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FHWA Program Update

National Concrete Consortium Spring 2022 Meeting

April 5, 2022

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2022

- New York
- South Carolina
- Wyoming
- North Dakota
- Idaho
- Minnesota (MnROAD)
- Oklahoma*
- Eastern Federal Lands Highway Division*
- Nebraska*
- Utah*
- Nebraska Concrete Paving Assoc.
- Florida Pavewise Conference
- Technology Tour Across Ohio
- Indiana ASCE
- WV Roadway Management Conference
- NY Local Bridge Conference

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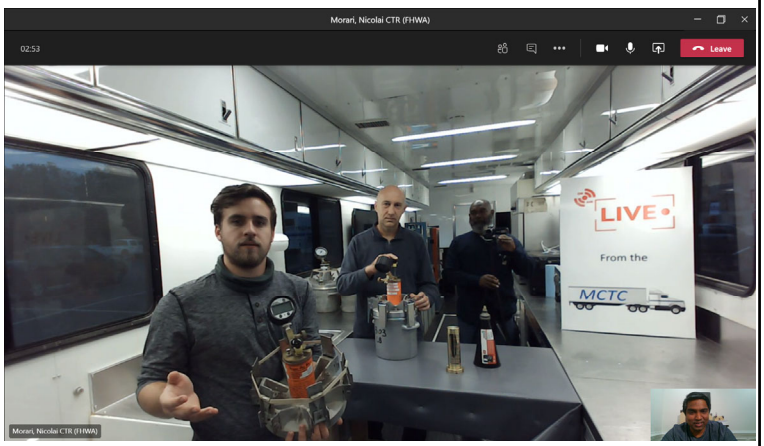
"Live From the MCTC" Training/Workshops

- Super Air Meter (SAM)
- Surface/Bulk Resistivity
- Maturity
- Box Test/V-Kelly
- Semi-adiabatic calorimeter
- Phoenix (fresh water content)
- Pulse Induction Technology (MIT-SCAN-T3)
- MIT-DOWEL-SCAN
- HIPERPAV®
- Optimized Gradation software



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MCTC Virtual Sessions (2020-2021)

Technology Tour Across Ohio – 2 weeks, 6 cities, 13 sessions

College Program

- QC in Practice
- Concrete Technologies
- MCTC/Performance Engineered Mixtures (PEM)

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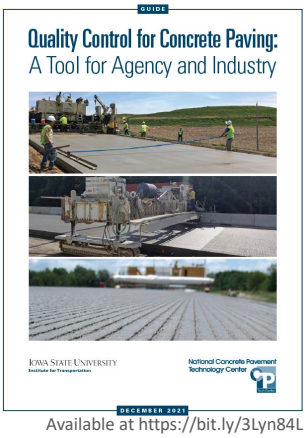
New Tool

- Tech Briefs being developed
- Workshop
  - Agency focused
  - 1/2-3/4 day
  - Combined with performance specification workshop?
- Industry training
  - American Concrete Pavement Association (ACPA)
  - Portland Cement Association (PCA)
  - National Ready Mixed Concrete Association (NRMCA)



Available at https://bit.ly/3Lyn84L

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FHWA-Oregon State Meeting (December 2021)

- Surface Resistivity = Bulk Resistivity
- Curing conditions at agency discretion
  - Understand impacts
  - Be consistent
  - Caution: data comparison and specification development
- 28 vs. 56 day testing
- Specifications and practice
  - F for mixture prequalification/approval
  - Resistivity for quality control (QC) and acceptance
- Sensor development

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USDOT SBIR Program

- Small Business Innovation Research
- Current Projects
  - Fly Ash and Air Entrainer Interaction
  - Rapid Analysis of Air Void Quality In Concrete
  - Pore Solution Resistivity Sensor
  - Curing Quantification
- Some teams might be looking for partners
- Future showcasing via Turner-Fairbank Highway Research Center (TFHRC) and MCTC

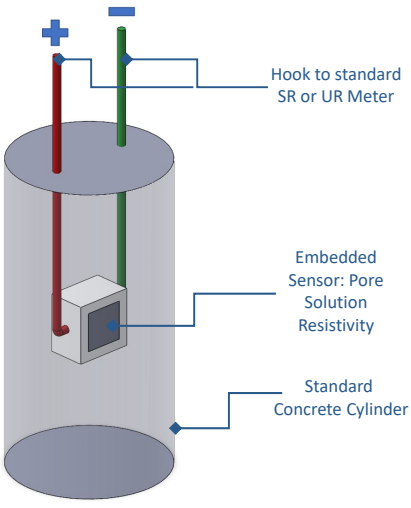

Image Source: Callentis.io

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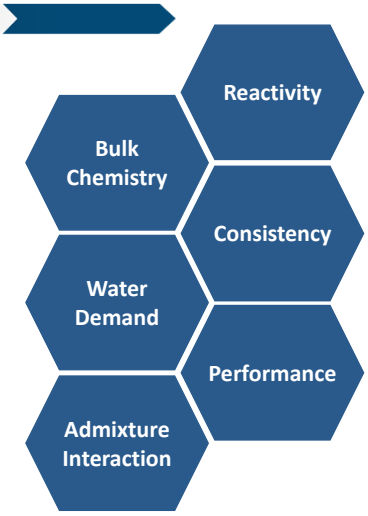
Exploratory Advanced Research (EAR)

- Production of Class C and Class F fly ashes are decreasing.
- The future might leverage "boutique solutions."
  - Unique chemistries and reactivity.
  - Not the same consistency we see with traditional supplementary cementitious materials (SCMs).
- EAR, National Cooperative Highway Research Program (NCHRP), and Department of Energy collaborations are giving good information.
- FAA ASR project
- We would be interested to work with an agency looking at non-conventional sources.



Performance in Concrete

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PEM and Sustainability

- Move to performance-type specifications; eliminate mandatory cement content
- Optimize aggregate gradation to optimize cement content
- Use supplementary cementitious materials
- Use maturity to determine opening times
- Promote quality control at the plant to provide consistent production

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Questions?

Image Pixabay

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