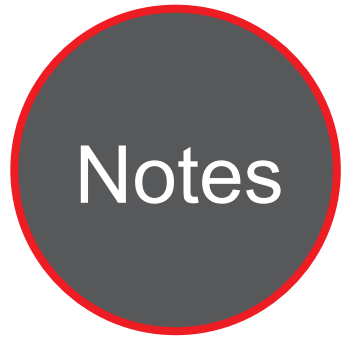




Caltrans Division of Research,
Innovation and System Information

Research



Notes



Pavement

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Project Title:
PPPC 20 Performance Related
Specifications

Task Number: 3188

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Implementation of PRS for AC Long Life Projects

Implementation and support of simplified performance related specifications development and deployment in asphalt concrete long-life projects.

WHAT IS THE NEED?

To accomplish California Department of Transportation's (Caltrans') mission of providing an efficient transportation system to enhance California's economy and livability, Caltrans is transitioning from using empirical methods to Mechanistic-Empirical (M-E) methods for pavement design so that local conditions such as materials, climate, and traffic can be effectively accounted for.

An integral component of the M-E design method is the use of performance related specification (PRS). For the four asphalt concrete (AC) long life projects in California: I-710 in 2002; I-5 near Red Bluff in 2011; SIS-5 near Weed in 2011; and SOL-80 near Dixon in 2013, PRS involves minimum requirements for laboratory test results for AC materials regarding stiffness, rutting performance, and fatigue performance, as well as tests for moisture damage.

Contractors are expected to submit job mix formulae (JMF) with test results, showing compliance with the corresponding PRS. Based on the experience from the four completed AC long life projects that used PRS, it is apparent that the process for JMF approval is both time consuming and full of uncertainty for inexperienced contractors.

The procedure for mix design and specification development has been found to be time consuming. In some projects, contractors were faced with unpredictable delays. The development and implementation of PRS needs to be simplified without sacrificing its ability to obtain expected performance from materials and pavement structures, to allow its wider adoption and help the transition to M-E design methods.



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WHAT ARE WE DOING?

This study focuses on developing a classification system for asphalt mixes based on their laboratory performance in terms of stiffness, rutting life, and fatigue life. The research team will develop a streamlined procedure for mix design and specification development based on the mix classification system. They will also develop a contracting approach for handling timely testing and classification of materials with Caltrans.

These efforts should make the PRS more user friendly for both Caltrans and industry. The University of California Pavement Research Center helps with other practical aspects of PRS implantation, such as training on performance related mix design guidance, summarizing experiences from past AC long life projects, and supporting new projects that use PRS.

This research is to simplify the procedures for developing PRS for AC mixes and help promote its implementation. This is achieved through the following tasks:

- Develop a simplified asphalt mix design procedure and construction specification development
- Support implementation of mix design guidance
- Evaluate revised specifications and procedures
- Support Caltrans on implementation and training
- Document all findings from this research

WHAT IS OUR GOAL?

The main goal of this research is to address the issues related to PRS and support Caltrans in its implementation, and ultimately bring performance-related testing to more projects where their cost and importance warrant the extra cost and integrated with the use of the M-E design method.

WHAT IS THE BENEFIT?

It is expected that the research will lead to simplified PRS in terms of specification development and deployment in AC long life projects. The simplified PRS will be easier for contractors and districts to understand and communicate and will not increase risk of poor performance to Caltrans.

WHAT IS THE PROGRESS TO DATE?

The following tasks are partially accomplished:

- Reviewing overall PRS system previously developed and develop a simplified asphalt mix design procedure and construction specification system
- Presenting mix design guidance to industry and answer questions from contractors on mix design guidance
- Conducting pavement condition evaluation of all AC long life projects and do deflection testing and sampling
- Continuing performance testing of I-5 Sacramento AC long life project
- Preparing tech memo on PRS development process for I-5 Sacramento project