MODELLING OF CRACK GROWTH IN PAVEMENT PERFORMANCE EVALUATION

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ABSTRACT
Asphaltic concrete (AC) pavements represent a large majority of road surfacings constructed on Australian roads. These pavements deteriorate and exhibit surface deficiencies in the form of cracks, rutting, deformation and loss of texture. AC pavement defects relate to many factors that can be associated with the mechanical properties and chemical structure of the materials used in the construction of AC surfacings. They affect the pavement's structural integrity and functional pavement performance which in turn influences the level of service. The relationship between pavement performance and level of service is hard to establish due to a lack of correlation between the results obtained from the evaluation of pavement functional performance and structural conditions.

Considering the fact that the AC pavement structure is composed of a number of layers having varied physical and mechanical characteristics, it is therefore expected that these multiple layers perform differently and influence AC pavement performance. In this study, a mathematical approach was used to evaluate AC surfacing performance and subsequently a generic model for nano-,micro- and macro- crack growth in AC pavements is proposed.

KEY WORDS: Pavement, modelling, deterioration, distresses, cracks