DRISI

CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Regional and New Materials in Standard Materials Library and Implementation of Design Guidance

Expanding the CalME Standard Materials Library to improve flexible pavement design in California.

Pavement

MAY 2025

Project Title:
Partnered Pavement Research Center (PPRC) 23: Mechanistic-Empirical Design

Task Number: 4200

Start Date: November 7, 2023

Completion Date: September 30, 2026

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WHAT IS THE NEED?

The continuous evolution of pavement materials, construction techniques, and performance requirements makes it essential for the California Department of Transportation (Caltrans) to maintain and improve its pavement design tools. The mechanistic-empirical (M-E) method, implemented through the CalME software program, relies on accurate, up-to-date material data. Expanding and refining the CalME Standard Materials Library ensures designers have access to current information, enabling them to accommodate new materials, respond to changing conditions, and maintain efficient, reliable pavement design practices.

WHAT ARE WE DOING?

This task involves expanding and updating the CalME Standard Materials Library by identifying data gaps, sampling and testing materials, maintaining a materials test tracking system, and developing practical design guidance for flexible pavement projects in California. Building on work completed under previous contracts, this effort continues to address remaining priorities. Subtasks include:

- Identifying gaps in the Standard Materials Library
- Materials sampling and testing, including hot mix asphalt (HMA), cold recycled materials, and other high-priority materials
- Updating the Standard Materials Library
- Maintaining the test tracking system
- Developing design guidance

Caltrans

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WHAT IS OUR GOAL?

This task strengthens Caltrans' ability to deliver efficient, cost-effective, and high-performing pavement designs by ensuring access to reliable, current material data. An updated Standard Materials Library enables more informed decision-making, promotes the integration of innovative materials and construction techniques, and supports consistent, high-quality design practices statewide.

WHAT IS THE BENEFIT?

This task strengthens Caltrans' ability to deliver efficient, cost-effective, and high-performing pavement designs by ensuring access to reliable, current material data. An updated Standard Materials Library enables more informed decision-making, promotes the integration of innovative materials and construction techniques, and supports consistent, high-quality design practices statewide. Ultimately, this will improve pavement performance and extend service life.

WHAT IS THE PROGRESS TO DATE?

The research team has made the following progress:

- Confirmed task priorities with Caltrans, with a focus on polymer-modified mixes and HMA with PG70-10 binder.
- Continued testing of all sampled materials. Eight mixes from other projects (BMD and RAP in RHMA) were identified for complementary testing, along with three for this task. Two additional RHMA-G mixes with PG70-10 binder were added from another research effort.
- Sampled the first field section on Yol-16 near Esparto and completed the initial round of Falling Weight Deflectometer (FWD) testing.
- Developed a list of field projects for monitoring lime- and cement-stabilized subgrade/subbase materials. A new project with lime-stabilized soil was identified, and a sampling and testing strategy has been established.
- Continued support for lab operations and collaboration with the Caltrans' Data Interchange for Materials Engineering (DIME) team on the Application Programming Interface (API).