

Maintenance and Restriping Strategies for Pavement Markings on Asphalt Pavements in Louisiana

Developing simple, efficient restriping strategies for pavement markings in Louisiana roads.

Project Number:

20BLSU03

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Principal Investigator(s):

Momen Mousa

Louisiana State University

mragab@lsu.edu

Marwa Hassan

Louisiana State University

marwa@astate.edu

Lead Institution:

Louisiana State University

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Tran-SET

Louisiana State University

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\$86,975

Pavement markings are major components in the highway system that define the roadway path and specific traffic lanes. They provide continuous information to road users related to the roadway alignment, vehicle positioning, and other important driving-related tasks, and therefore, reduce traffic crashes and fatalities. In general, pavement markings encompass longitudinal lines (centerlines, lane lines, and edge lines on paved roads), transverse lines, words, and symbols. White marks separate traffic in the same direction and delineate the right edge of the roadway; while yellow lines are used to separate traffic in opposing directions, two-way, left-turn lanes, and reversible lanes from other lanes and delineate the left edge of the roadway of divided and one-way highways and ramps. This project will evaluate the retroreflectivity of pavement markings in Louisiana to address poor performance, which is widespread in Region 6. This project will provide solutions for the poor durability and retroreflectivity of pavements markings in Region 6, thus enhancing the durability and service life of infrastructure. Furthermore, this research will propose new re-striping strategies to preserve the existing pavement.

Problem Statement

Pavement markings deteriorate with time and become less retroreflective. Eventually, most of the glass beads disappear, and their effectiveness in communicating the intended travel path and roadway alignment to road users at nighttime diminishes. After their deterioration, if pavement markings are left untouched, the retroreflectivity (RL) can decrease to a point where their markings are functionally invisible for nighttime drivers to react appropriately. Therefore, roads need to be re-stripped to their maintain retroreflectivity.

Objectives

The main objective of this research study is to assist the Louisiana Department of Transportation and Development (LADOTD) shifting from current practices in maintaining pavement markings to adopt the Expected Service Life Method to maintain retroreflectivity at or above the appropriate levels. To facilitate the implementation of this strategy, the research team will address its main disadvantage (it requires time as it necessitates state agencies to begin tracking their markings of similar type to develop service life values). To achieve this, a decision tree (or performance models) would be developed to determine the PMSL based on the project conditions.

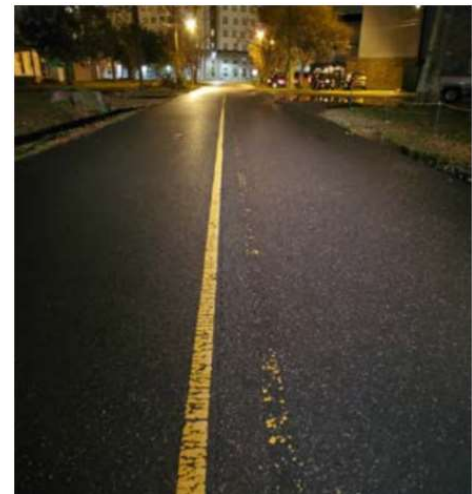


Figure 1: Under Restriped Pavement Marking in Louisiana (2019)

Intended Implementation of Research

Education and Workforce Development: This research project will fund one Ph.D student at Louisiana State University. This will aid in preparing future leaders in the Transportation Sector. The research team will also prepare educational materials on the



new decision-making procedures for pavement marking maintenance to be incorporated into courses at LSU and share it with other universities. The educational material will also be summarized and disseminated to interested government entities and the industry.

Outreach: This project will extend at least one summer internship to high school students within the High School Student Research (HSSR) Intern Program organized by Dr. Adam Melvin at LSU.

Anticipated Impacts/Benefits of Implementation

Implementation of the proposed decision-making tool will minimize the risks of over striping and under restriping, hence, enhancing traffic safety on roadways, thus reducing costs. The main deliverables from the project are:

1. A final report will be delivered at the end of the technical phase with the details of the developed decision-making procedure for pavement marking replacement. The final report will include a complete description of the problem, approach, methodology, procedures, findings, conclusions, and recommendations.
2. Implementation report will be delivered at the end of the implementation phase using the Tran-SET template for implementation reports. The Implementation Report will include a complete description of and developed products from the education, T2, and workforce development activities that were executed during the implementation phase of this project.
3. Findings will be shared at national conferences and through journal publications.

Web links

- Tran-SET's website
<https://transet.lsu.edu/research-in-progress/>

Tran-SET

Tran-SET is Region 6's University Transportation Center. It is a collaborative partnership between 11 institutions (see below) across 5 states (AR, LA, NM, OK, and TX). Tran-SET is led by Louisiana State University. It was established in late November 2016 "to address the accelerated deterioration of transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovative construction management processes".

Learn More

For more information about Tran-SET, please visit [our website](#), LinkedIn, Twitter, Facebook, and YouTube pages. Also, please feel free to contact Mr. Momen Mousa (Tran-SET Program Manager) directly at transet@lsu.edu.

