

Research in Progress

A Pavement Marking Inventory and Retroreflectivity Condition Assessment Method Using Mobile LiDAR – Phase 2

Research Need

The FHWA has recently released Revision 3 of the 2009 MUTCD and includes new provisions for maintaining minimum levels of retroreflectivity for pavement marking. Regulatory compliances pose a challenge to DOTs, as conventional visual inspection methods are labor-intensive, and the results can be subjective. There is a pressing need for MassDOT to develop and implement an effective and efficient inventory method and a reliable retroreflectivity condition assessment approach for pavement marking.

Goals/Objectives

MassDOT recently completed Phase 1 of the study with promising results from LiDAR-based methods. The objective of Phase 2 of this study is to leverage the outcomes from Phase 1 and expand the knowledge for pavement marking in the following three aspects:

- In-service marking: to continuously monitor pavement marking retroreflectivity conditions with additional pavement marking materials and properties.
- Newly installed marking: to develop new methods to conduct efficient and effective QA/QC of new pavement marking installations.
- MUTCD compliance: to develop a draft SOP for in-service pavement marking retroreflectivity measurement to meet MUTCD's regulatory compliance requirement.

Project Information

This project is being conducted as part of the Massachusetts Department of Transportation (MassDOT) Research Program with funding from Federal Highway Administration (FHWA) State Planning and Research (SPR) funds.

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Performing Organization:
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Project Start Date:
February 2023

Expected Project Completion Date:
February 2025

Methodology

The proposed study will leverage the outcomes from the completed Phase 1 study (including automated pavement marking extraction and retroreflectivity evaluation algorithms) and continue to utilize mobile LiDAR data to achieve the proposed goals.

- Mobile LiDAR Data Acquisition: To collect point cloud data in selected roadway test sections containing with different pavement marking materials (e.g., waterborne, tape), and properties (e.g., skip lines, recessed marking, wet performance marking, RPM).
- New Marking Installation QA/QC: to evaluate the retroreflectivity conditions within 0-6 months from installation and other critical properties (e.g., color, embedment, uniformity).
- Pavement Marking Management: To develop an SOP and supporting database for in-service marking retroreflectivity measurement to meet MUTCD's regulatory requirements..

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