A Simulation Study of Flexible Pavement Design Parameters on Pavement Performance for Application in Tanzania

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Abstract:

This research aimed to improve pavement performance at the design stage by evaluating the effect of several input parameters used in pavement design. Three types of pavement structures were analyzed: asphalt concrete on granular base, asphalt concrete on bituminous base, and asphalt concrete on cemented base. Subbase for all 3 pavement structures was granular. In the analysis, pavement design input parameters were varied in terms of layer's moduli and thicknesses, axle load, and tire pressure; the mechanistic-empirical approach was used to determine pavement service life. The most influential parameters on pavement performance for all 3 types of pavements were found to be base modulus, axle load, AC thickness, subgrade modulus, and base thickness. It is recommended that these parameters be more accurately determined during design and measured during construction, and that pavement structures be more carefully selected to minimize the impact of uncontrollable factors.