Guideline

February 2016

Welcome to this update on technical and informative advice for the building and construction industry on issues relating to building controls and good construction practices.

In this issue: Construction noise ● Slip, slop, slap – carefully ● Steel bending ● Getting it nailed ● BRANZ B-RISK workshop – final reminder ● Managing Moisture seminar

Construction noise

Know the limits

Many construction and demolition activities are inherently noisy. However, noise generated during construction, maintenance and demolition work is generally of a temporary nature. Provided ongoing noise does not occur at inconvenient times, the adverse effects can generally be avoided or mitigated.

NZS 6803:1999 *Acoustics – Construction noise* allows for the production of significant noise between the hours of 7.30am to 6pm during weekdays. The standard also contains provisions relating to:

- the measurement of noise from construction, maintenance and demolition work
- the assessment of such noise to determine whether action is required to control those noise emissions.

In the event of non-compliance, action can be taken under the appropriate sections of the Resource Management Act.

NZS 6803:1999 sets out recommended upper limits in dB(A) for construction work noise in residential areas:

	Weekdays			Saturdays			Sundays/public holidays		
	L10	L95	Lmax	L10	L95	Lmax	L10	L95	Lmax
6.30am–7.30am	60	45	70	*	*	*	*	*	*
7.30am–6.00pm	75	60	90	75	60	90	*	*	*
6.00pm–8.00pm	70	55	85	*	*	*	*	*	*
8.00pm–6.30am	*	*	*	*	*	*	*	*	*

- L10 is the noise level exceeded for 10% of the time of the measurement period. For example, a noise limit of L10 75 dB(A) means that, over a period of 1 hour, the noise from construction activities can only exceed 75 dB(A) for a total of 6 minutes or 1 minute over a period of 10 minutes.
- L95 is the level exceeded for 95% of the time and represents the background level without any construction noise present.
- Lmax is the maximum level measured over a time period, but it is not the same or not as high as an individual peak level

To help reduce building noise, consider:

- limiting work hours
- selecting quieter equipment or use alternatives
- carrying out work as far away as possible from neighbours and away from sensitive areas such as bedroom windows
- regularly servicing equipment – lack of maintenance can cause higher noise levels
- erecting a solid fence or barrier
- installing an acoustic enclosure for fixed equipment such as compressors or vacuum equipment
- modifying equipment – discuss this option with the manufacturer or installer.

If noisy work is planned, such as jack hammering, concrete cutting and pouring, discuss this with nearby residents beforehand. A sign on site or distribution of leaflets explaining the hours and duration of operation may help prevent complaints.

Slip, slop, slap – carefully

Sunscreen versus painted surfaces

It's important to be sunsmart, but the RANZ *Rooflink* magazine recently published this warning – contact between some sunscreens and prepainted surfaces such as roofing and vehicles can result in damage to the paint finish.

The offending sunscreens are those containing titanium dioxide or zinc oxide, which can cause rapid and permanent deterioration of painted surfaces. If you are using sunscreens containing these ingredients, make sure that, when around painted surfaces:

- hands are free of the sunscreen
- none is dropped onto the surface when applying it.

Steel bending

Reproduced from MBIE Practice Advisory 1

We have recently had a number of calls to the BRANZ helpline regarding suitable bend diameters for steel reinforcing.

Incorrect bending can severely affect the performance of steel reinforcement in service. The result 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 reinforcing steel to too small a bend diameter.

Bending then straightening (rebending) the reinforcing on site is of even greater concern.

To avoid fracture or weakening, NZS 3109:1997 *Concrete construction* requires that hooks and bends are formed in accordance with the bend requirements of Table 3.1, which is reproduced below with the permission of Standards New Zealand. The minimum diameter of bend is measured on the inside of the bar.

