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Establish Correlation between Aggregate Properties and Pavement Friction

Problem

Maryland SHA's concern over issues related to aggregate quality in regards to pavement friction and increased variability in aggregate friction test results has prompted a review of the existing approach to aggregate friction evaluation and the implications of aggregates on pavement friction.

Objectives

It was the objective of this research project to estimate pavement friction life for mixtures with aggregates from a variety of quarries, and relate pavement friction to aggregate material properties.

Description

To achieve these objectives, the work under this research included: review the current state of practice in aggregate quality requirements and pavement friction measurements; examine and merge the SHA pavement friction data, and the aggregate/mixture database; examine pavement friction equipment repeatability and comparison; develop the methodology for predicting pavement friction of selected mixtures and aggregates; establish the relationships between aggregate properties and pavement friction.

Results

The major outcomes of this study include: i) the development of a methodology for predicting pavement friction life; and ii) the quantification of pavement friction life (in terms of cumAADT, ESAL, friction life in years since construction, and FNdrop/10K) for common asphalt mixtures and aggregates used by SHA; Since the SHA friction data available for the analysis of this study were collected for pavement network evaluation, they had a significant variability. Thus, it is the recommendation of this study that in order to properly attribute the contribution of the specific aggregate on friction a control set of experiments (project level data) is required for isolating the contribution of the remaining parameters.