



Fall 2019 | Cincinnati

# The Concrete Convention and Exposition

# PROGRAM BOOK

**October 20-24, 2019**

Duke Energy Convention Center & Hyatt Regency Cincinnati  
Cincinnati, OH, USA

# Convention Sponsors

Sponsors are listed as of 9/25/19

## Mississippi River Sponsors



Baker Concrete Construction



Greater Miami Valley Chapter – ACI

## Ohio River Sponsors



Anderson Concrete Corp.



Cemex



LafargeHolcim

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BASF Corporation



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Lithko Contracting, LLC



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RMD Kwikform



Ruttura & Sons Construction Co.



Terracon Consultants, Inc.



Webcor Builders

## Great Miami River Sponsors



Advance Ready Mix  
Concrete, Inc.



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Messer Construction Co.



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Western Nevada  
Chapter – ACI



Quebec and Eastern  
Ontario Chapter – ACI



San Antonio Chapter – ACI



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Services, LLC



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Chapter – ACI



Wiss, Janney, Elstner  
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## Little Miami River Sponsors

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Carolinas Chapter – ACI  
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Central Ohio Chapter – ACI  
Contractors Materials Company

Greater Michigan Chapter – ACI  
Keystone Structural Concrete, LLC  
Las Vegas Chapter – ACI  
New Jersey Chapter – ACI  
Ohio Concrete  
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SMART Building Supply  
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SRM Concrete  
Structural Engineers Association of Ohio  
Turner Construction

## Licking River Sponsors

Arizona Chapter – ACI  
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Eastern Pennsylvania and Delaware Chapter – ACI  
Georgia Chapter – ACI  
GeoTechnology, Inc.

Houston Chapter – ACI  
Illinois Chapter – ACI  
Intermountain Chapter – ACI  
Iowa Chapter – ACI  
Kansas Chapter – ACI  
Louisiana Chapter – ACI  
Maryland Chapter – ACI

Missouri Chapter – ACI  
National Capital Chapter – ACI  
New Mexico Chapter – ACI  
Northeast Ohio Chapter – ACI  
Rocky Mountain Chapter – ACI  
Russtech Inc.  
Silica Fume Association  
St Marys Cement/Votorantim

# Table of Contents

ACI Board of Direction .....	2
ACI President's Welcome .....	2
ACI Sustaining Members.....	3
Concrete Mixer .....	49
Contractors' Day Lunch .....	46
Convention Sponsors .....	Inside Front Cover
Daily Program .....	13
Exhibitor Demonstration Schedule .....	11
Exhibitors .....	10
General Information .....	4
Greater Miami Valley Chapter Convention Committee.....	2
International Lunch.....	30
Meeting Space Maps.....	7
Numerical Committee Meeting Listing .....	17
Opening Reception .....	34
Opening Session and Keynote Presentation .....	34
Sessions & Events .....	26
Student FRP Composites Competition .....	29
Student Lunch .....	39
Where's That Meeting Room?.....	6



CEMEX is a global building materials company that provides high-quality products and reliable service to customers and communities in more than 50 countries throughout the world. Its U.S. network includes 11 cement plants, more than 50 strategically located distribution terminals, 50 aggregate quarries, and more than 270 ready-mix concrete plants. For more information, visit [cemexusa.com](http://cemexusa.com).



## American Concrete Institute Board of Direction

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Cary S. Koczynski

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### Past President Board Members

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Khaled Awad

Michael J. Schneider

### Executive Vice President

Ron Burg

## ACI President's Welcome

ACI Members and Guests:



On behalf of myself and ACI, it is a pleasure to welcome you to Cincinnati, Ohio, and The ACI Concrete Convention and Exposition.

The ACI Concrete Convention and Exposition provides the industry with a professional environment where individuals from across the globe come together to share new ideas and discover innovative ways to use concrete. The ACI Convention offers educational opportunities for personal growth, committee opportunities for technical advancement, and networking opportunities for professional enrichment. The opportunities are numerous, with over 300 committee meetings; 40+ technical sessions; an exciting student competition; and numerous networking events, culminating with the Concrete Mixer at the Union Terminal on Tuesday night. In addition, the industry exposition showcases the products and services of more than 60 companies from around the world! I urge you to make the most of your time here and attend all of these events.

The Greater Miami Valley Chapter Convention Committee has put a great deal of effort into developing a convention program that is both memorable and productive. Please join me in thanking them by stopping by the host chapter desk during the ACI Convention.

None of this could be possible without the aid and support from our outstanding exhibitors and sponsors. Anyone who is wearing an exhibitor badge or sponsor ribbon has played an integral role in the success of this convention. Please be sure to thank them while at the convention and stop by their booths to see the newest products and services on the market today.

On behalf of Bonnie and myself, we are honored and excited to be able to share this week with you, and we hope you will enjoy all that Cincinnati has to offer. Thank you for attending the convention and for your continued involvement in ACI.

Kind Regards,  
Randall W. Poston  
ACI President

## Greater Miami Valley Chapter Convention Committee

### Committee Chair

Tom Dorsey

### Student Program

Mandy Albrecht

### Contractors' Day

Brad Rogers

### Treasurer

Robin Hahn

### Secretary

Tim Schirmann

### Fundraising

Mike Schneider

Lisa Rogers

### Exhibitors

Mark Cooper

### Special Events

Mike Hornback

### Technical Sessions

Julie Cromwell

### Volunteers

Robbie Cherry

### Publicity

Mike Suter

### Guest Programs

Mary Michael Jett













Download the  
**Convention App!**

Search "ACI Convention" on your Apple or Android device.

Already have the app? Simply switch the event to Fall Convention.



# ACI Sustaining Members

 Advanced Construction Technology Services
 American Engineering Testing, Inc.
 American Society of Concrete Contractors
 Arcosa, Inc.
 Ash Grove Cement Co.
 Baker Concrete Construction, Inc.
 Barrier-1 Inc.
 The Chemical Company BASF Admixtures, Inc.
 Bauman Landscape & Construction
 Bentley Systems Inc.
 Boral Resources
 Cantera Concrete Company

 Ceco Concrete Construction
 CHRYSO, Inc.
 Concrete Reinforcing Steel Institute
 Concrete Strategies LLC
 CTLGroup
 Curecrete Distribution, Inc.
 Dayton Superior Corporation
 Doka USA Ltd.
 The Euclid Chemical Company
 Full-Tilt Constructors, Inc.
 Future Tech Consultants
 GCP Applied Technologies
 Keystone Structural Concrete LLC

 SMART CONCRETE® Kryton International Inc.
 LafargeHolcim (US) Inc.
 Lehigh Hanson
 Lithko Contracting, LLC
 Meadow Burke Products Inc.
 Metromont Corporation
 Modern Technology Laboratories
 Municipal Testing Group
 North S.Tarr Concrete Consulting PC
 Oztec Industries, Inc.
 Penetron International Ltd.
 PERI Formwork Systems, Inc.
 Portland Cement Association

 Precast/Prestressed Concrete Institute
 Saudi Building Code
 Seretta Construction Inc.
 Sika Corporation
 Specialty Products Group, Inc.
 STRUCTURAL
 Structural Services, Inc.
 Tekna Chem SPA
 TWC Concrete Services, LLC
 Twining Concrete Insight
 W. R. Meadows, Inc.
 Xypex

## General Information

For detailed program information and program changes, download the Convention App.

### Convention App

Download the ACI Convention App and have all the information you need for the week ahead at your fingertips. Updated schedules, exhibitor and sponsor information, and more are all available through the app. Search “ACI Convention” on your Apple or Android device. Already have the convention app? Simply switch the event to the Fall Convention.

### Schedule Changes

Cancellations, additions, and location changes to the convention schedule will be posted daily on a monitor in the exhibit area, as well as in the convention app.

### Exhibit Hall Refreshments—C-Ballroom Foyer

Beverages are available courtesy of ACI during the following hours:

Saturday	Soda	2:00 pm – 6:00 pm
Sunday – Wednesday	Coffee	7:00 am – 10:00 am
Sunday – Tuesday	Soda	1:00 pm – 4:00 pm

### ACI Store—C-Ballroom Foyer

Visit the ACI Store to receive 10% off ACI publications. To learn more about the new ACI membership benefits and how to become a member, visit the ACI Store. The ACI Store is open during the following hours:

Saturday	2:00 pm – 6:00 pm
Sunday – Tuesday	8:00 am – 5:00 pm
Sunday	7:00 pm – 8:00 pm
Wednesday	8:00 am – 12:00 pm

**ACI University**—A new global and online learning resource providing on-demand access to a wide range of topics on concrete materials, design, and construction. Learn more at the ACI University booth, located near the ACI Store.

**ACI Foundation**—A nonprofit subsidiary of ACI that facilitates industry research, collaboration, and student fellowships/scholarships. Learn more at the ACI Foundation booth, located near the ACI Store.

**Career Center**—ACI’s online job search engine is specifically designed to target jobs in the industry. Learn more at the Career Center, located near the ACI Store.

### ACI Cyber Café and Meeting Spot—C-Ballroom Foyer

Stop by the ACI Cyber Café and Meeting Spot—the perfect place to stay connected with work and family or network with ACI attendees during refreshment breaks. Use the computers to browse the web, print on demand, or catch up on e-mail.

Saturday	2:00 pm – 6:00 pm
Sunday – Tuesday	8:00 am – 5:00 pm
Wednesday	8:00 am – 12:00 pm

### ACI Lunch Concession—C-Ballroom Foyer

Stop by the exhibit hall to grab a quick bite to eat.

Sunday – Tuesday	11:00 am – 2:00 pm
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### Looking for Exercise?\*

Meet up with other ACI attendees in the [Hyatt Main Lobby](#) before heading out for your morning run or walk. Local area maps are available at the hotel concierge desk. All are welcome.

Sunday – Wednesday	5:00 am and 6:00 am
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Morning yoga classes will be offered in [H-Sungarden](#) at the Hyatt Regency for those who are interested in putting a little balance into a hectic week. Led by yoga teacher Kimberly Kayler, this intro to yoga class requires no experience. Registration is not required, and a limited quantity of yoga mats will be provided.

Monday – Wednesday	6:00 am – 6:45 am
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\*Please consult your physician to determine if you are fit for this type of activity. Run/walk at your own risk.

### Session Handouts On Demand

Handouts are available from speakers who have elected to provide and post them to the ACI website. Stop by the Cyber Café or go to [www.aciconvention.org/handouts](http://www.aciconvention.org/handouts) to download or print a copy of the handouts for the sessions you plan to attend. If you do not find a handout for a particular session, please contact the speaker for more information.

### Suitcasing

Attendees, sponsors, or exhibitors found to be “suitcasing” (soliciting business in session and committee meeting rooms, aisles, or the booth of another exhibitor) will be asked by staff to cease this practice. Should this continue, they will be asked to leave the show floor immediately and will forfeit any exhibitor points earned for that show.

### Local Information—C-2nd Floor South Concourse



The Greater Miami Valley Chapter Convention Committee members will be happy to answer general convention questions and provide information about the local area. Stop by the information desk during the following hours:

Saturday	2:00 pm – 5:00 pm
Sunday – Tuesday	8:00 am – 5:00 pm

### Anti-Harassment Policy

It is the policy of the American Concrete Institute (ACI) that all participants in ACI and its subsidiaries’ activities and events will enjoy an environment free from all forms of harassment and retaliation. Harassment, sexual or otherwise, is a form of misconduct that undermines the integrity of ACI activities and events and violators of this policy will be subject to discipline. To view ACI’s Anti-Harassment policy in its entirety, please visit [www.concrete.org/event/policy.aspx](http://www.concrete.org/event/policy.aspx).

# General Information

## Hyatt Regency Cincinnati

### Red Roost Tavern

Hours: Daily 6:30 am – 11:00 am, 11:30 am – 2:30 pm,  
5:00 pm – 12:00 am

### The Bar at Red Roost Tavern

Hours: Daily 6:30 am – 12:00 am

### The Market

Hours: Daily 6:00 am – 8:00 pm

## Hilton Cincinnati Netherland Plaza

### Orchids at Palm Court

Hours: Sunday – Thursday 5:30 pm – 9:00 pm,  
Friday – Saturday 5:30 pm – 10:00 pm

### The Bar at Palm Court

Hours: Monday – Thursday 11:00 am – 12:00 am,  
Friday – Saturday 11:00 am – 1:00 am,  
Sunday 5:00 pm – 12:00 am

### The Grille at Palm Court

Hours: Monday – Saturday 6:30 am – 10:30 am,  
Sunday 6:30 am – 9:30 am

## Duke Energy Convention Center

### Espresso Café

Hours: Daily 7:00 am – 5:00 pm (Hours subject to change)

Please visit <https://cincinnatiusa.com/restaurants/all> to view additional restaurants and hours in Cincinnati.

## Continuing Education



ACI is a continuing education provider for the American Institute of Architects (AIA) and the International Code Council (ICC). All sessions

approved by AIA or ICC are noted with AIA and ICC logos and the number of hours.

## Earn CEUs/PDHs for Session Attendance

Attend the entire duration of a session and record the codes given out during the session using the spaces provided next to the session details in the program book. In most cases, one contact hour is equal to one Professional Development Hour (PDH). Check with your state Board for acceptance criteria. **Please note: ACI does not track and cannot provide documentation confirming attendee participation or attendance at any ACI session held during the convention.**

For attendance certificates:

1. Visit [www.concrete.org](http://www.concrete.org) and sign in.
2. Hover over **My ACI** and click on **My ACI CEU/PDH**.
3. Select the convention, day, and title of the session for which you are submitting session codes.
4. After successfully submitting the session codes, your certificate will be available under the session title.

If you earned a certificate for a session and would like ACI to report your CEUs/PDHs to the Florida Board of Professional Engineers or AIA, e-mail your Professional Engineer's or Architecture license number to Eva Korzeniewski at [emk@concrete.org](mailto:emk@concrete.org).

## Speaker Ready Room—C-209

The Speaker Ready Room is available to moderators, speakers, and committee Chairs during the following hours:

Saturday	2:00 pm – 6:00 pm
Sunday – Tuesday	7:00 am – 6:00 pm
Wednesday	7:00 am – 2:00 pm

All speakers are requested to check in at the Speaker Ready Room 1 day prior to their session to ensure that their presentations have been uploaded and work properly on the ACI computers.

*Please note: speakers participating in a Mini Session cannot check their presentation into the Speaker Ready Room—they must bring their presentation with them to the Mini Session.*

## Guest-Only Events

Please note that the guest events below are for registered guests only. To be a registered guest, a guest registration must accompany an attendee registration.

### Guest Hospitality—H-Findlay

Sunday – Wednesday, 7:00 am – 10:00 am  
Coffee, tea, and pastries will be available for guests each morning (Sunday – Wednesday). You must be a registered guest to attend.

### Guest Lounge—H-Findlay

10:00 am – 5:00 pm Sunday, Tuesday, and Wednesday  
10:00 am – 2:30 pm Monday  
Stop by the Guest Lounge to relax and meet other ACI guests. Guests can enjoy the Guest Lounge Sunday-Wednesday.

### Guest Overview—H-Findlay

Sunday, October 20, 8:00 am – 9:00 am  
Acquaint yourself with the week ahead in Cincinnati. Learn about the exciting things to do in and around the city.

### Guest Social—H-Findlay

Monday, October 21, 3:30 pm – 5:00 pm  
ACI invites all convention guests to the Guest Social hosted by Bonnie Poston. You don't want to miss an opportunity to catch up with old friends, get to know other convention guests, and enjoy light refreshments. A guest name badge is required to attend this event.

## The Concrete Convention

### Spring 2020 | Rosemont/Chicago, IL— C-2nd Floor South Concourse



Mark your calendars for The Concrete Convention in Rosemont/Chicago, IL, March 29-April 2, 2020, at the Hyatt Regency O'Hare. Stop by the Illinois Chapter Convention Committee desk Saturday through Tuesday to learn more about the convention!

# Where's That Meeting Room?

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Duke Energy Convention Center	
Room Name	Level
C-200	Second Floor
C-201	
C-202	
C-203	
C-204	
C-205	
C-206	
C-207	
C-208	
C-209	
C-210	
C-211	
C-212	
C-230	
C-231	
C-232	
C-233	
C-234	
C-235	
C-236	
C-237	
C-238	
C-250	
C-251	
C-252	
C-260	
C-261	
C-262	
C-263	
C-264	
C-Grand Ballroom A	Third Floor
C-Ballroom Foyer	
C-Junior Ballroom A	
C-Junior Ballroom B	
C-Junior Ballroom C	
C-Junior Ballroom D	

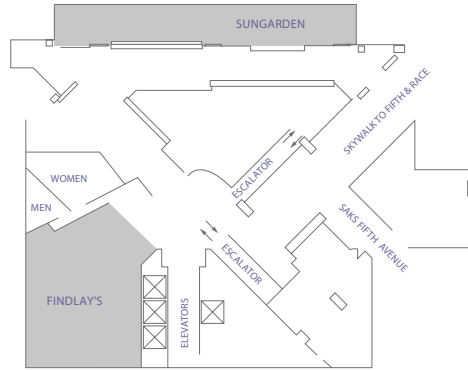
Hyatt Regency Cincinnati	
Room Name	Level
H-Sungarden	Second Floor
H-Findlay's	
H-Buckeye A	Third Floor
H-Buckeye B	
H-Bluegrass A	
H-Bluegrass B	
H-Regency A	
H-Regency B	
H-Regency C	
H-Regency E	Fourth Floor
H-Regency F	
H-Hoosier A	
H-Hoosier B	
H-Wolverine A	
H-Wolverine B	
H-Board of Directors	
H-Mountaineer	



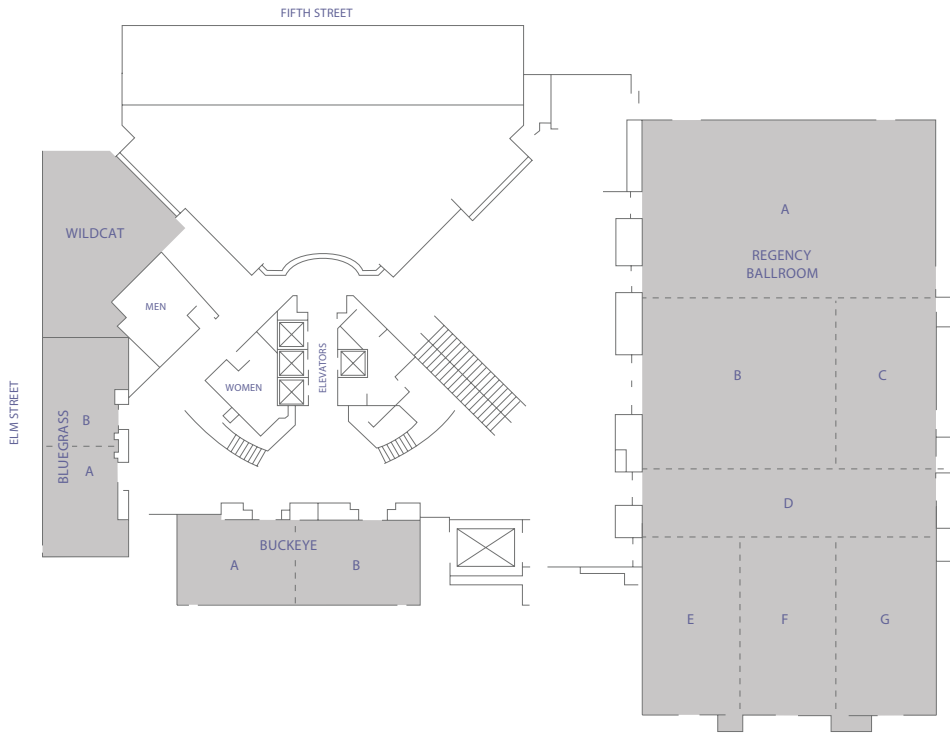
# Meeting Space Map

## Hyatt Regency Cincinnati

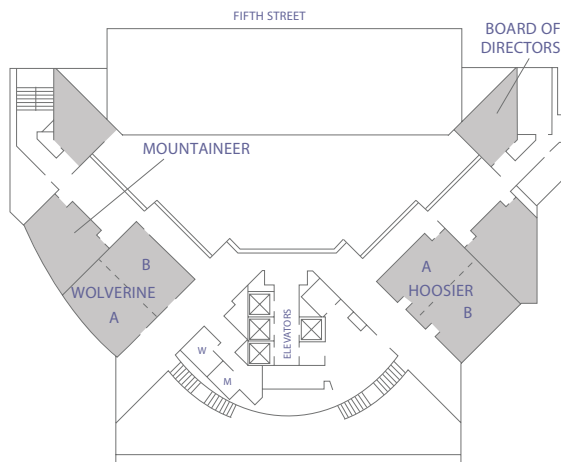
### SECOND FLOOR



### THIRD FLOOR



### FOURTH FLOOR



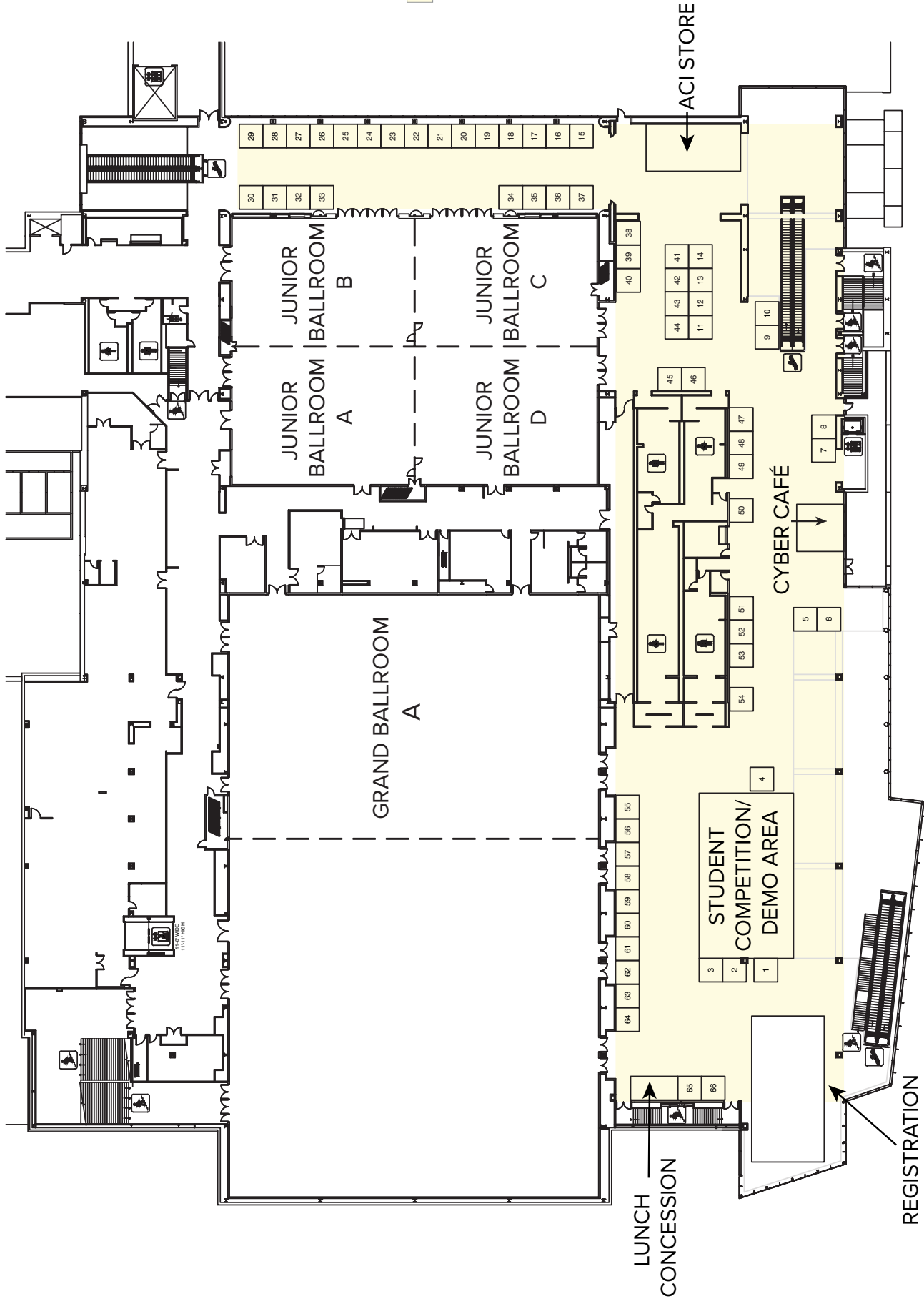
Depart Hyatt Regency lobby (first floor) to get to convention center.



# Meeting Space Map

## Floor 3 and Exhibit Area Duke Energy Convention Center

 = Exhibit hall



# Exhibitors

ACI would like to thank all exhibitors for their participation in and support of The ACI Concrete Convention and Exposition. To learn more about each of these exhibitors, stop by their booth or visit the convention app.

