

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(295)		Transportation Pooled Fund Program - Report Period: Quarter 1 (January 1 – March 31, 2018) X Quarter 2 (April 1 – June 30) Quarter 3 (July 1 – September 30) Quarter 4 (October 1 – December 31)	
Project Title: Midwest Smart Work Zone Deployment Initiative			
Name of Project Manager(s): Dan Sprengeler	Phone Number: 515-239-1823	E-Mail Dan.Sprengeler@dot.iowa.gov	
Lead Agency Project ID: Keith Knapp	Other Project ID (i.e., contract #): Addendum 535	Project Start Date: July 1, 2014	
Original Project End Date: June 30, 2020	Current Project End Date: June 30, 2019	Number of Extensions: None	

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
\$1,150,000 (committed)	\$751,485.45	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
\$216,839.88		0

Project Description:

The Midwest Smart Work Zone Deployment Initiative (MwSWZDI) was initiated in 1999 as a Federal Highway Administration (FHWA) Pooled Fund Study intended to coordinate and promote research among the participating states related to safety and mobility in highway work zones.

The program is an ongoing cooperative effort between State Departments of Transportation, universities, and industry. The studies completed have consisted of evaluations of various work zone related products, various innovative topics, and several synthesis studies. Completed reports and descriptions of ongoing projects can be obtained at the Iowa State University's Institute for Transportation (InTrans) website (www.intrans.iastate.edu/smartwz/) link to the Smart Work Zone Deployment Initiative. InTrans currently operates as the program manager of the pooled fund efforts and completes administrative tasks related to request for ideas and proposals, meetings, project files, quarterly reports, and recommending reimbursement.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**Quarter Ending June 30, 2018 (Overall)**

During this quarter we communicated with a number of principal investigators as needed and resolved progress issues if they occurred. Projects from Program Year 2015 to 2018 contracts progressed (see below). A board meeting was held on May 15, 2018 and project updates provided along with a webinar of a recently completed project. Problem statements for Program Year 2019 were requested and received. A problem statement board meeting is currently being scheduled. Planning for a September 18, 2018 face to face meeting continued. Two projects were finished and their reports posted this quarter.

The following is a summary of accomplishments from April to June 2018 for the individual research projects underway with fund account TPF-5(295).

2018 Program Projects

- Smart Work Zone App, University of Missouri-Columbia, Yam Adu-Gyamfi as PI.

We focused primarily on developing the key components of the mobile application. The back-end set up is complete. A real-time database has been designed and deployed to store user and work zone activity information. Google's fire-base was chosen as the application's main database due to it's ability to scale rapidly as the number of users increase. A middle-ware has also been developed to facilitate user authentication. The front-end of the app is currently 70% complete. It consists of pages for adding new work zone projects, mapping work zone locations, posting and viewing real-time work zone activities. The next phase will include completing front-end development, deploying an android and iOS version of the application and conducting a field testing.

This project started on January 20, 2018 and is expected to finish on January 19, 2019. It is 40% complete.

- Development of Adjustment Factors for HCM Sixth Edition Freeway Work Zone Capacity Methodology, Iowa State University, Jing Dong as PI.

Project kick-off meeting was held on April 18, 2018. Participants include the TAC (Dan, Willy and Mark) and the research team (Jing, Anuj, Peter, and Skylar). An additional TAC member, Tim Simodynes, was suggested by the TAC during the meeting. The PI contacted and confirmed his participation in the project.

Data collection is underway, including Wavetronix sensor data and snapshots from the cameras (every 5 minutes, starting May 24, 2018) at all the TCP work zones.

This project is contracted to start on April 1, 2018 and finish on July 31, 2019. It is 5% complete.

- Guidance on Active Work Zone Data Archival, Iowa State University, Peter Savolainen as PI.

Task 1. Develop and Convene TAC - A kickoff meeting was held on March 26, 2018. The research team presented an overview of the project at the 2018 Midwest Work Zone Roundtable in May 2018.

Task 2. Conduct Literature Review - The research team has identified pertinent reports, standards, specifications, and other materials that are available online regarding active work zone data that are collected by state DOTs.

Task 3. Develop Survey - The research team is coordinating with other work being conducted in this area and a draft survey tool is under development.

Task 4. Conduct Survey - No progress to report.

Task 5. Analyze Survey Results - No progress to report.

Task 6. Meet with TAC - No progress to report.

Task 7. Develop Prototype and Report - No progress to report.

