Michigan
Department
Of Transportation
5305 (1/2020)

RESEARCH ADMINISTRATION
QUARTERLY REPORT

REPORT FOR QUARTER ENDING	DATE SUBMITTED
9/30/23	10/2/2023

PROJECT TITLE
Evaluating New Technologies for Roads Program Initiatives in Safety and Efficiency (ENTERPRISE) - Phase III

RESEARCH AGENCY
Athey Creek Consultants, LLC

PRINCIPAL INVESTIGATOR
Dean Deeter

PROJECT MANAGER
Elise Feldpausch

RESEARCH MANAGER
Andre Clover

CONTRACT/AUTHORIZATION NO.	2023-0171		PROJECT START DATE	03/06/2023
PROJECT NO.			PROJECT COMPLETION DATE (Original)	03/06/2028
OR NO.			PROJECT COMPLETION DATE (Revised)	
BUDGET STATUS				
CONTRACT FUNDS APPROVED	$509,721.19		% PERCENT COMPLETE (By Budget)	29.1%
			% PERCENT COMPLETE (By Work)	30%
TOTAL FUNDS EXPENDED TO DATE	$148,298.86		% PERCENT OF TIME EXPIRED:	11.6%

PLEASE LIST THE TECHNICAL LIAISONS AND OTHER INDIVIDUALS WHO SHOULD RECEIVE A COPY OF THIS REPORT

SUMMARY OF PROGRESS FOR THIS QUARTER
Attach a progress schedule consisting of graphical information depicting a schedule of research activities tied to **each task** defined in the proposal.

Participated in and provided project updates during the July, August, and September ENTERPRISE Board meeting webinars.

Work performed on the following current research projects included:

Project 1: State of the Art Roadway Sensors – Phase 1
- Task 1: Literature Search, Survey, and/or Interviews – Complete 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 – Begin documenting use cases that were identified in Tasks 1 and 2.
- Task 4: Draft Final Report – Begin 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.

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 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.

PROPOSED WORK FOR NEXT QUARTER

Research project updates for selected projects will be presented at each monthly Board meeting.

Work on specific projects is expected to include:

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.
- Task 3: Create "Model" Procurement Specification(s): Based on specifications and input from agencies as collected during agency interviews, work with the project champion to review example specifications and consider practices that may be suited for a model specification.

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.

IMPLEMENTATION (if any)

To be determined as individual projects progress.

PROBLEMS AND RECOMMENDED SOLUTIONS (if applicable)

Describe any problems encountered or anticipated that might affect the completion of the project within the time, scope, and fiscal constraints set forth in the contract. Describe recommended solutions. NOTING DIFFICULTIES IN THIS SECTION DOES NOT CONSTITUTE A REQUEST OR AUTHORITY TO MODIFY THE PROJECT. Any requests for additional time, money, or scope revisions must be submitted in a separate letter to the Engineer of Research.

None.

EQUIPMENT PURCHASED (if any)

No equipment purchased.

CONTACTS AND MEETINGS

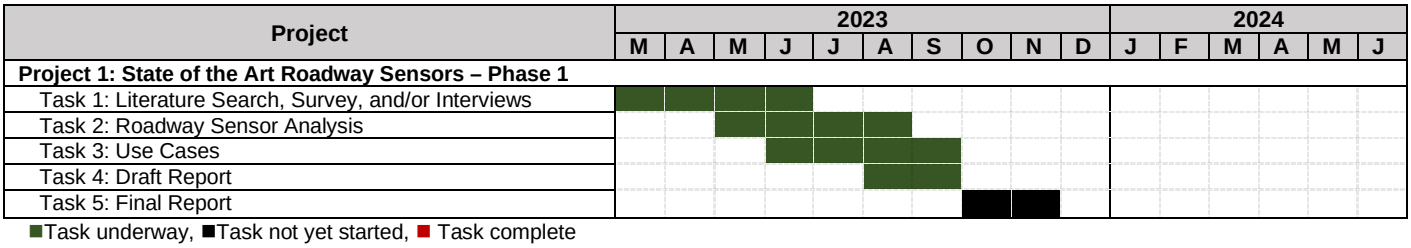
(Describe any meetings or contact with MDOT technical liaisons and other pertinent individuals relative to this project.)

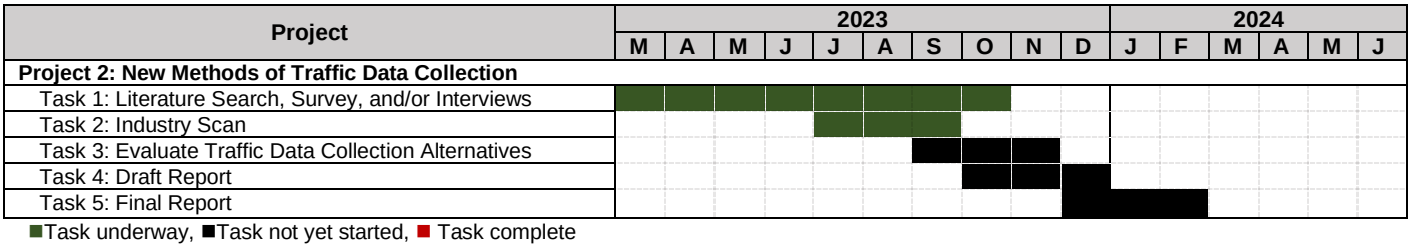
Updates on research projects were provided at ENTERPRISE Board meetings in July, August, and September 2023. Meetings with project champions were conducted, to discuss project kickoffs, project status, and technical input. Attended the September 18-19 ENTERPRISE Board meeting in Kansas City to provide project updates and begin discussion scopes for the secondary projects.

