TMC – Tinni Management Consulting

PAVEMENT INFORMATION NOTE

Issue No. 43

Edited by Arvo Tinni. Email arvo@tinni.com.au

20 05 2010

Allowable Shrinkage Crack Widths in Continuously Reinforced Concrete Pavements

Background

All concrete expands during setting due to the temperature increase caused by the heat of hydration of the cement. As it cools to the ambient temperature, it shrinks. In the case of CRCP, the reinforcement is designed to hold the shrinkage cracks together to provide aggregate interlock for load transfer. The design specifications provide for maximum allowable crack width to ensure that water will not enter to corrode the reinforcement. In conjunction with the properties of the particular concrete the spacing of these cracks is also designed to fit into a predetermined band width.

What width is acceptable?

World wide there are differences of opinion as illustrated in the following table:

Ser	Authority	Max crack width (mm)
1	AASTO (US)	1.0
2	Austroads Pavement Design Guide	0.3
3	Belgium	0.3 – 0.5
4	Federal Highway Administration (US)	0.6
5	NCHRP (US)	0.51
6	RTA NSW Concrete Pavement Manual	0.3 – 0.5
7	RTA Supplement to Austroads (Version 16)	0.3
8	Virginia (US)	<1.0
9	Washington (US)	0.5

From the above it can be seen that the Austroads and RTA requirements are the most stringent and conservative.

Research has also shown that cracks <2 mm will heal autogenously.