TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Federal Highway Administration (FHWA)

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 Projec	**Transportation Pooled Fund Program - Report Period:**
TPF-5(478)	☐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:

Accelerated Implementation and Deployment of Pavement Technologies (AIDPT) Pooled Fund

Pooled Fund Study Description:

Background:

Since 2013, FHWA's Accelerated Implementation and Deployment of Pavement Technologies (AIDPT) Program, in partnership with State Departments of Transportation (DOTs), academia and industry, has identified asphalt and concrete paving advancements and seek to implement effective strategies for rapid deployment of new and promising technologies. Through the leveraging of Federal investments with State DOT partnerships, the AIDPT Pooled Fund study aims to advance deployment of engineering design criteria and specifications for new and efficient practices, products, and materials that support processes of importance to FHWA and State DOT partners.

The AIDPT Pooled Fund Study is an opportunity for participating states to advance deployment of the innovative technologies in interest areas including, but not limited to, Balanced Mix Design (BMD) for asphalt, performance engineered mixture (PEM) for concrete, pavement preservation, sustainability, resiliency or any other pavement management strategy that improves decision-making processes, technical frameworks, education efforts, and stakeholder engagement.

As this pooled fund is designed, FHWA collaborates with each DOT to define the parameters of each state pavement technology project. The above-mentioned topics were identified in the initial solicitation; however, as noted, other topics are considered when proposed by participating DOTs. The study provides up to $250,000, up to 100 hours of technical assistance, and resources for developing case study reports and videos for each selected pavement technology project. Additionally, FHWA plans to host a website for publishing case studies and other relevant project documents, as well as peer exchanges for showcasing lessons learned and best practices from the projects. Each state DOT is expected to participate in pooled fund meeting opportunities and actively collaborate with other states and FHWA to advance these initiatives. The state DOT will complete a report documenting the initiative and outcomes of selected state DOT accelerated pavement technologies projects.

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Lead Agency contact: LaToya Johnson & Gina Ahlstrom	**Other Project ID (i.e., contract #):** N/A	**Project Start Date:** September 30, 2021
Original Project End Date: October 30, 2026	**Current Project End Date:** October 30, 2026	**Number of Extensions:** N/A

Project schedule status:

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

Overall Study Funding:

Table 1: Funding Commitments by Agency

Agency	**Commitments**					
	2021	**2022**	**2023**	**2024**	**2025**	**2026**
FHWA	$1,500,000.00	$1,500,000.00	$1,500,000.00	$1,500,000.00	$1,500,000.00	$1,500,000.00
AL		$50,000.00				
AZ		$10,000.00	$10,000.00			
CA			$10,000.00	$10,000.00	$10,000.00	$10,000.00
CO		$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
CT			$10,000.00	$10,000.00	$10,000.00	
GA	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	
HI	$10,000.00					
ID	$50,000.00					
IL		$10,000.00	$50,000.00			
IA		$50,000.00				
MS	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
MO	$60,000.00					
ND		$10,000.00	$10,000.00	$10,000.00	$10,000.00	
OK		$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
PA	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	
TX	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	
WI	$10,000.00	$10,000.00	$10,000.00			

Totals:	$170,000.00	$200,000.00	$160,000.00	$90,000.00	$90,000.00	$40,000.00

Table 2: Project Proposals by Agency

Agency	**Project Proposals**	**Project Topics**	**Allocations**	
			2021	2022
AL	Finalized – Funding not yet allocated	Asphalt - Balance Mix Design		
AZ	Finalized – Funding allocated	Resilience	$200,000	$50,000
CA	Not Submitted yet	To be determined		
CO	Finalized – Funding allocated	Sustainability	$250,000	
GA	Submitted – In review	Preservation		
HI	Finalized – Funding not yet allocated	Asphalt - Balance Mix Design		
ID	Not Submitted yet	To be determined		
IL	Submitted – In review	Performance		
IA	Finalized – Funding allocated	Foundations		$250,000
MS	Not Submitted yet	To be determined		
MO	Finalized – Funding not yet allocated	Asphalt - Balance Mix Design		
ND	Finalized – Funding allocated	Asphalt - Balance Mix Design		$250,000
OK	Not Submitted yet	To be determined		
PA	Not Submitted yet	To be determined		
TX	Finalized – Funding allocated	Asphalt - Balance Mix Design		$250,000
WI	Finalized – Funding not yet allocated	Asphalt - Balance Mix Design		
Totals:			$450,000	$800,000

Note: Pooled fund study project funding is sent to participating agencies via allocation memos. Allocation memos are sent to the DOT once project proposals have been submitted and finalized. Project proposals are typically in one of the following statuses: Not Submitted yet, Submitted-In review, Finalized – Funding not yet allocated, Finalized – Funding allocated. Additional project information is included in this report for agencies that have finalized project proposals and receive funding allocations, as provided with the project summaries included.

