VTRC
Virginia Transportation Research Council

VDOT
Virginia Department of Transportation

We Bring Innovation to Transportation

Michael Sprinkel

H. Celik Ozyildirim, Ph.D., P.E.
Principal Research Scientist, VTRC, VDOT

3-26-2024

Michael Sprinkel

- 1948-2022
- UVA BSCE 1972
- UVA MECE 1975
- 50+ years at VTRC
- Active at ACI and TRB

Met Michael Sprinkel in Early 1970s

- We both were graduate students at UVA
- We both worked for VTRC
- We both were interested in concrete
- My first ACI paper was a joint one with Michael Sprinkel:
  - Durability of Concrete Containing Hollow Plastic Micro Spheres, ACI Journal, Vol. 79, No. 4, July August 1982, pp. 307-311

Attended Meetings Together

Switzerland

Michael Sprinkel

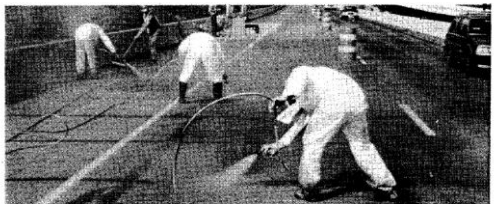
- Accomplished Civil Engineer and Research Scientist
- Earned many prestigious awards
  - 1988 TRB K.B. Woods award
  - 2012 ACI Robert E. Philleo Award
  - 2016 VDOT Commissioners Lifetime Achievement Award
  - 2021 ACI Charles S. Whitney Medal

Michael Sprinkel

- Associate Director guided many successful research projects at VTRC
- Pioneer and industry leader in the maintenance, repair, and rehabilitation of highway bridges and pavements
- Enjoyed hands on field applications of new technology
- Over 100 VTRC and Journal papers
- Prepared many specification for VDOT

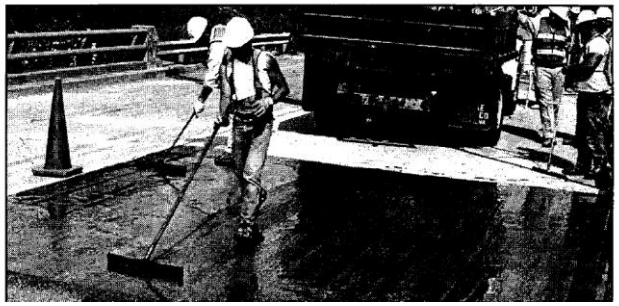
Repair and Rehabilitation

A MANUAL FOR THE REPAIR AND PROTECTION OF HYDRAULIC CEMENT CONCRETE BRIDGE DECKS



1990

REPAIR AND PROTECTION OF HYDRAULIC CEMENT CONCRETE BRIDGE DECKS



1994

Rapid Concrete Bridge Deck Protection, Repair and Rehabilitation

Michael M. Sprinkel
Angela R. Sellars
Virginia Transportation Research Council
Charlottesville, Virginia

Richard E. Weyers
Virginia Polytechnic Institute and State University
Blacksburg, Virginia

shrp
Strategic Highway Research Program
National Research Council
Washington, DC 1993

At the Meeting

Michael in the Field

Substructure Repairs

Corrosion in the Tunnel

Bonded Overlay

Surveys for Delaminated Areas

Inspecting Strands

His Contributions to Concrete Technology

- Air entrainment
- HRWRA
- Polymers for cracks and overlays
- High early strength concretes using rapid setting cements
- Corrosion resistant reinforcement
- Strands in ducts and grouts

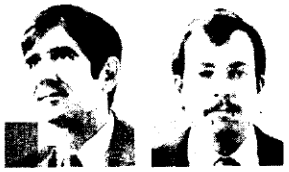
Air Entrainment

- Hollow plastic microspheres can produce satisfactory freeze-thaw resistance.

ACI JOURNAL TECHNICAL PAPER

Title no. 79-31

Durability of Concrete Containing Hollow Plastic Microspheres



by Celik Ozyildirim and Michael M. Sprinkel

1982

Early Work on HRWRA

- Segregation
- Slump loss
- Control of air
- Permission should be granted on a case-by-case bases. Emphasized the importance of trial batching

FINAL REPORT

EFFECTIVE FIELD USE OF HIGH-RANGE, WATER-REDUCED CONCRETE

by

Michael M. Sprinkel
Research Scientist

1981

Polymers for Filling and Sealing Cracks

- High molecular weight methacrylate, epoxy, and urethane

Polymer Overlays

- Epoxy concrete overlays

First LMC in 1969

- Latex modified concrete

HES Concretes With Rapid Setting Cements

- Used in
  - Patches
  - Overlays

First LMCVE in 1997

HES Concretes With Rapid Setting Cements

- Rapid setting cements: 2,500 psi in 3 hrs

CRR vs ECR

- Michael recognized the limitations of epoxy coated reinforcing (ECR) steels in bridge structures.
- He acted as the champion within VDOT to replace ECR with corrosion resistant reinforcing steel (CRR).
- His efforts have resulted in the successful use of CRR since 2008.

ECR Failure

- ECR deck reinforcement
- Leaking construction joint failed in 17 years

I-81

Post Tensioning

- Prepackaged high-performance grouts (HPGs)
- Observed that HPG could bleed and segregate, producing soft grout and leaving voids causing corrosion of strands
- While the VDOT experience has identified many issues with grouts and grouting, PT structures continue to provide service.

Closing Remarks

- Michael was an accomplished engineer, research scientist, and administrator. He made significant contributions to bridge and materials advancements around the world. He will be greatly missed.

Thank You.