



Y2C – End of 10 year Maintenance Period

1 Issue

As a new requirement, RTA has directed Abigroup to carry out deflection measurements and curvature calculations on the Ramps of the Project.

2 Purpose

The purpose of this summary is to demonstrate that such measurements are not applicable to the ramp pavements nor are they a contractual obligation of Abigroup.

3 Ramp Design

- The ramps were designed as composite pavements having 175 mm of AC on ~220 mm LMC subbase.
- The designs were based on CIRCLY analyses using the following Moduli of Elasticity:
 - SMZ – 150 kPa
 - LMC – 10,000 kPa
 - AC - 2500 kPa
- The 175 mm AC thickness was adopted as the minimum to stop any likely reflection cracking from the concrete subbase (Austroads 2008).
- The LMC was designed to be thick enough to stop subsequent cracking under fatigue and also to establish the desired top-down failure mechanism (when it occurs).
- Deflection and curvature are not design parameters for composite designs.

4 Pavement Classification

- Composite pavements are regarded by RTA as Heavy Duty pavements.
- Because of the substantial concrete subbase (considered structural in composite design) the pavement is regarded as rigid in the Life Cycle Cost analysis and suitable for the 40 year design life. (The design life of flexible pavements is 20 years).

5 Contractual Performance Criteria

- Attached is an extract from the approved Y2C Maintenance Manual showing that the composite pavement of the ramps are regarded as: "Thick Surfaced Pavements Bound". There are no requirements for

deflection measurements or curvature calculations or hints of any interventions.

- The only specific mention regarding ramps refers to skid resistance.
- It may be assumed that all the other listed possible defects are also applicable.

6 Overlay Designs

The following are pertinent extracts from Austroads: "Guide to Pavement Technology – Part 5: Pavement Evaluation and Treatment Design":

- "Deflection and curvature parameters are used for asphalt and granular overlay design."
- Clause E24 – Performance Criteria: "The pavement deflection performance criteria developed by Austroads for the design of granular and asphalt overlays are **not applicable to flexible pavements that include cemented materials** ..." If this occurs, then the General Mechanistic Procedure (GMP) is required.
- The GMP assumes that there is little or no remaining fatigue life left when a structural overlay is being considered.
- What this means is that the fatigue lives of asphalt and cemented material layers in the existing pavement are not assessed as these materials are assumed to be in a cracked condition.
- This, of course, is not the case at Y2C as there is 30 years of pavement life remaining.

7 Conclusions

- 1 The measurement of deflections on a perfectly good composite pavement is not even of academic interest.
- 2 Even if the General Mechanistic Procedure is adopted, there is a lot more other information required besides the deflections and curvature calculations.
- 3 There is no contractual obligation on Abigroup to undertake any such assessments provided the specified pavement maintenance standards have been maintained.