Guideline

November 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.

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Torque settings when installing screw bolts

Driving speed important too

Screw bolts are a commonly used option for the fixing of bottom plates or bracing panel hold-downs to a concrete slab or foundation wall. They are commonly installed using compressed air or other powered wrenches.

These powered tools can operate at torques of 1,000 Nm at speeds of up to 8,000 rpm.

Operating the tools at above the recommended torque settings when installing screw bolts can:

- shear the heads off the screw bolts
- shear the bolt within the concrete
- overdrive the bolts.

Adding a pipe to a hand-held torque wrench to increase the leverage on the bolt over the specified value is also not recommended.

The torque settings for the two BRANZ Appraised screw bolts are 55 Nm and 45 Nm respectively. For non-appraised screw bolts, obtain the recommended driving speed and torque from the supplier before starting installation of the products.

Other tips when using screw bolts:

- Ensure the drill is the correct diameter and in good condition – if the bit is worn, it won't drill the correct diameter hole.
- Drill the hole twice the bolt diameter deeper than the inserted length so that dust or debris in the bottom of the hole doesn't stop the bolt being inserted fully. Avoid drilling right through a slab.
- Clean out the hole after drilling to remove all drilling dust.
- Insert the bolt part way then withdraw to remove dust if greater than the insertion torque is required to wind in the bolt. When reinserting ensure that that the bolt follows the original thread cut into the concrete – cutting a new thread in an existing hole will reduce the capacity of the fixing.

Storage water heater restraint
Where to find details

Seismic restraint details for storage water heaters are given in:
- Acceptable Solution G12/AS1 Figure 14
- *Build* 124 (pages 18–19) Hot water cylinder restraints

For tanks over 200 litres in capacity, a centre strap is required.

Head flashings in E2/AS1
Using sealant or compressed foam seal

When Acceptable Solution E2/AS1 is being used as a means of compliance, a sealant bead is required for head flashings in the very high and extra high wind zones. The sealant should be installed between the top of the window flange and the underside of the flashing. This requirement is a classic case of something that is easy to detail, but if sealant is being used, it is difficult to execute on site.

An alternative was given in MBIE *Codewords* 61, which should be easier to install and ultimately more reliable. It uses a strip of compressed foam seal instead of sealant. Using a foam seal that incorporates a self-adhesive strip will allow it to be secured in place while the window and/or flashing is installed.

The dangers of substitution
What you need to know

Within a set of construction documents, the designer should have clearly identified the materials and components to be used in the building. What to do where an alternative material or component is proposed to one specified:
- Provide specific information and potential impacts (cost, time) relative to the proposed change to the designer or client.
- Discuss with and gain approval from the designer before the change is made, or where the designer is not involved during construction, the client's approval will be needed. A change made on site is a change to the contractual agreement between the builder and the client.
- Where the change impacts on the consent approval, an application for amendment to consent will need to be made to the BCA and the change approved. For a minor change, many BCAs will give this approval during a site inspection.

Water pipes under slabs
Two compliance paths

How water pipes under slabs are installed depends on the compliance path being used – AS/NZS 3500.4:2015 *Plumbing and drainage – Part 4: Heated water services* or Acceptable Solution G12/AS1.

In AS/NZS 3500.4:2015, clause 2.13.3 requires water pipes under a slab to be laid in a narrow trench on a bed of sand or fine-grained soil. The pipe must be at least 75 mm below the underside of the slab.

AS/NZS 3500.4:2015 also requires that pipes penetrating the slab are:
- installed at right angles to the slab surface
- lagged with an impermeable material for the full depth of the slab penetration. Impermeable lagging must be at least 6 mm thick.

For designs to G12/AS1, clause 7.3.3 simply says: "Pipework in or under a concrete slab must be installed in a manner to achieve a 50 year durability." Pipes penetrating concrete or masonry elements must be either wrapped with a flexible material or passed through a sleeve or duct. This is required to permit free movement for expansion and contraction.

Two new MBIE/NZGS guidance documents
Geotechnical engineering

MBIE and the New Zealand Geotechnical Society (NZGS) have jointly released two new geotechnical engineering guidance documents as part of the Earthquake Geotechnical Engineering Practice series. This joint guidance has been published as Building Act section 175 guidance.

The two new modules are:

- Module 2: Geotechnical investigations for earthquake engineering
- Module 4: Earthquake resistant foundation design.

These versions are being issued for public comment. Geotechnical and structural engineers are encouraged to make use of these documents and return comments to modulefeedback@nzgs.org. Feedback should be done within 6 months for consideration by the editorial committee. Comments are also welcome from others working in earthquake engineering.

An education programme is supporting the release of the documents. A seminar series on Module 4 on foundation design with worked examples for experienced professional will be held at various centres around New Zealand in early 2017.