



Composite Pavements – Effect of the Location of Longitudinal Construction Joints

This Note explains one of the principles of design of composite pavements. The movements in butted longitudinal construction joints in LCS may be regarded as identical to the cracking behaviour from full width paving, but less pronounced than those of the transverse construction or planned contraction joints. In all instances there would be a concern that reflection cracking through asphalt will occur.

RTA **Specification DCM R82 – Lean-Mix Concrete Subbase** in Clause 4.5.4 – Longitudinal Construction Joints, states, amongst other, that:

"Longitudinal construction joints must only be placed within the zone 0.25 ± 0.15 m offset from the following nominated locations:

- (A) Under concrete bases: as measured from the longitudinal joint in the base.....;*
- (B) Under flexible bases: as measured from the lane line."*

The Specification is silent on or about the transverse construction joints.

Occasions will arise when this requirement for the location is not practical.

The Specification also overlooks the fact that for composite pavement design, the accepted criteria for the elimination of possible reflection cracking from the subbase is to have a minimum thickness of 175 mm of AC base. This is always stipulated by RTA in the SWTC documents for contracts involving pavement options.

The references to the above are:

- 1 **RTA Technical Directions 2000/7** (19 May 2000) – Pavements – Additions/Amendments to MR Form 76 (June 1992), Clause 8.5 – Determination of Asphalt Thickness over Concrete Sub-base (sic): *"A minimum thickness of 175 mm of dense graded asphalt base over a lean mix concrete or lean rolled concrete sub-base is recommended for heavy duty pavement applications ($>10^7$ ESA over 20 years) to limit the reflective cracks from the sub-base. However where local experience has indicated the effectiveness of bandaging sub-base cracks, this thickness may be reduced to 150 mm".*
- 2 **RTA Supplement to the Austroads Guide to the Structural Design of Road Pavements** (Draft December 2005 Version 14): Table 8.A – The minimum asphalt thickness of 175 mm is required over lean mix concrete Subbase.

Hence, there is a conflict between the construction and design specifications and if the required asphalt thickness is provided, the disposition for construction non-conformance is "do nothing".