

# AID-PT

Accelerated Implementation & Deployment of Pavement Technologies

INSIDE:

*Hear from researchers working in asphalt, concrete, sustainability and resiliency.*

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Cooperative Agreements Advance Transportation Goals

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## Cooperative Agreements Advance Transportation Goals

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The Federal Highway Administration (FHWA) has a long history of using cooperative agreements to collaborate with stakeholders in achieving its transportation infrastructure goals. Cooperative agreements allow FHWA to work closely with State and local governments, Tribal nations, transit agencies, metropolitan planning organizations, universities, and other entities to address transportation challenges and improve the nation's highway system.

These agreements are typically used to develop innovative technologies, facilitate technical assistance programs, training workshops, and knowledge-sharing activities and conduct research. They include marketing and implementation strategies to ensure innovative solutions and practices are effectively and rapidly adopted by State departments of transportation and other transportation agencies.

“Cooperative agreements allow for more flexibility than standard contracts, with the ability to adapt scope based on changing needs through continuous coordination,” said Migdalia Carrion, FHWA Sustainable Pavements Program manager. “We can maximize our funding and encourage collaboration because our partner provides 20 percent of the cost share and FHWA provides 80 percent.”

Currently, FHWA's Pavement and Materials Program is engaged in three cooperative agreements to deploy pavement technologies. These agreements support improvements throughout the pavement life cycle in the focus areas of concrete, asphalt, sustainability and resiliency, and provide technical assistance and training.

## Sustainability and Resiliency

The most recent agreement, “[Advancing Sustainability and Resilience in Pavements](#),” is a 5-year, and up to \$7.5 million Federal award. Signed in 2023, this agreement explores topics such as the use of low-carbon materials, equity, life-cycle cost analysis, life-cycle assessment (LCA), social LCA, and vulnerability assessments. It will also support ongoing efforts such as the [FHWA Climate Challenge](#), the [Environmental Product Declarations for Sustainable Project Delivery](#) Every Day Counts initiative, and the Inflation Reduction Act [Low-Carbon Transportation Materials Grant Program](#).

In the context of pavements, sustainability refers to a pavement system’s ability to:

- Achieve engineering goals for which it was constructed.
- Preserve and restore surrounding ecosystems.
- Use financial, human, and environmental resources economically.
- Meet basic human needs such as health, safety, equity, employment, comfort, and happiness.

Sustainability is often described as the balance of environmental, social, and economic needs. “We will work to facilitate the use of materials that have a lower financial and environmental impact,” said John Harvey, director of the University of California Pavement Research Center and principal investigator of the sustainability cooperative agreement. “One of the great things is that those usually go together. The lower-cost material is often more energy efficient, which means it also has a lower-environmental impact.” Researchers will conduct social life-cycle assessments to determine the distribution of benefits. “Pavement should be a benefit for everyone,” said Harvey.

In the area of resiliency, the UC Davis team and its partners will develop methodologies and guidance to incorporate resilience into pavement design, construction, maintenance, and preservation processes.

“The last main piece is workforce and recruitment,” said Harvey. “How do we get people interested in what we’re doing? How do we get them trained on these concepts?” Researchers will

assess university curriculum for sustainability and resilience and determine whether it addresses quantification and analysis methods, then recommend strategies for addressing potential gaps.

The team will develop technical documents, such as marketing and implementation plans, tech briefs, and case studies, as well as engage subject matter experts, develop training tools, conduct data analyses, compile findings, and support stakeholder engagement. “By sharing knowledge and highlighting the benefits, we’re committed to making sustainable and resilient pavements a part of everyday practice,” said Harvey.

For more information about this cooperative agreement, contact the Agreement Officer’s Representative [Migdalia Carrion](#).



A new cooperative agreement seeks to expand the community of sustainability champions. John Harvey, director of the University of California Pavement Research Center, explains in this video. (Source: FHWA)

## Asphalt

In 2018, FHWA awarded the “[Development and Deployment of Innovative Asphalt Pavement Technologies \(DDIAPT\)](#)” cooperative agreement that included up to \$3 million in Federal award to the University of Nevada, Reno (UNR). In 2018. The new “FY23 DDI-APT” was awarded to UNR in 2023 with up to \$5 million in Federal award.

