

# Uncontrolled Water Addition

## NZRMCA Technical Note 6



Members of NZRMCA aim to supply their customers with quality assured concrete that meets the strength and workability requirements of your project and NZS 3104, 'Specification for Concrete Production'. Concrete as delivered to your site will meet these requirements provided it is placed and compacted in accordance with NZS 3109 Specification for Concrete Construction.

If water is added to increase workability beyond that specified when you ordered the concrete, its strength will be compromised. For example, adding water to adjust a concrete with a 100 mm designed slump to increase its slump to 180 mm will reduce its strength by some 6 MPa. In addition if the concrete in its fresh state is not compacted, again the strength will be seriously reduced.

## In Summary

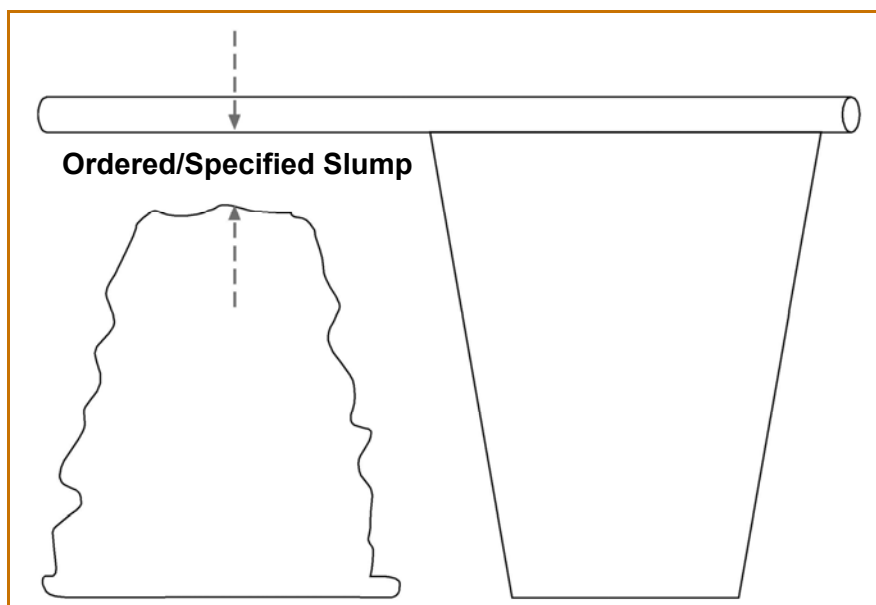
**More water** means:

1. Loss of strength 20%.
2. Dusting and poor surface wear on floors.
3. Increase in risk of shrinkage cracks.

**No compaction** means:

1. Loss of strength 20-30%.

**ON REQUEST** but at a possible cost, your supplier will be able to provide you with a concrete with a higher designed slump without compromising any of the above. We draw these matters to your attention because poor quality will reflect upon your job and the whole industry.



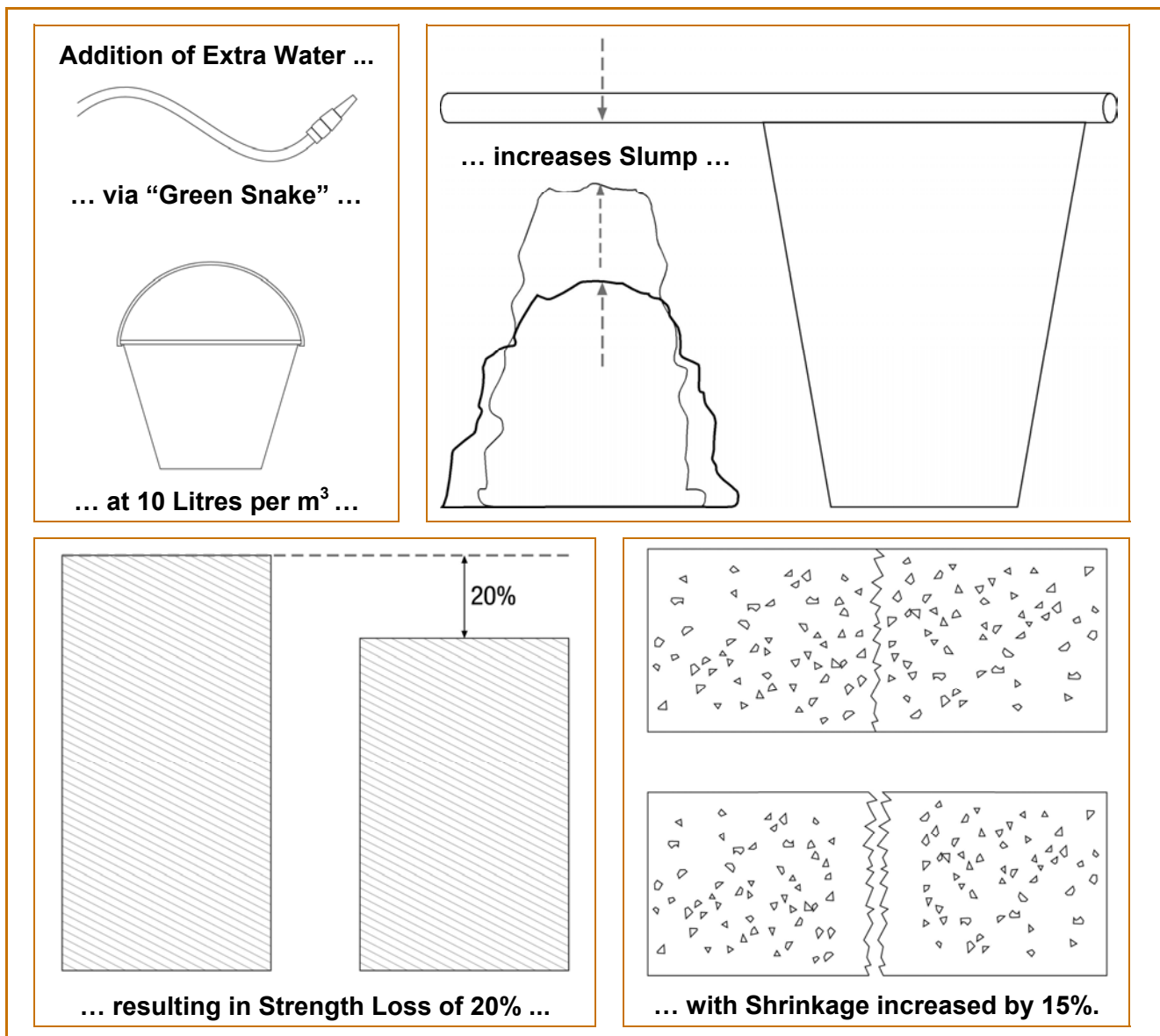
**Figure 1: NZRMCA Supplied Concrete WITH WARRANTY to NZS 3104**

## Performance Check

A series of tests was carried on delivered loads of normal concrete. The procedure was to test the first half of the load at the specified/ordered slump for slump, strength and shrinkage. The second half of the load had extra water added at 10 litres per m<sup>3</sup> and was remixed. The slump increased by 50 mm and new samples for strength and shrinkage tests were taken. The results are shown below.

## Loss of Warranty to NZS 3104

As soon as un-authorised water is added to a concrete truck the concrete no longer complies with NZS 3104.



**Figure 2: Concrete with NO WARRANTY to NZS 3104**



**Prepared by the NZRMCA Technical Committee in August 2008  
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