## Exhibit Hours – C-Ballroom Foyer

Sunday – Tuesday 8:00 am – 5:00 pm

<b>ADAPT Visicon</b> <a href="http://www.adaptsoft.com">www.adaptsoft.com</a>	<b>Booth #24</b>	<b>Germann Instruments</b> <a href="http://www.germann.org">www.germann.org</a>	<b>Booth #55 &amp; 56</b>
<b>American Galvanizers Association</b> <a href="http://www.galvanizeit.org">www.galvanizeit.org</a>	<b>Booth #12</b>	<b>Gilson Company, Inc.</b> <a href="http://www.globalgilson.com">www.globalgilson.com</a>	<b>Booth #3</b>
<b>AOMS Technologies</b> <a href="http://www.aoms-tech.com">www.aoms-tech.com</a>	<b>Booth #10</b>	<b>Green Umbrella</b> <a href="http://www.greenumbrellasystems.com">www.greenumbrellasystems.com</a>	<b>Booth #28</b>
<b>Arcosa Lightweight</b> <a href="http://www.arcosalightweight.com">www.arcosalightweight.com</a>	<b>Booth #2</b>	<b>Gunite Supply &amp; Equipment</b> <a href="http://www.airplaco.com">www.airplaco.com</a>	<b>Booth #13</b>
<b>Baker Concrete Construction</b> <a href="http://www.bakerconcrete.com">www.bakerconcrete.com</a>	<b>Booth #65 &amp; 66</b>	<b>Headed Reinforcement Corp.</b> <a href="http://www.hrc-usa.com">www.hrc-usa.com</a>	<b>Booth #51</b>
<b>BarSplice Products Inc.</b> <a href="http://www.barsplice.com">www.barsplice.com</a>	<b>Booth #48</b>	<b>Humboldt Mfg. Co.</b> <a href="http://www.humboldtmfg.com">www.humboldtmfg.com</a>	<b>Booth #44</b>
<b>BASF Corporation</b> <a href="http://www.master-builders-solutions.basf.us">www.master-builders-solutions.basf.us</a>	<b>Booth #47</b>	<b>Imerys</b> <a href="http://www.imerys.com">www.imerys.com</a>	<b>Booth #52</b>
<b>Bekaert Corporation</b> <a href="http://www.bekaert.com">www.bekaert.com</a>	<b>Booth #32</b>	<b>International Concrete Repair Institute</b> <a href="http://www.icri.org">www.icri.org</a>	<b>Booth #8</b>
<b>BoMetals, Inc.</b> <a href="http://www.bometals.com">www.bometals.com</a>	<b>Booth #45</b>	<b>International Zinc Association</b> <a href="http://www.zinc.org">www.zinc.org</a>	<b>Booth #23</b>
<b>Buzzi Unicem USA</b> <a href="http://www.buzziunicemusa.com">www.buzziunicemusa.com</a>	<b>Booth #34</b>	<b>Irving Materials, Inc.</b> <a href="https://irvmat.com">https://irvmat.com</a>	<b>Booth #36</b>
<b>Červenka Consulting</b> <a href="http://www.cervenka.cz">www.cervenka.cz</a>	<b>Booth #27</b>	<b>JSW Stud Rails - Jobsite Stud Welding</b> <a href="http://www.jobsitestud.com">www.jobsitestud.com</a>	<b>Booth #22</b>
<b>CMEC, Inc.</b> <a href="http://www.cmec.org">www.cmec.org</a>	<b>Booth #5</b>	<b>Kestrel Weather Meters</b> <a href="http://www.kestrelmeters.com">www.kestrelmeters.com</a>	<b>Booth #19</b>
<b>COMMAND Center</b> <a href="http://www.commandcenterconcrete.com">www.commandcenterconcrete.com</a>	<b>Booth #53</b>	<b>Kryton International Inc.</b> <a href="http://www.kryton.com">www.kryton.com</a>	<b>Booth #33</b>
<b>Concrete Sealants, Inc.</b> <a href="http://www.conseal.com">www.conseal.com</a>	<b>Booth #40</b>	<b>Lehigh Hanson</b> <a href="http://www.lehighhanson.com">www.lehighhanson.com</a>	<b>Booth #4</b>
<b>Concrete Sensors</b> <a href="http://www.concretesensors.com">www.concretesensors.com</a>	<b>Booth #1</b>	<b>M.A. Industries, Inc.</b> <a href="http://www.maind.com">www.maind.com</a>	<b>Booth #59</b>
<b>Con-Cure</b> <a href="http://www.concure.com">www.concure.com</a>	<b>Booth #61</b>	<b>MAPEI</b> <a href="http://www.mapei.com">www.mapei.com</a>	<b>Booth #54</b>
<b>Contractors Materials Co.</b> <a href="http://www.cmcmmi.com">www.cmcmmi.com</a>	<b>Booth #63</b>	<b>Microban International</b> <a href="http://www.microban.com">www.microban.com</a>	<b>Booth #17</b>
<b>Controls Group USA Inc.</b> <a href="http://www.controls-usa.com">www.controls-usa.com</a>	<b>Booth #7</b>	<b>Myers Construction Materials Testing Equipment</b> <a href="http://www.myerstest.com">www.myerstest.com</a>	<b>Booth #18</b>
<b>CRC Press Taylor and Francis</b> <a href="http://www.crcpress.com">www.crcpress.com</a>	<b>Booth #43</b>	<b>NITROcrete</b> <a href="http://www.nitrocrete.com">www.nitrocrete.com</a>	<b>Booth #49</b>
<b>Cresset Chemical Company</b> <a href="http://www.cresset.com">www.cresset.com</a>	<b>Booth #57</b>	<b>Olson Engineering</b> <a href="http://www.olsonengineering.com">www.olsonengineering.com</a>	<b>Booth #60</b>
<b>The Euclid Chemical Company</b> <a href="http://www.euclidchemical.com">www.euclidchemical.com</a>	<b>Booth #50</b>	<b>PERI Formwork Systems</b> <a href="http://www.peri-usa.com">www.peri-usa.com</a>	<b>Booth #25</b>
<b>FDH Infrastructure Services</b> <a href="http://www.fdh-is.com">www.fdh-is.com</a>	<b>Booth #20</b>	<b>PlanGrid, An Autodesk Company</b> <a href="http://www.plangrid.com">www.plangrid.com</a>	<b>Booth #29</b>
<b>FiberForce by ABC Polymer</b> <a href="http://www.abcpolymerindustries.com">www.abcpolymerindustries.com</a>	<b>Booth #37</b>	<b>Premier CPG</b> <a href="http://www.premiercpg.com">www.premiercpg.com</a>	<b>Booth #46</b>
<b>Forney, L.P.</b> <a href="http://www.forneyonline.com">www.forneyonline.com</a>	<b>Booth #58</b>	<b>Proceq USA, Inc.</b> <a href="http://www.proceq.com">www.proceq.com</a>	<b>Booth #41</b>
<b>GCP Applied Technologies</b> <a href="http://www.gcpat.com/en/solutions">www.gcpat.com/en/solutions</a>	<b>Booth #15</b>		

Exhibitors are listed as of 9/25/19.

# Exhibitors

<b>QuakeWrap, Inc.</b> <a href="http://www.quakewrap.com">www.quakewrap.com</a>	<b>Booth #35</b>	<b>STRUCTURAL TECHNOLOGIES</b> <a href="http://www.structuraltechnologies.com">www.structuraltechnologies.com</a>	<b>Booth #9</b>
<b>Radarview LLC</b> <a href="http://www.radarviewllc.com">www.radarviewllc.com</a>	<b>Booth #11</b>	<b>Tech Sales, LLC</b> <a href="http://www.reigstad.com">www.reigstad.com</a>	<b>Booth #42</b>
<b>Rattle Stick Concrete Tools</b> <a href="http://www.rattlestick.net">www.rattlestick.net</a>	<b>Booth #31</b>	<b>Terracon Consultants, Inc.</b> <a href="http://www.terracon.com">www.terracon.com</a>	<b>Booth #16</b>
<b>Resource International, Inc.</b> <a href="http://resourceinternational.com">resourceinternational.com</a>	<b>Booth #21</b>	<b>Vector Corrosion Technologies</b> <a href="http://www.vector-corrosion.com">www.vector-corrosion.com</a>	<b>Booth #14</b>
<b>Rhino Carbon Fiber</b> <a href="http://www.rhinocarbonfiber.com">www.rhinocarbonfiber.com</a>	<b>Booth #30</b>	<b>Wicktek, Inc.</b> <a href="http://www.densicrete.com">www.densicrete.com</a>	<b>Booth #39</b>
<b>RMD Kwikform</b> <a href="http://www.rmdkwikform.com/us/">www.rmdkwikform.com/us/</a>	<b>Booth #62</b>	<b>Xypex Chemical Company</b> <a href="http://www.xypex.com">www.xypex.com</a>	<b>Booth #64</b>
<b>Silica Fume Association</b> <a href="http://www.silicafume.org">www.silicafume.org</a>	<b>Booth #38</b>	<b>Zircon Corporation</b> <a href="http://www.zircon.com">www.zircon.com</a>	<b>Booth #27</b>
<b>SSRG</b> <a href="http://www.ssr.org">www.ssr.org</a>	<b>Booth #6</b>		

## Exhibitor Demonstration Schedule

TIME	MONDAY, OCTOBER 21
9:00 – 9:30 am	COMMAND Center – COMMAND Center Concrete Temperature and Maturity System
9:45 – 10:15 am	Cervenka Consulting – ATENA Software: Simulation of Reinforced Concrete Structures Driven by On-Site Monitoring
10:30 – 11:00 am	Olson Engineering – Concrete Thickness Gauge & Resonance Test Gauge NDE Devices
11:15 – 11:45 am	Cresset Chemical Company – Creating Perfect Concrete Surfaces - The Importance of Release Agents in Architectural Concrete Production
12:00 – 12:30 pm	Green Umbrella – Innovative Architectural Floor Designs
1:00 – 1:30 pm	Tech Sales, LLC – PS=0, the Pour Strip Alternative with Continuity
3:30 – 4:00 pm	PERI Formwork Systems – PERI DUO Planner: Free formwork layout in 3-D
TIME	TUESDAY, OCTOBER 22
9:45 – 10:15 am	Lehigh Hanson – Cleaner buildings and improved air quality using nano-technology
10:30 – 11:00 am	Imerys – Biogenic Corrosion and Cementitious Materials
11:15 – 11:45 am	Vector Corrosion Technologies – Galvanic Anode/Cathodic Protection Demonstration
12:00 – 12:30 pm	Con-Cure – Concrete Strength Goes Digital

Demonstrations schedule listed as of 9/25/19.  
For the most up-to-date list of exhibitor demonstrations, please check the Convention App.





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# Daily Program

For detailed program information and program changes, download the Convention App.

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C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Friday, October 18, 2019	
<b>6:30 pm - 9:00 pm</b>	
Committee Meetings	See Numeric or Convention App for detailed list
Saturday, October 19, 2019	
<b>7:00 am - 9:00 pm</b>	
Committee Meetings	See Numeric or Convention App for detailed list
<b>8:00 am - 5:15 pm</b>	
✓International Workshop on Structural Concrete	C-206
<b>8:15 am - 9:45 am—Session</b>	
✓International Workshop Session: Changes in ACI 318-19, Part 1 of 2	C-206
<b>10:15 am - 12:00 pm—Session</b>	
✓International Workshop Session: Concrete Construction in the Middle East	C-206
<b>1:30 pm - 3:00 pm—Session</b>	
✓International Workshop Session: Design of Super-tall Reinforced Concrete Structures	C-206
<b>12:00 pm - 1:30 pm</b>	
✓International Workshop Lunch	C-205
<b>2:00 pm - 6:00 pm</b>	
ACI Registration	C-Ballroom Foyer
ACI Store	C-Ballroom Foyer
ACI Cyber Café & Meeting Spot	C-Ballroom Foyer
Afternoon Soda Break	C-Ballroom Foyer
Speaker Ready Room	C-209
<b>3:30 pm - 5:00 pm—Session</b>	
✓International Workshop Session: Changes in ACI 318-19, Part 2 of 2	C-206
<b>6:00 pm - 7:00 pm</b>	
✓International Workshop Reception and Young Practicing Engineer Poster Session	C-205
<b>8:00 pm - 9:30 pm</b>	
Student Networking Reception	C-206
Sunday, October 20, 2019	
<b>5:00 am and 6:00 am</b>	
Run/Walk Meet-Up	H-Depart Hyatt Lobby
<b>7:00 am - 10:00 am</b>	
★ Guest Hospitality	H-Findlay
Coffee Break	C-Ballroom Foyer
<b>7:00 am - 5:30 pm</b>	
Committee Meetings	See Numeric or Convention App for detailed list
<b>7:00 am - 6:00 pm</b>	
Speaker Ready Room	C-209

<b>7:30 am - 5:00 pm</b>	
ACI Registration	C-Ballroom Foyer
<b>8:00 am - 9:00 am</b>	
Convention Orientation Breakfast	C-206
★ Guest Overview	H-Findlay
<b>8:00 am - 10:00 am—Sessions</b>	
ACI 222R: Guide to Protection of Reinforcing Steel in Concrete against Corrosion, Part 1 of 2	C-Junior Ballroom B
National Veterans Memorial and Museum	C-Junior Ballroom D
Simulation of Concrete Flow, Part 1 of 2	C-Junior Ballroom C
<b>8:00 am - 5:00 pm</b>	
ACI Store	C-Ballroom Foyer
ACI Cyber Café & Meeting Spot	C-Ballroom Foyer
Exhibits	C-Ballroom Foyer
<b>9:00 am - 10:00 am—Mini Session</b>	
Design and Construction Trends in Tilt Up	C-232
<b>Approximately 9:00 am - 2:00 pm</b> (confirm time in convention app)	
Student FRP Composites Competition	C-Ballroom Foyer
<b>9:30 am - 11:00 am—Session</b>	
ACI International Forum	C-203
<b>10:00 am - 5:00 pm</b>	
★ Guest Lounge	H-Findlay
<b>10:30 am - 12:30 pm—Sessions</b>	
ACI 222R: Guide to Protection of Reinforcing Steel in Concrete against Corrosion, Part 2 of 2	C-Junior Ballroom B
Simulation of Concrete Flow, Part 2 of 2	C-Junior Ballroom C
UHPC – Innovations and Changes in Structural Design, Part 1 of 3	C-Junior Ballroom D
<b>11:00 am - 2:00 pm</b>	
Lunch concession	C-Ballroom Foyer
<b>11:30 am - 1:30 pm</b>	
✓International Lunch	C-206
<b>1:00 pm - 3:00 pm—Sessions</b>	
Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/Fabric-Reinforced Cementitious Matrix, Part 1 of 3	C-Junior Ballroom C
UHPC – Innovations and Changes in Structural Design, Part 2 of 3	C-Junior Ballroom D
<b>2:00 pm - 3:30 pm—Session</b>	
International Session: Sustainability - Always Advancing	C-Junior Ballroom B
<b>1:00 pm - 4:00 pm</b>	
Afternoon Soda Break	C-Ballroom Foyer

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<b>2:30 pm - 3:30 pm—Mini Session</b>	
High-Strength/Mass Concrete: Challenges and Solutions in the Field	C-204
<b>3:30 pm - 5:30 pm—Sessions</b>	
Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/ Fabric-Reinforced Cementitious Matrix, Part 2 of 3	C-Junior Ballroom C
SDC - Innovations in Concrete Technology	C-Junior Ballroom B
UHPC – Innovations and Changes in Structural Design, Part 3 of 3	C-Junior Ballroom D
<b>4:00 pm - 5:00 pm—Mini Session</b>	
Student Chapter Leadership Workshop	C-200
<b>5:45 pm - 7:00 pm</b>	
Opening Session and Keynote Presentation	C-Grand Ballroom A
<b>7:00 pm - 8:00 pm</b>	
Opening Reception	C-Ballroom Foyer
ACI Store	C-Ballroom Foyer
<b>8:00 pm - 10:00 pm—Sessions</b>	
Hot Topic Session: Innovation and Technology in the Construction and Design Industry	C-Junior Ballroom B
Hot Topic Session: Do We Have a Sustainable and Scalable Material to Address Carbon Steel Corrosion Once and for All?	C-Junior Ballroom C
<b>8:30 pm - 10:00 pm</b>	
Young Professional Networking Event	Rock Bottom Brewery
<b>Monday, October 21, 2019</b>	
<b>5:00 am and 6:00 am</b>	
Run/Walk Meet-Up	H-Depart Hyatt Lobby
<b>6:00 am - 6:45 am</b>	
Morning Yoga Class	H-Sungarden
<b>6:30 am - 8:00 am</b>	
Workshop for Technical Committee Chairs (by invitation only)	C-Grand Ballroom A
<b>7:00 am - 8:30 am</b>	
Speaker Development Breakfast	C-201
<b>7:00 am - 10:00 am</b>	
★ Guest Hospitality	H-Findlay
Coffee Break	C-Ballroom Foyer
<b>7:00 am - 6:00 pm</b>	
Speaker Ready Room	C-209
<b>7:00 am - 7:00 pm</b>	
Committee Meetings	See Numeric or Convention App for detailed list

<b>7:30 am - 5:00 pm</b>	
ACI Registration	C-Ballroom Foyer
<b>8:00 am - 8:30 am</b>	
Coffee at Meeting Spot for first-time attendees	C-Ballroom Foyer
<b>8:00 am - 5:00 pm</b>	
ACI Store	C-Ballroom Foyer
ACI Cyber Café & Meeting Spot	C-Ballroom Foyer
Exhibits	C-Ballroom Foyer
<b>8:30 am - 9:30 am—Mini Session</b>	
Project Files and How Attorneys Will Use Them or Protecting Your Six	C-204
<b>8:30 am - 10:30 am—Sessions</b>	
Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/ Fabric-Reinforced Cementitious Matrix, Part 3 of 3	C-Junior Ballroom C
Research in Progress, Part 1 of 2	C-Junior Ballroom B
What I Wish I Knew: Involvement in ACI as a Young Professional	C-Junior Ballroom D
<b>10:00 am - 2:30 pm</b>	
★ Guest Lounge	H-Findlay
<b>10:30 am - 11:30 am—Session</b>	
ACI Student Forum	C-203
<b>10:30 am - 12:00 pm—Session</b>	
ACI 123 Concrete Research Poster Session	C-Ballroom Foyer
<b>11:00 am - 1:00 pm—Sessions</b>	
Prestressed Concrete with Conventional and Nonconventional Materials, Part 1 of 2	C-Junior Ballroom C
Recent Developments in Bio-Inspired Cementitious Materials	C-Junior Ballroom D
Research in Progress, Part 2 of 2	C-Junior Ballroom B
<b>11:00 am - 2:00 pm</b>	
Lunch concession	C-Ballroom Foyer
<b>11:15 am - 12:15 pm—Mini Session</b>	
Durability of Self-Consolidating Concrete (SCC)	C-206
<b>11:30 am - 1:30 pm</b>	
✓ Student Lunch	C-Grand Ballroom A
<b>1:00 pm - 2:00 pm—Mini Session</b>	
New Approaches to Measuring Pozzolanic Activity	C-232
<b>1:00 pm - 4:00 pm</b>	
Afternoon Soda Break	C-Ballroom Foyer
<b>1:30 pm - 2:00 pm</b>	
Sodas at The Meeting Spot for first-time attendees	C-Ballroom Foyer



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<b>1:30 pm - 2:30 pm—Mini Session</b>	
Reliability and Safety of New and Rehabilitated Concrete Structures	C-233
<b>1:30 pm - 3:30 pm—Sessions</b>	
Cincinnati Children's Hospital Medical Center	C-Junior Ballroom D
Optimizing Workability of Fiber-Reinforced Concrete	C-Junior Ballroom B
Prestressed Concrete with Conventional and Nonconventional Materials, Part 2 of 2	C-Junior Ballroom C
<b>3:00 pm - 5:00 pm</b>	
Mini Taste of Cincinnati	C-Ballroom Foyer
<b>3:30 pm - 5:00 pm</b>	
★ Guest Social	H-Findlay
<b>4:00 pm - 6:00 pm—Sessions</b>	
Fire and Flood Design, Performance, Mitigation, and Strengthening for Concrete Bridges	C-Junior Ballroom B
Innovation in Architectural Precast and Decorative Concrete	C-Junior Ballroom D
Novel Techniques and Advances in Load Testing Concrete Structures	C-Junior Ballroom C
<b>5:00 pm - 6:00 pm</b>	
Women in ACI Reception	C-203
<b>5:00 pm - 6:00 pm—Mini Session</b>	
Concrete with Recycled Materials	C-232
<b>5:30 pm - 10:00 pm</b>	
✓Excellence in Concrete Construction Awards Gala	C-Grand Ballroom A
<b>6:30 pm - 8:30 pm—Session</b>	
123 Forum: Is Ultra-High-Performance Concrete Necessary?	C-Junior Ballroom B
<b>Tuesday, October 22, 2019</b>	
<b>5:00 am and 6:00 am</b>	
Run/Walk Meet-Up	H-Depart Hyatt Lobby
<b>6:00 am - 6:45 am</b>	
Morning Yoga Class	H-Sungarden
<b>7:00 am - 10:00 am</b>	
★ Guest Hospitality	H-Findlay
Coffee Break	C-Ballroom Foyer
<b>7:00 am - 6:00 pm</b>	
Speaker Ready Room	C-209
Committee Meetings	See Numeric or Convention App for detailed list
<b>7:30 am - 5:00 pm</b>	
ACI Registration	C-Ballroom Foyer
<b>8:00 am - 8:30 am</b>	
Coffee at Meeting Spot for first-time attendees	C-Ballroom Foyer

<b>8:00 am - 5:00 pm</b>	
ACI Store	C-Ballroom Foyer
ACI Cyber Café & Meeting Spot	C-Ballroom Foyer
Exhibits	C-Ballroom Foyer
<b>8:30 am - 9:30 am—Mini Session</b>	
Structural Design of ICF Walls and Study of Operational Costs of ICF Apartment Building	C-264
<b>8:30 am - 9:30 am—Session</b>	
Contractors' Day Session: The Future of Building Things, Top Construction Innovation Trends	C-Junior Ballroom B
<b>8:30 am - 10:30 am—Sessions</b>	
Assessment of Concrete Prior to Rehabilitation, Part 1 of 2	C-Junior Ballroom C
Estimating In-Place Concrete Strength: Methods and Applications, Part 1 of 2	C-Junior Ballroom D
<b>9:30 am - 10:30 am—Session</b>	
Contractors' Day Session: Construction Robotics	C-Junior Ballroom B
<b>10:00 am - 5:00 pm</b>	
★ Guest Lounge	H-Findlay
<b>11:00 am - 1:00 pm—Sessions</b>	
Assessment of Concrete Prior to Rehabilitation, Part 2 of 2	C-Junior Ballroom C
Design and Construction of Concrete Streets and Local Roads	C-Junior Ballroom B
Fragility Assessment of Earthquake-Resistant Reinforced Concrete Bridges	C-Junior Ballroom D
<b>11:00 am - 2:00 pm</b>	
Lunch concession	C-Ballroom Foyer
<b>11:30 am - 1:30 pm</b>	
✓Contractors' Day Lunch	C-232
<b>1:00 pm - 4:00 pm</b>	
Afternoon Soda Break	C-Ballroom Foyer
<b>1:30 pm - 2:00 pm</b>	
Sodas at The Meeting Spot for first-time attendees	C-Ballroom Foyer
<b>1:30 pm - 2:30 pm—Mini Sessions</b>	
Residential Foundations: Selecting Soil Loads and Sizing Walls by Two Alternative Methods	C-205
Resilient Concrete Structures in Cincinnati	C-264
<b>1:30 pm - 2:30 pm—Session</b>	
Contractors' Day Session: 2020 A Construction Tech Odyssey	C-Junior Ballroom B
<b>1:30 pm - 3:30 pm—Sessions</b>	
Long-Term Durability of Concrete Bridges	C-Junior Ballroom D
Open Topic Session, Part 1 of 2	C-Junior Ballroom C

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<b>2:00 pm - 3:00 pm—Mini Session</b>	
Emergency Response with CLSM	C-233
<b>2:30 pm - 3:30 pm—Session</b>	
Contractors' Day Session: Reality Capture	C-Junior Ballroom B
<b>4:00 pm - 6:00 pm—Sessions</b>	
Estimating In-Place Concrete Strength: Methods and Applications, Part 2 of 2	C-Junior Ballroom D
Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 1 of 3	C-Junior Ballroom B
Open Topic Session, Part 2 of 2	C-Junior Ballroom C
<b>5:30 pm - 6:30 pm</b>	
Faculty Network Reception	H-Regency E
<b>6:00 pm - 9:00 pm</b>	
Concrete Mixer	Union Terminal Depart Convention Center Main Entrance. (Buses will begin to depart at 5:30 pm)
<b>Wednesday, October 23, 2019</b>	
<b>5:00 am and 6:00 am</b>	
Run/Walk Meet-Up	H-Depart Hyatt Lobby
<b>6:00 am - 6:45 am</b>	
Morning Yoga Class	H-Sungarden
<b>7:00 am - 10:00 am</b>	
★ Guest Hospitality	H-Findlay
Coffee Break	C-Ballroom Foyer
<b>7:00 am - 2:00 pm</b>	
Speaker Ready Room	C-209
✓Concrete Construction Special Inspector Certification Exam	C-250
✓Concrete Transportation Construction Inspector Certification Exam	C-250
✓Concrete Quality Technical Manager Certification Exam	C-250
✓Post-Installed Concrete Anchor Installation Inspector Certification Exam	C-250

<b>7:00 am - 6:00 pm</b>	
Committee Meetings	See Numeric or Convention App for detailed list
<b>8:00 am - 12:00 pm</b>	
ACI Registration	C-Ballroom Foyer
ACI Cyber Café & Meeting Spot	C-Ballroom Foyer
ACI Store	C-Ballroom Foyer
<b>8:30 am - 10:30 am—Sessions</b>	
Concrete Constructability: River of Knowledge	C-Junior Ballroom C
Concrete with Recycled Materials, Part 1 of 2	C-Junior Ballroom D
Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 2 of 3	C-Junior Ballroom B
<b>10:00 am - 5:00 pm</b>	
★ Guest Lounge	H-Findlay
<b>11:00 am - 1:00 pm—Sessions</b>	
Academy of Motion Pictures Museum	C-Junior Ballroom C
Concrete with Recycled Materials, Part 2 of 2	C-Junior Ballroom D
Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 3 of 3	C-Junior Ballroom B
<b>6:30 pm - 8:00 pm</b>	
President's Reception	H-Sungarden
<b>Thursday, October 24, 2019</b>	
<b>8:00 am - 12:00 pm</b>	
Board of Direction	H-Regency EF



# Numerical Committee Meeting Listing

For detailed program information and program changes, download the Convention App.

