

Pavement

MAY 2026

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

Expanding the California Mechanistic-Empirical (CalME) Standard Materials Library to improve flexible pavement design in California.

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



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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 priorities with Caltrans regarding prioritized polymer-modified and Performance Grade (PG) 70-10 Hot Mix Asphalt (HMA) mixes as well as sampling of 1.5" mixes; continued testing of Balanced Mix Design (BMD), Reclaimed Asphalt Pavement (RAP) in Rubberized Hot Mix Asphalt (RHMA), and Rubberized Hot Mix Asphalt – Gap Graded (RHMA-G) mixes. Field sampling and Falling Weight Deflectometer (FWD) testing began on Yol-16 near Esparto.
- Identified field projects for monitoring stabilized subgrades; initiated a new lime-stabilized soil project with a defined testing strategy.
- Scheduled field testing for recycled projects.
- Continued testing of all the sampled materials. Additionally, new samples were collected for

testing, including a 1.5" mix with PG 64-16 binder and a 3/4" mix with PG 64-28PM binder.

- Identified more than 10 new cold recycling projects for testing and monitoring performance.
- Added fourteen new mixes to the Standard Materials Library (nine from high RAP/RAS ((recycled asphalt shingles)) mixes, and five from the BMD study).
- Added six new mixes to the Standard Materials Library with polymer modified binders and three new mixes from the fine dry rubber mixes used in the Levee Road test section.
- Continued development of the application programming interface (API) for the materials database.
- Continued the integration of the concrete testing in CalME software.
- Continued support for lab operations, working on integration of concrete testing.