Table 3: Funding Transfers by Agency

Agency	**Transfers**		
	2021	**2022**	**2023**
AL		$50,000	
AZ		$10,000	$10,000
CA			$10,000
CO		$10,000	$10,000
CT			$10,000
GA	$10,000	$10,000	$10,000
HI	$10,000		
ID	$50,000		
IL		$10,000	$50,000
IA		$50,000	
MS	$10,000	$10,000	$10,000
MO	$60,000		
ND		$10,000	$10,000
OK		$10,000	$10,000
PA	$10,000	$10,000	$10,000

TX	$10,000	$10,000	$10,000
WI	$10,000	$10,000	$10,000
Totals:	$170,000	$200,000	$160,000

State Project Updates

Alabama: Alabama Department of Transportation (ALDOT)

Progress this Quarter:

Project Highlights: Balanced Mixture Design (BMD): Pilot and Field Sections, Long term field evaluation of BMD test sections for benchmarking and determination of performance testing variability during production

ALDOT is currently preparing to use a special specification for hot mix asphalt balanced mix design to evaluate the pavement behavior through a long-term trial.

Key Project Milestones:

- The Specifications are written.
- Two (2) possible locations identified.
- Initial testing of possible locations to begin soon.

Anticipated work next quarter:

We plan to let the project for construction in the second quarter of 2023.

Significant Results:

There are no results to report currently.

Potential Implementation:

We do not have sufficient information for this.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
AL:	$250,000.00		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
$0.00			(TBD for Q3)		$0%	
Allocations:	2021	2022	2023	2024	2025	2026

Circumstance affecting project or budget: Our greatest concern at this time is testing the possible project locations using a profiler and by drilling cores to ensure that the experimental mixes will be place on reasonably similar underlying layers.

Arizona: Arizona Department of Transportation (ADOT)

Progress this Quarter:

Project Highlights: Resilience: Pavement Performance and Climate Data Analysis

It is anticipated that the effort would measurably advance FHWA / State DOT state of the practice and tools testing as it relates to linking climate models, climate data, pavement, materials, and sustainability and resilience for weather and natural hazard risk.

Key Project Milestones:

- Initial climate model data downloaded in 2022.

Anticipated work next quarter:

Climate model data synthesis and starting analysis.

FHWA CMIP 5 with LOCA data sets was utilized.

https://www.fhwa.dot.gov/engineering/hydraulics/software/cmip_processing_tool_version2.cfm

Data consists of 5.9 terabytes (TB) of high resolution extracted from eighteen (18) General Circulation Models (GCM).

Significant Results:

No updated information provided.

Potential Implementation:

No updated information provided.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
AZ:	$300,000.00		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
$25,000.00			(TBD for Q3)		$20%	
Allocations:	2021	2022	2023	2024	2025	2026
	$200,000.00	$50,000.00				

Circumstance affecting project or budget: None reported for Quarter 3.

Colorado: Colorado Department of Transportation (CDOT)

Progress this Quarter:

Project Highlights: Benchmarking Transportation Sector Green House Gas (GHG) Emissions, EPDs

Colorado HB 21-1303 "Buy Clean Colorado Act" directs the Office of State Architecture and Colorado Department of Transportation (CDOT) to establish policies that reduce greenhouse gas emissions over time by accounting for and limiting the global warming potential (GWP) of key construction materials in state-funded building and transportation projects.

The Office of the State Architect is responsible for Section 117 of the bill, which covers building construction, and CDOT is responsible for Section 118 of the bill, which covers transportation infrastructure that includes road, highway, and bridge construction. The eligible construction materials listed under Section 118 of the bill are asphalt and asphalt mixtures, cement and concrete mixtures, and steel.

- Milestone #1 - Specification in place to require EPD submittals by July 1, 2022 – met.

- Milestone #2 - Year 2 EPD submittal requirements for additional materials - July 2023.

    - Finalization of CDOT project support tools to determine EPD collection requirements based on materials quantities/bid items consistent with protocol document.
    - Issuance of Construction Bulletin to CDOT staff conveying support tools and relevant information meeting.
    - EPD Quantity Conversion Spreadsheet Version 1 created and shared with CDOT staff in August.
    - Conducted a Contractor EPD Workshop on August 16, 2022. Attendees from Steel, Asphalt, and Concrete provided perspective, in addition to the CDOT EPD Team.
    - Created internal EPD Database in OnBase in August.
    - Began Precast Industry Stakeholder Outreach Meetings in September.

