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DETERMINATION OF PAVEMENT THICKNESS BASED ON THRESHOLD STRESS OF THE SUBGRADE SOIL

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ABSTRACT

This paper presents the threshold stress determination to determine the pavement thickness. This design method is based on maintaining the maximum deviator stress induced from traffic loadings on top of the sub-grade below the threshold stress of the subgrade by providing a suitable pavement layer thickness. The design method is intended to achieve a stable deformation behavior of the subgrade soil under repeated loadings, thus limiting plastic deformation. This method has significant advantages over existing ones. It is applicable to the various soil types, different surfaces, base and subbase qualities. The effects of surface and base qualities are isolated from the formation quality, and can be readily presumed and determined. A simple laboratory test procedure for quick evaluation of the threshold stress of the subgrade soil is suggested. A flow chart is given for the systematic formation design along with a suitable example. The importance of drainage conditions for the success of this approach is emphasized. The design method is evaluated by observing the performance of an actual formation under repeated load applications.

Keywords: threshold stress, induced stress, traffic loading

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