

## Concrete Pouring Guide

*This document is to be used as a guide only, all concrete is to be placed in accordance with NZS3109 Section 7 and finished as per NZS3114 Class U3*

It is a commonly held misconception that grinding will hide defects in concrete. The opposite is true. Defects in vibration and the quality of the forms tend to be emphasized when the surface is polished.

Before pouring, the base course must be carefully compacted, making sure all service trenches are re-compacted after working in them.

The concrete should be mixed in the truck for at least 10 minutes to obtain as even a quality as possible and to avoid separation.

The concrete needs to be vibrated to try to eliminate air bubbles but do not drag the vibrator thru the concrete or over vibrate as this will drive down the stone and bring the fines to the surface.

Care must be taken not to let screeds or other tools settle in the mix during concrete pours as these lines will show up once the top surface has been ground. The placer should walk on in the concrete as little as possible, taking care to fill boot holes with aggregate and not fines, as this would show up later as bare patches free from aggregate.

Any seeding of the surface should be done before floating, with the stones etc coated in concrete and pushed approx 1mm under the surface.

After the concrete has been screeded and bull floated, use a stick trowel to remove the bull float lines before passing over once or twice with a power float. Do not over power float as this will burnish the surface making it hard to grind and being therefore more costly for the client. The power float is to minimise the air holes in the surface of the slab, making it less porous.

Make sure that the slab is as flat as possible, in order to achieve a consistent aggregate finish, any low spots must be filled with aggregate not just fines. High spots will receive more grinding (showing more aggregate) while low spots will not be ground so deep (showing only fines/small aggregate).

Control of long-term drying shrinkage cracking is important and although all concrete will shrink, measures can be taken to limit unsightly cracks. The water in the mix needs to be the **minimum** for workability as the more water put in means the more the concrete will shrink when it dries out. The concrete should be carefully cured, with 3 days being the minimum for interior work and 7 days for exterior, however 14 days is preferable. During this period the concrete should be kept moist.

Reinforcing steel is placed in the concrete to help reduce cracking and care must be taken not to cut thru the steel when performing the expansion cut as this would result in considerably more movement, causing cracking. When doing the expansion cut it is important to use a proper Green concrete blade and make sure the concrete has cured enough so that it won't result in stone pull-out, causing unsightly chipping. You should provide construction joints at reasonable intervals, 30 times the slab thickness maximum.

Plastic fibers can also be added to minimise cracking, they have the added advantage of helping to keep the aggregate in the concrete's upper surface.

Avoid calcium chloride admixtures – these increase shrinkage and therefore increase the risk of cracking.

Concrete shrinkage is due primarily to shrinkage of the hardened cement paste. The presence of aggregate in concrete reduces the total shrinkage by providing elastic restraint to paste shrinkage. The more aggregate you put in or the larger the aggregate you use will reduce the amount of shrinkage. Quartz, limestone, dolomite, granite and some basalts can be classified as higher-modulus aggregates, which result in lower shrinkage properties of concrete. High shrinkage concrete often contains sandstone, slate, hornblende, and some types of basalts.

Avoid curing compounds - curing compounds form a film on the concrete surfaces that reduces water loss to aid concrete curing. However, this film prevents the sealer applied later from penetrating and binding to the concrete surface, ultimately leading to delaminating. Hence it is recommended that water is the only curing agent used on a concrete floor destined to become an HTC Superfloor™.