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
ACIFDD	ACI Foundation Development	Mon	2:00 pm - 4:00 pm	H-Mountaineer
ACIFdn	ACI Foundation	Wed	8:00 am - 11:30 am	C-207
BOD	Board of Direction	Thu	8:00 am - 12:00 pm	H-Regency EF
CAC	Chapter Activities Committee	Mon	2:00 pm - 4:00 pm	C-208
CLC	Construction Liaison Committee	Sun	8:00 am - 10:30 am	C-263
CPC	Certification Programs Committee	Tue	2:00 pm - 5:00 pm	C-236
CRC	Concrete Research Council	Tue	11:00 am - 1:00 pm	C-263
CSAO	Codes and Standards Advocacy and Outreach	Mon	3:30 pm - 5:30 pm	H-Hoosier A
C601-E	Concrete Construction Sustainability Assessor	Tue	7:30 am - 9:00 am	C-231
C601-F	Nondestructive Testing Technician	Mon	1:00 pm - 3:00 pm	C-231
C601-I	Shotcrete Inspector	Sun	1:00 pm - 2:00 pm	H-Hoosier B
C610	Field Technician Certification	Mon	8:00 am - 10:30 am	C-200
C612	Self-Consolidating Concrete Technician Certification	Mon	11:30 am - 1:00 pm	C-251
C620	Laboratory Technician Certification	Tue	8:30 am - 10:00 am	C-250
C621	Cement Tester Certification	Wed	8:30 am - 9:30 am	C-260
C630	Construction Inspector Certification	Mon	1:00 pm - 2:30 pm	H-Regency A
C631	Concrete Transportation Construction Inspector Certification	Tue	10:00 am - 11:30 am	C-250
C640	Craftsman Certification	Sun	11:00 am - 2:00 pm	C-252
C650	Tilt-up Constructor Certification	Sun	4:00 pm - 5:30 pm	H-Hoosier B
C655	Foundation Constructor Certification	Mon	12:30 pm - 2:00 pm	C-235
C660	Shotcrete Nozzleman Certification	Sun	10:00 am - 12:00 pm	C-264
C670	Masonry Technician Certification	Mon	3:00 pm - 4:30 pm	C-231
C680	Adhesive Anchor Installer	Sun	11:30 am - 1:00 pm	C-230
C681	Adhesive Anchor Installation Inspector Certification	Mon	4:30 pm - 5:30 pm	C-231
C690	Concrete Quality Technical Manager Certification	Mon	10:30 am - 11:30 am	C-231
EAC	Educational Activities Committee	Tue	8:00 am - 11:30 am	C-262
E701	Materials for Concrete Construction	Sun	9:00 am - 10:30 am	C-260
E702	Designing Concrete Structures	Mon	8:30 am - 10:30 am	C-204
E703	Concrete Construction Practices	Mon	4:00 pm - 6:00 pm	C-250
E706	Concrete Repair Education	Sun	7:00 am - 9:00 am	C-260
E707	Specification Education	Tue	11:30 am - 1:00 pm	C-262
E710	ACI University Programs	Sun	10:30 am - 12:00 pm	C-260
E905	Training Programs	Sun	9:00 am - 10:00 am	C-211
HTC	Hot Topics Committee	Sun	2:30 pm - 4:00 pm	H-Wolverine A
IAC	International Advisory Committee	Tue	9:30 am - 11:30 am	C-208
IC-Cert	International Certification	Sun	1:30 pm - 3:00 pm	C-262
IC-Conf	International Conferences and Conventions	Mon	7:15 am - 8:30 am	C-237
IPAC	International Project Awards Committee	Wed	9:00 am - 11:00 am	C-252
ISO/TC 71	ISO-TC 71 Advisory Committee	Mon	1:00 pm - 2:30 pm	C-238
MEMC	Membership Committee	Mon	10:00 am - 11:00 am	C-250
SYPAC	Student and Young Professional Activities Committee	Wed	8:00 am - 9:30 am	C-263
S801	Student Competitions	Sun	7:30 am - 9:00 am	C-232
S802	Teaching Methods and Educational Materials	Mon	8:30 am - 9:30 am	H-Hoosier B
S805	Collegiate Concrete Council-CLGE	Sun	4:00 pm - 5:30 pm	C-200
S806	Young Professional Activities	Mon	2:00 pm - 3:30 pm	C-260
TAC	Technical Activities Committee	Fri	6:30 pm - 9:00 pm	H-Wolverine A&B
TAC	Technical Activities Committee	Sat	7:00 am - 6:30 pm	C-211

# Numerical Committee Meeting Listing

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Code	Committee	Day	Time	Room Name
TAC-RG1	TAC Review Group 1	Sat	1:00 pm - 4:00 pm	C-207
TAC-RG2	TAC Review Group 2	Sat	1:00 pm - 4:00 pm	C-208
TAC-RG3	TAC Review Group 3	Sat	1:00 pm - 4:00 pm	C-260
TAC-RG4	TAC Review Group 4	Sat	1:00 pm - 4:00 pm	C-261
TCSC	TAC Construction Standards Committee	Wed	8:30 am - 10:30 am	C-261
TRRC	TAC Repair and Rehabilitation Committee	Tue	7:00 am - 8:30 am	C-252
090-TG16	Technical Exchanges with International Societies & Partners Task Group	Tue	11:30 am - 12:30 pm	C-238
117	Tolerances-Joint ACI-ASCC	Mon	2:00 pm - 6:00 pm	C-201
117	Tolerances-Joint ACI-ASCC	Tue	8:00 am - 12:00 pm	C-206
117-L	Laser Scanning	Tue	1:30 pm - 4:00 pm	C-208
117-N	Tolerance Data	Mon	1:00 pm - 2:00 pm	C-201
120	History of Concrete	Tue	1:30 pm - 3:30 pm	C-264
121	Quality Assurance Systems for Concrete	Mon	10:00 am - 12:00 pm	C-252
122	Energy Efficiency of Concrete and Masonry Systems (Joint ACI-TMS)	Mon	1:00 pm - 3:00 pm	C-237
123	Research and Current Developments	Sun	4:00 pm - 5:30 pm	C-236
124	Concrete Aesthetics	Mon	12:30 pm - 2:00 pm	C-260
130	Sustainability of Concrete	Mon	2:00 pm - 5:00 pm	C-262
130	Sustainability of Concrete	Tue	11:00 am - 1:00 pm	C-236
130-A	Materials	Mon	8:30 am - 10:00 am	C-212
130-H	Climate Change Impacts on the Sustainability of Concrete	Mon	8:30 am - 10:00 am	C-250
130-L	Liaison Subcommittee	Mon	10:00 am - 11:00 am	H-Wolverine B
131	Building Information Modeling of Concrete Structures	Sat	8:00 am - 5:00 pm	C-263
131	Building Information Modeling of Concrete Structures	Tue	3:00 pm - 5:00 pm	C-211
132	Responsibility in Concrete Construction	Sun	2:00 pm - 5:00 pm	C-250
133	Disaster Reconnaissance	Sun	12:30 pm - 3:30 pm	C-212
134	Concrete Constructability	Tue	3:00 pm - 5:00 pm	C-231
201	Durability of Concrete	Tue	8:00 am - 11:00 am	C-205
201-F	Durability in Design Specification	Sun	10:00 am - 12:00 pm	C-212
201-G	Executing Durability in Construction Specification	Mon	11:30 am - 1:00 pm	C-237
201-H	Aggregate Reactions	Sun	12:00 pm - 3:00 pm	C-260
201-TG1	Aggressive Chemicals	Mon	3:00 pm - 4:00 pm	C-252
201-TG2	Physical Salt Attack	Sun	11:00 am - 12:00 pm	C-207
201-TG5	Microbially Induced Corrosion of Concrete	Sun	10:00 am - 11:00 am	C-207
201-TG6	Performance Options for 318 Code Requirements for Concrete Durability	Sun	4:00 pm - 5:00 pm	C-201
207	Mass Concrete	Mon	10:00 am - 1:00 pm	C-205
209	Creep and Shrinkage in Concrete	Mon	10:00 am - 1:00 pm	C-207
209-C	Models Applicability and Uncertainty	Sun	3:30 pm - 4:30 pm	C-261
209-D	Numerical Methods and 3D Analyses	Sun	4:30 pm - 5:30 pm	C-261
209-E	Experimental Methods and Monitoring	Mon	9:00 am - 10:00 am	H-Wolverine B
211	Proportioning Concrete Mixtures	Wed	8:00 am - 10:00 am	C-205
211-A	Proportioning-Editorial	Tue	10:00 am - 12:00 pm	H-Wolverine B
211-M	Aggregate Packing Model	Mon	10:00 am - 11:00 am	C-234
211-N	Proportioning with Ground Limestone and Mineral Fillers	Tue	3:00 pm - 4:00 pm	C-230
211-TG2	Developing & Using a Three Point Curve	Tue	11:30 am - 1:00 pm	H-Wolverine A
212	Chemical Admixtures	Mon	2:00 pm - 5:00 pm	C-202

# Numerical Committee Meeting Listing

For detailed program information and program changes, download the new Convention App.

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
213	Lightweight Aggregate and Concrete	Tue	1:30 pm - 3:30 pm	C-207
213-TG1	Lightweight - Editorial Task Group	Tue	11:00 am - 12:30 pm	C-235
214	Evaluation of Results of Tests Used to Determine the Strength of Concrete	Mon	3:30 pm - 5:30 pm	C-205
214-A	Document Preparation	Mon	12:30 pm - 2:00 pm	H-Wolverine A
215	Fatigue of Concrete	Sun	12:30 pm - 2:30 pm	H-Hoosier A
216	Fire Resistance and Fire Protection of Structures (Joint ACI-TMS)	Mon	10:00 am - 12:00 pm	C-202
221	Aggregates	Tue	11:00 am - 1:30 pm	C-264
222	Corrosion of Metals in Concrete	Tue	2:00 pm - 5:00 pm	C-201
222-TG1	Developing Standardized Tests for Chloride Thresholds	Sun	1:00 pm - 3:00 pm	C-202
223	Shrinkage-Compensating Concrete	Tue	2:00 pm - 5:00 pm	C-262
224	Cracking	Sun	2:30 pm - 5:00 pm	C-252
225	Hydraulic Cements	Mon	1:00 pm - 5:00 pm	C-251
228	Nondestructive Testing of Concrete	Sun	9:30 am - 12:30 pm	C-233
228-B	Visual Inspection	Sun	1:00 pm - 3:00 pm	H-Mountaineer
229	Controlled Low-Strength Materials	Tue	1:00 pm - 4:00 pm	C-233
230	Soil Cement	Tue	8:30 am - 9:30 am	H-Wolverine A
231	Properties of Concrete at Early Ages	Mon	12:30 pm - 2:30 pm	C-250
232	Fly Ash in Concrete	Mon	1:00 pm - 4:00 pm	C-232
233	Ground Slag in Concrete	Tue	2:00 pm - 5:00 pm	C-200



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C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
234	Silica Fume in Concrete	Tue	2:00 pm - 4:30 pm	C-250
236	Material Science of Concrete	Mon	4:30 pm - 5:30 pm	C-206
236-TG1	Advanced Analysis Techniques for Concrete	Sun	3:00 pm - 4:00 pm	H-Mountaineer
237	Self-Consolidating Concrete	Mon	8:15 am - 12:15 pm	C-206
237-TG2	SCC Formwork Pressure TG	Sun	3:00 pm - 5:00 pm	C-260
238	Workability of Fresh Concrete	Tue	8:00 am - 10:00 am	C-230
238-A	Student Workability	Tue	10:00 am - 11:30 am	C-230
239	Ultra-High-Performance Concrete	Mon	3:30 pm - 6:00 pm	C-233
239-C	Structural Design on UHPC	Mon	10:30 am - 12:30 pm	C-204
239-D	Materials & Methods of Construction with UHPC	Mon	1:00 pm - 3:00 pm	H-Regency C
239-E	Educational Outreach	Sun	1:00 pm - 3:00 pm	H-Wolverine B
240	Pozzolans	Mon	10:00 am - 1:00 pm	C-212
241	Nanotechnology of Concrete	Sun	4:00 pm - 5:30 pm	C-208
241-A	The Application and Implementation of Nano-Engineered Concrete	Tue	1:00 pm - 3:00 pm	C-231
241-SC	SC Steering Committee	Sun	11:00 am - 12:00 pm	H-Wolverine A
241-TG1	Dispersion of Nanoparticles in Concrete Materials TG	Sun	1:30 pm - 3:00 pm	C-208
241-TG2	Nanoscale Fiber Reinforced Concrete Task Group	Sun	3:00 pm - 4:00 pm	C-208
242	Alternative Cements	Tue	12:00 pm - 3:00 pm	C-212
301	Specifications for Structural Concrete	Sat	1:00 pm - 4:00 pm	C-203
301	Specifications for Structural Concrete	Sun	1:00 pm - 4:00 pm	C-200
301	Specifications for Structural Concrete	Mon	1:00 pm - 4:00 pm	C-204
301-A	General Requirements, Definitions, and Tolerances - Section 1	Sun	8:00 am - 9:30 am	C-235
301-B	Formwork and Formwork Accessories - Section 2	Sat	6:30 pm - 8:30 pm	C-203
301-C	Reinforcement and Reinforcement Supports - Section 3	Sat	4:30 pm - 6:30 pm	C-203
301-D	Concrete Mixtures - Section 4	Sun	8:00 am - 9:30 am	C-212
301-E	Handling, Placing, and Constructing - Section 5	Sat	4:00 pm - 6:00 pm	H-Wolverine A
301-F	Architectural Concrete - Section 6	Sun	10:30 am - 12:30 pm	C-208
301-G	Lightweight Concrete - Section 7	Mon	8:00 am - 9:00 am	H-Wolverine B
301-H	Mass Concrete - Section 8	Sun	9:30 am - 11:00 am	H-Hoosier A
301-I	Post-Tensioned Concrete - Section 9	Sun	8:00 am - 9:30 am	C-234
301-J	Shrinkage Compensating Concrete - Section 10	Sun	8:00 am - 9:30 am	C-252
301-K	Industrial Floor Slabs - Section 11	Sun	9:30 am - 11:00 am	C-252
301-L	Tilt-Up Construction - Section 12	Sun	7:30 am - 9:30 am	C-207
301-M	Precast Structural Concrete - Section 13	Sun	9:30 am - 11:00 am	C-261
301-N	Precast Architectural Concrete - Section 14	Sun	7:30 am - 9:30 am	C-261
301-SC	Steering Committee	Sat	11:30 am - 1:00 pm	C-203
302	Construction of Concrete Floors	Mon	8:30 am - 1:00 pm	C-Junior Ballroom A
303	Architectural Cast-in-Place Concrete	Mon	8:30 am - 11:30 am	H-Hoosier A
304	Measuring, Mixing, Transporting, and Placing Concrete	Mon	11:30 am - 1:00 pm	H-Hoosier A
304-F	Measuring/Mixing-Volumetric	Mon	10:00 am - 11:30 am	H-Wolverine A
305	Hot Weather Concreting	Sun	2:00 pm - 4:00 pm	C-264
306	Cold Weather Concreting	Tue	8:30 am - 11:00 am	C-236
307	Concrete Chimneys	Mon	2:00 pm - 5:00 pm	C-235
308	Curing Concrete	Wed	10:00 am - 1:00 pm	C-211
308-A	Curing-Guide	Wed	8:00 am - 10:00 am	C-211



# Numerical Committee Meeting Listing

For detailed program information and program changes, download the new Convention App.

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
308-B	Curing-Specifications	Tue	4:00 pm - 5:30 pm	C-208
309	Consolidation of Concrete	Sun	3:00 pm - 4:30 pm	C-237
310	Decorative Concrete (Joint ACI-ASCC)	Tue	3:00 pm - 5:00 pm	C-212
310-J	Polished Finishes	Tue	10:00 am - 12:30 pm	C-201
310/308-TG2	310-308 Curing Decorative Concrete Joint Task Group	Tue	9:00 am - 10:00 am	C-252
311	Inspection of Concrete	Tue	12:30 pm - 2:30 pm	C-211
314	Simplified Design of Concrete Buildings	Sun	8:30 am - 10:30 am	C-208
315	Details of Concrete Reinforcement (Joint ACI-CRSI)	Sun	2:00 pm - 5:00 pm	C-263
318	Structural Concrete Building Code	Wed	8:00 am - 6:00 pm	C-Junior Ballroom A
318-A	318 Subcommittee - General, Concrete, and Construction	Tue	1:30 pm - 6:00 pm	C-260
318-B	318 Subcommittee - Anchorage and Reinforcement	Tue	8:00 am - 12:30 pm	C-200
318-C	318 Subcommittee - Safety, Serviceability, and Analysis	Tue	8:00 am - 12:30 pm	C-211
318-D	318 Subcommittee - Members	Tue	1:30 pm - 6:00 pm	C-202
318-E	318 Subcommittee - Section and Member Strength	Tue	8:00 am - 12:30 pm	C-202
318-F	318 Subcommittee - Foundations	Tue	8:00 am - 12:30 pm	C-203
318-H	318 Subcommittee - Seismic Provisions	Tue	1:30 pm - 6:00 pm	C-206
318-J	318 Subcommittee - Joints and Connections	Tue	1:30 pm - 6:00 pm	C-203
318-L	318 Subcommittee - International Liaison	Mon	2:30 pm - 4:00 pm	C-250
318-N	318 Subcommittee - Sustainability	Sun	1:00 pm - 5:00 pm	H-Regency F
318-P	318 Subcommittee - Precast and Prestressed Concrete	Tue	1:30 pm - 6:00 pm	C-263
318-S	318 Spanish Translation	Mon	11:00 am - 12:30 pm	C-232
318-SC	318 Steering Committee	Mon	8:00 am - 11:00 am	C-251
318-T	318 Subcommittee - Post-tensioned Concrete	Tue	8:00 am - 12:30 pm	H-Bluegrass A&B
318-W	318 Subcommittee - Wind Provisions	Mon	1:30 pm - 5:30 pm	H-Buckeye A
319	Precast Structural Concrete Code	Mon	3:00 pm - 5:00 pm	H-Hoosier B
325	Concrete Pavements	Tue	3:00 pm - 5:00 pm	C-252
325-A	Pavements-Design	Tue	9:00 am - 10:00 am	C-231
325-C	Pavements - Prestressed and Precast	Tue	10:00 am - 11:00 am	C-231
325-F	Concrete Pavement Overlays	Tue	1:00 pm - 2:00 pm	C-252
325-TG1	Task Group on Thin Concrete Pavements	Tue	2:00 pm - 3:00 pm	C-252
327	Roller-Compacted Concrete Pavements	Tue	11:00 am - 1:00 pm	C-251
329	Performance Criteria for Ready Mixed Concrete	Wed	9:30 am - 11:30 am	C-263
330	Concrete Parking Lots and Site Paving	Wed	8:00 am - 12:00 pm	C-212
332	Residential Concrete Work	Tue	1:30 pm - 5:00 pm	C-205
332-B	Residential Concrete Materials and Placement	Sun	4:00 pm - 5:30 pm	C-264
332-D	Residential Concrete-Footings & Foundation Walls	Tue	10:30 am - 12:00 pm	C-260
332-E	Residential Concrete-Above Grade Walls	Tue	7:00 am - 8:30 am	C-260
332-F	Residential Concrete-Slabs	Tue	10:30 am - 12:00 pm	C-234
334	Concrete Shell Design and Construction (Joint ACI-ASCE)	Mon	5:00 pm - 7:00 pm	C-234
335	Composite and Hybrid Structures (Joint ACI-ASCE)	Sun	11:30 am - 1:00 pm	C-263
336	Footings, Mats and Drilled Piers	Sun	1:30 pm - 5:30 pm	C-231
341	Earthquake-Resistant Concrete Bridges	Sun	2:00 pm - 5:00 pm	C-211
341-A	Earthquake Resistant Bridges-Columns	Sun	10:00 am - 11:30 am	C-211
341-C	Earthquake Resistant Bridges-Retrofit	Sun	12:30 pm - 2:00 pm	C-211
342	Evaluation of Concrete Bridges and Bridge Elements	Sun	8:30 am - 10:30 am	C-230
343	Concrete Bridge Design (Joint ACI-ASCE)	Mon	10:00 am - 12:00 pm	C-211



# Numerical Committee Meeting Listing

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C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
343-A	Design	Mon	10:00 am - 12:00 pm	C-211
343-B	Bridge Deck Design	Mon	8:30 am - 9:30 am	C-260
345	Bridge Construction and Preservation	Sun	1:30 pm - 3:30 pm	C-261
347	Formwork for Concrete	Sat	2:00 pm - 9:00 pm	C-200
347	Formwork for Concrete	Sun	8:00 am - 12:00 pm	C-200
348	Structural Reliability and Safety	Mon	1:30 pm - 3:00 pm	C-233
349	Concrete Nuclear Structures	Tue	1:30 pm - 5:00 pm	C-204
349-A	Nuclear Structures-Materials	Mon	1:00 pm - 4:30 pm	C-263
349-B	Nuclear Structures-Design	Mon	1:00 pm - 4:30 pm	C-263
349-C	Nuclear Structures-Anchorage	Mon	8:00 am - 11:00 am	C-232
349/359/370	ACI 349 and ACI 359 and ACI 370 Joint Committee Task Group	Tue	11:00 am - 12:30 pm	C-237
350	Environmental Engineering Concrete Structures	Wed	8:30 am - 4:00 pm	C-206
350-A	350 Subcommittee - General and Concrete	Tue	1:00 pm - 5:00 pm	C-237
350-B	350 Subcommittee - Durability	Mon	8:30 am - 1:00 pm	C-238
350-C	350 Subcommittee - Reinforcement and Development	Mon	4:00 pm - 6:00 pm	C-252
350-D	350 Subcommittee - Structural	Mon	8:30 am - 4:00 pm	C-230
350-E	350 Subcommittee - Precast - Prestress	Sun	1:30 pm - 5:30 pm	C-251
350-F	350 Subcommittee - Seismic Provisions	Tue	8:30 am - 2:00 pm	C-261
350-G	350 Subcommittee - Tightness Testing	Mon	8:00 am - 12:00 pm	H-Mountaineer
350-H	350 Subcommittee - Editorial	Mon	12:30 pm - 2:00 pm	H-Mountaineer
350-J	350 Subcommittee - Education	Tue	1:00 pm - 3:00 pm	H-Wolverine B
350-K	350 Subcommittee - Hazardous Materials	Mon	8:00 am - 12:00 pm	H-Mountaineer
350-L	350 Subcommittee - Specification	Tue	4:00 pm - 6:00 pm	C-235
350-SC	350 Subcommittee - Steering	Sun	11:30 am - 1:00 pm	C-234
351	Foundations for Equipment and Machinery	Tue	10:00 am - 12:00 pm	C-212
351-C	Equipment Foundations - Dynamic Foundations	Mon	4:30 pm - 6:30 pm	C-230
351-D	Design Provisions for Heavy Industrial Equipment and Machinery Concrete Support Structures	Tue	8:30 am - 10:00 am	C-212
352	Joints and Connections in Monolithic Concrete Structures (Joint ACI-ASCE)	Sun	2:00 pm - 5:00 pm	C-233
352-TG1	Slab-Column Joints & Connections	Mon	12:00 pm - 1:30 pm	C-252
352-TG2	Beam-Column Joints & Connections	Mon	1:30 pm - 3:00 pm	C-252
355	Anchorage to Concrete	Sun	1:30 pm - 5:00 pm	C-205
357	Offshore and Marine Concrete Structures	Tue	8:00 am - 11:00 am	C-235
357-TG2	ACI 357.2R-10 Revision	Mon	1:00 pm - 2:00 pm	C-202
359	Concrete Containments for Nuclear Reactors (Joint ACI-ASME)	Wed	9:00 am - 12:00 pm	C-204
359-A	Working Group on Design	Tue	7:00 am - 11:00 am	C-237
359-B	Working Group on Materials, Fabrication & Examination	Tue	7:00 am - 11:00 am	C-237
359-C	Working Group on Modernization	Wed	7:00 am - 9:00 am	C-204
360	Design of Slabs on Ground	Mon	2:00 pm - 6:30 pm	C-Junior Ballroom A
362	Parking Structures	Mon	1:00 pm - 5:00 pm	C-212
362-A	Updating Guide for Structural Maintenance of Parking Structures	Sun	1:00 pm - 4:00 pm	C-236
363	High-Strength Concrete	Sun	2:30 pm - 5:00 pm	C-204
363-A	High Strength Lightweight Concrete	Tue	3:30 pm - 5:00 pm	H-Wolverine A
364	Rehabilitation	Mon	1:00 pm - 4:00 pm	C-236
364-A	Editorial Subcommittee	Mon	10:30 am - 12:00 pm	C-262

