DRISI

CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

Research Notes

Partnered Pavement Research Center (PPRC) 23: Performance Related Specifications

To evaluate use of fine dry rubber in dense-graded hot mix asphalt (HMA) and to develop design criteria, guidance, and specifications

Pavement

MAY 2024

Project Title:
Partnered Pavement Research Center (PPRC) 23: Performance Related Specifications

Task Number: 4215

Start Date: November 7, 2023

Completion Date: September 30, 2026

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WHAT IS THE NEED?

This task needs to be done to develop recommendations for incorporating recycled tire rubber in dense-graded HMA. This includes achieving sustainable asphalt mixes with potential cost savings, improved pavement performance, and environmental benefits. The task builds on previous research, addressing a need for more effective and eco-friendly practices in asphalt technology, benefiting Caltrans and contributing to the advancement of sustainable infrastructure solutions.

WHAT ARE WE DOING?

This project work includes evaluating rubber technologies for adding recycled tire rubber to HMA, developing new HMA designs that maximize the use and performance benefits of recycled tire rubber, and validating the constructability and benefits of the most promising technologies for adding recycled tire rubber to HMA based on a pilot project.

This task includes the following subtasks:

- Laboratory testing of HMA with rubber
- Develop improved HMA designs with rubber
- Pilot implementation in the field

WHAT IS OUR GOAL?

The goal of this task is to develop recommendations for using recycled tire rubber in dense-graded HMA, including suggested specification language for implementation in balanced mix

Caltrans

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design, where same or better life cycle cost and same or better environmental impact can be achieved.

WHAT IS THE BENEFIT?

The use of recycled tire rubber may reduce the cost of HMA production as the recycled tire rubber can be used as an asphalt binder extender and it is cheaper than the asphalt binder. The use of recycled tire rubber is expected to make asphalt mixes more sustainable too. Further, the addition of rubber to HMA is expected to improve the performance of asphalt pavement by improving cracking and rutting.

WHAT IS THE PROGRESS TO DATE?

As of May 2024, the research team has made the following progress:

- Continued laboratory testing of control HMA and four RHMA-D mixes produced in the laboratory.
- Started discussions with CalRecycle, UC Davis, and industry regarding constructing pilot test sections on the UC Davis campus.