

FHWA Program Update

58th Iowa Concrete Paving Workshop

February 9, 2024

Robert Spragg, Ph.D.

Robert.Spragg@dot.gov

Concrete Engineer | FHWA Office of Infrastructure



U.S. Department of Transportation
Federal Highway Administration

Agenda

1

Instant Air Meter

2

FHWA's LCTM Materials
Program

How can we prevent F/T damage?



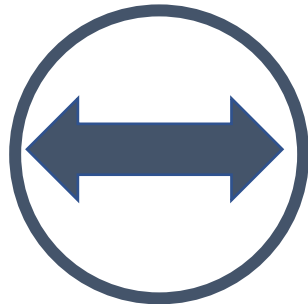
Keep the water out...

Drainage, lower permeability concretes



Accommodate the expansion...

Air Entrained Concrete (4-8 %)



Space the voids...

Make sure the voids are close enough together such that water can expand into the voids

Total Air assessment in the fresh state....



Source: NCDOT



Source: Gilson Company



Source: Gilson Company

Air Quality assessment in the fresh state....



Source: FHWA



Source: Gilson Company

2017 SBIR Solicitation

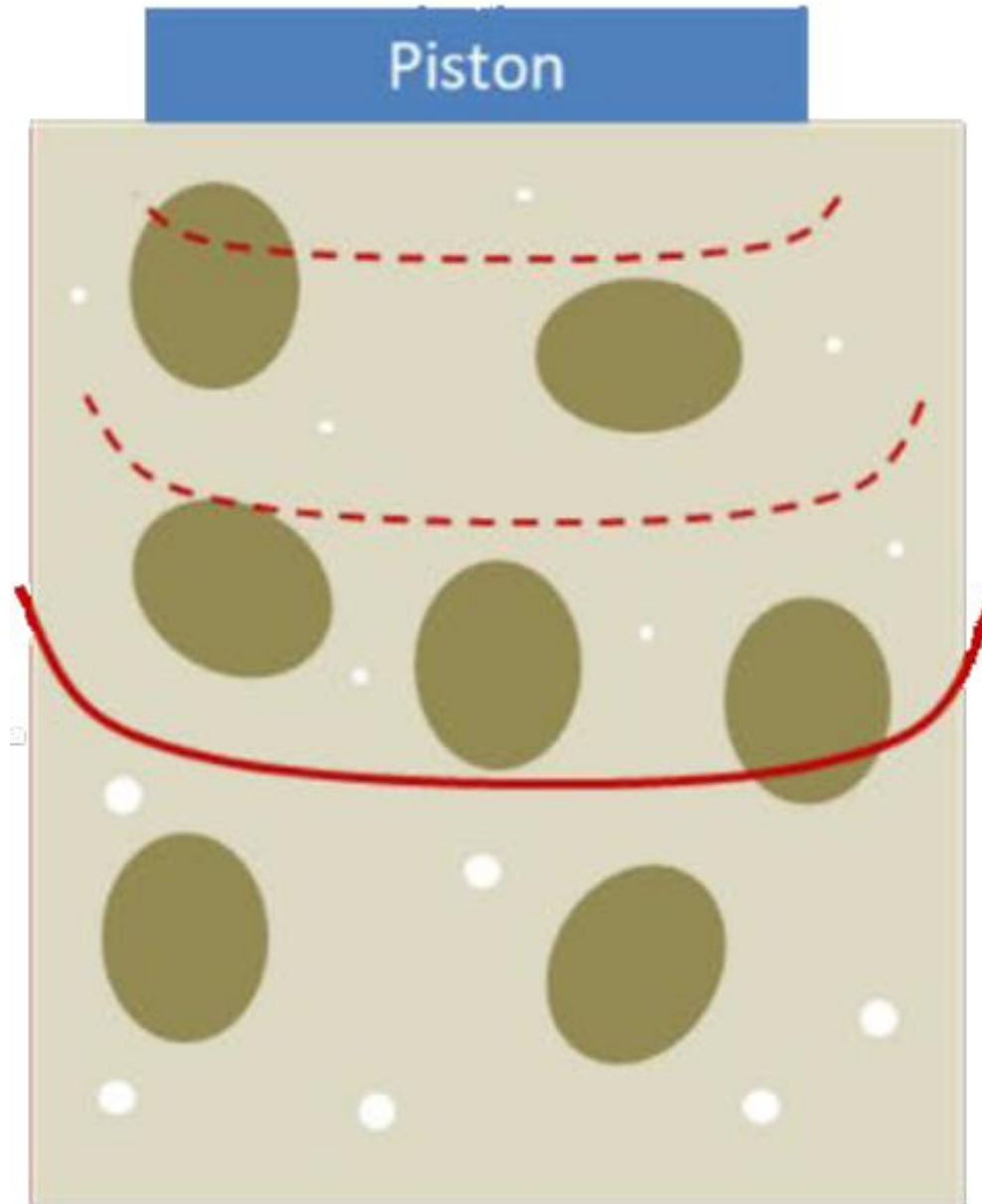
- Rapid, reasonably priced, and capable of measuring the air void parameters (volume and spacing) in fresh concrete;
- Accuracy that can be used for quality assurance (QA) testing by state DOTs in the field and can be adopted by AASHTO and ASTM;
- Easy operation, calibration, and durable enough to withstand repeated testing of fresh concrete in the field.