# Numerical Committee Meeting Listing

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Code	Committee	Day	Time	Room Name
364-C	TechNote Subcommittee	Mon	10:30 am - 12:00 pm	C-262
364-TG2	Guide to Rehabilitation of Historic Concrete	Mon	11:00 am - 12:00 pm	C-234
365	Service Life Prediction	Mon	9:00 am - 12:00 pm	C-263
369	Seismic Repair and Rehabilitation	Mon	2:00 pm - 6:00 pm	C-264
369-A	General Provision	Sun	9:00 am - 12:00 pm	C-236
369-C	Frames	Sun	1:00 pm - 4:00 pm	C-207
369-D	Walls	Sun	10:00 am - 12:00 pm	C-251
369-E	Diaphragms and Foundations	Sun	8:00 am - 10:00 am	C-251
369-F	Retrofit	Sun	2:00 pm - 5:30 pm	C-238
370	Blast and Impact Load Effects	Sun	3:00 pm - 5:00 pm	C-262
371	Elevated Tanks with Concrete Pedestals	Mon	3:00 pm - 5:00 pm	C-238
372	Tanks Wrapped with Wire or Strand	Tue	2:00 pm - 4:00 pm	C-235
374	Performance-Based Seismic Design of Concrete Buildings	Mon	8:30 am - 12:00 pm	C-264
375	Performance-Based Design of Concrete Buildings for Wind Loads	Mon	1:00 pm - 3:30 pm	H-Hoosier A
376	Concrete Structures for Refrigerated Liquefied Gas Containment	Mon	1:00 pm - 4:00 pm	H-Wolverine B
376-01	Steering Subcommittee	Sun	10:30 am - 12:00 pm	C-238
376-A	Code, Education & Publication Subcommittee	Mon	10:00 am - 12:00 pm	C-236
376-B	Materials Subcommittee	Sun	1:00 pm - 3:00 pm	C-230
376-C	Analysis Subcommittee	Sun	3:00 pm - 5:00 pm	C-230

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C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
376-D	Design & Construction Subcommittee	Mon	8:00 am - 10:00 am	C-261
377	Performance-Based Structural Integrity & Resilience of Concrete Structures	Mon	10:00 am - 12:30 pm	C-261
378	Concrete Wind Turbine Towers	Mon	8:15 am - 9:30 am	C-207
380	Structural Plain Concrete	Sun	1:00 pm - 3:00 pm	C-234
408	Bond and Development of Steel Reinforcement (Joint ACI-ASCE)	Sun	8:30 am - 11:30 am	C-201
408-A	Mechanical Reinforcing Bar Anchorages and Splices	Sun	1:30 pm - 3:30 pm	C-201
421	Design of Reinforced Concrete Slabs (Joint ACI-ASCE)	Sun	10:00 am - 1:00 pm	C-262
423	Prestressed Concrete (Joint ACI-ASCE)	Mon	8:30 am - 12:30 pm	C-233
423-C	Corrosion and Repair of Grouted Multistrand and Bar Tendon Systems	Sun	3:30 pm - 5:30 pm	C-212
423-G	Specification for Unbonded Single-Strand Tendon Materials	Mon	2:00 pm - 6:00 pm	H-Wolverine A
423-TG2	Anchorage Zone Task Group	Sun	4:00 pm - 5:30 pm	H-Mountaineer
435	Deflection of Concrete Building Structures	Mon	3:00 pm - 6:00 pm	C-207
437	Strength Evaluation of Existing Concrete Structures	Mon	10:30 am - 12:30 pm	C-260
437-A	Test Database	Mon	8:00 am - 9:30 am	C-236
439	Steel Reinforcement	Mon	8:30 am - 10:30 am	C-262
439-A	Steel Reinforcement-Wire	Sun	3:30 pm - 5:00 pm	H-Hoosier A
440	Fiber-Reinforced Polymer Reinforcement	Tue	8:00 am - 11:00 am	C-Junior Ballroom A
440-D	Research Development and Applications	Sun	12:00 pm - 1:00 pm	C-Junior Ballroom A
440-D	Research Development and Applications	Mon	10:00 am - 11:30 am	H-Regency A
440-F	FRP-Repair-Strengthening	Mon	1:00 pm - 4:00 pm	C-206
440-G	FRP-Student	Mon	11:30 am - 1:00 pm	H-Regency A
440-H	FRP-Reinforced Concrete	Sun	2:30 pm - 5:00 pm	C-Junior Ballroom A
440-H	FRP-Reinforced Concrete	Mon	8:00 am - 10:00 am	H-Regency A
440-J	FRP Stay-in-Place Forms	Sun	10:30 am - 12:00 pm	C-Junior Ballroom A
440-L	FRP-Durability	Sun	1:00 pm - 2:30 pm	C-Junior Ballroom A
440-M	FRP-Repair of Masonry Structures	Sun	8:00 am - 10:30 am	C-Junior Ballroom A
441	Reinforced Concrete Columns (Joint ACI-ASCE)	Mon	11:30 am - 2:00 pm	C-208
444	Structural Health Monitoring and Instrumentation	Tue	8:00 am - 11:00 am	C-263
445	Shear and Torsion (Joint ACI-ASCE)	Mon	2:00 pm - 6:00 pm	C-200
445-A	Shear & Torsion-Strut & Tie	Sun	9:30 am - 12:30 pm	H-Hoosier B
445-B	Shear & Torsion-Seismic Shear	Sun	9:30 am - 11:30 am	C-234
445-C	Shear & Torsion-Punching Shear	Sun	1:00 pm - 3:00 pm	C-237
445-D	Shear & Torsion-Shear Databases	Sun	2:00 pm - 5:00 pm	C-235
445-E	Shear & Torsion-SOA Torsion	Sun	12:30 pm - 2:00 pm	C-235
446	Fracture Mechanics of Concrete (Joint ACI-ASCE)	Mon	8:30 am - 10:00 am	C-231
447	Finite Element Analysis of Reinforced Concrete Structures (Joint ACI-ASCE)	Mon	11:00 am - 1:30 pm	C-200
506	Shotcreting	Tue	8:30 am - 11:30 am	C-204
506-A	Shotcreting-Evaluation	Mon	12:30 pm - 2:30 pm	C-261
506-C	Shotcreting-Guide	Mon	8:30 am - 11:00 am	C-208
506-E	Shotcreting-Specifications	Mon	8:30 am - 11:00 am	C-208
506-F	Shotcreting-Underground	Mon	2:30 pm - 4:00 pm	C-261

# Numerical Committee Meeting Listing

For detailed program information and program changes, download the new Convention App.

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

Code	Committee	Day	Time	Room Name
506-H	Shotcreting-Pools	Sun	2:00 pm - 4:00 pm	H-Hoosier B
515	Protective Systems for Concrete	Tue	9:00 am - 11:00 am	C-251
522	Pervious Concrete	Tue	8:00 am - 11:00 am	C-233
523	Cellular Concrete	Tue	8:30 am - 10:30 am	C-238
524	Plastering	Mon	8:30 am - 10:00 am	C-202
533	Precast Panels	Mon	8:30 am - 10:00 am	C-234
543	Concrete Piles	Mon	8:30 am - 11:30 am	C-237
544	FRC Production and Applications	Tue	3:00 pm - 5:30 pm	C-Junior Ballroom A
544-A	FRC-Education Production Application	Mon	1:00 pm - 2:30 pm	C-207
544-B	FRC-Education	Mon	2:00 pm - 5:00 pm	C-211
544-C	FRC-Testing	Tue	2:00 pm - 3:00 pm	C-Junior Ballroom A
544-D	FRC-Structural Uses	Tue	12:00 pm - 1:30 pm	C-Junior Ballroom A
544-E	FRC-Mechanical Properties	Mon	5:00 pm - 6:30 pm	C-260
544-F	FRC-Durability	Tue	10:30 am - 12:00 pm	C-252
544-SC	FRC-Steering Committee	Mon	8:30 am - 10:00 am	C-252
546	Repair of Concrete	Mon	9:30 am - 12:00 pm	C-201
546-B	Repair-Material Selection Guide	Sun	8:00 am - 9:00 am	C-250
546-C	Repair-Guide	Sun	9:00 am - 10:00 am	C-250
546-D	Packaged Repair Materials	Mon	8:00 am - 9:30 am	C-211
546-E	Corrosion Studies	Sun	10:00 am - 11:30 am	C-250
548	Polymers and Adhesives for Concrete	Tue	8:30 am - 11:30 am	C-207
548-A	Polymers-Overlays	Mon	1:00 pm - 3:00 pm	C-234
548-B	Polymers-Adhesives	Mon	3:00 pm - 5:00 pm	C-234
548-TG1	Updating Guide for the Use of Polymers in Concrete	Mon	11:00 am - 12:30 pm	C-250
549	Thin Reinforced Cementitious Products and Ferrocement	Sun	10:00 am - 1:00 pm	C-202
550	Precast Concrete Structures (Joint ACI-ASCE)	Sun	3:00 pm - 5:00 pm	C-202
551	Tilt-up Concrete Construction	Sun	9:00 am - 12:00 pm	C-232
552	Cementitious Grouting	Tue	4:00 pm - 5:30 pm	C-230
555	Concrete with Recycled Materials	Mon	5:00 pm - 6:30 pm	C-232
560	Design and Construction with Insulating Concrete Forms	Tue	8:30 am - 10:30 am	C-264
562	Evaluation, Repair, and Rehabilitation of Concrete Buildings	Sun	2:00 pm - 5:00 pm	C-232
562-A	General	Sat	12:00 pm - 3:00 pm	H-Wolverine B
562-B	Loads	Sat	3:00 pm - 6:00 pm	H-Wolverine B
562-C	Evaluation	Sun	8:00 am - 10:00 am	H-Wolverine B
563	Specifications for Repair of Structural Concrete in Buildings	Tue	1:00 pm - 5:00 pm	C-251
563-E	Reinforcement	Sun	10:00 am - 11:30 am	C-231
563-J	Crack Repair	Tue	8:30 am - 9:30 am	C-208
563-M	Polymer Concrete/Overlays	Sun	3:00 pm - 5:00 pm	C-234
563-N	Protection Systems	Sun	1:00 pm - 2:00 pm	C-238
563-P	Corrosion	Sun	10:00 am - 12:00 pm	C-237
563-Q	Repair of Post Tensioned Concrete	Sun	10:00 am - 12:00 pm	C-235
564	3-D Printing with Cementitious Materials	Mon	1:30 pm - 3:30 pm	C-205



# Sessions & Events

For detailed program information and program changes, download the new Convention App.

✓= Separate fee required

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

## Saturday, October 19, 2019

### 8:00 am – 7:00 pm

#### ✓*International Workshop on Structural Concrete and Reception*

\$75 U.S. per person

Sponsored by ACI Committee 318

Chaired by Jack Moehle, Former Chair of ACI 318, Structural Concrete in the Americas – 11th International Workshop

Workshop: 8:00 am – 5:15 pm – C-206

Lunch: 12:00 pm – 1:30 pm – C-205

Reception: 6:00 pm – 7:00 pm – C-205

The International Workshop on Structural Concrete is held every 18 to 24 months in conjunction with the ACI Convention. The primary purpose of this workshop is to gather and share information on the development and application of concrete design standards throughout the Americas and beyond. Following the workshop, network with colleagues at an evening reception. An assortment of food and beverages will be available. Registered guests may attend this reception for an additional fee of \$50. ACI Registration will open at 7:00 am in the Exhibit Hall on Saturday, October 19, for all International Workshop attendees to pick up their registration materials.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk based on availability. Please notify the ACI Registration Desk if you have any dietary restrictions.

### 8:15 am – 9:45 am

#### ✓*International Workshop Session – Changes in ACI 318-19, Part 1 of 2 - C-206*

Moderated by James K. Wight, University of Michigan

Papers in this session cover the most significant technical changes to design requirements in the ACI 318-19 Building Code. Professor Sanders will discuss changes to the Code equations for one-way shear in beams and slabs that have eliminated many of the empirical shear strength equations. A “size-effect” term is now included in the shear strength equations for members that do not have minimum transverse reinforcement. Changes have also been made to the strut-and-tie definitions and requirements. Professor Darwin will discuss modifications of tension development lengths for straight, hooked, and headed bars. A broader range of steel and concrete material strength were included in developing a database to support these required changes. For hooked and headed bars, the development lengths will be a function of  $d_b^{1.5}$  and requirements for confinement reinforcement are increased. Structural Engineer Dominic Kelly will discuss the acceptance of Grades 80 and 100 steel as longitudinal and transverse reinforcement in most structural members. Primary use of high-strength steel will be for design of columns and shear walls. Design requirements are not changed but development lengths will be increased.

#### **Presentation 1: New Shear Strength Equations and Modifications for Strut-and-Tie Method**

David Sanders, Iowa State University

#### **Presentation 2: New Development Length Requirements for Hooked and Headed Bars**

David Darwin, University of Kansas

#### **Presentation 3: Building Code Changes for Use of High-Strength Reinforcement**

Dominic Kelly, Simpson Gumpertz & Heger, Inc.

*To attend this session, you must be registered for the International Workshop on Structural Concrete and Reception.*



1.5 AIA/CES LU



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### 10:15 am – 12:00 pm

#### ✓*International Workshop Session – Concrete Construction in the Middle East - C-206*

Moderated by Luke Snell, Concrete Consultant

Construction in the Middle East has many unique challenges. Many areas have extreme high temperatures, low humidity, constant winds, and sulfates in the soils. Areas near the Gulf and Red Seas have corrosion issues from the sea water. This area has had a building boom and is home to some of the tallest buildings in the world. These presentations will discuss how the challenges on construction in the Middle East have been met and how the ACI 318 Code provides the guidance for successful design and construction.

#### **Presentation 1: Design, Qualification, Production, and Pumping of High-Strength, High-Performance Mass Concrete for Pile Cap of Dubai Creek Tower**

Fouad Yazbeck, Universal Concrete Products – Unimix

#### **Presentation 2: Codes and Standards Used in the Middle East**

Mohamad Nagi, American University of Dubai; and Ahmed Shuraim, Saudi Arabia and Gulf Region Building Codes

#### **Presentation 3: Special Construction Considerations in the Middle East**

Charbel Aoun, Advanced Construction Technology Services (ACTS)

*To attend this session, you must be registered for the International Workshop on Structural Concrete and Reception.*



1.75 AIA/CES LU



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### 12:00 pm – 1:30 pm

#### ✓*International Workshop Lunch - C-205*

#### **Introduction**

David Lange, University of Illinois

#### **Presentation: Infrastructure Projects in Qatar Related to 2022 World Cup**

Khaled Awad, Advanced Construction Technology (ACTS)

*To attend this lunch, you must be registered for the International Workshop on Structural Concrete and Reception.*



# Sessions & Events

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## 1:30 pm – 3:00 pm

### ✓ *International Workshop Session – Design on Super-Tall Reinforced Concrete Structures - C-206*

Moderated by Larry Novak, International Code Council

Concrete has become the structural engineers' material of choice for high-rise construction around the world. The majority of tall buildings constructed today feature either primary structural systems using all reinforced concrete or a composite system using a combination of reinforced concrete and structural steel. Of the current 20 tallest completed buildings in the world, 19 use composite or reinforced concrete structural systems; and the only structural steel system on the top 20 list has a completion date prior to 1975. An even better indicator is that of the 20 tallest buildings completed in 2018, all used composite or reinforced concrete systems (data as per the Council of Tall Buildings and Urban Habitat, [www.ctbuh.org](http://www.ctbuh.org)). Reinforced concrete construction has an inherent advantage for tall building design in that it provides a substantial amount of stiffness and mass and damping for the structural—three factors that are critical in controlling building motions and accelerations. This session demonstrates the use of reinforced concrete as it pushes to new heights across the globe.

#### **Presentation 1: Concrete Pushes Mexico to New Heights**

Roberto Stark, Stark & Ortiz

#### **Presentation 2: Recent Supertall Concrete Towers in the Middle East**

Robert Sinn, Thornton Tomasetti; and John Peronto, Thornton Tomasetti

#### **Presentation 3: Design Using High-Performance Concrete and Construction Method for Lotte World Tower in Seoul**

Edward Roberts, LERA Consulting Structural Engineers

*To attend this session, you must be registered for the International Workshop on Structural Concrete and Reception.*



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## 3:30 pm – 5:00 pm

### ✓ *International Workshop Session – Changes in ACI 318-19, Part 2 of 2 - C-206*

Moderated by Jim Cagley, Cagley & Associates, Inc.

This session includes a continuing review of the changes included in ACI 318-19 as well as a presentation on the issues arising from the 2016 Kaikoura Earthquake in the New Zealand Guidelines resulting from the earthquake.

#### **Presentation 1: Design Verification Using Nonlinear Response History Analysis**

Luis Garcia, Universidad de los Andes

#### **Presentation 2: New Seismic Provisions in Building Code**

John Wallace, University of California at Los Angeles

#### **Presentation 3: Damage to Concrete Buildings with Precast Floors during the 2016 Kaikoura Earthquake**

Ken Elwood, University of Auckland

*To attend this session, you must be registered for the International Workshop on Structural Concrete and Reception.*



PDH Codes: \_\_\_\_\_

## 5:00 pm – 5:15 pm

### ✓ *International Workshop Closing Remarks - C-206*

Moderated by Jack Moehle, University of California, Berkeley; and James K. Wight, University of Michigan

*To attend this event, you must be registered for the International Workshop on Structural Concrete and Reception.*

## 6:00 pm – 7:00 pm

### ✓ *International Workshop Reception and Young Practicing Engineer Poster Session - C-205*

#### **Grand Hyatt SFO Hotel**

Kion Nemati, Arup

#### **Ayia Napa Marina, Cyprus**

Indira Oraziman, Thornton Tomasetti

#### **Design of a Post-Tensioned Flat-Slab Bridge**

Umut Akin, SU-YAPI Engineering & Consulting Inc.

#### **Reduce, Reuse, Recycle - Concrete**

Ashley Gaur, Englekirk

#### **IQON Tower: Modeling and PBSD of Tall Building with Friction Dampers in Quito**

Jorge Bustos Silva, Rene Lagos Engineers

#### **Inspection, Strengthening, and Load Testing of a 63-Year-Old Reinforced Concrete Bridge**

Matheus Moyses Pain, EGT Engenharia

#### **Cracking Analysis of Elevated Railway RC Piers Due to Train-Induced Vibrations at an Early Age**

Santiago Bertero, LABDIN

#### **Performance-Based Design Yields System Efficiency**

Jaskanwal Chhabra, Skidmore, Owings & Merrill LLP

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# Sessions & Events

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## Saturday, October 19, 2019

8:00 pm – 9:30 pm

### **Student Networking Reception - C-206**

Sponsored by ACI Student and Young Professional Activities Committee

The ACI Student and Young Professional Activities Committee (SY PAC) invites all students, faculty advisors, and mentors to the Student Networking Reception. This casual and fun environment is an opportunity to engage with future concrete professionals and professors. Students will participate in games to win door prizes. In addition, food and beverages will be provided for free on a first-come, first-served basis.

## Sunday, October 20, 2019

8:00 am – 9:00 am

### **Convention Orientation Breakfast - C-206**

Moderated by Randall W. Poston, Pivot Engineers

First-time convention attendees are invited for a continental breakfast and brief session to orient you to the week ahead. Attendees will have the opportunity to meet other first-time convention attendees, connect with convention mentors, and learn about what The ACI Concrete Convention and Exposition has to offer.

8:00 am – 10:00 am

### **ACI 222R: Guide to Protection of Reinforcing Steel in Concrete against Corrosion, Part 1 of 2 - C-Junior Ballroom B**

Sponsored by ACI Committee 222

Moderated by O. Burkan Isgor, Oregon State University; and David G. Tepke, SKA Consulting Engineers Inc.

ACI 222R, "Guide to Protection of Reinforcing Steel in Concrete against Corrosion," is the flagship document of ACI Committee 222. The new version of the document is the first major revision since 2001 and comprises the latest state of the art. It presents with a practical emphasis the mechanism of steel corrosion in concrete, corrosion protection in new construction, condition evaluation, and remedial measures to mitigate corrosion in existing structures. The session will contain presentations from subject experts on critical topics from the ACI 222R document. Students, practicing engineers, contractors, product manufacturers, corrosion experts, and researchers should attend the session.

#### **8:00 am: Overview of the 222R Guide to Protection of Reinforcing Steel in Concrete against Corrosion**

O. Burkan Isgor, Oregon State University

#### **8:20 am: Mechanisms of Corrosion of Steel in Concrete – Principles of Corrosion**

Carolyn M. Hansson, University of Waterloo

#### **8:45 am: Mechanisms of Corrosion of Steel in Concrete – Reinforcing Bar and the Concrete Environment**

Michael C. Brown, WSP USA

#### **9:10 am: Protection against Corrosion in New Construction – Design Approaches and Choices**

David Trejo, Oregon State University

### **9:35 am: Protection against Corrosion in New Construction – Methods for Excluding External Sources of Chloride from Concrete**

Neal S. Berke, Tourney Consulting Group, LLC



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

8:00 am – 10:00 am

### **National Veterans Memorial and Museum - C-Junior Ballroom D**

Sponsored by the Greater Miami Valley Chapter – ACI Moderated by Julie Cromwell, Julie Cromwell & Associates, LLC; and Robin Hahn, Advantage Group Engineers, Inc.

The National Veterans Memorial and Museum is an award-winning structure located in Columbus, OH, and is the first museum dedicated to honoring all veterans, past and present. The museum is more than 50,000 ft<sup>2</sup> and contains over 28 million pounds of concrete. The arch structure and spiral façade exemplify the versatility of concrete to achieve unique and complex geometries through innovative design and construction methods.

#### **8:00 am: National Veterans Memorial and Museum**

Rob Ford, Baker Concrete



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

8:00 am – 10:00 am

### **Simulation of Concrete Flow, Part 1 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committees 236, 237, and 238; Co-sponsored by RILEM TC-266: Measuring Rheological Properties of Cement-Based Materials

Moderated by Dimitri Feys, Missouri S&T

This session aims to give the latest updates on numerical simulations of concrete flow. Its intended audience includes academics, students, contractors, concrete producers, material suppliers, and architects. It will highlight the power of computational fluid dynamics in investigating, understanding, and predicting concrete flow, including complex phenomena, such as blocking, segregation, and particle dynamics.

#### **8:00 am: Homogeneous versus Heterogeneous Simulation of Self-Consolidating Concrete Flow—Advantages and Limitations**

Masoud Hosseinpoor, Université de Sherbrooke; Kamal H. Khayat, Missouri S&T; and Ammar Yahia, Université de Sherbrooke

#### **8:30 am: Development of a Standard Reference Concrete for Rheological Measurements**

Nicos Martys, National Institute of Standards and Technology; Chiara F. Ferraris, National Institute of Standards and Technology; and William L. George, National Institute of Standards and Technology

# Sessions & Events

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## 9:00 am: Structural Elements Made with Highly Flowable UHPFRC: Can Computational Fluid Dynamics (CFD) and Nondestructive Survey of Fiber Dispersion Complement Structural Design in Predicting Failure Modes?

Liberato Ferrara, Politecnico di Milano; Massimiliano Cremonesi, Politecnico di Milano; Marco Faifer, Politecnico di Milano; Sergio Toscani, Politecnico di Milano; Luca Sorelli, Universite Laval; Marc-Antoine Baril, Universite Laval; Julien Rethore, Institut des Sciences Appliquees de Lyon; Florent Baby, IFSTTAR; Francois Toutlemonde, IFSTTAR; and Sebastien Bernardi, Lafarge-Holcim

## 9:30 am: Homogeneous Analysis of Self-Consolidating Concrete Casting in Reinforced Beam Using Computational Fluid Dynamics

Masoud Hosseinpoor, Université de Sherbrooke; Kamal Khayat, Missouri S&T; Ammar Yahia, Université de Sherbrooke; and Habib Mesbah, Université de Rennes



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 9:00 am – 10:00 am

### MINI SESSION: Design and Construction Trends in Tilt Up - C-232

Sponsored by ACI Committee 551

Moderated by James R. Baty, Sauter, Baty & Bloomquist Inc.

During committee meetings, conversation regarding trends found in both design and construction have been identified by members that should be part of modifications to the Construction Guide and the Design Guide for Tilt Up. This session will advance the understanding of curing trends and identify the pitfalls of strength design checks for slender wall design called from Chapter 11 to reference Sections 6.5, 6.6, and 6.7 in ACI 318.

### 9:00 am: Performance-Based Linear Elastic Design in Tilt Applications

Luke Pinkerton, Helix Steel

### 9:30 am: Curing Trends for Tilt-Up Warehouse and Distribution Center Floors/Casting Slabs

Craig J. Coppersmith, Nox Crete Products Group



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

## Approx. 9:00 am – 2:00 pm

### Student FRP Composites Competition - C-Ballroom Foyer

Sponsored by ACI Committee S801 and ACI Subcommittee 440-G  
Moderated by Walter H. Flood IV, Flood Testing Laboratories Inc.

