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Research Notes

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

Facilitating the adoption of Balanced Mix Design (BMD) through enhanced Performance Related Tests (PRT) and Performance Related Specifications (PRS)

Pavement

MAY 2024

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

Task Number: 4214

Start Date: October 23, 2023

Completion Date: September 30, 2026

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WHAT IS THE NEED?

The implementation of a BMD approach is critical for ensuring that asphalt mixes used by Caltrans meet performance expectations, especially in the context of diverse asphalt mix types and evolving industry standards. The refinement and optimization of Performance Related Tests (PRTs) are necessary to expedite the approval process, making it faster, easier, and more cost-effective for both major rehabilitation projects and routine endeavors.

Moreover, the project addresses the growing need for sustainable practices in pavement maintenance. The evaluation of a wider range of asphalt mixes, including those with recycled materials, aligns with environmental goals and contributes to reducing life cycle costs. The development of alternative tests and the creation of a BMD framework not only enhance the overall efficiency of Caltrans' operations but also position the department as a leader in adopting environmentally conscious approaches to infrastructure maintenance.

WHAT ARE WE DOING?

The project focuses on implementing a BMD strategy for asphalt mixes within Caltrans. This involves refining existing PRT to make them more efficient for initial mix approvals on larger projects, developing alternative, faster, and cost-effective PRTs for routine projects, and assessing a broader range of asphalt mixes, including those with recycled materials.

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This task includes the following subtasks:

- Evaluation of alternative routine PRT for BMD using accelerated pavement testing
- Sampling and testing of high recycled content and other new mix types using PRT
- Testing, analysis, and other support for full-scale asphalt rehabilitation/reconstruction projects with PRS
- Development of alternative test methods for fatigue cracking
- Recommendations for BMD tests and specifications and improvements to full-scale PRS and test methods, and communication support for implementation

WHAT IS OUR GOAL?

The goal of this task order is to implement a BMD strategy for asphalt mixes within Caltrans to reduce life cycle costs, to minimize environmental impacts, and to enhance the sustainability of asphalt-surfaced pavements across the state highway network.

WHAT IS THE BENEFIT?

The anticipated benefits of the project are substantial, aiming to yield cost savings and environmental advantages for Caltrans. The project seeks to streamline the approval process for asphalt mixes, reducing both time and costs associated with large-scale and routine projects. Additionally, the incorporation of recycled materials aligns with environmental goals, contributing to a decrease in life cycle costs and minimizing the environmental impact of maintaining asphalt-surfaced pavements.

WHAT IS THE PROGRESS TO DATE?

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

- Submitted and presented test track plan to the Office of Asphalt Pavement, METS, and PMPC task group leader.
- Updated the framework for BMD and initial criteria for specifications.
- Continued testing of 100% RAP mix and control mix from I-40 in District 8.
- Sampled Ven-150 again due to previous JMF failure.
- Completed draft report on SBD-215 pilot project. Further work on analysis for SJ-26 pilot project.
- Continued testing and analysis to develop linear amplitude sweep tests for mix and binder fatigue.

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