



Spring 2019 | Québec City

Program Book

The Concrete Convention
and Exposition

March 24-28, 2019

Québec City Convention Centre and Hilton Québec
Québec City, Québec, Canada

Convention Sponsors

Sponsors are listed as of 2/18/19

Cement Sponsor



Baker Concrete Construction

Admixture Sponsors



BASF Corporation



EUCLID CHEMICAL

The Euclid Chemical Company



GCP Applied Technologies



MAPEI



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François Modjabi-Sangnier, SNC Lavalin GEM

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Download the all-new
**Convention
App!** Search “ACI Convention” on
your Apple or Android device.

Detailed program information and program changes
can be found in the Convention App!

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ACI President's Welcome

ACI Members and Guests:



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

The ACI Convention 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; exciting student competitions; and numerous networking events, culminating with the Concrete Mixer on Tuesday night. In addition, the industry exposition showcases the products and services of more than 40 companies from around the world! I urge you to make the most out of your time here and attend all of these events.














The Québec & Eastern Ontario 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.

Risë and I are excited to be able to share this week with you, and we hope you will enjoy all that Québec City has to offer. Thank you for attending the convention and for your continued involvement in ACI.

Kind Regards,
David Lange
ACI President

ACI Sustaining Members


Advanced Construction Technology Services

American Society of Concrete Contractors

Ash Grove Cement Co.

Baker Concrete Construction, Inc.

Barrier-1 Inc.

BASF Admixtures, Inc.

Bauman Landscape & Construction

Bentley Systems Inc.

Boral Resources

Braun Intertec Corporation

Cantera Concrete Company

CHRYSO, Inc.

Concrete Reinforcing Steel Institute


Concrete Strategies LLC

CTLGroup

Curecrete Distribution, Inc.

Dayton Superior Corporation

Doka USA Ltd.

Ductilcrete Slab Systems, LLC

The Euclid Chemical Company

Full-Tilt Constructors, Inc.

Future Tech Consultants

GCP Applied Technologies

Keystone Structural Concrete LLC

Kryton International Inc.

LafargeHolcim (US) Inc.


Lehigh Hanson

Lithko Contracting, LLC

Meadow Burke Products Inc.

Metromont Corporation

Modern Technology Laboratories

Multiquip Inc.

Municipal Testing

North S.Tarr Concrete Consulting PC

Oztec Industries, Inc.

Penetron International Ltd.

PERI Formwork Systems, Inc.

Portland Cement Association

Precast/Prestressed Concrete Institute


QuakeWrap Inc.

Seretta Construction Inc.

Sika Corporation

Specialty Products Group, Inc.

STRUCTURAL

Structural Services, Inc.

Tekna Chem SPA

TWC Concrete Services, LLC

Twining Concrete Insight

Wacker Neuson

W. R. Meadows, Inc.

Xypex

General Information

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

Convention App

Download the new ACI Convention App and have all the information you need for the week ahead at your fingertips, including your own personal schedule. Updated event schedules, exhibitor and sponsor information, and more are all available through the app. Search “ACI Convention” on your Apple or Android device.

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-2000 A-D

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-2000 A-D

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-2000 A-D

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-2000 A-D

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 [Hilton 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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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 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.

General Information

Local Information—C-2000 Foyer



The Québec & Eastern Ontario 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

Hilton Québec Dining

Allegro Restaurant

Hours: 7:00 am – 11:00 am and 4:00 pm – 10:00 pm

LE23

Hours: Monday – Friday 12:00 pm – 2:00 pm; Sunday 11:00 am – 1:00 pm

Delta Québec Dining

Le Bistro

Hours: Daily 7:00 am – 11:00 pm

Convention Centre Dining

Le Subtil

Hours: Monday – Friday 7:00 am – 1:30 pm

Le Prep

Hours: Monday – Friday 7:00 am – 3:00 pm

Le Lounge

Hours: Monday – Friday 11:00 am – 2:00 pm

Please visit <https://www.quebecregion.com/en/where-to-eat-restaurants/> to view additional restaurants and hours in Québec City.

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 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.

Speaker Ready Room—C-201A

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.*

The Concrete Convention and Exposition

Fall 2019 | Cincinnati, OH—C-2000 Foyer



Mark your calendars for The Concrete Convention and Exposition in Cincinnati, OH, October 20-24, 2019, at the Duke Energy Convention Center and Hyatt Regency Cincinnati. Stop by the Greater Miami Valley Chapter Convention Committee desk Saturday through Tuesday to learn more about the convention!

Where's That Meeting Room?

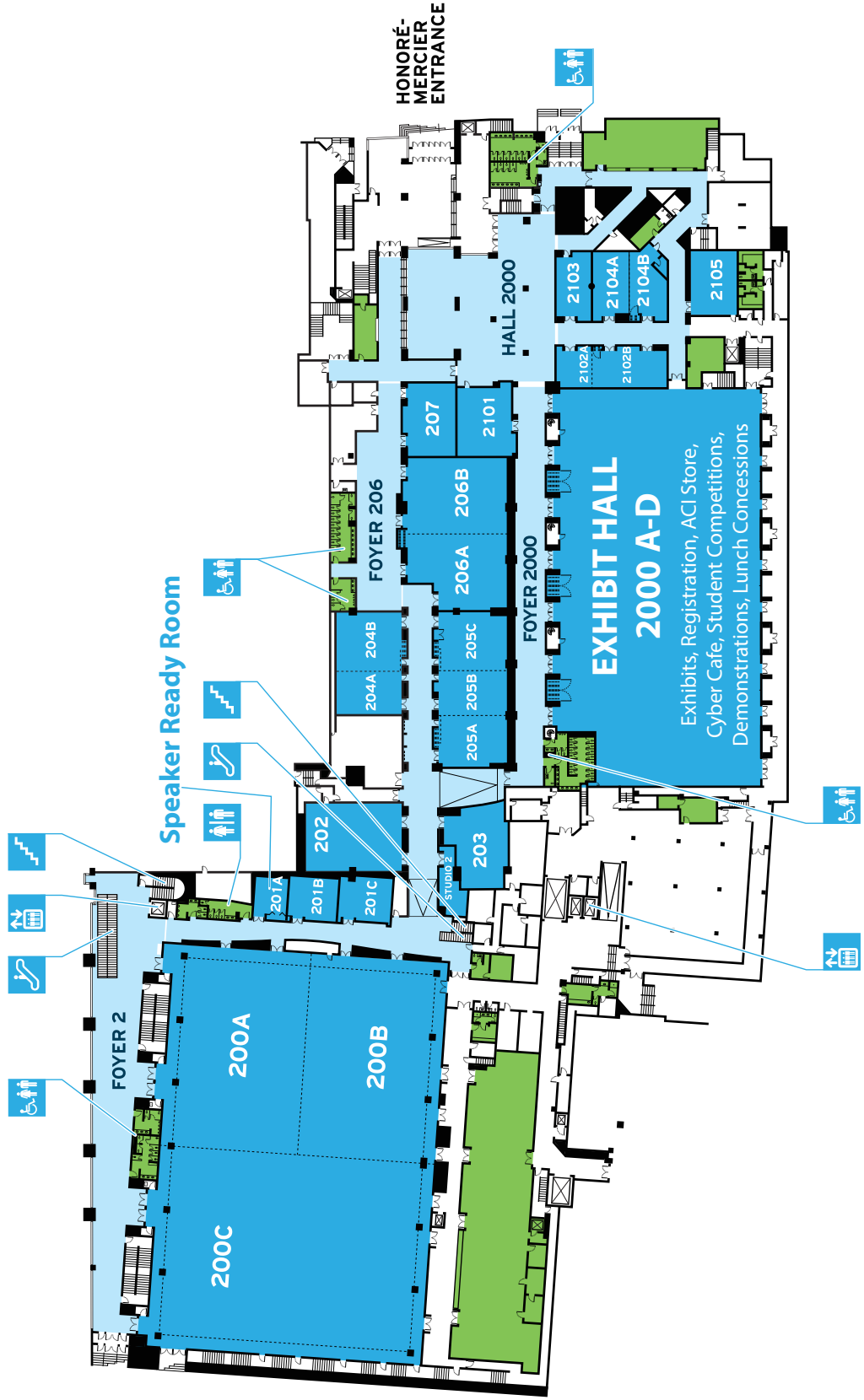
C = Québec City Convention Centre H = Hilton Québec

Québec City Convention Centre	
Room Name	Level
C-200A	Second Floor
C-200B	
C-200C	
C-201A	
C-201C	
C-202	
C-203	
C-205A	
C-205B	
C-206A	
C-206B	
C-207	
C-2000 A-D	
C-2101	
C-2102AB	
C-2103	
C-2104A	
C-2104B	
C-2105	
C-301A	
C-301B	
C-302A	
C-302B	
C-303A	
C-303B	
C-304A	
C-304B	
C-305	
C-306A	
C-307A	
C-307B	
C-308A	
C-308B	
C-309A	
C-309B	

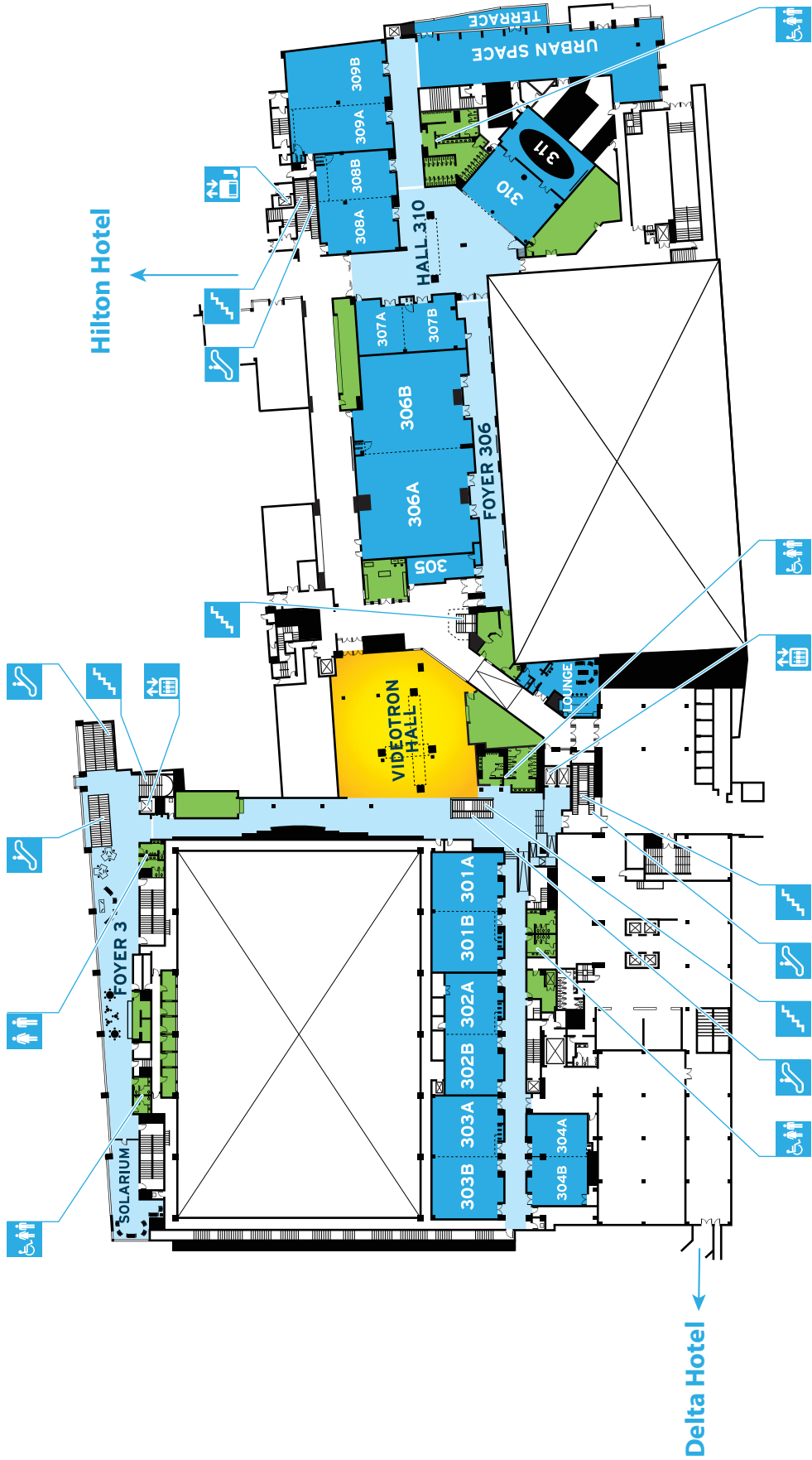
Hilton Québec	
Room Name	Level
H-De Tourny	Lobby
H-Dufferin	
H-Villeray	
H-Courville	First Floor
H-Duchesnay	
H-Lauzon	
H-Montmorency	
H-Orleans	
H-Palais	
H-Portneuf	Second Floor
H-Sainte-Foy	
H-Beaumont	
H-Beauport	Second Floor
H-Belair	
H-Plaines	23rd Floor

Québec City Convention Centre Meeting Space Map

Second Level

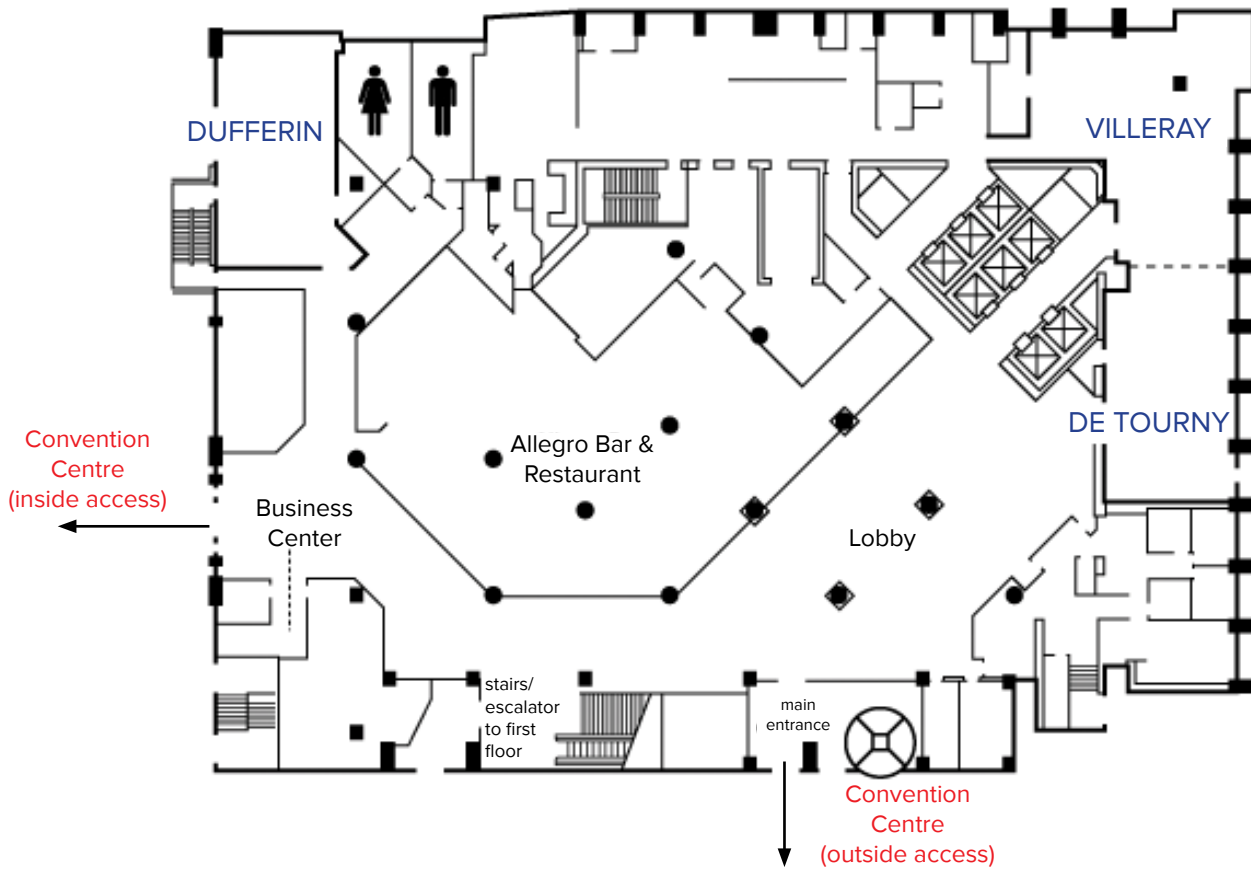


Québec City Convention Centre Meeting Space Map Third Level

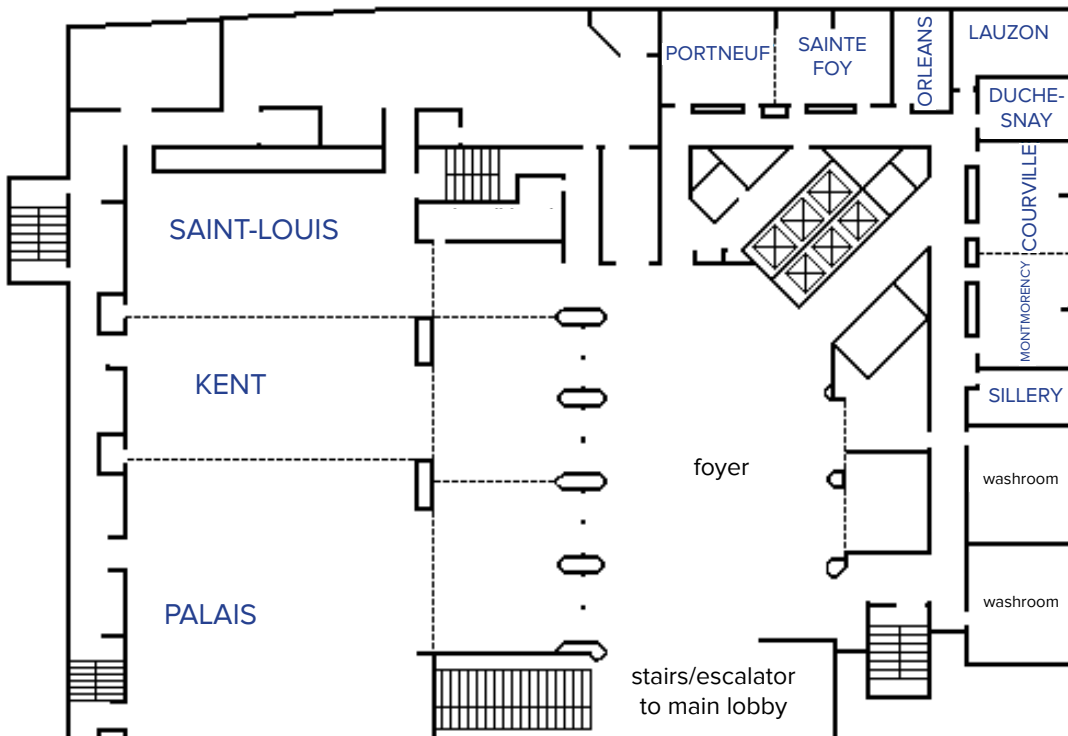


Hilton Québec Meeting Space Map

Lobby Level

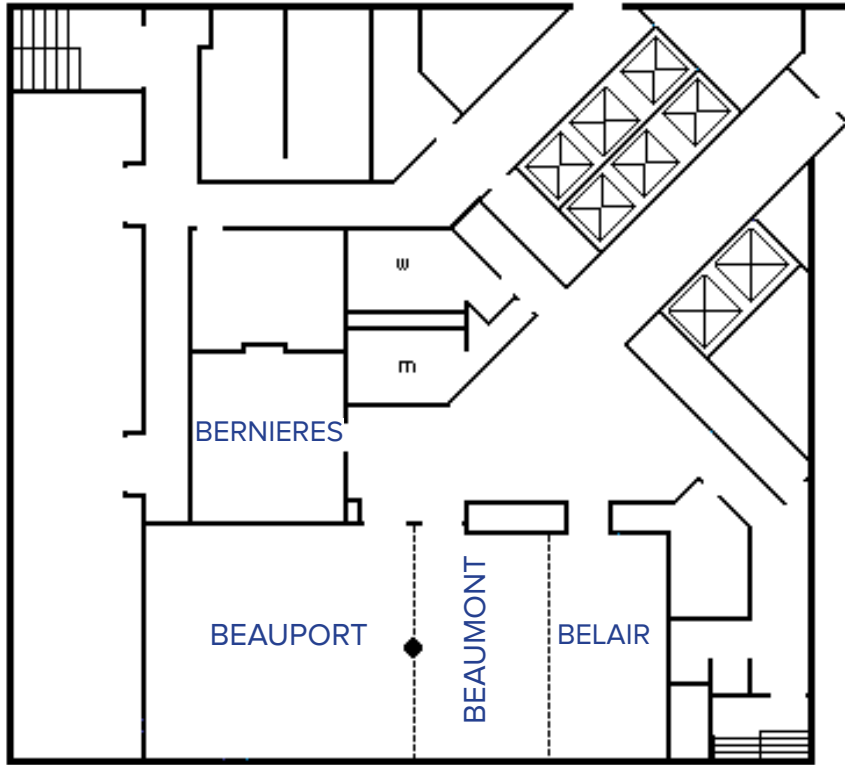


First Level

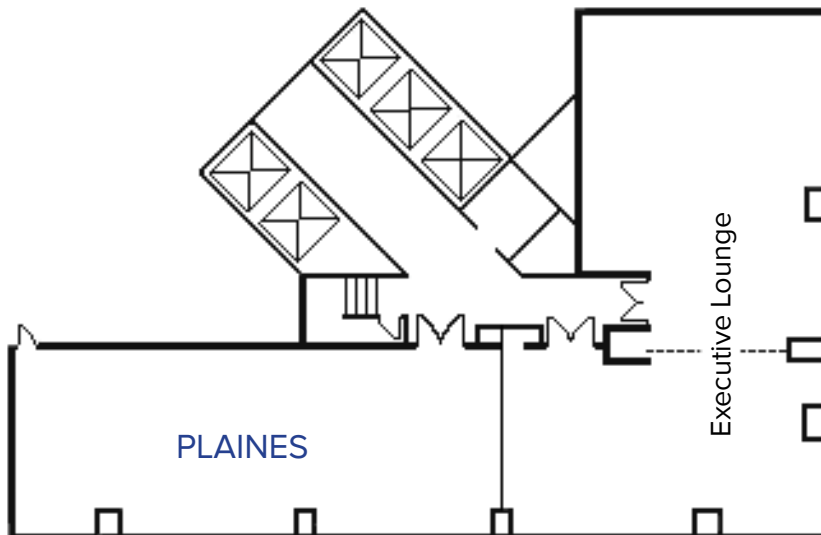


Hilton Québec Meeting Space Map

Second Level



Twenty Third Level



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 new convention app.

