FHWA Updates

Fall 2025 NCC Meeting

Springfield, MA

Robert Spragg

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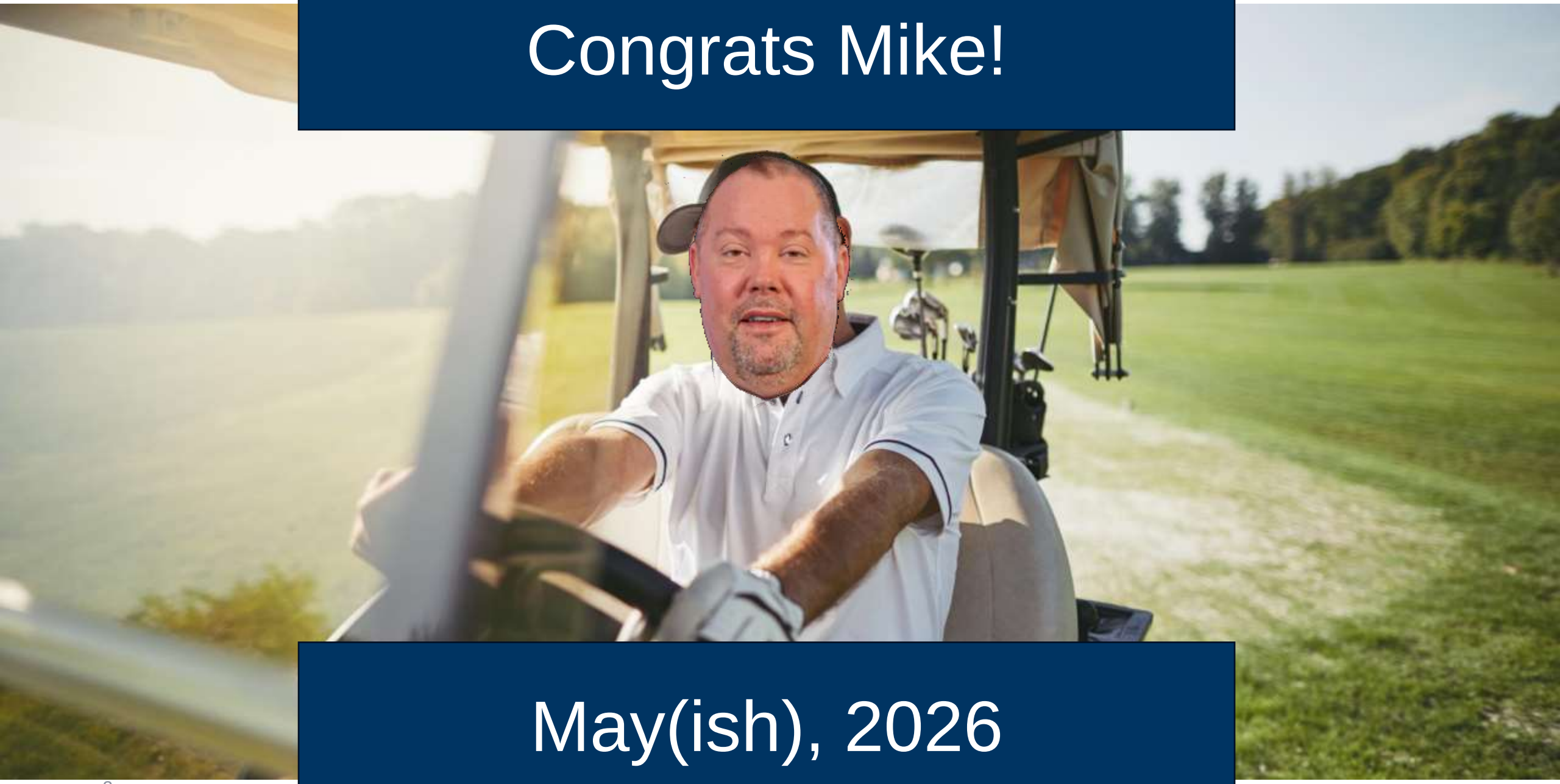
U.S. Department of Transportation
Federal Highway Administration

CPM Concrete Pavement Materials PROGRAM

Disclaimer

Except for the statutes and regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the States or the public in any way. This presentation is intended only to provide information regarding existing requirements under the law or agency policies.

Congrats Mike!



May(ish), 2026

Stakeholder Feedback

- Comments collected via Regulations.gov

- Surface Transportation Reauthorization
  - regulations.gov/docket/DOT-OST-2025-0468 (through 9/8/25)
  - IIJA provides programs and funding through Sept. 30, 2026
- DOT Strategic Plan
  - regulations.gov/docket/DOT-OST-2025-0963 (through 9/8/25)
  - Safety, Transformation, Implementation of White House Executive Actions, Cybersecurity (transportation.gov/priorities)

AID-PT Program

Accelerated Implementation and Deployment of Pavement Technologies

- "Advances the latest and best practices and technologies for constructing and maintaining high-quality, long-lasting pavements."
- General Activities
  - Technology Transfer
  - Information Dissemination
  - Innovation Deployment
  - Technical Assistance
- Introduced in MAP-21 in 2012 and outlined at 23 U.S.C. 503(c)(3).

https://www.fhwa.dot.gov/pavement/aidpt

Source: FHWA-HIF-24-038

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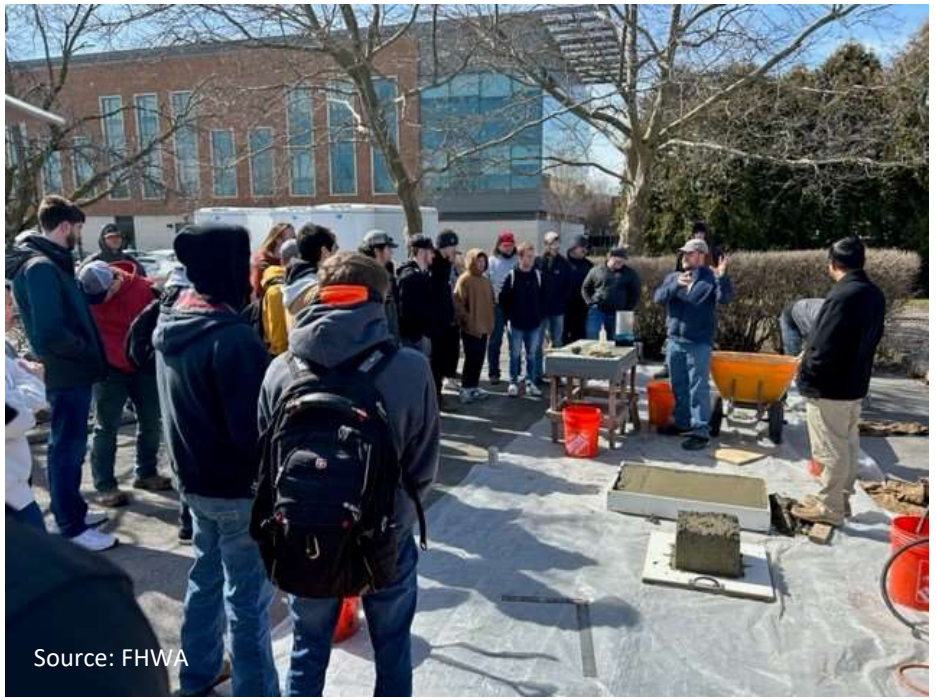
2025 MCTC Activities

- Project Site Visits
  - Montana
  - Georgia
  - California
  - Arkansas
  - Puerto Rico
  - Federal Lands (VA)
- Workshops
  - Nevada
  - Utah
- University Days
  - University of Nebraska
  - University of Wisconsin
  - University of California-Chico
- Technology Tours
  - Texas
  - Oregon
  - Maryland
- Conferences
  - TRB
  - World of Concrete
  - ACPA Annual Meeting
  - ACPA—PA Chapter Annual Meeting
  - ACI Fall Convention (MD)
  - Eastern Federal Lands Construction Conference
  - FHWA Pavement and Materials Discipline Seminar


Source: FHWA

For more info, please contact: michael.praul@dot.gov

Development and Deployment of Innovative Technologies for Concrete Pavements

- Cooperative Agreement competitively awarded to CP Tech Center Sept 2024 (through Sept. 2029).
- Primary support for our concrete topic area.
- Work Plan that is developed approximately annually.
- Informed by meetings such as NCC, AASHTO, and CPM-TFG.
- Cost share - 25% non-Federal funds from industry and State funds. **Thank you!**

Cost Share

Collaborative Activities

Shared Success

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Other Miscellaneous Programs (that I am aware of)

- EDC-8
- LCTM Program
  - 5 states with obligated agreements will continue work
  - Questions can be directed to fhwalowcarbonmaterials@dot.gov
- FHWA contributions to Pooled Funds
  - Including P3C, TTCC, PBS for FRC
- Development and Deployment of Innovative Technologies for Asphalt Pavements (University of Nevada, Reno)
  - timothy.aschenbrener@dot.gov
- MATC
  - Robert.Conway@dot.gov

Portland Limestone Cement (PLCs)

- **Case studies** (nearly 3 decades).
- **Anecdotal challenges**
- **Best practices**:
  - "Nominally 1-1 at 28d"
  - Trial batches
  - Monitor variability
  - Tools (e.g., Calorimetry)
- **Continued work**: Supporting agencies in the Midwest that have documented challenges in finishing and sawcutting.


TECHNOTE

U.S. Department of Transportation
Federal Highway Administration

Turner-Fairbank Highway Research Center

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296

https://highways.dot.gov/research

Portland Limestone Cement

FHWA Publication No.: FHWA-HRT-23-104

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INTRODUCTION

Portland limestone cement (PLC) is a binary blended cement manufactured according to ASTM International (ASTM) C595[1] or American Association of State Highway and Transportation Officials (AASHTO) M 240.[2] PLC contains 5- to 15-percent blended or interground limestone and is alternatively identified with the term "IL," which indicates portland cement-limestone blended cement in ASTM C595 and AASHTO M 240.[1,2] PLC is engineered to provide 28-d performance equivalent to that of ordinary portland cement (OPC) (ASTM C150[3] or AASHTO M 85[4]) for 1:1 replacement while reducing global-warming potential (GWP) 8.3 percent on average, thanks to its lower clinker content.[5] Cement suppliers are typically producing PLC with 10- to 12-percent limestone powder because such a blend results in a more optimal, 1:1 performance.

Though PLC has now become widely available throughout the United States, several agencies and contractors have reported challenges with its implementation due to limited field experience using the material in the United States.[6] This TechNote is designed to help State highway agencies (SHAs) and contractors become more acquainted with technical and background information regarding PLC and to promote its successful application nationwide. The document provides information regarding the history, specifications, sustainability, manufacture, engineering principles, and performance of PLC. In addition, the document presents successful case studies and best practices for implementing PLC.

History of PLC in the United States

ASTM C150 began allowing the use of up to 5-percent interground limestone in OPC types I–V in 2004.[3] Before then, in North American specifications, limestone had not been permitted as an addition to cement. AASHTO M 85 was harmonized with ASTM C150 in 2007, when the 5 percent allowable limestone content for OPC was balloted and accepted.[4] PLC was introduced in the United States in 2005 through ASTM C1157 as a performance cement.[7] While cements with high ground limestone contents have been successfully used in Europe for 15–20 yr, North American PLC differs in that it was designed to have mechanical properties similar to those of OPC at 28 d, and the concrete producers often add supplementary cementitious materials (SCMs) to PLC.[8] Beginning in 2012, ASTM C595 and AASHTO M 240 standard specifications for blended hydraulic cements started allowing up to 15-percent blended or interground limestone to be used in binary blended cements, and the specifications defined the product as IL or PLC.[1,2] While PLC has been allowed in many States since 2012,

