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, 2020) 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, 2020	**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
$500,000	$56,925.36	90

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$45,742.36		

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 December 31, 2020 (Overall)
During this quarter, the three PY 2020 projects continued. The administrative contract for 2020 also continued by helping the principal investigators of these projects as requested. The RFP was submitted and proposals for the PY 2021 were collected and a first ranking was completed. Three projects have entered into a second ranking process for PY 2021. A TAC meeting was held October 9, 2020 to select the final problem statements and led to the RFP for PY 2021 and the subsequent ranking that is currently ongoing.

The following is a summary of accomplishments from October to December 2020 for the individual research projects underway with fund account TPF-5(438).

2020 Program Projects

- Work Zone Activity Data Logging – Phase II, Iowa State University, John Shaw as PI

  Wrapping up predecessor project - no new activities on this project in 4Q 2020.

  This project was contracted to start on May 1, 2020 and end on April 30, 2022. This project remains at 1% complete.

- Using Smart Work Zone Trailer Data to Evaluate and Predict Lane Closure Impacts with a Consideration of Work Intensity, The University of Texas-Austin, Natalia Ruiz-Juri as PI

  - Documentation
    -Web app tutorial
    -Documentation of data workflows and web app capabilities
    -Documentation of methods underlying web app
  - Refinements of Estimation Web App - added computation of user cost, added computation of vendor 'overpayment' based on data availability, refined queue position estimation and visualization
  - Exploration of availability of data from permanent ITS sensors
  - Data model extension (tentative model for ITS sensor data, explored WZDX standard)
  - Exploration of robust approach to estimate typical conditions
    -Identified and tested appropriate temporal aggregation of data by exploring daily, weekly and seasonal variability

-Testing data cleaning methods to remove outliers that may affect estimated values

- Met with TAC to review project progress, solicit feedback and obtain input

This project was contracted to start on May 15, 2020 and end on May 31, 2021. It is 50% complete.

- Temporary Traffic Control Devices at Driveways within a One-Lane, Two-Way Section, Tim Gates as PI

  Task 1: Review of Literature and Practice - The literature review was completed in Q4.

  Task 2: Expert and Public Survey of DADs Displays - A TAC panel meeting was held via Zoom on Tuesday, June 23 to obtain feedback regarding the information that should be included in the online public survey, including question structure, along with various aspects of the DADs device, including signal configurations, arrow colors, and signing messages. The expert panel vetted numerous DADs configurations and provided direction for the survey. Based on this feedback, the MSU team designed a public survey in Qualtrics. Several iterations were piloted by the TAC panel and other experts and non-experts, and was implemented to the Qualtrics panel of 1,000 drivers nationwide in early August 2020. Data were compiled and analyzed in Q4. Data were presented to the technical panel on November 12, 2020

  Task 3: Field Evaluation - A series of field evaluations of DADS implementations occurred in June, July and August on US-31 in Benzonia, Michigan. The field data was collected used elevated video cameras positioned at each subject driveway/minor road approach where the DADS device was installed. This setup allowed for the following measures to be assessed: 1.) Proportion of drivers on the subject minor approach that perform appropriate/inappropriate maneuver; 2.) Gap selection and dwell time; 3.) Minor approach queue length. The feedback from the survey was utilized to determine various auxillary sign messages to field test. Five different auxiliary signs, including the standard MDOT sign, were rotated through the various DADs installations at the US-31 site to determine the impact of sign message on driver behavior. Data were compiled and analyzed in Q4. Data were presented to the technical panel on November 12, 2020.

  The project was contracted to start on May 1, 2020 to October 31, 2021. It is 50% complete.

Anticipated work next quarter:

The proposals for PY 2021 have been received and the review continues for selection.

Significant Results:

The projects under this administrative contract have just started and there are no results yet.

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).

It is not expected that the COVID 19 shut downs will have an impact on the administration of the SWZDI pooled fund but it may impact the progress of the projects.

Potential Implementation:

Potential implementation includes project report posting when completed.