EXHIBIT HOURS – C-2000 A-D

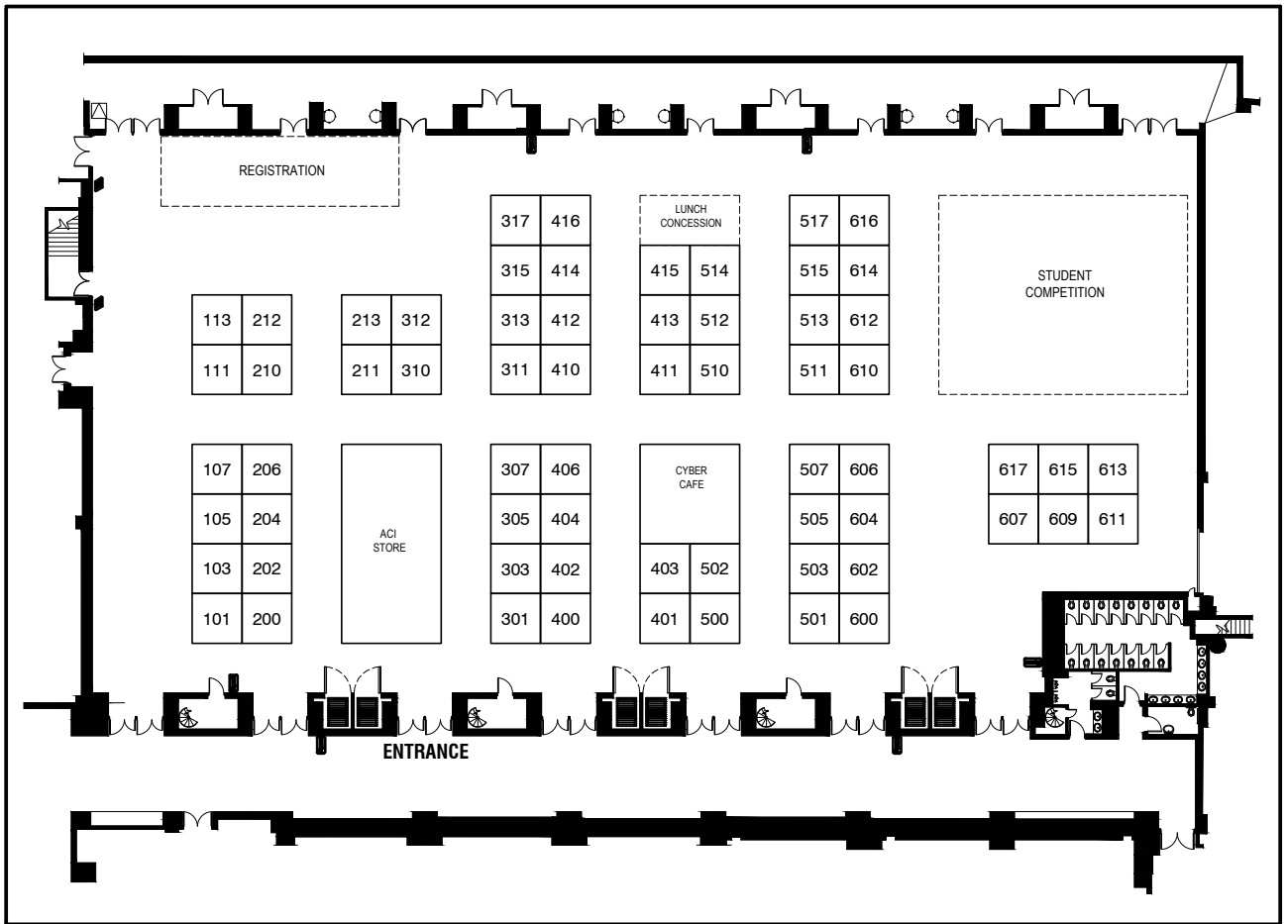
Sunday – Tuesday 8:00 am – 5:00 pm

AOMS Technologies Inc. www.aoms-tech.com	Booth #510	Kryton International Inc. www.kryton.com	Booth #411
BASF Corporation www.master-builders-solutions.basf.us	Booth #500	Les Produits Daubois Inc. www.daubois.com	Booth #402
Concrete Sealants, Inc. www.conseal.com	Booth #312	M&L Testing Equipment (1995) Inc. www.mltest.com	Booth #317
Concrete Sensors www.concretesensors.com	Booth #202	MAPEI www.mapei.com	Booth #206
Cresset Chemical Company www.cresset.com/	Booth #410	NITROcrete www.nitrocrete.com	Booths #303 & 305
Englobe www.englbecorp.com	Booth #502	Norchem - Ferroglobe www.norchem.com	Booth #507
The Euclid Chemical Company www.euclidchemical.com	Booth #212	Northeast Solite Corp. www.nesolite.com	Booth #213
FiberForce by ABC Polymer www.abcpolymerindustries.com	Booth #403	Peikko USA www.peikkousa.com	Booth #103
GCP Applied Technologies www.gcpat.com/en/solutions	Booth #307	Premier CPG www.premiercpg.com	Booth #113
Germann Instruments www.germann.org	Booths #511 & 513	Proceq USA, Inc. www.proceq.com	Booth #311
Giatec Scientific, Inc. www.giatec.ca	Booth #211	QuakeWrap, Inc. www.quakewrap.com	Booth #617
Gilson Company, Inc. www.globalgilson.com	Booth #610	Radarview LLC www.radarviewllc.com	Booth #111
Hoskin Scientific www.hoskin.ca	Booth #313	Research Center On Concrete Infrastructure - CRIB http://lecrib.ca/	Booth #612
Humboldt Mfg. Co. www.humboldtmgf.com	Booth #401	Sika Corporation www.usa.sika.com	Booth #301
Imerys www.imerys.com	Booth #505	Slag Cement Association www.slacement.org	Booth #310
International Concrete Repair Institute www.icri.org	Booth #210	Structural Technologies www.structuraltechnologies.com www.simcotechnologies.com	Booth #406
International Zinc Association www.zinc.org	Booth #400	Tech-Mix/Solhydroc www.bauval.com/techmix/index.php	Booth #606
James Instruments www.ndtjames.com	Booth #404	Vector Corrosion Technologies www.vector-corrosion.com	Booth #600
Jordahl USA Inc. www.jordahlusa.com	Booth #107	Zircon Corporation www.zircon.com	Booth #501
King Packaged Materials Co. www.kingshotcrete.com	Booth #105		

Exhibitor Floor Plan

QUÉBEC CITY CONVENTON CENTRE

C-2000 A-D



Exhibitor Demonstration Schedule

TIME	MONDAY, MARCH 25
10:30 - 11:00 am	Giatec Scientific, Inc.— Concrete Electrical Resistivity—Another Alternative to RCPT
11:15 - 11:45 am	Tech-Mix/Solhydroc—Pre-Blended Concrete; Utility to Specialty Blends for Various Applications.
3:30 - 4:00 pm	MAPEI—Innovative Method to Recycle Returned Concrete

Demonstrations schedule listed as of 2/18/19.

For the most up-to-date list of exhibitor demonstrations, please check the new Convention App

Daily Program

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

✓ = Separate fee required ★ = Guest-only event

C = Québec City Convention Centre H = Hilton Québec

Friday, March 22, 2019	
6:30 pm - 9:00 pm	
Committee Meetings	See Numeric or Convention App for detailed list
Saturday, March 23, 2019	
7:00 am - 6:00 pm	
Committee Meetings	See Numeric or Convention App for detailed list
2:00 pm - 6:00 pm	
ACI Registration	C-2000 A-D
ACI Store	C-2000 A-D
ACI Cyber Café & Meeting Spot	C-2000 A-D
Afternoon Soda Break	C-2000 A-D
Speaker Ready Room	C-201A
8:00 pm - 9:30 pm	
Student Networking Reception	H-Beauport-Belair
Sunday, March 24, 2019	
5:00 am and 6:00 am	
Run/Walk Meet-Up	H-Depart Hilton Lobby
7:00 am - 10:00 am	
★ Guest Hospitality	H-Villeray
Coffee Break	C-2000 A-D
7:00 am - 6:00 pm	
Committee Meetings	See Numeric or Convention App for detailed list
7:00 am - 6:00 pm	
Speaker Ready Room	C-201A
7:30 am - 5:00 pm	
ACI Registration	C-2000 A-D
ACI Cyber Café & Meeting Spot	C-2000 A-D
8:00 am - 8:30 am	
Convention Orientation Breakfast	C-306A
Coffee at the Meeting Spot for First-time Attendees	C-2000 A-D
8:00 am - 9:00 am	
★ Guest Overview	H-Villeray
8:00 am - 10:00 am—Sessions	
Challenges and Opportunities for Scaling Additively Manufactured Concrete from Lab to the Field	C-303A
Offshore and Marine Concrete Structures: Past, Present, and Future, Part 1 of 2	C-301A
Recent Advances in Latex-Modified Concretes	C-301B
8:00 am - 5:00 pm	
ACI Store	C-2000 A-D
Exhibits	C-2000 A-D
Approx. 8:30 am - 4:00 pm (confirm time in Convention App)	
Student Eco Concrete Competition	C-2000 A-D

9:00 am - 4:00 pm (confirm time in Convention App)	
Student Mortar Workability Competition	C-2000 A-D
9:30 am - 10:30 am—Mini Session	
Nondestructive Testing and Characterization of AAR	C-200A
10:00 am - 11:30 am—Session	
ACI International Forum	C-207
10:00 am - 5:00 pm	
★ Guest Lounge	H-Villeray
10:30 am - 12:30 pm—Sessions	
Early-Age Response of Concretes and the Influence of Binder Composition	C-303A
Innovative Techniques for Monitoring and Evaluating Concrete Bridges and Bridge Elements, Part 1 of 2	C-301B
Offshore and Marine Concrete Structures: Past, Present, and Future, Part 2 of 2	C-301A
11:00 am - 2:00 pm	
Lunch Concession	C-2000 A-D
11:30 am - 1:30 pm	
✓ International Lunch	C-306A
1:00 pm - 3:00 pm—Sessions	
Innovative Techniques for Monitoring and Evaluating Concrete Bridges and Bridge Elements, Part 2 of 2	C-301B
New Experience with Testing and Application of Concrete Pozzolans, Part 1 of 2	C-301A
Visual Condition Survey of Concrete and Case Studies, Part 1 of 2	C-303A
1:00 pm - 4:00 pm	
Afternoon Soda Break	C-2000 A-D
1:30 pm - 2:00 pm	
Soda at the Meeting Spot for First-time Attendees	C-2000 A-D
1:30 pm - 3:30 pm	
✓ Château Frontenac Tour	H-Depart Hilton Lobby
2:00 pm - 5:00 pm	
Award Pickup & Photo	C-2000 A-D
2:30 pm - 3:30 pm—Mini Session	
Development and Applications of High-Strength Lightweight Concrete	C-206B

Daily Program

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3:30 pm - 5:30 pm—Sessions	
Marine Structures—Global Case Studies and Research	C-301B
New Experience with Testing and Application of Concrete Pozzolans, Part 2 of 2	C-301A
Visual Condition Survey of Concrete and Case Studies, Part 2 of 2	C-303A
5:45 pm - 7:00 pm	
Opening Session and Keynote Presentation	C-200C
Approx. 7:00 pm - 8:00 pm	
Opening Reception and Awards Recognition	C-2000 A-D
8:00 pm - 9:30 pm	
Young Professional Networking Event	C-2000 A-D
8:00 pm - 10:00 pm—Session	
Hot Topic Session: Durability of Concrete: Aggregate Matters and Alternative Test Methods	C-301A
Monday, March 25, 2019	
5:00 am and 6:00 am	
Run/Walk Meet-Up	H-Depart Hilton Lobby
6:30 am - 8:00 am	
Workshop for Technical Committee Chairs (<i>by invitation only</i>)	C-200B
7:00 am - 8:30 am	
Speaker Development Breakfast	C-309B
7:00 am - 10:00 am	
★ Guest Hospitality	H-Villeray
Coffee Break	C-2000 A-D
7:00 am - 6:00 pm	
Speaker Ready Room	C-201A
7:00 am - 7:00 pm	
Committee Meetings	See Numeric or Convention App for detailed list
7:30 am - 5:00 pm	
ACI Registration	C-2000 A-D
ACI Cyber Café & Meeting Spot	C-2000 A-D
8:00 am - 8:30 am	
Coffee at Meeting Spot for first-time attendees	C-2000 A-D
8:00 am - 5:00 pm	
ACI Store	C-2000 A-D
Exhibits	C-2000 A-D
8:15 am - 9:15 am—Mini Session	
SCC in Repair	C-202

8:30 am - 10:30 am—Sessions	
Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 1 of 4	C-303A
Research in Progress, Part 1 of 2	C-301A
Undergraduate Research Session	C-301B
9:00 am - 11:00 am	
✓ Old Québec Walking Tour	H-Depart Hilton Lobby
10:00 am - 11:00 am—Mini Session	
New Developments in Bridge Loads	C-303B
10:00 am - 2:30 pm	
★ Guest Lounge	H-Villeray
10:30 am - 11:30 am—Session	
ACI Student Forum	C-207
10:30 am - 12:00 pm—Session	
ACI 123 Concrete Research Poster Session	C-Hall 2000
11:00 am - 1:00 pm—Sessions	
Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 2 of 4	C-303A
Alkali-Activated Binders, Part 1 of 2	C-301B
Research in Progress, Part 2 of 2	C-301A
11:00 am - 2:00 pm	
Lunch Concession	C-2000 A-D
11:30 am - 1:30 pm	
✓ Student Lunch	C-200B
1:00 pm - 4:00 pm	
Afternoon Soda Break	C-2000 A-D
1:30 pm - 2:00 pm	
Sodas at The Meeting Spot for first-time attendees	C-2000 A-D
1:30 pm - 3:30 pm—Sessions	
Alkali-Activated Binders, Part 2 of 2	C-301B
Concrete Design 201	C-301A
Fiber-Reinforced Self-Consolidating Concrete: From Development to Use	C-303A
2:00 pm - 3:00 pm—Mini Session	
Admixture Use in Performance-Based HPC	C-309A
3:30 pm - 5:00 pm	
★ Guest Social	H-Villeray

Daily Program

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C = Québec City Convention Centre H = Hilton Québec

4:00 pm - 6:00 pm—Sessions	
Alkali Aggregate Reaction—Evaluation and Aggregate Types, Texture, and Mineralogy	C-301B
Constructability and Durability Considerations for Long-Term Service Life	C-301A
Measurement and Control of Workability in Concrete In-Transit Mixers	C-303A
5:00 pm - 6:00 pm	
Women in ACI Reception	H-Plaines
6:30 pm - 8:30 pm—Session	
123 Forum: The Gap between Research and Practice—Always Advancing?	C-301A
7:00 pm - 9:00 pm	
✓ Reception Honoring Sami Rizkalla	H-Plaines
Tuesday, March 26, 2019	
5:00 am and 6:00 am	
Run/Walk Meet-Up	H-Depart Hilton Lobby
7:00 am - 10:00 am	
★ Guest Hospitality	H-Villeray
Coffee Break	C-2000 A-D
7:00 am - 6:00 pm	
Speaker Ready Room	C-201A
Committee Meetings	See Numeric or Convention App for detailed list
7:30 am - 5:00 pm	
ACI Registration	C-2000 A-D
ACI Cyber Café & Meeting Spot	C-2000 A-D
8:00 am - 8:30 am	
Coffee at Meeting Spot for first-time attendees	C-2000 A-D
8:00 am - 12:00 pm	
✓ Montmorency Falls and Basilica Tour	H-Depart Hilton Lobby
8:00 am - 5:00 pm	
ACI Store	C-2000 A-D
Exhibits	C-2000 A-D
8:30 am - 9:30 am—Mini Session	
Structural Design Examples for ICF walls, and Observations of Problems Caused by Pyrrhotite in Aggregate in Concrete	C-303B
8:30 am - 10:30 am—Sessions	
Advanced Analysis and Testing Methods for Concrete Bridge Evaluation and Design, Part 1 of 2	C-303A
Contractors' Day Session: Nordic Bridges	C-301A
Effects of Extreme Events on Reinforced Concrete Columns, Part 1 of 2	C-301B

10:00 am - 5:00 pm	
★ Guest Lounge	H-Villeray
11:00 am - 2:00 pm	
Lunch Concession	C-2000 A-D
11:00 am - 1:00 pm—Sessions	
Advanced Analysis and Testing Methods for Concrete Bridge Evaluation and Design, Part 2 of 2	C-303A
Effects of Extreme Events on Reinforced Concrete Columns, Part 2 of 2	C-301B
Nanoparticle Dispersion and Applications in Concrete	C-301A
11:30 am - 1:30 pm	
✓ Contractors' Day Lunch	C-206A
12:45 pm - 4:30 pm	
✓ Québec Observatory & Citadel Tour	H-Depart Hilton Lobby
1:00 pm - 4:00 pm	
Afternoon Soda Break	C-2000 A-D
1:30 pm - 2:00 pm	
Sodas at The Meeting Spot for first-time attendees	C-2000 A-D
1:30 pm - 2:30 pm—Mini Session	
Outstanding Concrete Projects in Quebec Over the Last 50 Years	C-2102AB
1:30 pm - 3:30 pm—Sessions	
Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 3 of 4	C-303A
Open Topic Session, Part 1 of 2	C-301B
Phase Change Materials in Concrete	C-301A
2:00 pm - 3:00 pm—Mini Session	
New Research on Internal Curing	C-307B
3:00 pm - 4:00 pm—Mini Sessions	
Accelerated Techniques for Concrete Paving	C-2102AB
Advances in Fiber-Reinforced Concrete	C-200A
4:00 pm - 6:00 pm—Sessions	
Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 4 of 4	C-303A
Contractors' Day Session: Modern Shotcrete Technology	C-301A
Open Topic Session, Part 2 of 2	C-301B
5:30 pm - 6:30 pm	
Faculty Network Reception	H-Plaines
6:30 pm - 8:00 pm	
Concrete Mixer	C-200C

Daily Program

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

√ = Separate fee required ★ = Guest-only event

C = Québec City Convention Centre H = Hilton Québec

Wednesday, March 27, 2019	
5:00 am and 6:00 am	
Run/Walk Meet-Up	H-Depart Hilton Lobby
7:00 am - 10:00 am	
★ Guest Hospitality	H-Villeray
Coffee Break	C-2000 A-D
7:00 am - 2:00 pm	
Speaker Ready Room	C-201A
√ Adhesive Anchor Installation Inspector Certification Exam	C-304B
√ Concrete Construction Special Inspector Certification Exam	C-304B
√ Concrete Quality Technical Manager Certification Exam	C-304B
√ Concrete Transportation Construction Inspector Certification Exam	C-304B
8:00 am - 12:00 pm	
ACI Registration	C-2000 A-D
ACI Store	C-2000 A-D
8:00 am - 2:00 pm	
ACI Cyber Café & Meeting Spot	C-2000 A-D
8:00 am - 6:00 pm	
Committee Meetings	See Numeric or Convention App for detailed list
8:30 am - 10:30 am—Sessions	
Design of Precast Concrete Parking Structures	C-303A
Creating Durable Concrete with Slag Cement	C-301A
UHPC and UHPFRC: Innovations in Combining High Tensile Strength and High Ductility, Part 1 of 2	C-301B
10:00 am - 5:00 pm	
★ Guest Lounge	H-Villeray
11:00 am - 1:00 pm—Sessions	
Concrete Aesthetics: From Historical Mortar to Architectural Concrete and Coming Advances	C-301A
Non-Prestressed FRP Reinforcement and Retrofitting Systems—Honoring Distinguished Professor Emeritus Sami Rizkalla, Part 1 of 2	C-303A
UHPC and UHPFRC: Innovations in Combining High Tensile Strength and High Ductility, Part 2 of 2	C-301B
1:30 pm - 3:30 pm—Sessions	
Application of ACI 351-C Report on Dynamic Foundations	C-301A
Prestressed FRP Reinforcement and Hybrid Systems—Honoring Distinguished Professor Emeritus Sami Rizkalla, Part 2 of 2	C-303A
6:30 pm - 8:00 pm	
President's Reception	H-Palais

Thursday, March 28, 2019	
10:15 am - 5:00 pm	
Board of Direction	H-Palais

Numerical Committee Meeting Listing

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

C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
ACIFDD	ACI Foundation Development	Mon	2:00 pm - 4:00 pm	H-Montmorency
ACIFdn	ACI Foundation	Wed	8:00 am - 11:30 am	C-302B
BOD	Board of Direction	Thurs	10:15 am - 5:00 pm	H-Palais
CAC	Chapter Activities Committee	Mon	2:00 pm - 4:00 pm	C-205B
CLC	Construction Liaison Committee	Sun	8:00 am - 10:30 am	C-309A
CPC	Certification Programs Committee	Tue	2:00 pm - 5:00 pm	H-Palais
CRC	Concrete Research Council	Tue	11:00 am - 1:00 pm	C-202
CSAO	Codes & Standards Advocacy & Outreach	Mon	3:30 pm - 5:30 pm	C-307A
C601	New Certification Programs	Mon	3:00 pm - 4:30 pm	C-305
C601-E	Concrete Construction Sustainability Assessor	Tue	7:30 am - 9:00 am	C-205A
C601-F	Nondestructive Testing Technician	Mon	1:00 pm - 3:00 pm	C-304B
C601-I	Shotcrete Inspector	Sun	1:00 pm - 2:00 pm	C-307B
C610	Field Technician Certification	Mon	8:00 am - 10:30 am	H-Palais
C611	Canadian Standards-based Certification	Fri	3:00 pm - 5:00 pm	C-2101
C612	Self-Consolidating Concrete Technician Certification	Mon	11:30 am - 1:00 pm	C-206A
C620	Laboratory Technician Certification	Tue	8:30 am - 10:00 am	C-2102AB
C621	Cement Tester Certification	Wed	8:30 am - 9:30 am	C-304A
C630	Construction Inspector Certification	Mon	1:00 pm - 2:30 pm	C-2105
C631	Concrete Transportation Construction Inspector Certification	Tue	10:00 am - 11:30 am	C-2102AB
C640	Craftsman Certification	Sun	11:00 am - 2:00 pm	C-304B
C641	Decorative Concrete Finisher Certification	Tue	1:00 pm - 3:00 pm	C-309A
C650	Tilt-up Constructor Certification	Sun	4:00 pm - 5:30 pm	C-304A
C655	Foundation Constructor Certification	Mon	12:30 pm - 2:00 pm	C-205B
C660	Shotcrete Nozzleman Certification	Sun	10:00 am - 12:00 pm	C-309B
C660-TG	Examiner Task Group	Sun	9:00 am - 10:00 am	C-309B
C670	Masonry Technician Certification	Mon	3:00 pm - 4:30 pm	C-205A
C680	Adhesive Anchor Installer Certification—Joint CRSI	Sun	11:30 am - 1:00 pm	C-307B
C681	Adhesive Anchor Installation Inspector Certification	Mon	4:30 pm - 5:30 pm	C-202
C690	Concrete Quality Technical Manager Certification	Mon	10:30 am - 11:30 am	C-2104A
EAC	Educational Activities Committee	Tue	8:00 am - 11:30 am	C-203
E701	Materials for Concrete Construction	Sun	9:00 am - 10:30 am	C-2103
E702	Designing Concrete Structures	Mon	8:30 am - 10:30 am	C-2104A
E703	Concrete Construction Practices	Mon	4:00 pm - 6:00 pm	C-304A
E706	Concrete Repair Education	Sun	8:00 am - 10:00 am	C-206B
E707	Specification Education	Tue	11:30 am - 1:00 pm	C-2101
E710	ACI University Programs	Sun	10:30 am - 12:00 pm	C-2102AB
E905	Training Programs	Sun	9:00 am - 10:00 am	C-308B
HTC	Hot Topics Committee	Sun	2:30 pm - 4:00 pm	H-Lauzon
IAC	International Advisory Committee	Tue	9:30 am - 11:30 am	C-302B
Intl-Cert	International Certification	Sun	1:30 pm - 3:00 pm	C-308B
IC-Conf	International Conferences/Conventions	Mon	7:15 am - 8:30 am	C-2104A
IPAC	International Project Awards Committee	Wed	9:00 am - 11:00 am	C-2101
MEMC	Membership Committee	Mon	10:00 am - 11:00 am	C-304A
MJEB	Materials Journal Editorial Board	Sun	9:00 am - 10:00 am	H-Sainte-Foy
MJEB/SJEB	Materials Journal Editorial Board/Structural Journal Editorial Board	Sun	10:00 am - 11:00 am	H-Sainte-Foy
SYPAC	Student and Young Professional Activities Committee	Wed	8:00 am - 9:30 am	C-308A
S801	Student Competitions	Sun	7:30 am - 9:00 am	C-309B