In this exciting competition, students design, construct, and test a concrete structure reinforced with fiber-reinforced polymer (FRP) bars to achieve the optimal load to cost ratio, predict the ultimate load, and predict the load that will result in a piston deflection of 3.5 mm (0.14 in.). Final results and prizes will be announced at the Student Lunch on Monday. Three separate check-in times will be spaced out throughout the competition to keep the action flowing all day long. **Please check the Convention App for the most accurate competition times.**

## 9:30 am – 11:00 am

### ACI International Forum - C-203

Chaired by Vice President Jeffery W. Colman, The Coleman Law Firm, LLC

The ACI International Forum provides an opportunity for convention attendees to meet and learn from ACI International Partners, ACI chapter representatives, and ACI leadership about worldwide events, activities, initiatives, and common themes of interest to the concrete materials, design, and construction industry.

Speakers include: Khalifa Al Suwaidi, Sharjah Municipality, UAE; Speaker TBD, Jordan Concrete Association - JCA; Speaker TBD, RILEM; Francois Toutlemonde, Paris Chapter - ACI; Sourabh Manjrekar, India Chapter - ACI; Amir Salih Mia, Qatar Chapter - ACI; Mr. Guillermo Loayza, Ecuador Chapter - ACI; and others.

## 10:30 am – 12:30 pm

### ACI 222R: Guide to Protection of Reinforcing Steel in Concrete against Corrosion, Part 2 of 2 - C-Junior Ballroom B

Sponsored by ACI Committee 222

Moderated by O. Burkan Isgor, Oregon State University; and David G. Tepke, SKA Consulting Engineers, Inc.

The session description for this session may be found in the Part 1 listing; refer to page 28.

### 10:30 am: Protection against Corrosion in New Construction – Corrosion Control Methods

David G. Tepke, SKA Consulting Engineers, Inc.

### 10:55 am: Procedures for Identifying Corrosive Environments and Active Corrosion in Reinforced Concrete Structures – Corrosion Evaluation Methods (Part 1)

Ceki Halmen, University of Missouri-Kansas City

### 11:20 am: Procedures for Identifying Corrosive Environments and Active Corrosion in Reinforced Concrete Structures – Corrosion Evaluation Methods (Part 2)

Matthew O'Reilly, University of Kansas

### 11:45 am: Remedial Measures

Matthew A. Miltenberger, Vector Corrosion Services, Inc.

### 12:10 pm: Open Discussion and Closing Remarks

O. Burkan Isgor, Oregon State University



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

# Sessions & Events

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## Sunday, October 20, 2019

### 10:30 am – 12:30 pm

#### **Simulation of Concrete Flow, Part 2 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committees 236, 237, and 238; Co-sponsored by RILEM TC 266: Measuring Rheological Properties of Cement Based Materials

Moderated by Dimitri Feys, Missouri S&T; and Ammar Yahia, Université de Sherbrooke

The session description for this session may be found in the Part 1 listing; refer to page 28.

#### **10:30 am: Using Simulations to Scale from Paste to Concrete 3-D Printing**

Scott Z. Jones, National Institute of Standards and Technology; and Nicos Martys, National Institute of Standards and Technology

#### **10:54 am: Numerical Simulation of the Rheological Behavior of Concrete at Fresh State**

Gianluca Cusatis, Northwestern University; and Elham Ramyar, Northwestern University

#### **11:18 am: Numerical Simulation of Thixotropy in Concrete Flows**

Robin De Schryver, Ghent University; and Geert De Schutter, Ghent University

#### **11:42 am: Simulation of Rheology of Blended Dispersions: Insights to Guide Material Design**

Narayanan Neithalath, Arizona State University; Sooraj Nair, Arizona State University; and Pu Yang, Arizona State University

#### **12:06 pm: Discrete Element Model of Flow of SCC and 3-D Printable Materials**

David A. Lange, University of Illinois; Chuanyue Shen, University of Illinois; Karthik Pattaje, University of Illinois; and Yu Song, University of Illinois



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 10:30 am – 12:30 pm

#### **UHPC – Innovations and Changes in Structural Design, Part 1 of 3 - C-Junior Ballroom D**

Sponsored by ACI Committees 239 and 544

Moderated by Kay Wille, University of Connecticut

Ultra-high-performance concrete (UHPC) is one of the most promising material innovations in the construction industry in the 21st century. Innovations in material design led to enhanced material properties, allowing for innovative and novel structural designs using UHPC. This includes structural elements and structures fully or partially made out of UHPC. This session will invite national and international research groups and contractors and will share innovations and changes in structural design and performance of UHPC elements. The session has been chosen for the ACI Convention in Cincinnati, OH, to spread “A River of Knowledge” of advanced structural design using UHPC. Sharing academic knowledge and practical experiences about innovative structural designs using UHPC will facilitate the acceptance and application of the material in U.S. construction.

#### **10:30 am: Employing Ultra-High-Performance and Ultra-High-Durability Concrete for a Novel Durability-Based Concept and Design of Structures Exposed to Extremely Aggressive Environments: The Approach of the Horizon 2020 Project ReSHEALience**

Liberato Ferrara, Politecnico di Milano; Francesco Animato, Enel Green Power; Patrick Bamonte, Politecnico di Milano; Francesco Lo Monte, Politecnico di Milano; and Estefania Cuenca Asensio, Universitat Politècnica de Valencia

#### **10:45 am: Long Span Ultra-High-Performance Concrete Voided Slab**

Maheer K. Tadros, eConstruct, USA; Michael A. Asaad, University of Nebraska Omaha; and Gregory Lucier, North Carolina State University

#### **11:00 am: Achieving High Strength, Ductility, and Durability in Flexural Members Reinforced with Fiber-Reinforced Polymer Rebars by Using UHP FRC**

Shih Ho Chao, University of Texas at Arlington

#### **11:15 am: UHPC an Alternative to Control End-Zone Cracking in Prestressed Bridge Girders**

Eduardo Torres, University of Florida; Gary R. Consolazio, University of Florida; and H. R. (Trey) Hamilton, University of Florida

#### **11:30 am: Behavior of Ultra-High-Performance Concrete Encasing Steel H-pile Bridge Columns: Experimental Study**

Mohamed A. ElGawady, Missouri S&T; Mohanad M. Abdulazez, Missouri S&T; and Binod Shrestha, Missouri S&T

#### **11:45 am: UHPC Link Slabs and Overlays – A Robust Combination**

Gregory Nault, LafargeHolcim Ltd



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 11:30 am – 1:30 pm

#### **√ International Lunch - C-206**

\$40 U.S. per person

Sponsored by ACI International Advisory Committee (IAC)

**Topic:** Sustainability in the Latin American Cement Industry: How to Transform Challenges into Opportunities

**Speaker:** Maria José Garcia, FICEM

Join industry colleagues and friends for the International Lunch with featured speaker Maria José Garcia, Executive Director, FICEM. Latin America is immersed in the dilemma between the need for development and the growing responsibility of environment protection and natural resource conservation. During this presentation, Maria will provide an overview of the challenges being faced in Latin America and the Caribbean—in particular, how the cement and concrete industry contributes in a sustainable way to the problems faced by the region, highlighting our commitment with climate change challenges, high product resilience, and its capacity for the development of sustainable infrastructures.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability. Please notify the ACI Registration Desk if you have any dietary restrictions.



# Sessions & Events

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## 1:00 pm – 3:00 pm

### **Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/Fabric-Reinforced Cementitious Matrix, Part 1 of 3 - C-Junior Ballroom C**

Sponsored by ACI Committee 549; Co-sponsored by RILEM TRC and *fib* C-Cubed Committees  
Moderated by Barzin Mobasher, Arizona State University; and Antonio Nanni, University of Miami

State-of-the-art sessions on Textile-Reinforced Concrete/Fabric-Reinforced Cementitious Matrix (TRC/FRCM) will be supported by ACI Committee 549 in collaboration with RILEM TRC and *fib* C-Cubed committees. This forum will provide an opportunity to collect information and present the state-of-the-art knowledge in the field of TRC and FRCM as sustainable construction materials. The term TRC is typically used for new construction while the term FRCM refers to repair of existing concrete and masonry elements. The aim is to promote the technology; document; and develop recommendations for testing, design, analysis, and to showcase the key features of this ductile and strong cement composite system. New methods for characterization of key parameters will be developed and the results will be collected towards the development of state-of-the-art papers. Textile types include polymer-based (low and high performance), glass, natural, basalt, carbon, hybrid, matrix may consist of cementitious, geopolymers, lightweight matrix (aggregates). Additives such as short fibers, fillers, and nanomaterials are also considered. This session will communicate methods to characterize, analyze, and design with TRM/FRCM.

#### **1:00 pm: Investigation on End-Anchorage of SRG Composites Externally Bonded to a Concrete Substrate**

Lesley H. Sneed, Missouri S&T; Xingxing Zou, Missouri S&T; and Chris Moore, Jacobs Engineering Group

#### **1:25 pm: Experiment Approach to Determine Anchorage Length of Textile Reinforced Concrete**

Minoru Kunieda, Gifu University; and Bui Si Muoi, Gifu University

#### **1:50 pm: Effect of Bonded Length on Material Characterization of FRCM Composites**

Houman Akbari Hadad, DeSimone Consulting Engineers; Davide Campanini, University of Miami; and Antonio Nanni, University of Miami

#### **2:15 pm: Strengthening of Bending Stressed Components with FRCM**

Egbert Mueller, Technische Universität Dresden; Silke Scheerer, Technische Universität Dresden; and Manfred H. Curbach, Technische Universität Dresden

#### **2:40 pm: Numerical Modelling of FRCM Composites for the Seismic Retrofitting of Existing Concrete Structures**

Marco Carlo Rampini, Politecnico di Milano; Marco Di Prisco, Politecnico di Milano; Giulio Zani, Politecnico di Milano; and Matteo Colombo, Politecnico di Milano



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 1:00 pm – 3:00 pm

### **UHPC – Innovations and Changes in Structural Design, Part 2 of 3 - C-Junior Ballroom D**

Sponsored by ACI Committees 239 and 544  
Moderated by Kay Wille, University of Connecticut

The session description for this session may be found in the Part 1 listing; refer to page 30.

#### **1:00 pm: Design and Implementation of a UHPC Vehicular Bridge in Canada**

Don Gardonio, Facca Inc.; Philip L. Loh, Facca Inc.; Maher Tadros, eConstruct; and Adam Sevenker, eConstruct

#### **1:25 pm: Seismic Behavior of UHPC Segmental Column**

Mohamed A. ElGawady, Missouri S&T

#### **1:50 pm: UHPC Creep and Shrinkage Models to Estimate Long-Term Losses of Prestressed Girders**

Alireza Mohebbi, Federal Highway Administration – Turner-Fairbank Highway Research Center; Zachary B. Haber, Federal Highway Administration; and Benjamin Allen Graybeal, Federal Highway Administration

#### **2:15 pm: Low-Shrinkage Architectural UHPC**

Larry Rowland, Lehigh White Cement Company

#### **2:40 pm: Framework for Structural Design with UHPC-Class**

**Materials: Flexural Behavior and Design Methodology**  
Rafic El-Helou, Federal Highway Administration – Turner-Fairbank Highway Research Center; and Benjamin Graybeal, Federal Highway Administration



2 AIA/CES LU



PDH Codes: \_\_\_\_\_



# Sessions & Events

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## Sunday, October 20, 2019

### 2:00 pm – 3:30 pm

#### **International Session: Sustainability -**

#### **Always Advancing - C-Junior Ballroom B**

Sponsored by ACI International Advisory Committee (IAC)  
Moderated by José M. Izquierdo Encarnación, PORTICUS CSP

Sustainability is the ability to exist constantly. In the 21st century, it refers generally to the capacity for the biosphere and human civilization to coexist. It is also defined as the process of people maintaining change in a balanced environment, in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.

**2:00 pm: Sustainability Concerns Revisited after 17 Years**  
Terence C. Holland, Concrete Materials Engineer

**2:30 pm: Concrete: Adaptive and Resilient Engineering for Climate Change**  
Julie K. Buffenbarger, Beton Consulting Engineers

**3:00 pm: Making Sustainable Construction Tangible**  
David R. Green, BASF



1.5 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 2:30 pm – 3:30 pm

#### **MINI SESSION: High-Strength/Mass Concrete: Challenges and Solutions in the Field - C-204**

Sponsored by ACI Committee 363  
Moderated by Mauricio Lopez Casanova, Pontificia Universidad Católica de Chile

There are many projects specifying high-strength concrete (HSC) that have relatively large concrete elements creating a challenging scenario for early heat stress development and cracking. This is sometimes not well managed in the field with unsatisfactory results. The aim of the mini session is to give the audience information and tools to produce and successfully use HSC in large elements.

**2:30 pm: Projects Where High-Strength Concrete was Required to be Treated as Mass Concrete**  
John W. Gajda, MJ2 Consulting, PLLC

**2:45 pm: Structural Performance of High-Strength Concrete and High-Strength Rebar in Nuclear Structures**  
Robert Devine, University of Notre Dame; Steven Barbachyn, University of Notre Dame; Ashley Thrall, University of Notre Dame; and Yahya Kurama, University of Notre Dame

**3:00 pm: High-Strength Mass Concrete: Aston Martin Residences**

R. Brett Holland, Simpson Gumpertz & Heger Inc.

**3:15 pm: Impact of Aggregate Selection on Heat Profile for HS Mass Concrete/HS Mass Concrete: Northwestern Mutual Tower Mat Foundation**

Jason D. Wimberly, GCP Applied Technologies



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 3:30 pm – 5:30 pm

#### **Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/ Fabric-Reinforced Cementitious Matrix, Part 2 of 3 - C-Junior Ballroom C**

Sponsored by ACI Committee 549; Co-sponsored by RILEM TRC and fib C-Cubed Committees

Moderated by Barzin Mobasher, Arizona State University; and Flávio de Andrade Silva, Pontificia Universidade Católica do Rio de Janeiro

The session description for this session may be found in the Part 1 listing; refer to page 31.

**3:30 pm: Sustainability Assessment of CFRC Reinforced Building Components**

Benjamin Kromoser, University of Natural Resources and Life Sciences, Vienna

**3:55 pm: Development and Design of Sensory Reinforcing Textile Structures for Smart TRC Pipes**

Gozdem Dittel, RWTH Aachen University; Kira Heins, RWTH Aachen University; Gali Perry, Technion - Israel Institute of Technology; Yiska Goldfeld, Technion - Israel Institute of Technology; and Thomas Gries, RWTH Aachen University

**4:20 pm: Mineral Bonded Composites with Textile and Discrete Fiber Reinforcement for Enhanced Structural Impact Safety**

Iurie Curosu, Technische Universität Dresden; and Viktor Mechtcherine, Technische Universität Dresden

**4:45 pm: Shear Capacity of Textile-Reinforced Concrete: Modelling and Examples from Practice**

Jan Bielak, RWTH Aachen University; and Josef Hegger, RWTH Aachen University

**5:10 pm: Mechanical Performance of TRM/TRC Systems under Elevated Temperatures and Fire Conditions**

Thanasis Triantafyllou, University of Patras; and Catherine G. Papanicolaou, University of Patras



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

# Sessions & Events

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## 3:30 pm – 5:30 pm

### **SDC - Innovations in Concrete Technology - C-Junior Ballroom B**

Sponsored by ACI Foundation's Strategic Development Council (SDC)

Moderators G. Terry Harris, GCP Applied Technologies; and Lawrence L. Sutter, Michigan Technological University

Moving towards performance-based specifications has been a goal for the concrete construction industry for many years. Performance-based specifications allow for innovation and provide contractors more flexibility, allowing them to use materials, means, and methods that might otherwise not meet prescriptive requirements. For all parties, owners, designers, materials providers, and contractors, performance-based specifications offer advantages and challenges. This session will provide a perspective on performance-based specifications from each of these key stakeholders and will provide examples of where this approach to construction has been applied or is being implemented.

The SDC collaborates across the concrete industry to address industry challenges and creates a forum to introduce and encourage new technologies.

### **3:30 pm: Performance-Engineered Concrete Mixtures: An Effort by FHWA and State DOTs to Advance Concrete Technology**

Thomas J. Van Dam, NCE

### **4:00 pm: Performance-Based Specifications for Concrete – A Design Professional's Perspective**

Frank Malits, Cagley & Associates, Inc.

### **4:30 pm: Perspective of a Material Supplier: Performance Specifications for Concrete Materials and Mixtures**

Colin L. Lobo, National Ready Mixed Concrete Association

### **5:00 pm: Implementing Performance Engineered Design and Construction Requirements for Concrete**

Oscar R. Antommattei, Kiewit Engineering Group Inc.



2 AIA/CES LU

PDH Codes: \_\_\_\_\_

## 3:30 pm – 5:30 pm

### **UHPC – Innovations and Changes in Structural Design, Part 3 of 3 - C-Junior Ballroom D**

Sponsored by ACI Committees 239 and 544

Moderated by Kay Wille, University of Connecticut

The session description for this session may be found in the Part 1 listing; refer to page 30.

### **3:30 pm: Reinforcement Anchorage and Bond-Slip Laws for UHPC Structures**

Stavroula J. Pantazopoulou, York University, Canada; Konstantinos Tsiotsias, York University; and Katerina D. Papoulia, University of Waterloo

### **3:50 pm: Effect of Fiber Reinforcement on the Tensile Behavior of Rebar Reinforced UHPC**

Kay Wille, University of Connecticut

### **4:10 pm: Transitioning from Shear to Bending Failure of UHPC Beams: Fibers as the Key Factor**

Tathagata Bhaduri, Rensselaer Polytechnic Institute; Shady Mohamed Gomaa, Elsewedy Electric PSP; and Mohammed Galal Alnaggar, Rensselaer Polytechnic Institute

### **4:30 pm: Shear Performance of Pretensioned UHPC Girders**

Gary G. Greene, Federal Highway Administration – Turner Fairbank Highway Research Center; Rafic El-Helou, Federal Highway Administration – Turner Fairbank Highway Research Center; and Benjamin Allen Graybeal, Federal Highway Administration

### **4:50 pm: Experimental Evaluation of UHPFRC Beams with Longitudinal Reinforcement Designed at Balanced Strain Condition**

Jorge Torres Alamo, University of Florida

### **5:10 pm: Mechanical Properties and Failure Characterization of Ultra-High-Performance Concrete**

Aashay Arora, Arizona State University; Barzin Mobasher, Arizona State University; and Narayanan Neithalath, Arizona State University



2 AIA/CES LU

PDH Codes: \_\_\_\_\_

## 4:00 pm – 5:00 pm

### **MINI SESSION: Student Chapter Leadership Workshop - C-200**

Sponsored by ACI Committees S805 and Student and Young Professional Activities Committee

Moderated by Andres Matos, Flood Testing Laboratories, Inc.

The Student Chapter Leadership Workshop is a training session for new student officers in ACI Student Chapters.

### **4:00 pm: ACI Certified Student**

George W. Seegebrecht, Concrete Consulting Engineers, LLC

### **4:15 pm: Student Certification Training**

Sahira E. Palomo, University of Houston-Downtown

### **4:30 pm: Student Certification Training**

Martin Alejandro Ruiz-Pimentel, Universidad Autónoma de Nuevo León; and José Gallardo-Chávez, Universidad Autónoma de Nuevo León

### **4:45 pm: Student Certification Training**

Mohamed Hassan, New Jersey Institute of Technology



1 AIA/CES LU

PDH Codes: \_\_\_\_\_

# Sessions & Events

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## Sunday, October 20, 2019

### 5:45 pm – 7:00 pm

#### **Opening Session and Keynote Presentation - C-Grand Ballroom A**

The Opening Session is the official start to the ACI Convention and will begin with a welcome address by ACI President Randall Poston. Next, we'll kick off the convention with our keynote speaker, Mark Bowden. Mark entertainingly trains any audience in the cutting-edge techniques that will help them to stand out, win trust, and profit every time they speak. His keynote presentation takes everyone on an exciting and humorous journey to understand how, with the right body language, "It's often not what you say—but how you say it, that gets results!" Don't miss out on this keynote presentation!

### 7:00 pm – 8:00 pm

#### **Opening Reception - C-Ballroom Foyer**

Immediately following the Opening Session, attendees are invited to the exhibit hall for this evening reception. Reunite with colleagues, network with new acquaintances, and learn about the products and services offered by the exhibitors. A cash bar and light refreshments will be available.

### 8:00 pm – 10:00 pm

#### **Hot Topic Session: Innovation and Technology in the Construction and Design Industry - C-Junior Ballroom B**

Sponsored by ACI Hot Topic Committee  
Moderated by Brent Cooper, Northern Kentucky Chamber of Commerce

Moderated panel discussion on innovation in the construction and design industry. Panel discussion with representatives from an owner's (Cincinnati Zoo), designer's (GBBN Architects), General Contractor's (Pepper Construction), and a concrete supplier's perspective. Where is the future of Innovation within our industry? Who will be the leader and who will follow? Is it fundamental human nature or finance? Fad or fact? Are we improving?

The convention's theme is based on the River of Knowledge. This 'river' is an ever flowing and changing entity that relies on the history and past, but also moves to the future. Just as our building and design practices rely heavily on standard methodologies, we also are encouraged to embrace new innovative techniques to increase the safety, efficiency, and overall performance of our structures. There are many questions that come into play, such as: how fast do we implement these new technologies; how do we evaluate the safety and validity of new materials and methods; how do companies of all sizes utilize innovation within their firms for the betterment of the business as well as the projects they

are involved in construction? Innovation to be focused on opportunities for fundamental changes.

#### **8:00 pm: Panel Discussion**

Mark Fischer, Cincinnati Zoo and Botanical Garden; Matt Schottelkotte, GBBN Architects; Jerry Noble, Pepper Construction; and Brad Slabaugh, Hilltop Concrete



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 8:00 pm - 10:00 pm

#### **Hot Topic Session: Do We Have a Sustainable and Scalable Material to Address Carbon Steel Corrosion Once and for All? - C-Junior Ballroom C**

Sponsored by ACI Hot Topic Committee  
Moderated by Antonio Nanni, University of Miami

The major challenge to the durability of reinforced concrete structures exposed to chlorides is the corrosion of the carbon steel reinforcement. The current-state-of practice uses different strategies to address this problem, such as use of admixtures or supplemental binders in the concrete mixture, and increase of cover or surface protection by membranes. Additionally, carbon steel may be coated with epoxy or replaced by more corrosion-resistant alloys. The purpose of this hot topic session is to show practitioners, researchers, and students the availability of composite reinforcement that, rather than delaying the corrosion problem, totally resolves it with a material system (that is, glass fiber-reinforced polymer) that is validated, included in standards (that is, design and materials specs), and readily available. A hosted bar and dessert will be available during the reception.

#### **8:00 pm: Panel Discussion**

Patrick McColley, ODOT District Two; Richard F. Bertz, The Mannik & Smith Group, Inc.; and John Myers, Missouri S&T

#### **9:00 pm: Networking Session**

Sponsored by Owens Corning



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 8:30 pm – 10:00 pm

#### **Young Professional Networking Event – Rock Bottom Brewery**

Sponsored by the ACI Student and Young Professional Activities Committee

SYPAC (Student and Young Professional Activities Committee) invites all graduate students, young professionals, and mentors to a casual networking exchange following the Opening Reception. Attendees will establish connections with fellow young members. Bring your business card for a chance to win door prizes. A cash bar will be available.

# Sessions & Events

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## Monday, October 21, 2019

### 6:30 am – 8:00 am

#### **Workshop for Technical Committee Chairs (by invitation only) - C-Grand Ballroom A**

Sponsored by ACI Technical Activities Committee (TAC)  
Moderated by Lawrence F. Kahn, Georgia Institute of Technology

ACI technical committee Chairs are expected to attend this breakfast workshop to meet with fellow Chairs, TAC members, and ACI staff to hear updates on important recent developments of interest to ACI technical committee Chairs. There will be table discussions and short presentations. If you are unable to attend, please ask the Secretary of your committee or another committee member to represent you in your absence. *Attendance is by invitation only.*

### 7:00 am – 8:30 am

#### **Speaker Development Breakfast - C-201**

Sponsored by ACI Committee S802  
Moderated by Ben Dymond, University of Minnesota Duluth; and Chris Carroll, Saint Louis University

**Speaker:** Armen Amirkhanian, University of Alabama  
**Topic:** Keeping Your Presentation Above Water

Bad presentations are bad. They are boring, not informative, and drastically drive up cell phone usage. But what can we do when we must include that graph/table/video/picture or else everyone in the audience will not realize how great of a researcher we are? What can we do when the audience must know that we collected 20,000 data points and must plot each point? This session will demonstrate some simple things and presentation visualization techniques to turn a bad presentation into a good presentation. And who knows, it may even help a good presentation become a great presentation!

### 8:30 am – 9:30 am

#### **MINI SESSION: Project Files and How Attorneys Will Use Them or Protecting Your Six - C-204**

Sponsored by ACI Committee E702  
Moderated by Kimberly Waggle Kramer, Kansas State University

Engineers/Architects and other professionals must meet the requirement for retaining complete project documentation as set out in the by-laws. Intellectual property (IP) protection is absolutely critical for protecting a company's proprietary designs, processes, and inventions that, if leaked to competitors or made public, could ruin a company's market advantage and reputation or lead to costly litigation. This session will cover topics to consider for documentation of engineering services and IP protection.