Source: FHWA-HRT-23-104

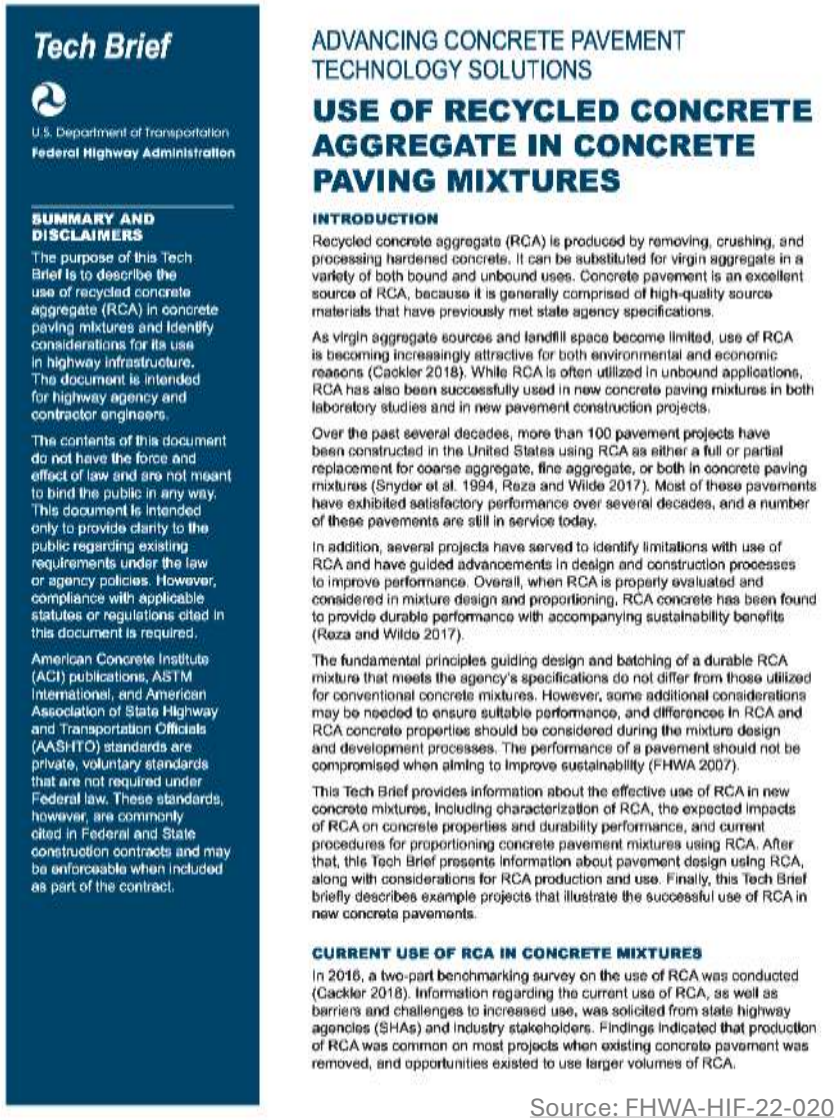
Novel Materials or Boutique Solutions?

- Is it cementitious or pozzolanic (SCM)? Does it matter?
- Does it improve performance?
- Is it commercially available? In sufficient quantities? In which markets?

Contact:
Robert.Spragg@dot.gov and Michelle.Cooper@dot.gov

Recycled Concrete Aggregate

- RCA technology is being used today – including byproducts from industrial and construction processes.
- International interest – Thanks to Tara Cavalline and Matt Fonte.
- Research study being led by TFHRC.



Tech Brief

U.S. Department of Transportation
Federal Highway Administration

SUMMARY AND DISCLAIMERS

The purpose of this Tech Brief is to describe the use of recycled concrete aggregate (RCA) in concrete paving mixtures and identify considerations for its use in highway infrastructure. The document is intended for highway agency and contractor engineers.

The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies. However, compliance with applicable statutes or regulations cited in this document is required.

American Concrete Institute (ACI) publications, ASTM International, and American Association of State Highway and Transportation Officials (AASHTO) standards are private, voluntary standards that are not required under Federal law. These standards, however, are commonly cited in Federal and State construction contracts and may be enforceable when included as part of the contract.

ADVANCING CONCRETE PAVEMENT TECHNOLOGY SOLUTIONS

USE OF RECYCLED CONCRETE AGGREGATE IN CONCRETE PAVING MIXTURES

INTRODUCTION

Recycled concrete aggregate (RCA) is produced by removing, crushing, and processing hardened concrete. It can be substituted for virgin aggregate in a variety of both bound and unbound uses. Concrete pavement is an excellent source of RCA, because it is generally comprised of high-quality source materials that have previously met state agency specifications.

As virgin aggregate sources and landfill space become limited, use of RCA is becoming increasingly attractive for both environmental and economic reasons (Cackler 2018). While RCA is often utilized in unbound applications, RCA has also been successfully used in new concrete paving mixtures in both laboratory studies and in new pavement construction projects.

Over the past several decades, more than 100 pavement projects have been constructed in the United States using RCA as either a full or partial replacement for coarse aggregate, fine aggregate, or both in concrete paving mixtures (Snyder et al. 1994, Reza and Wilde 2017). Most of these pavements have exhibited satisfactory performance over several decades, and a number of these pavements are still in service today.

In addition, several projects have served to identify limitations with use of RCA and have guided advancements in design and construction processes to improve performance. Overall, when RCA is properly evaluated and considered in mixture design and proportioning, RCA concrete has been found to provide durable performance with accompanying sustainability benefits (Reza and Wilde 2017).