Numerical Committee Meeting Listing

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

C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
S802	Teaching Methods and Educational Materials	Mon	8:30 am - 9:30 am	C-203
S805	Collegiate Concrete Council-CCGE	Sun	4:00 pm - 5:30 pm	C-200A
TAC	Technical Activities Committee	Fri	6:30 pm - 9:00 pm	H-Beauport
TAC	Technical Activities Committee	Sat	7:00 am - 6:30 pm	C-303B
TAC-RG1	TAC Review Group 1	Sat	1:00 pm - 4:00 pm	C-304A
TAC-RG2	TAC Review Group 2	Sat	1:00 pm - 4:00 pm	C-304B
TAC-RG3	TAC Review Group 3	Sat	1:00 pm - 4:00 pm	C-305
TCSC	TAC Construction Standards Committee	Wed	8:30 am - 10:30 am	C-307B
TRRC	TAC Repair & Rehabilitation Committee	Tue	7:00 am - 8:30 am	C-2102AB
TTAG	SDC - Technology Transfer Advisory Group	Tue	6:30 am - 8:00 am	C-302A
090-TG16	Technical Exchanges with International Societies & Partners Task Group	Tue	11:30 am - 12:30 pm	H-Portneuf
117	Tolerances	Tue	8:00 am - 12:00 pm	H-Palais
117	Tolerances	Mon	2:00 pm - 6:00 pm	C-309B
117-N	Tolerances Data	Mon	1:00 pm - 2:00 pm	C-309B
120	History of Concrete	Tue	1:30 pm - 3:00 pm	C-2102AB
121	Quality Assurance Systems for Concrete	Mon	10:00 am - 12:00 pm	C-2105
122	Energy Efficiency of Concrete and Masonry Systems—Joint ACI-TMS	Mon	1:00 pm - 3:00 pm	H-Duchesnay
123	Research and Current Developments	Sun	4:00 pm - 5:30 pm	C-308A
124	Concrete Aesthetics	Mon	12:30 pm - 2:00 pm	H-Montmorency
130	Sustainability of Concrete	Tue	11:00 am - 1:00 pm	C-308A
130-A	Materials	Mon	8:30 am - 10:00 am	C-309A
130-C	Structures in Service	Tue	10:00 am - 11:00 am	C-308B
130-H	Climate Change Impacts on the Sustainability of Concrete	Mon	8:30 am - 10:00 am	C-2105
130-L	Liaison Subcommittee	Mon	10:00 am - 11:00 am	H-Orleans
131	Building Information Modeling of Concrete Structures	Tue	3:00 pm - 5:00 pm	C-309A
131	Building Information Modeling of Concrete Structures	Sat	8:00 am - 5:00 pm	C-302B
132	Responsibility in Concrete Construction	Sun	2:00 pm - 5:00 pm	C-2105
133	Disaster Reconnaissance	Sun	12:30 pm - 3:30 pm	C-309A
134	Concrete Constructability	Tue	3:00 pm - 5:00 pm	C-206B
201	Durability of Concrete	Tue	8:00 am - 11:00 am	C-206B
201-F	Durability in Design Specification	Sun	2:00 pm - 4:00 pm	C-302A
201-G	Executing Durability in Construction Specification	Mon	11:30 am - 1:00 pm	H-Duchesnay
201-TG1	Aggressive Chemicals	Mon	3:00 pm - 4:00 pm	C-304A
201-TG2	Physical Salt Attack	Sun	11:00 am - 12:00 pm	C-302A
201-TG3	Alkali-Aggregate Reactivity	Sun	12:00 pm - 2:00 pm	C-302A
201-TG5	Microbially Induced Corrosion of Concrete	Sun	10:00 am - 11:00 am	C-302A
201-TG6	Performance Options 318 Code Req Concrete Durability	Sun	4:00 pm - 5:00 pm	C-302A
207	Mass Concrete	Mon	10:00 am - 1:00 pm	C-308A
209	Creep and Shrinkage in Concrete	Mon	10:00 am - 1:00 pm	C-307B
209-C	Models Applicability and Uncertainty	Sun	3:30 pm - 4:30 pm	H-Courville
209-D	Numerical Methods and 3-D Analyses	Sun	4:30 pm - 5:30 pm	H-Courville
209-E	Experimental Methods and Monitoring	Mon	9:00 am - 10:00 am	C-307B
211	Proportioning Concrete Mixtures	Wed	8:00 am - 10:00 am	C-309B
211-A	Proportioning-Editorial	Tue	10:00 am - 12:00 pm	C-305
211-I	Assessing Aggregate Gradation	Tue	1:00 pm - 3:00 pm	H-Sainte-Foy
211-M	Aggregate Packing Model	Mon	10:00 am - 11:00 am	C-305

Numerical Committee Meeting Listing

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Code	Committee	Day	Time	Room Name
211-N	Proportioning with Ground Limestone and Material Fillers	Tue	3:00 pm - 5:00 pm	C-205A
211-TG2	Developing & Using a Three Point Curve Task Group	Tue	11:30 am - 1:00 pm	C-307B
212	Chemical Admixtures	Mon	2:00 pm - 5:00 pm	C-309A
213	Lightweight Aggregate and Concrete	Tue	1:30 pm - 3:30 pm	C-307B
213-TG1	Lightweight-Editorial Task Group	Tue	11:00 am - 12:30 pm	C-304B
214	Evaluation of Results of Tests Used to Determine the Strength of Concrete	Mon	3:30 pm - 5:30 pm	C-304B
214-A	Document Preparation	Mon	12:30 pm - 2:00 pm	H-Sainte-Foy
215	Fatigue of Concrete	Sun	12:30 pm - 2:30 pm	C-2104A
216	Fire Resistance and Fire Protection of Structures— Joint ACI-TMS	Mon	10:00 am - 12:00 pm	C-304B
221	Aggregates	Tue	11:00 am - 1:30 pm	C-200A
222	Corrosion of Metals in Concrete	Tue	2:00 pm - 5:00 pm	C-302B
222-TG1	Developing Standardized Tests for Chloride Threshold	Sun	1:00 pm - 3:00 pm	C-303B
223	Shrinkage-Compensating Concrete	Tue	2:00 pm - 5:00 pm	C-205B
224	Cracking	Sun	2:30 pm - 5:00 pm	C-2104A
225	Hydraulic Cements	Mon	1:00 pm - 5:00 pm	C-2104A
228	Nondestructive Testing of Concrete	Sun	9:30 am - 12:30 pm	C-200A
228-B	Visual Inspection	Sun	1:00 pm - 3:00 pm	H-Orleans
229	Controlled Low-Strength Materials	Tue	2:00 pm - 4:00 pm	C-303B
230	Soil Cement	Tue	8:30 am - 9:30 am	C-2101
231	Properties of Concrete at Early Age	Mon	12:30 pm - 2:30 pm	H-Lauzon
232	Fly Ash in Concrete	Mon	1:00 pm - 4:00 pm	C-303B
233	Ground Slag in Concrete	Tue	2:00 pm - 5:00 pm	C-309B
234	Silica Fume in Concrete	Tue	2:00 pm - 4:30 pm	C-305
236	Material Science in Concrete	Mon	4:30 pm - 5:30 pm	H-Palais
236-TG1	Advanced Analysis Techniques for Concrete	Sun	3:00 pm - 4:00 pm	H-Orleans
237	Self-Consolidating Concrete	Mon	8:15 am - 12:15 pm	C-202
237-TG2	SCC Formwork Pressure Task Group	Sun	3:00 pm - 5:00 pm	H-Portneuf
238	Workability of Fresh Concrete	Tue	8:00 am - 10:00 am	C-309A
238-A	Student Workability	Tue	10:00 am - 11:30 am	C-307B
239	Ultra-High-Performance Concrete	Mon	3:30 pm - 6:00 pm	C-308B
239-C	Structural Design on UHPC	Mon	10:30 am - 12:30 pm	C-309A
239-D	Materials & Methods of Construction with UHPC	Mon	1:00 pm - 3:00 pm	C-305
239-E	Educational Outreach	Sun	1:00 pm - 3:00 pm	H-Portneuf
240	Natural Pozzolans	Mon	10:00 am - 1:00 pm	C-205A
241	Nanotechnology of Concrete	Sun	4:00 pm - 5:30 pm	C-307B
241-A	The Application and Implementation of Nano-Engineered Concrete	Tue	1:00 pm - 3:00 pm	C-308A
241-SC	Steering Committee	Sun	11:00 am - 12:00 pm	H-Sainte-Foy
241-TG1	Dispersion of Nanoparticles in Concrete Materials TG1	Sun	1:30 pm - 3:00 pm	C-2104B
242	Alternative Cements	Tue	12:00 pm - 3:00 pm	C-302A
301	Specifications for Structural Concrete	Sun	1:00 pm - 4:00 pm	C-200A
301	Specifications for Structural Concrete	Mon	1:00 pm - 4:00 pm	C-203
301-B	Formwork and Formwork Accessories - Section 2	Sat	6:30 pm - 8:30 pm	C-302A
301-C	Reinforcement and Reinforcement Supports - Section 3	Sat	4:30 pm - 6:30 pm	C-302A
301-D	Concrete Mixtures - Section 4	Sun	8:00 am - 9:30 am	C-304B
301-E	Handling, Placing, and Constructing - Section 5	Sat	4:00 pm - 6:00 pm	C-304B
301-F	Architectural Concrete - Section 6	Sun	10:30 am - 12:30 pm	C-309A

Numerical Committee Meeting Listing

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C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
301-G	Lightweight Concrete - Section 7	Mon	8:00 am - 9:00 am	C-307A
301-H	Mass Concrete - Section 8	Sun	9:30 am - 11:00 am	C-304B
301-I	Post-Tensioned Concrete - Section 9	Sun	8:00 am - 9:30 am	H-Lauzon
301-J	Shrinkage Compensating Concrete - Section 10	Sun	8:00 am - 9:30 am	C-2104B
301-K	Industrial Floor Slabs - Section 11	Sun	9:30 am - 11:00 am	C-2104B
301-L	Tilt-Up Construction - Section 12	Sun	7:30 am - 9:30 am	C-302A
301-SC	Steering Committee	Sat	1:00 pm - 4:00 pm	C-302A
302	Construction of Concrete Floors	Mon	8:30 am - 1:00 pm	C-200A
303	Architectural Cast-in-Place Concrete	Mon	8:30 am - 11:30 am	C-205B
304	Measuring, Mixing, Transporting, and Placing Concrete	Mon	11:30 am - 1:00 pm	C-2104A
304-F	Measuring/Mixing-Volumetric	Mon	10:00 am - 11:30 am	H-Duchesnay
305	Hot Weather Concreting	Sun	2:00 pm - 4:00 pm	C-307B
306	Cold Weather Concreting	Tue	8:30 am - 11:00 am	C-302A
307	Concrete Chimneys	Mon	2:00 pm - 5:00 pm	H-Sainte-Foy
308	Curing Concrete	Wed	10:00 am - 1:00 pm	C-203
308-A	Curing-Guide	Wed	8:00 am - 10:00 am	C-203
308-B	Curing-Specifications	Tue	4:00 pm - 5:30 pm	C-304B
309	Consolidation of Concrete	Sun	3:00 pm - 4:30 pm	C-2102AB
310	Decorative Concrete	Tue	3:00 pm - 5:00 pm	C-308A
310-J	Polished Finishes	Tue	10:00 am - 12:30 pm	C-205A
310/308-TG2	Curing Decorative Concrete Joint Task Group	Tue	9:00 am - 10:00 am	C-304A
311	Inspection of Concrete	Tue	12:30 pm - 2:30 pm	C-205A
313	Concrete Bins and Silos	Mon	8:30 am - 5:00 pm	H-Portneuf
314	Simplified Design of Concrete Buildings	Sun	8:30 am - 10:30 am	C-303B
315	Details of Concrete Reinforcement—Joint ACI-CRSI	Sun	2:00 pm - 5:00 pm	C-304B
318	Structural Concrete Building Code	Wed	8:00 am - 6:00 pm	C-200A
318-A	General, Concrete, and Construction	Tue	1:30 pm - 6:00 pm	C-2105
318-B	Anchorage and Reinforcement	Tue	8:00 am - 12:30 pm	C-205B
318-C	Safety, Serviceability, and Analysis	Tue	8:00 am - 12:30 pm	C-2104B
318-D	Members	Tue	1:30 pm - 6:00 pm	C-2104B
318-E	Section and Member Strength	Tue	7:30 am - 12:30 pm	C-2104A
318-F	Foundations	Tue	8:00 am - 12:30 pm	H-Montmorency
318-G	Precast and Prestressed Concrete	Tue	8:00 am - 10:00 am	C-307B
318-H	Seismic Provisions	Tue	1:30 pm - 6:00 pm	C-308B
318-J	Joints and Connections	Tue	1:30 pm - 6:00 pm	C-2104A
318-L	International Liaison	Mon	2:30 pm - 4:00 pm	H-Lauzon
318-N	Nonlinear Dynamic Analysis	Sun	1:00 pm - 5:00 pm	C-309B
318-R	High Strength Reinforcement	Tue	1:30 pm - 6:00 pm	H-Montmorency
318-S	Spanish Translation	Mon	11:00 am - 12:30 pm	H-Palais
318-SC	318 Steering Committee	Mon	8:00 am - 11:00 am	C-2103
325	Pavements	Tue	3:00 pm - 5:30 pm	C-2102AB
325-A	Pavements-Design	Tue	9:00 am - 10:00 am	H-Sainte-Foy
325-C	Pavements-Prestressed and Precast	Tue	10:00 am - 11:00 am	C-2101
325-F	Concrete Pavement Overlays	Tue	1:00 pm - 2:00 pm	C-304B
325-TG1	Task Group on Thin Concrete Pavements	Tue	2:00 pm - 3:00 pm	C-304B
327	Roller-Compacted Concrete Pavements	Tue	11:00 am - 1:00 pm	C-307A
329	Performance Criteria for Ready-Mixed Concrete	Wed	9:30 am - 11:30 am	C-308A
330	Concrete Parking Lots and Site Paving	Wed	8:00 am - 12:00 pm	C-309A

Numerical Committee Meeting Listing

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C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
332	Residential Concrete Work	Tue	1:30 pm - 5:00 pm	C-202
332-B	Residential Concrete Materials and Placement	Sun	4:00 pm - 5:30 pm	C-307A
332-D & E	Residential Concrete-Footings & Foundation Walls/ Residential Concrete-Above Grade Walls	Tue	10:30 am - 12:00 pm	H-Sainte-Foy
332-F	Residential Concrete-Slabs	Tue	10:30 am - 12:00 pm	C-304A
334	Concrete Shell Design and Construction—Joint ACI-ASCE	Mon	5:00 pm - 7:00 pm	H-Montmorency
336	Footings, Mats and Drilled Piers	Sun	1:30 pm - 5:30 pm	C-205A
341	Earthquake-Resistant Concrete Bridges	Sun	3:00 pm - 5:00 pm	C-302B
341-A	Earthquake Resistant Bridges-Columns	Sun	11:00 am - 1:00 pm	C-302B
341-C	Earthquake Resistant Bridges-Retrofit	Sun	1:00 pm - 3:00 pm	C-302B
341-D	Earthquake Resistant Bridges-Performance-Based Seismic Design	Sun	9:00 am - 11:00 am	C-302B
342	Bridge Evaluation	Sun	8:30 am - 10:30 am	C-2102AB
343	Evaluation of Concrete Bridges and Bridge Elements	Mon	10:00 am - 12:00 pm	C-303B
343-B	Bridge Deck Design	Mon	8:30 am - 9:30 am	H-Orleans
345	Concrete Bridge Construction, Maintenance, and Repair	Sun	1:30 pm - 3:30 pm	C-2103
347	Formwork for Concrete	Sun	8:00 am - 12:00 pm	C-200B
347	Formwork for Concrete	Sat	2:00 pm - 6:00 pm	C-307B
348	Structural Reliability and Safety	Mon	1:30 pm - 3:30 pm	C-308B
349	Concrete Nuclear Structures	Tue	1:30 pm - 5:00 pm	C-203
349-A & B	Nuclear Structures-Materials/ Nuclear Structures-Design	Mon	1:00 pm - 4:30 pm	C-308A
349-C	Nuclear Structures-Anchorage	Mon	8:00 am - 11:00 am	C-308B
350	Environmental Engineering Concrete Structures	Wed	8:00 am - 4:00 pm	C-202
350-A	Environmental Structures-General & Concrete	Tue	1:00 pm - 5:00 pm	H-Courville
350-B	Environmental Structures-Durability	Mon	8:30 am - 1:00 pm	C-2104B
350-C	Environmental Structures-Reinforcement & Development	Sun	8:30 am - 11:30 am	C-307B
350-D	Environmental Structures-Structural	Mon	8:30 am - 6:30 pm	C-302A
350-E	Environmental Structures-Precast - Prestress	Sun	1:30 pm - 5:30 pm	H-Sainte-Foy
350-F	Environmental Structures-Seismic Provisions	Tue	8:30 am - 3:00 pm	C-201C
350-G & K	Environmental Structures-Tightness Testing/ Environmental Structures-Hazardous Materials	Mon	8:00 am - 12:00 pm	H-Montmorency
350-H	Environmental Structures-Editorial	Mon	12:30 pm - 2:00 pm	H-Courville
350-J	Environmental Structures-Education	Tue	1:00 pm - 3:00 pm	H-Portneuf
350-L	Environmental Structures-Specification	Tue	5:00 pm - 6:00 pm	C-205A
350-SC	Environmental Structures-Steering	Sun	11:30 am - 1:00 pm	C-206B
351	Foundations for Equipment and Machinery	Tue	10:00 am - 12:00 pm	C-309A
351-C	Equipment Foundations - Dynamic Foundations	Mon	4:30 pm - 6:30 pm	C-303B
351-D	Design Provisions for Heavy Industrial Equipment and Machinery Concrete Support	Tue	8:30 am - 10:00 am	C-308B
352	Joints and Connections in Monolithic Concrete Structures—Joint ACI-ASCE	Sun	2:00 pm - 5:00 pm	C-203
352-TG1	Slab-Column Joints & Connections	Mon	12:00 pm - 1:30 pm	C-201C
352-TG2	Beam-Column Joints & Connections	Mon	1:30 pm - 3:00 pm	C-201C
355	Anchorage to Concrete	Sun	1:30 pm - 5:00 pm	C-200B
357	Offshore and Marine Concrete Structures	Tue	8:00 am - 11:00 am	H-Courville
360	Design of Slabs on Ground	Mon	2:00 pm - 6:30 pm	C-200A
362	Parking Structures	Mon	1:00 pm - 5:00 pm	C-2102AB
362-A	Updating Guide for Structural Maintenance of Parking Structures	Sun	1:00 pm - 4:00 pm	C-307A
363	High-Strength Concrete	Sun	2:30 pm - 5:00 pm	C-206B

Numerical Committee Meeting Listing

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

C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
363-A	High-Strength Lightweight Concrete	Tue	3:30 pm - 5:00 pm	C-302A
364	Rehabilitation	Mon	1:00 pm - 4:00 pm	C-302B
364-A & C	Editorial Subcommittee/TechNotes Subcommittee	Mon	10:30 am - 12:00 pm	H-Courville
364-L	Liaison Subcommittee	Mon	8:00 am - 9:00 am	C-206A
364-TG1	Rehabilitation Guide	Mon	11:00 am - 12:00 pm	H-Orleans
365	Service Life Prediction	Mon	9:00 am - 11:00 am	C-206A
369	Seismic Repair and Rehabilitation	Mon	2:00 pm - 6:00 pm	C-307B
369-A	General Provision	Sun	9:00 am - 12:00 pm	C-205A
369-C	Frames	Sun	1:00 pm - 4:00 pm	C-304A
369-D	Walls	Sun	10:00 am - 12:00 pm	C-304A
369-E	Diaphragms and Foundations	Sun	8:00 am - 10:00 am	C-304A
369-F	Retrofit	Sun	2:00 pm - 5:30 pm	C-201C
370	Blast and Impact Load Effects	Sun	3:00 pm - 5:00 pm	C-308B
371	Elevated Tanks with Concrete Pedestals	Mon	3:00 pm - 5:00 pm	H-Duchesnay
372	Tanks Wrapped with Wire or Strand	Tue	3:00 pm - 5:00 pm	H-Sainte-Foy
374	Performance-Based Seismic Design of Concrete Buildings	Mon	8:30 am - 12:00 pm	C-309B
375	Performance-Based Design of Concrete Buildings for Wind Loads	Mon	1:00 pm - 3:30 pm	H-Orleans
376	Concrete Structures for Refrigerated Liquefied Gas Containment	Mon	1:00 pm - 4:00 pm	C-2104B
376-01	Steering Subcommittee	Sun	10:30 am - 12:00 pm	H-Courville
376-A	Code, Education & Publication Subcommittee	Mon	10:00 am - 12:00 pm	C-201C
376-B	Materials Subcommittee	Sun	1:00 pm - 3:00 pm	C-205B
376-C	Analysis Subcommittee	Sun	3:00 pm - 5:00 pm	C-205B
376-D	Design & Construction Subcommittee	Mon	8:00 am - 10:00 am	H-Duchesnay
377	Performance-Based Structural Integrity & Resilience of Concrete Structures	Mon	10:00 am - 12:30 pm	H-Sainte-Foy
378	Concrete Wind Turbine Tower	Mon	8:15 am - 9:30 am	C-303B
408	Bond and Development of Steel Reinforcement—Joint ACI-ASCE	Sun	8:30 am - 11:30 am	C-308A
408-A	Mechanical Reinforcing Bar Anchorages and Splices	Sun	1:30 pm - 3:30 pm	C-308A
421	Design of Reinforced Concrete Slabs—Joint ACI-ASCE	Sun	10:00 am - 1:00 pm	C-308B
423	Prestressed Concrete—Joint ACI-ASCE	Mon	8:30 am - 12:30 pm	C-302B
423-C	Corrosion and Repair of Grouted Multistrand and Bar Tendon Systems	Sun	3:30 pm - 5:30 pm	C-309A
423-F	Sustainable Prestressed Concrete	Sun	1:00 pm - 3:00 pm	H-Duchesnay
423-G	Specification for Unbonded Single-Strand Tendon Materials	Mon	2:00 pm - 6:00 pm	H-Courville
423-TG2	Anchorage Zone Task Group	Sun	4:00 pm - 5:30 pm	C-2104B
435	Deflection of Concrete Building Structures	Mon	3:00 pm - 6:00 pm	C-2101
437	Strength Evaluation of Existing Concrete Structures	Mon	10:30 am - 12:30 pm	C-2102AB
437-A	Test Database	Mon	3:30 pm - 5:00 pm	H-Orleans
439	Steel Reinforcement	Mon	8:30 am - 10:30 am	C-2102AB
439-A	Steel Reinforcement-Wire	Sun	3:30 pm - 5:00 pm	C-2103
440	Fiber Reinforced Polymer Reinforcement	Tue	8:00 am - 11:00 am	C-200A
440-E	FRP-Prof Education	Mon	11:30 am - 1:00 pm	C-305
440-F	FRP-Repair Strengthening	Mon	1:00 pm - 4:00 pm	C-202
440-H	FRP-Reinforced Concrete	Sun	2:30 pm - 5:00 pm	H-Palais
440-H	FRP-Reinforced Concrete	Mon	8:00 am - 10:00 am	C-308A
440-I	FRP-Prestressed Concrete	Sun	10:30 am - 12:00 pm	H-Palais

