DRISI
CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Pavement

November 2025

Project Title: Improve Pavement Surface Distress and Transverse Profile Data Collection and Analysis, Phase II, TPF-5(399)

Task Number: 3999

Start Date: April 1, 2019

Completion Date: March 31, 2025

Task Manager:

Vipul Chitnis
Research Engineer
vipul.chitnis@dot.ca.gov

DRISI provides solutions and knowledge that improves California's transportation system.

Improve Pavement Surface Distress and Transverse Profile Data Collection and Analysis, Phase II, TPF-5(399)

Advancing Nationwide Consistency in Pavement Distress Data Collection and Analysis.

WHAT IS THE NEED?

Over the past five to ten years, the technical capabilities of systems for collecting and analyzing pavement surface distress and transverse profile (PSDATP) data have advanced significantly. Many State Highway Agencies are now evaluating or procuring equipment and vendor services for both network- and project-level pavement condition assessments. High-quality PSDATP data is essential for effective pavement management, design, and performance evaluation.

This study will help unify strategies, support implementation, and promote practices that improve the accuracy, consistency, and understanding of PSDATP data collection and analysis.

WHAT ARE WE DOING?

This study proposes a systematic approach to collect, analyze, and use transverse profile data to identify pavement distress. The Federal Highway Administration (FHWA) will develop a robust methodology to improve data quality and support consistent implementation among state Departments of Transportation (DOTs). The study includes three primary tasks:

- Task 1 – Administration: Assemble a Technical Advisory Committee (TAC). Initial activities include developing a study charter outlining how the TAC will identify needs, propose and select projects, and carry out its responsibilities.
- Task 2 – Identify, prioritize, and select projects as necessary: Identify, prioritize, and select projects for this pooled-fund study. Potential projects may include certifying and

validating existing standards, conducting field evaluations of vendor systems, refining analysis standards for transverse profiles (e.g., water retention), piloting new methods, developing procurement and calibration standards, verifying data accuracy, and exploring emerging technologies.

- Task 3 – Project Execution: Selected projects will be developed into detailed project plans. If a project requires contracting, the plan will serve as the basis for the statement of work.

WHAT IS OUR GOAL?

The study aims to:

1. Develop an accurate, standardized methodology for identifying pavement surface distress using transverse profile data.
2. Establish practical approaches for widespread implementation by state DOTs, including the California Department of Transportation (Caltrans).

WHAT IS THE BENEFIT?

The proposed methodology will improve the accuracy, consistency, and efficiency of pavement surface distress and transverse profile data collection and analysis, supporting better pavement management decisions.

WHAT IS THE PROGRESS TO DATE?

The research team has made the following progress:

- Continued work on improving rut and cross slope definition.
- Initiated testing to assess the transverse profiler pavement.
- Continued developing work for feasibility study to create a reference quality annotated image library for Artificial Intelligence and Machine Learning (AI/ML) applications.