

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(438)	Transportation Pooled Fund Program - Report Period: Quarter 1 (January 1 – March 31, 2023) Quarter 2 (April 1 – June 30) Quarter 3 (July 1 – September 30) X 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 733	Project Start Date: January 1, 2020
Original Project End Date: December 31, 2020	Current Project End Date: December 31, 2023	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
\$1,300,000	\$685,829	100%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$189,255		

Project Description:

The Smart Work Zone Deployment Initiative (SWZDI) 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 December 31, 2023 (Overall)**

During this quarter, work on two and three PY 2022 and PY 2023 projects, respectively, continued. One of the projects from PY 2022, however, is nearing completion. A request for proposals (RFP) for PY 2024 funding was distributed on September 7, 2023. The deadline for submittals was October 9, 2023. A total of 19 proposals was received and reviewed/ranked by the state representatives on the SWZDI board. The last ranking from a state was submitted on November 27, 2023 and it was ultimately decided to fund the top ranked proposal from all three topics. Contract negotiations for these three projects are ongoing. Plans started to re-advertise for SWZDI pooled fund contributions in 2024.

The following is a summary of accomplishments provided by the project principal investigators for the October to December 2023 time period for their individual research projects underway with fund account TPF-5(438).

2023 Program Years Projects

- Usefulness and Reliability of Probe Data when Altering Work Zone Message Signs – Iowa State University, Chris Day as PI

In the 4th quarter of 2023, the research team completed Task 5 (Data Collection) and continued working on Task 6 (Evaluation of Probe Data). For Task 6, the research team finished developing a methodology for executing the evaluation and began to carry it out. The evaluation methodology is envisioned as (1) using data from an example work zone to compare a variety of aggregation methods and thresholds to identify congestion, and subsequently (2) further testing the best performing of these by application to other work zones. This work is ongoing at present.

This project was contracted to start on March 1, 2023 and end on February 29, 2024. An extension to May 31, 2024 has been requested. This project is 60% complete.

- Guidance for Incorporating Work Zone Data within Traffic Management Operations – Iowa State University, Skylar Knickerbocker as PI

The research team has been working on task 4 which includes the analysis of work zone and connected arrow board data. The research team has downloaded all of the historical data from Iowa, Minnesota, Colorado and Wisconsin from the WZDx Registry and developed a process to clean the data by removing any redundant work

zones (since the data is downloaded every 15 min). The Colorado experimental WZDx feed is also being downloaded now every 15 minutes to show which work zones have a corresponding arrow board. The team did not hear back from Minnesota so we are not able to use their data for the analysis.

With the data above along with the smart arrow board data archived by the research team, the team has been focused on data cleaning and analysis. This includes identifying the number of verified work zones, the delay in verification, the number of missed verifications and the number of times with ambiguity. In addition the team has been working on processing the raw arrow board data to create work zone events without any work zone information.

This project was contracted to start on March 1, 2023 and end on June 30, 2024. The project is 60% complete.

- Merging Implementation Criteria – Michigan State University, Peter Savolainen as PI.

Task 0: Formation of the Technical Advisory Committee – Task complete.

Task 1: Literature Review and Synthesis of Existing Practices – The state agency survey was sent to the TAC for review and is ready for implementation. The literature review has been completed.

Task 2: Driver Feedback Survey in SWZDI States – The road-user survey was sent to the TAC for review. and is scheduled or implementation during the next quarter.

Task 3: Site Selection and Data Collection – Fall data collection has been completed in Michigan. Missouri data collection is also complete. Data reduction is continuing.

Task 4: Data Analysis - The data from the Michigan sites is being analyzed. Aggregate summary statistics were presented to the TAC and more detailed analyses are ongoing.

Task 5: Develop and Submit Deliverables - No progress to report.

This project was contracted to start on April 1, 2023 and end on September 30, 2024. The project is 50% complete.

2022 Program Year Projects

- Mobility and Safety Impacts of Work Zone Lane and Shoulder Widths, University of Wisconsin-Madison, David Noyce as PI
 - Regular TAC meetings. Literature review is completed. Verified the new data collection device and shared results with the TAC on 08/11/2022.
 - Collected data at five locations in three work zones in Wisconsin on 09/19/2022. Also collected data at six locations in Wisconsin on 10/19/2022. However, there was limited variability in lane/shoulder widths at these locations.
 - Data have been processed to obtain speed, lateral position, vehicle length/category, headway, presence of vehicle in adjacent lane information. Presented preliminary data to TAC on 02/28/2023 when they approved the NCTE.
 - Obtained information from WI, MI, IA, and IL about potential WZs where data can be collected in Spring/Summer of 2023.
 - Coordinated with WisDOT/MDOT/contractors for data collection. Collected data at Six locations in Milwaukee, WI area

Three locations in Mauston, WI area

Six locations in greater Detroit, MI area.

- Data is being processed currently.
- Algorithm for processing the raw data was refined using the field data.
- Collected data at four locations at WZs on I-80 in IL in mid-October.
- Data analysis is ongoing.
- Next TAC meeting scheduled for 01/24/2024.

This project was contracted to start on April 15, 2022 and end on July 31, 2023. Due to additional data collection needs in Spring/Summer 2023 the research team requested and was granted a no-cost extension to April 30, 2024. This project is 75% complete.

- Analysis of Improvements in the Effectiveness of Speed Feedback Trailers. Michigan State University, Tim Gates as PI

Task 1: Literature Review and Synthesis of Existing Practices - Complete. Will be included in the final report.

Task 2: Site Selection and Data Collection - Data collection completed in Q4 2023. Will be included in the final report.

Task 3: Data Analysis - Data analysis completed in Q4 2023. Will be included in the final report.

Task 4: Develop and Submit Deliverables - Preparation of the final report began in Q4 2023 and will continue into Q1 2024. The final report includes a summary of all work performed, analytical methods, results, conclusions, recommendations, and guidelines for SFT use. The draft final report is expected to be submitted to the SWZDI BOD in January 2024. A technical transfer document and presentation materials that support implementation of the findings and guidelines will also be submitted.

This project was contracted to start on April 15, 2022 and end on October 31, 2023. The project team will be requesting a no-cost extension to December 31, 2023. A March 31, 2024 end date was agreed to with SWZDI in connection to its report review workload at the end of the year. The project is 93% complete.

Anticipated work next quarter:

During the next quarter the SWZDI Board will determine how or if it would like to spend the remaining PY 2024 research funding. A SWZDI board meeting is planned for January 25, 2024. One or both of the PY 2022 project draft reports should also be up for review and posting.

Significant Results:

Proposals were reviewed for PY 2024 and three of them selected for funding. Contract negotiations are ongoing.

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, with recommended solutions to those problems).

None of the projects under this funding account number appear to be encountering any unusual challenges at this time.

Potential Implementation:

Potential implementation includes project report posting when completed. There may be one or two posted in the next quarter or very soon thereafter.