The purpose of the cooperative agreement is to improve the quality and performance of asphalt pavements by expediting the deployment and rapid adoption of innovative technology relating to the design, production, testing, control, construction, and investigation of asphalt pavements.

Work conducted as part of the cooperative agreement includes writing technical reports, hosting webinars and peer exchanges, and producing instructional videos. Outreach materials have focused on asphalt binders, balanced mix design, recycled asphalt materials, asphalt pavement design and construction, and quality assurance for asphalt.

“It’s critical that we meet the States where they are,” said UNR Civil Engineering Professor Elie Hajj. “The States are at different stages and levels of implementation, and if we meet them where they are, we can help them to advance to the next stage.”

The FY23 DDIAPT team is primarily focused on sharing innovations in two key areas: resource responsible use of materials for flexible pavement systems (e.g., reclaimed asphalt pavement and in-place recycling); and design, specifications, and strategies for implementation actions (e.g., balanced mix design and in-place density).

“A constant challenge in the transportation community is timely and efficient deployment of innovative technologies,” said FHWA Senior Asphalt Engineer Tim Aschenbrener. “The DDI-APT helps us provide State DOTs the ability to accelerate implementation with cost-effective solutions to pavement-related challenges.”

DDIAPT efforts align with several goals and objectives in the [USDOT](#) and [FHWA Strategic Plans](#) related to safety, economic strength and global competitiveness, climate and sustainability, and transformation.

For more information about this cooperative agreement, contact the Agreement Officer’s Representative [Tim Aschenbrener](#).

### DDIAPT Cooperative Agreement 2018-2023

- Instructional Videos (8)
  - 22,145 views
- Webinars (19)
  - 1,847 live participants, 5,390 views
- Peer Exchanges (5)
  - 35 States, 52 participants
- Publications (> 45)
  - 40,057 link visits
- Workshops (14 virtual, 8 in-person)
  - 822 participants
- Virtual Site Visits (25)



University of Nevada, Reno Civil Engineering Professor Elie Hajj says cooperative agreements provide a unique opportunity for stakeholders to learn from each other. He describes how in this video. (Source: University of Nevada, Reno)

## Concrete

Cooperative agreements between FHWA and concrete stakeholders date back to the early 2000s. The most recent agreement, "[Advancing Concrete Pavement Technology Solutions](#)," awarded to the National Concrete Pavement Technology Center at Iowa State University, includes the deployment of innovative technologies and strategies to advance concrete pavements and improve concrete pavement performance. The \$9.3 million agreement began in 2018 and will conclude in 2024.

"Our job is to find out what is new, available, and effective, then put it into the hands of practitioners including specifiers, owners, and contractors," said Peter Taylor, director of the National Concrete Pavement Technology Center at Iowa State University. "The other role that we like to think we play in is providing coordination between the owners and contractors so they're speaking the same language and hitting the same goals."

Outreach materials and resources developed as part of this cooperative agreement focus on six key areas: recycling and reuse of waste products; performance engineered mixtures; preservation strategies and technologies; tech transfer; accelerated construction techniques; and non-destructive testing and real-time techniques. "It's a wide encompassing program that takes ideas from conception and design through to implementation," said FHWA Civil Engineer Robert Spragg.



National Concrete Pavement Technology Center Director Peter Taylor says more can be accomplished in a cooperative agreement compared to most research contracts. He explains why in this video. (Source: FHWA)



LEFT: Engineer Eric Desjardins uses the Instant Air Meter during a cooperative agreement demonstration event. RIGHT: Non-contact sensors measure real-time smoothness of freshly paved concrete during a demonstration. (Source: Concrete Pavement Technology Center)

In addition to hosting meetings and demonstrations, the [Advancing Concrete Pavement Technology Solutions](#) team has developed a variety of guides, manuals, tech briefs, case studies, one-pagers, videos, and reports.

"Our industry is extraordinarily conservative and with good reason," said Taylor. "We have to work pretty hard to persuade change, but we're getting there. We are getting it done."

For more information about this cooperative agreement, contact the Agreement Officer's Representative [Robert Spragg](#).

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Source: New Jersey DOT



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