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The Temperature Effect on the Reflective Cracking of Asphalt Overlays

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ABSTRACT. *This paper presents a study about the influence of temperature on the reflective cracking in a flexible road pavement through the evaluation of the asphalt overlay damage associated to traffic and temperature variations throughout a year. This study was developed from a numerical simulation of the asphalt overlay behaviour based on a three-dimensional finite-element analysis, considering the simultaneous loading of traffic and temperature variations. A mechanistic-based overlay design method was used to predict the reflective cracking overlay life. Climatic temperature variations in pavements lead to an increase of the reflective cracking phenomenon, due to the stress and strain states created by temperature, resulting in the premature distress of the asphalt overlay. This study also intends to establish a comparison between the expected performance of asphalt rubber hot mixes and conventional asphalt overlays.*

KEYWORDS: *Reflective Cracking, Temperature Variation, Thermal Behaviour of Asphalt Mixes, Numerical Analysis, Asphalt Rubber Mix.*

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