RESEARCH NEED STATEMENT

Call for Projects 2015

Project Research Title: Design Options of AASTHO, Manual for Assessing Safety Hardware TL-3 Guardrail System to Accommodate Vehicle, Pedestrians and Bikes

TDOT Sponsor Director: Jennifer Lloyd

List TDOT Research Team Lead: Ali Hangul

List TDOT Research Team Members:

Jessica Wilson, Division of Multimodal Transportation Resources

Jim Waters, Strategic Transportation Investments Division

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

Often locally administrated enhancement projects propose sidewalk, greenway, or a trail in front of the existing guardrail (right of way issue). The paved roadside shoulder often becomes the designated lane for bicyclists and pedestrians, although this is highly undesirable considering the posted speed limits (45 mph and above) and the absence of curb especially at suburban corridors.

The International Building Code (IBC) requires safety rail for vertical drop-offs of 30 inches or more, or other situations which include existence of slopes in excess of 2:1 adjacent to a pedestrian path, slope surfaces consisting of rough materials, such as revetment, adjacent to pedestrian a path, or the presence of traffic or a body of water at the bottom of a slope adjacent to a pedestrian path. Moreover, if a safety rail taller than 3.5 feet is constructed next to a pedestrian path, a handrail is required and must comply with the current American Disability Act Accessibility Guidelines (ADAAG) and IBC.

In some places, in order to comply with IBC requirements, a pedestrian guardrail is placed in front of the existing roadside vehicle guardrail. There is a need to design a new type of barrier to accommodate pedestrian, bike and vehicle traffic requirements, while satisfying ADA. Also, a rail height of 42” is required for bike safety, but this would constitute an obstruction for an intersection sight distance.

The purpose of this research is to propose design options of a roadside guardrail system to accommodate vehicle traffic, pedestrians and bikes while satisfying ADA, in accordance with Test Level 3 MASH conditions. One solution to be explored would be to retrofit existing roadside vehicle guardrail to accommodate for bicycles and pedestrians requirements. Use of concrete barrier is not desirable for cost reasons.

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.

N/A

3. Describe anticipated benefits/expected deliverables.

The outcome of this project would provide detailed guardrail system option(s) for vehicle traffic; pedestrians and bikes to be further evaluated according current crash test MASH level 3 criteria.

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

Six months.

5. List the anticipated tasks for this research.

Literature Review: A detailed literature review of existing barriers or their retrofitted options for accommodation of pedestrian and bicycles will be performed.

Possible rail design parameters and constraints will be defined as per the American Disability Act (ADA), the International Building Code (IBC) or specific TDOT requirements.

6. Describe how the project results will be implemented?

This will provide with detailed design option(s) for implementation of an acceptable combination railing system that serves to accommodate vehicle, pedestrians and bikes.

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 desribe:

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
- [x] (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
- [x] (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:

The result of this project will increase safety on the TDOT roadway system with a dramatic cost reduction since the proposed barrier option will be able to accommodate multiple users' needs. It will also constitute a safe alternative to the existing option of placing untested pedestrian barriers in the path of vehicles.

For additional information, please contact:
Stephanie Vincent
TDOT Research Program Administrator
Telephone: (615) 741-2203
Email: Stephanie.Vincent@tn.gov