عنوان مقاله:

Sensitivity Analysis of Tensile Strength and Creep Compliance on the Thermal Crack Growth with Prediction Model of Fiber Modified Asphalt Concrete

محل انتشار:

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خلاصه مقاله:

Thermal cracking is one of the significant forms of asphalt pavement deterioration that can occur in cold climates or where large daily temperature cycles occur. Thermal cracking is mainly driven by mechanical and thermal properties of the asphalt concrete mixture such as creep compliance, fracture properties and thermal coefficient. In this paper, in order to investigate the effect of tensile strength and creep compliance of the fiber reinforced asphalt concrete on the amount of crack propagation induced by thermal cycle, two sets of Marshall and Indirect Tension Creep Tests were implemented using 8 specimens. The crack growth prediction model was developed using Stress Distribution Model (SDM), Stress Intensity Factor (SIF) Model, and Paris Model. The sensitivity analysis of the crack growth prediction model was done using the fracture parameters related to tensile strength of the mixture and creep compliance which were obtained from the tests. The results show that the fiber reinforcement has a great effect on the enhancement of fracture behavior of HMA asphalt concrete due to its tensile strength against crack propagation

کلمات کلیدی:

Sensitivity analysis, Thermal cracking, Crack growth prediction model, Asphalt concrete, Fiber reinforced

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