives can have a significant influence on the accuracy of electrical resistance-based moisture meters – even when correction figures are used.

Recent research at BRANZ used three different moisture meters for a number of specimens of radiata pine (treated and untreated). Each meter came with slightly different calibration figures. This is perhaps not surprising, as a number of manufacturers sell equipment in New Zealand.

After the correction figures were applied all of the meters accurately determined the moisture content of untreated timber (the readings were checked using a standard oven-dry method).

Problems arose in many cases, however, when treated timbers were examined. The accuracy of some of the meters deteriorated significantly and the moisture content of a selection of ACQ, LOSP and boron treated timbers could not be determined within at least  $\pm 2\%$  moisture meter percentage units.

Standardisation of moisture meter design and calibration may be one step towards the improvement of moisture meter accuracy, as not all meters can be used with the same table of calibration figures. Also, the on-site problem of identifying both the active ingredient of the timber treatment and the type of carrier solvent used can be a difficult one and requires careful consideration by the meter user.

## CAVITY BATTEN FIXING

As stated in B2/AS1 3.2.1, Pt 1 of NZS 3602: 2003 is an acceptable solution for meeting the durability requirements of timber building elements". Table 1D.10 from NZS 3602 "Battens used behind cladding to form a cavity" have a 50 year durability requirement.

Despite the conflict between B2/AS1 3.2.1 and B2/AS1 Table 1 the bottom line is that both battens and fixings shall have a durability of at least 15 years i.e. refer NZS 3602 105.4 second paragraph, "Where the structural integrity of the building is dependent on a fastening and that fastening has a limited life, then the life of the fastening shall be the specified intended life of the building". Irrespective of the above debate, where the cavity batten is structurally connected to the framing it becomes monolithic and must be considered to attract the same durability as the framing i.e. 50 years.

To be consistent with NZS 3602 105.4, the fixings that attach the batten to the framing will need to be durable for 50 years also.

This raises a new issue, the durability of the fixings especially in the light of the recent BRANZ research findings regarding the more corrosive chemicals used to treat timber. At present E2/AS1 Table 24 calls up Table 4.3 of NZS 3604 for the determination of suitable fixing types for the building locations to meet B2 durability requirements.

However, we believe that following publication of the BRANZ research some of those fixing types will be reviewed to align with the findings. One such finding has already led to a BRANZ recommendation that Stainless Steel fixings should always be used whenever ACQ or CuAz treated timber is used in an "exposed" application for 15 or 50 years.

### CITE 2007 Events

#### ➤ Building Controls

\$3,995 including GST

**Auckland:** 19-23 February & 19-23 March  
**Christchurch:** 14-18 May & 18-22 June

#### ➤ Fire Design

\$3,945 including GST

**Wellington:** 20-23 February & 20-23 March

#### ➤ Weathertight Design

\$3,945 including GST

**Christchurch:** 26-28 February & 26-30 March  
**Auckland:** 7-9 May & 11-15 June

#### ➤ Building Compliance for IQPs

\$1,540 including GST

**Auckland:** 7-9 March  
**Christchurch:** 21-23 May

#### ➤ Domestic Sprinkler Design

\$1,100 including GST

**Auckland:** 14 & 15 March  
**Christchurch:** 18 & 19 April

#### ➤ Access, Egress and Barriers

\$1,540 including GST

**Auckland:** 16-18 April  
**Wellington:** 6-8 June

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