

## 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.*

<b>Transportation Pooled Fund Program Project</b> TPF-5(478)	<b>Transportation Pooled Fund Program - Report Period:</b> <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" 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)
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**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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<b>Lead Agency contact:</b> LaToya Johnson & Gina Ahlstrom	<b>Other Project ID (i.e., contract #):</b> N/A	<b>Project Start Date:</b> September 30, 2021
<b>Original Project End Date:</b> October 30, 2026	<b>Current Project End Date:</b> October 30, 2026	<b>Number of Extensions:</b> 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	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00
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
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	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00
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	\$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:	\$200,000.00	\$180,000.00	\$120,000.00	\$100,000.00	\$100,000.00	\$60,000.00

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 not yet allocated	Asphalt - Balance Mix Design		
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		
<b>Totals:</b>			<b>\$450,000</b>	<b>\$550,000</b>

**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
AL		\$50,000
AZ		\$10,000
CA		
CO	\$10,000	
GA	\$10,000	\$10,000
HI	\$10,000	
ID	\$50,000	
IL		\$10,000
IA		\$50,000
MS	\$10,000	\$10,000
MO	\$60,000	
ND	\$10,000	
OK	\$10,000	\$10,000
PA	\$10,000	\$10,000
TX	\$10,000	\$10,000
WI	\$10,000	\$10,000
<b>Totals:</b>	<b>\$200,000</b>	<b>\$180,000</b>

## State Project Updates

### *Arizona:*

#### **Progress this Quarter:**

##### **Project Highlights:** Resilience

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:

- Download updated climate models (include LOCA) June 2021,
- Binder grade assessment August – October 2021,
- Freeze/thaw assessment October 2021 – January 2022,
- Identify a diverse set of pavement locations to pilot August 2021 – January 2022,
- Conduct pilot location analysis January 2022 – June 2022.

#### **Anticipated work next quarter:**

Assessing the pilot location analysis that was conducted from January 2022 – June 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:**

Analysis development for:

- (1) Binder grade assessment, (2) Freeze/thaw assessment, and (3) Surface treatment toolbox assessment.

#### Quarterly Project Statistics:

State	Total Project Budget		Total Cost to Date for Project		Percentage of Work Completed to Date	
AZ:	TBD (Fed. \$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
	\$200,000.00	\$50,000.00				

**Circumstance affecting project or budget:** None reported for Quarter 2.

### *Colorado:*

#### **Progress this Quarter:**

##### **Project Highlights:** Sustainability

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

In this Quarter, weekly CDOT EPD Team Meetings have been conducted, there has been outreach to reinforcing steel industry, outreach/education meetings with concrete, cement, asphalt industries to go over CDOT's draft EPD Specification and EPD Collection Protocol documents for comments, CDOT Specification and Protocol Document was approved at the Materials Advisory Committee meeting in May and the CDOT/Contractor Spec. Committee Meeting in June. The team has conducted an Informational Meeting to CDOT Employees/Staff on EPD requirements and status in June. The specification was published and available for inclusion on projects June 14, 2022. Work also continued on coordination with CDOT OIT staff on website, EPD email address, as well as coordination with CDOT OnBase on a more stable data collection storage/reporting setup.

**Anticipated work next quarter:**

Continued work and 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. Informational meeting scheduled for 8/16 with CDOT Contracting Community. Begin outreach to industries targeted for EPD data collection in Year 2/Year 3 of our program (pre-cast concrete/steel).

**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:	\$312,000.00 (Fed.\$250,000.00)	\$89,635.00	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	
(TBD for Q3)			(TBD for Q3)		(TBD for Q3)	
<b>Allocations:</b>	2021	2022	2023	2024	2025	2026
	\$250,000.00					

**Circumstance affecting project or budget:** None reported for Quarter 2.

***Iowa:***

**Progress this Quarter:**

**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)	
<b>Allocations:</b>	2021	2022	2023	2024	2025	2026
		\$250,000.00				

**Circumstance affecting project or budget:** None reported for Quarter 2.

**Texas:**

**Progress this Quarter:**

**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 2.

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