

EVALUATION OF PAVEMENT MECHANICAL PROPERTIES USING NON-DESTRUCTIVE TECHNIQUE

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ABSTRACT: An analytical method to estimate the elastic properties of a multi-layer road pavement structure is presented. The method includes the influence of surface bonding coefficients between the individual pavement layers on the back-calculated pavement layers elastic moduli using the falling weight Deflectometer (FWD).

The responses of the pavement during the impact loading of the (FWD) is evaluated using the backcalculation techniques. A parametric study is carried out with various pavements moduli and thickness. The results revealed that the use of the interface coefficient in the backcalculation techniques allows for more accurate calculation of the pavement layers moduli and thus more accurate analysis to define the cause of pavement failure.

INTRODUCTION

The design and analysis of a flexible road pavement require knowledge of, firstly, the stress and strain characteristics of the material making up the individual pavement layers. These characteristics can then be used for evaluating stress and displacement of the pavement due to the combined action of the traffic loads and environmental conditions and, secondly, the pavement mechanism of failure which leads to loss of serviceability. These mechanisms are normally expressed in terms of stress, strain and deflection when used in one of the current pavement analytical model.