TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): ____Texas Department of Transportation_____

INSTRUCTIONS:

Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *TPF-5(482)*	**Transportation Pooled Fund Program - Report Period:** ☒ Quarter 1 (January 1 – March 31) ☐ Quarter 2 (April 1 – June 30) ☐ Quarter 3 (July 1 – September 30) ☐ Quarter 4 (October 1 – December 31)

Project Title: Development and Evaluation of Roadside Safety System for Motorcyclists		
Name of Project Manager(s): Martin Dassi	**Phone Number:** 512-416-4747	**E-Mail** Martin.Dassi@txdot.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:** 2021
Original Project End Date: 2024	**Current Project End Date:** 2025	**Number of Extensions:**

Project schedule status:

☒ On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
$900,000	$759,067.86	84.3%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$34,668.86; 4%	$34,668.86	89.5%

Project Description:
The objective of this pooled fund study is to provide a cooperative approach to conducting research to address roadsi safety issues specifically related to improving motorcyclist safety. Furthermore, the study is intended to provide participating states collaborative opportunities to stay abreast of best practices, new regulatory issues, risk managem strategies, and other research pertaining to roadside safety improvements for motorcyclists. Research activities will in identification, development, and evaluation of strategies and devices for mitigating the frequency and severity of road departure motorcyclist crashes.

Progress This Quarter (includes meetings, work plan status, contract status, significant progress, etc.):
The following tasks were completed in this quarter:

Task 1. Project Management

Task 2. Analyze Motorcycle Roadside Safety Issues

- Project 8. Feasibility Study to Investigate Roadway Elements Design Characteristics and Their Effects on Motorcycle Safety through BikeSim Computer Simulations
    - Models were developed in BikeSim to represent a roadway with a raised crosswalk.
    - Two scenarios were considered: a motorcycle traversing straight over the raised crosswalk and a motorcycle turning and traversing over the raised crosswalk. For each scenario the following was considered:
        - Vehicle speeds of 25, 28, and 31 mi/h
        - Friction value of 0.2, 0.3, 0.4, 0.7, and 1.0 in front of the raised crosswalk
        - Sport and cruiser type motorcycles
    - A simulation was completed for each combination of variables and scenarios which resulted in matrix of simulations. Each simulation was assessed to determine if motorcycle stability was significantly affected by turnover of the motorcycle.
- Project 9. Further Development and Refinement of the Anchor Cap for the Motorcycle Rub Rail System.
    - SolidWorks models were developed for design concepts.
    - The SW models were integrated into LS-DYNA which is the FEA software used for the crashworthiness evaluation.
    - A finite element mesh was generated for the parts and components in the design concepts. Appropriate material and section properties were applied to each part. Representative boundary conditions were applied in the models.
    - Preliminary simulations with gravity loading were conducted to verify the robustness and accuracy of the models. Minor updates were made to the models.

Anticipated Work Next Quarter:
Task 1. Project Management

- It is anticipated that a virtual midyear meeting will be conducted to update the state members on ongoing research activities.

Task 2. Analyze Motorcycle Roadside Safety Issues

- Project 8. Feasibility Study to Investigate Roadway Elements Design Characteristics and Their Effects on Motorcycle Safety through BikeSim Computer Simulations
    - Investigate the effects of braking in turn applications for the raised crosswalk
    - Develop models for roundabout systems
    - Identify critical maneuvering scenarios for roundabouts
    - Perform matrix of simulations
- Project 9. Further Development and Refinement of the Anchor Cap for the Motorcycle Rub Rail System.
    - Evaluate crashworthiness of termination of rubrail using LS-DYNA
        - Conduct MASH Test 3-10 computer simulation
        - Conduct MASH Test 3-11 computer simulation
        - Evaluate simulations results according to MASH evaluation criteria

- Consider design modifications or improvements that could be made to concepts to improve crashworthiness, if needed.

Significant Results:

Potential Implementation: