Characterization of Variability in Highway Pavement Materials and Construction

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ABSTRACT
Pavement materials and construction (M&C) are inherently variable. Unavoidable inhomogeneous materials, inconsistent construction methods and equipment, and changing weather conditions during construction, among other factors, result in M&C variability. Motivated by the need to provide realistic inputs to pavement quality assurance programs, design procedures, and reliability analysis, this paper presents the results of an investigation of variability in key acceptance quality characteristics (AQC}s) for both HMA and PCC pavements using empirical data (field and laboratory test results from recently-completed construction projects). Variability is measured at three levels: within-lot, within-project, and within-state. The variability values found in this study are compared to the variability values reported about 14 years ago. It is encouraging to state that major progress has been made over the past 14 years in reducing variability in pavement materials and construction.

Key words: Variability, PWL, Standard Deviation, COV, Specifications.

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