Task 8. Finalize Prototype and Report - No progress to report.

This project started on January 1, 2018 and was expected to finish on December 31, 2018. The kick-off meeting was held on March 26, 2018 and due to some additional match funding a request for a no-cost extension was submitted to extend the project to December 31, 2019. This extension has not yet been received. It is 5% complete.

2017 Program Projects

- Extension of Safety Assessment Tool for Construction Work Zone Phasing Plans, University of Missouri-Columbia, Henry Brown as PI.

The literature review was completed. The development of the draft version of the user-friendly spreadsheet tool for practitioners was completed. A tutorial for the tool was also prepared. A draft of the final report was also completed. The draft report and tool were submitted to SWZDI for TAC review.

This project started on March 1, 2017 and is expected to finish on May 31, 2018, but a three month no cost extension was granted to August 31, 2018. It is 80% complete.

- Analytical Methods for Work Zone Travel Time Reliability. University of Wisconsin-Madison Susan Ahn as PI.

We finished changes to the modeling structure based on the comments from presenting the work to TAC on Mar 22/23. Created a final report draft for the project detailing the efforts and results obtained. Apr 4 - Draft was shared with the TAC for comments. Updated draft created incorporating comments and recommendations from TAC review. Apr 21 - Draft shared with the board for review. May 14 - Final report, Tech Transfer Summary, and Final Model (excel spreadsheet) were submitted to Iowa DOT. June 3 - Reviewed and finalized the documents for publishing with Iowa State - Institute for Transportation's publication group.

This project started on May 15, 2017 and is expected to finish on May 14, 2018. It is 100% complete and posted on the website.

- Testing Non-Proprietary Devices to MASH 2016 Criteria. University of Nebraska-Lincoln, Jennifer Schmidt as PI.

All parts for the fabrication of the Type III barricade were received and assembled. MASH test 3-71 was conducted on a 0-degree and 90-degree barricade on May 23, 2018. The results were processed, and the test successfully passed all evaluation criteria according to MASH test 3-71. A meeting was held with the TAC on June 26, 2018, and the TAC provided their approval to proceed and had no major recommendations. The first draft of the research report was completed and sent to the TAC to review on June 29.

This project started on May 1, 2017 and is expected to finish on April 30, 2018. It is 80% complete.

2016 Program Projects

- Design Optimal and Effective Queue Detection and Notification: Design of a Low-Cost Work Zone Warning System, University of Wisconsin, Madhav Chitturi as PI.

Project began June 15, 2016. Due to staff turnover, we could not make much progress.

The TAC meeting happened in October, 2016 and we obtained their input on the proposed design. Lot of discussion in the TAC meeting about what sign should be used "Be prepared to stop" or "Slow traffic ahead" or "Watch for stopped traffic". Have been in communication with TAPCO about design of the low-cost system. TAPCO has developed a potential design already. We have gone through multiple iterations to make the design MUTCD compatible. Design changes were required to satisfy crashworthiness requirements of roadside hardware without having to go through crash testing requirements. On February 20, 2018, we presented the design changes to TAC. We communicated with FHWA to ascertain the need for submitting a Request for Experiment to FHWA before proceeding with the field testing. Based on feedback from TAC, we redesigned the sign to avoid the Request to Experiment. Working with TAPCO (private sector partner) on the redesigned sign. Contacted WisDOT as well as Counties in Wisconsin to identify potential sites for field testing.

Project started on June 15, 2016 and was expected to finish on December 15, 2017. An extension to December 31, 2018 has been requested and granted. The project is 45% complete.

2015 Program Projects

- Orange Work Zone Pavement Marking Midwest Field Test, University of Wisconsin – Madison, Madhav Chitturi as PI.

The project was expected to end by September 30, 2016, but it has been extended to March 31, 2017. And extended further to June 30, 2017. It was extended further to September 30, 2017. Another extension was then granted to December 31, 2017. The project and report are essentially complete. The multiple deliverables for this project were finished this quarter and the report posted. It is 100% complete.

Anticipated work next quarter:

Work will continue to work to finalize projects and in the next quarter the Board should meet and put out request for proposal for PY 2019. We plan to have a face to face board meeting in September 2018.

Significant Results:

Two reports were posted this quarter. All the 2018 PY projects have started.

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).

Currently there are no problems to report with the administrative contract. Any issues that have come up with the individual projects that may impact schedule or budget are resolved on a case by case basis.

Potential Implementation:

One project was finished and one other is near completion.