



## Research Problem Statement

2021-08-LSRB

Continuation for Testing and Evaluation of the MGS System with Critical Flare at MASH Test Level 3 Conditions (609971)

<b>Project Title:</b>	MASH TL-3 Design, Testing and Evaluation of a Flared Guardrail System
<b>Project Synopsis:</b>	<p>There is a need for monetary support for the construction, testing and evaluation of the flared guardrail system selected under current project “Testing and Evaluation of the MGS System with Critical Flare at MASH Test Level 3 Conditions (609971).” This project will fund the completion of a MASH Test Level 3 investigation of a flared guardrail system, which would be available for State DOTs implementation at places where a flared guardrail is a cost-effective solution.</p>
<b>Project Goal(s):</b>	<p>Construct/install and full-scale crash test a flared guardrail system per MASH Test Level 3 impact conditions. The details of the proposed system design would be provided through an on-going pooled fund project (Testing and Evaluation of the MGS System with Critical Flare at MASH Test Level 3 Conditions (609971)).</p>
<b>Project Background:</b>	<p>Current pooled fund project “Testing and Evaluation of the MGS System with Critical Flare at MASH Test Level 3 Conditions (609971)” aims to develop design details for an MGS guardrail system for flare installations. The flared MGS systems (7:1 and 11:1) that have been full-scale crash tested within this project resulted in rail rupture or containment problems for the impacting vehicle. Additional design options are being considered and evaluated within the current 609971 project. There is a need for a new project to provide monetary support for the construction and testing of the flared system that will be selected for evaluation. This project will complete crash testing of a MASH Test Level 3 testing investigation of a flared guardrail system, which would be readily available for State DOTs implementation at places where flared guardrail is a cost-effective solution.</p>

<p><b>Proposed Work Plan:</b></p>	<p>Task 1. System Construction and Installation (\$30,000, 4 months) Procure the material for system construction, construct and install the proposed system.</p> <p>Task 2. MASH Test Level 3 Full-Scale Crash Testing (\$95,000, 5 months) Conduct full scale crash test the proposed system per MASH Test Level 3 conditions. Both MASH Tests 3-10 and 3-11 will be conducted, and test data will be evaluated according to the MASH evaluation criteria.</p> <p>Task 3. Reporting (\$5,000, 3 months) Prepare a concise and cohesive report presenting the testing results, provide recommendations for implementation, and discussing opportunities for further research as needed. If needed, support for request of an FHWA eligibility letter.</p>
<p><b>Deliverables:</b></p>	<p>The project’s deliverable will be a crashworthy guardrail system for flared applications. Also, a report will summarize the results of the MASH TL3 full-scale testing and provide with appropriate system implementation recommendations.</p>
<p><b>Urgency and Expected Benefit:</b></p>	<p>Testing the prioritized flared guardrail installation will complete the necessary evaluation of the proposed design previously investigated through a currently on-going pooled fund project. The ability to provide funds for the construction and testing of the system would ensure the completion of an on-going effort in a shorter timeline. Such project would therefore guarantee the needed resource continuity to verify the crashworthiness of a much-needed flared guardrail system and potentially provide State DOTs with an implementable flared guardrail design option. Failure to fund the proposed project would result in the inability to verify proposed system crashworthiness, which would have to be re-discussed at future annual meetings, only if the problem statement will be adequately prioritized. Currently, no other research /testing studies have been funded either at national or state level to investigate flared length-of-need guardrail applications.</p>
<p><b>Problem Funding and Research Period:</b></p>	<p>Budget: \$130,000 Research Timeline: 12 months</p>
<p><b>Developer(s) of the Problem Statement</b></p>	<p>Mary McRae (Alaska Department of Transportation) <a href="mailto:mary.mcrae@alaska.gov">mary.mcrae@alaska.gov</a> 907-465-1222</p>