#### **8:30 am: Project Files and How Attorneys will Use Them or Protecting Your Six**

William E. Rushing, Waldemar S Nelson & Co., Inc



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### 8:30 am – 10:30 am

#### **Materials, Analysis, Structural Design, and Applications of Textile-Reinforced Concrete/ Fabric-Reinforced Cementitious Matrix, Part 3 of 3 - C-Junior Ballroom C**

Sponsored by ACI Committee 549; Co-Sponsored by RILEM TRC and fib C-Cubed Committees  
Moderated by Barzin Mobasher, Arizona State University

The session description for this session may be found in the Part 1 listing; refer to page 31.

**8:30 am: On the Mechanical Behavior of Carbon Textile-Reinforced Concrete – Material and Structural Assessment**  
Flávio de Andrade Silva, Pontificia Universidade Católica do Rio de Janeiro; Rebecca Silva, Pontificia Universidade Católica do Rio de Janeiro; and Daniel C.T. Cardoso, Pontificia Universidade Católica do Rio de Janeiro

#### **8:54 am: Tensile Properties and Damage Characterization of Polypropylene-Based TRC Composites**

Barzin Mobasher, Arizona State University; Jacob MacGregor Bauchmoyer, Arizona State University; Vikram Dey, Arizona State University; and Steve Schaefer, BASF North America

#### **9:18 am: Numerical Modelling of FRCM Composites for the Seismic Retrofitting of Existing Concrete Structures**

Marco Rampini, Politecnico di Milano; Giulio Zani, Politecnico di Milano; Matteo Colombo, Politecnico di Milano; and Marco Di Prisco, Politecnico di Milano

#### **9:42 am: Behavior of Brick Masonry Columns Confined with Multi-layer SRG Jackets**

Lesley H. Sneed, Missouri S&T; Christian Carloni, Case Western Reserve University; Sarah Elizabeth Jemison, KPFF Consulting Engineers; and Carolina Senesi, Aliva Corporation

#### **10:06 am: A Staircase and Wall Element Made of TRC**

Egbert Mueller, Technische Universität Dresden; Silke Scheerer, Technische Universität Dresden; and Manfred H. Curbach, Technische Universität Dresden



PDH Codes: \_\_\_\_\_



# Sessions & Events

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## Monday, October 21, 2019

### 8:30 am – 10:30 am

#### **Research in Progress, Part 1 of 2 - C-Junior Ballroom B**

Sponsored by ACI Committee 123

Moderated by Matthew O'Reilly, University of Kansas

This session will feature presentations of original, unpublished results from ongoing research projects and leading-edge concrete technology and research throughout the world.

#### **8:30 am: Influence of Metakaolin and Crumbed Rubber on Properties of 3-D Printable Cementitious Mixture for Application in Additive Manufacturing**

HariPriya Nekkanti, Clemson University; and Prasada R. Rangaraju, Clemson University

#### **8:45 am: Development of a New Test Method to Evaluate the Impact of Curing on the Near-Surface Chloride Penetration Resistance of Concrete**

Majed Karam, University of Toronto; and R Doug Hooton, University of Toronto

#### **9:00 am: Nonlinear Modeling Parameters and Acceptance Criteria for Reinforced Concrete Coupling Beams**

Christopher Motter, Washington State University

#### **9:15 am: Freeze-Thaw Durability of the Bond Zone between Cementitious Rapid Repair Materials and Concrete Substrate**

Noah Thibodeaux, New Jersey Institute of Technology; Matthew J. Bandelt, New Jersey Institute of Technology; and Matthew P. Adams, New Jersey Institute of Technology

#### **9:30 am: The Effect of Chemical Composition of Superabsorbent Hydrogels on Their Influence on Cementitious Materials**

Ali Ghahremaninezhad, University of Miami; Babak Vafaei, University of Miami; and Khashayar Farzarian, Yale University

#### **9:45 am: Use of Splay Anchors in Flexural Strengthening of RC Bridge Girders with CFRP Sheet**

Hayder A. Rasheed, Kansas State University; and Mustafa M. Raheem, Kansas State University

#### **10:00 am: Assessing the Comparability of Concrete Environmental Product Declarations (EPDs) through a Probabilistic Analysis**

Hessam Azari Jafari, Massachusetts Institute of Technology; Jeremy Gregory, Massachusetts Institute of Technology; and Randolph Kirchain, Massachusetts Institute of Technology

#### **10:15 am: Development of Ecological Nanoengineered Strain-Hardening Cementitious Composites with High-Volume Ground Glass Pozzolans**

Hisseine Ousmane Ahmat, Université de Sherbrooke; and Arezki Tagnit Hamou, Université de Sherbrooke



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

### 8:30 am – 10:30 am

#### **What I Wish I Knew: Involvement in ACI as a Young Professional - C-Junior Ballroom D**

Sponsored by ACI Committee S806

Moderated by Megan M. Huberty, American Engineering Testing; and Andres Matos, Flood Testing Laboratories, Inc.

This session will be targeted for students who are in the last few semesters of their academic careers. After attending this session, students will have a clear understanding of how to stay involved in ACI when they enter the industry. Five young professionals will discuss their experiences in finding their own path within ACI.

#### **8:30 am: Why ACI? My Journey in ACI!**

Samhar S. Hoz, Helix Steel

#### **8:55 am: Shaping Your Career, Shaping the Concrete Industry**

Destry R. Kenning, Nox Crete Products Group

#### **9:20 am: I Was Supposed to Go to Law School**

Melissa Camarillo, Harris County Flood Control District

#### **9:45 am: How to Get Involved with Technical Committees as a Young Member?**

Dimitri Feys, Missouri S&T

#### **10:10 am: Involvement in ACI as Teaching Faculty**

Anahid Behrouzi, California Polytechnic State University



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

### 10:30 am – 11:30 am

#### **ACI Student Forum - C-203**

Sponsored by the ACI Student and Young Professional Activities Committee

Moderated by Kanette Worlds, American Concrete Institute

The ACI Student Forum provides an opportunity for student chapters and competition teams to exchange ideas and best practices. Student speakers will deliver presentations about their university activities and achievements. A limited number of presentation spots are available. Speakers may present as a group or individually.



# Sessions & Events

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**10:30 am – 12:00 pm**

## **ACI 123 Concrete Research Poster Session - C-Ballroom Foyer**

Sponsored by ACI Committee 123

Moderated by Robert J. Thomas, Clarkson University

The ACI 123 Concrete Research Poster Session complements the existing Research in Progress and Open Topic sessions and provides further opportunity for the presentation of original, unpublished results from ongoing research projects and leading-edge concrete technology throughout the world.

### **Effect of Ultra-High-Performance Concrete (UHPC) Coating on Steel Reinforcement Corrosion**

Haitham Zeddan Hussein, Clemson University; Prasad Rangaraju, Clemson University; Amir Pourssae, Clemson University; and Hamid Sarraf, Clemson University

### **Temperature Effect on Electromechanical Impedance (EMI) Method for Very-Early-Age Concrete Properties Monitoring**

Guangshuai Han, Purdue University; Yen-Fang Su, Purdue University; and Na Lu, Purdue University

### **Autogenous Healing Performance of Zeolite-Based Self-Healing Cementitious Materials**

Cihang Huang, Purdue University; Yen-Fang Su, Purdue University; and Na Lu, Purdue University

### **Machine Learning Guided Modeling for Concrete Strength Prediction Using Electromechanical Impedance (EMI) Technique**

Yen-Fang Su, Purdue University; Guangshuai Han, Purdue University; and Na Lu, Purdue University

### **Influence of High-Volume Clays on Portland Cement Hydration and Concrete Aging Resistance**

Jianqiang Wei, University of Massachusetts Lowell

### **Corrosion and Bond Characteristics of Coated Steel Reinforcement and Its Effect on the Service Life of Concrete Structures**

Deepak Kumar Kamde, Indian Institute of Technology; and Radhakrishna G. Pillai, Indian Institute of Technology

### **Shear Performance of Post-Tensioned Concrete Girder with UngROUTED Ducts**

Jongkwon Choi, University of Texas at Austin; and Oguzhan Bayrak, University of Texas at Austin

### **Evaluation of Geopolymer Mortar Based on a Binary Blend of Class F Fly Ash and Ground Glass Fibers Using a Sodium Silicate-Free Activator**

Omar Alsanusi Amer, Clemson University; Prasad Rangaraju, Clemson University; and Hassan Rashidian Dezfouli, Clemson University

### **In-Situ Concrete Early-Age Strength Monitoring Using Piezoelectric-Based Sensors**

Na Lu, Purdue University; Yen-Fang Su, Purdue University; and Guangshuai Han, Purdue University

### **Freeze-Thaw Durability of Internally Cured Concrete for Bridge Decks**

James Lafikes, University of Kansas; Alireza Bahadori, University of Kansas; Matthew O'Reilly, University of Kansas; Muzai Feng, University of Kansas; and David Darwin, University of Kansas

### **Experimental Investigation of the Face Reinforcement Ratio and Drilled Shaft Diameter in Drilled-Shaft Footings**

Ryan Boehm, University of Texas at Austin; Hyunsu Kim, University of Texas at Austin; Yousun Yi, University of Texas at Austin; Jongkwon Choi, University of Texas at Austin; Juan Murcia-Delso, University of Texas at Austin; Trevor Hrynyk, University of Waterloo; and Oguzhan Bayrak, University of Texas at Austin

### **Investigation on the Influence of Cement Composition, Particle Size Distribution, and Fineness on the Response of Cementitious System to C-S-H Nanoparticle-Based Nucleating Agent**

Abdul Basit Peerzada, Clemson University; and Prasad Rangaraju, Clemson University

### **Creep and Shrinkage Prestress Losses in Ultra-High-Performance Concrete Members**

Madiha Ammari, The Ohio State University

### **Assessing the Mechanical Performance of Mortar Reinforced with Recycled Fiber from Retired Wind Turbine Blade**

Somayeh Nassiri, Washington State University; and Mohammed Mostafa Haider, Washington State University

### **The Advantages and Challenges to Constructing Labyrinth Spillways with Self-Consolidating Concrete and Conventional Concrete**

James P. Murphy, Gannett Fleming, Inc.; and Timothy A. Weber, Gannett Fleming, Inc.

### **Using Environmental Product Declarations for Green Public Procurement and Life Cycle Assessment of Concrete Pavements**

Milena Rangelov, Federal Highway Administration; Heather Dylla, Federal Highway Administration; and Nadarajah Sivanesar, Federal Highway Administration

### **Interfacial Bond Strength between Normal-Strength Concrete and Sustainable Ultra-High-Performance Concrete**

Ganesh Prakasam, CSIR-Structural Engineering Research Centre; and Ramachandra Murthy, CSIR-Structural Engineering Research Centre

### **A Statistical Approach to Derive Design Code for Shear Strength of Corrosion-Damaged Reinforced Concrete Beams**

Mahmoodreza Soltani, Bradley University; and Adham Abu-Abaileh, Bradley University

### **Cooling Aggregate with Liquid Nitrogen to Control Concrete Temperatures**

Eric Van Dixhorn, Peak Innovations, Inc.

# Sessions & Events

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## Monday, October 21, 2019

### 11:00 am – 1:00 pm

#### **Prestressed Concrete with Conventional and Nonconventional Materials, Part 1 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committee 345  
Moderated by Yail Jimmy Kim, University of Colorado Denver; and Hiroshi Mutsuyoshi, Saitama University

Professor Hiroshi Mutsuyoshi of Japan Prestressed Concrete Institute is co-moderating a special session that focuses on the recent advancement of prestressed concrete for bridges and structures using conventional and nonconventional materials. Presentations and technical papers will include the conceptual development of innovative prestressed concrete, laboratory experiments, numerical modeling, and case studies. State-of-the-art prestressing techniques and nonconventional materials such as fiber-reinforced polymer (FRP) composites to address the sustainable performance of concrete members will also be considered. The session will benefit practicing engineers, government officials, and academics.

#### **11:00 am: Pretensioned Bent Caps to Improve Bridge Substructure Design and Performance**

Anna C. Birely, Texas A&M University; John B. Mander, Texas A&M University; Codi McKee, Texas A&M University; and Judong Lee, Texas A&M University

#### **11:20 am: Recent Advances in Prestressed Concrete in Korea**

Jae-Hoon Lee, Yeungnam University; Younghwan Park, Korea Institute of Civil Engineering and Building Technology; Byul Shim, Daor E&C; and Seung Yup Jang, Korea National University of Transportation

#### **11:40 am: Mildglass: GFRP Strand Prototype Development**

Marco Rossini, University of Miami; and Antonio Nanni, University of Miami

#### **12:00 pm: AASHTO-LRFD Design Specifications for Beams Prestressed with CFRP Systems**

Abdeldjelil Belarbi, University of Houston; and Bora Gencturk, University of Southern California

#### **12:20 pm: On the Application of Basalt-Fiber Reinforced Polymer (BFRP) Bars to the Pre-Stressed Concrete Industry**

Liberato Ferrara, Politecnico di Milano; and Bruno Dal Lago, Politecnico di Milano

#### **12:40 pm: Use of Flexible Filler in U.S. Post-Tensioned Bridges: An Overview of Testing To Date and Lessons Learned**

Natassia Brenkus, The Ohio State University; and Trey Hamilton, University of Florida



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 11:00 am – 1:00 pm

#### **Recent Developments in Bio-Inspired Cementitious Materials - C-Junior Ballroom D**

Sponsored by ACI Committees 130-TG1, 201, and 236  
Moderated by Wil V. Srubar, University of Colorado Boulder

Bio-inspired approaches for improving the properties of cementitious materials have seen increasing interest in the recent years. There have been significant developments in fundamental and applied research on bio-inspired materials for concrete crack healing to enhance sustainability and long-term durability. The primary objective of this session is to bring together experts in both academia and industry to discuss the recent developments in microbial bio cementation.

#### **11:00 am: Using Microbial-Induced Calcite Precipitation to Mitigate Salt-Induced Damage in Concrete Exposed to CaCl<sub>2</sub>**

Yaghoob Farnam, Drexel University; Maissoun Ksara, Drexel University; and Rayna Newkirk, Drexel University

#### **11:20 am: Role of Microbially Induced Calcite Precipitation on Corrosion Prevention**

Raissa P. Ferron, University of Texas at Austin

#### **11:40 am: Materials Inspired from Nature: Bio-Derived Admixtures for Cement-Based Materials**

Zeynep Basaran Bundur, Özyeğin University

#### **12:00 pm: Biomimetic Antifreeze Polymers: Can They Mitigate Freeze-Thaw Damage?**

Shane Frazier, University of Colorado Boulder; and Wil V. Srubar, University of Colorado Boulder

#### **12:20 pm: Influence of Biopolymers on Calcium-Silicate-Hydrate**

Ali Ghahremaninezhad, University of Miami; and Mahsa Kamali, University of Miami

#### **12:40 pm: Genetically Engineered Biocementitious Composites**

Wil V. Srubar, University of Colorado Boulder; and Sarah Williams, University of Colorado Boulder



2 AIA/CES LU



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### 11:00 am – 1:00 pm

#### **Research in Progress, Part 2 of 2 - C-Junior Ballroom B**

Sponsored by ACI Committee 123  
Moderated by Matthew O'Reilly, University of Kansas

The session description for this session may be found in the Part 1 listing; refer to page 36.

#### **11:00 am: Ground-Penetrating Radar Data Processing for Concrete Bridge Deck Evaluation**

Sepehr Pashoutani, University of Nebraska-Lincoln

# Sessions & Events

For detailed program information and program changes, download the new Convention App.

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## 11:15 am: Large-Scale Testing of a Lightly Reinforced Concrete Wall and Proposed FRP Retrofit Approach

Anahid Behrouzi, California Polytechnic State University; Michael Deigert, California Polytechnic State University; Rory De Sevilla, California Polytechnic State University; Peter T. Laursen, California Polytechnic State University; and Jerry Luong, California Polytechnic State University

## 11:30 am: Experimental Investigation of High-Strength Reinforcing Bars in Shear-Friction Applications

Ahmed Abdulhameed Alimran, Purdue University; and Christopher Williams, Purdue University

## 11:45 am: Seismic Performance Design Criteria for Bridge Bent Plastic Hinge Regions

A K M Golam Murtuz, Portland State University; Peter Dusicka, Portland State University; and Thomas Schumacher, Portland State University

## 12:00 pm: Testing a Full-Scale Reinforced Concrete Bridge Deck with GFRP and Steel Reinforcement Using a New Rolling Load Simulator (ROLLS)

Laura Tauskela, Queen's University; and Amir Z. Fam, Queen's University

## 12:15 pm: Fatigue Behavior of Reinforced Concrete Beams Rehabilitated Using Sustainable Ultra-High-Performance Concrete Strips

Ganesh Prakasa, Academy of Scientific & Innovative Research, CSIR-Structural Engineering Research Centre; and A. Ramachandra Murthy A., CSIR-Structural Engineering Research Centre

## 12:30 pm: Estimating Strains in Deep Beams Using Measured Cracking Information

Jarrold R. Zaborac, University of Texas at Austin; Jongkwon Choi, University of Texas at Austin; Trevor D. Hrynyk, University of Waterloo; and Oguzhan Bayrak, University of Texas

## 12:45 pm: Enhanced Imaging of Structural Concrete through Data Fusion of Ultrasonic and Radar Signals

Sina Mehdiinia, Portland State University; Eric Wan, Portland State University; Xubo Song, Oregon Health and Science University; and Thomas Schumacher, Portland State University



2 AIA/CES LU

PDH Codes: \_\_\_\_\_

## 11:15 am – 12:15 pm

### MINI SESSION: Durability of Self-Consolidating Concrete (SCC) - C-206

Sponsored by ACI Committees 201 and 237

Moderated by Mohamed Bassuoni, University of Manitoba

The focal subject of the presentations will be on the durability behavior of self-consolidating concrete (SCC). Durability aspects are primarily related to specifics of the mixture design parameters of SCC. The scope involves theoretical and experimental investigations as well as field case studies. The session should be of particular interest to concrete practitioners and researchers.

## 11:15 am: Durability of SCC

Miles Zeman, Dura Stress Inc.

## 11:30 am: Development of a Durable SCC Mixture for Use in Mass Applications in New Nuclear Construction

Boris Haranki, Westinghouse Electric Company

## 11:45 am: An Overview on High-Temperature Behavior of Self-Consolidating Concrete

Patrick Bamonte, Politecnico di Milano

## 12:00 pm: Freezing/Thawing Durability and a Predictive Model of High-Volume Fly Ash Self-Consolidating Concrete

Sen Du, Washington State University; and Xianming Shi, Washington State University



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 11:30 am – 1:30 pm

### √ Student Lunch - C-Grand Ballroom A

\$39 U.S. per person

Sponsored by Baker Concrete Construction Company, Inc.



Coordinated by The Greater Miami Valley Chapter – ACI

**Speaker:** Ken Hover

**Topic:** Taking your College Knowledge to Work!

Join students and other ACI attendees for the Student Lunch with featured speaker Ken Hover. The transition from college to the work world is an exciting time. You are eager to find out how the so-called “Real World” works, and equally eager to apply the lessons learned in school. You might wonder if you are really up to it, and you may have a sneaking suspicion that your courses, homework, projects, tests, and professors may not have prepared you for off-campus reality. Nagging questions include “How is the ‘Real World’ different from the classroom and laboratory?” You might be concerned that you have “book smarts,” but do you have the “street smarts” that you need? Do they really “throw away the book” out in practice? And finally, you might wonder if you “have what it takes to succeed?” The lunchtime presenter’s primary advice to you is to RELAX! You will have the capacity to do exciting work and to do it well, and best of all, your education prepared you to learn the things you still need to know. Get up early, come to work on time, pay attention, ask questions, take notes, and be polite. Success is just around the corner! All are welcome to register for the lunch. Following the lecture, the results of the student competition will be announced.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability. Please notify the ACI Registration Desk if you have any dietary restrictions.

# Sessions & Events

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## Monday, October 21, 2019

### 1:00 pm – 2:00 pm

#### **MINI SESSION: New Approaches to Measuring Pozzolanic Activity - C-232**

Sponsored by ACI Committee 232

Moderated by Lawrence L. Sutter, Michigan Technological University

New tests are being proposed to measure the pozzolanic activity of fly ash and other pozzolans. The objective of this session is to introduce the methods and provide an opportunity for stakeholders to learn more about these tests' methods, which may ultimately be used to help characterize or specify these materials for use in concrete.

**1:00 pm: A New Approach to Measuring Pozzolanic Activity**  
Maria G. Juenger, University of Texas at Austin

**1:15 pm: SCM Pozzolanic Reactivity: A Key Parameter to Predict Performance**

Jason Weiss, Oregon State University; and O Burkan Isgor, Oregon State University

**1:30 pm: Reactivity Testing for Supplementary Cementitious Materials: Classification and Relationships with Paste Properties**

Prannoy Suraneni, University of Miami

**1:45 pm: A Novel Test Method to Assess Pozzolanicity**

Kimberly E. Kurtis, Georgia Institute of Technology; and Renee Taylor Rios, Georgia Institute of Technology



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 1:30 pm – 2:30 pm

#### **MINI SESSION: Reliability and Safety of New and Rehabilitated Concrete Structures - C-233**

Sponsored by ACI Committee 348

Moderated by Nakin Suksawang, Florida Institute of Technology

Many codes rely on the use of structural reliability and safety approaches to design or assess new and existing concrete structures. The acceptability criterion is the target reliability index, as reliability is considered as a rational measure of structural performance. Although there are guidelines to help engineers to obtain this information, there is a lack of knowledge of formal education in this subject. The objective of the proposed session is to present the structural reliability concepts that can be easily understood by the practitioner. The presence of uncertainties in materials properties, geometries, predictive models, loads, etc., will be discussed. Paper on evaluation methods, prediction models, reliability analysis, and code calibration will also be presented.

**1:30 pm: Challenges in the Safety Assessment of Existing Reinforced Concrete Columns Strengthened by FRP**

Peterson A. Quadros, Federal University of Minas Gerais; Juscelina R. Ferreira, State University of Minas Gerais; and Sofia M.C. Diniz, Federal University of Minas Gerais

**1:50 pm: Probabilistic System-Level Performance Evaluation for the Risk-Based Disaster Resilience of Reinforced Concrete Frame Buildings**

YeongAe Heo, Case Western Reserve University; YeongAe Heo Case Western Reserve University; and Xiaowei Wang, Case Western Reserve University

**2:10 pm: Parameterized Fragility Models Towards Hurricane Risk Assessment of Concrete Structures**

Georgios Balomenos, McMaster University



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 1:30 pm – 3:30 pm

#### **Cincinnati Children's Hospital Medical Center - C-Junior Ballroom D**

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Julie Cromwell, Julie Cromwell & Associates, LLC; and Robin Hahn, Advantage Group Engineers, Inc.

The Cincinnati Children's Hospital Medical Center (CCHMC) is the #2 Children's Hospital in the nation. Their master planning and collaboration between the hospital staff, facility directors, and construction and design teams have allowed them to grow and build numerous concrete buildings on campus. Learn about master planning, budgeting, and implementing innovative design and construction technologies to build the buildings for the users who are also implementing new technologies to save lives.

**1:30 pm: Cincinnati Children's Hospital Medical Center – Part I Master Planning | Architectural Design | Structural Design**

Michael Browning, Cincinnati Children's Hospital Medical Center; Shawn Feigh, GBBN; and David Marshall, THP Limited, Inc.

**2:30 pm: Cincinnati Children's Hospital Medical Center – Part II Construction**

Brian Campbell, Messer Construction Co.



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 1:30 pm – 3:30 pm

#### **Optimizing Workability of Fiber-Reinforced Concrete - C-Junior Ballroom B**

Sponsored by ACI Committees 238, 302 and 544  
Moderated by Van K. Bui, BASF; and Liberato Ferrara, Politecnico di Milano

Research and development on fiber-reinforced concrete (FRC) have been extensively undertaken. Application of FRC in actual structures has been also increased. However, achieving suitable workability of FRC for ease of placement and finishing is usually a challenge, especially for use of medium and high volume of fibers to achieve performance requirement of hardened concrete. This session will focus on optimizing workability of FRC and adapting its rheological properties to the successful



# Sessions & Events

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accomplishment of the intended application. The session will include the topics on a need on achieving good workability, factors influencing workability, laboratory and onsite test methods for FRC concrete, and finishing associated with workability and case studies, which showed the use of FRC in real structures.

### 1:30 pm: Optimizing Workability of Fiber-Reinforced Concrete

Kamal H. Khayat, Missouri S&T; and Ahmed Abdelrazik, Missouri S&T

### 1:50 pm: Controlling Excess Paste Volume to Achieve Fresh and Hardened Performance of Fiber-Reinforced Concrete

Jiong Hu, University of Nebraska–Lincoln

### 2:10 pm: Workability and Surface Finish Properties of Fiber-Reinforced Concrete

Joshua Edwards, AVR, Inc.

### 2:30 pm: Selecting the Right Fibers for Your Application

Marc M. Rached, BASF

### 2:50 pm: A Comprehensive Methodology to Assess the Fresh State Performance of FRC with Adapted Rheology

Liberato Ferrara, Politecnico di Milano

### 3:10 pm: A New Tool and Test Procedure for Assessment of Waiting Period in Surface Finishing of Fiber-Reinforced Concrete Flatworks

Van K. Bui, BASF



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 1:30 pm – 3:30 pm

### **Prestressed Concrete with Conventional and Nonconventional Materials, Part 2 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committee 345

Moderated by Hiroshi Mutsuyoshi, Saitama University; and Yail Jimmy Kim, University of Colorado Denver

The session description for this session may be found in the Part 1 listing; refer to page 38.

