

Mechanistic Study of Composite Pavement Behavior in Heavy Duty Area

Authors : Makara Rith, Young Kyu Kim, Seung Woo Lee

Abstract : In heavy duty areas, asphalt pavement constructed as entrance roadway may expose distresses such as cracking and rutting during service life. To mitigate these problems, composite pavement with a roller-compacted concrete base may be a good alternative; however, it should be initially investigated. Structural performances such as fatigue cracking and rut depth may be changed due to variation of some design factors. Therefore, this study focuses on the variation effect of material modulus, layer thickness and loading on composite pavement performances. Stress and strain at the critical location are determined and used as the input of transfer function for corresponding distresses to evaluate the pavement performance. Also, composite pavement satisfying the design criteria may be selected as a design section for heavy duty areas. Consequently, this investigation indicates that composite pavement has the ability to eliminate fatigue cracking in asphalt surfaces and significantly reduce rut depth. In addition, a thick or strong rigid base can significantly reduce rut depth and prolong fatigue life of this layer.

Keywords : composite pavement, ports, cracking, rutting

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