5 Years of US DOT's SBIR Program

- Bubble assessment has a range of applications:
 - Hydraulic systems
 - Aerospace applications
 - Microbes in jet fuel
 - Navy Divers
- “Bubbly liquid engineers” from Creare adapted this solution to concrete engineering.



How does it work?

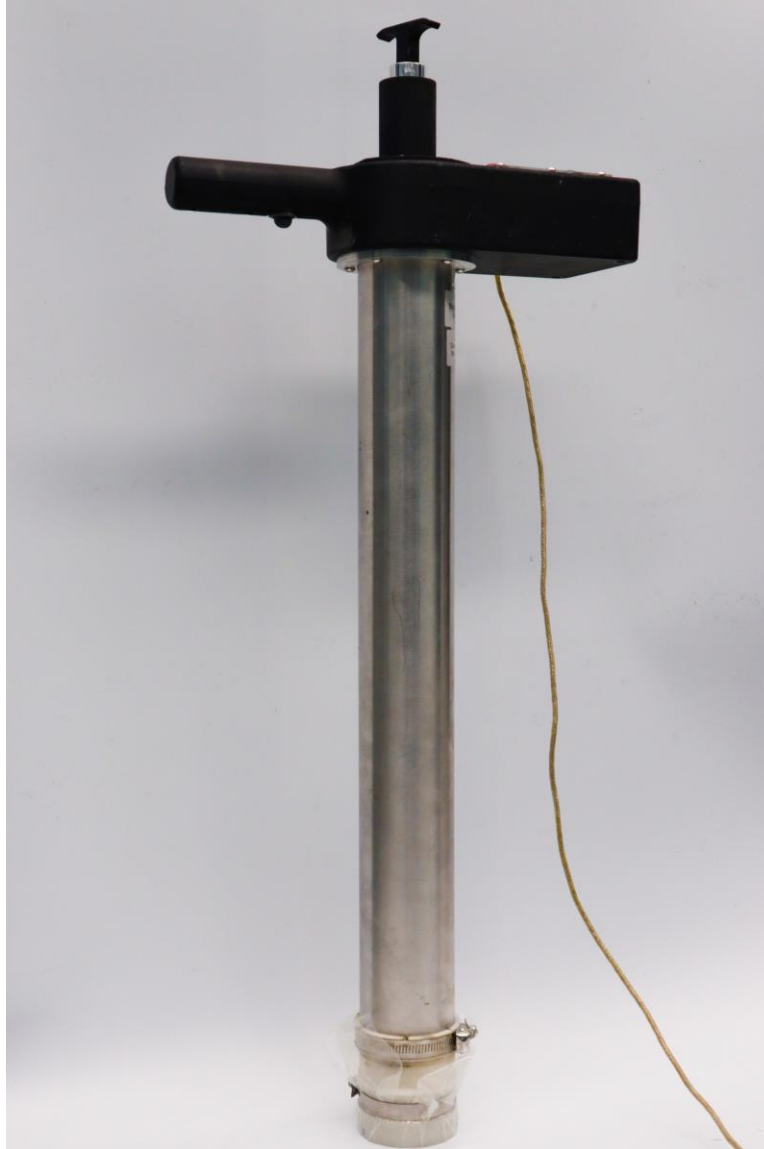


How does it work?

