

**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.

<b>Transportation Pooled Fund Program Project #</b> <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i>  <p style="text-align: center;">TPF-5(490)</p>	<b>Transportation Pooled Fund Program - Report Period:</b> <input checked="" type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
<b>TPF Study Number and Title:</b> <b>TPF-5(490) ENTERPRISE-Phase III (Phase II Continuation)</b>		
<b>Lead Agency Contact:</b> Michigan Department of Transportation	<b>Lead Agency Phone Number:</b> 517-636-0036	<b>Lead Agency E-Mail:</b> FeldpauschE1@michigan.gov
<b>Lead Agency Project ID:</b> OR17-101	<b>Other Project ID (i.e., contract #):</b> 2018-0172	<b>Project Start Date:</b> 3/6/2023
<b>Original Project Start Date:</b> 3/6/2023	<b>Original Project End Date:</b> 9/30/2028	<b>If Extension has been requested, updated project End Date:</b> Click or tap to enter a date.

**Project schedule status:**

<input checked="" type="checkbox"/> On schedule	<input type="checkbox"/> On revised schedule	<input type="checkbox"/> Ahead of schedule	<input type="checkbox"/> Behind schedule
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**Overall Project Statistics:**

Total Project Budget	Total Funds Expended This Quarter	Percentage of Work Completed to Date
\$1,195,980.00	\$49,913.47	49%

## 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 13 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. ITS Simple Innovations
9. Uncontrolled Pedestrian Crossing ITS Countermeasures
10. Defining and Advancing Digital Infrastructure
11. Role of AI in ITS
12. Alternate Methods of Traffic Data Analysis
13. Truck Parking Technologies

## Progress this Quarter

**(includes meetings, work plan status, contract status, significant progress, etc.):**

Board teleconferences held on January 17, February 21 and March 20, 2024. CTC & Associates developed the agenda, took notes, and finalized, distributed and posted meeting minutes.

CTC & Associates finalized the planning for the hybrid in-person/virtual Board meeting in Ankeny, IA from April 2-4, 2024. Tasks included setting up the virtual platform, agenda development, booking flights, securing a hotel and meeting logistics.

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 assisted Athey Creek with activities related to individual research projects.

### Research projects

Project 2: New Methods of Traffic Data Collection

- Task 1: Literature Search and Survey – Task complete.
- Task 2: Industry Scan – Task complete.
- Task 3: Compare Traffic Data Collection Alternatives – Task complete.
- Task 4: Draft Report – Completed the draft report and distributed for review.

- Task 5: Final Report – Incorporated comments and edits received and completed the Final Report.

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

- Task 1: Synthesis of Current WWD In-Vehicle or Mobile Applications – Task Complete.
- Task 2: Industry Outreach - Automobile Manufacturers and Application Providers – Task Complete.
- Task 3: Industry Outreach – Enhance Phase 1 White Paper – Task Complete.
- Task 4: Outreach to Providers that May Contribute to a National WWD Data Feed – Conducted agency interviews and finalized agency surveys investigating readiness of wrong-way event data and feasibility of a national data feed. – Task Complete
- Task 5: Outreach to Public/Private Entities that May Ingest from a National WWD Data Feed – Task Complete
- Task 6: Draft Report – Began preparing the draft report.

Project 4: Procurement Specification for Physical Security of ITS

- Task 1: Investigate Best Practices for Security of ITS Field Devices – Task complete.
- Task 2: Best Practices Checklist – Task complete
- Task 3: Create a “Model” Procurement Specification – Created a library of materials applicable to physical security of ITS enclosures including “model” procurement specifications for electronic lock/key systems, construction drawings, construction specifications, and agreements.
- Task 4: Draft Report – Finalized the draft report. Task complete.
- Task 5: Final Report – Routed the draft report for review by agency participants (interviews) and the project champion. Incorporated edits received on the draft report to date.

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

- Task 1: Literature Search, Survey, and/or Interviews – Task complete.
- Task 2: Use Cases and Applications – Task complete.
- Task 3: Draft Report – Developed the draft report and distributed it for review.

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

- Task 1: Propose Assessment Options – Begin drafting draft evaluation plan.
- Task 2: Conduct a High-Level Systems Engineering Approach – Complete and distribute a draft high-level systems engineering approach for sensor selected in Task 1. Contacted two ENTERPRISE agencies who are currently testing the selected sensor of interest to understand how the sensor is being used.
- Task 3: Draft Report – Begin developing a report that includes findings in Tasks 1 and 2.

Project 7: Administration of Communications

- Task 1: Gather Agency Examples – Began conducting research to gather agency examples of cost-saving or efficient approaches for communications infrastructure to support ITS systems.

