TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): NDOR

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)*	**Transportation Pooled Fund Program - Report Period:**
TPF-5(193) Suppl # 94	☐ 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:		
Development of a Generic Energy-Absorbing, Approach End Terminal for MGS		
Name of Project Manager(s):	**Phone Number:**	**E-Mail**
Schmidt, Reid, Faller	(402) 472-0870	jennifer.schmidt@unl.edu
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
2611211124001	RPFP-16-TERM-1	10/1/2015
Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**
9/30/2018	9/30/2018	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
$123,057	$47,829	40%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
	$12,473	

Project Description:

Several crashworthy end terminals exist for W-beam guardrail, including energy-absorbing and non-energy absorbing options. According to the FHWA resource charts for roadside terminals, the currently available generic W-beam guardrail end terminals are all classified as non-energy absorbing [1]. Seven proprietary, energy-absorbing, end terminals exist for W-beam guardrail. However, only one of those systems has been evaluated according to MASH safety performance criteria. Several of the other end terminals were evaluated with 27¾-in. high guardrail and had limited full-scale crash testing with 31-in. high MGS. Only one proprietary, energy-absorbing W-beam guardrail end terminal has been evaluated according to MASH safety performance criteria. Therefore, state DOTs desire a generic, energy-absorbing, tangent end terminal for the MGS that meets the MASH TL-3 safety performance criteria.

The research objective is to synthesize information regarding existing end terminal designs and begin development of design concepts for a generic, tangent, energy-absorbing end terminal for use with the MGS.

Major Task List

1. Literature Review
2. Brainstorming
3. Concept Development and Preliminary Design

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

A meeting was held with the Midwest States Pooled Fund members in November to update them on the summary of the course of direction of the project. In December 2016, an email was sent to the States to vote on utilizing Year 23 contingency funds to provide short term funding to continue this project and if a tangent, energy-absorbing terminal was still the primary focus. The majority of the States voted Yes to both questions. Concepts initially developed by MwRSF researchers were ranked and the top three were further explored. Preliminary calculations and design details were developed to determine feasibility of each. A meeting will be held with the Pooled Fund States in 2017 Quarter 1 to design the design concepts and course of direction of the project. Writing continued on the report regarding the patent and literature search.

Anticipated work next quarter:

A meeting will be held with the Midwest States Pooled Fund members to update them on the summary of the new design concepts. The Pooled Fund members will determine their desired path for the project, and MwRSF will follow that path including component testing as needed. Report writing will continue.

Significant Results:

The background and patents on all current end terminals has been documented. Several concepts have been brainstormed.

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).

Initially, $70,000 was funded to begin the project and determine the course of direction. In December 2016, the majority of the Pooled Fund States voted to utilize $53,057 in Year 23 contingency funds to continue with component testing and possibly simulation in this Phase I effort. Thus, the total project budget was increased from $70,000 to $123,057 in the 2016 Quarter 4 quarterly progress report.

Potential Implementation:

At the completion of this multiple phase project, State DOTs will have a tangent approach end terminal for MGS that is generic,energy-absorbing, and meets MASH safety performance criteria. Additionally, State DOTs will better understand the performance of energy-absorbing end terminals, will have an alternative to proprietary products, and could easily explore special applications (i.e. with a curb) that are beyond the current state-of-the-practice.