

RESEARCH SUMMARY

IMPROVING ROADWAY DEBRIS CLEARANCE FOR CHART RESPONDERS

WHAT WAS THE NEED?

Roadway debris poses significant safety risks to both motorists and Coordinated Highways Action Response Team (CHART) responders, necessitating efficient and safe clearance procedures. LaneBlade[®] offered the potential to enhance debris clearance efficiency, reduce exposure of responders to traffic hazards, and enhance overall roadway safety. Therefore, understanding its effectiveness and feasibility is crucial for improving the efficiency of freeway emergency responses and the safety of emergency responders.

WHAT WAS THE GOAL?

This project intends to investigate the feasibility of deploying LaneBlade[®] on CHART vehicles under various environmental conditions such as low visibility conditions, etc., as well as the effectiveness of LaneBlade[®] in reducing debris clearance time in various scenarios where its deployment is feasible.

WHAT DID THE RESEARCH TEAM DO?

The study began with a literature review aimed at understanding existing technologies and current SHA practices in roadway debris clearance. Building upon this foundation, structured field experiments were conducted to assess the performance of LaneBlade[®] systems in real-world scenarios under different conditions and to identify key findings and recommendations. These experiments considered various factors such as weather conditions, debris types, blade types, and operating speeds. The effectiveness of debris clearance in ensuring the safety of responders and road users, while optimizing operational efficiency, was evaluated, and some operational challenges encountered were documented.

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WHAT WAS THE OUTCOME?

LaneBlade® systems show promising effectiveness in clearing various types of debris on freeways, especially during adverse weather conditions. Steel blades were found to be more efficient than rubber blades, and operational speeds between 5 mph to 10 mph were recommended to balance effectiveness and safety. Overall, the system improves safety for responders and road users, enhances traffic flow, and reduces exposure to traffic hazards. Recommendations include developing standard operating procedures and training programs for CHART responders. Moreover, continuous monitoring and evaluation are needed to ensure the long-term effectiveness and sustainability of the technology.

HOW WILL MDOT SHA USE THE RESULTS?

The results of this research project validate the necessity for SHA to procure and install debris removal systems on our patrol vehicles, justifying the purchase of the specific 'Lane Blade' system. By contrasting the 'Lane Blade' with systems used by other transportation organizations, we highlight its unique benefits and efficiencies. The report emphasizes the need for training and the development of standard operating procedures to ensure effective use, detailing all structural pros and cons prior to procurement. Furthermore, we will share the outcomes of this project with FHWA during their pooled fund exchange with safety service patrols nationwide, and present our findings to the EDC-7 (Every Day Counts) group.

This FHWA initiative focuses on rapidly deploying proven yet underutilized innovations to enhance our transportation system's adaptability, sustainability, equity, and safety. Our engagement with EDC-7 amplifies the impact of our work and aligns with their mission to foster smarter infrastructure development at the State, Local, and Tribal levels. This collaboration not only demonstrates our dedication to enhancing road safety and operational efficiency nationwide but also ensures our project's insights significantly contribute to broader efforts aimed at improving the transportation sector.

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