

## **PERFORMANCE BASED USER CHARGES IN MANAGING FLEXIBLE PAVEMENTS**

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### *ABSTRACT*

In order to develop a total transportation cost model for the existing flexible pavements, there is a need to quantify and estimate the maintenance and strengthening costs. Accordingly to estimate user charges, based on the volume of commercial vehicles duly considering the damage caused to the pavement structure and the performance of flexible pavements.

The data collected for two research projects sponsored by the Government of India have been used to develop the pavement deterioration models and overlay thickness equations. Accordingly the structural and functional behaviour of in-service flexible pavements have been studied. Rebound deflection criteria as structural performance has been used to determine the overlay thickness. Strengthening intervention is decided based on the functional performance of the pavement. The optimum overlay strategy has been selected through the evaluation of different alternative maintenance and rehabilitation (M & R) strategies of pavement overlays. The best strategy is considered as the one with the least overlay construction cost, subsequent maintenance cost and lower vehicle operation cost (VOC) and thus the least transportation cost.

The pavement improvement costs have been decided based on structural and functional performance of overlaid flexible pavements, duly considering cumulative standard axle repetitions. The user charges have been estimated by allocating improvement cost, considering the yearly increase in VOC due to the cumulative traffic loading during the analysis/design period. Then these costs are assigned to the road user over the analysis period, depending upon the damage caused to the overlaid pavement and the serviceability performance of the pavement. Accordingly, the user charges can be decided dynamically, over a period of time.

*KEY WORDS:* pavement, performance, user charges, maintenance