Distress Based Pavement Performance Prediction Models

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A B S T R A C T

A deterioration prediction model is a vital element for an effective and successful pavement management system. This paper presents the development of network level prediction models for flexible pavement on arterial class of roads, located in four geographical locations in USA. Two types of models are developed, distress based deterministic and age based probabilistic models. The historical pavement condition data in the Long-term Pavement Performance Database (LTPP), part of the Strategic Highway Research Program (SHRP), is utilized to develop a deterioration trend in pavement condition index (PCI). In development of deterministic models, pavement cracks, age, traffic loading and maintenance affect are used as input parameters, while a probabilistic models; pavement deterioration versus age is modeled using a Markov chain. The results show that, compared to the probabilistic models, the deterministic deterioration models in all climatic zones have good accuracy in estimating the future pavement condition..