TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Michigan DOT

INSTRUCTIONS:

Lead Agency contacts 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 # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* *TPF-5(490)*	**Transportation Pooled Fund Program - Report Period:** ☐Quarter 1 (January 1 – March 31) ☐Quarter 2 (April 1 – June 30) ☒Quarter 3 (July 1 – September 30) ☐Quarter 4 (October 1 – December 31)
TPF Study Number and Title: **TPF-5(490) ENTERPRISE-Phase III (Phase II Continuation)**	

Lead Agency Contact: **Michigan Department of Transportation**	**Lead Agency Phone Number:** **517-636-0036**	**Lead Agency E-Mail** FeldpauschE1@michigan.gov
Lead Agency Project ID: **OR17-101**	**Other Project ID (i.e., contract #):** **2018-0172**	**Project Start Date:** 3/6/2023
Original Project Start Date: **3/6/2023**	**Original Project End Date:** **9/30/2028**	**If Extension has been requested, updated project End Date:** Click or tap to enter a date.

Project schedule status:

☒On schedule	☐On revised schedule	☐Ahead of schedule	☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Funds Expended This Quarter	Percentage of Work Completed to Date
$1,195,980.00	$105,929.67	30%

Project Description:

TPF-5(490) is a continuation of TPF-5(359) led by the Michigan Department of Transportation. This pooled fund federal project originated under the project titled "ENTERPRISE Group" that was established in 1991. Each year, partner members contribute funds in support of ITS projects of mutual interest.

Selected research studies/projects typically involve private sector partners contracted to work with designated member agencies. An administrative contract, currently with CTC & Associates LLC, covers project management, meeting planning, website and other tasks. Over time ENTERPRISE has grown into a multi-national consortium dedicated to the advancement of ITS. The consortium provides a focus for coordinating ITS developments and sharing results within and outside the ENTERPRISE program.

Primary Focus:
To enhance innovation in highway operations and intelligent transportation systems through research and technology transfer, as well as to continue assessing transformational technologies and their impact on the transportation industry.

Objectives: The Board has selected the following 14 research projects for this phase of the pooled fund study.
Primary Projects
1. State of the Art Roadway Sensors – Phase 1
2. New Methods of Traffic Data Collection
3. Potential Approaches for Wrong Way Driving Applications – Phase 2
4. Procurement Specification for Physical Security of ITS
5. Novel Uses of Unmanned Aerial Systems in ITS
6. State of the Art of Roadway Sensors – Phase 2

Secondary Projects
7. Administration of Communications – Phase 1
8. Something Old, Something New – New Applications of Old Technologies
9. Uncontrolled Pedestrian Crossing ITS Countermeasures
10. Communication Future - Phase 1
11. Quick Connect DMS Replacement
12. Administration of Communications – Phase 2
13. Analysis of the Benefits of Connected Street Lighting
14. Communication Future - Phase 2

Progress this Quarter
(includes meetings, work plan status, contract status, significant progress, etc.):

Board teleconferences held on July 19 and August 16, 2023. CTC & Associates developed the agenda, took notes, and finalized, distributed and posted meeting minutes.

A two day, in-person Board Meeting was held from September 19-20, 2023 in Kansas City, KS. CTC & Associates finalized the planning for the virtual including setting up the virtual platform, agenda development, booking flights, securing a hotel, meeting logistics, notetaking during the meeting, finalizing meeting minutes, posting/distributing meeting minutes, reimbursements and follow up meeting action items.

CTC & Associates assisted MDOT with members' pooled fund commitments and transfers.

CTC & Associates updated the website with current information. (http://enterprise.prog.org)

CTC & Associates created a draft version of the ENTERPRISE Program Brochure that highlights projects completed in the previous phase of the study and the current in-progress projects.

CTC & Associates assisted Athey Creek with activities related to individual research projects.

Research projects

Project 1: State of the Art Roadway Sensors – Phase 1

- Task 1: Literature Search, Survey, and/or Interviews – Completed Task 1 by compiling and organizing findings from the literature search and survey.
- Task 2: Roadway Sensor Analysis – Conducted a webinar with interested ENTERPRISE Board members to prioritize use case areas and specific sensors in order to focus in-depth analysis on items of interest for Task 2 and 3 activities.
- Task 3: Use Cases – Began documenting use cases that were identified in Tasks 1 and 2.
- Task 4: Draft Final Report – Began development of the report based on findings from Tasks 1 and 2.

Project 2: New Methods of Traffic Data Collection

- Task 1: Literature Search, Survey, and or/Interviews – Continued online search to identify traditional and emerging data collection methodologies. Began to analyze survey results that focused on identifying state DOTs that have used or are using emerging methodologies for collecting traffic data.
- Task 2: Industry Scan – Continued online search of vendors that provide data collection methodologies.

Project 3: Potential Approaches for Wrong Way Driving Applications – Phase 2

- Task 1: Synthesis of Current WWD In-Vehicle or Mobile Applications – Completed Task 1 by completing the online search to identify WWD in-vehicle and mobile applications and prepared the draft synthesis. Presented a project update at the September ENTERPRISE Board meeting.
- Task 2: Industry Outreach - Automobile Manufacturers and Application Providers – Began discussing an outreach strategy.
- Task 3: Industry Outreach – Enhance Phase 1 White Paper – Completed engagement with USDOT/FHWA, received input and insights to continue to pursue inclusion of WWD events in national data exchanges.

