3rd INTERNATIONAL CONFERENCE
BITUMINOUS MIXTURES AND PAVEMENTS
Thessaloniki, Greece, 21-22 November 2002

"MODELLING OF SUB-SURFACE CRACKS IN THIN AC SURFACINGS FOR URBAN LOCAL ROADS"

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ABSTRACT
Cracks in thin AC pavements are generally regarded as a symptom of pavement structural deterioration. Their presence is usually linked to the pavement fatigue and the ageing process of the bituminous binder contained in the AC mix.

A recent study found that almost all AC surfacings possess sub-surface cracks that have existed since pavement construction. The initial (incipient) cracks develop and propagate within the AC layers and possibly the pavement structure almost unnoticed until they reach certain dimensions. The surface cracks visible to an unaided eye are usually well developed within the AC layers. It was found that the time required for the incipient nano- and micro-cracks to develop into macro-cracks and propagate to the surface is about four years.

To determine the growth rate of the sub-surface cracks twenty-three thin AC surfacings constructed on urban local roads were examined using a Scanning Electron Microscope (SEM) technique. The results obtained are presented in this paper.

KEY WORDS: crack modelling, surface cracks, micro-cracks, sub-surface cracks, asphaltic concrete surfacings