



基于薄板单元的水泥混凝土路面荷载应力分析

Loading Stress Analysis of Double-layered Cement Concrete Pavement Struct

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英文关键词: [road engineering](#) [cement concrete pavement](#) [shell element](#) [solid element](#)

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中文摘要

将刚性、半刚性基层上水泥混凝土路面结构简化为弹性地基上不等平面尺寸双层结构模型, 在轴(轮)载作用下, 采用薄板单元轴载作用下路面结构最大荷载应力大小和位置的变化规律。分析了基层超宽对面层和基层自身最大荷载应力的影响, 基层超宽降低了明显增大。比较了采用薄板单元及实体单元时面层和基层最大荷载应力的差异, 当面、基层厚度增大时, 采用薄板单元得到的面层荷载标准轴载作用于纵边中部荷位的荷载应力修正系数。

英文摘要

The cement concrete pavement on rigid or semi-rigid base is hereof simplified as a model of double-layered structure on an elastic foundation, under axle (tire) load, by using thin shell element the relationship between element meshing locations and magnitudes of the maximum loading stresses in pavement structure under moving axle load along longitudinal base extension on the maximum loading stresses in pavement and base are also analyzed, the results showed that with increasing pavement thickness the maximum stress in pavement will drop 0~33%; whereas the maximum stress in base will increase remarkably. Furthermore, when the thicknesses of pavement exceed a certain value, the maximum stress in pavement based upon shell element is 0~20% larger than that of solid element; but in base is 2~30% smaller; in the end, the correction coefficient of the stresses in pavement and base by using shell element is provided.