



RESEARCH NEED STATEMENT

Call for Projects 2015

Project Research Title: Incorporating Pavement Type and Characteristics in Traffic Safety Management for Highway Design and Maintenance

TDOT Sponsor Director: Jennifer Lloyd

List TDOT Research Team Lead: Ali Hangul

List TDOT Research Team Members: Robert Braun, James Maxwell

1. Define the problem or research requested. What is the goal/objective of the research?

This proposed research project will build upon the TDOT-sponsored study entitled "Integrating Pavement Engineering and Road Geometric Factors into the Safety Evaluation Toolbox for Highway Design and Maintenance".

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2. Is this research a continuation of a past or present project?

☒ No ☐ Yes

If yes, provide current research project title, RES # and reason for the project continuation.

3. Describe anticipated benefits/expected deliverables.

This proposed research will result in the following benefits to TDOT:

- (1) Better understanding of impacts of pavement types and characteristics on traffic safety issues;
- (2) Significant reduction in accident frequency and severity;
- (3) Better and safer driving environment through implementation of the recommendations.
- (4) Improved public satisfaction through a better driving environment

4. What is your timeline for completion of the research?

1 year

5. List the anticipated tasks for this research.

(1) State DOT Survey on Ways to Improve Traffic Safety via Better Pavement Maintenance and Literature Review

(2) Access of Tennessee Roadway Information Management System, TRIMS and Pavement Management System, PMS and Data Preparation

(3) Identification of Pavement Types and Characterization as Crash Factors

(4) Statistical Modeling Analysis

(5) Guideline Development

(6) Draft of Final Report

(7) Recommendations for Specification and Implementation

6. Describe how the project results will be implemented?

To improve highway safety

7. Will this study produce software, web page or other technology that will involve the Information Technology Division?

☒ No ☐ Yes, please describe:

8. Will training be provided to employees as a result of this research?

☒ No ☐ Yes, please describe:

9. Will this research involve equipment or materials purchase?

☒ No ☐ Yes, please describe:

10. Research must support the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative. *(See attachments for additional information)*

Please indicate which categories the research will support:

Transportation Long Range Plan Policy Recommendations

☐ (A) Accessibility

☐ (B) Safety, Security, and Transportation
Resilience

- ☐ (C) Coordination, Cooperation, and Consultation
- ☐ (D) Demographic and Employment Changes and Trends
- ☐ (E) Freight Logistics and Planning
- ☐ (F) Financial
- ☐ (G) Mobility
- ☐ (H) Travel Trends and System Performance

TDOT Operational Goals and/or Strategic Initiative

- ☒ (A) Deliver transportation projects on schedule and within budget
- ☒ (B) Maintain the state transportation system to protect the long term investment in our infrastructure assets
- ☒ (C) Operate and manage Tennessee's transportation system to provide a high level of safety and service to our customers and workers
- ☐ (D) Expanding mobility choices to maximize access
- ☒ (E) Dramatically change the paradigm for delivery of transportation products and service to improve the efficiency and effectiveness of Tennessee's transportation network

11. Please explain how the research supports the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative selected above:

Pavement types and characteristics have a direct influence on traffic safety. For example, open-graded friction course (OGFC) can improve surface frictional resistance, minimize hydroplaning, reduce splash and spray, improve night visibility, thus significantly improve traffic safety. Pavement surface characteristics, such as rut depth, surface texture, surface roughness, not only affect driving serviceability of pavements, but also are indicators of traffic safety problems.

For additional information, please contact:
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