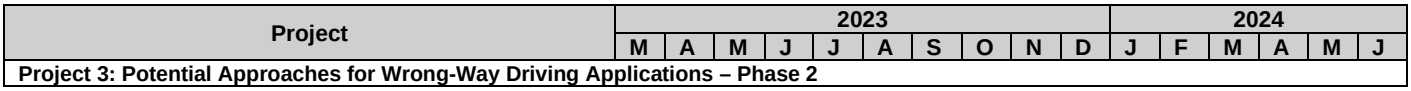
ENTERPRISE - Phase III

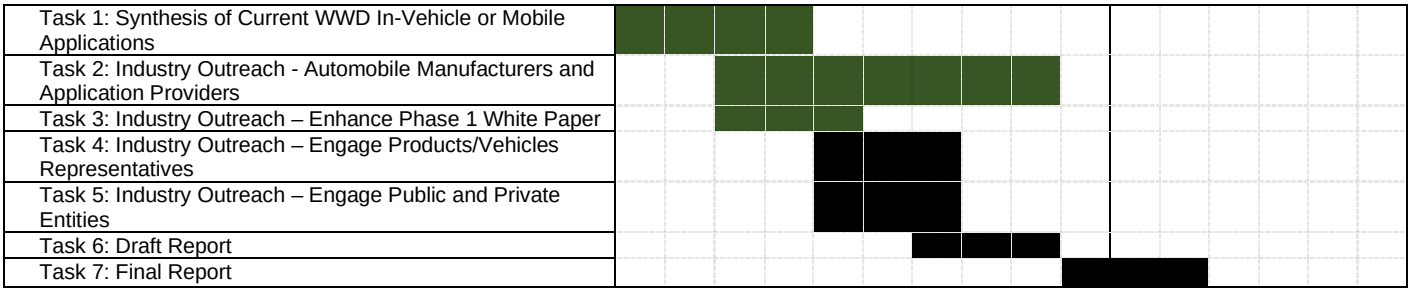
Schedule of Current Projects

September 30, 2023









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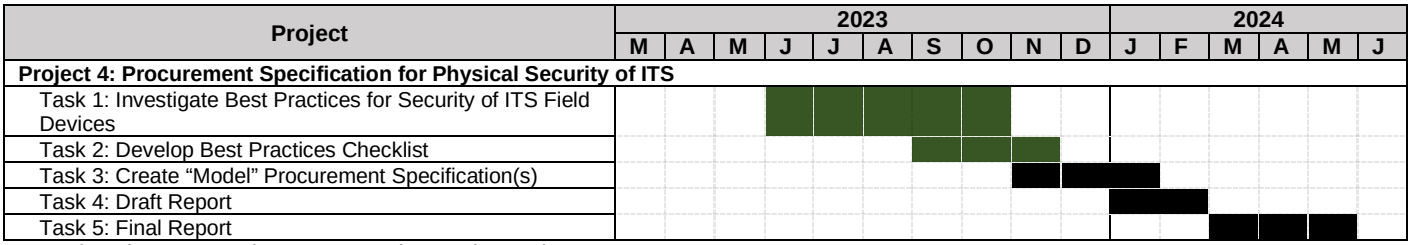

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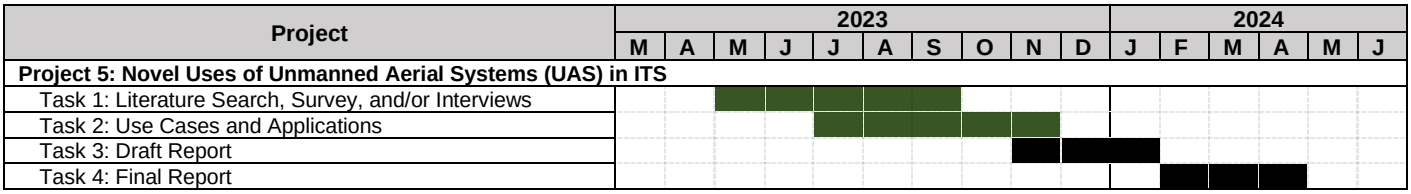

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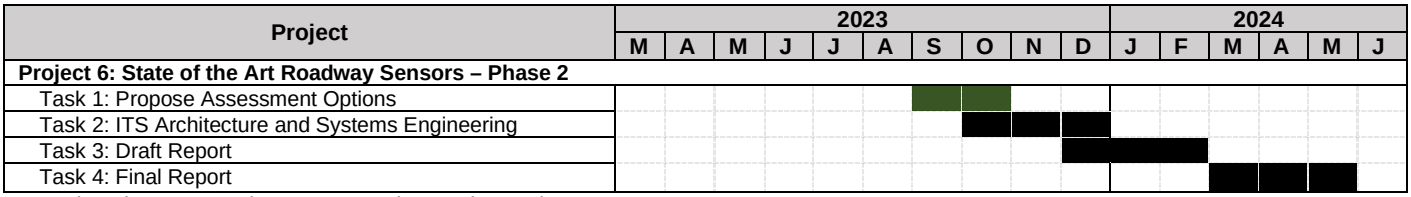

■Task underway, ■Task not yet started, ■ Task complete