TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): ____IOWA DOT_____

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(483)*	**Transportation Pooled Fund Program - Report Period:** Quarter 1 (January 1 – March 31) Quarter 2 (April 1 – June 30) Quarter 3 (July 1 – September 30) X Quarter 4 (October 4 – December 31)
Project Title: Implementation of New Traffic Signal Actuation Concepts using Enhanced Detector	

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Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
	Addendum 791	02/01/2022
Original Project End Date:	**Project End Date:**	**Number of Extensions:**
02/28/2026		

X On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
$595,032	$285,794	%51

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
$14,768		%1

Project Description: The objective of this research is to develop field-tested methods of integrating vehicle trajectory data into actuated signal control that can be directly implemented in traffic signal controllers. This research will identify the practical requirements and limitations of establishing trajectory-assisted actuated signal control, including requirements for acquisition, storage, and communication of vehicle trajectory data. The findings will be developed into a resource toolkit that will permit implementation and further development of the methods conceived during the course of the research.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):
In the fourth quarter of 2024, the team made incremental refinements to the control methods, began documenting the code for the "Simulation Manager" tool developed to conduct the work, and began planning for future work and the eventual final report for this project, anticipated for completion in 2026. In addition, the team began looking for potential field test locations and had a few meetings to explore potential locations. Virginia DOT expressed interest in the concept and joined the Pooled Fund Study in December of 2024. The team is currently revising its plans for the next stage of the project considering the additional resources contributed by Virginia DOT.

Anticipated work next quarter: The team will present findings at the Transportation Research Board Annual Meeting in a poster session as well as during a subcommittee meeting. The team will develop a revised work plan for 2025-2026, considering the addition of Virginia DOT to the pooled fund study states, and convene a panel meeting to discuss the plan and obtain panel input on this plan. It is anticipated that the final report will consist of three volumes, reflecting the background, methodology (including a description of the unique simulation tools developed for this study), and results. The results will include the preliminary results presented in the interim report, which expand on the initial field test in Colorado Springs with additional control methods under a wider variety of volume scenarios, additional simulation studies reflecting other control scenarios, and for the last part, either a set of field test results, and/or a description of deployment requirements and efforts made toward that direction such as exploration of real-world sensor data, or introduction of the control code into custom logic or an edge device. The last portion is contingent on the level of effort needed for deployment, which is uncertain, but will be explored by this research in 2025.

Significant Results: Overall, the results of the study as documented in the interim report indicate that there is a potential for improvement of signal control with the integration of vehicle trajectory data into actuated control processes. Total delay reductions up to 20% compared with fully-actuated control and up to 35% compared with actuated-coordinated control were observed. In addition, reductions in split failures and dilemma zone vehicles were observed, along with an increase in percent on green and decrease in corridor travel times. We believe that this package of control methods can offer a new option for signal control that achieves a certain degree of signal coordination without requiring a fixed cycle length and associated cycle-offset-split pattern. In addition to enhancing fully-actuated control, it is likely that these methods can also be integrated with both coordinated and real-time adaptive control as a last-second adjustment to scheduled timings that coordinators and real-time adaptive schedulers set for the next cycle length or planning horizon.