DRISI

CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

Research Notes

Continued Development of Guidance and Specifications for Cold Recycling

Further improvements on the recycling guide by refining mix designs such as gradations, stabilizers, and other pavement applications.

Pavement

MAY 2024

Project Title:
Partnered Pavement Research Center (PPRC) 23: Recycling

Task Number: 4205

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WHAT IS THE NEED?

California Department of Transportation (Caltrans) employs a variety of strategies and materials in maintaining and rehabilitating the state highway system's pavements, a necessary approach given the varying characteristics of the pavements in use and their diverse properties.

There has been growing interest in in-place full-depth and partial-depth reclamation of distressed pavements in the United States and internationally. Caltrans has been using full-depth reclamation (FDR) as a rehabilitation strategy since 2001 and it is pursuing to develop detailed guidance on mix design and pavement design for FDR projects.

WHAT ARE WE DOING?

This study is a continuation of accelerated pavement testing (APT) and laboratory testing study for developing and updating project selection, pavement and mix design guidelines and specifications.

This study will assess the use of other types of cement in terms of strength, shrinkage, microcracking procedures and timing, stiffness gain, and short- to medium-term performances. It will also analyze the deep-lift full-depth recycling to assess the distribution of cement and determine whether layers can be uniformly mixed and compacted. The use of rejuvenators to mobilize some of the in-place binder to achieve recycling of both aggregates and binder will be investigated.

Caltrans

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WHAT IS OUR GOAL?

To provide an updated cold recycling guide, test methods, and specifications. Guidance will be developed for the use of rejuvenators in cold recycled pavement applications.

WHAT IS THE BENEFIT?

The updated guideline for recycling will help the designers, contractors, and project specification engineers determine the optimal recycling procedure. The guideline will assist engineers determine the appropriate pavement rehabilitation strategy. It will also be utilized to update standards, plans, and specifications. It also ensures cost effectiveness through use of longer lasting pavement. In addition, the result of the study can be used for project selection in pavement management system.

WHAT IS THE PROGRESS TO DATE?

Fifty percent completion of compaction and strength testing for specification updates. The project team: (1) continued working on supplemental fines study including identifying gradation bands, conducting mechanistic sensitivity analyses, identifying potential sources of fines, and collecting samples for testing; (2) prepared experiment factorial and started mix designs; and (3) hosted a two-day cold recycling mix design forum to understand national and international directions on the topic.

The next steps for this task include: (1) identifying CR projects in PaveM that are performing poorly and selecting representative projects for forensic investigation; (2) working on the compaction and strength test method report for specification updates; and (3) working on the mix design, specimen preparation, and testing of mixes with and without supplemental fines.