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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

Research Notes

CalME Standard Materials Library for Flexible Pavements

Updating and Improving the Standard Materials Library for ME Design

Pavement

MAY 2024

Project Title:
Partnered Pavement Research Center (PPRC) 20: Mechanistic-Empirical Design

Task Number: 3809

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Completion Date: September 30, 2023

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WHAT IS THE NEED?

To accomplish its mission of providing an efficient transportation system that enhances California's economy and livability, Caltrans is encouraging innovations in pavement materials to improve efficiency and increase sustainability. California is a large state with diverse geological conditions. The materials used in any given project are dominated by the available local quarries, refineries, and asphalt mixing plants. These local materials behave differently than materials from other localities when used in pavements, and therefore materials representative of each region need to be characterized. This research study aims to characterize new materials in terms of their mechanical behavior before they can be effectively used in pavement designs. The updated Standard Materials Library allows Caltrans engineers to effectively use materials available in their District within CalME software for future pavement designs.

WHAT ARE WE DOING?

This task is a continuation of the Standard Materials Library project. This task tests and includes additional regional and new materials from the field, including partial- and full-depth recycled materials, PG+5 mixes, bonded concrete overlays, and AC projects using performance related specifications (PRS). It expands the focus on aged properties of the mix. The field or laboratory data used in characterizing the material are to be added to the Standard Materials Library in CalME, the Caltrans' asphalt concrete pavement design program.
This study includes the following sub-tasks:

- Updating the strategy for collecting and testing regional materials.
- Material sampling and testing.

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- Developing an asphalt concrete specimen production procedure.
- Developing fatigue testing procedures for polymer- and rubber-modified mixes.
- Refining new performance testing methods for asphalt binder, Fine Aggregate Matrix (FAM) mixes, and asphalt concrete mixes.
- Preparing project reports.

WHAT IS OUR GOAL?

The goal of this project is to characterize new or additional materials so that Caltrans can use them effectively and efficiently in pavement designs. These additional materials will become part of the growing materials library in CalME.

WHAT IS THE BENEFIT?

Compared to empirical methods, M-E method is better at accommodating new materials and construction processes. Having accurate material properties will help Caltrans to expand the use of M-E methods for flexible pavement design and rehabilitation throughout California, and thus reduce maintenance costs and create savings by maintaining longer-lasting pavements.

WHAT IS THE PROGRESS TO DATE?

The research is complete. The research team is in the process of delivering the final report.