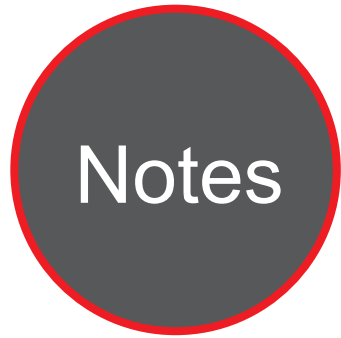




Caltrans Division of Research,  
Innovation and System Information

# Research



# Notes

Pavement

JULY 2020

Project Title:  
PPRC 20 Mechanistic-Empirical  
Design

Task Number: 3197

Start Date: July 1, 2017

Completion Date: June 30, 2020

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## MED-A: Standard Materials

Updating and improving the standard materials library for Mechanistic Empirical design.

### WHAT IS THE NEED?

To accomplish California Department of Transportation's (Caltrans') mission of providing an efficient transportation system to enhance California's economy and livability, Caltrans is encouraging innovations in pavement materials to improve efficiency and increase sustainability.

These new materials need to be characterized in terms of their mechanical behavior before they can be effectively used in pavement designs. In addition, 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.

### WHAT ARE WE DOING?

To characterize new or local materials, the research systematically and strategically selects roadway projects to provide representative coverage of the usage of these materials in Caltrans roadway network.

Depending on the specific type of material involved, field or laboratory testing is conducted on the material used in the selected projects. The field or laboratory data will then be used to characterize the material so that it can be added to the Standard Materials Library in Caltrans Mechanistic-Empirical Tool (CalME). The updated Standard Materials Library will allow Caltrans engineers to effectively use materials available in their District within CalME software for future pavement designs.



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knowledge that improves  
California's transportation system

Characterizing new or local materials is achieved through the following tasks:

- Review gaps in current materials library
- Identify projects for sampling and field testing
- Collect field or plant sampling
- Conduct laboratory testing
- Update the Standard Materials Library
- Develop updated material selection guide
- Prepare project report

## WHAT IS OUR GOAL?

The goal of this research is to characterize new or otherwise additional materials, so that Caltrans can use them effectively in pavement designs and achieve its goals of efficiency and sustainability. These additional materials will become part of the growing materials library that the University of California Pavement Research Center (UCPRC) is developing for Caltrans.

## WHAT IS THE BENEFIT?

Caltrans is looking to expand the use of Mechanistic Empirical (M-E) methods for flexible pavement design and rehabilitation throughout California. Compared to empirical methods, M-E method is better at accommodating new materials and construction processes.

The key to the success of the M-E method is to have accurate material properties that are determined through laboratory testing (stiffness, fatigue resistance, rutting resistance, etc.) under controlled conditions.

## WHAT IS THE PROGRESS TO DATE?

As of July 2020, the research team has made the following progress:

- Continuing to review and identify gaps in Standard Materials Library with Caltrans
- Put sampling loose field mix on hold due to COVID-19
- Due to COVID-19, limited testing of plant samples collected from ALA-580, KIN-41, and YOL-84.
- Continuing to add new materials to the Library
- Developed a flow chart for Hot Mix Asphalt material selection and currently making the Standard Materials Library easier to use for non-performance related specifications designs.
- Continuing to document progress