



## **Self Healing Concrete – What next?**

I am indebted to Jeffery Woodard from D2G and Andrew Deck from Banora Point for drawing my attention to the following information:

A lady Master's Degree candidate at the University of Rhode Island has developed a concrete mix that has in-built self healing properties. This new "concrete" which has only recently been developed and tested, could have some special value for us in getting rid of the various forms of early age cracking in the pavement concrete.

What she has done, is to embed a microencapsulated sodium silicate healing agent directly into the concrete mix. When tiny (?) stress cracks start to form in the concrete, the capsules rupture and release the "healing agent" into the adjacent areas.

The sodium silicate reacts with the calcium hydroxide, which is naturally present in the concrete, to form a calcium-silicate-hydrate product to heal the cracks and block any pores/voids in the adjacent concrete. This chemical reaction creates a gel-like substance which hardens in a week.

At this stage it is not clear whether it is cost effective, but as usual researchers can promise many advantages. Regardless, however, I will keep my eye on the development and progress and will check it out in more detail with the URI.

### **Comment**

In PIN 43 I provided some info on the variations in acceptable crack widths in CRCs. The RTA and Austroads have the strictest requirement of 0.3 mm. If it turns out that this can be healed and, say, a 0.5 mm crack width is accepted – this will result in the reduction of the design steel ratio from 0.0067 to 0.0052, a reduction of 22% and significant cost savings in CRCs.