



Key to good concrete slabs



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There are plenty of things to consider when laying a concrete floor slab. Timing, the right amount of water and aftercare are all important.

DOES CONCRETE HAVE A USE-BY DATE? Certainly fresh concrete does, and if you are not well organised and prepared with the right skills and equipment, you might have a disaster on your hands!

Clock ticking once mixing starts

NZS 3104:2003 *Specification for concrete production* says that full discharge of concrete from ready-mix trucks shall be completed within 90 minutes after the commencement of mixing.

This is probably a little known clause, but we all know that concrete will stiffen as the cement starts to 'go off', particularly in hot weather. The use of retarding admixtures in summer and accelerating admixtures in winter will help alleviate issues, but being unprepared for the concrete truck comes down to bad planning.

Preparation, mix and workmanship key

BRANZ Bulletin 498 *Preparation for concrete floor slabs* outlines key areas needing attention when preparing for a concrete pour. Also, the recent BRANZ Study Report 340 *Revisiting concrete ground floor slabs* concludes that good mix design and workmanship are the key to producing crack-free concrete.

Even though the concrete pour is typically carried out by a specialist subcontractor, it pays for the supervising contractor to be aware of the facts.

Issue of uncontrolled cracking

Uncontrolled cracking is undoubtedly the biggest issue with concrete floors and pavements. As soon as the concrete starts to dry out, shrinkage

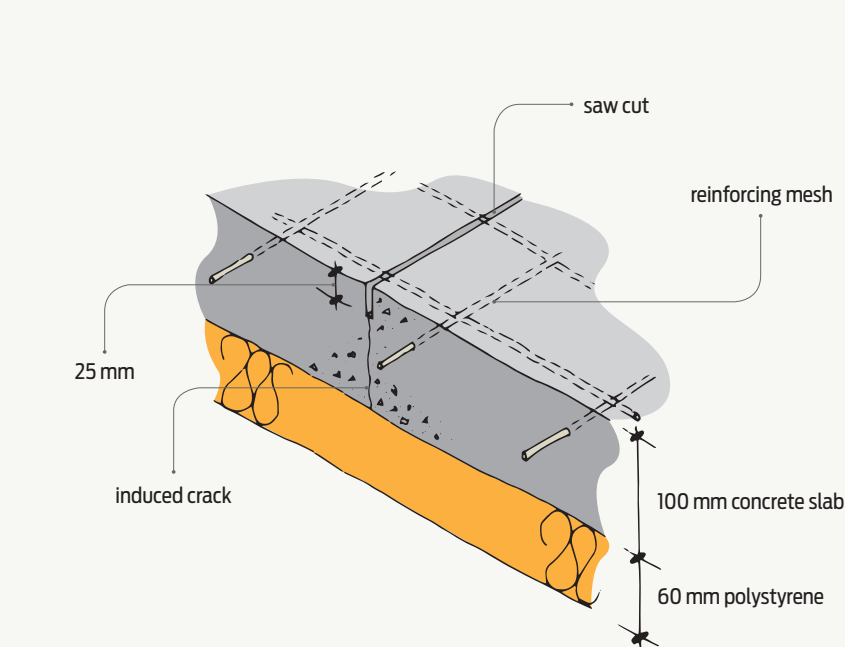


Figure 1 Shrinkage control joint.

commences, and there is potential for shrinkage cracking to occur given the low tensile strength of immature concrete.

Water in the concrete mix is the biggest protagonist causing shrinkage.

There needs to be just enough water to make the concrete workable in order to place and compact it. Inevitably around 7 mm of shrinkage will occur over a 10 m length of slab.

If more water is added to increase the slump of the concrete and make it easier to place, this shrinkage could increase to 12 mm in a 10 m slab length.

Controlled addition of water OK

Did you know that NZS 3104:2003 allows the addition of water to the truck but in a controlled manner – up to 10 litres/m³ of concrete? The concrete may dry out through evaporation from the truck, particularly in hot summer temperatures. This makes it hard to get the stiff concrete out of the truck and to place and fully compact it.

Also, where the transit time from the concrete plant to the site is considerable, slump loss may be an issue. Adding water is OK, but it must be a measured amount and with the agreement of the concrete plant. ➔