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Simple Procedure for Probability Calculation of Tensile Crack Occurring in Rigid Pavement: A Case Study

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Abstract : Formation of tensile cracks in concrete slabs of rigid pavement can be (among others) the initiation point of the other, more serious failures which can ultimately lead to complete degradation of the concrete slab and thus the whole pavement. Two measures can be used for reliability assessment of this phenomenon - the probability of failure and/or the reliability index. Different methods can be used for their calculation. The simple ones are called moment methods and simulation techniques. Two methods - FOSM Method and Simple Random Sampling Method - are verified and their comparison is performed. The influence of information about the probability distribution and the statistical parameters of input variables as well as of the limit state function on the calculated reliability index and failure probability are studied in three points on the lower surface of concrete slabs of the older type of rigid pavement formerly used in the Czech Republic.

Keywords : failure, pavement, probability, reliability index, simulation, tensile crack
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