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## **MECHANISTIC-EMPIRICAL BEHAVIOUR OF INSERVICE FLEXIBLE PAVEMENTS**

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### *ABSTRACT*

The most important forms of pavement distress that lead to the failure are fatigue cracking of bituminous layers and rutting in the pavement. This paper focus on the Mechanistic-Empirical (ME) performance of existing flexible pavements overlaid with two types of materials, Asphalt Concrete (AC) and Premix Carpet (PC) over Bituminous Macadam (BM) in India.

The stresses and strains induced in the pavement layers under a standard wheel load are determined using a computer program developed based on four layer elastic theory. The time series information on crack area, rut depth, unevenness (roughness) and ride rating representing the Riding Comfort Index (RCI) are collected through detailed pavement condition surveys.

The Mechanistic-Empirical models for the crack area, rut depth and unevenness are developed considering model parameters as tensile strain in the bituminous layer and the compressive strain in the subgrade. ME behavior of pavements has been studied and failure criteria established for different initial strains at critical conditions of crack area, rut depth and RCI.

Considering the cracking criteria, the pavements overlaid with AC surface are found to carry less traffic than PC surface, at equal initial strains. Based on rutting criteria, PC surface pavements are found to carry less traffic than AC surfaces at equal initial compressive subgrade strains. Unevenness is well influenced by the initial subgrade strains of pavements.

**KEY WORDS:** Mechanistic, Empirical, Flexible, Pavements, Strains, Failure