DRISI
Caltrans Division of Research,
Innovation and System Information

Research Results

PPRC14 SPE PBS-B: Support for Superpave Implementation

This research is an ongoing effort to improve the Superpave Hot Mix Asphalt (HMA) mix design method. s.

Pavement

MAY 2019

Project Title:
PPRC14 SPE PBS-B: Support for Superpave Implementation

Task Number: 2672

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WHAT IS THE NEED?

Improve on the specifications for the Superpave Hot Mix Asphalt mix design method such as testing standards, laboratory and plant mix comparisons, and quality control/quality assurance.

WHAT WAS OUR GOAL?

The objective of this project is to support the implementation of the Superpave Hot Mix Asphalt mix design process in California.

Task objectives:

- Establishment of an annual state-wide round robin study for the Hamburg Wheel Track Test (HWTT) to determine precision and bias statements, and to incorporate the results in the revised specifications.
- Assess differences between laboratory and plant produced mix for performance related tests.
- Review appropriateness and applicability of quality control and quality assurance testing on Superpave projects with recommendations for revised specifications if justified.
- Monitor performance of Superpave projects constructed to date.

WHAT DID WE DO?

In this research, the following was performed:

- Conduct a round robin study with 20 participating labs to evaluate the effect of testing device, operator, and sample preparation on HWTT results.
- Take samples from five different asphalt mixing plants and conduct laboratory testing to compare mix performances
- Conduct semicircular beam bending test on all of the asphalt

mixtures for recent research projects at University of California Pavement Research Center.
- Identify a list of Superpave projects and conduct manual roadside condition survey

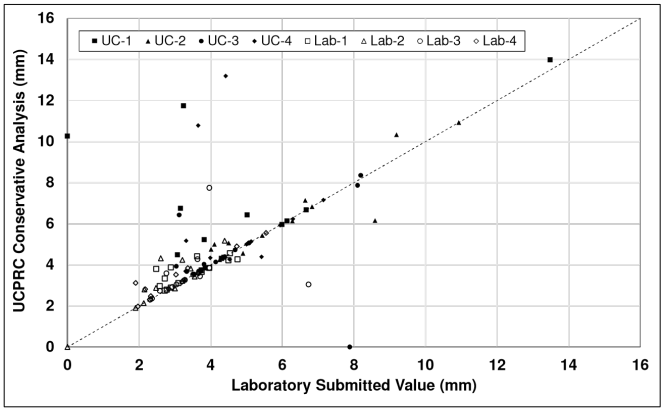
WHAT WAS THE OUTCOME?

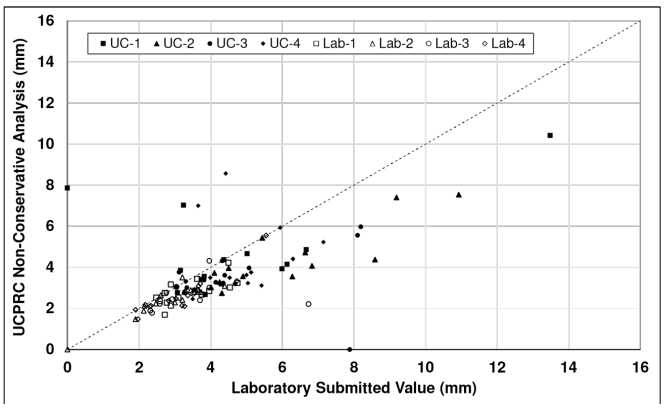
The research resulted in the following results:
- Between-laboratory variability related to specimen fabrication was much smaller than the variability introduced by testing and data analysis. Some of the current test method AASHTO T 324 need to be better specified.
- The effect of different specimen preparation method on fatigue, stiffness and permanent deformation performance.
- Whether semicircular beam bending test can be used as a quality check/quality assurance tool for Caltrans.
- Some Superpave projects were chip-sealed within one year of construction.

WHAT IS THE BENEFIT?

The HWTT round robin study helps standardize the test method and make it a more reliable tool for quality assurance. By knowing the effect of specimen preparation method on mix performance, Caltrans can improve asphalt concrete mix design efficiency by properly combing test results from lab and plant produced specimen. The semicircular beam bending test is a quick test that can potentially be a good quality control and quality assurance tool. The Superpave project condition survey helps identify whether there is significant issue with the current specification.

IMAGES





UCPRC analysis of rut depth after 20,000 passes