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.

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 regualtory requirements..