Project 8: ITS Simple Innovations

- Task 1: Gather Agency Examples – Began conducting research to gather examples of ITS simple innovations.

Project 9: Uncontrolled Pedestrian Crossing ITS Countermeasures

- Task 1: Review of Existing Guidance Resources – Began the literature search to identify existing guidance and safety studies for selection of countermeasures at uncontrolled pedestrian crossings. Met with the project champion to review initial literature and gather input for additional search focus.

Project 10: Defining and Advancing Digital Infrastructure

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Project 12: Alternate Methods of Traffic Data Analysis

- Task 1: Gather Agency Examples – Began conducting research to identify alternative methods of traffic data analysis.

Project 13: Truck Parking Technologies

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See “Schedule of Current Projects” at the end of this quarterly report for graphical information depicting the schedule of research activities for each current research project.

The following research projects are complete, and the final report is posted to the ENTERPRISE PFS website:

- **Completed December 2023:** State of the Art Roadway Sensors – Phase 1: <https://enterprise.prog.org/wp-content/uploads/ENT-Roadway-Sensors-Phase-1-Final-Report.pdf>

- **Completed March 2024:** New Methods of Traffic Data Collection (Comparison of Emerging Traffic Data Collection Methods to Traditional Methods): <https://enterprise.prog.org/wp-content/uploads/ENT-Comparison-Traffic-Data-Collection-Methods-Final-Report.pdf>

## Anticipated work next quarter:

The Board will hold teleconferences on May, 15 and June 19, 2024. CTC & Associates will create agendas, take notes, and finalize, distribute and post meeting minutes for monthly Board meetings.

A hybrid in-person/virtual meeting will take place from April 2-3, 2024 in Ankeny, Iowa.

-- CTC will take the meeting notes, and finalize, distribute and post meeting minutes and materials. Athey Creek will present project updates and discuss the secondary projects.

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

CTC & Associates will monitor the research projects schedules and assist Athey Creek with activities related to individual research projects.

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

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

- Task 6: Draft Report – Finalize the draft report and send it to interview participants, project champions, and ENTERPRISE Board for review.
- Task 7: Incorporate comments/edits received and finalize the report.

Project 4: Procurement Specification for Physical Security of ITS

- Task 5: Final Report – Route the draft report to ENTERPRISE Board members for review and comment. Incorporate comments, finalize the report, and send it to the ENTERPRISE program administration consultant to post on the members only web page, with a note on the public-facing website that government agencies can contact ENTERPRISE to request the report.

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

- Task 4: Final Report – Incorporate comments from review of the draft report and complete the final report.

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

- Task 1: Propose Assessment Options – Complete development of testbed methodology.
- Task 2: Conduct a high-level systems engineering approach – Incorporate feedback and finalize high-level systems engineering approach for the sensor identified in Task 1 that defines the needs addressed, operational concepts, and preliminary requirements.
- Task 3: Draft Report – Develop and submit draft final report based on findings in Task 1 and Task 2.

Project 7: Administration of Communications

- Task 1: Gather Agency Examples – Continue the literature search to gather agency examples of cost-saving or efficient approaches for communications infrastructure to support ITS systems. Work with the project champion to determine case studies for Task 2.
- Task 2: Complete Agency Interviews – Begin developing an interview guide.

Project 8: ITS Simple Innovations

- Task 1: Gather Agency Examples – Continue gathering agency examples of ITS simple innovations through conferences, meetings, and webinars.

Project 9: Uncontrolled Pedestrian Crossing ITS Countermeasures

- Task 1: Review of Existing Guidance Resources – Continue the literature search. Work with the project champion to determine an approach for engaging ENTERPRISE agency traffic safety engineers. Work with the project champion to determine Task 2 case studies.
- Task 2: Document Selected Case Studies of ITS Deployments – Determine case study documentation approach and possible questions for agency interviews.

Project 10: Defining and Advancing Digital Infrastructure

- Kickoff project, begin webinars to advance Digital Infrastructure sharing

Project 11: Role of AI in ITS

- Kick off project at in-person ENTERPRISE Board Meeting on April 2.
- Task 1: Review of AI Uses – Initiate literature review.

Project 12: Alternate Methods of Traffic Data Analysis

- Task 1: Gather Agency Examples – Continue to research alternative methods of traffic data analysis.

Project 13: Truck Parking Technologies

- Task 1: Accelerate project by coordinating with three project chairs; support research into different approaches for truck parking monitoring.

Project 14: Documenting Current RWIS Technologies

- Kick off project at in-person ENTERPRISE Board Meeting on April 2.
- Task 1: Gather Information – Initiate literature review.
- Task 2: Conduct Practitioner Survey – Begin developing survey instrument.

### Significant Results:

See Progress This Quarter section.

**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:

None