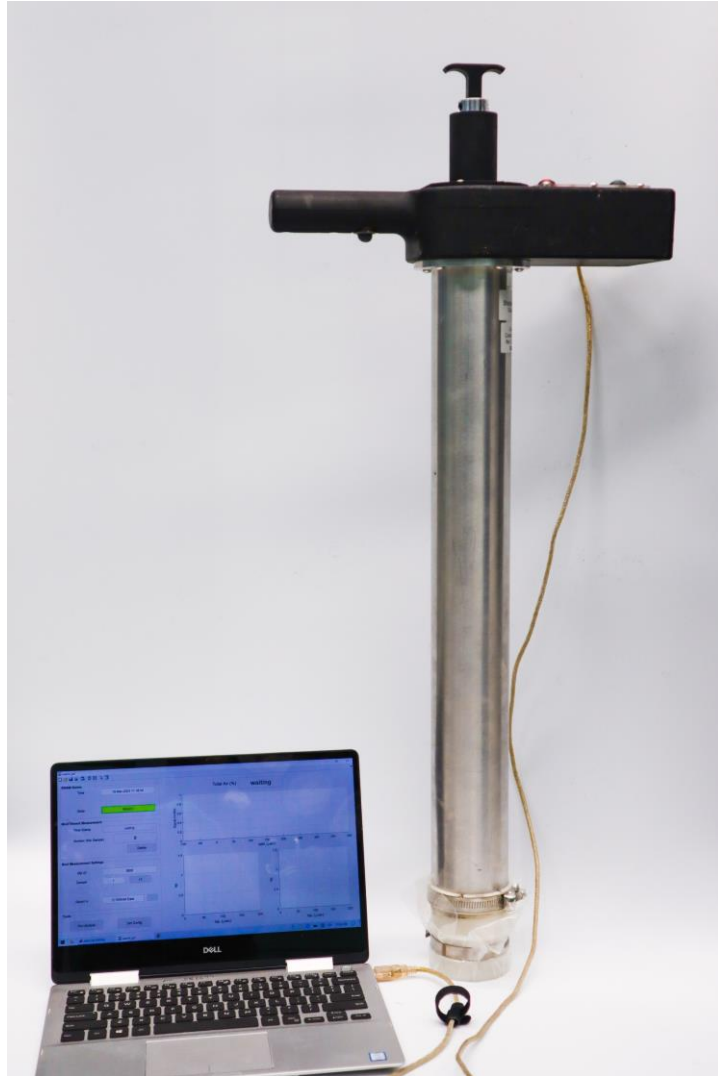
**Peak Acceleration:
Total Air Volume**

**Time to Peak Acceleration:
Air Void Size**

The Instant Air Meter (Creare, LLC)



Tethered Operation





UNIQUE

JUST BECAUSE YOU ARE UNIQUE DOES NOT MEAN YOU ARE USEFUL



Peter Taylor
ptaylor@dot.gov



Robert Spragg
Robert.Spragg@dot.gov

FHWA's Low Carbon Transportation Materials Program



LOW CARBON
TRANSPORTATION
MATERIALS

Disclaimer

- Information presented here is preliminary.
- Program elements are working through approval right now.

IRA Section 60506 (23 U.S.C. 179)

- Low Carbon Transportation Materials and Products
- Amount: \$2 billion to remain available until September 30, 2026.
- Agency: Federal Highway Administration.
- Purpose: The purpose of the program is to reimburse or provide incentives to eligible recipients for the use, in projects, of construction materials and products that have substantially lower levels of embodied greenhouse gas emissions.

Who is eligible?

- a State
- a unit of local government
- a political subdivision of a State
- a territory of the United States
- an entity described in 23 U.S.C. 207(m)(1)(E) (Federally recognized Indian Tribe)
- a recipient of funds under 23 U.S.C. 203 (Federal Land Management Agency)
- a Metropolitan Planning Organization as defined in 23 U.S.C. 134(b)(2)
- a special purpose district or public authority with a transportation function

One application per
agency

What is a
“substantially lower
carbon material”?

What types of
activities will this
program fund?

New materials and/or practices can be “risky” for an agency. How does the program address risk?

How can my agency
apply?

Why should my
agency apply?

How does this
program impact
contractors?

Other questions?

[***fhwa.dot.gov/lowcarbon***](https://www.fhwa.dot.gov/lowcarbon)



LOW CARBON
TRANSPORTATION
MATERIALS