Anticipated work next quarter:

- Continue outreach to industries targeted for EPD data collection in Year 2/Year 3 of program (pre-cast concrete/steel). Colorado specific ACPA/NCPA Meeting date: December 15, 2022.
- November 14 meeting with UL on CDOT's Steel PCR comments
- Continue planning and discussion on how to address disengaged and unsupportive contractors.
- Prepare CDOT Annual EPD Report

Significant Results:

Developed methodology for collecting, reviewing and cataloging GHG's emissions through Environmental Product Declarations for various construction materials used on CDOT projects, focusing on Concrete, Asphalt, and Steel materials. Specification approved through CDOT process and incorporated into eligible projects. EPD website developed and maintained at https://www.codot.gov/business/designsupport/materials-and-geotechnical/epd. Specification and protocol document approved.

Potential Implementation:

As part of HB 21-1303 "Buy Clean Colorado Act", CDOT began collecting EPD data on eligible construction materials (i.e. asphalt and asphalt mixtures, cement and concrete mixtures, and steel) on July 1, 2022. By January 1, 2025, the bill specifically requires CDOT to establish a policy that sets maximum acceptable global warming potential (GWP) benchmark limits for the eligible materials. CDOT has developed a protocol for collection of EPD data, and that protocol currently limits the EPD data collection to the cradle-to-gate life cycle modules (A1-A3) and requests single-facility EPDs. There are three distinct types of EPDs: an industrywide (also known as an industry average) EPD; a company-wide (i.e., representing multiple facilities) EPD; and a single-facility EPD, which reports the environmental profile of a specific product (e.g., a specific asphalt mixture produced at a specific facility). The CDOT EPD protocol requests contractors provide single-facility EPDs since they typically have higher resolution and are better suited to derive meaningful regionally applicable benchmarks.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
CO:	$300,854.00 (Fed.$250,000.00)		$129,794.00		28.7% (money only)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
$40,159.00			(TBD for Q3)		50%	
Allocations:	2021	2022	2023	2024	2025	2026
	$250,000.00					

Circumstance affecting project or budget: None reported for Quarter 3.

Georgia:

Progress this Quarter:

Project Highlights: Crack Mitigation/ Pavement Preservation Techniques

GDOT will have meetings with the State Maintenance Office, Office of Transportation Data, and Office of Materials and Testing for input on developing a workplan. GDOT plans to send a scheduled commitment during FY2023 4th quarter.

Anticipated work next quarter:

To Be Determined, based on Project Approval.

Significant Results:

N/A.

Potential Implementation:

N/A.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
GA:	$250,000 (Federal: $250,000.00)		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
(TBD for Q3)			(TBD for Q3)		(TBD for Q3)	
Allocations:	2021	2022	2023	2024	2025	2026

Circumstance affecting project or budget: There was a lack of good mapping for cracking distresses along the project location prior to preservation treatments. Therefore, GDOT determined that it would be best to identify new pavement locations or to identify a new project.

Illinois: Illinois Department of Transportation (IDOT)

Progress this Quarter:

Project Highlights: Profiler Comparison - Benchmark Profiler vs. the Urban Low Speed Profiler

Repair/Upgrade profilers, setup track at ICART, complete testing at ICART, Analyze testing results, draft report on results, track setup, and conclusions, create operators manuals for both benchmark and urban low speed profilers.

IDOT does not report progress on the project scope of work this quarter. The primary progress is related to working final coordination to get the AIDPT project contract in place.

Federal FY2023 commitment contribution transfer planned (to be sent to FHWA during FY2023 2nd quarter).

Anticipated work next quarter:

When a contract is in place, work will begin on assessing the two pieces of equipment and beginning the repairs/upgrades.

Significant Results:

None to date.

Potential Implementation:

The urban low speed profiler will be utilized as a reference device or potentially a benchmark device at ICART if it is proven to meet the repeatability and accuracy results.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
IL:	$300,000 (Federal: $250,000.00)		$0		0%	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
0			$0		0%	
Allocations:	2021	2022	2023	2024	2025	2026

Circumstance affecting project or budget: The biggest concern is getting the contract in place so that we can start on the upgrades and repairs of the devices during the winter months. We hope to be testing the two devices in the spring at ICART.

Iowa: Iowa Department of Transportation (IowaDOT)

Progress this Quarter: No change from Quarter 2

Project Highlights: Foundations

Iowa DOT is in the first year of a 5-year plan to implement the technologies and field training that will allow for rapid measurement, real-time construction compaction monitoring, and modulus-based field control, as implemented on four Spring 2022 pavement construction/grading projects (FY 2022 – 4 to 5 projects). Currently deploying VIC monitoring, e-construction compaction reporting, and APLT modulus measurement technology on two pilot projects currently under construction. The state supports performance-based specifications.

Anticipated work next quarter:

Validated Intelligent Compaction (VIC) and Automated Plate Load Testing (APLT): Continue VIC monitoring deployment, e-construction compaction reporting, APLT modulus measurement technology on two pilot projects currently under construction and ten additional projects are anticipated for FY2023.