Numerical Committee Meeting Listing

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C = Québec City Convention Centre H = Hilton Québec

Code	Committee	Day	Time	Room Name
440-K	FRP-Material Characteristics	Sun	10:00 am - 11:30 am	C-206B
440-L	FRP-Durability	Sun	12:00 pm - 1:30 pm	H-Palais
440-M	FRP-Repair of Masonry Structures	Sun	8:00 am - 10:30 am	H-Palais
440-TG3	Anchorage Task Group	Sun	1:00 pm - 2:30 pm	C-206B
441	Reinforced Concrete Columns—Joint ACI-ASCE	Mon	11:30 am - 2:00 pm	C-2101
441-B	Lateral Reinforcement	Mon	9:00 am - 10:00 am	C-307A
444	Structural Health Monitoring and Instrumentation	Tue	8:00 am - 11:00 am	C-202
445	Shear and Torsion—Joint ACI-ASCE	Mon	2:00 pm - 6:00 pm	C-206A
445-A	Shear & Torsion-Strut & Tie	Sun	9:30 am - 12:30 pm	C-2104A
445-B	Shear & Torsion-Seismic Shear	Sun	9:30 am - 11:30 am	H-Lauzon
445-C	Shear & Torsion-Punching Shear	Sun	1:00 pm - 3:00 pm	H-Courville
445-D	Shear & Torsion-Shear Databases	Sun	2:00 pm - 5:00 pm	C-305
445-E	Shear & Torsion-Torsion	Sun	12:30 pm - 2:00 pm	C-203
446	Fracture Mechanics of Concrete—Joint ACI-ASCE	Mon	8:30 am - 10:00 am	C-304B
447	Finite Element Analysis of Reinforced Concrete Structures—Joint ACI-ASCE	Mon	11:00 am - 1:30 pm	C-308B
506	Shotcreting	Tue	8:30 am - 11:30 am	C-309B
506-A	Shotcreting-Evaluation	Mon	12:30 pm - 2:30 pm	C-2103
506-B	Shotcreting-Fiber Reinforced	Mon	2:30 pm - 4:00 pm	C-2103
506-C & E	Shotcreting-Guide/Shotcreting-Specifications	Mon	8:30 am - 11:00 am	C-2101
506-F	Shotcreting-Underground	Mon	4:00 pm - 5:00 pm	C-203
515	Protective Systems for Concrete	Tue	9:00 am - 11:00 am	H-Portneuf
522	Pervious Concrete	Tue	8:00 am - 11:00 am	C-308A
524	Plastering	Mon	8:30 am - 10:00 am	H-Sainte-Foy
533	Precast Panels	Mon	8:30 am - 10:00 am	C-305
543	Concrete Piles	Mon	8:30 am - 11:30 am	H-Lauzon
544	Fiber Reinforced Concrete	Tue	3:00 pm - 5:30 pm	C-200A
544-A	FRC-Education Production Application	Mon	3:00 pm - 5:00 pm	C-2105
544-C	FRC-Testing	Tue	2:00 pm - 3:00 pm	C-206B
544-D	FRC-Structural Uses	Tue	12:00 pm - 1:30 pm	C-304A
544-E	FRC-Mechanical Properties	Mon	5:00 pm - 6:30 pm	H-Sainte-Foy
544-F	FRC-Durability	Tue	10:30 am - 12:00 pm	C-303B
544-SC	FRC-Steering Committee	Mon	8:30 am - 10:00 am	C-201C
546	Repair of Concrete	Mon	9:30 am - 12:00 pm	C-203
546-B	Repair-Material Selection Guide	Sun	8:00 am - 9:00 am	C-203
546-C	Repair Guide	Sun	9:00 am - 10:00 am	C-203
546-D	Packaged Repair Materials	Mon	8:00 am - 9:30 am	C-304A
546-E	Corrosion Studies	Sun	10:00 am - 11:30 am	C-203
548	Polymers and Adhesives for Concrete	Tue	8:30 am - 11:30 am	C-2105
548-A	Polymer-Overlays	Mon	1:00 pm - 3:00 pm	C-304A
548-B	Polymer-Adhesives	Mon	3:00 pm - 5:00 pm	C-201C
548-TG1	Updating Guide for the Use of Polymers in Concrete	Mon	11:00 am - 12:30 pm	C-2103
549	Thin Reinforced Cementitious Products and Ferrocement	Sun	9:00 am - 12:00 pm	C-2101
549-L	Liaison	Sun	8:00 am - 9:00 am	C-2101
550	Precast Concrete Structures—Joint ACI-ASCE	Sun	3:00 pm - 5:00 pm	C-303B
551	Tilt-Up Concrete Construction	Sun	9:00 am - 12:00 pm	C-202
552	Cementitious Grouting	Tue	4:00 pm - 5:30 pm	C-2101
555	Concrete with Recycled Materials	Mon	5:00 pm - 6:30 pm	C-308A

Numerical Committee Meeting Listing

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Code	Committee	Day	Time	Room Name
560	Design and Construction with Insulating Concrete Forms	Tue	8:30 am - 10:30 am	C-303B
562	Evaluation, Repair, and Rehabilitation of Concrete Building	Sun	1:00 pm - 5:00 pm	C-202
562-A	Life Safety	Sat	12:00 pm - 4:00 pm	C-201C
562-B	Loads	Sat	4:00 pm - 6:00 pm	C-201C
562-C	Evaluation	Sun	8:00 am - 10:00 am	H-Orleans
562-D	Design	Sat	9:00 am - 12:00 pm	C-201C
562-E	Coordination	Mon	8:00 am - 10:00 am	C-205A
562-F	Durability	Sat	6:00 pm - 9:00 pm	C-201C
563	Specifications for Repair of Structural Concrete in Buildings	Tue	1:00 pm - 5:00 pm	C-2103
563-P	Corrosion	Mon	7:00 am - 8:30 am	C-205B
563-Q	Repair or Post Tensioned Concrete	Sun	10:00 am - 12:00 pm	C-205B
564	3-D Printing	Mon	1:30 pm - 3:30 pm	H-Palais



JOIN A COMMITTEE!

ACI Committees are recognized for providing widely accepted standards of practice for nearly every facet of the concrete industry thanks to the participation of professionals across the concrete industry.

ACI's committees are classified as follows:

100s – General

200s – Materials and Properties of Concrete

300s – Design and Construction

400s – Concrete Reinforcement and Structural Analysis

500s – Specialized Applications and Repair

C – Certification Committees

E – Education Committees

S – Student and Young Professional Committees

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Sessions & Events

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Saturday, March 23, 2019

8:00 pm – 9:30 pm

Student Networking Reception—H-Beauport-Belair

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, March 24, 2019

8:00 am – 9:00 am

Convention Orientation Breakfast—C-306A

Moderated by David A. Lange, University of Illinois
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

Challenges and Opportunities for Scaling Additively Manufactured Concrete from Lab to the Field—C-303A

Sponsored by ACI Committees 236, 238, and 564
Moderated by Narayanan Neithalath, Arizona State University; and Scott Jones, National Institute of Standards and Technology

This is the second session, as a continuation from the session was presented in Las Vegas in Fall 2018. Interest in additive manufacturing (AM) or three-dimensional (3-D) printing is growing tremendously among different ACI committees. The session for Las Vegas was “Materials Science Aspects in Additive Manufacturing of Cementitious Binders” and dealt with fundamental materials science and processing of such systems. The session for Québec City presents challenges and opportunities for scaling of AM of concrete. The session will provide novel information to researchers, engineers, concrete producers, robotic system designers, and contractors to take AM from the lab to the field.

8:00 am: 3-D Concrete Printing by Selective Deposition—Requirements for Fresh Concrete and Testing

Viktor Mechtcherine, Dresden University of Technology; and Venkatesh Nerella, Dresden University of Technology

8:20 am: Opportunities for Customization of Concrete Structures Using 3-D Printing Technology

Jan Olek, Purdue University; Reza Moini, Purdue University; Pablo Zavattieri, Purdue University; and Jeffrey Youngblood, Purdue University

8:40 am: 3-D Concrete Printing Using Geopolymer Concrete

Jay Sanjayan, Swinburne University of Technology; Behzad Nematollahi, Swinburne University of Technology; Shin Bong, Swinburne University of Technology; and Ali Nazari, Swinburne University of Technology

9:00 am: Mixture Proportioning and Mechanical Characterization of 3-D Printable Concrete

Manu Santhanam, Indian Institute of Technology Madras

9:20 am: Using Simulations to Scale from Paste to Concrete 3-D Printing

Scott Jones, National Institute of Standards and Technology

9:40 am: Analytical and Numerical Models to Guide Materials—Processing Linkage in 3-D Printing

Narayanan Neithalath, Arizona State University; Gaurav Sant, University of California, Los Angeles; Pu Yang, Arizona State University; and Sooraj Nair, Arizona State University



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8:00 am – 10:00 am

Offshore and Marine Concrete Structures: Past, Present, and Future, Part 1 of 2—C-301A

Sponsored by ACI Committee 357

Moderated by Mohammad Khan, High Performance Technologies Inc.

Offshore and marine concrete structures have not received enough attention in the recent past, at least here in the United States. The complexity and safety concerns associated with these structures are such that they probably need more attention compared to many other types of concrete structures. Offshore and marine concrete structures are so global in nature that there is a higher need for better coordination and synchronization of design, construction, inspection, and maintenance practices in different parts of the world. This two-part session will highlight the past, present, and future of this technology. Academics, researchers, practitioners, engineers, scientists, and manufacturers from all across the world will benefit from this session.

8:00 am: Design and Construction Overview of Offshore Concrete Gravity-Based Structures: Past, Present, and Future

Widiyanto, ExxonMobil; Erik Aldstedt, Conoptica AS; Jameel Khalifa, EMDC; and Kjell Tore Fossa, Kværner

8:20 am: Hebron Offshore Concrete Gravity-Based Structure: Novel Design and Construction Techniques

Widiyanto, ExxonMobil; Anton Magne Gjørven, Norconsult; Jameel Khalifa, EMDC; and Kjell Tore Fossa, Kværner

8:40 am: Barbour's Cut Terminal—Container Port Wharf Expansion Design

Jeremiah Fasl, Wiss, Janney, Elstner Associates, Inc.; and Carl Larosche, Wiss, Janney, Elstner Associates, Inc.

9:00 am: Concrete Mixture Design Development for Offshore Structures

Kjell Tore Fossa, Kværner

9:20 am: Performance-Based Requirements for Marine Concrete Structures: A Durability and Service Life Perspective

Jose Pacheco, CTLGroup



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Sessions & Events

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8:00 am – 10:00 am

Recent Advances in Latex-Modified Concretes—C-301B

Sponsored by ACI Committee 548

Moderated by Jacques Bertrand, Ambex Concrete Technologies, Inc.

This session will present ACI members an overview of research performed on the durability of latex-modified concrete in recent years. Presentations will highlight research test programs that investigated the parameters that influence and determine the durability of latex-modified concrete in Nordic climate including choice of cements, latex concentrations, and mixing and curing conditions. Investigation of performance and durability of concrete overlays with 20+ years of service will be presented as well as repairs using latex-modified mortars used in historical restorations. This session is appropriate for researchers, engineers, and contractors in the concrete repair industry.

8:00 am: Research on Durability of Latex-Modified Concretes

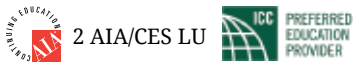
Richard Gagne, University of Sherbrooke

8:30 am: Use and Development of Latex-Modified Mortars for Restoration of Granite Pavements in Historic Old Montréal

Richard Morin, City of Montréal

9:00 am: Durability of LMC Overlays after 20+ Years in Service in Nordic Climate Case Studies

Jacques Bertrand, FICRI



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Approx 8:30 am – 4:00 pm

Student Eco Concrete Competition—C-2000 A-D

Sponsored by ACI Committee S801 and ACI Subcommittee 238-A

Moderated by Walter H. Flood IV, Flood Testing Labs Inc.

This student competition aims to promote the idea of environmental performance in concrete mixture design as an important aspect of sustainability. The teams will have the mission to develop an innovative concrete mixture that must have the lowest possible environmental impact while maintaining optimal mechanical and durability performance. After designing their concrete mixture, teams are asked to perform a simplified life-cycle assessment (LCA) and present their results in a written report. At the competition, teams will have a poster to present their innovative concrete to the audience and judges, with an emphasis on environmental aspects considered in their design, and their mixture will be checked for durability by testing the resistivity.

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9:00 am – 4:00 pm

Student Mortar Workability Competition—C-2000 A-D

Sponsored by ACI Committees S801 and 238

Moderated by Walter H. Flood IV, Flood Testing Labs Inc.

This competition will focus on workability and rheological properties of concrete. Teams are challenged to create a mortar mixture with optimum flowability and stability. Students are to mix mortar at the convention competition site and their mixture will be placed into a mold made in the shape of the letters “aci” from the top of the letter “a”. Both flowability and mixture stability will be evaluated. In creating their mortar mixture, teams will have to pay careful attention to the specified material requirements, just as concrete producers must meet specification and project requirements on a daily basis. Equipment provided by Humboldt and Forney.

Sessions & Events

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Sunday, March 24, 2019

9:30 am – 10:30 am

MINI SESSION: Nondestructive Testing and Characterization of AAR—C-200A

Sponsored by ACI Committees 201, 228, and 236

Moderated by John Popovics, University of Illinois at Urbana-Champaign

The session will present emerging nondestructive testing (NDT) methods that are used to detect and characterize alkali-aggregate reactivity (AAR) damage in new and existing concrete structures. Both laboratory and field measurements will be discussed, including those carried out on large-scale controlled-ASR block samples.

9:30 am: Nonlinear Acoustic Time Shift for Detection of ASR in Concrete Structures

Patrice Rivard, University of Sherbrooke; and Farid Moradi Marani, Fprimec Solutions

9:50 am: Thermal Modulation of Nonlinear Acoustic Wave for Evaluation of ASR Damage in Concrete

Jinying Zhu, University of Nebraska–Lincoln; and Hongbin Sun, University of Nebraska–Lincoln

10:10 am: Visualization and Characterization of ASR Damage in Concrete Using Contactless Ultrasonic Scanning

John Popovics, University of Illinois at Urbana-Champaign; Steven Feldman, National Institute of Standards and Technology; and Homin Song, University of Illinois at Urbana-Champaign



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10:00 am – 11:30 am

ACI International Forum—C-207

Chaired by Vice President Randall Poston, Pivot Engineers

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: David Millar, Concrete Institute of Australia (CIA); Prof. Jae-Yeol Cho, Korea Concrete Institute (KCI); Jose Lozano Ruy Sanchez, Central & Southern Mexico Chapter – ACI; Jose Lozano Ruy Sanchez, Northeast Mexico Chapter – ACI; Jose Lozano Ruy Sanchez, Northwest Mexico Chapter – ACI; Robert Lewis, Institute of Concrete Technology (UK) (ICT); Johan Silfverbrand, Swedish Concrete Association (SCA); Radhika Markan, India Chapter — ACI; Tomohiro Miki, Japan Concrete Institute (JCI)

10:30 am – 12:30 pm

Early-Age Response of Concretes and the Influence of Binder Composition—C-303A

Sponsored by ACI Committees 231, 236, and 242

Moderated by Narayanan Neithalath, Arizona State University; and Gaurav Sant, University of California, Los Angeles

Several new binding materials are being promoted for use in concrete, both to enhance performance and improve the sustainability benefits of concrete. While mechanical properties of such systems are studied extensively, there is a lack of understanding in the engineering community on the response of such concretes at early ages, which influence constructability. This session is geared towards engineers and consultants, researchers, and concrete producers to provide state-of-the-art results on the influence of the type and amount of binding materials on early-age properties. Factors to consider when using concretes containing alternate cements (on which a new ACI committee has been formed—this is the first session to be cosponsored by this committee) will also be discussed.

10:30 am: Investigation of the Reactivity of Fly Ash-Limestone Blends and Its Effect on Concrete Mixture Properties

W. Jason Weiss, Oregon State University; Deborah Glosser, Oregon State University; O. Burkan Isgor, Oregon State University; and Antara Choudry, Oregon State University

10:50 am: Influence of Pozzolanic Additives on Hydration Mechanisms of Tricalcium Silicate

Aditya Kumar, Missouri University of Science and Technology; and Jonathan Lapeyre, Missouri University of Science and Technology

11:10 am: Isothermal Stimulation of Mineral Dissolution Processes by Acoustic Perturbation

Gaurav Sant, University of California, Los Angeles; Yi-Hsuan Hsiao, University of California, Los Angeles; Jacob Israelachvili, University of California, Los Angeles; and Zongsu Wei, University of California, Los Angeles

11:30 am: Potential for On-Demand Setting of Concrete Using Aluminum and Alkanolamine Compounds

Deepika Sundar, Pennsylvania State University

11:50 am: Rheological Behavior of Fresh Portland Cement Blended Pastes Incorporating Calcined Florida Kaolin Clays

Kyle Austin Riding, University of Florida; Abba Zayed, University of South Florida; and Brando Lorentz, University of South Florida

12:10 pm: Mechanical Characterization of Polymer-Modified CSH

Mahmoud Reda Taha, University of New Mexico; Jeremy Starr, University of New Mexico; and Eslam Soliman, Assiut University



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Sessions & Events

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10:30 am – 12:30 pm

Innovative Techniques for Monitoring and Evaluating Concrete Bridges and Bridge Elements, Part 1 of 2—C-301B

Sponsored by ACI Committees 342 and 444

Moderated by John Myers, Missouri University of Science and Technology; and Larry Olson, Olson Engineering, Inc.

This first session examines the latest techniques and technologies for both monitoring and evaluating concrete bridges and bridge elements. This includes both superstructure elements such as bridge decks, barriers, and main spanning girder elements as well as substructure elements including bridge pier bents, piers, and foundations. The session for Québec City deals with innovative techniques for monitoring and evaluating concrete bridges and bridge elements. The session will provide novel information to researchers, engineers, educators, students, and contractors.

10:30 am: Emerging NDE Methods for Concrete Bridge Superstructure and Substructure

Larry Olson, Olson Engineering, Inc.

10:55 am: Recent Innovative Structural Health Monitoring Techniques for Field Monitoring and Bridge Evaluation

John Myers, Missouri University of Science and Technology; and Eli Hernandez, Missouri University of Science and Technology

11:20 am: Condition Assessment of Bridges in the United States

Elizabeth Nadelman, Wiss, Janney, Elstner Associates, Inc.; Mohamed ElBatanouny, Wiss, Janney, Elstner Associates, Inc.; Todd Nelson, Wiss, Janney, Elstner Associates, Inc.

11:40 am: Assessment of Deteriorating and Retrofitted Concrete Bridges

Wael Zatar, Marshall University

12:05 pm: Damage Assessment of Corroded Bridge Girders Using Image Processing

Faouzi Ghrib, University of Windsor



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10:30 am – 12:30 pm

Offshore and Marine Concrete Structures: Past, Present, and Future, Part 2 of 2—C-301A

Sponsored by ACI Committee 357

Moderated by Mohammad Khan, High Performance Technologies Inc.

The session description for this session may be found in the Part 1 listing; refer to page 26.

10:30 am: Testing and Inspection Techniques for Offshore and Marine Structures

Mohammad Khan, High Performance Technologies Inc.

10:50 am: Performance of Concrete in a Harsh Marine Environment for 25 Years

Edward Moffatt, University of New Brunswick; Michael Thomas, University of New Brunswick; and Andrew Fahim, Giatec Scientific Inc.

11:10 am: Commonwealth Pier, South Boston—Investigation and Repair

Varoujan Hagopian, GEI Consultants, Inc.; and Pericles Stivaros, GEI Consultants, Inc.

11:30 am: LaGuardia Airport Design Build for Extending Runway Decks for Safety Area Improvements, Queens, NY

Anthony Devito, Mueser Rutledge Consulting Engineers; and Leszek Czajkowski, Mueser Rutledge Consulting Engineers

11:50 am: Corrosion Prevention and Cathodic Protection of Reinforced Concrete Structures in Marine Environments

Doug Leng, Structural Group; and Tore Arnesen, Vector Corrosion Technologies



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PDH Codes: _____

Sessions & Events

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

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C = Québec City Convention Centre H = Hilton Québec

Sunday, March 24, 2019

11:30 am – 1:30 pm

✓ **International Lunch—C-306A**

\$30 U.S. per person

Sponsored by the ACI International Advisory Committee (IAC)

Topic: Concrete Structures in Marine Environments

Speaker: Tor Ole Olsen, Dr.techn. Olav Olsen

The American Concrete Institute is honored to welcome Tor Ole Olsen to The Concrete Convention and Exposition in Québec City, QC, Canada, as the International Lunch Guest Speaker. The objective of Olsen's presentation will focus on the many reasons the future will see an increased use of the sea; mankind simply has to. Applications may be related to production of food, recreation, infrastructure, living, and rising of sea level. Fortunately, we know how to design and build robust structures; properly designed and built concrete structures behave very well in the sea. Examples of marine structures that will be described are offshore platforms for the oil and gas industry, strait crossings, renewable energy (in particular, wind), recreational, and fish farming. The presentation aims at showing what is possible to achieve with marine structures, and a little bit of what is required to do so. Tor Ole Olsen is a Structural Designer, predominantly focusing on concrete marine structures. Olsen has more than 40 years with Dr.techn. Olav Olsen, a Norwegian structural design consultancy. Olsen received his BSc and MSc from the University of Toronto, Toronto, ON, Canada; is the President of *fib* in 2019 and 2020; and is an honorary member of the Norwegian Concrete Association.

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.

1:00 pm – 3:00 pm

Innovative Techniques for Monitoring and Evaluating Concrete Bridges and Bridge Elements, Part 2 of 2—C-301B

Sponsored by ACI Committees 342 and 444

Moderated by John Myers, Missouri University of Science and Technology; and Eli Hernandez, Missouri University of Science and Technology

The session description for this session may be found in the Part 1 listing; refer to page 29.

1:00 pm: Mitigation of Rotation of Bridge Exterior Girders due to Construction Loads

Riyadh Hindi, Saint Louis University

1:25 pm: Load Testing and Condition Evaluation of Bridges Using Ultrasonic Monitoring

Thomas Schumacher, Portland State University; and Devin Harris, University of Virginia

1:50 pm: Evaluation of Approach Slabs through Innovative NDE Technologies

Mohamed ElBatanouny, Wiss, Janney, Elstner Associates, Inc.; Nathaniel Rende, Wiss, Janney, Elstner Associates, Inc.; and Paul Krauss, Wiss, Janney, Elstner Associates, Inc.

