Review

Dynamic effects of moving loads on road pavements: A review

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ARTICLE INFO

ABSTRACT

This review paper deals with the dynamic response of road pavements to moving loads on their surface. The road pavement can be modeled as a beam, a plate, or the top layer of a layered soil medium. The foundation soil can be modeled as a system of elastic springs and dashpots or a homogeneous or layered half-space. The material behavior of the pavement can be elastic or viscoelastic, while that of the foundation layers elastic, viscoelastic, water-saturated poroelastic or even inelastic. The loads are concentrated or distributed of finite extent, may vary with time and move with constant or variable speed. The analysis is done by analytical, analytical/numerical and purely numerical methods, such as finite element and boundary element methods, under conditions of plane strain or full three-dimensionality. A number of representative examples is presented in order to illustrate the problem and the methods of analysis, demonstrate the dynamic effects of moving loads on the layered soil medium and indicate the implications of the results on road and airport pavement design.

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