TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Nebraska 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 # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* TPF-5(193) Suppl.#89	**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 4 – December 31)	
Project Title: Continued Development of Midwest High-Tension, Cable Barrier End Terminal - Phase I		
Name of Project Manager(s): Reid, Faller, Lechtenberg, Bielenberg, Rosenb	**Phone Number:** 402-472-9070	**E-Mail** kpolivka2@unl.edu
Lead Agency Project ID: 2611211119001	**Other Project ID (i.e., contract #):** RPFP-16-CABLE-4	**Project Start Date:** 10/1/2015
Original Project End Date: 9/30/2018	**Current Project End Date:** 9/30/2018	**Number of Extensions:** 0

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
$41,230	$686	0%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
	$385	

Project Description:

MwRSF has been conducting research for the Midwest States Pooled Fund Program to develop a non-proprietary, high-tension, four-cable median barrier. A separate effort was funded in parallel to develop a crashworthy end terminal for that cable barrier design. Previous research efforts resulted in two non-proprietary, high-tension, cable barrier end terminal designs that were subjected to dynamic bogie testing. However, the bogie testing indicated that the two systems did not meet all of the design goals and further design modifications and investigation was deemed necessary. Additionally, during the development of the high-tension, four-cable median barrier, several design modifications were implemented that will likely affect the design of the end terminal, including the post section, the cable height and spacing, cable tension, and the cable-to-post connection hardware. It is desired that the end terminal system be designed to integrate with the high-tension, four-cable median barrier design as seamlessly as possible. Thus, additional effort is needed to update the terminal to the current high-tension, cable median barrier configuration.

The research objective is to continue the development, dynamic component testing, and evaluation of a crashworthy, four-cable end terminal. The system is desired to meet the TL-3 safety performance criteria found in MASH.

Major Task List -

1. LS-DYNA Simulation
2. CAD Drawings
3. Construction of End Terminal
4. Two Bogie Tests and Data Analysis
5. Summary Report

New Project Description -

The Midwest Roadside Safety Facility (MwRSF) has been conducting research for the Midwest States Regional Pooled

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

These project funds are to be utilized for the development of the cable median barrier. These funds will be used after the funds in TPF-5(193) Supplement #79, RPFP-15-CABLE-1 are exhausted. The funds in the aforementioned project were exhausted in Quarter 4 of 2017. All progress was noted under the previous project and further progress will be noted herein starting in Quarter 1 of 2018.

Anticipated work next quarter:

Internal review of the draft report of the final 5 component tests evaluating the addition of a cap to the top of the post to prevent cutting of the floorboard will be completed. Draft report will be sent to the member states for review

Internal review of the draft report of test no. MWP-9 will be completed. Draft report will be sent to the member states for review.

Conduct and analyze dynamic component tests for the selected post section with the floorpan bogie to evaluate the potential for floorpan cutting.

Continue brainstorming design concepts for the clean-slate high-tension cable median barrier.

Initiate draft report on the nineteen dynamic component tests and one floorpan cutting dynamic component test on the closed post sections.

Significant Results:

None.

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

Note: This project was originally funded in Year 26 with a total budget of $106,230. In the November 9 Pooled Fund meeting, it was decided that $65,000 would be reduced from this project RPFP-16-CABLE-4, so the currently funded budget is $41,230 as reflected in 'Total Project Budget' on page 1. The $65,000 deficit was not made up in Year 27. Thus, all tasks in this project will not be completed. The Pooled Fund States decided to explore new median barrier design concepts, and the funds in this project will be utilized for the median barrier design.

Project funds from Project No. TPF-5(193) Supplement #79 - RPFP-15-CABLE-1 were exhausted in Quarter 4 of 2017. Thus continued development of the cable median barrier will be reported under this project.

Potential Implementation:

The revised terminal will provide a non-proprietary end terminal for high tension barrier cable systems once the design is finalized and the full-scale crash testing program has been funded and successfully completed.

New Potential Implementation:
The successful completion of the development, testing, and evaluation of the Midwest four-cable, high-tension, median barrier on level terrain will allow the member states to implement a non-proprietary, high-tension, cable system along our nation's highways and roadways. In addition, the crash testing of the four-cable, high-tension, median barrier on level terrain would also provide a more complete understanding of barrier performance (i.e., dynamic deflections, working width, etc.) when used in relatively flat, narrow medians. The crash results from the level terrain testing will be used in combination with computer simulation to evaluate the effects of reduced post spacing. The successful completion of this project along with the non-proprietary four-cable, high-tension, median barrier in V-ditch and cable guardrail end terminal would help to assure acceptance by FHWA and improve its chances for widespread implementation.