The fundamental principles guiding design and batching of a durable RCA mixture that meets the agency's specifications do not differ from those utilized for conventional concrete mixtures. However, some additional considerations may be needed to ensure suitable performance, and differences in RCA and RCA concrete properties should be considered during the mixture design and development processes. The performance of a pavement should not be compromised when aiming to improve sustainability (FHWA 2007).

This Tech Brief provides information about the effective use of RCA in new concrete mixtures, including characterization of RCA, the expected impacts of RCA on concrete properties and durability performance, and current procedures for proportioning concrete pavement mixtures using RCA. After that, this Tech Brief presents information about pavement design using RCA, along with considerations for RCA production and use. Finally, this Tech Brief briefly describes example projects that illustrate the successful use of RCA in new concrete pavements.

CURRENT USE OF RCA IN CONCRETE MIXTURES

In 2018, a two-part benchmarking survey on the use of RCA was conducted (Cackler 2018). Information regarding the current use of RCA, as well as barriers and challenges to increased use, was solicited from state highway agencies (SHAs) and industry stakeholders. Findings indicated that production of RCA was common on most projects when existing concrete pavement was removed, and opportunities existed to use larger volumes of RCA.

Source: FHWA-HIF-22-020

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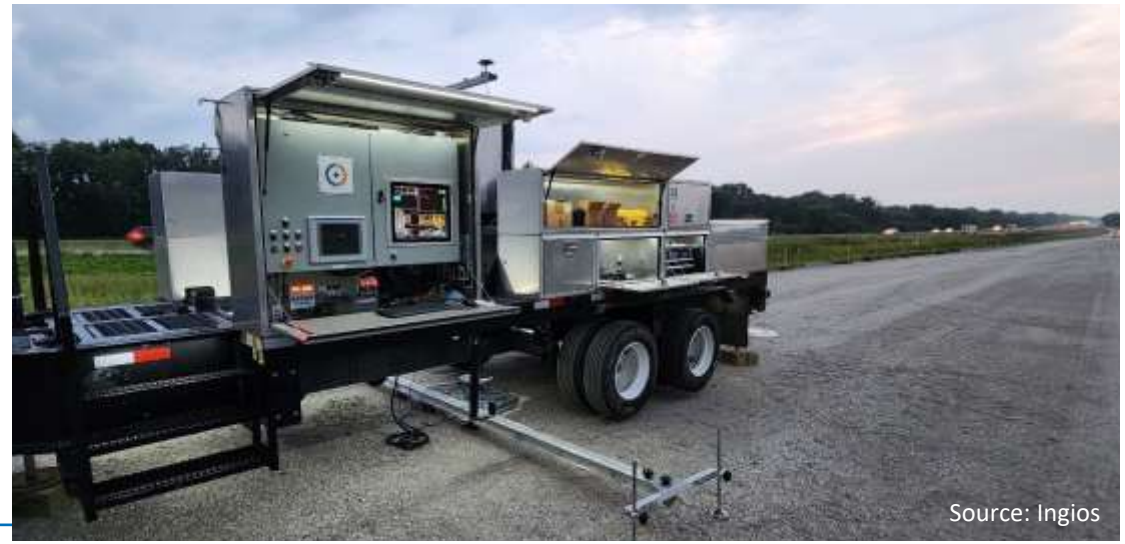
OPM

Foundation Verification via E-Compaction

- Foundation design verification is emerging as a critical parameter to ensure long-term performance.
- Workshop at the 13th ICCP in 2024.
  - Foundation design values are often not achieved.
  - Agencies are interested in sampling/testing methods.
- 6 demo projects completed in 2024.
- **To Do:** How e-Compaction technology can be used in typical QA oversight processes.

Source: Ingios


Source: Ingios

P3C: Performance Centered Concrete Construction

Actions between the batch plant and opening to traffic can significantly impact the performance of a concrete pavement.

More Info:
https://www.pooledfund.org/Details/Solicitation/1582

Contact: Michelle.Cooper@dot.gov

Pavement Maintenance and Preservation

- **Glossary of Terms.** What is maintenance vs preservation? What is eligible for federal aid?
- **Peer network.** Maintenance work can labor-intensive and high risk. What are some best practices?
- **Maintenance Monitoring.** How are agencies held to their *duty to maintain* outlined in 23 USC 116?
- **Design and Selection of PP treatments**. What does cost-effective mean?
- **Knowledge repository.** Treatment techniques, schedules, and equipment.

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