Roadside Safety Pooled Fund

Research Problem Statement

Project Title:	**Title (Project Category: LSRB) Development and Evaluation of a MASH TL-3 Guardrail Gate**
Project Synopsis:	The proposed work would be to develop designs of a hinge guardrail gate section which can adapt to a standard 31-inch W-Beam guardrail system. A single design will be selected for further evaluation and optimization through finite element computer simulations. To evaluate the crashworthiness of the developed guardrail gate design, full-scale crash tests will be conducted. The appropriate MASH crash tests will be performed to adequately evaluate the performance of the guardrail gate.
Project Goal(s):	• Develop designs for a hinge guardrail gate • Evaluate and optimize final design through finite element computer simulations • Conduct full-scale crash tests
Project Background:	Access to facilities such as detention ponds and/or canals located adjacent to bridge railings is often restricted by the use of W-Beam guardrail around the facility. Often the required length of need for guardrail will not be met in order to leave access to the detention ponds open. Also, on limited occasions, these facilities are accessed by disassembling 12 ft-6 inch sections of guardrail and removing a single post. These components are reinstalled once access is no longer needed, requiring the post to be drilled and compacted or driven back in place. This adds unnecessary time and effort for workers accessing facilities behind the guardrail system. In addition, it may require possible lane closure to disassemble the guardrail section resulting in traffic congestion and safety hazards for the workers.
Proposed Work Plan:	Task 1: Design Concepts • Develop concepts of a hinge guardrail gate section which can adapt to a standard 31-inch W-Beam guardrail system • Select design for finite element analysis Task 2: Finite Element Simulations • Perform 3-10 and 3-11 computer simulations on selected design • If needed, modify and improve design concept to improve crashworthiness • Finalize design details for full-scale crash testing Task 3: Full-Scale Crash Testing • Conduct MASH Tests 3-10 and 3-11 Task 4: Final Report

Deliverables:	• Final report documenting entire research effort • Standard drawings of guardrail gate design
Urgency and Expected Benefit:	The project will result in improved safety features that will be implemented through new standard detail sheets of the guardrail gate system. Additional benefits include reducing unnecessary time and effort of maintenance workers and increasing safety of the workers while accessing facilities behind the guardrail.
Problem Funding and Research Period:	**Total Estimated Cost = $180,000**
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