2:15 pm: Structural Health Monitoring for Evaluation and Load Rating of Prestressed Concrete Bridges

Hani Nassif, Rutgers University; Peng Lou, Rutgers University; and He Zhang, Rutgers University

2:40 pm: Evaluation of Bridges under Transit Loading

Yail Jimmy Kim, University of Colorado Denver



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PDH Codes: _____

1:00 pm – 3:00 pm

New Experience with Testing and Application of Concrete Pozzolans, Part 1 of 2—C-301A

Sponsored by ACI Committees 232, 236, and 240

Moderated by Farshad Rajabipour, Pennsylvania State University; and Kimberly Kurtis, Georgia Institute of Technology

This session is cosponsored by RILEM Committee TC 267 TRM. Traditional test methods have significant limitations for evaluating the properties and performance of pozzolans in concrete. For example, the strength activity index does not truly capture the reactivity of pozzolans and their impact on concrete strength and durability, while the loss on ignition cannot reliably predict the impact on concrete air entrainment. This session introduces new and more reliable test methods to characterize the reactivity and performance of pozzolans in concrete. In addition, it presents laboratory and field studies of application of unconventional sources of pozzolans.

1:00 pm: Development of a Rapid, Robust, and Relevant (R3) Reactivity Test for Supplementary Cementitious Materials

Karen Scrivener, Swiss Federal Institute of Technology Lausanne; and Ruben Snellings, Catholic University of Leuven

1:20 pm: Using SCM Reactivity Testing to Design Mixtures for Durability in the Presence of Deicing Salts

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

1:40 pm: A Comparison of Methods for Measuring the Adsorption Capacity of Coal Fly Ash

Lawrence Sutter, Michigan Technological University; Ivan Diaz-Loya, Boral Resources; and G. C. Anzalone, Michigan Technological University

2:00 pm: Thermogravimetric Analysis of Blast-Furnace Slags

Susan Bernal, University of Leeds

2:20 pm: The Effect of Composition on the Performance of Ground Glass Pozzolan

Mary Christiansen, University of Minnesota Duluth; and Ben Dymond, University of Minnesota Duluth

2:40 pm: Fluidized Bed Combustion (FBC) Fly Ash and Its Performance in Concrete

Farshad Rajabipour, Pennsylvania State University; and Mahboubeh Zahedi, Pennsylvania State University



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Sessions & Events

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1:00 pm – 3:00 pm

Visual Condition Survey of Concrete and Case Studies, Part 1 of 2—C-303A

Sponsored by ACI Committee 228 and ACI Subcommittee 228-B
Moderated by Julie Ann Hartell, Oklahoma State University; and Liying Jiang, Simpson Gumpertz & Heger Inc.

This session is on state-of-the-art guidelines to conducting a visual condition survey of concrete in service. Attendees will learn of the visual condition survey process, distress features of concrete, as well as in which context they manifest: construction-related defects and distress due to improper placement, finishing, and curing practices; design- and service-related distress due to loading, moisture, and temperature conditions; and durability-related distress due to various mechanisms. Presentations of case studies complemented with nondestructive testing (NDT) techniques are also planned.

1:00 pm: Application of Visual Inspection in Post-Fire Serviceability Evaluation of Precast Concrete Bridge Girders

Nur Yazdani, University of Texas at Arlington; and Eyosias Beneberu, Oklahoma State University

1:24 pm: Visual Assessment of Concrete Placement and Finishing Defects

Jacob Borgerson, Wiss, Janney, Elstner Associates, Inc.; and Heather Todak, Wiss, Janney, Elstner Associates, Inc.

1:48 pm: A View from Inside the South Austin Waste Water Treatment Plant

Kerry Kreitman, University of Texas at Austin; Sumanth Cheruku, Pivot Engineers; Aaron Larosche, Pivot Engineers; and Michael Ahern, Pivot Engineers

2:12 pm: Supplementing Visual Inspection with Nondestructive Testing: Lessons Learnt from Select Case Studies

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

2:36 pm: Freeze-Thaw Damage: Mechanism, Diagnosis, and Treatment

Liying Jiang, Simpson Gumpertz & Heger Inc.



PDH Codes: _____

1:30 pm – 3:30 pm

✓Château Frontenac Tour—H-Depart Hilton Lobby

\$25 U.S. per person

Coordinated by the Québec & Eastern Ontario Chapter – ACI

Experience the history of the prestigious Fairmont Le Château Frontenac during a guided tour of this iconic hotel located on one of the most beautiful sites in Québec City. You will discover the famous people and historical events that have shaped the identity of Fairmont Le Château Frontenac over the years, as well as its architectural development and facelift undergone in recent years. Please note this is a walking tour, with steep, uneven terrain; no transportation will be provided.

PREREGISTRATION IS REQUIRED TO ATTEND. Tickets are available for purchase at ACI Registration. Tours are nonrefundable. All tours depart from the Hilton Lobby.

2:30 pm – 3:30 pm

MINI SESSION: Development and Applications of High-Strength Lightweight Concrete—C-206B

Sponsored by ACI Committee 363

Moderated by William Hale, University of Arkansas

This session focuses on developing high-strength lightweight concrete and presents applications of the concrete. Mixture proportioning and material properties will also be discussed in the session. The session will benefit practicing engineers who are interested in specifying and using high-strength lightweight concrete.

2:30 pm: Selecting Lightweight Aggregates for Optimizing Strength-to-Density Ratio in HSLW for Post-Tensioned Bridge Girders

Mauricio Alejandro Lopez Casanova, Pontifical Catholic University of Chile

2:45 pm: High-Strength Lightweight Concrete Mixture Development and Production Challenges: It's Not Your Normal Concrete

Brett Holland, Simpson Gumpertz & Heger Inc.

3:00 pm: High-Strength Lightweight Self-Consolidating Concrete for Prestressed Members

Royce Floyd, University of Oklahoma

3:15 pm: The Use of High-Strength Lightweight Concrete in the Bayonne Bridge

Oscar Antommattei, Kiewit Engineering Group Inc.



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Sessions & Events

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Sunday, March 24, 2019

3:30 pm – 5:30 pm

Marine Structures—Global Case Studies and Research—C-301B

Sponsored by the International Advisory Committee
Moderated by Ishita Manjrekar, Sunanda Specialty Coatings

This session aims to provide a platform for presentation and discussion on the latest international case studies and developments in research, design, construction, and in-service experience relating to concrete marine structures—that is, all structures of reinforced concrete having an interface with the sea, including offshore platforms; pipelines; subsea structures; and coastal structures such as ports, jetties, and piers. Papers submitted to the session must be original and will be referred to a high standard. They may include new research findings, together with developments in design methodology, construction techniques, and repair and maintenance guidelines. Priority will be given to international papers which are focused on case studies, real-life project learnings, as well as research being carried out on the subject.

3:30 pm: Hebron Platform: Internationally Designed and Executed

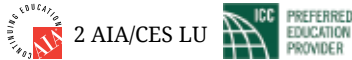
Jameel Khalifa, Exxon Mobil; and Widiyanto, ExxonMobil

4:10 pm: Underwater Coating Technology for Marine and Coastal Concrete Structures: Applications and Technical Challenges

Min Ook Kim, Korea Institute of Ocean Science and Technology; Boreum Won, Korea Institute of Ocean Science and Technology; and JinHak Yi, Korea Institute of Ocean Science and Technology

4:50 pm: Protective Measures for Concrete Foundations under Aggressive Soil Conditions in Industrial Marine Environment—A Case Study

Anurag Sinha, Engineers India Ltd



PDH Codes: _____

3:30 pm – 5:30 pm

New Experience with Testing and Application of Concrete Pozzolans, Part 2 of 2—C-301A

Sponsored by ACI Committees 232, 236, and 240
Moderated by Farshad Rajabipour, Pennsylvania State University; and Kimberly Kurtis, Georgia Institute of Technology

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

3:30 pm: Development of a Rapid and Reliable Pozzolanic Reactivity Test Method

Mahipal Kasaniya, University of New Brunswick; Michael Thomas, University of New Brunswick; and Edward Moffatt, University of New Brunswick

3:50 pm: Emerging Test Methods to Characterize Different Types of SCMs and Evaluating Their Effectiveness to Prevent ASR

Anol Kanti Mukhopadhyay, Texas A&M Transportation Institute; and Kai-Wei Liu, Texas A&M Transportation Institute

4:10 pm: Particle Analysis: Systematic Procedure and Applications to Fly Ash Studies

Taehwan Kim, University of New South Wales; Tyler Ley, Oklahoma State University; and Jeffrey Bullard, National Institute of Standards and Technology

4:30 pm: Evaluation of Blended Fly Ashes in Concrete

Saif Al-Shmaisani, University of Texas at Austin; Raissa P. Ferron, University of Texas at Austin; and Maria Juenger, University of Texas at Austin

4:50 pm: Use of Alternative Fly Ashes as Supplementary Cementitious Materials in Concrete

Xenia Wirth, Georgia Institute of Technology

5:10 pm: Review, Sampling, and Evaluation of Landfilled Fly Ash

Gopakumar Kaladharan, Pennsylvania State University; Asghar Gholizadeh Vayghan, Pennsylvania State University; and Farshad Rajabipour, Pennsylvania State University



PDH Codes: _____

3:30 pm – 5:30 pm

Visual Condition Survey of Concrete and Case Studies, Part 2 of 2—C-303A

Sponsored by ACI Committee 228 and ACI Subcommittee 228-B
Moderated by Julie Ann Hartell, Oklahoma State University; and Wassay Gulrez, Oklahoma State University

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

3:30 pm: Lessons Learned: Twenty-Five Years of Bridge Deck Crack Surveys

Matthew O'Reilly, University of Kansas; and David Darwin, University of Kansas

3:54 pm: Assessment of Distress in Industrial Port Structures

Joshua White, Wiss, Janney, Elstner Associates, Inc.; Marwa Abdelrahman, Wiss, Janney, Elstner Associates, Inc.; and Heather Todak, Wiss, Janney, Elstner Associates, Inc.

4:18 pm: Forensics on the Battleship Bunkers at the Manhattan Project Historical Park, Los Alamos National Laboratory Site

Charlene Brown, EPC-ES, Los Alamos National Laboratory

4:42 pm: Utilizing New Technology to Provide Comprehensive Visual Assessment of Cooling Towers and Other Difficult-to-Access Structures

Glenn Schaefer, Structural Technologies

5:06 pm: Visual Condition Survey of an Underground Tunnel Structure Affected by External Sulfate Attack

Julie Ann Hartell, Oklahoma State University



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Sessions & Events

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5:45 pm – 7:00 pm

Opening Session and Keynote Presentation—C-200C

The Opening Session is the official start to the ACI Convention and will begin with a welcome address by ACI President David Lange. Next, the emcee for the night will recognize new Honorary Members, Fellows, and 50-Year Members for their contributions to the concrete industry. The Opening Session will conclude with a keynote presentation from Jeff Evans on the topic of Mountain Vision: Lessons Beyond the Summit. Evans' global experiences as a world-class mountaineer, guide, and emergency medic have helped him master the skills of servant leadership, teamwork, communication, and trust, which are the cornerstone themes in his keynote and breakout sessions. His amazing adventures and challenges have given him the tools to become one of the most dynamic and inspirational speakers on the circuit today. Don't miss out on this keynote presentation!

Approx. 7:00 pm – 8:00 pm

Opening Reception and Awards Recognition—C-2000 A-D

Immediately following the Opening Session and Keynote Presentation, attendees are invited to the exhibit hall for this evening reception. Congratulate awardees, 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 – 9:30 pm

Young Professional Networking Event—C-2000 A-D

Sponsored by the ACI Student and Young Professional Activities Committee

SYPAC (Student and Young Professionals 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.

8:00 pm – 10:00 pm

Hot Topic Session: Durability of Concrete: Aggregate Matters and Alternative Test Methods—C-301A

Sponsored by Hot Topic Committee

Moderated by Pierre-Luc Fecteau, GHD

Deleterious chemical reactions of aggregates in concrete are among the various mechanisms that can conduct to regular or recurring repairs or eventually the replacement of the affected elements/structures. Assessing concrete degradations in structures starts with a reliable diagnosis process performed by a concrete professional. Alkali-aggregate reaction (AAR) or any other aggregate degradation mechanism is a gradual process and determining the current condition and the potential for further damage is rather complex. Testing methods for accurate condition assessment and determination of reaction stage are limited and a deep understanding of the reactions

involved and of their impact on the mechanical properties of the affected concrete are crucial in this process. Testing methods for prognosis are generally performed under accelerated laboratory conditions and their correlation with field exposure is often not very accurate. Relatively “new” reactions in concrete such as internal sulfate attack associated with sulphide-bearing aggregates need better understanding and also methods to detect reliably and accurately reactive aggregates. Therefrom, relatively new/upgraded test methods (petrographic and mechanical) for diagnosis of current level of damage due to AAR or other aggregate reactions are presented in this session. Results on the correlation between field exposed concrete blocks and laboratory results for the prevention of AAR are also presented accompanied by new information on the challenges of evaluating the deleterious potential of sulfide-bearing aggregates.

8:00 pm: Mechanical Tools to Assess Damage in Concrete Affected by AAR and Combined Mechanisms

Leandro Sanchez, University of Ottawa

8:30 pm: The Damage Rating Index in the Assessment of AAR-Affected Concrete: Theory and Practice

Mathieu Champagne, Laval University; and Pierre-Luc Fecteau, GHD

9:00 pm: Challenges in Determining the Deleterious Potential of Sulphide-Bearing Aggregates in Concrete

Josée Duchesne, Laval University; Benoit Fournier, Laval University; Andreia Rodrigues, GHD; Julie Francoeur, Transport Québec; Benoit Durand, IREQ – Hydro-Québec; and Medhat Shehata, Ryerson University

9:30 pm: Outdoor Exposure Site Testing for Validating Preventive Measures against ASR in Concrete—A Review

Benoit Fournier, Laval University; Jan Lindgård, SINTEF Building and Infrastructure, Børge Wigum, Heidelberg Cement Northern Europe; and Ingmar Borchers, Verein Deutscher Zementwerke e.V. Forschungsinstitut der Zementindustrie



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Sessions & Events

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Monday, March 25, 2019

6:30 am – 8:00 am

Workshop for Technical Committee Chairs (by invitation only)—C-200B

Sponsored by the ACI Technical Activities Committee (TAC)
Moderated by Lawrence 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-309B

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

Speakers: Rania Al-Hammoud, University of Waterloo; Daniel Castaneda, James Madison University; and Jennifer Eisenhauer Tanner, University of Wyoming

Topic: Multi-Cultural Communication

ACI Committee S802 invites you to interact with a panel of three speakers who will discuss their involvement with *Multi-Cultural Communication and Presentation*. The speakers each have a diverse set of experiences presenting to a non-responsive (cold) audience or reaching students from different backgrounds and countries (that is, diversity of students, delivery of technical knowledge in other languages, or teaching method preferences considering language barriers). Each speaker will highlight their experiences and background and the remainder of the breakfast will be an open forum for discussion from the crowd or among the presenters.

8:15 am – 9:15 am

MINI SESSION: SCC in Repair—C-202

Sponsored by ACI Committee 237
Moderated by Ammar Yahia, University of Sherbrooke

Participants should learn how intrinsic SCC properties facilitate placement and performance of concrete in repair applications.

8:15 am: The Magic of SCC: Amazing Results for Concrete Repair

Peter Emmons, STRUCTURAL

8:35 am: Fiber-Reinforced SCC for Repair

Kamal Khayat, Missouri University of Science and Technology; and Ammar Yahia, University of Sherbrooke

8:55 am: SCC for Repair: Case Studies

Richard Morin, City of Montreal

8:30 am – 10:30 am

Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 1 of 4—C-303A

Sponsored by ACI Committees 345 and 369
Moderated by Yail Jimmy Kim, University of Colorado Denver; Myoungsu Shin; Ulsan National Institute of Science and Technology; and Hung-Jen Lee, National Yunlin University of Science and Technology

The special sessions will present recent advances in the construction, evaluation, and repair of concrete structures and materials with an emphasis on international perspectives with Korea Concrete Institute (KCI) and Taiwan Concrete Institute (TCI). Presentations will encompass a variety of technical aspects such as the refined analysis and assessment techniques of concrete members, damage detection and mitigation, seismic behavior, durability performance, and repair/strengthening of constructed structures. Both experimental and analytical investigations are of interest. The sessions will bring to light recent research findings and provide an opportunity to discuss current challenges and technical demands. Critical information will be provided to those who lead tomorrow's structural construction, evaluation, and repair, including practicing engineers, government officials, and academics.

8:30 am: Seismic Performance of Reinforced Concrete Shear Walls with Various Retrofit Details

Chang-Sik Choi, Hanyang University

8:54 am: Seismic Evaluation and Retrofitting of Low-Rise Reinforced Concrete Buildings in Taiwan

Shyh-Jiann Hwang, National Taiwan University; and Tsung-Chih Chiou, National Center for Research on Earthquake Engineering

9:18 am: Halls River Bridge: Showcase of FRP Reinforcement

Antonio Nanni, University of Miami

9:42 am: Structural Walls: New Modeling Parameters for Seismic Evaluation

John Wallace, University of California, Los Angeles; and Saman Abdullah, University of California, Los Angeles

10:06 am: Seismic Evaluation of Buildings Damaged under 2017 Pohang Earthquake

Hong-Gun Park, Seoul National University



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8:30 am – 10:30 am

Research in Progress, Part 1 of 2—C-301A

Sponsored by ACI Committee 123

Moderated by Matthew O'Reilly, University of Kansas; and Ali Ghahremaninezhad, University of Miami

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: Correlation between the Rheology and Printability of Fine Mortars Fabricated with Various Sand Gradations

Mohammad Amin Moeini, University of Sherbrooke; Ammar Yahia, University of Sherbrooke; Masoud Hosseinpour, University of Sherbrooke; Thomas Borja, University of Sherbrooke; and Paul Lalanne, University of Sherbrooke

8:45 am: Microstructural Development of C3S Paste in Microgravity

Juliana Morales Neves, Pennsylvania State University; Richard Grugel, Marshall Space Flight Center; and Aleksandra Radlinska, Pennsylvania State University

9:00 am: Experimental Investigation on the Behavior of Recycled Coarse Aggregate Concrete Elements Subjected to Shear

Paolo Calvi, University of Washington; Huan Zhang, Harbin Institute of Technology; Dawn Lehman, University of Washington; Katherine Kuder, Seattle University; and Charles Roeder, University of Washington

9:15 am: Toward a Better Understanding of Chloride Diffusion in LC3 Systems

William Wilson, École Polytechnique Fédérale de Lausanne; Julien Gonthier Nicolas, École Polytechnique Fédérale de Lausanne; Fabien Georget, École Polytechnique Fédérale de Lausanne; and Karen Scrivener, École Polytechnique Fédérale de Lausanne

9:30 am: Effect of Biomolecules on the Microstructure and Performance of Cementitious Materials

Ali Ghahremaninezhad, University of Miami; and Katelyn Kosar, University of Miami

9:45 am: Alternate Rheological Measurements of Cement-Based Materials for 3-D Printing

Jacob Henschen, Valparaiso University; Timothy Mueller, Valparaiso University; Spencer Oldfield, Valparaiso University; and Andrea Wall, Valparaiso University

10:00 am: The Effect of Shear Rate on Air Dissolution in Cement Paste under Pressure

Daniel Galvez-Moreno, Missouri University of Science and Technology; Dimitri Feys, Missouri University of Science and Technology; and Kyle Riding, University of Florida

10:15 am: Microstructure-Strength Relationships of Cement Paste Incorporating Calcined Clay

Diandian Zhao, University of Calgary; and Rahil Khoshnazar, University of Calgary



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8:30 am – 10:30 am

Undergraduate Research Session—C-301B

Sponsored by ACI Committee S805

Moderated by Bjorn Erik Vors, University of Saskatchewan

The objective of this session is to provide a greater opportunity for undergraduate students to present their research at a national meeting. This session will focus on research conducted predominately by undergraduate students. It is expected that this session will draw a new group of students to ACI and the convention. It will also allow students to hear presentations of a slightly less technical nature that are more in keeping with their current level of knowledge regarding concrete.

8:30 am: An Experimental Investigation on the Effect of Location and Inclination of Construction Joints in Beams with No Shear Reinforcement

Abel Alemu, Addis Ababa Institute of Technology; Alemayehu Moges Kebede, Addis Ababa Institute of Technology; Abel Demere Hailu, Addis Ababa Institute of Technology; and Amir Sultan Mohammed, Addis Ababa Institute of Technology

8:43 am: An Experimental Study on the Tensile Capacity of Concrete at an Interface Tested at Dry and Wet Condition

Kalkidan Tesfaye Shewandagn, Addis Ababa Institute of Technology; Bethel Gebeyehu Mekonnen, Addis Ababa Institute of Technology; Nahom Seifu Melaku, Addis Ababa Institute of Technology; Lensa Tadesse Gulti, Addis Ababa Institute of Technology; Hermella Ababu Anagie, Addis Ababa Institute of Technology; Mohammed Sirage Ibrahim, Addis Ababa Institute of Technology; and Yonas Solomon Bekele, Addis Ababa Institute of Technology

8:56 am: Development of Ultra-High-Performance Self-Compacting Concrete Reinforced with Steel Fiber by Particle Packing

Mateus Zanovello Oliveira, Mauá Institute of Technology

9:09 am: In-Situ Testing of Prestressed Concrete Double Tees in Parking Structure

Griffin Coffey, Washington and Lee University; and Anna Soroka, Washington and Lee University

9:22 am: Modeling Damage Accumulation of Fiber-Reinforced Concrete Using Repeated Impact Testing

Ryan Langford, Utah State University

9:35 am: Optimization of Mortar Mixtures for Use in 3-D Printing

Timothy Kedric Mueller, Valparaiso University; Spencer Oldfield, Valparaiso University; and Andrea Wall, Valparaiso University

9:48 am: Study of Cement Replacement by Limestone Powder in the Formation of Microstructure and Properties of Reactive Powder Concrete

Josue Rodrigues Da Silva Junior, Mauá Institute of Technology

10:01 am: The Influence of Citric Acid on Setting Time and Thermal Behavior of Calcium Sulfoaluminate Cement

Edgar Soriano Somarriba, University of Arkansas

10:14 am: The Use of the Pulloff Test Method to Characterize the Performance of a Concrete Repair System

Evan Karunaratne, Oklahoma State University; and Norbert Delatte, Oklahoma State University



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Monday, March 25, 2019

9:00 am – 11:00 am

✓ **Old Québec Walking Tour—H-Depart Hilton Lobby**

\$20 U.S. per person

Coordinated by the Québec & Eastern Ontario Chapter – ACI

As soon as you step into the old part of town, you will fall in love with the charm of the city. As one of the oldest cities in North America, Québec is full of rich history and well-kept secrets that most locals have no knowledge of. On the tour you will be able to see the Parliament Building, the Fortifications, Porte St. Louis, Morrin Centre, City Hall, Price Building, Cathedral of the Holy Trinity, Terrasse Dufferin, Château Frontenac, Breakneck Steps, and Place Royale. Please note this is a walking tour, with steep, uneven terrain; no transportation will be provided.

PREREGISTRATION IS REQUIRED TO ATTEND. Tickets are available for purchase at ACI Registration. Tours are nonrefundable. All tours depart from the Hilton Lobby.

