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, 2022) 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, 2022	**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
$750,000	$393,691	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
$48,016		

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, 2022 (Overall)
During this quarter, work on two PY 2021 and two PY 2022 projects continued. One of the PY 2021 projects was finished in September, but the project report edited, finalized, and posted in October. The SWZDI RPF was released on September 13, 2022 and included four problem statement topic areas. The deadline for proposals is October 13, 2022. Overall, five proposals were received for three of the four topics. Two of the topics had competitive proposals and the board ranked these competitive proposals this quarter. The board, after review of the proposal addressing the third topic, decided to fund projects in all three topics. Contracting for these three PY 2023 projects is not underway. We also continued to work with the Iowa DOT to coordinate meeting in person during the spring of 2023 in coordination with Midwest Work Zone Roundtable in Davenport, IA. Minnesota also joined the SWZDI pooled fund.

The following is a summary of accomplishments provided by the project principal investigators for the October to December 2022 time period for their individual research projects underway with fund account TPF-5(438).

2022 Program Year Projects

- Mobility and Safety Impacts of Work Zone Lane and Shoulder Widths, University of Wisconsin-Madison, David Noyce as PI

  Team had a kickoff meeting with the TAC on May 10, 2022.
  Obtained feedback from the TAC on the scope of the project and criteria for data collection locations.
  Literature review is completed.
  Team reached out to agencies and obtained WZ plans. Reviewed the plans and identified potential data collection locations.
  Team collected sample field data to calibrate/validate the new data collection device.
  Calibration/validation of the algorithm to process the data from the data collection device to obtain speed, vehicle category, and lateral distance is completed. The results of validation were shared with the TAC on 08/11/2022. TAC/Project Monitor gave us the go ahead to start field data collection on 08/22/2022.
  Coordinated with WisDOT/contractors for data collection.
  Collected data at five locations in three work zones in Wisconsin on 09/19/2022. Data were collected for roughly one day at each location. Due to equipment issues, data at two locations were not logged or only partially logged.
  Also collected data at six locations in Wisconsin on 10/19/2022. Five of the locations are same as in Sep data collection.

Data have been processed to obtain speed, lateral position, vehicle length/category, headway, presence of vehicle in adjacent lane information.
All locations had 2 travel lanes and concrete barriers on both sides with 2 ft clear distance. Two locations had 11 ft lane width and others had 12 ft lane width.

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 will be requesting a non-cost extension. The project is 30% 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 - The literature review started in Q2 and continued into Q4. A state of the practice survey was administered during Q4 and the data are being analyzed and synthesized with the literature review.

  Task 2: Site Selection and Data Collection - A series of work zone sites were selected for SFT field data collection, which began during Q3 2022, included: 1.) NB US-127 near Leslie, Michigan; 2.) SB US-127 near Mason, Michigan, 3.) EB I-69 near Lapeer, Michigan. The SFT variables investigated during the field studies included: 1.) SFT location (taper start, taper end, beyond taper end); 2.) Worker presence/absence; 3.) Enforcement vehicle presence/absence; 4.) SFT used w/ digital speed limit signs. In order to assess these variables of interest, speeds of individual vehicles were tracked through the advance warning area, taper, and beyond the taper.

  Task 3: Data Analysis - A series of analyses were performed on the speed data in Q4. Speed feedback signs reduce the speeds of vehicles traversing a work zone, and are most effective when positioned near the taper end. The speed reduction effects are most prominent at the speed feedback sign, and are largely sustained for at least 1200 ft beyond the feedback sign. The speed reduction effects of the feedback sign are enhanced by the presence of a police car positioned near the sign. There is no evidence of any difference in the speed reduction effects of a digital speed limit sign displaying 45 mph (with beacons flashing) and the traditional "45 mph when workers present" speed limit sign. However, utilization of a speed feedback sign in addition to the digital speed limit display decreases work zone speeds, but only when a work vehicle or worker is present at the site.

  This project was contracted to start on April 15, 2022 and end on October 31, 2023. The project is 40% complete.

2021 Program Year Projects

- Evaluation of Messaging Techniques to Increase Vehicle Spacing at Work Zones, Iowa State University, Jing Dong as PI

  Complete the literature review
  Summarize the findings from the field deployment at the work zone on US 30 over Cedar River

  This project was contracted to start on March 1, 2021 and end on June 30, 2022. This contract was extended to December 31, 2022 and another request for extension (to collect more data) to September 30, 2023 has been submitted. The project is 80% complete.

- Work Zone Speed Limits and Motorist Compliance, Michigan State University, Peter Savolainen as PI

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

  Task 1: Synthesis of Existing Practices – Task complete.

  Task 2: Site Selection and Data Collection – Task complete.

  Task 3: Data Analysis – Task complete.

  Task 4: Develop and Submit Deliverables – Task complete.

  All project activities are now complete. The final report was published in October 2022.

  This project was contracted to start on March 1, 2021 and end on September 30, 2022. It was 100% complete in September but the report was finalized and posted in October 2022.

Anticipated work next quarter:

During the next quarter the SWZDI Board will continue to plan for the spring meeting in April 2023. Discussions will focus on the adequacy of the process SWZDI follows and if any adjustments should be made. Topics of interest to the Board will also be address for potential PY 2024 funding. Work will continue on the three active projects above and start on the three PY 2023 currently being contracted

Significant Results:

The projects under this administrative contract continued toward completion. The report of a project finished late last quarter will be posted early this quarter.

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.