Project 4: Procurement Specification for Physical Security of ITS

- Task 1: Investigate Best Practices for Security of ITS Field Devices – Completed the literature review. Created a one- page project summary document. Defined “ITS cabinets, shelters/huts, and boxes” for the purpose of this project. Recruited agencies to participate in interviews through outreach to the AASHTO Committee on Transportation System Operations (CTSO). Developed an interview guide. Completed 6 interviews with State DOTs to gather physical security practices and specifications. Began creating interview summaries. Presented a project update at the September ENTERPRISE Board Meeting.
- Task 2: Best Practices Checklist: Began reviewing practices noted by State DOTs, for consideration for inclusion in the best practices checklist.

Project 5: Novel Uses of Unmanned Aerial Systems (UAS) in ITS

- Task 1: Literature Search, Survey, and/or Interviews – Completed the literature search. Began developing survey questions. Provided a project update at the September ENTERPRISE Board meeting.
- Task 2: Use Cases and Applications: Began compiling UAS use cases from the literature.

Project 6: State of the Art of Roadway Sensors – Phase 2

- Conducted project kickoff during September ENTERPRISE Board meeting.

The following research projects have not yet begun, therefore there is no progress to report:

- Project 7: Administration of Communications – Phase 1
- Project 8: Something Old, Something New – New Applications of Old Technologies
- Project 9: Uncontrolled Pedestrian Crossing ITS Countermeasures
- Project 10: Communication Future – Phase 1
- Project 11: Quick Connect DMS Replacement
- Project 12: Administration of Communications – Phase 2
- Project 13: Analysis and Benefits of Connected Street Lighting

Began discussing project priorities and potential revisions to secondary projects with members during the September 19-20 ENTERPRISE Board meeting.

Anticipated work next quarter:

The Board will hold teleconferences on October 18, November 15 and December 20, 2023. CTC & Associates will create agendas, take notes, and finalize, distribute and post meeting minutes for monthly Board meetings.

CTC & Associates will update the website with current information. (http://enterprise.prog.org).

CTC & Associates will finalize the ENTERPRISE program brochure to highlight current completed projects and highlight the new in-progress projects.

CTC & Associates will monitor the research projects schedules and obtain TAC approval for the researcher's invoices.

Research projects - Athey Creek (Project updates are presented at monthly Board meetings.)

Project 1: State of the Art Roadway Sensors – Phase 1

- Task 3: Use Cases – Complete development of use cases that were identified in Tasks 1 and 2.
- Task 4: Draft Final Report – Complete development of the report and distribute to project champion and ENTERPRISE Board Members for review and comment.
- Task 5: Final Report – Revise draft final report based on received comments and submit final report to complete project.

Project 2: New Methods of Traffic Data Collection

- Task 1: Literature Search, Survey, and/or Interviews –Complete literature search, survey analysis, and initial preliminary criteria for comparing traffic data collection alternatives.
- Task 2: Industry Scan – Complete an online search of traffic data collection vendors' products.
- Task 3: Compare Traffic Data Collection Alternatives – Develop initial comparisons of traffic data collection methods.

Project 3: Potential Approaches for Wrong-Way Driving Applications – Phase 2

- Task 1: Synthesis of Current WWD In-Vehicle or Mobile Applications – Incorporate any comments to the draft synthesis and finalize the synthesis documentation.
- Task 2: Industry Outreach - Automobile Manufacturers and Application Providers –Work with the project champions to finalize the outreach approach.
- Task 3: Industry Outreach – Enhance Phase 1 White Paper – Finalize the white paper per comments from project champions.
- Task 4: Industry Outreach – Engage Products/Vehicles Representatives – Develop an outreach strategy in cooperation with the project champions and begin outreach efforts.
- Task 5: Industry Outreach – Engage Public and Private Entities - Develop an outreach strategy in cooperation with the project champion and begin outreach. Work with the project champions to finalize the approach for engaging USDOT through current data exchange development efforts and begin conducting outreach to share the concept.

Project 4: Procurement Specification for Physical Security of ITS

- Task 1: Investigate Best Practices for Security of ITS Field Devices – Complete agency interviews.
- Task 2: Develop Best Practices Checklist – Based on findings from Task 1, identify a format for the checklist and begin selecting best practices for inclusion in the checklist.

Project 5: Novel Uses of Unmanned Aerial Systems (UAS) in ITS

- Task 1: Literature Search, Survey, and/or Interviews – Complete survey questions and issue the online survey. Select 4-5 case studies for expanded documentation through agency interviews.
- Task 2: Use Cases and Applications: Finish compiling use cases from the literature. Summarize results from the online survey to document ITS use cases for UAS. Conduct agency interviews to document 4-5 expanded case studies.

Project 6: State of the Art of Roadway Sensors – Phase 2

- Task 1: Propose Assessment Options – Develop and share presentation with ENTERPRISE board members based on available findings from Project 1 to help identify specific sensors and possible testing locations to support Project 6 activities.
- Task 2: Conduct a high-level systems engineering approach – Begin developing a high-level systems engineering approach for the sensor(s) identified in Task 1 that defines the needs addressed, operational concepts, and preliminary requirements.
- Task 3: Draft Report – Begin developing a draft final report based on findings in Task 1 and Task 2.

Secondary Projects:

- Continue to work with ENTERPRISE members to define the Secondary projects.

Significant Results:

See Progress This Quarter section.

To be determined as individual projects progress.

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, along with recommended solutions to those problems).

None

Potential Implementation: