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

Research Notes

Pilot testing for feasibility of technologies for inventorying complete streets assets and condition evaluation rating system

Testing new technologies to improve Complete Streets maintenance.

Pavement

November 2025

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

Task Number: 4099

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WHAT IS THE NEED?

Complete Streets policies aim to create safe, accessible routes for people walking, bicycling, using public transit, and driving. Yet sidewalks, bike lanes, and other active transportation facilities often receive less attention than roads and highways in asset management programs. A national survey of all 50 state Departments of Transportation (DOTs), along with interviews with the California Department of Transportation (Caltrans) and the Georgia DOT, found no consistent system for assessing sidewalk cracking, surface evenness, or compliance with the Americans with Disabilities Act (ADA). Without reliable data and clear maintenance guidelines, these multimodal assets deteriorate, posing risks to safety, accessibility, and long-term infrastructure value.

WHAT ARE WE DOING?

This task comprises four sub-tasks:

- Revise the Complete Streets Technical Memorandum: Update the condition-maintenance decision trees and evaluation framework based on Caltrans feedback.
- Conduct a Technology Literature Review: Identify and review hardware and software tools for collecting sidewalk and bike path inventory data and determining asset condition to support the decision trees.
- Demonstrate LiDAR-Based Methods: Pilot the use of Light Detection and Ranging (LiDAR) and other data sources to inventory sidewalks, assess their condition, and check for ADA compliance.
- Prepare Project Deliverables: Develop technical

Caltrans

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memoranda and a final research report summarizing all findings and recommendations.

WHAT IS OUR GOAL?

The main goal of this task is to incorporate sidewalks, curb ramps, and bike lanes into routine asset management alongside highways and bridges. Standardized condition ratings, paired with modern data collection tools, will help transportation agencies plan, prioritize, and fund maintenance of these multimodal facilities using the same consistent, data-driven practices applied to roadways.

WHAT IS THE BENEFIT?

Integrating these methods will improve safety and accessibility for pedestrians and cyclists by identifying and addressing hazards quickly. Automated data collection and decision-tree frameworks will reduce labor demands, improve consistency, and lower costs. Including ADA compliance checks in routine workflows will help agencies meet legal obligations and promote equitable access for all users. Overall, this effort will support the long-term sustainability of Complete Streets features through reliable asset management and maintenance planning.

WHAT IS THE PROGRESS TO DATE?

The research team made the following progress:

- Updated the Technical Memorandum and maintained ongoing coordination with the Caltrans Office of Safety lead, including a joint meeting.
- Completed the technology literature review, presented the findings, and submitted the report to Caltrans for review.
- Reviewed the University of California, Davis LiDAR data and shipped the data to the Georgia Institute of Technology to begin work on the demonstration. Developed a framework to define the stages of the workflow.
- Conducted manual extraction of sidewalk features for a representative corridor (sidewalk geometry). Conducted analysis to identify critical LiDAR specifications (including accuracy and final point density) that affect extraction accuracy (analysis of real-world LiDAR data and literature review).
- Prepared final contents to include in final report.