10:00 am – 11:00 am

MINI SESSION: New Developments in Bridge Loads—C-303B

Sponsored by ACI Committees 342, 343, and 348

Moderated by Andrzej Nowak, Auburn University; and Michael Brown, WSP USA

This session aims at providing researchers and bridge engineers an update on new developments in bridge loads as applied to design of new structures and evaluation of existing bridges. A bridge live load model was developed in conjunction with the calibration of the AASHTO LRFD Specifications 25 years ago. The statistical parameters of truck loads were based on the Ontario truck survey performed in the 1970s. The objective of this session is to review the available weigh-in-motion (WIM) data and update the live load model accordingly. The available WIM database includes millions of records in all states.

10:00 am: WIM-based Live Load Models for Highway Bridges

Olga Iatsko, Auburn University; Anjan Babu, Auburn University; and Andrzej Nowak, Auburn University

10:20 am: Live Load Effects on Concrete Bridges due to Special Hauling Vehicles (SHV)

Peng Lou, Rutgers University; Hani Nassif, Rutgers University; and Dongjian Gao, Rutgers University

10:40 am: Evaluation of WIM-Based Live Load Models for Concrete Bridges

Dan Su, Embry-Riddle Aeronautical University; and Hani Nassif, Rutgers University



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PDH Codes: _____

10:30 am – 12:00 pm

ACI 123 Concrete Research Poster Session—C-Hall 2000

Sponsored by ACI Committee 123

Moderated by Robert Thomas, Clarkson University; and Yaghoob Farnam, Drexel 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.

Investigating Vibrations of the Washington and Lee University Parking Structure

Kacie Caple D'Alessandro, Washington and Lee University; Anna Soroka, Washington and Lee University; and Griffin Coffey, Washington and Lee University

Durable High-Early-Strength Concrete via Internal Curing Approach Using Saturated Lightweight Aggregate and Recycled Concrete

Faisal Qadri, Kansas State University; and Christopher Jones, Kansas State University

Changes in Fresh Properties of Flowable Concrete Induced by Pumping

Alexis Salinas, Missouri University of Science and Technology; Dimitri Feys, Missouri University of Science and Technology; Kyle Riding, University of Florida; and Daniel Galvez Moreno, Missouri University of Science and Technology

Influence of Pumping Parameters on the Freeze/Thaw and Scaling Resistance of Highly Workable Concrete

Alexandra Nicole Wehar, Missouri University of Science and Technology; Daniel Galvez Moreno, Missouri University of Science and Technology; Kyle Riding, University of Florida; and Dimitri Feys, Missouri University of Science and Technology

Utilization of Nanoindentation to Characterize the Aging Viscoelastic Properties of Cement Paste

Poornima Patil, Kansas State University; and Christopher Jones, Kansas State University

Monitoring the Setting Time of Metakaolin-Based Geopolymer Cement

Marcelino Diaz, University of Alabama; Spencer Oldfield, Valparaiso University; Atolo Tuinukuafe, University of Alabama; and Armen Amirkhanean, University of Alabama

Influence from Different Drilling Methods on the Bearing Capacity of Anchors

Michael Schwenn, University of Natural Resources and Life Sciences, Vienna; Oliver Zeman, University of Natural Resources and Life Sciences, Vienna; and Konrad Bergmeister, University of Natural Resources and Life Sciences, Vienna

Challenges Encountered in Rheological Characterization of Cement Paste

Aida Ley Hernandez, Missouri University of Science and Technology; and Dimitri Feys, Missouri University of Science and Technology

Evaluation of Surface Roughness and Bond Strength of Composite Concrete

Kacie Caple D'Alessandro, Washington and Lee University; Sarah Anne Troise, Washington and Lee University; Ryder Babik, Washington and Lee University; Kevin McHugh, Washington and Lee University; Natalie Smith, University of Virginia; and Matthew Swenty, Virginia Military Institute

Sessions & Events

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Investigation of the C3A Microstructure from Hydration in Microgravity

Peter Collins, Pennsylvania State University; Juliana Neves, Pennsylvania State University; Richard Grugel, NASA Marshall Space Flight Center; Barry Scheetz, Pennsylvania State University; and Aleksandra Radlinska, Pennsylvania State University

Anchorage Behavior of 700 MPa (1000 ksi) Hooked Bars in Compression Terminated within Exterior Beam-Column Joint

Min Kyu Seong, Incheon National University; and Sung Chul Chun, Incheon National University

A Color-Based Algorithm for Segmenting Aggregate, Cement Paste, and Air Voids

Priscilla Fonseca, Quinnipiac University; and Christopher Reynolds, Quinnipiac University

A New S-Notch Cube Geometry for Testing Shear Properties of Cementitious Materials

Subodh Ashok Mhamankar, Kansas State University; and Christopher Jones, Kansas State University

Industry-Wide Standardization of Embedded Plates for Design, Fabrication, and Construction Economy

Ian Chin, University of Alberta; Douglas Tomlinson, University of Alberta; and Robert Driver, University of Alberta

Determining the Optimum Air Content in Fresh Concrete by Using Super Air Meter

Ragini Krishna Nikumbh, Kansas State University; and Christopher Jones, Kansas State University

Rebar Surface Finish Matters

Ibrahim Gbolahan Ogunsanya, University of Waterloo; and Carolyn Hansson, University of Waterloo

Frozen Concrete—Why is it Stronger?

Colin Bradley Van Niejenhuis, University of Waterloo; Carolyn Hansson, University of Waterloo; and Maria Anna Polak, University of Waterloo

Electrochemical Response from Steel in Highly Resistive Binder Systems and Estimation of Chloride Threshold and Service Life

Sripriya Rengaraju, Indian Institute of Technology Madras; and Radhakrishna Pillai, Indian Institute of Technology Madras

10:30 am – 11:30 am

ACI Student Forum—C-207

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 presentations spots are available. Speakers may present as a group or individually.

11:00 am – 1:00 pm

Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 2 of 4—C-303A

Sponsored by ACI Committees 345 and 369

Moderated by Myoungsu Shin, Ulsan National Institute of Science and Technology; Hung-Jen Lee, National Yunlin University of Science and Technology; 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 34.

11:00 am: Use of Large-Diameter Headed Bars in Concrete Joints for Enhanced Constructability

Sung-Chul Chun, Incheon National University

11:24 am: Taiwan New RC Project and Guidelines

Hung-Jen Lee, National Yunlin University of Science and Technology; and Ker-Chun Lin, National Center for Research on Earthquake Engineering

11:48 am: Recent Developments on FRP Bars as Internal Reinforcement in Concrete Structures and Bridges

Brahim Benmokrane, University of Sherbrooke

12:12 pm: Use of High-Strength Reinforcement for Construction of Reinforced-Concrete Structures

Dominic Kelly, Gumpertz & Heger Inc.

12:36 pm: Cyclic Behavior of Reinforced Concrete Squat Walls Using High-Strength Materials

Min-Yuan Cheng, National Taiwan University of Science and Technology



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Sessions & Events

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Monday, March 25, 2019

11:00 am – 1:00 pm

Alkali-Activated Binders, Part 1 of 2—C-301B

Sponsored by ACI Committees 236 and 242

Moderated by Sulapha Peethamparan, Clarkson University; and Paramita Mondal, University of Delaware

High-volume replacement of cement by supplementary cementitious materials (SCMs) such as fly ash, slag, and calcined clay is gaining interest as a promising approach to reduce the use of cement in concrete and hence its environmental impact. However, compared to cement, SCMs are generally slower to react with water. External alkali activation can enhance reactivity of SCMs, and therefore can be a crucial step to achieve comparable performance of sustainable concrete made with high volume of (or entirely from) SCMs.

11:00 am: Alkali-Activated Binder: Potential and Performance

Ahmed Soliman, Concordia University

11:17 am: Effects of Composition and Activator Type on Glass-Based Geopolymers

Mary Christiansen, University of Minnesota Duluth

11:34 am: Understanding the Reaction Kinetics: Implications for Future Accelerators/Retarders of Alkali-Activated Binders

Xu Chen, University of Delaware; and Paramita Mondal, University of Delaware

11:51 am: Alkaline Activation of Cementitious Systems Based on OPC, Slag and Natural Pozzolan: Physical Performance and Microstructural Evaluation

Juan David Tabares, Argos Cement; Maria Fernanda Diaz, University of San Carlos of Guatemala; and Jherson Diaz, Argos Cement

12:08 pm: What is the Role of Water in the Geopolymerization of Metakaolin?

Sungwoo Park, North Carolina State University; and Mohammad Pour-Ghaz, North Carolina State University

12:25 pm: Property Prediction of Geopolymers from Real and Simulated Microstructures: A Material Design Tool

Sumanta Das, University of Rhode Island; Akash Dakhane, Arizona State University; Nikhilesh Chawla, Arizona State University; and Narayanan Neithalath, Arizona State University

12:42 pm: Characterization of Mixture Design Parameters of Alkali-Activated Materials

Atolo Aaron Tuinukuafe, University of Alabama; Spencer Oldfield, Valparaiso University; Armen Amirkhaniyan, University of Alabama; and Marcelino Diaz, University of Alabama



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11:00 am – 1:00 pm

Research in Progress, Part 2 of 2—C-301A

Sponsored by ACI Committee 123

Moderated by Matthew O'Reilly, University of Kansas; and Ali Ghahremaninezhad, University of Miami

The session description for this session may be found in the Part 1 listing; refer to page 35.

11:00 am: Effect of Microcracking on Strength and Durability Properties of Pre-stressed Concrete with Microcracks

Savitha Srinivasan, The University of Texas at Austin; and Raissa Ferron, The University of Texas at Austin

11:15 am: The Production of Thin, Lightweight, Double-Curved, Precast, Geopolymer Concrete Cladding Panels Using a Vibrating, Reconfigurable Mold and 3-D Printed, Soluble, Textured Mold Liner

Roisin Hyde, Queen's University Belfast; Brett Tempest, William States Lee College of Engineering; Sreejith Nanukuttan, Queen's University Belfast; Roger West, Trinity College Dublin; Michael McGarry, Queen's University Belfast; and Alan Gordon Leacock, Carrickfergus Enterprise

11:30 am: Statistical Analysis of Shear Capacity for Hollow-Core Slabs with Concrete-Filled Cores

Scott Asperheim, University of Minnesota Duluth; and Ben Dymond, University of Minnesota Duluth

11:45 am: Setting Performance Evaluation Using Wireless and Contactless Ultrasonic System

Hajin Choi, Soongsil University; Jinyoung Hong, Soongsil University; and Hyunjin Kim, Soongsil University

12:00 pm: Design and Detailing of Curved-Bar Nodes in the Strut-and-Tie Method: Knee Joint Tests

Hwa-Ching Wang, Purdue University; and Christopher Williams, Purdue University

12:15 pm: Experimental Investigation of Thermal Bowing for Concrete Insulated Wall Panels

Sergio Arevalo, University of Alberta; and Douglas Tomlinson, University of Alberta

12:30 pm: Damage Assessment of Prestressed Beam with Acoustic Emission Monitoring

Hang Zeng, Oklahoma State University; Julie Ann Hartell, Oklahoma State University; and Mohamad Soliman, Oklahoma State University

12:45 pm: Experimental Study of the Behavior of Drilled-Shaft Footings with Different Bottom Mat Reinforcement Configurations

Yousun Yi, University of Texas at Austin; Hyun su Kim, University of Texas at Austin; Ryan Boehm, University of Texas at Austin; Stephan Mühlberg, Ecole Polytechnique Fédérale de Lausanne; Juan Murcia-Delso, University of Texas at Austin; and Trevor Hrynyk, University of Texas at Austin



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11:30 am – 1:30 pm

✓ **Student Lunch—C-200B**

\$40 U.S. per person

Sponsored by Baker Concrete Construction Company, Inc.



Coordinated by the Québec & Eastern Ontario Chapter – ACI

Topic: The Environmental and Social Responsibility of Engineers

Speaker: Michel Pigeon, Laval University

Join students and other ACI attendees for the Student Lunch with featured speaker Dr. Michel Pigeon. Pigeon's keynote is based on how the work of all engineers has a very large impact on human societies and the environment in which they thrive. In fact, almost all aspects of our daily lives are influenced by the action of engineers. In addition to their primary responsibility towards their employers and clients, they have an extremely important ethical responsibility toward their fellow citizens. This talk will focus on two specific elements—social and environmental—with a view to explaining the basic global characteristics of both our socio-economic system and our environmental earth system because it is not possible to properly exercise these responsibilities without a proper knowledge and understanding of how these two systems function. 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.

1:30 pm – 3:30 pm

Alkali-Activated Binders, Part 2 of 2—C-301B

Sponsored by ACI Committees 236 and 242

Moderated by Sulapha Peethamparan, Clarkson University; and Paramita Mondal, University of Delaware

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

1:30 pm: Alkali-Activated Cements and Concretes—Testing and Standardization

John Provis, University of Sheffield

1:50 pm: Alkali-Silica-Reaction (ASR) Resistance of Alkali-Activated Fly Ash and Slag Concrete

Robert Thomas, Clarkson University; Sulapha Peethamparan, Clarkson University; and Zhihui Li, Clarkson University

2:10 pm: Enhancing the Durability of Alkali-Activated Materials

Claire White, Princeton University; Eric McCaslin, Princeton University; and Kai Gong, Princeton University

2:30 pm: Chloride Transport in Alkali-Activated Cement Paste, Mortar, and Concrete

Wil Srubar, University of Colorado Boulder; Jorge Osio Norgaard, University of Colorado Boulder; and Juan Pablo Gevaudan, University of Colorado Boulder

2:50 pm: Influence of Creep and Curing Temperature on Drying Shrinkage and Creep of Alkali-Activated Cements

Maryam Hojati, Bucknell University; Farshad Rajabipour, Pennsylvania State University; and Aleksandra Radlinska, Pennsylvania State University

3:10 pm: Field Performance of Slag-Fly Ash Binders Using the Pre-Placed Aggregate Method

Peter Stynoski, U.S. Army Engineer Research and Development Center; Ghassan Al-Chaar, United States Army Corps of Engineers; and Waltraud Kriven, University of Illinois at Urbana-Champaign



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Monday, March 25, 2019

1:30 pm – 3:30 pm

Concrete Design 201—C-301A

Sponsored by ACI Committee S802
Moderated by James Hanson, Rose-Hulman Institute of Technology; and Arsenio Caceres-Fernandez, University of Puerto Rico

You learned the basics of concrete design in your introductory course in college. Now take home some additional design skills you probably did not see there. In addition to these new design skills, come hear from this year's Walter P. Moore, Jr. Faculty Achievement Award winner.

1:30 pm: Concrete: An Economics Perspective
Ardavan Yazdanbakhsh, The City College of New York

2:00 pm: Case Study of a 16-Story Flat-Slab Hotel
Matthew Senecal, American Concrete Institute



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PDH Codes: _____

1:30 pm – 3:30 pm

Fiber-Reinforced Self-Consolidating Concrete: From Development to Use—C-303A

Sponsored by ACI Committees 237 and 544
Moderated by Benjamin Birch, CTLGroup; and Liberato Ferrara, Politecnico di Milano

The objective is to present on the development and use of fiber-reinforced self-consolidating concrete (FRSCC). We would hope to attract concrete producers and engineers who want to learn about the unique properties and challenges of the use of FRSCC.

1:30 pm: Effect of Fiber Characteristics on Fresh and Hardened Properties of Fiber-Reinforced SCC
Kamal Khayat, Missouri University of Science and Technology; and Ahmed Abdelrazik, Missouri University of Science and Technology

1:50 pm: Design of Steel Fiber-Reinforced Self-Consolidating Concrete (SFRSCC) Based on Void Content in Fiber-Aggregate Granular Skeleton
Jiong Hu, University of Nebraska–Lincoln; Chungwook Sim, University of Nebraska–Lincoln; and Joey Malloy, University of Nebraska–Lincoln

2:10 pm: Homogeneity of Self-Compacting Concrete Modified by Carbon Nanotubes
Maria Konsta-Gdoutos, University of Texas at Arlington; Panagiotis Danoglidis, Democritus University of Thrace; and Surendra Shah, Northwestern University

2:30 pm: Ductility of Fiber-Reinforced Self-Consolidating Concrete under Multi-Axial Compression
Alessandro Fantilli, Politecnico di Torino; and Bernardino Chiaia, Politecnico Di Torino

2:50 pm: Fiber-Reinforced Self-Consolidating Concrete: The Perspective of ACI TCs 544 and 237
Liberato Ferrara, Politecnico di Milano



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2:00 pm – 3:00 pm

MINI SESSION: Admixture Use in Performance-Based HPC—C-309A

Sponsored by ACI Committee 212
Moderated by Kari Yuers, Kryton International Inc.

The presentation will look at specifications for performance-based concrete that have variable requirements for admixtures based on the concrete performance. The presentation will address projects in Texas, Minnesota, and Edmonton, AB, Canada, where various approaches to performance-based concrete have been taken. The discussion will include the use of corrosion inhibitor based on concrete performance, of accelerator, air-entraining agent, high-range water-reducing admixture, hydration stabilizers, and other materials in the production of high-performance concrete for transportation and civil structures.

2:00 pm: Admixture Use in Performance-Based HPC
Kevin MacDonald, Beton Consulting Engineers LLC



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PDH Codes: _____

4:00 pm – 6:00 pm

Alkali Aggregate Reaction—Evaluation and Aggregate Types, Texture, and Mineralogy—C-301B

Sponsored by ACI Committees 201, 221, and 232
Moderated by Anol Kanti Mukhopadhyay, Texas A&M Transportation Institute; and Benoit Fournier, Laval University

An effective evaluation of Alkali Aggregate Reaction (AAR) needs a better understanding on types of aggregate and reactive constituent and nature of distribution of the reactive constituents (that is, texture) inside aggregate. The factors that play sometimes a crucial role to determine aggregate reactivity are 1) amount and nature of distribution of the reactive constituents inside aggregates (for example, homogeneous or inhomogeneous distribution, whether the whole aggregate particle is reactive (e.g., acid volcanic rock) or certain reactive constituent(s) inside an aggregate is reactive, etc.), and 2) threshold alkali loading—each aggregate may have different level of alkali tolerance (for example, maintaining a low level of alkali loading may be needed for a highly reactive aggregate and vice versa). Mineralogy play an important role in understanding the above factors related to aggregate reactivity. Creation of false positive and negative situations based on ASTM C 1260 and 1293 test methods is commonly observed. The above mineralogy-based observations/information sometimes provides a better explanation of this phenomena and judge the effectiveness of the current test methods. The optimum level of fly ash content to mitigate ASR depends on 1) aggregate reactivity and threshold alkali loading, and 2) fly ash characteristics and the practice of one size fits for everything doesn't provide adequate protection. The pore solution alkalinity needs to be lower than threshold alkalinity to formulate a safe ASR resistant mixture. The limitations of the current test methods are well studied and documented. The effectiveness of some of the promising new test

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methods along with the mineralogical and aggregate material science related information will be used to address the above aspects and better evaluation of AAR. It is unlikely that mineralogy and percentage of reactive constituent will remain the same for a particular quarry/pit (especially for an aggregate with high variability).

4:00 pm: Alkali-Aggregate Reaction (AAR) Research at FHWA Turner-Fairbank Highway Research Center (TFHRC)
Richard Meininger, Federal Highway Administration TFHRC; and Mengesha Beyene, SES Group & Associates, LLC

4:20 pm: An Innovative Way to Measure Aggregate Alkali Silica Reactivity and Threshold Alkalinity and Formulating ASR-Resistant Concrete Mixture
Anol Kanti Mukhopadhyay, Texas A&M Transportation Institute; and Kai-Wei Liu, Texas A&M Transportation Institute

4:40 pm: Reactive Aggregate Mineralogy in a Large-Block Study of Nuclear Concrete Structures Affected by Alkali-Silica Reaction
Steven Feldman, National Institute of Standards and Technology; and Richard Eason, National Institute of Standards and Technology

5:00 pm: Alkali-Silica Reactions: Long-Term Testing and Understanding Mechanisms
Karen Scrivener, Swiss Federal Institute of Technology Lausanne

5:20 pm: Petrography in Thin Sections on ACR-Affected Samples: Phenomenon and Typical Observations of the Reaction
Pierre-Luc Fecteau, GHD; and Benoit Fournier, Laval University

5:40 pm: A Mistaken Case of ACR in Precast Concrete
Chris Rogers, Consultant



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4:00 pm – 6:00 pm

Constructability and Durability Considerations for Long-Term Service Life—C-301A

Sponsored by ACI Committees 134 and 201
Moderated by Lloyd Keller, EllisDon Corporation; and Victor Villarreal, U.S. Concrete—Redi-Mix Concrete

It is important to design a project that achieves the architectural and structural requirements of a long-term service life while providing the constructor with a plan that enables them to build economically and efficiently. This session looks to case studies, best practices, and materials sciences for strategies to best achieve a constructable structure that meets the demanding durability requirements of the industry.

4:00 pm: The Concrete Mixture's Impact on the Constructability of a Concrete Structure
Joseph Daczko, BASF Corporation

4:20 pm: High Performance and Constructability: Can They Be Found Together? The I-35 Reconstruction and Beyond
Kevin MacDonald, Beton Consulting Engineers LLC

4:40 pm: ASR—Using the ASTM Guide to Build a Practical Specification in ACI 301

Henry Prenger, LafargeHolcim

5:00 pm: Developing Constructible Solutions for Long-Term Service Life Transportation Systems in Canada

Lloyd Keller, EllisDon Corporation

5:20 pm: Precast UHPFRC Deck of the Isabey-Darnley Pedestrian Bridge

Richard Morin, City of Montreal

5:40 pm: A Holistic Approach to Obtaining Long-Term Service Life Concrete

R. Doug Hooton, University of Toronto



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4:00 pm – 6:00 pm

Measurement and Control of Workability in Concrete In-Transit Mixers—C-303A

Sponsored by ACI Committees 238 and 304

Moderated by Nathan Tregger, GCP Applied Technologies; and Denis Beaupre, Command Alkon

During delivery of ready mixed concrete, the slump may change depending on a host of variables. However, the slump is typically known only at the batch plant or job site. This session explains the concepts used for the measurement of several properties (such as workability and volume) of fresh concrete directly in the drum of the concrete truck. Also, the adjustment of slump while in transit is discussed, incorporating experiences of concrete producers that have adopted this new technology. Lastly, researchers will present studies on the economical and practical aspects of slump measurement.

4:00 pm: In-Drum Measurement Systems

Denis Beaupre, Command Alkon

4:25 pm: A Ready Mix Producer's Perspective on Using Command Assurance for Minimizing Product Liability and Improving Operational Performance

Bradley Burke, PB Materials

4:50 pm: In-Transit Management Systems

Nathan Tregger, GCP Applied Technologies

5:15 pm: Practical Experience with the Use of In-Transit Management Systems

Kirk Deadrick, ARGOS

5:40 pm: Environmental and Economical Assessment of Integrated Probe from Laval University

Mélodie Hilt, Laval University; and Marc Jolin, Laval University



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Monday, March 25, 2019

5:00 pm – 6:00 pm

Women in ACI Reception—H-Plaines

All registered convention attendees are invited to attend the Women in ACI Reception. This long-standing ACI tradition is a great opportunity to get to know women in the concrete industry. In addition to networking, attendees of this reception will have the opportunity to participate in a silent auction. This auction will feature concrete artwork beautifully created by students and others. Proceeds from the auction go toward sponsoring free registration for a young professional to attend the spring or fall convention. All are welcome at this reception! A cash bar and light hors d'oeuvres will be served.

