



CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

Research



Notes



Pavement

MAY 2024

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

Task Number: 3761

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2023

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New Rubberized Hot Mix Asphalt Materials with Recycled Asphalt Pavement/Recycled Asphalt Singles, Part A for Structural Layers in Flexible Pavements

Laboratory testing to characterize properties of Rubberized Hot Mix Asphalt (RHMA) containing Recycled Asphalt Pavement (RAP)/Recycled Asphalt Singles (RAS) for flexible pavements.

WHAT IS THE NEED?

This research investigates the use of Recycled Asphalt Pavement (RAP) in RHMA without reducing the amount of recycled tire rubber used by Caltrans. There is growing interest in adding some RAP to RHMA-G mixes. Given that binder replacement is typically achieved by using finer fractions of the RAP, the coarser RAP left over from removing the finer fractions can be added to RHMA-G mixes. This allows for the use of all processed RAP without reducing the amount of recycled tires used.

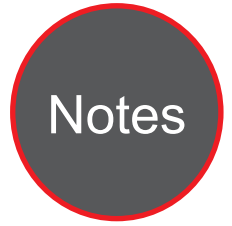
WHAT ARE WE DOING?

This task continues laboratory testing to establish properties of RHMA mixes containing RAP/RAS. The research team runs CalME simulations to quantify performance of these mixes in interlayers, rich bottom layers, and base for new Portland Cement Concrete (PCC) pavements, where both stiffness and crack resistance are required. This study includes the following sub-tasks:

- To update literature review on recently completed research.
- To run initial CalME simulations using RHMA with RAP, RAS, or RAP with RAS, in various structural layer applications in flexible pavements.
- To test laboratory properties of selected RHMA mixes with fine and coarse RAP, RAS, or RAP with RAS.
- To run refined CalME simulations using RHMA with RAP, RAS, or RAP with RAS, in various structural layer applications in flexible pavements.
- To conduct pilot studies and/or HVS testing to verify simulations, if justified.



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WHAT IS OUR GOAL?

The goal of this task is to develop guidelines for use of RAP in RHMA mixes and to prepare Performance-Related Specification (PRS) for RHMA used in interlayers, rich bottom layers, and base in flexible pavements.

WHAT IS THE BENEFIT?

The research focuses on decreasing environmental impacts by allowing RAP into RHMA without reducing the amount of recycled tire rubber used by Caltrans. It also reduces maintenance costs by developing simplified PRS to maintain the necessary stiffness and crack resistance for the pavement.

WHAT IS THE PROGRESS TO DATE?

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