### 1:30 pm: Prestressed Concrete Using Calcium Sulfoaluminate Cement

Cameron D. Murray, University of Arkansas; Royce W. Floyd, University of Oklahoma; and Chris C. Ramseyer, University of Oklahoma

### 1:50 pm: Impact of Void Details on the Performance of Hollow Pretensioned Concrete Bent Caps

Codi McKee, Texas A&M University; and Anna C. Birely, Texas A&M University

### 2:10 pm: Distributed Horizontal Shear Reinforcement to Mitigate Shear Failures at End Regions of Pretensioned Beams

Bruce W. Russell, Oklahoma State University

### 2:30 pm: Field Deployment of CFCC in Highway Bridge Applications

Yoshiaki Yamamoto, Tokyo Rope Mfg. Co., LTD.

### 2:50 pm: Prestressed NSM CFRP for Highway Bridges: From Modeling to World-First Field Application

Yail Jimmy Kim, University of Colorado Denver; Jae-Yoon Kang, Jong-Sup Park; and Woo-Tai Jung, Korea Institute of Civil Engineering and Building Technology

### 3:10 pm: Evaluation and 3-D Visualization of Nondestructive Testing Data for Prestressed and Reinforced Concrete Structures

Wael Zatar, Marshall University



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 3:00 pm – 5:00 pm

### **Mini Taste of Cincinnati - C-Ballroom Foyer**

Sponsored by Greater Miami Valley Chapter – ACI



The Greater Miami Valley Chapter – ACI would like to invite you to a Mini Taste of Cincinnati. Come enjoy some local food and craft beer. This will be a great chance to see old friends and meet new ones! While supplies last.

## 4:00 pm – 6:00 pm

### **Fire and Flood Design, Performance, Mitigation, and Strengthening for Concrete Bridges - C-Junior Ballroom B**

Sponsored by ACI Committees 216, 343, and 345

Moderated by Nur Yazdani, University of Texas at Arlington

Recent years have shown the potential vulnerability of concrete bridges to fire and flood hazards. Bridge fires can be caused by crashed or overturned vehicles, arson, accidents, or wildfire, while flooding can be due to coastal storm surge or inland riverine and flash events. While provisions for fire and flood safety are a requirement for building design, essentially no such requirements exist for concrete bridges. The proposed session will include presentations on topics related to design, performance, mitigation, and strengthening of concrete bridges for such hazards. Academic, industry, and agency representatives should attend this session.

### 4:00 pm: Load Testing and Rating of Fire-Damaged Prestressed Concrete Bridge Girders

Nur Yazdani, University of Texas at Arlington; and Eyosias Beneberu, Bridgefamer & Associates

### 4:20 pm: Post-Fire Assessment of Reinforced and Prestressed Concrete Bridge Elements

Tzu-Chun Tseng, Purdue University; Sijia Wang, Purdue University; Raikhan Tokpatayeva, Purdue University; Jan Olek, Purdue University; Amit H. Varma, Purdue University; Christopher Williams, Purdue University; and Dan Huang, Purdue University

### 4:40 pm: Application of Concrete Spalling Mitigation

Kevin Mueller, Thornton Tomasetti; Stephen M. Stacey, Jensen Hughes; and Anthony F. Bentivegna, Jensen Hughes

Description continues on next page



# Sessions & Events

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## Monday, October 21, 2019

Description continued from previous page

### 5:00 pm: Investigating Wave Forces on Coastal Bridge Decks

Guoji Xu, University of Notre Dame

### 5:20 pm: Bridge Fragility Models for Spatial Accessibility Assessment in Areas Prone to Coastal Hazards

Georgios Balomenos, McMaster University; Yujie Hu, University of South Florida; and Kyle Shelton, Rice University

### 5:40 pm: Investigating Wave Forces on Coastal Bridge Decks

Guoji Xu, University of Notre Dame



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

## 4:00 pm – 6:00 pm

### Innovation in Architectural Precast and Decorative Concrete - C-Junior Ballroom D

Sponsored by ACI Committees 124 and 533

Moderated by Karen Polanco, Metromont Corporation; and Brian D. Miller, GCP Applied Technologies

The use of architectural precast and decorative concrete is significantly growing year after year. A large portion of this is seen in building enclosure applications where the speed, energy efficiency, and residency of precast concrete systems provides excellent value to all stakeholders. Join other ACI attendees, contractors, and designers to learn more about innovative finishes, techniques for achieving finishes in light of new industry regulations, and new applications. Case studies will be used to illustrate topics being discussed.

### 4:00 pm: Withstand the Storm with Resilient Precast Concrete Buildings and Communities

Donn C. Thompson, Portland Cement Association

### 4:25 pm: Exceeding Thermal Performance with Precast Enclosure Systems

Darryl E. Dixon, Thermomass

### 4:50 pm: The World's First Net-Zero Energy and LEED Platinum Free Standing Police Station – A Case Study

Dwayne Robinson, High Concrete Group LLC

### 5:15 pm: Trends and Innovation in Achieving Architectural Precast Aesthetics

Brian D. Miller, GCP Applied Technologies

### 5:40 pm: Thin-Wall Precast Concrete Enclosure Systems

Alan Pritchard, Smith-Midland Corporation



2 AIA/CES LU



PREFERRED EDUCATION PROVIDER

PDH Codes: \_\_\_\_\_

## 4:00 pm – 6:00 pm

### Novel Techniques and Advances in Load Testing Concrete Structures - C-Junior Ballroom C

Sponsored by ACI Committee 437

Moderated by Aaron K. Larosche, Pivot Engineers; and Mohamed ElBatanouny, Wiss, Janney, Elstner Associates, Inc.

This session will introduce attendees to new techniques in load testing of concrete structures. Such techniques include load testing structures where shear is the expected covering limit state, and where nondestructive testing or monitoring supplements load test results.

### 4:00 pm: Load Testing of In-Service Structures: Case Studies and Lessons Learned

Brian R. Greve, Wiss, Janney, Elstner Associates, Inc.

### 4:25 pm: Load Testing – Changes in ACI 318-19 – Integration and Coordination between Committees

Keith E. Kesner, CVM Professional; Aaron K. Larosche, Pivot Engineers; and Paul H. Ziehl, University of South Carolina

### 4:50 pm: Load Testing of a Precast Concrete Tub Stadium Riser

Jeremiah D. Fasl, Wiss, Janney, Elstner Associates, Inc.

### 5:15 pm: Load Testing after Strengthening of a Prestressed Double-Tee Beam That Had Failed in Shear

Nestore Galati, Structural Technologies

### 5:40 pm: Development of Database for Structural Load Tests

Mohamed ElBatanouny, Wiss, Janney, Elstner Associates, Inc.



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

## 5:00 pm – 6:00 pm

### MINI SESSION: Concrete with Recycled Materials - C-232

Sponsored by ACI Committee 555

Moderated by Mohamed A. Mahgoub, New Jersey Institute of Technology; and Moncef L. Nehdi, Western University

The earth's natural resources have been consumed at a very high rate for many years. The potential depletion of resources, CO<sub>2</sub> emissions, and high energy consumption rates in the process of production increase the necessity of recycling. All sectors of society are responsible for these concerns, especially the construction industry. As a major construction material, concrete is increasingly judged by its environmental impacts and reusing the readily available concrete is becoming very important. Considering that much of the U.S. infrastructures and urban buildings now require renovation and replacement, the concrete left behind can be a valuable source of aggregate for new concrete. Such concrete is usually called recycled aggregate concrete. Through cost analyses, it is shown that using

# Sessions & Events

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recycling concrete as aggregate for new concrete production can be a cost-effective method for construction.

## 5:00 pm: Petrographic Characterization of Recycled Concrete Aggregates (RCAs)

Mengesha Beyene, SES Group & Associates, LLC; and Richard C. Meininger, Federal Highway Administration (FHWA)

## 5:15 pm: Characterizations of Recycled Concrete Aggregate (RCA) for Concrete Applications

Jiong Hu, University of Nebraska–Lincoln; and Tara Cavalline, University of North Carolina at Charlotte

## 5:30 pm: Evaluation of Reclaimed Asphalt Pavement-Based Cementitious Materials

Xijun Shi, Texas A&M University

## 5:45 pm: Degree of Hydration and Remaining Unhydrated Cement in Concrete Waste

Daniele Kulisch, Technion – Israel Institute of Technology; Amnon Katz, Technion – Israel Institute of Technology; and Semion Zhutovsky, Technion – Israel Institute of Technology



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 5:00 pm – 6:00 pm

### Women in ACI Reception - C-203

All registered convention attendees are invited to attend the Women in ACI Reception. This longstanding ACI tradition is a great opportunity to get to know other women in the concrete industry. A cash bar and light hors d'oeuvres will be served.

## 5:30 pm – 10:00 pm

### ✓Excellence in Concrete Construction Awards Gala - C-Grand Ballroom A

\$95 U.S. per person

Doors open & Reception: 5:30 pm

Dinner: 6:45 pm

Awards Presentations: 7:45 pm

Red Carpet Social Hour: 9:00 pm – 10:00 pm

The ACI Excellence in Concrete Construction Awards will showcase and honor some of the most creative projects the concrete world has to offer. Over 85 concrete projects from around the world were nominated by ACI Chapters and International Partners. Entries were judged by an independent panel of industry professionals representing diverse backgrounds, with technical expertise in six award categories. First- and second-place awards will be given in each category, in addition to an overall “Excellence” award to be revealed the evening of the Gala. Following the Awards Dinner, celebrate the accomplishments of those recognized during the Red Carpet Social Hour. A cash bar will be available.

*Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability. Please notify the ACI Registration Desk if you have any dietary restrictions.*

## 6:30 pm – 8:30 pm

### 123 Forum: Is Ultra-High-Performance Concrete Necessary? - C-Junior Ballroom B

Sponsored by ACI Committee 123

Moderated by Jacob Henschen, Valparaiso University; and Mohammad Pour Ghaz, North Carolina State University

Ultra-high-performance concrete (UHPC) is a technology that has grown from the desire to improve the mechanical and durability properties of concrete. In addition to compressive strengths exceeding 22,000 psi (150 MPa), UHPC generally has higher tensile strength, ductility, and toughness. These properties are achieved through a combination of admixtures as well as the use of fibers. There are, however, challenges associated with this technology, including cost, complicated mixing procedures that require specialized training, lack of design codes that can use the enhanced mechanical properties, and a lack of test methods and data on the material's structural performance. The goals of this forum are to explore current applications, identify research needs, and discuss whether the benefits of UHPC outweigh the challenges. Discussions on these topics will inform designers and potential stakeholders about potential benefits from using UHPC and will allow researchers to provide insight into the future of UHPC technologies. A panel of experts from various backgrounds will discuss these questions and more to provide the audience information regarding the latest developments of concrete research. The forum will start with short presentation by each of the panelists. The presentations will be followed by an interactive discussion with the audience.

### 6:30 pm: ACI 123 Concrete Research Poster Session Outstanding Poster Award Announcement

Robert J. Thomas, Clarkson University

### 6:35 pm: Introduction of Panelists and Forum Topic

Jacob Henschen, Valparaiso University; and Mohammad Pour Ghaz, North Carolina State University

### 6:40 pm: UHPC: A Compelling Solution to a Wide Variety of Challenges

Benjamin Allen Graybeal, Federal Highway Administration

### 6:55 pm: UHPC: An Opportunity to Reinvent Steel and Reimagine Concrete

JP Binard, Precast Systems Engineering

### 7:10 pm: Taking Advantage of UHPC Properties: Role of Specifications

Kyle Austin Riding, University of Florida

### 7:25 pm: Challenges in Performance Evaluation and Characterization of UHPC

Jan Vosahlik, CTLGroup

### 7:40 pm: Advanced Concrete (UHPC) Pedestrian Bridges in Colombia

Byron Velasquez, Argos Cement

### 7:55 pm: Audience Questions and Panel Discussion

Jacob Henschen, Valparaiso University; Mohammad Pour Ghaz, North Carolina State University; Benjamin Allen Graybeal, Federal Highway Administration; JP Binard, Precast Systems Engineering; Kyle Austin Riding, University of Florida; and Jan Vosahlik, CTLGroup



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

# Sessions & Events

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## Tuesday, October 22, 2019

### 8:30 am – 9:30 am

#### **Contractors' Day Session: The Future of Building Things, Top Construction Innovation Trends - C-Junior Ballroom B**

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Bradley Douglas Rogers, Structural Systems Repair Group

In the early days of the construction industry, innovation was done out of necessity. But over the decades, our industry has lagged all others in the adoption of advanced technology. But times are changing and the future of how we build will look radically different than it did just two decades ago. With increased labor shortages and more capital investment going into construction technology startup companies, there is now a greater focus on our industry and the status quo is being challenged. From wearable technology to artificial intelligence, the construction world is embracing innovation. In this discussion, we will explore the top trends in construction technology and what they mean for the future workforce.

#### **8:30 am: The Future of Building Things, Top Construction Innovation Trends**

Andy Burg, Messer Construction Co.



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 8:30 am – 9:30 am

#### **MINI SESSION: Structural Design of ICF Walls and Study of Operational Costs of ICF Apartment Building - C-264**

Sponsored by ACI Committee 560  
Moderated by Robert E. Sculthorpe, ICF-MA

Examples of structural design of ICF walls in accordance with ACI 318 and study of low operating costs of a 20-year-old apartment building constructed with ICF walls and precast hollow-core floors.

#### **8:30 am: Structural Design Example - Simplified Bearing Wall Design Method**

Bridget Crowley, Schaefer

#### **8:45 am: Structural Design Example - Alternative Design for Slender Walls**

Jerry D. Coombs, Coombs Engineering, P.C.

#### **9:00 am: Structural Design Example - Special Reinforced Concrete Shear Walls**

Craig McKee, Huckabee

#### **9:15 am: Operating Energy Costs of an Apartment Building Constructed with ICF Walls and Thermal Performance of ICF Walls**

Robert E. Sculthorpe, ICF-MA



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 8:30 am – 10:30 am

#### **Assessment of Concrete Prior to Rehabilitation, Part 1 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committee 364

Moderated by Paul E. Gaudette, Wiss, Janney, Elstner Associates, Inc.

The session will include presentations of case studies that focus on the assessment of concrete structures. The presentations are intended to provide insight into the practical use of the new ACI 364.1R, "Guide for Assessment of Concrete Structures before Rehabilitation"; and how to use with other new ACI documents that relate to repair of concrete.

#### **8:30 am: An Overview of the New ACI 364.1R - Guide for Assessment of Concrete Structures**

Ashok M. Kakade, Concrete Science, Inc.

#### **9:00 am: Sampling and Testing of Concrete as Part of an Assessment (ACI 364.1R, Chapter 6)**

Benoit Bissonnette, Laval University

#### **9:30 am: Assessment and Repair of a Precast Parking Deck with Construction Defects**

Kyle D. Stanish, Klein & Hoffman, Inc.

#### **10:00 am: Wading through Chloride-Induced Corrosion and Concrete Deterioration of Swimming Pool Structures**

Liying Jiang, Simpson Gumpertz & Heger Inc.



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 8:30 am – 10:30 am

#### **Estimating In-Place Concrete Strength: Methods and Applications, Part 1 of 2 - C-Junior Ballroom D**

Sponsored by ACI Committee 228

Moderated by Eric R. Giannini, RJ Lee Group, Inc.; and Malcolm K. Lim, MLim Consulting, Inc.

A completed revision of ACI 228.1R, "Report on Methods for Estimating In Place Concrete Strength," was published in January 2019 as ACI 228.1R-19. This session will be of interest to practicing engineers engaged in structural assessment; those engaged in QA/QC on new construction; and educators who teach advanced courses in concrete repair, forensics, and nondestructive testing. Attendees will learn about standardized test methods used to estimate in-place strength, including the underlying principles, advantages, and limitations of the tests. They will also learn how to properly interpret the results of in-place tests, the statistical significance of test results, and plan an in-place testing program. The session will also incorporate several case study presentations on successful implementation of in-place testing.

#### **8:30 am: Introduction to the Revised ACI 228.1R-19**

John S. Popovics, University of Illinois at Urbana-Champaign

#### **8:40 am: Rebound Number, Penetration Resistance, Pullout, Pull-off, and Maturity Testing Methods**

Christopher C. Ferraro, University of Florida

# Sessions & Events

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## 9:20 am: UPV, Cast-in-Place Cylinders, and Combined Methods

John S. Popovics, University of Illinois at Urbana-Champaign

## 9:50 am: Statistical Considerations: More Than a Line

Nicholas J. Carino, Consultant



PDH Codes: \_\_\_\_\_

## 9:30 am – 10:30 am

### Contractors' Day Session: Construction Robotics - C-Junior Ballroom B

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Bradley Douglas Rogers, Structural Systems Repair Group

The evolution of robotics is quickly progressing off the plant floor. Advancements in technology are allowing the development of robotics in every aspect of construction. Robotics will aid the construction industry in making safer work environments, increasing productivity, and alleviating the labor shortage seen across the country.

## 9:30 am: Construction Robotics

Scott Peters, Construction Robotics



PDH Codes: \_\_\_\_\_

## 11:00 am – 1:00 pm

### Assessment of Concrete Prior to Rehabilitation, Part 2 of 2 - C-Junior Ballroom C

Sponsored by ACI Committee 364  
Moderated by Ashok M. Kakade, Concrete Science, Inc.

The session description for this session may be found in the Part 1 listing; refer to page 44.

## 11:00 am: Case Studies: Detailed Assessments of Historic Concrete Structures

Ann Harrer, Wiss, Janney, Elstner Associates, Inc.; and Paul E. Gaudette, Wiss, Janney, Elstner Associates, Inc.

## 11:30 am: Evaluation of Concrete Prior to Rehabilitation

John S. Lund, Martin/Martin Consulting Engineers

## 12:00 pm: Chapter 7 - Evaluation and Assessment of Concrete Prior to Rehabilitation

David A. VanOcker, CVM

## 12:30 pm: Preparing the Final Report for Assessment of Concrete Structures

Marjorie M. Lynch, Jensen Hughes



PDH Codes: \_\_\_\_\_

## 11:00 am – 1:00 pm

### Design and Construction of Concrete Streets and Local Roads - C-Junior Ballroom B

Sponsored by ACI Committee 325

Moderated by Brian M. Killingsworth, National Ready Mixed Concrete Association

The design of a concrete pavement system for a low traffic volume extends beyond the process of pavement thickness selection; it entails an understanding of the processes and the factors that affect pavement performance. It also encompasses appropriate slab jointing and construction practices that are consistent with local climatic and soil conditions. This session will be for designers, specifiers, and owners of pavement assets. Attendees will learn about the revised ACI 325.12R, other methods available to design concrete streets, how construction specifications and materials requirements for local roads may differ from highway roads, and maintenance and rehabilitation requirements for low-volume roads.

## 11:00 am: Investigating and Characterizing Soils for Use in Local Road Concrete Pavement Design

Brian M. Killingsworth, National Ready Mixed Concrete Association

## 11:30 am: Cement Based Pavement Design Methods and Tools for the Practitioner

Eric Ferrebee, American Concrete Pavement Association

## 12:00 pm: Construction and Jointing of Local Concrete Roads: State of the Practice

Sherry O. Sullivan, PNA Construction Technologies

## 12:30 pm: Concrete Overlays for Streets and Roads

Peter C. Taylor, National Concrete Pavement Technology Center



PDH Codes: \_\_\_\_\_



# Sessions & Events

For detailed program information and program changes, download the new Convention App.

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## Tuesday, October 22, 2019

### 11:00 am – 1:00 pm

#### **Fragility Assessment of Earthquake-Resistant Reinforced Concrete Bridges - C-Junior Ballroom D**

Sponsored by ACI Committee 341 and ACI Subcommittee 341-D  
Moderated by Mohamed Moustafa, University of Nevada, Reno

This session will provide a forum for students, researchers, and practitioners to discuss fragility and seismic vulnerability assessment of concrete bridges. There is a growing interest among the bridge community in adopting performance-based earthquake engineering (PBEE). Developing fragility curves and seismic vulnerability functions are central to PBEE and decision-making frameworks. The objective of this session is to present the state of the art in developing seismic fragility curves for concrete bridges considering new methods (for example, machine learning), ground motions selection and databases, damage and limit states definitions, and for different bridge types and geometries.

#### **11:00 am: Characterization of the Limit States of Circular Reinforced Concrete Columns Confined with CFRPs**

Nathalie Roy, Université de Sherbrooke

#### **11:25 am: Seismic Vulnerability Assessment of a Typical Multi-span Continuous Concrete Highway Bridge in British Columbia**

AHM Muntasir Billah, The University of British Columbia; and Shahria Alam, The University of British Columbia

#### **11:50 am: Developing Bridge-Specific Seismic Fragility Curves for Skewed Bridges Using Artificial Neural Network**

Sujith Mangalathu, University of California, Los Angeles; and Jong Su Jeon, Hanyang University

#### **12:15 pm: Fragility Analysis of Reinforced Concrete Bridge Columns under Short and Long Duration Ground Motions**

Mojtaba Alian, University of Nevada, Reno; Mohamed A. Moustafa, University of Nevada, Reno; and David H. Sanders, Iowa State University

#### **12:40 pm: Seismic Vulnerability Assessment of As-Built and Retrofitted Skewed Multi-Frame Bridges**

Mohammad J. Abbasi, Nevada Department of Transportation; and Mohamed A. Moustafa, University of Nevada, Reno



PDH Codes: \_\_\_\_\_

### 11:30 am – 1:30 pm

#### **✓Contractors' Day Lunch - C-232**

**\$41 U.S. per person**

Coordinated by the Greater Miami Valley Chapter – ACI

**Topic:** The Future is Now

**Speaker:** Brent Cooper, Northern Kentucky Chamber of Commerce

Today's workplace is rapidly changing. The efficiencies gained from technology and innovation are becoming disrupters to all areas of business. The need to embrace these changes is becoming a necessity to not thrive but survive. In this presentation, Brent Cooper will discuss this rapidly changing

landscape, the effects these changes are having on the business world, and what the future of business may look like. Brent Cooper is President & CEO of the Northern Kentucky Chamber of Commerce, the largest business organization in Northern Kentucky, representing 1500 businesses and 200,000 employees. A University of Kentucky graduate, Cooper has over 25 years of experience as an entrepreneur and business owner.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability. Please notify the ACI Registration Desk if you have any dietary restriction.

### 1:30 pm – 2:30 pm

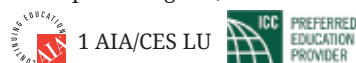
#### **Contractors' Day Session: 2020 A Construction Tech Odyssey - C-Junior Ballroom B**

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Bradley Douglas Rogers, Structural Systems Repair Group

The construction landscape is changing quickly due to a rapidly evolving tech landscape. Join us as Kris Lengieza will discuss what the jobsite of the future could look like, leveraging existing and evolving technology. From current trending technologies such as Drones, IoT, and 360 photos to the future of robotics, Big Data, and automation, come along for a peek into the future of the industry and how we can build great things together.

#### **1:30 pm: 2020 A Construction Tech Odyssey**

Kristopher Lengieza, Procore Technologies



PDH Codes: \_\_\_\_\_

### 1:30 pm – 2:30 pm

#### **MINI SESSION: Residential Foundations: Selecting Soil Loads and Sizing Walls by Two Alternative Methods - C-205**

Sponsored by ACI Committee 332

Moderated by James A. Farny, Portland Cement Association

The ACI 332 Code Committee has expanded its approach to designing efficient residential concrete structures that may result in more economical construction than design by ACI 318. This session covers two of the more recent changes to the 332 code, presenting a clear understanding of soil load conditions and how to select them for use in the design of foundation walls for residential structures, then shows two alternative methods for sizing a foundation wall using ACI 332-19; first, by the prescriptive method, and second, by the new design procedure of the Code.

#### **1:30 pm: Sizing a Foundation Wall by Two Alternative Methods Using ACI 332**

Samhar S. Hoz, Helix Steel

#### **2:00 pm: Understanding and Selecting Soil Load Conditions for Residential Foundations**

Brent Anderson, BDA Associates LLC



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# Sessions & Events

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## 1:30 pm – 2:30 pm

### **MINI SESSION: Resilient Concrete Structures in Cincinnati - C-264**

Sponsored by ACI Committee 120

Moderated by Dean Houdeshell, Cemen Tech Inc.

Thanks to their service life, three concrete structures built more than 75 years ago continue to serve in the Cincinnati Community—all located within walking distance from the Convention Hotel.

#### **1:30 pm: Resilient Concrete Structures in Cincinnati**

Richard Yelton, World of Concrete

#### **1:50 pm: Cincinnati Subway**

Daniel P. Dorfmüller, D. P. Dorfmüller Co., Inc.

#### **2:10 pm: Cincinnati Union Terminal**

Wil Beckwith, Terracon



1 AIA/CES LU



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## 1:30 pm – 3:30 pm

### **Long-Term Durability of Concrete Bridges - C-Junior Ballroom D**

Sponsored by ACI Committees 342, 343, and 345

Moderated by Mark E. Williams, Walter P Moore; and Larry D. Olson, Olson Engineering, Inc.

