

2019 National ABC Conference – Pre-Conference Workshop

W-03: Non-Proprietary UHPC for ABC, Part 1: Mix Development and Material Properties

Wednesday, December 11, 2019 – 8:00 a.m. to 12:00 p.m.

Introduction:

Ultra-high-performance concrete (UHPC) has the potential to provide significant benefits in many applications for ABC due to its superior mechanical and durability properties. This workshop covers the basics of non-proprietary UHPC mix development, material properties, and applications of non-proprietary UHPC mix designs for ABC. It includes presentations on the need for non-proprietary UHPC, mix design development and material selection, non-proprietary UHPC material properties, effect of regionally available materials on mix performance, results of ongoing research sponsored by the ABC-UTC on structural behavior and durability of non-proprietary UHPC, and a summary of research conducted by other states and entities.

Workshop Organizer and Moderator:

Royce Floyd, P.E., Ph.D., University of Oklahoma

Program:

8:00 a.m.	Welcome and Introduction to Workshop	Atorod Azizinamini, Ph.D., P.E.
8:15 a.m.	UHPC Applications and Need for Non-Proprietary UHPC in ABC	Atorod Azizinamini, Ph.D., P.E.
8:35 a.m.	Non-Proprietary UHPC Mix Design and Material Selection	Jeffery Volz, S.E., P.E., Ph.D.
9:10 a.m.	Material and Bond Properties of “ABC-UTC Non-Proprietary UHPC Mix”	Royce Floyd, P.E., Ph.D.
9:40 a.m.	“ABC-UTC Non-Proprietary UHPC Mix” Durability Considerations	Behrouz Shafei, Ph.D.
10:00 a.m.	Break	
10:30 a.m.	“ABC-UTC Non-Proprietary UHPC Mix” Deck Panel Joint Performance	Mohamed Moustafa, Ph.D., P.E.
10:50 a.m.	“ABC-UTC Non-Proprietary UHPC Mix” Shear Behavior	Paolo Calvi, Ph.D. John Stanton, Ph.D.
11:10 a.m.	Effect of Regional Materials on “ABC-UTC Non-Proprietary UHPC Mix”	David Garber, Ph.D., P.E.
11:30 a.m.	Non-Proprietary UHPC Across the United States	Royce Floyd, P.E., Ph.D.
12:00 p.m.	Adjourn	

Speakers & Bios, W-03: Non-Proprietary UHPC for ABC, Part 1: Mix Development and Material Properties

Royce Floyd, P.E., Ph.D., rfloyd@ou.edu (**Organizer & Moderator**)

Royce is an Associate Professor in the School of Civil Engineering and Environmental Science at the University of Oklahoma. His research interests include material property characterization and applications of innovative concrete materials, bond of prestressing strands, prestress losses, camber, and shear behavior of prestressed concrete members, and internal curing using lightweight aggregates. He is currently leading the ABC-UTC effort investigating non-proprietary UHPC.

Atorod Azizinamini, Ph.D., P.E., aazizina@fiu.edu

Atorod is the Vasant H. Surti Professor of Civil Engineering and is the Director of Accelerated Bridge Construction University Transportation Center; Director of the Moss School of Construction, Infrastructure, and Sustainability; and the Director of Preeminent Institute for Resilient and Sustainable Coastal Infrastructure at Florida International University. He has led several major multi-disciplinary bridge engineering-related initiatives and has developed several bridge engineering products/systems that are being used nationally and internationally.

Paolo Calvi, Ph.D., pmc85@uw.edu

Paolo is an Assistant Professor in the Department of Civil and Environmental Engineering. His current research studies include development of mechanical models to estimate the residual strength of RC and PC bridge structures. He designed and supervised construction of the UW Panel Element Tester, which is the first of its kind to be available on the west coast of the US. He is a registered Professional Engineer in Italy.

David Garber, Ph.D., P.E., dgarber@fiu.edu

David is an Assistant Professor of Structural Engineering in the Civil and Environmental Engineering Department at Florida International University. His research focus has been in the areas of time dependent behavior in prestressed concrete members and shear behavior in reinforced concrete deep beams and prestressed members. He is author or coauthor of a number of peer reviewed journal articles in both of these areas.

Mohamed Moustafa, Ph.D., P.E., mmoustafa@unr.edu

Mohamed is an Assistant Professor in the Department of Civil & Environmental Engineering at the University of Nevada, Reno. Mohamed has more than 12 years of experience in mechanics and design of reinforced concrete structures, multi-scale experimental testing, structural and performance-based design for mitigating hazards, advanced monitoring techniques, and finite element and computational modeling with application to buildings, bridges, and electrical power equipment and infrastructure.

Behrouz Shafei, Ph.D. shafei@iastate.edu

Behrouz is an Assistant Professor in the Civil, Construction and Environmental Engineering Department at Iowa State University. His research interests are in vulnerability assessment of structures under mechanical and environmental stressors, nano-scale investigation of cement-based materials, evaluation of uncertainties involved in aging mechanisms, practical implementation of advanced statistical approaches, condition assessment of deteriorating structural components, and mitigation of disasters in infrastructure components.

John Stanton, Ph.D., Stanton@uw.edu

John is the Thomas & Marilyn Nielsen Professor in Engineering in the Civil and Environmental Engineering Department at the University of Washington. He worked in design practice for six years in Britain, France and Canada before joining the University of Washington. He has taught and conducted research in several areas of structural engineering, focusing primarily on seismic engineering issues.

Jeffery Volz, S.E., P.E., Ph.D., volz@ou.edu

Jeff is a Professor in the School of Civil Engineering and Environmental Science and is Director of the Donald G. Fears Structural Engineering Laboratory at the University of Oklahoma. His research interests are primarily in the combination of structural engineering and material science aimed at improving building and bridge structural systems, particularly in regard to sustainability and innovative materials. He is currently chair of ACI-ASCE Joint Committee 423 Prestressed Concrete.