TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Colorado Department of Transportation

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 # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* TPF-5(380)		**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)
Project Title: Autonomous Maintenance Technology (AMT)		
Name of Project Manager(s): David Reeves	**Phone Number:** 303-757-9518	**E-Mail** david.reeves@state.co.us
Lead Agency Project ID: WBS 22610.06.01	**Other Project ID (i.e., contract #):**	**Project Start Date:** 3/20/2018
Original Project End Date: 3/20/2023	**Current Project End Date:** 3/20/2025	**Number of Extensions:** 1

Project schedule status:

☑ 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
$321,387 (6 active projects)	$206,864	64%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
N/A	N/A	N/A

Project Description:

The Colorado Department of Transportation (CDOT) has helped to develop a first of its kind work zone vehicle designed to advance safety for roadway maintenance crews. Customarily positioned behind road construction crews in order to protect workers from the traveling public, the Autonomous Impact Protection Vehicle (AIPV) increases work zone safety by removing the driver from a truck that is actually designed to be hit. The objective of the Autonomous Maintenance Technology (AMT) Pool Fund is to develop, demonstrate and refine the AIPV in preparation for its wide spread deployment nationwide in DOT maintenance operations.

Currently there are twelve projects related to this pooled fund:

https://sites.google.com/state.co.us/amt-pooled-fund/projects?authuser=0

5380-18-01 AMT Coordination (CSU)

5380-19-02 Evaluating the Human-Automated Maintenance Vehicle for Improved Safety & Facilitating Long Term Trust (CSU)
5380-19-03 Development of ATMA/AIPV Deployment Guidelines Considering Traffic and Safety Impacts

5380-20-04 ATMA Tabletop (All Clear Emergency Management)

5380-20-05 ATMA Cybersecurity Complement (CSU)

5380-20-06 ATMA Documentation
5380-21-07 ATMA Incident Form Workshop (All Clear Emergency Management)

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

Progress in Q3 2022 includes:

5380-18-01 AMT Coordination (CSU) $150,000 - Dr. Tom Bradley (PI), Erika Miller, and Janine-Marie Conrad. Colorado State University (CSU). Provides administrative management and support of the pool fund. This includes travel for annual meetings.

5380-19-02 Evaluating the Human Automated Maintenance Vehicle for Improved Safety and Facilitating Long Term Trust (CSU) $75,000 – Dr. Erika Miller (PI). Completed final report CDOT-2021-05.

5380-19-03 Development of ATMA/AIPV Deployment Guidelines Considering Traffic and Safety Impacts $92,572 (PennState) - Dr. Xianbiao (XB) Hu (PI). This project was originally with Missouri State University. The PI moved to PennState. This project is in Procurement/Contract.

5380-19-03 ATMA Dev Guide (MST) $92,572 - Dr. Xianbiao (XB) Hu (PI), PennState
Project Update: OSP is reviewing the languages and terms in the contract. Attended the pool fund annual meeting in Denver, CO, in person.

5380-20-04 ATMA Tabletop $22,300 – Will Moorhead (PI), All Clear Emergency Mgmt, Golden, Colorado
Project Update: Final deliverables for the tabletop exercise project were provided. Those included the After-Action Report (AAR) and a project summary. All Clear met with the planning team on October 7 to review the final deliverables and next steps. We also discussed, and recorded in the final documents, additional next steps for preparedness/readiness and incident response within the ATMA. The additional steps discussed included holding a workshop to develop a

Anticipated work next quarter:

In the 3nd quarter of 2022, the team plans to accomplish the following:
Continued refinement of the Toolkit
Continued monthly meetings
Quarterly report and project status
Maintaining and updating outwardly facing website
Continued work on all projects and contract projects
Organizing Annual Autonomous Maintenance Technology (AMT) Peer Exchange TBH Spring 2023

Significant Results:

Nothing significant to report

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).

CDOT is still working on several agreements/contracts with several new Institutes of Higher Education (IHE) that is taking significantly longer than anticipated as all IHE's want a custom Inter-Governmental Agreement (IGA) rather than a standard Purchase Order (PO). CDOT had to ask FHWA to extend the AMT end date to a maximum of 7 years total.

Potential Implementation:

Currently five states in some phase of deployment with purchase of a vehicle: California, Colorado, Missouri, Minnesota, and Virginia. This has increased since 2018 when Colorado was the only infrastructure owner operator of an ATMA and who had deployed an ATMA.