Pavement

Improve Pavement Surface Distress and Transverse Profile Data Collection and Analysis, Phase I
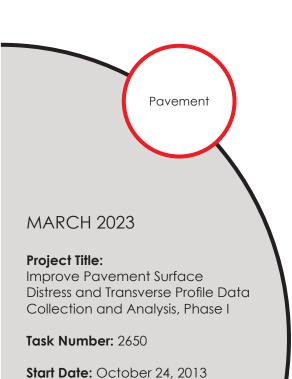
Developing guidelines for agencies use in automated and semi-automated pavement distress data collection and analysis

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Project Title:
Improve Pavement Surface Distress and Transverse Profile Data Collection and Analysis, Phase I

Task Number: 2650

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WHAT WAS THE NEED?

The technical capabilities of systems to collect and analyze Pavement Surface Distress and Transverse Profile (PSDATP) have increased dramatically in the last 5-10 years. Many State highway Agencies (SHAs) are in the process of assessing the procurement of equipment/systems or procuring vendor services for network and project level assessments. Additionally, the SHAs are constantly trying to determine the cost of data collection to help support pavement decisions. The collection of quality PSDATP is critical for pavement management and design. The current national and state efforts to develop and refine pavement performance measures highlight the high value provided by quality PSDATP. The implementation of new project delivery methods with medium-to long-term maintenance agreements (Design Build Maintain, Design Build Operate, etc.) and performance measures directing maintenance and rehabilitation strategies, justify a high level of quality PSDATP for proper planning and the allocation of funding. The implementation of the Mechanistic Empirical Pavement Design Guide (MEPDG) highlights the need for quality PSDATP to maximize the potential of the MEPDG and all other pavement design models. The emphasis on preventive pavement maintenance activities provides the opportunity for additional value from greater resolution of pavement surface distress quantification.

WHAT WAS OUR GOAL?

The goal of this Transportation Pooled Fund (TPF) study 5(299) was to develop guidelines that include technical assessment protocols for automated and semi-automated pavement cracking data collection/analysis systems and/or services for use in agency vendor selection contracting documents.

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WHAT DID WE DO?

This project was initiated by the TPF study 5(299) to improve the quality of PSDATP data collection and analysis by assembling SHAs, the Federal Highway Administration (FHWA), and industry representatives to:

- Identify data collection integrity and quality issues
- Identify data analysis needs
- Suggest approaches to addressing identified issues and needs for SHAs and the FHWA to Initiate and monitor projects intended to address identified issues and needs, to disseminate results, and to assist in solution deployment.

Key tasks in the completion of this project were to conduct a literature review, a review of previous TPF-5(299) documents, and other associated information. In addition, a data gathering effort consisted of obtaining information and meeting with the pooled fund study agencies to gain insight and experience with the procurement process. Information was also obtained from most of the vendors who are currently providing high speed cracking data technology and/or services.

WHAT WAS THE OUTCOME?

A refined 2D/3D system was developed to be:

- Efficient and effective in providing the contracting agency the information needed to select a vendor
- Sensitive to the vendor resources required to provide the information
- Prepared in an appropriate format

In addition, the study was tasked with assessing the need to develop separate protocols for vendor services and vendor data collection/analysis systems. Guidelines for Vendor Selection and Guidelines for Equipment and Software Purchasing were developed.

WHAT IS THE BENEFIT?

This new pooled-fund project was established to provide direction and funding that will unify the strategies, address implementation efforts, and promote practices that improve the accuracy and repeatability of the data collection and analysis systems and promote the knowledge and understanding of PSDATP measurements.

The developed guide will benefit both the California Department of Transportation (Caltrans) and industry for use in agency vendor selection contracting documents. Improving accuracy and repeatability of data collection and analysis will allow for better predictions of pavement performance, thus improve pavement ME design, reduce construction cost and maintenance costs, reduce energy costs and greenhouse gas production during construction and maintenance.

LEARN MORE

Final Report: https://www.fhwa.dot.gov/pavement/pub_details.cfm?id=1119

More task reports and documents for TPF-5(299): https://www.pooledfund.org/Details/Study/543