6:30 pm – 8:30 pm

123 Forum: The Gap between Research and Practice—Always Advancing?—C-301A

Sponsored by ACI Committee 123

Moderated by Jacob Henschen, Valparaiso University; and Jan Vosahlik, CTLGroup

In recent decades, the concrete research community has been criticized for the lack of progress in transitioning research findings into actionable and implementable technologies and practices. This is often accompanied by illustrative comparisons of the progress of the concrete industry with those of automotive, aeronautics, and consumer electronics industries, in which overwhelming progress has been achieved during the same time. The goals of this research forum are to explore whether such comparisons are justified given the constraints of the concrete industry, highlight the advances in the concrete industry over the past decades that may not have been appreciated by wider research community, and discuss what hinders the progress in transitioning research findings into practice in the field of concrete technology. This topic is in dire need of discussion because it has direct implications on the research community—for example, through decisions made in allocation of research funding at national level, in addition to broader implications such as attracting next generation of engineers and researchers to the field of concrete technology.

The forum will include on the following discussion:

- What have been the most impactful advances in concrete technology over the past few decades?
- Which research advances have not seen significant implementation, but should receive greater exposure, considering their potential impacts on constructability and cost?
- The literature is filled with topics that have been subject of active research for several decades; are we advancing?
- What are the constraints that the concrete industry must address and how do these constraints hinder the transition of research findings into practice? Are the constraints self-imposed or the result of a lack of understanding of the material?

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 Thomas, Utah State University

6:35 pm: Introduction of Panelists and Forum Topic

Jan Vosahlik, CTLGroup; and Jacob Henschen, Valparaiso University

6:40 pm: Perspectives on Introducing New Cement and Concrete Materials

Eric Koehler, Titan America

6:55 pm: A General Contractor's Approach for Integrating Research and Construction through Project-Specific Mockups and Performance Testing

Lloyd Keller, EllisDon

7:10 pm: Material Science of Concrete—Is it Useful?

Jan Olek, Purdue University

7:25 pm: Bridging Research and Practice: A Consultant's Perspective

Matthew D'Ambrosia, MJ2 Consulting

7:40 pm: Artificial Stone

Mohammad Pour-Ghaz, North Carolina State University

7:55 pm: Audience Questions and Panel Discussion

Jacob Henschen, Valparaiso University; Jan Vosahlik, CTLGroup; Eric Koehler, Titan America; Lloyd Keller, EllisDon; Jan Olek, Purdue University; Matthew D'Ambrosia, MJ2 Consulting; and Mohammad Pour-Ghaz, North Carolina State University



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7:00 pm – 9:00 pm

✓ Reception Honoring Sami Rizkalla—H-Plaines

\$25 U.S. per person

This reception is the inaugural event of the Sami Rizkalla Symposium on Fiber-Reinforced Polymers (FRP) in Structural Concrete, honoring Professor Sami Rizkalla for his outstanding contributions in this field of knowledge. Rizkalla is a structural engineer whose pioneering research contributed to the widespread adoption of FRP as a mainstream material for reinforcement of concrete structures around the globe. His research has advanced this now well-recognized technology both as internal reinforcements for new construction and as external reinforcements for rehabilitation of existing structures.

Dr. Rizkalla received his BSc from Alexandria University in Alexandria, Egypt in 1965 and his MS and PhD degrees from North Carolina State University, Raleigh, NC in 1974 and 1976, respectively. He joined the University of Manitoba as an Assistant Professor in 1979, where he climbed the academic ranks for 21 years. In 2000 he returned to North Carolina State University as a Distinguished Professor of Civil Engineering and Construction.

Dr. Rizkalla was the founding President and Scientific Director of the Canadian Network of Centers of Excellence on Intelligent Sensing for Innovative Structures (Canada) from 1995 to 2000. He was one of the founding members of ACI Committee 440 "Fiber-Reinforced Polymer Reinforcement". He was elected Fellow of ACI in 1993 and is a recipient of ACI's Delmar L. Bloem Award (2004), Joe W. Kelly Award (2008), Arthur Boase Award (2010), Chester Paul Siess Award (2014), and Charles S. Whitney Medal Award (2016). Dr. Rizkalla has co-authored over 600 technical publications including 190 journal papers.

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.

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Tuesday, March 26, 2019

8:00 am – 12:00 pm

✓ **Montmorency Falls and Basilica Tour—H-Depart Hilton Lobby**

\$40 U.S. per person

Coordinated by the Québec & Eastern Ontario Chapter – ACI

A regional excursion under the theme of relaxation: cross 40 km (25 miles) of road on the Chemin du Roy, the oldest roadway in New France, through the pretty villages of pure French tradition that lead to Sainte-Anne-de-Beaupré. This circuit provides a stop at the Montmorency Falls, a 83 m (272 ft) high waterfall on the Montmorency River (30 m [98 ft] higher than Niagara Falls). You'll also stop at the famous Sainte-Anne sanctuary and visit the legendary Basilica of Sainte-Anne-de-Beaupré, where many miracles occurred. At the Montmorency Falls, you will see the Montmorency Manor Interpretation Center. Your half-day tour of the countryside follows Avenue Royale through the traditional villages and farms of Côte-de-Beaupré. During your visit, interesting comments from your bilingual (English and French) guide will help you to recreate the quiet pace and the lifestyle of the past. The half-day excursion includes two stops of 35 to 45 minutes each at Montmorency Falls and Basilica of Sainte-Anne-de-Beaupré.

PREREGISTRATION IS REQUIRED TO ATTEND. Tickets are available for purchase at ACI Registration. Tours are nonrefundable. All tours depart from the Hilton Lobby.

8:30 am – 9:30 am

MINI SESSION: Structural Design Examples for ICF Walls, and Observations of Problems Caused by Pyrrhotite in Aggregate in Concrete—C-303B

Sponsored by ACI Committees 332 and 560

Moderated by Robert Sculthorpe, ICF-MA

Demonstrate two examples of the structural design of ICF walls using ACI 318. Observations of problems caused by the mineral pyrrhotite in concrete aggregate in residential foundations.

8:30 am: Structural Design Example: Sectional Bearing Wall Design Method

Adam Knaack, Schaefer

8:45 am: Structural Design Example: Ordinary Reinforced Concrete Shear Wall Design Method

Samhar Hoz, Helix Steel

9:00 am: Observation of Concrete Deterioration with the Mineral Pyrrhotite in the Aggregate

Ralph Tulis, A.H. Harris



PDH Codes: _____

8:30 am – 10:30 am

Advanced Analysis and Testing Methods for Concrete Bridge Evaluation and Design, Part 1 of 2—C-303A

Sponsored by ACI Committees 323 and 324

Moderated by Ben Dymond, University of Minnesota Duluth; and Bruno Massicotte, Polytechnique Montreal

The session objective is to present state-of-the-art and emerging technologies for the strength evaluation and design of concrete bridges using advanced computational analysis and load testing methods. The following topics are considered: advanced nonlinear modeling and nonlinear finite element analysis (NLFEA), structural versus element rating, determination of structure specific reliability indexes, load testing beyond the service level, load testing to failure, and use of continuous monitoring for detecting anomalies.

8:30 am: Inelastic Shear Distribution in Prestressed Concrete Girder Bridges during Load Tests to Failure

Ben Dymond, University of Minnesota Duluth; Carol Shield, University of Minnesota; and Catherine French, University of Minnesota

8:50 am: Monitoring and Assessment of a Prestressed Concrete Segmental Box-Girder Bridge

Jean-François Laflamme, Bridge Department, Québec Ministry of Transportation; and Marc Savard, Bridge Department, Québec Ministry of Transportation

9:10 am: Field Testing to Failure of Four Solid Concrete Slab Bridges

Fabien Lagier, Polytechnique Montreal; Bruno Massicotte, Polytechnique Montreal; David Conciatori, Université Laval; and Jean-François Laflamme, Bridge Department, Québec Ministry of Transportation

9:30 am: Instrumentation, Monitoring, and Load Testing of a 50-Span Large Precast Prestressed Concrete Bridge

Dominic Lavigne, Jacques-Cartier Champlain Bridge Corporation

9:50 am: State-of-the-Practice in Load Rating Reinforced Concrete Bridges without Plans

Remy Lequesne, University of Kansas; and William Collins, University of Kansas

10:10 am: Estimation of the Rebar Strength in Existing Concrete Bridges

Alessandro Fantilli, Politecnico di Torino; and Bernardino Chiaia, Politecnico Di Torino



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Sessions & Events

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Tuesday, March 26, 2019

8:30 am – 10:30 am

Contractors' Day Session: Nordic Bridges—C-301A

Sponsored by the Québec & Eastern Ontario Chapter – ACI
Moderated by Benoit Bissonnette, Laval University

This session is divided in three sections covering different aspects of modern concrete technology applied to the construction and repair of engineering structures. First, a presentation of the mechanisms underlying the self-healing of concretes and presentation of the different approaches used to maximize the self-healing potential of concrete and the experimental methods used to quantify this property and real application for the repair of a concrete pile of large bridge in Québec. Second, various challenges related to the construction of the Confederation Bridge that links Prince Edward Island to the Province of New Brunswick that was inaugurated on May 31, 1997, are presented. Finally, an evolution in the use of concrete and construction techniques for Québec bridges, from the early 1990s to today, will be presented.

8:30 am: Self-Healing Concretes and Their Use as Repair Concrete on the Champlain Bridge

Richard Gagne, University of Sherbrooke

9:10 am: The Confederation Bridge

Pierre-Claude Aitcin, University of Sherbrooke

9:50 am: Evolution of Materials and Construction Techniques for Concrete Bridges in Quebec

Bernard Pilon, Transports Quebec



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8:30 am – 10:30 am

Effects of Extreme Events on Reinforced Concrete Columns, Part 1 of 2—C-301B

Sponsored by ACI Committees 341 and 441; Co-sponsored by Engineering Mechanics and Materials (EMM) Division of Canadian Society for Civil Engineering (CSCE)
Moderated by Shahria Alam, University of British Columbia; and Murat Saatcioglu, University of Ottawa

The main objective of this session is to present results from recent research studies (experimental/numerical/analytical) and field examples. This session will provide a forum for practicing engineers and researchers to share and discuss various issues related to design and construction issues of RC columns under extreme events. This session aims to provide a platform to demonstrate the performance of reinforced concrete columns for buildings or bridges during extreme events such as earthquake, tsunami, vehicular impact, corrosion, high temperature differential, freezing-and-thawing cycles, and ice load impact. Challenges from inspection to design and constructions will be discussed and possible solutions to improve their performance will be debated.

8:30 am: Tsunami-Induced Hydrodynamic and Debris Loading on Structural Columns

Jacob Stolle, University of Ottawa; Nils Goseberg, Leichtweiss Institute; Ioan Nistor, University of Ottawa; and Murat Saatcioglu, University of Ottawa

8:54 am: RC Columns Subjected to Reinforcement Corrosion under Sustained Load

Samer Jabbour, Halsall Associates Limited; Beatriz Martín-

Pérez, University of Ottawa; and Arnaud Vadeboncoeur, University of Ottawa

9:18 am: Structural Performance of Aged Bridge Reinforced Concrete Columns Subjected to Extreme Lateral Loads

Husham Almansour, National Research Council Canada; and Amina Mohammed, University of Ottawa

9:42 am: Near Fault or Long-Duration Earthquakes—Which is More Devastating for Highway Bridge Columns?

AHM Muntasir Billah, Lakehead University

10:06 am: Proposed Design Environmental Reduction Factors for CFFT Columns Exposed to Short- and Long-Term Freeze-Thaw Cycles

Hend El-Zefzafy, University of Sherbrooke; and Radhouane Masmoudi, University of Sherbrooke



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PREFERRED EDUCATION PROVIDER

PDH Codes: _____

11:00 am – 1:00 pm

Advanced Analysis and Testing Methods for Concrete Bridge Evaluation and Design, Part 2 of 2—C-303A

Sponsored by ACI Committees 323 and 324

Moderated by Ben Dymond, University of Minnesota Duluth; and Bruno Massicotte, Polytechnique Montreal

The session description for this session may be found in the Part 1 listing; refer to page 43.

11:00 am: Nonlinear Finite Element Analysis for the Evaluation of Concrete Bridges for Service and Ultimate Conditions

Mahdi Ben Ftima, Polytechnique Montreal; Bruno Massicotte, Polytechnique Montreal; and David Conciatori, Université Laval

11:17 am: Seismic Performance of Unreinforced Concrete Railroad Bridge Piers

Qiang Gui, University of Tennessee, Knoxville; and Zhongguo John Ma, University of Tennessee

11:34 am: Evaluation of the Orientation of Concrete Finishing Machines in Skewed Bridges Using Finite Elements

Fares Hraib, Saint Louis University; Li Hui, Saint Louis University; and Riyadh Hindi, Saint Louis University

11:51 am: Evaluation of the Existing Champlain Bridge—Non-Linear Analysis and Testing

Denis Mitchell, McGill University; Bruno Massicotte, Polytechnique Montreal; and William Digby Cook, McGill University

12:08 pm: An Advanced Nonlinear Modeling Method for the Strength Evaluation of Deep Bridge Bents

Serhan Guner, University of Toledo; and Anish Sharma, University of Toledo

12:25 pm: Parametric Studies on Longitudinal Connections of an Adjacent Prestressed Concrete Box Beam Bridge

Ali Semendary, Ohio University

12:42 pm: Seismic Evaluation on Performance of Curved Bridges Considering Interaction between Bending and Torsion Effects on Concrete Columns Exerted by Ground Movements

Yang Yang, University of Hartford



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11:00 am – 1:00 pm

Effects of Extreme Events on Reinforced Concrete Columns, Part 2 of 2—C-301B

Sponsored by ACI Committees 341 and 441; Co-sponsored by Engineering Mechanics and Materials (EMM) Division of Canadian Society for Civil Engineering (CSCE)
Moderated by Shahria Alam, University of British Columbia; and Murat Saatcioglu, University of Ottawa

The main objective of this session is to highlight the ongoing research studies on the seismic, blast, and impact performance of RC columns. This session will provide a forum for practicing engineers and researchers to share and discuss various issues related to design and construction issues of RC columns under extreme events. Recent findings regarding the effect of high-strength reinforcement and fibers on blast behavior of RC columns will be discussed. This session will also discuss the behavior of RC columns under axial and combined flexure/lateral loads when subjected to seawater exposure and the seismic vulnerability of RC columns made of recycled aggregate concrete subjected to freezing-and-thawing cycles.

11:00 am: Composite Action of Circular Concrete-Filled FRP Columns under Lateral Cyclic Load

Ahmed Mohammed Hassan Ali, University of Sherbrooke; and Radhouane Masmoudi, University of Sherbrooke

11:15 am: Seismic Fragility Analysis of Recycled Aggregate Concrete Columns Subjected to Freeze-Thaw Cycles

Kaihua Liu, Harbin Institute of Technology; Jiachuan Yan, Harbin Institute of Technology; Chaoying Zou, Harbin Institute of Technology; and Shahria Alam, University of British Columbia

11:30 am: Effects of Cyclic Load on Hollow-Core Fiber-Reinforced Polymer-Concrete-Steel Columns Subjected to Seawater Exposure for One Year

Song Wanga, Missouri University of Science and Technology; and Mohamed ElGawady, Missouri University of Science and Technology

11:45 am: Effect of High-Strength Reinforcement and Fibers on the Blast Performance of High-Strength Concrete Columns

Hassan Aoude, University of Ottawa

12:00 pm: Structural Performance and Damage Mechanisms of CFRP-Strengthened Reinforced Concrete Columns Subjected to Blast, Impact, and Quasi-Static Loads

Husham Almansour, National Research Council Canada



PDH Codes: _____

11:00 am – 1:00 pm

Nanoparticle Dispersion and Applications in Concrete—C-301A

Sponsored by ACI Committees 241 and 246
Moderated by Shiho Kawashima, Columbia University; and Jeremy Betts, Lehigh Hanson

Nanoparticles are increasingly used in cement-based materials to alter cement hydration, microstructure, and engineering properties. Due to their fine size and high specific surface area, nanoparticles have very high interparticle forces and strong tendencies to agglomerate, consequently reducing their functionalities. Therefore, achieving dispersion, both prior to addition and once incorporated in the cement matrix, is critical to achieve. This session will address the challenges, currently available dispersion techniques, and applications; nanoparticles will include nanosilica, nanotitanium dioxide, and carbon nanotubes/fibers.

11:00 am: The Dispersion of CNT/CNF for Cement-Based Materials

Yuan Gao, AECOM; Kavya Mendu, Northwestern University; David Corr, Northwestern University; Maria Konsta-GDoutos, Northwestern University; and Surendra Shah, Northwestern University

11:20 am: Surface-Modified Graphite Nanomaterials for Improved Reinforcement Efficiency in Cementitious Paste

Amirpasha Peyvandi, Jacobs; and Parviz Soroushian, Michigan State University

11:40 am: Influence of PCEs on the Nucleation and Crystallization of Calcium Silicate Hydrate Performed under Terrestrial and Microgravity Conditions

Lei Lei, Technical University of Munich; Markus Schönlein, Technical University of Munich; and Johann Plank, Technical University of Munich

12:00 pm: Influence of Low Concentrations of Well-Dispersed Multiwalled Carbon Nanotubes on Structure and Physico-Mechanical Properties of Cement Paste

Fabio Matta, University of South Carolina; Shohana Iffat, University of South Carolina; Yohanna Mejia, University of South Carolina; Mithun Sikder, University of South Carolina; Mohammed Baalousha, University of South Carolina; Juan Caicedo, University of South Carolina; and Steven Serkiz, Savannah River National Laboratory

12:20 pm: Dispersion Properties and Performance Evaluation of Colloidal Silica in Cementitious Composites

Whitney Le Belkowitz, Intelligent Concrete; Jon Belkowitz, Intelligent Concrete; Robert Moser, US Army ERDC; Charles Weiss, U.S. Army Corps of Engineers; and Frank Fisher, Stevens Institute of Technology

12:40 pm: Dispersion of Nanomaterials in Aqueous Solutions for Effective Application in Portland Cement-Based Systems

Ismael Flores-Vivian, Universidad Autónoma de Nuevo León; and Konstantin Sobolev, University of Wisconsin



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Tuesday, March 26, 2019

11:30 am – 1:30 pm

✓ **Contractors' Day Lunch—C-206A**

\$41 U.S. per person

Coordinated by the Québec & Eastern Ontario Chapter – ACI

Topic: New Champlain Bridge Corridor Project

Speaker: Guy Mailhot, Chief Engineer, Infrastructure Canada

Join other ACI attendees and contractors for the Contractors' Day Lunch. Enjoy a special presentation by Guy Mailhot. The New Champlain Bridge Corridor Project is one of the largest infrastructure projects in North America and includes a new bridge for L'Île-des-Soeurs, as well as the reconstruction and widening of the federally managed section of Highway 15. The project is being carried out as a public-private partnership (P3) between the Government of Canada and Signature on the Saint Lawrence. Work is expected to last four and a half years.

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.

12:45 pm – 4:30 pm

✓ **Québec Observatory & Citadel Tour—H-Depart Hilton Lobby**

\$30 U.S. per person

Coordinated by the Québec & Eastern Ontario Chapter – ACI

The Observatoire de la Capitale is located in the Marie-Guyart building, which is the highest building in Québec City. At the top, you can have a 360-degree view of the city. This part lasts about 1 hour, and the building is located just in front of the Convention Centre. Afterwards, there will be a visit at the Citadelle of Québec and the Royal 22e Regiment Museum. This will allow you to visit a National Historic Site, which has impressive architecture and spectacular views of the city and St. Lawrence River. Please note this is a walking tour; no transportation will be provided.

PREREGISTRATION IS REQUIRED TO ATTEND. Tickets are available for purchase at ACI Registration. Tours are nonrefundable. All tours depart from the Hilton Lobby.

1:30 pm – 2:30 pm

MINI SESSION: Outstanding Concrete Projects in Québec Over the Last 50 Years—C-2102AB

Sponsored by ACI Committee 120

Moderated by Dean Houdeshell, Cemen Tech

Our industry's legacy are the built structures serving our Quebec communities. For the 50th Anniversary of our local Chapter, a collective team of more than 100 persons has been assembling, during four years, the information on several important projects that by their scale and their innovation represent important milestones. These projects include advancements in design, material election, or concrete construction techniques. During the past 50 years, the construction industry has progressed with avant-garde structural concepts, research on sustainable development with an objective of restoring and conserving our heritage.

1:30 pm: Daniel-Johnson Dam

Bruce Labrie, BASF – Canada

1:50 pm: Louis-Hippolyte-La Fontaine Tunnel

Bruce Labrie, BASF – Canada

2:10 pm: Sherbrooke's Ultra-High-Performance Fiber-Reinforced Concrete Pedestrian/Bikeway Bridge

Bruce Labrie, BASF – Canada



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1:30 pm – 3:30 pm

Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 3 of 4—C-303A

Sponsored by ACI Committees 345 and 369

Moderated by Hung-Jen Lee, National Yunlin University of Science and Technology; Yail Jimmy Kim, University of Colorado Denver; and Myoungsu Shin, Ulsan National Institute of Science and Technology

The session description for this session may be found in the Part 1 listing; refer to page 34.

1:30 pm: Ultrasonic Evaluation Methods for Self-Healing in Concrete

Myoungsu Shin, Ulsan National Institute of Science and Technology

1:50 pm: Confined Concrete Model and Design of High- Strength Reinforced Concrete Columns

Yu Chen Ou, National Taiwan University; and Kuang-Yen Liu, National Cheng Kung University

2:10 pm: Innovative Use of FRP for the Precast Concrete Industry

Sami Rizkalla, North Carolina State University

2:30 pm: Repair and Maintenance of Swedish Concrete Bridges

Johan Silfwerbrand, KTH Royal Institute of Technology

2:50 pm: Korea's Research Infrastructure for Extreme Events

Jae-Yeol Cho, Seoul National University

3:10 pm: Seismic Design and Serviceability Requirement for RC Beams with High-Strength Steel Reinforcement

Chien-Kuo Chiu, National Taiwan University of Science and Technology; and Yung-Chih Wang, National Central University



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1:30 pm – 3:30 pm

Open Topic Session, Part 1 of 2—C-301B

Sponsored by ACI Committee 123

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

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

1:30 pm: Earthquake-Resistant Steel Fiber-Reinforced Concrete Coupling Beams without Diagonal Bars

Angel Luis Perez Irizarry, University of Wisconsin–Madison; and Gustavo Parra-Montesinos, University of Wisconsin–Madison

1:50 pm: Resistivity Behavior of Concrete Mixtures with Included Supplementary Cementitious Materials

Cody Joe Shults, Oklahoma State University; and Julie Hartell, Oklahoma State University

2:10 pm: Punching Strength of RC Footings with Varying Shear Reinforcement Ratios

Dominik Alexander Kueres, RWTH Aachen University; Philipp Schmidt, RWTH Aachen University; and Josef Hegger, RWTH Aachen University

2:30 pm: Strengthening of Damaged Reinforced Concrete Bridge Girders via Post-Tensioning with Unbonded Near-Surface-Mounted (NSM) Shape-Memory Alloy (SMA) Wires

Arkabrata Sinha, University of Delaware; and Jovan Tatar, University of Delaware

2:50 pm: Effect of Superabsorbent Polymers (Saps) on the Autogenous Shrinkage and Properties of Alkali-Activated Slag Pastes

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

3:10 pm: Relating the Formation Factor of Concrete to Water Absorption

Mehdi Khanzadeh Moradillo, Oregon State University; Chunyu Qiao, DRP, A Twining Company; Burkan Isgor, Oregon State University; Steven Reese, Oregon State University; and W. Jason Weiss, Oregon State University



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PDH Codes: _____

1:30 pm – 3:30 pm

Phase Change Materials in Concrete—C-301A

Sponsored by ACI Committee 236

Moderated by Hongyan Ma, Missouri University of Science and Technology; Narayanan Neithalath, Arizona State University; and Gaurav Sant, University of California, Los Angeles

Phase change materials (PCMs) have been widely incorporated in building envelopes to regulate the indoor temperature. Recent studies have shown that PCMs have other potentials in civil engineering applications, including thermal cracking mitigation in mass concrete, freezing-and-thawing damage control, snow melting, and thermal fatigue retardation. This session will address the efficiency of various stabilization forms of PCMs, the effects of PCMs on concrete properties, and modeling methods. Researchers and engineers considering PCMs as a manner to control temperature change-related problems of concrete should attend. Attendees will learn the strategies and details of using PCMs to manage temperature change in concrete.

