# PAVEMENT PERFORMANCE MEASURES USING ANDROID-BASED SMART PHONE APPLICATION

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**Abstract**

Pavement roughness is a phenomenon experienced by the passenger and operator of a vehicle. It continuously deteriorates under the combined actions of traffic loading and the environment. The most common indicators of pavement performance are: fatigue cracking, surface rutting, riding quality, and skid resistance. It is very essential to evaluate the structural and functional condition of pavements to determine the present condition of the pavement. The models predicting pavement performance play an important role in financial planning and budgeting. Therefore it is essential to study the pavement deterioration factors to draw up the suitable maintenance strategies. This paper aims to investigate pavement roughness for improving the performance, using android based smart phone technology. The data on performance of in service flexible and rigid pavements of Hyderabad City were collected. In the study main distresses were identified from the selected road stretches each of 6km and 20km length. Eleven sets of data were already available from previous studies and additional one set is incorporated in this study. The data is analyzed for assessing the cracking progression, deflection growth, pothole progression and roughness index. The device recorded roughness index measure at a time interval of one second, as opposed to distance based. The raw data is presented in which reports a large variance in international roughness index (IRI) along the road length. This detailed low-level data exceeds the detail necessary of IQL-3/4 data, and therefore the raw unfiltered results from each direction were manually averaged over a one kilometer length. It is observed that the average IRI across the road length is similar despite the severe runs. The results thus obtained were compared with the roughness of the main road outside the city area and the roughness within the city. Regression models were then developed using SPSS (Statistical packages for social sciences) package for validation. The researched model if implemented by the construction agencies shall help in predicting pavement performance and help in protecting further deterioration of the roads with premature financial planning and budgeting.

**Key words: Distress, Pavement, roughness index, regression model, smart phone application**