A Parametric Procedure to Evaluate Fracture Sensitivity of HMA

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Abstract

The semi-circular bending (SCB) test allows for the evaluation of the strength and fracture performance of asphalt laboratory specimens and field cores. The geometry of SCB specimen results in variable stress and strain response under loading that may be exacerbated depending on specimen thickness, loading rate and notch depths applied.

This paper attempts to quantify the variability of the SCB test arising from the test configuration by evaluating the sensitivity of both specimen and test parameters using a parametric approach and sound statistical estimation. To assess this approach, SCB strength tests were performed on an asphalt mixture at ambient temperature. The sensitivity of SCB strength and fracture parameters determined from specimens with varying thicknesses, tested at varying loading rates and with different notch depths was determined. The recommended parametric approach provided a measure of the SCB test variability and the sensitivity of the measured test performance parameters. The approach as applied may be used to refine SCB (or other) test protocols since allows for the evaluation on many parameters of interest.

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