DRISI
CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Evaluation of Fine Dry Rubberized Asphalt Mixes and Inclusion in Performance-Related Specifications

Integrating fine dry rubber into dense-graded hot mix asphalt (HMA).

Pavement

MAY 2025

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

Task Number: 4215

Start Date: November 7, 2023

Completion Date: September 30, 2026

Task Manager:
Vipul Chitnis
Research Engineer
Vipul.Chitnis@dot.ca.gov

WHAT IS THE NEED?

The California Department of Transportation (Caltrans) seeks sustainable, cost-effective ways to boost asphalt pavement durability. Adding fine dry rubber from recycled tires to dense-graded hot mix asphalt can lower material costs and enhance resistance to cracking and rutting. Building on earlier studies, this task will deliver clear, actionable guidance on when and how to use rubberized mixes across California's highway network.

WHAT ARE WE DOING?

This task includes evaluating recycled tire rubber technologies for HMA, developing new HMA designs that maximize performance and sustainability, and validating these designs through a pilot project.

The work is organized into three subtasks:

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

WHAT IS OUR GOAL?

This task aims to create practical recommendations and specification language for incorporating fine dry rubber into dense-graded hot mix asphalt. All guidance will integrate with Caltrans' balanced mix design framework and target equal or better life-cycle costs and environmental outcomes.

WHAT IS THE BENEFIT?

Using recycled tire rubber in asphalt reduces binder costs,

Caltrans

DRISI provides solutions and knowledge that improves California's transportation system.

diverts waste from landfills, and extends pavement life. Rubber-enhanced mixes offer greater durability against common distresses and help Caltrans meet its sustainability objectives by cutting life-cycle emissions and conserving resources.

WHAT IS THE PROGRESS TO DATE?

The research team has made the following progress:

- Completed all laboratory testing of dense-graded hot mix asphalt with recycled tire rubber.
- Finalized the optimization of mix designs incorporating recycled tire rubber to improve performance and sustainability.
- Continued coordination for the Brooks-Levee Road pilot project, with construction scheduled for early May 2025.