Significant Results:

Utilized the Iowa DOT STIC and AID in-situ measurement projects to pilot two innovative technologies that previously were not used in the state of Iowa, which includes modulus-based measurements.

Outcomes include model specifications, training materials, and workflow processes to assist agencies in developing a roadmap for modulus-based pavement foundation construction in their state.

Potential Implementation:

The DOT is committed to moving foundation construction requirements from the current Method specification to performance-based requirements. The objective of this project will be to support the implementation of technologies on additional projects for performance-based specifications.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
IA:	TBD (Federal: $250,000.00)		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
(TBD for Q3)			(TBD for Q3)		(TBD for Q3)	
Allocations:	2021	2022	2023	2024	2025	2026
		$250,000.00				

Circumstance affecting project or budget: None reported for Quarter 3

North Dakota: North Dakota Department of Transportation (NDDOT)

Progress this Quarter:

Project Highlights: Implementing Balanced Mix Design

Project start 12/16/2022, Final Closeout 2027.

National Center for Asphalt Technology (NCAT) is finalizing the research proposal with a planned project start date of 12/16/2022 for the project kickoff.

Anticipated work next quarter:

Project has not started yet.

Significant Results:

Project has not started yet.

Potential Implementation:

Implementation of BMD through Pilot Projects.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
ND:	$250,000 (Federal: $250,000.00)		$0		0%	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
0			$0		0%	
Allocations:	2021	2022	2023	2024	2025	2026
		$250,000				

Circumstance affecting project or budget: None reported for Quarter 3

Pennsylvania: Pennsylvania Department of Transportation (PennDOT)

Progress this Quarter:

Project Highlights: Implementation of Mastics at the Pennsylvania DOT

The PennDOT determined the best area of pavement management program support to be using mastic materials for preservation activities that would evolve in developing statewide application specific specifications. The PennDOT State Transportation Innovation Council (STIC) was a source for supporting equipment acquisitions during the earlier phases of mastic material application. The AIDPT project component of the ongoing PennDOT efforts will include technical assistance and collaboration to determine the extent of mastic materials use.

Research applications, new equipment, and specifications used by other states Summer 2023 Develop PennDOT draft specification Fall 2023 Finalize PennDOT specification Summer 2024.

a. Submission recently provided to FHWA.

Anticipated work next quarter:

Submission recently provided to FHWA.

Significant Results:

Submission recently provided to FHWA.

Potential Implementation:

a. Research applications, new equipment, and specifications used by other states Summer 2023
b. Develop PennDOT draft specification Fall 2023
c. Finalize PennDOT specification Summer 2024.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
PA:	TBD (Federal: Tech. assistance)		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
(TBD for Q3)			(TBD for Q3)		(TBD for Q3)	
Allocations:	2021	2022	2023	2024	2025	2026

Circumstance affecting project or budget: None reported for Quarter 3.

Texas: Texas Department of Transportation (TxDOT)

Progress this Quarter: No change from Quarter 2

Project Highlights: Asphalt - Balance Mix Design

Several balanced mix design sections are being constructed to compare a control mix design with several balanced mixed designs that encompassing several factors: recycled materials, rejuvenators, different binder grades, … etc. Testing plan: the project team will locate all TxDOT Balanced Mix Design initiative sections and provide a performance assessment plan based on the sections age, for example: annual performance documentation for sections constructed in the past 3 years, semi-annual performance documentation for sections constructed between 3 and 6 years ago. TxDOT is currently working to complete a balanced mix design initiative by 8/31/2022.

Anticipated work next quarter:

TxDOT will complete a balanced mix design initiative by 8/31/2022.

Significant Results:

Identified a diverse set of pavement locations to pilot, through which to obtain the pavement design details, any material details that are known, traffic levels, condition history if available, any of the sites were designed using Pavement ME, and localized weather data.

Potential Implementation:

Documenting the performance of balanced mix design sections in the state of Texas. Constructed several balanced mix design sections to compare a control mix design with several balanced mixed designs encompassing several factors such as: recycled materials, rejuvenators, different binder grades, … etc.

Quarterly Project Statistics:

State	**Total Project Budget**		**Total Cost to Date for Project**		**Percentage of Work Completed to Date**	
TX:	TBD (Federal: $250,000.00)		(TBD for Q3)		(TBD for Q3)	
Total Project Expenses and Percentage This Quarter			**Total Amount of Funds Expended This Quarter**		**Total Percentage of Time Used to Date**	
(TBD for Q3)			(TBD for Q3)		(TBD for Q3)	
Allocations:	2021	2022	2023	2024	2025	2026
		$250,000.00				

Circumstance affecting project or budget: None reported for Quarter 3.

NOTE: Other state project progress snapshots expected for Quarter 3, as project proposals are finalized and projects commence work activities.