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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
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Research Notes

Piloting of Cold Recycling and New Asphalt Base Designs and Interlayers for Concrete Pavements

Developing sustainable asphalt bases and interlayers for concrete pavements.

Pavement

November 2025

Project Title:
Partnered Pavement Research Center (PPRC) 23: Mechanistic-Empirical Design

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WHAT IS THE NEED?

Jointed plain concrete pavement (JPCP) and continuously reinforced concrete pavement (CRCP) require durable, cost-effective base designs. Incorporating high recycled asphalt pavement (RAP) content and recycled tire rubber into hot mix asphalt (HMA) bases and interlayers can boost sustainability, lower life-cycle costs, and improve pavement performance. Caltrans is piloting these innovations to inform statewide design recommendations.

WHAT ARE WE DOING?

The scope of work includes:

- Monitoring a specialized concrete slab test track to evaluate interlayer behavior under traffic.
- Completing laboratory tests on standard concrete pavement base mixtures.
- Designing and testing enhanced base materials and interlayers incorporating high RAP content and rubber modifiers.
- Preparing for a field pilot to validate these new HMA base and interlayer designs under real-world conditions.

WHAT IS OUR GOAL?

The main goal of this task is to produce clear, data-driven recommendations for sustainable HMA base and interlayer designs, optimizing mixtures with recycled materials, verifying performance, and guiding California Department of Transportation's (Caltrans) specifications for concrete pavement systems.

Caltrans

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WHAT IS THE BENEFIT?

New base and interlayer designs will extend pavement life, reduce maintenance needs, and lower material costs by using recycled content. They will also enhance ride quality and safety, decrease environmental impacts, and support Caltrans' commitment to sustainable infrastructure.

WHAT IS THE PROGRESS TO DATE?

The research team has made the following progress:

- Continued monitoring of the concrete slab test track ("Interlayers Test Track").
- Completed the laboratory testing of standard concrete pavement bases.
- Developed recommendations for designing new HMA bases for JPCP and CRCP, and interlayers (bond-breakers) to be used between the JPCP slabs and the lean concrete bases (LCB).
- Completed sampling of raw materials for the laboratory experiments.
- Completed designing the control mix for experimental testing.
- Initiated laboratory production of improved base materials.