TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Virginia DOT (VDOT) .

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(513) Emerging Data Streams for Pavement (Ass Health Monitoring and Management**	**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:

Pavement Structural Evaluation with Traffic Speed Deflection Devices (TSDDs)

Name of Project Manager(s): Hari Nair	**Phone Number:** (434) 493-3147	**E-Mail** Harikrishnan.Nair@VDOT.Virginia.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):** 467730 (VT)	**Project Start Date:** 09/01/2023
Original Project End Date: 09/30/2028	**Current Project End Date:** 09/30/2028	**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
$600,000*	$ 60,153	10%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$15,153 (3%)	$15,153	10%

* Committed; the actual contracted budget is $270,000 (VTTI)

Project Description:

The main objective of the pooled-fund program of research is to identify, test and evaluate emerging big data stream that may enhance the process we use to evaluate the performance and manage our pavement assets. The technologies considered will include at a minimum, vehicle response data collected by connected and automated vehicles, smart infrastructure sensors (e.g., internet of things), mobile devices and e-construction and BIM technologies (e.g., digital twins)..

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

- Completed the assessment of the use of connected vehicles (CV) to collect pavement ride quality data estimated based on sensors mounted in the cars.
    - The study compared the CV-estimated roughness values to the standard International Roughness Index (IRI) values used by VDOT and found a good fit between the two data sets. Although estimated CV roughness values were slightly higher than the reference IRI values, poor road surfaces can still be located using the estimated CV-estimated roughness data. A correlation R value based on 90 uniform sections was found to be 0.93.
    - The study suggested that the maturity level of the CV-estimated roughness is at least at a TRL 7. This suggests that CV technology can be a valuable addition to the traditional methods for collecting pavement surface data.
- Completed a MS Thesis on *Pavement Surface Characteristics Evaluation Using Vehicle-Based Data Collection* at Virginia Tech.

Anticipated work next quarter:

- Continue to explore additional applications of CV-based pavement condition data.

Significant Results:

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).

Potential Implementation:

- ✓ The limited assessment conducted as part of this study suggested that the maturity level of the CV-estimated roughness is at least at a TRL 7. This suggests that CV technology can be a valuable addition to the traditional methods for collecting pavement surface data.