**DATE:** 09/07/2018  |  **PROJECT AREA:** Planning  

**TITLE:** Mobile LiDAR for MASH Compliance  

**PROBLEM STATEMENT:**  
The AASHTO Manual for Assessing Safety Hardware (MASH) is the new state of the practice for the crash testing of safety hardware devices. By 2020, the locations of all bridge rails, transitions, other barriers, terminals, sign supports, and breakaway hardware on the National Highway System (NHS) must be in compliance with the MASH standards. The Arkansas Department of Transportation (ARDOT) is currently up to date on the pre-MASH guardrail update but requires help in developing a new system to classify all guardrails in the state to meet the new MASH standards. Data from a combined mobile LiDAR/video logging/GPS/GIS system are currently being collected by the company Pathway on a pilot project affiliated with the 412 corridor. Using this data, algorithms will be developed to extract guardrail features. These features will then be recorded within the NAS for MASH compliance. Following completion of the project, the algorithms, developed for the pilot program, will be made available to be used on the entire NHS statewide transportation network. The algorithms may also be used for other non-NHS systems like those of affiliated counties and cities that tie into the NHS.

**OBJECTIVES:**  
The objectives of this project are as follows.  
1) To develop algorithms to process mobile LiDAR and video logged data for the purposes of asset inventory extraction and compliance.  
2) To develop a NHS statewide guardrail database that can be integrated with the transportation asset management plan that will also comply with future MASH updates.  
3) To reduce exposure of the workforce to a dangerous working environment when collecting guardrail data.

**FORM OF RESEARCH IMPLEMENTATION AND RETURN ON INVESTMENT:**  
The form of the research implementation is algorithm(s) development that will provide more accurate MASH data in less time. The algorithm(s) will ensure the guardrail inventory data will be georeferenced and support the MASH upgrade implementation. The proposed use of mobile lidar for transportation asset management will save ARDOT time and money while insuring MASH compliance and protecting workforce safety. A return on investment (ROI) cannot be appropriately calculated until the aforementioned pilot mobile lidar data collection is completed. However, it is believed that 1) at least a 10:1 ROI may be achieved and that 2) ARDOT will be conforming with MASH.

**Estimated Project Duration:** 24 Months  

**PREPARED BY:** Richard A. Coffman, Chengbo Ai  

**AGENCY:** University of Arkansas;–Fayetteville University of Massachusetts-Amherst  

**PHONE:** (479) 575-8767  

**REVIEWER:** Tymli Frierson  

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