

Rigid pavement reinforcement: modelling of structural behaviour

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ABSTRACT: The use of “multi-layer” models is quite common in the calculation of the response of road and airport pavement structures to traffic loads. In order to study the reinforcement of jointed concrete pavements it is necessary to use more versatile methods, which allow for the analysis of situations that are not contemplated in the simple models. For such studies, advanced numerical methods can be used, such as the finite difference method. This study presents an application of the finite difference method to the analysis of an airport jointed concrete pavement overlaid with an asphalt layer. The model parameters are calibrated through FWD deflections measured in tests performed at different positions with respect to the concrete pavement joints. From the works developed in this study, it is possible to determine more realistic values for the stresses and strains in the asphalt overlays when the load is acting in the vicinity of a joint. These values may be quite significant for certain conditions of temperature and load transfer at joints.