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:** X Quarter 1 (January 1 – March 31, 2024) 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 733	**Project Start Date:** January 1, 2020
Original Project End Date: December 31, 2020	**Current Project End Date:** December 31, 2024	**Number of Extensions:** None

Project schedule status:

X 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	$740,633	25%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$54,804		

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 March 31, 2024 (Overall)

During this quarter, work on two and three PY 2022 and PY 2023 projects, respectively, continued. One of the projects from PY 2022 was completed and the other is nearing completion. Contracts for three PY 2024 projects were advanced and two were completed this quarter. Plans started this quarter to re-advertise a special lighting RFP for SWZDI in the spring of 2024 in addition to a full RFP in the summer for PY 2025 funding. Plan also started to re-advertise the pooled fund for partners under a new fund number.

The following is a summary of accomplishments provided by the project principal investigators for the January to March 2024 time period for their individual research projects underway with fund account TPF-5(438).

2024 Program Years Projects

- Development of an Analytical Tools for Work Zone Performance – Iowa State University, Guillermo Baulto-Elias as PI.

  The contract for this project started on March 1, 2024. The literature review and project structure setup has begun. Potential TAC members have also been discussed.

  This project was contracted to start on March 1, 2024 and end on May 31, 2025. This project is 0% complete.

- Improving Work Zone Management and Safety through AI-Powered Connected Vehicle Data Analysis – Iowa State University, Meenakshi Sumeet Arya as PI.

  The contract for this project started on March 1, 2024. The TAC has been setup for this project per the contracted PI. However, the contracted PI has also resigned from Iowa State University and will be leaving her position on April 25, 2024. Arrangements are being made with the Iowa DOT to transfer the principal investigator status for this project to Anuj Sharma.

  This project was contracted to start on March 1, 2024 and end on June 30, 2025. This project is 0% complete.

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 1st quarter of 2024, the research team worked on Task 6 (Evaluation of Probe Data). The team compiled a data set that combined one month of speed data from sensor, probe data, and connected vehicle (CV) data for several work zones in the month of June 2022. Initial comparisons focused on identifying false calls and missed calls, and explored methods of aggregating the CV data to develop a measurement value for work zone alerting. A method for measuring latency was also developed. We subsequently discovered an issue with some sensor data at one of the selected work zones, and we also discovered that the CV data sometimes experiences low counts during late-night periods. In response, the team is replacing one of the selected work zones and is exploring some further options for data aggregation to see whether the issue of sparse data in low volume periods can be mitigated. The team will complete this task within the first half of the next quarter and prepare the final deliverables shortly after.

  This project was contracted to start on March 1, 2023 and end on January 31, 2024. An extension to the project has been granted to July 31, 2024. This project is 75% complete.

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

  The research team has continued working on evaluating the data as part of task 4. Additional time was needed to clean and analyze the arrow board data to remove redundant records as well as support the final use to the arrow boards for building a work zone data archive. The analysis has been completed for Iowa data to identify the number of verified work zones, delay in verification, number of work zone not verified but with an arrow board, and number of arrow boards without a work zone. This same methodology is being applied to Wisconsin and Colorado which should be completed in early Q2 2024.

  This project was contracted to start on March 1, 2023 and end on June 30, 2024. The project is 85% 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 launched during this quarter. The literature review has been completed.

  Task 2: Driver Feedback Survey in SWZDI States – The road-user survey was completed during the quarter. Results are currently being analyzed.

  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 65% 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/IL DOT 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.
    Four locations in Joliet, IL
  - Data processed and analysis completed.
  - Draft Final Report is undergoing TAC review.
  - Next TAC meeting scheduled for 04/12/24.
  - Draft Final Report will be submitted for BOD review by 04/15.
  - Presenting this research at the Midwest WZ Roundtable in May.

  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 90% 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. Full write-up is provided in the final report.

  Task 2: Site Selection and Data Collection - Complete. Full write-up is provided in the final report.

  Task 3: Data Analysis - Complete. Full write-up is provided in the final report.

  Task 4: Develop and Submit Deliverables - A final report including a summary of all work performed, analytical methods, results, conclusions, recommendations, and guidelines for SFT use was submitted for BOD review on February 8, 2024. After minor editorial revisions, the revised final report was completed by the SWZDI editorial team and posted to the SWZDI website on March 8, 2024. A technical transfer document was also finalized and posted to the SWZDI website on March 8, 2024.

This project was contracted to start on April 15, 2022 and end on October 31, 2023. The project team requested a no-cost extension to December 31, 2023 and it was agreed that it should be March 31, 2024 due to SWZDI board workload. The project is 100% complete.

Anticipated work next quarter:

During the next quarter a RFP for a lighting project using PY 2024 funds will be released. Planning for the PY 2025 project problem statement and RFP will also begin. At least one project and possibly two will be completed. The last PY 2024 project contract should also be finalized.

Significant Results:

Work continued on all SWZDI projects. Contract negotiations were completed for two PY 2024 project and is ongoing for a third.

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:

One project report was posted this quarter.