Grade, f_y (MPa)	Bar type	Bar diameter, d_b (mm)	Minimum diameter of bend, d_i (mm)	
			Plain bars	Deformed bars
300 or 500	Stirrups and ties	6–20	$2d_b$	$4d_b$
		24	$3d_b$	$6d_b$
	All other bars	6–20	$5d_b$	$5d_b$
		24–40	$6d_b$	$6d_b$

Note that the above table only gives part of the requirements. For full details of standard hooks, bends, stirrups or ties, for mesh bend diameter requirements and for galvanised bar bend requirements, refer to clause 3.3 of NZS 3109:1997.

Rebending should only be carried out when unavoidable and identified at the design stage. NZS 3109:1997 and NZS 3101.1&2:2006 *Concrete structures standard* require that rebending is done in the specified manner and to the manufacturer's requirements.

Getting it nailed
Durability is key

For external use, nails need to have a sufficient level of corrosion resistance to ensure they remain durable. Typically, the minimum is hot-dip galvanising provided the weight of galvanising is at least 320 grams/m^2. Hot-dip galvanised nails will have a grey slightly textured finish.

Nails that are shiny when new (bright steel or plated) or that are new but already showing signs of rust or tarnishing are not suitable for external use.

BRANZ B-RISK workshop – final reminder
Register now

This full-day workshop is intended for new users of B-RISK and those users who are seeking a refresher.

The workshop will be a mixture of presentation/lecture content and worked examples during the day. Questions and discussion will be encouraged.

The following topics will be covered during the workshop:
- Basic refresher on zone modelling principles.
- Guidance on constructing models to represent building layouts, including room size and shape and simplifying models.
- Modelling tall shafts and long corridors.
- Updated guidance on the use of ceiling vents to connect vertically offset compartments.
- Using balcony and adhered spill plumes and mechanical ventilation for smoke extraction.
- Automatically opening/closing vents during a simulation.
- C/VM2 rules for modelling fully developed and post-flashover fires.
- Understanding and interpreting vent flow data.
- Tenability calculations.

You will need to bring a laptop with the software pre-installed. A link and instructions for the installation of B-RISK and Smokeview will be sent on confirmation of registering for this workshop.

The full-day seminars will be presented by BRANZ Senior Fire Research Scientist Colleen Wade and BRANZ Fire Research Engineer Dr Haejun Park and will be held at these locations:
- Wellington – Monday 22 February – InterContinental Wellington
- Auckland – Tuesday 23 February – Crowne Plaza Auckland
- Christchurch – Thursday 25 February – Sudima Christchurch Airport

Online registration is available now.

Managing Moisture seminar
Registration available soon

Water. It is a vital component for life to exist on earth, but it causes all manner of headaches when it comes to constructing buildings that work. It can cause degradation of materials and loss of thermal performance and have an adverse effect on occupant health.

The aim of this seminar, delivered by experienced BRANZ researchers, is to provide the scientific low-down on a range of building moisture issues other than weathertightness. In each case, we'll talk about the science involved and provide the best guidance we have, based on what we know today.

- Water 101 – get up to speed with water and why it causes so many issues.
- Moisture movement – the big picture:
    - How does water vapour move around structures?
    - How much do we have to deal with?
    - Where does it come from?
- Vapour control in walls:
    - What the heck is a vapour retarder?
    - Do I need one?
- Roof space ventilation in schools and homes.
- Subfloor spaces.
- Good ventilation practice.

Venues and dates
The following are the dates for each location:

Location	Date	Venue
Dunedin	Mon 14 March	Crowne Plaza Queenstown
Queenstown	Tue 15 March	Forsyth Barr Stadium
Christchurch	Wed 16 March	Addington Events Centre
Auckland – North Shore	Thu 17 March	QBE Stadium
Hamilton	Mon 21 March	Claudelands Conference and Exhibition Centre
Tauranga	Tue 22 March	Trinity Wharf Tauranga
Auckland – Central	Wed 23 March	Crowne Plaza Auckland
Wellington	Thu 24 March	InterContinental Wellington

All seminars are from 1.00–4.00pm. Online registration will be available shortly.