

EFFECT OF FINITE ELEMENT MESHING PARAMETERS AND MODELS ON PAVEMENT RESPONSE AND CONTRACTOR PAY FACTOR

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ABSTRACT

A finite element model is used to calculate the pavement response through a framework of a performance-related specification (PRS). In this framework, the quality characteristics of the pavement is related to the mixture response, the pavement response, the anticipated pavement performance and, at the end of the chain, the contractor pay factor using different mathematical models. A sensitivity analysis is an important tool for evaluating the behavior of the models that included in the framework of the PRS. A wide range of conditions (levels of independent variables) that cover the region of interest may be used in the sensitivity analysis. Such an analysis will indicate whether the models respond realistically to the independent variables. A sensitivity analysis can also be used to identify the variables that require careful definition. The main objective of this study is to evaluate the effect of the finite element meshing parameters and materials properties models (independent variables) on the pavement response and contractor pay factor (dependent variables). This involves the selecting of two or three levels of values for each independent variable and determining the response value for all combinations of all independent variables. The results of this analysis are calculated from a computer program that developed for the framework of the PRS to determine the pay factor. This program uses the finite element procedure in determining the pavement response