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, 2024) 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 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	$767,286	50%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	**Total Amount of Funds Expended This Quarter**	**Total Percentage of Time Used to Date**
$26,653		

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 June 30, 2024 (Overall)

During this quarter, work on one PY 2022 project was finished and posted. Work related to three PY 2023 projects continued and some are nearing completion. Contracts for three PY 2024 projects were completed this quarter and work begun. A special supplemental PY 2024 RFP was released for lighting projects and a winner selected shortly after the quarter was completed. States were encouraged to commit to the next round of the SWZDI pooled fund on the FHWA site. In addition, a meeting was set for July to discuss topics for the PY 2025 request for problem statements.

The following is a summary of accomplishments provided by the project principal investigators for the April to June 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.

  - Formed TAC.
  - Held TAC kickoff meeting
  - Finalized state-by-state search for docs. and dashboard for work zones
  - Set up functional skeleton of online tool to upload and download data
  - Started list of performance metrics based on lit. review at state level and project level

  This project was contracted to start on March 1, 2024 and end on May 31, 2025. This project is 20% complete.

- Improving Work Zone Management and Safety through AI-Powered Connected Vehicle Data Analysis – Iowa State University, Meenakshi Sumeet Arya as PI (resigned). Anuj Sharma resumed work.

  Team working on enabling data consumption from street light data feed. Team developed preliminary model for detecting lane closures using historical CAV data. The model provided good accuracy. Work continued on the arrangements to officially transfer the PI for this project to Anuj Sharma (due to the resignation of the original PI).

This project was contracted to start on March 1, 2024 and end on June 30, 2025. This project is 15 percent complete.

- Accommodation of Vulnerable Road Users – Wayne State University, Steven Lavrenz as PI.

  A project champion from the Michigan DOT has been identified. Confirmation/completion of the TAC roster is currently underway. An amplified work plan is also nearing completion, and will be shared with the TAC in advance of the project kickoff meeting, to be held in mid-July.

  This project was contracted to start on June 15, 2024 and end on June 15, 2025. This project is 5% 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 2nd quarter of 2024, the research team completed Task 6 (Evaluation of Probe Data). All tasks for the project have been completed and the final report is under preparation. The report is anticipated to be completed during the first week of July and will be distributed to the panel as soon as possible and a meeting scheduled for discussion of the results. The analysis focused on appropriateness of CV and probe vehicle data for queue warning systems. Results show that CV data has low coverage during overnight hours, while probe vehicle data does not suffer from this problem. Compared to sensor data for congestion alerting, both CV data and probe vehicle data have high numbers of false calls, but CV data has low false calls under some circumstances. CV data has less latency than probe vehicle data. Use of CV data for alerting was also tested.

  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 95% 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. An extension has been granted to September 30, 2024. The project is 90% 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 and literature review have been completed.

  Task 2: Driver Feedback Survey in SWZDI States – The road-user survey has been completed.

Task 3: Site Selection and Data Collection – Fall data collection and reduction has been completed.

Task 4: Data Analysis - The data from the Michigan and Missouri sites are being analyzed. Final results are expected during the next quarter.

Task 5: Develop and Submit Deliverables - The project report is under development and scheduled for submission during the next quarter.

This project was contracted to start on April 1, 2023 and end on September 30, 2024. The project is 80% 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 underwent TAC review and Draft Final Report submitted for BOD review on 04/15.
  - Addressed TAC and BOD comments and submitted the Final Report and Tech Transfer document. Both are published on SWZDI website.
  - Presented 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 % 100 complete and posted.

Anticipated work next quarter:

During the next quarter a request for problem statements will be released and the results reviewed. The release of the PY 2025 request for proposal will be advanced. Two or three of the projects from PY 2023 may be completed. The contract for the 2024 Supplemental call for proposals will be advanced also.

Significant Results:

Work continued on all SWZDI projects. One project report was posted this quarter and another project selected for funding.

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.