The sessions are intended to introduce advances in design of concrete materials for long-term 100-year-plus performance of concrete bridges. Further, quality assurance testing for evaluation of the performance of concrete materials with laboratory tests will be discussed to confirm that durable concrete materials are being produced. The use of nondestructive evaluation methods for confirmation of in-place durable concrete, design steel cover depth, and strength of bridge concrete will be discussed from technical and contractual performance perspectives.

#### **1:30 pm: Bridge Service Life Design beyond 100 Years — Current Practices, Future Perspectives**

Meghdad Hoseini, WSP in Canada

#### **1:54 pm: Examining How Durability Can Be Achieved with Rapid Test Methods, Performance Specifications, and Service Life Models**

William Weiss, Oregon State University; O. Burkan Isgor, Oregon State University; Marisol Tsui-Chang, Olson Engineering, Inc.; and Joe Qiao, DRP Incorporate

#### **2:18 pm: Long-Term Performance of CFRP-Prestressed Concrete Bridge Girders**

Yail Jimmy Kim, University of Colorado Denver

#### **2:42 pm: NDE Methods for QA of Bridge Construction for Extended Service Life**

Michael C. Brown, WSP USA

### **3:06 pm: Enhancements of Quality Assurance of Concrete Bridge Structures in India - Lessons Learned from Past Two Decades and Path Forward**

Surendra K. Manjrekar, Sunanda Specialty Coatings Pvt Ltd; C. P. Joshi, Sunanda Specialty Coatings Pvt Ltd; SS Bhonge, Sunanda Specialty Coatings Pvt Ltd; and V. Ramgude, Sunanda Specialty Coatings Pvt Ltd



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

## 1:30 pm – 3:30 pm

### **Open Topic Session, Part 1 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committee 123

Moderated by Jovan Tatar, University of Delaware; and Natassia Brenkus, The Ohio State University

The Open Topic Session is a forum for presenting recent technical information that could not be scheduled into other convention sessions.

#### **1:30 pm: Geospatial Mapping and Analysis: Concrete Building Damage in the 2017 Mexico Earthquake**

Anahid Behrouzi, California Polytechnic State University; Anisha Datta, California Polytechnic State University; and Nicholas Slavin, California Polytechnic State University

#### **1:50 pm: Pervious Concrete under Flexural Fatigue Loading: Performance Evaluation and Model Development**

Othman Al Shareedah, Washington State University; Somayeh Nassiri, Washington State University; and J. Daniel Dolan, Washington State University

#### **2:10 pm: Evaluation of Drying Technique for Rehabilitation of Soft Grout in PT Tendons**

Satyajeet Rajendra Patil, University of Florida; and H.R. (Trey) Hamilton, University of Florida

#### **2:30 pm: Experimental and Analytical Investigation of Fiber-Reinforced Concrete Use for Bridge Traffic Railings under Impact Loading**

Jeffrey Honig, University of Florida; Gary R. Consolazio, University of Florida; and H.R. (Trey) Hamilton, University of Florida

#### **2:50 pm: Nonlinear Analysis of a Lightweight Concrete Ring Beam during Operation**

Gregory A. Congdon, State University of New York at Buffalo

#### **3:10 pm: Evaluation of Fly Ash with High Chloride Contents for Use in Concrete**

Brian H. Ortiz Salcedo, University of Florida; Jerry M. Paris, University of Florida; and Christopher C. Ferraro, University of Florida



2 AIA/CES LU



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PDH Codes: \_\_\_\_\_

# Sessions & Events

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## Tuesday, October 22, 2019

### 2:00 pm – 3:00 pm

#### **MINI SESSION: Emergency Response with CLSM - C-233**

Sponsored by ACI Committee 229  
Moderated by Thomas H. Adams, American Coal Ash Association

Controlled low-strength materials (CLSM) can provide immediate solutions to mitigate emergencies and structural failures. Using a wide variety of materials, CLSM can rapidly restore pavements, slabs, embankments, and other structures to service economically and safely. This session will provide three case histories of mitigation with CLSM.

#### **2:00 pm: North Carolina Hurricane Damage Response with CLSM**

Tilghman H. Keiper, The SEFA Group

#### **2:20 pm: Sinkhole Response on Pennsylvania Route 30**

Milton R. Gomez, Aerix Industries

#### **2:40 pm: Corvette Museum Sinkhole Response**

C. Brett Deters, Hilltop Company



1 AIA/CES LU



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### 2:30 pm – 3:30 pm

#### **Contractors' Day Session: Reality Capture - C-Junior Ballroom B**

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Bradley Douglas Rogers, Structural Systems Repair Group

In line with Moore's Law, the cost of computing power is consistently dropping while the speed and capability of computers is increasing. Add to that the development of ever more powerful algorithms and artificial intelligence and you have a perfect storm for the explosion of reality capture devices. Reality capture allows the construction industry to capture a digital representation of the physical world, which can then be used in a myriad of ways. This discussion will identify several types of reality capture devices/methods and discuss the pros and cons of each. The goal of this discussion is to help you identify potential use cases that may have a positive impact on your current construction processes.

#### **2:30 pm: Reality Capture**

Anthony Hartke, Turner Construction Company



1 AIA/CES LU



PDH Codes: \_\_\_\_\_

### 4:00 pm – 6:00 pm

#### **Estimating In-Place Concrete Strength: Methods and Applications, Part 2 of 2 - C-Junior Ballroom D**

Sponsored by ACI Committee 228  
Moderated by Eric R. Giannini, RJ Lee Group, Inc.; and Malcolm K. Lim, MLim Consulting, Inc.

The session description for this session may be found in the Part 1 listing; refer to page 44.

#### **4:00 pm: Practical Sampling Tips to Ensure Representative Data**

Malcolm K. Lim, MLim Consulting, Inc.

#### **4:15 pm: Evaluation of Concrete Strength in Existing Bridges Using the Pullout Test**

Andrzej T. Moczko, Wrocław University of Science and Technology; Claus Germann Petersen, Germann Instruments; and Nicholas J. Carino, Consultant

#### **4:30 pm: In-situ Nondestructive Evaluation of Concrete Strength: Canadian Case Studies**

Farid Moradi Marani, FPrimeC Solutions Inc.; and Hamed Layssi, FPrimeC Solutions Inc.

#### **4:45 pm: Estimating Concrete Strength Using the Maturity Method: Practical Aspects and Select Case Studies**

Andrew Fahim, Giatec Scientific Inc.; Pouria Ghods, Giatec Scientific Inc.; Aali R. Alizadeh, Giatec Scientific Inc.; and Sarah De Carufel, Giatec Scientific Inc.

#### **5:00 pm: Using Maturity Testing to Minimize Cycling Times in High-Rise Structures**

Walter H. Flood IV, Flood Testing Laboratories, Inc.

#### **5:15 pm: Strength Evaluation of Geopolymer Sewer Liner: Test Method Development and Application**

Nathaniel Steven Rende, Wiss, Janney, Elstner Associates, Inc.

#### **5:30 pm: Spatial Variation of Concrete Strength Estimation from In-Place NDT Methods**

Ming Liu, Naval Facilities Engineering and Expeditionary Warfare Center

#### **5:45 pm: Probabilistic Nondestructive Testing-Based Quality Control of Concrete Masonry Units**

Sikandar Hayat Sajid, McGill University; and Luc E. Chouinard, McGill University



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

# Sessions & Events

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## 4:00 pm – 6:00 pm

### **Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 1 of 3 - C-Junior Ballroom B**

Sponsored by ACI Committees 213, 224, and 231

Moderated by Will Hansen, University of Michigan; and Anton Schindler, Auburn University

This session will present latest developments on high-performance concrete (HPC). Presentations will review material requirements for achieving HPC (for example, low water-cementitious materials ratio, SCM and internal materials and replacement levels, air void characteristics for salt scaling and internal frost resistance, etc). Crack resistance due to volume changes from thermal, creep, and shrinkage effects will be discussed. Measurement and prediction of stress development for crack resistance in HPC associated with deformation restraint will be presented. Designers, contractors, educators, engineers, material suppliers, and students will benefit from attending this session.

**4:00 pm: High-Performance Concrete for Bridge Decks**  
Rouzbeh Khajehdehi, SJCA-P.C.; David Darwin, University of Kansas; and Muzai Feng, University of Kansas

### **4:30 pm: Modeling of Early-Age Concrete Stress Development**

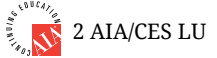
Anton Schindler, Auburn University; and Yalin Liu, Tsinghua University

### **5:00 pm: Improved understanding of Early-Age Properties of High-Performance Concrete using Temperature Stress Testing Machine**

Vinh Dao, The University of Queensland; and Pietro Lura, EMPA Switzerland

### **5:30 pm: Performance of High Early Strength High-Performance Concrete (HES HPC) Bridge Decks**

Adi Abu Obeidah, Rutgers University; Chaekuk Na, Rutgers University; Frank A. Corso, New Jersey Turnpike Authority; and Hani H. Nassif, Rutgers University



PDH Codes: \_\_\_\_\_

## 4:00 pm – 6:00 pm

### **Open Topic Session, Part 2 of 2 - C-Junior Ballroom C**

Sponsored by ACI Committee 123

Moderated by Jovan Tatar, University of Delaware; and Natassia Brenkus, The Ohio State University

The session description for this session may be found in the Part 1 listing; refer to page 47.

### **4:00 pm: Performance of Ternary and Binary Concrete Mixtures against Physical Sulfate Attack in Controlled Conditions Compared to Field Conditions**

Mohammed H. Alyami, University of Florida; Hossein Mosavi, University of Florida; Raid S. Alrashidi, University of Florida; Mohammed A. Almarshoud, University of Florida; and Kyle A. Riding, University of Florida

### **4:20 pm: New Insights into Additive-Based Freeze Protection for Cold Weather Concrete**

Benjamin E. Watts, United States Army Corps of Engineers; Danielle E. Kennedy, United States Army Corps of Engineers; and Ethan Thomas, United States Army Corps of Engineers

### **4:40 pm: Evaluating Effectiveness of ASR Mitigation Measures Using Miniature Concrete Prism Test (MCPT)**

Harish Konduri, Clemson University; and Prasad Rangaraju, Clemson University

### **5:00 pm: Dissolution of Calcined Clays at the Atomic Scale: Evidence of Reactive Al(V) Sites**

Nishant Garg, University of Illinois at Urbana-Champaign

### **5:20 pm: Effectiveness of Biochemicals to Control the Calcium Carbonate Crystallization in Carbonation-Activated Binder Systems**

Rakibul I. Khan, University of Maine; and Warda Ashraf, University of Maine

### **5:40 pm: Mechanical Properties and Electrical Resistivity of Portland Limestone Cement (PLC) Concrete Systems with Low Clinker Content**

Jose Eduardo Garcia, California State University, Sacramento; Nicolas Bruno Tiburzi, SIMCO Technologies Inc.; Kevin J. Folliard, The University of Texas at Austin; and Thano Drimalas, The University of Texas at Austin



2 AIA/CES LU



PDH Codes: \_\_\_\_\_

## 5:30 pm – 6:30 pm

### **Faculty Network Reception - H-Regency E**

Faculty members and students are invited to attend this informal reception for an opportunity to exchange ideas and network. Light hors d'oeuvres and a cash bar will be available.

## 6:00 pm – 9:00 pm

### **Concrete Mixer - Union Terminal**

Sponsored by the Greater Miami Valley Chapter – ACI



Join ACI attendees and guests for an evening of networking, entertainment, and great food during the Concrete Mixer, held at the Union Terminal. An assortment of food and a hosted bar will be available. **Transportation will depart from the Duke Energy Convention Center beginning at 5:30 pm. The last bus will depart from the Union Terminal at 9:30 pm. After 9:30 pm, attendees will be on their own for return transportation.**



# Sessions & Events

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## Wednesday, October 23, 2019

### 7:00 am – 2:00 pm

#### ✓**Post-Installed Concrete Anchor Installation Inspector Certification Exam - C-250**

The 45-minute installation examination is closed-book and consists of approximately 45 multiple-choice questions. To pass the installation examination, the examinee must attain a minimum score of 74%. The 2-hour inspection examination is open-book and consists of approximately 90 multiple-choice questions. To pass the installation examination, the examinee must attain a minimum score of 60% on each subsection, and an overall score of 70%.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability.

### 7:00 am – 2:00 pm

#### ✓**Concrete Construction Special Inspector Certification Exam - C-250**

The 3-hour written inspection examination is open-book and consists of approximately 80 multiple-choice questions. The 1-hour plans reading examination consists of approximately 20 questions and is designed to test the examinee's ability to read and understand engineering drawings. The minimum passing grade for each examination is 70%.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability.

### 7:00 am – 2:00 pm

#### ✓**Concrete Quality Technical Manager Certification Exam - C-250**

The 4-hour written examination is open-book and consists of approximately 100 multiple-choice questions. To pass the written examination, BOTH of the following conditions must be met:

1. At least 60% correct for each of the required sections; and
2. A minimum score of 70% overall.

The 2-hour practical application examination is open-book and consists of approximately 25 multiple-choice questions. The minimum passing grade for the practical examination is 70%.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability.

### 7:00 am – 2:00 pm

#### ✓**Concrete Transportation Construction Inspector Certification Exam - C-250**

The 3-hour written inspection examination is open-book and consists of approximately 80 multiple-choice questions. The 1-hour plans reading examination consists of approximately 20 questions and is designed to test the examinee's ability to read and understand engineering drawings. The minimum passing grade for each examination is 70%.

**PREREGISTRATION IS REQUIRED TO ATTEND.** Tickets may be purchased at the ACI Registration Desk up to 24 hours prior to the event, based on availability.

### 8:30 am – 10:30 am

#### **Concrete Constructability: River of Knowledge - C-Junior Ballroom C**

Sponsored by ACI Committee 134

Moderated by Stacia Van Zetten, EllisDon

Present new research, specification changes, and knowledge gained through experience as it applies to constructing in concrete. Educate members of our industry so they can use knowledge to produce a better concrete product.

#### **8:30 am: Tunnels in Paradise**

Mark Hirschi, Baldrige & Associates Structural Engineering, Inc.

#### **8:50 am: Constructability: Determining the Effectiveness of Curing Concrete**

Tyler Ley, Oklahoma State University

#### **9:10 am: Providing Expectations of Tilt-Wall Surfaces**

Anthony R. DeCarlo, TWC Concrete Services, LLC

#### **9:30 am: New Admixture Technology Provides Workability Solution for Tilt-Wall Panels**

Ryan M. Scott, GCP Applied Technologies

#### **9:50 am: How Good is Laser Scanning?**

William Paul, BKF Engineers, Inc.

#### **10:10 am: Accounting for Tolerances within ADA Design Criteria**

Peter J. Ruttura, Ruttura & Sons Construction



2 AIA/CES LU



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# Sessions & Events

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## 8:30 am – 10:30 am

### **Concrete with Recycled Materials, Part 1 of 2 - C-Junior Ballroom D**

Sponsored by ACI Committee 555

Moderated by Mohamed A. Mahgoub, New Jersey Institute of Technology; and Moncef L. Nehdi, Western University

Concrete is the world's most widely used construction material. Yet, the production of portland cement, an essential constituent of concrete, leads to greenhouse gas emissions into the atmosphere. The production of 1 ton of portland cement clinker releases approximately 1 ton of CO<sub>2</sub> and other greenhouse gases. Environmental considerations have been a major thrust for the sustainable development of the cement and concrete industries. A sustainable concrete structure is designed and built to have a positive environmental footprint during its entire life cycle. Concrete is increasingly being considered as a sustainable material owing to its low inherent energy requirements and little associated waste. Not only is it made from some of the most plentiful resources on Earth, it can also be made with numerous recycled materials and by-products and is itself entirely recyclable. Emerging breakthroughs in concrete technology have allowed producing ultra-high-performance concrete requiring less raw materials, along with structures that are much more durable to reduce maintenance, repair, and reconstruction.

#### **8:30 am: Performance of Concrete Containing Water Hyacinth Ash (WHA) as a Cement**

Ahmed F. Omran, Université de Sherbrooke; and Mohamed A. Mahgoub, New Jersey Institute of Technology

#### **8:50 am: Lightweight Rubberized Concrete Pavement Slabs Using Tire-Derived and Expanded Clay Aggregates – Life-Cycle Cost Analysis**

Maryam Nazari, California State University, Fresno; Jeevanlal, California State University, Fresno; Fariborz M. Tehrani, ESCSI; and Mojtaba Ansari, California State University, Fresno

#### **9:10 am: Effects of Rest Time and Curing Regime on the Long-Term Strength of Class C Fly-Ash-Based Geopolymer Mortars**

Mohamed A. ElGawady, Missouri S&T; Cedric Chani Kashosi, Missouri S&T; Eslam Gomaa, Missouri S&T; and Ahmed Ghenni, Missouri S&T

#### **9:30 am: Mesoscopic Fracture Modeling of Recycled Concrete Aggregate Systems Generated through Random Aggregates and Pores**

Anuruddha Jayasuriya, New Jersey Institute of Technology; J. Bandelt, New Jersey Institute of Technology; Matthew P. Adams, New Jersey Institute of Technology; and Moncef L. Nehdi, Western University

#### **10:10 am: Investigating the Application of Tire-Derived Aggregate Concrete in Buckling-Restrained Braced Frame**

Nasreen Pathan, California State University, Fresno; and Fariborz M. Tehrani, ESCSI



PDH Codes: \_\_\_\_\_

## 8:30 am – 10:30 am

### **Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 2 of 3 - C-Junior Ballroom B**

Sponsored by ACI Committees 213, 224, and 231

Moderated by Will Hansen, University of Michigan; and Vinh Dao, The University of Queensland

The session description for this session may be found in the Part 1 listing; refer to page 49.

#### **8:30 am: Shrinkage-Induced Tensile Stress Development in High-Performance Concrete under Partial and Full Deformation Restraint - Is Stress Relaxation Fictitious or Real?**

Will Hansen, University of Michigan; Zhichao Liu, University of Michigan; and Ya Wei, University of Michigan

#### **9:00 am: Monitoring Early-Age Temperature and Shrinkage of Ultra-High-Performance Concrete with Distributed Fiber-Optic Sensors**

Weina Meng, Stevens Institute of Technology; Yi Bao, Missouri S&T; and Kamal H. Khayat, Missouri S&T

#### **9:30 am: Modeling the Effects of Cracks on Chloride Ingress and Corrosion**

Neal S. Berke, Tournay Consulting Group, LLC

#### **10:00 am: Effect of Age on the Development of Bond by Simulation of Tensile Stiffening Effect**

Barzin Mobasher, Arizona State University



PDH Codes: \_\_\_\_\_

## 11:00 am – 1:00 pm

### **Academy of Motion Pictures Museum - C-Junior Ballroom C**

Sponsored by the Greater Miami Valley Chapter – ACI  
Moderated by Julie Cromwell, Julie Cromwell & Associates, LLC; and Robin Hahn, Advantage Group Engineers, Inc.

The Academy of Motion Pictures Museum will open in Los Angeles, CA, in late 2019. The project includes a spherical structure of over 300,000 ft<sup>2</sup> of concrete that will house multiple theaters and exhibition halls. This session covers the innovative and complex design and construction considerations that brought this work of art to life.

#### **11:00 am: Academy of Motion Pictures Museum – Part I Structural Design**

Derrick D. Roorda, BuroHappold Engineering

#### **12:00 pm: Academy of Motion Pictures Museum – Part II Construction**

Derrick D. Roorda, BuroHappold Engineering



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✓ = Separate fee required

C = Duke Energy Convention Center H = Hyatt Regency Cincinnati

## Wednesday, October 23, 2019

### 11:00 am – 1:00 pm

#### **Concrete with Recycled Materials, Part 2 of 2 - C-Junior Ballroom D**

Sponsored by ACI Committee 555

Moderated by Mohamed A. Mahgoub, New Jersey Institute of Technology; and Ahmed Ibrahim, University of Idaho

The session description for this session may be found in the Part 1 listing; refer to page 51.

#### **11:00 am: Improving the Freeze-and-Thaw Resistance of High-Volume Fly Ash Concrete Using Ground Recycled Rubber**

Mohamed A. ElGawady, Missouri S&T; and Ahmed Ghenni, Missouri S&T

#### **11:20 am: The Use of Rubber and Plastic Waste in Cementitious Mortars**

Alessandro P. Fantilli, Politecnico di Torino; and Bernardino Chiaia, Politecnico di Torino

#### **11:40 am: Investigating the Impact of Foundry Waste on the Mechanical Performance of Self-Consolidating Concrete**

Anthony Torres, Texas State University; and Federico M. Aguayo, Texas State University

#### **12:00 pm: Fresh, Mechanical, Durability, and Corrosion Properties of Basalt Fiber-Reinforced Concrete**

Kevin Ramirez, University of Idaho; and Ahmed Ibrahim, University of Idaho

#### **12:20 pm: Optimization of the Equivalent Volume (EV) Method through Particle Packing Models (PPM) to Mix-Proportion Fine Recycled Concrete Aggregates (FRCA) Mixtures**

Hian De Freitas, Macedo, University of Ottawa; Diego De Souza, University of Ottawa; Mayra Tagliaferri De Grazia, University of Ottawa; and Leandro Francisco Moretti Sanchez, University of Ottawa

#### **12:40 pm: Prediction of Mechanical Properties of Concrete Made with Recycled Concrete Aggregates Using Statistical Analysis of Data Available in Literature**

Anuruddha Jayasuriya, New Jersey Institute of Technology; and Matthew P. Adams, New Jersey Institute of Technology



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### 11:00 am – 1:00 pm

#### **Measurement and Prediction of Early-Age Properties of High-Performance Concrete for Durability and Crack Resistance, Part 3 of 3 - C-Junior Ballroom B**

Sponsored by ACI Committees 213, 224, and 231

Moderated by Kamal H. Khayat, Missouri S&T; and Will Hansen, University of Michigan

The session description for this session may be found in the Part 1 listing; refer to page 49.

#### **11:00 am: Early-Age Response of Cementitious Matrices Influenced by Phase Change Materials (PCMs): Implications on Crack Resistance**

Aashay Arora, Arizona State University; Gaurav N. Sant, University of California, Los Angeles; Gabriel Falzone, University of California, Los Angeles; Matthew J. Aguayo, Arizona State University; Laurent Pilon, University of California, Los Angeles; Neithalath, Arizona State University; and Zhenhua Wei, University of California, Los Angeles

#### **11:25 am: Setting Time and Cracking Potential of Concrete Mixtures with Variable Packing Density of Aggregates**

Jan Olek, Purdue University

#### **11:50 am: Measuring Early-Age Strain and Setting Time of Cement-Based Paste with Admixtures**

Akthem A. Al Manaseer, San Jose State University

#### **12:15 pm: Examining the Role of Moisture Gradients for Shrinkage and Curling**

Mehdi Khanzadeh, Moradilo, Oregon State University; and W. Jason Weiss, Oregon State University

#### **12:40 pm: Evaluation of High-Early-Strength Concrete Repair Slab Cracking Mitigation Methods**

Dhanushika V. Gunatilake, University of South Florida; Abba Zayed, University of South Florida; and Kyle Austin Riding, University of Florida



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### 6:30 pm – 8:00 pm

#### **President's Reception – H-Sungarden**

ACI President Randall Poston invites all convention attendees to the President's Reception, where you'll have the opportunity to network with committee Chairs, chapter Presidents, and international attendees. An assortment of food and a hosted bar will be available.



Fall 2019 | Cincinnati

# The Concrete Convention and Exposition

## The Greater Miami Valley Chapter – ACI would like to welcome you to the 2019 Fall Convention!

Welcome to the Queen City, the “Gateway to the West.” Cincinnati was once described by Mark Twain: “When the end of the world comes, I want to be in Cincinnati because it’s always twenty years behind the times.”

Small but mighty, this Midwest town is home to nine Fortune 500 companies; the oldest professional baseball team, the Cincinnati Reds, who played the first night baseball game under the lights; pro football team the Cincinnati Bengals; and now MLS soccer, the FCC – Football Club of Cincinnati. Along with all this, Cincinnati has the second oldest zoo in the country, which has a world-class animal preservation habitat and is advanced in using LEED technology to the zoo’s advantage.

Other great attractions this great city has to offer are the world-class Cincinnati Symphony Orchestra, the Cincinnati Art Museum, and a beautiful riverfront. Come to the local Greater Miami Chapter table to get more ideas of great places to visit.

Make the most of your time at the convention meeting new people and learning about new ideas and practices while enjoying what Cincinnati has to offer its guests.

# THANK YOU

from the Greater Miami Valley Chapter  
Convention Committee for joining us.





# Thank you for attending The Concrete Convention and Exposition!

## FUTURE ACI CONVENTIONS

### SPRING 2020

March 29-April 2, 2020  
Hyatt Regency O'Hare  
Rosemont/Chicago, IL, USA

### FALL 2020

October 25-29, 2020  
Raleigh Convention Center & Raleigh Marriott  
Raleigh, NC, USA

### SPRING 2021

March 28-April 1, 2021  
Hilton & Marriott Baltimore  
Baltimore, MD, USA

### FALL 2021

October 17-21, 2021  
Hilton Atlanta Downtown  
Atlanta, GA, USA

Be sure to visit the Rosemont Information Desk located on the 2nd Floor South Concourse.  
For a complete listing of all future conventions, visit [www.aciconvention.org](http://www.aciconvention.org).



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