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## INVESTIGATION OF STATISTICAL RELATIONSHIP BETWEEN DYNAMIC MODULUS AND THERMAL STRENGTH OF ASPHALT CONCRETE

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### **Abstract:**

Dynamic modulus is a performance indicator for asphalt concrete and is used to qualify asphalt mixtures based on stress-strain characteristics under repeated loading. Moreover, the low temperature cracking of asphalt concrete mixes are measured in terms of fracture strength and fracture temperature. Dynamic modulus test was selected as one of the simple performance tests in the AASHTO 2002 guidelines to rate mixtures according to permanent deformation performance. However, AASHTO 2002 guidelines is silent in relating dynamic modulus values to low temperature cracking, probably because of weak correlations reported between these two properties. The present study investigates the relation between these two properties under the influence of aggregate type and mix gradation. Mixtures were prepared with two types of aggregate and gradations, while maintaining the binder type and air voids constant. The mixtures were later tested for dynamic modulus and fracture strength using thermal stress restrained specimen test (TSRST). Results indicate that there exists a fair correlation between the thermal fracture strength and stiffness at a selected test temperature and frequency level. These correlations are highly dependent upon the type of aggregate and mix gradation.

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