1:30 pm: Numerical Simulations to Evaluate the Thermal Response of Phase-Change Materials in Infrastructure Applications

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

1:47 pm: How to Integrate Phase Change Materials in Construction Materials

Moncef Nehdi, Western University; and Afshin Marani, Western University

2:04 pm: Microstructure-Guided Numerical Simulation to Evaluate the Influence of Phase Change Materials (PCMs) on the Thermal Response of Concrete Pavements

Sumanta Das, University of Rhode Island

2:21 pm: The Potential Use of Micro-Capsulated Phase Change Materials for Thermal Energy Saving in Concrete

Yaghoob Farnam, Drexel University; and Mohammad Balapour, Drexel University

2:38 pm: Characterizing Early-Age Temperature Development in Concrete Pavements Containing Microencapsulated Phase Change Materials

Gaurav Sant, University of California, Los Angeles; Zhenyu She, University of California, Los Angeles; Zhenhua Wei, University of California, Los Angeles; Benjamin Young, University of California, Los Angeles; Gabriel Falzone, University of California, Los Angeles; and Laurent Pilon, University of California, Los Angeles

2:55 pm: Mitigating Curling of Concrete Pavement by Phase Change Materials: Method and Measurement

Hongyan Ma, Missouri University of Science and Technology; and Wenyu Liao, Missouri University of Science and Technology

3:12 pm: Increasing the Service Life of Bridge Decks by Incorporating Phase-Change Materials to Reduce Freeze-Thaw Cycles

Aaron Sakulich, Worcester Polytechnic Institute



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Sessions & Events

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Tuesday, March 26, 2019

2:00 pm – 3:00 pm

MINI SESSION: New Research on Internal Curing—C-307B

Sponsored by ACI Committee 213
Moderated by Jeffrey Speck, Arcosa Lightweight

The objective of this session is to present the results of two new research projects on internally cured concrete. The first research project is a field study of internally cured concrete slabs-on-ground. The second study is on internally cured concrete using calcium sulfoaluminate cement.

2:00 pm: Internal Curing for Slabs on Grade

Peter Taylor, CP Tech Center

2:30 pm: Internal Curing of Calcium Sulfoaluminate Cement Concrete Using Lightweight Aggregate

Royce Floyd, University of Oklahoma



PDH Codes: _____

3:00 pm – 4:00 pm

MINI SESSION: Accelerated Techniques for Concrete Paving—C-2102AB

Sponsored by ACI Committee 325
Moderated by Anthony Sorcic, Holcim US Inc.

Accelerated concrete paving techniques are appropriate for roadways, airfields, streets and intersections, and other paved surfaces where early opening to traffic and quick access are required. Many highway agencies use accelerated techniques for concrete paving techniques to expedite construction and ease work zone congestion. Accelerated-concrete pavement minimizes revenue loss by allowing earlier access at high-congestion areas. Recent improvements in paving equipment enhance their versatility in accelerated concrete paving. One of the primary ways to decrease facility closure time is to use a concrete mixture that develops strength rapidly. Rapid strength gain is not limited to the use of special blended cements or sophisticated construction methods. It is usually possible to proportion such a mixture using locally available cements, admixtures, and aggregates. When EOT or fast-setting concretes are used and must be opened to traffic at an early age, it is desirable to provide some sort of strength verification. Increasingly, agencies, consultants, and contractors are using nondestructive testing to adequately determine strength at early ages. The target audience for this session includes design and construction engineers, specifiers, contractors, and material suppliers.

3:00 pm: Precast Concrete Inlay Panels: A Novel Rehabilitation Strategy for High-Volume Asphalt Highways in Ontario

Dan Pickle, University of Waterloo

3:20 pm: Advantages and Challenges of Accelerated Concrete Mixtures

Peter Taylor, CP Tech Center

3:40 pm: Rapid-Set Cement: The Chemistry and History of Use in Accelerated Concrete Paving

John Kim, CTS Cement



PDH Codes: _____

3:00 pm – 4:00 pm

MINI SESSION: Advances in Fiber-Reinforced Concrete—C-200A

Sponsored by ACI Committee 544 and ACI Subcommittee 544-F
Moderated by Corina-Maria Aldea, Wood Environment and Infrastructure Solutions

The objectives of this session are to bring together experts from around the world to discuss advances in fiber-reinforced concrete (FRC) performance, durability, and field applications of FRC, as well as field applications where fibers have enhanced long-term performance of concrete and to identify opportunities to promote and expand the use of FRC to support sustainable development.

3:00 pm: Steel Fiber-Reinforced Concrete Sewer Pipes: Evaluation of Corrosion Resistance Over a Period of 20 Years

Hendrik Thooft, Bekaert

3:20 pm: Creep of Cracked Fiber-Reinforced Concrete in Flexure: RILEM TC 261CCF Round-Robin Test Results and Analysis

Emilio Garcia-Taengua, University of Leeds

3:40 pm: FRCA Innovative Fiber Project of the Year Awards 2017

Michael Mahoney, Euclid Chemical



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4:00 pm – 6:00 pm

Advances in Construction, Evaluation, and Repair of Concrete Structures and Materials: International Perspectives with KCI and TCI, Part 4 of 4—C-303A

Sponsored by ACI Committees 345 and 369

Moderated by Yail Jimmy Kim, University of Colorado Denver; Myoungsu Shin, Ulsan National Institute of Science and Technology; and Hung-Jen Lee, National Yunlin University of Science and Technology

The session description for this session may be found in the Part 1 listing; refer to page 34.

4:00 pm: The First Korean Practice in External Tendon Corrosion Fracture of Prestressed Concrete Bridges

Jae-Hoon Lee, Yeungnam University

4:20 pm: Experimental Study and Design Recommendations of Beam-Column Joints with High-Strength Reinforcement and Highly Flowable Strain-Hardening Fiber-Reinforced Concrete

Wen-Cheng Liao, National Taiwan University; and Hung-Jen Lee, National Yunlin University of Science and Technology

4:40 pm: Recent Development and Deployment of FRP Systems for Structural Concrete Retrofit and Strengthening

Issam Harik, University of Kentucky

5:00 pm: Use of GFRP Rebar in Bridge Decks—Proven Technology

Doug Gremel, Owens Corning Infrastructure Solutions

5:20 pm: Cyclic Behavior of Reinforced Concrete Slender Walls Using High-Strength Materials

Chung-Chan Hung, National Cheng Kung University

5:40 pm: Response of Reinforced Concrete Members under Dynamic Collapse Loading

Sarah Lynn Orton, University of Missouri at Columbia



PDH Codes: _____

4:00 pm – 6:00 pm

Contractors' Day Session: Modern Concrete Technology—C-301A

Sponsored by the Québec & Eastern Ontario Chapter – ACI

Moderated by Thomas Jacob-Vaillancourt, GHD Consultants

Among the techniques used for ground support in underground applications and infrastructure repairs, shotcrete or sprayed concrete has been used very successfully for many years due to the flexibility, efficiency, and robustness offered by the shotcrete process. In parallel, major advancements have been made to improve the mechanical performance, ease of application, and durability of shotcrete materials over the past two decades. Advancements in shotcrete materials and processes to be covered in this session include the durability properties of shotcrete materials used in North America to build and repair concrete infrastructures exposed to severe freezing-and-thawing cycles and severe exposure conditions due to aggressive agents such as chloride ions due to deicing salts. The benefits derived from modern shotcrete technology have provided forward-thinking contractors with an economic advantage over their competitors, and specifiers have also recognized that the shotcrete process can provide a durable, long-term repair solution that other materials procedures simply can't match. The intent of this presentation is to inspire innovations in underground development and infrastructure repairs through shotcrete by an overview of the latest technologies available to the industry.

4:00 pm: Latest Fundamental Research in Shotcrete

Marc Jolin, Laval University

4:30 pm: Education and Certification in the Shotcrete Industry

Charles Hanskat, American Shotcrete Association

5:00 pm: Applications of Recently Developed Shotcrete Technology

Simon Reny, King Packaged Materials Co.

5:30 pm: Shotcrete—Perspective from a Contractor

Simon Maltais, Cimota Inc.



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Tuesday, March 26, 2019

4:00 pm – 6:00 pm

Open Topic Session, Part 2 of 2—C-301B

Sponsored by ACI Committee 123

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

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

4:00 pm: Structural Control of Synthesized Geopolymer Gel by Adjusting Aqueous [Si] and [Al]: Implications for Future Accelerators/Retarders of Geopolymers

Xu Chen, University of Delaware; and Paramita Mondal, University of Delaware

4:20 pm Concrete Bridge Deck Performance Metrics and Service-Life Modeling for the State of Oregon

Jaël Wettach-Glosser, Portland State University; Thomas Schumacher, Portland State University; and Avinash Unnikrishnan, Portland State University

4:40 pm: What is “Synthetic Pore Solution” and Why Is It Important?

Leah Kristufek, University of Waterloo; and Carolyn Hansson, University of Waterloo

5:00 pm: De-Icing Brines: The Good and The Bad

Colin Bradley Van Niejenhuis, University of Waterloo; and Carolyn Hansson, University of Waterloo

5:20pm: An Evaluation of High Molecular Weight Methacrylate as a Treatment Option for Shrinkage Cracks in Airfield Pavement

Austin Hayes, Air Force Institute of Technology

5:40 pm: Mechanical and Durability Properties of Cement Mortar Reinforced by Silane Treated Bamboo Fibers

Tengfei Fu, Fujian Agriculture and Forestry University; Yang Ban, Fujian Agriculture and Forestry University; Demei Yu, Fujian Agriculture and Forestry University; Wei Zhi, Fujian Agriculture and Forestry University; Mingen Fei, Fujian Agriculture and Forestry University; Wendi Liu, Fujian Agriculture and Forestry University; and Renhui Qiu, Fujian Agriculture and Forestry University



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PDH Codes: _____

5:30 pm – 6:30 pm

Faculty Network Reception—H-Plaines

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.

6:30 pm – 8:00 pm

Concrete Mixer—C-200C

Sponsored in part by the Québec & Eastern Ontario Chapter – ACI



Join ACI attendees and guests for an evening of networking, entertainment, and traditional Québec cuisine during this Québec City-themed Concrete Mixer.

Wednesday, March 27, 2019

7:00 am – 2:00 pm

✓Adhesive Anchor Installation Inspector Certification Exam—C-304B

This is a two-part exam and you are allowed to start the exam anytime in the time slot provided above.

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 75-minute inspection examination is open-book and consists of approximately 55 multiple-choice questions. To pass the installation examination, the examinee must attain a minimum 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-304B

This is a two-part exam and you are allowed to start the exam anytime in the time slot provided above.

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-304B

This is a two-part exam and you are allowed to start the exam anytime in the time slot provided above.

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.

Sessions & Events

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

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C = Québec City Convention Centre H = Hilton Québec

7:00 am – 2:00 pm

✓Concrete Transportation Construction Inspector Certification Exam—C-304B

This is a two-part exam and you are allowed to start the exam anytime in the time slot provided above.

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

Design of Precast Concrete Parking Structures—C-303A

Sponsored by ACI Committee 362 and the ACI Educational Activities Committee (EAC)

Moderated by Claude Goguen, National Precast Concrete Association; and James Donnelly, Wiss, Janney, Elstner Associates, Inc.

As the population in urban areas continues to grow and availability of land continues to shrink, multi-level parking structures are being built at an increasing rate. Their design is also evolving due to an expansion of incorporated uses and amenities. Rooftop gardens, restaurants, and electric vehicle charging stations are becoming common features. This session will provide information based on the latest research and expert advice on how to design, build, and maintain precast concrete parking structures. Information on incorporating amenities, diaphragm design, connections, joints, and repairs will be discussed. This session is intended for design engineers, manufacturers, and contractors.

8:30 am: Seismic Design of Precast Concrete Diaphragms in Parking Garages

Ned Cleland, Blue Ridge Design Inc.

8:50 am: Report on Double Flange Tee Connection Research

Clay Naito, Lehigh University

9:10 am: Flange-to-Flange Connection Repairs

Peter Tarara, Wiss, Janney, Elstner Associates, Inc.

9:30 am: Incorporating Amenities to Precast Concrete Parking Garages

Harry Gleich, Metromont Corporation



2 AIA/CES LU

PDH Codes: _____

8:30 am – 10:30 am

Creating Durable Concrete with Slag Cement—C-301A

Sponsored by ACI Committee 233

Moderated by Jan Prusinski, Skyway Cement

The presentation will provide in-depth looks at projects that have used slag cement to increase concrete durability in innovative ways. Attendees will learn about slag cement use in mass concrete, projects using high percentage replacement rates, and how to avoid scaling in concrete with slag cement. The session will conclude with the Slag Cement Project of the Year Awards,

which highlights 8-10 projects that have used slag cement. The ceremony will provide case study overviews of the winning projects in the categories of architectural design, durability, green design, high performance, innovative applications, sustainability, and research.

8:30 am: High Percentage Replacement Rates in London Tunnel System

James Aldred, University of New South Wales

9:00 am: Slag Cement in Mass Concrete Bridge Construction: St. Croix Crossing

Lars Anderson, Cemstone

9:30 am: Avoiding Scaling in Concrete with Slag Cement

Henry Prenger, LafargeHolcim

10:00 am: 2018 Slag Cement Project of the Year Awards Ceremony

Drew Burns, Slag Cement Association



2 AIA/CES LU



PDH Codes: _____

8:30 am – 10:30 am

UHPC and UHPFRC: Innovations in Combining High Tensile Strength and High Ductility, Part 1 of 2—C-301B

Sponsored by ACI Committees 239 and 544

Moderated by Liberato Ferrara, Politecnico di Milano; and Kay Wille, University of Connecticut

In comparison to conventional concrete, high-performance concrete (HPC) and ultra-high-performance concrete (UHPC) are characterized by higher compressive strength and enhanced durability due to their optimized cementitious matrix design. The addition of fiber reinforcement and tailoring the bond properties between matrix and fibers allow for enhanced tensile strength and tensile ductility leading to the concept of ultra-high-performance fiber-reinforced concrete (UHPFRC). Enhanced material properties under tensile loading provide opportunities for innovative and novel structural designs. This session will invite national and international research groups as well as contractors and designers to share their innovations in material tensile strength and tensile ductility of HPC and UHPC, also known as high-performance fiber-reinforced cementitious composites (HPFRCC) or ultra-high-performance fiber-reinforced concrete (UHPRC).

8:30 am: UHPC: Strength, Ductility, and Constructability

Surendra Shah, Northwestern University

8:48 am: Tensile Behavior of UHPFRC with Nano-Scale Functionalizing Constituents for Structural Applications in Extremely Aggressive Environments Characterized by Chlorides and Acids

Liberato Ferrara, Politecnico di Milano

9:06 am: Influence of Fiber Reinforcement on the Direct Tensile Properties of Ultra-High-Performance Engineered Cementitious Composites (UHPECC)

JianGuo Dai, The Hong Kong Polytechnic University; Zhou Dao Lu, Tongji University; Ke Yuan Yu, Tongji University; and Surendra Shah, Northwestern University

9:24 am: Synergy Assessment in Hybrid Ultra-High-Performance Fiber-Reinforced Concrete (UHPFRC)

Alessandro Fantilli, Politecnico di Torino

Sessions & Events

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Wednesday, March 27, 2019

9:42 am: Effect of the Cementitious Paste Density on the Performance Efficiency of Graphite Nanomaterials in Concrete Nanocomposite

Amirpasha Peyvandi, Jacobs

10:00 am: The Truth About Nano-Engineered UHPC

Jon Belkowitz, Intelligent Concrete

10:18 am: Suitability Testing Methods to Assess UHPC Fiber Distribution and Orientation

Dominique Corvez, Lafargeholcim



2 AIA/CES LU



PREFERRED EDUCATION PROVIDER

PDH Codes: _____

11:00 am – 1:00 pm

Concrete Aesthetics: From Historical Mortar to Architectural Concrete and Coming Advances—C-301A

Sponsored by ACI Committees 124 and 564

Moderated by Claudiane Ouellet-Plamondon, ETS Montreal

The session aims to expose the audience to the challenge of aesthetic concrete, from cultural site characterization to best practices for architectural concrete and coming possibilities with the digitalization of concrete. Rehabilitation of sites of cultural importance requires knowledge of the materials to ensure the site will be in place for the future generations. Architectural concrete is influenced by mixture design, placing, finishing, and aging conditions. Digitalization of concrete allows creating new mixture design, formwork, and shapes. Researchers, engineers, scientists, architects, contractors, and students are welcome.

11:00 am: Concrete Sculpture Gardens Monitoring of the Ernest-Cormier Esplanade in the City of Montreal

Patrick Power, SIMCO Technologies; and Lena Buchinger, EVOQ Architecture

11:30 am: Architectural Precast Concrete as a Building Enclosure

Guy Tremblay, BPDL

12:00 pm: Ultra-High-Performance Concrete (UHPC) and Its Applications in Architecture

Philipp Hofmann, HOFMANN STONE GROUP

12:30 pm: Building Systems Based on Robotized Mortar Extrusion

Romain Duballet, Laboratoire NAVIER and XTreeE



2 AIA/CES LU



PREFERRED EDUCATION PROVIDER

PDH Codes: _____

11:00 am – 1:00 pm

Non-Prestressed FRP Reinforcement and Retrofitting Systems—Honoring Distinguished Professor Emeritus Sami Rizkalla, Part 1 of 2—C-303A

Sponsored by ACI Committee 440

Moderated by Amir Fam, Queen's University; and Abdeldjelil Belarbi, University of Houston

Two sessions are requested to honor ACI Fellow Sami Rizkalla, Distinguished Professor Emeritus at North Carolina State University, and a long-time active member of ACI (elected Fellow in 1993)

and a past Chairman of ACI Committee 440, Fiber-Reinforced Polymer Reinforcement (1997-2003). The two sessions will focus on reinforced and prestressed concrete structures with emphasis on the applications of FRP reinforcement as well as high-performance materials. Presentations will be given by invited distinguished leaders in the field. The audience could be practitioners and researchers, including both students and academics, who will learn about most recent advances in these areas.

11:00 am: FRP Reinforcement for Concrete—Coming of Age

Antonio Nanni, University of Miami

11:17 am: Recent Canadian Experience of Applications of FRP Reinforcing Bars in Buildings and Bridges

Brahim Benmokrane, University of Sherbrooke

11:34 am: Seismic Performance of Concrete Columns Containing GFRP Longitudinal Bars and GFRP Transverse Reinforcement

Shamim Sheikh, University of Toronto

11:51 am: Innovations in Bridge Strengthening using FRP in Australia

Riadh Al-Mahaidi, Swinburne University of Technology

12:08 pm: FRP Retrofit of Concrete Bridges Subjected to Over-Height Truck Impact

Issam Harik, University of Kentucky

12:25 pm: Case Studies of CFRP Strengthening of Concrete Bridges

Mohsen Shahawy, SDR Engineering Consultants Inc.

12:42 pm: Model and Code Predictions of Deep Beams Reinforced with FRP Failing in Shear

Akthem Al-Manaseer, San Jose State University; Cengiz Dundar, Cukurova University; Louai Wafa, San Jose State University; and Sedat Karaahmetli, Cukurova University



2 AIA/CES LU



PREFERRED EDUCATION PROVIDER

PDH Codes: _____

11:00 am – 1:00 pm

UHPC and UHPFRC: Innovations in Combining High Tensile Strength and High Ductility, Part 2 of 2—C-301B

Sponsored by ACI Committees 239 and 544

Moderated by Liberato Ferrara, Politecnico di Milano; and Kay Wille, University of Connecticut

The session description for this session may be found in the Part 1 listing; refer to page 51.

11:00 am: Hybrid Combination of Fibers and Composite Rebar for Early Green Strength of UHPC

William Kulish, Kulish Design Co. LLC

11:15 am: Pure Shear Strength of UHPFRC

Evan Bentz, University of Toronto; Frank Vecchio, University of Toronto; Brittany Yap, University of Toronto; and Stephen Foster, University of New South Wales

11:30 am: Transitioning from Shear to Bending Failure of UHPC Beams: Fibers as the Key Factor

Mohammed Galal Alnaggar, Rensselaer Polytechnic Institute

11:45 am: Predicting Structural Behavior of UHPC and Ductile Concrete Materials with Numerical Simulation

Matthew Bandelt, New Jersey Institute of Technology

Sessions & Events

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12:00 pm: Repair and Strengthening of Corroded Steel Girders Utilizing UHPC

Kay Wille, University of Connecticut; Kevin McMullen, University of Connecticut; and Arash Zoghi, University of Connecticut

12:15 pm: Optimization of UHPC Curved Post-Tensioned Tub Girder Bridge

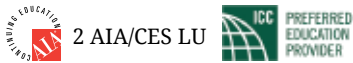
Maher Tadros, eConstruct, UCA.LLC; Adam Sevenker, eConstruct, UCA.LLC; and Chuanbing Sun, University of Nebraska Omaha

12:30 pm: Seismic Behavior of UHPC Segmental Columns

Mohamed ElGawady, Missouri University of Science and Technology

12:45 pm: Static Behavior of Group Large Headed Stud-UHPC Shear Connectors in Composite Structures

Yiming Yao, Southeast University



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PDH Codes: _____

1:30 pm – 3:30 pm

Application of ACI 351-C Report on Dynamic Foundations—C-301A

Sponsored by ACI Subcommittee 351-C
Moderated by Carl Nelson, ESI Engineering

This session will review the information presented in ACI 351.3R-18, “Report on Foundations for Dynamic Equipment.” Engineers involved in the design of foundations for generators, compressors, and other heavy equipment producing large dynamic forces will find this session of interest. Note: Earthquake-generated forces are not within the main purview of ACI Subcommittee 351-C.

1:30 pm: Elevated Foundations for Rotating Machines for High Speed Balancing Facilities: A Case Study

Pericles Stivaros, GEI Consultants, Inc.; and Pablo Bruno, GEI Consultants, Inc.

1:50 pm: Nonlinear Finite Element Analysis and Retrofit Design of a Compressor Foundation: A Case Study

Serhan Guner, University of Toledo; Robert Zemp, Morrison Hershfield; and Mike Brady, Morrison Hershfield

2:10 pm: Comparison of Several Methodologies Used for Designing Table Top Foundations

Mukti Das, Elsewedy Electric PSP

2:30 pm: One Company’s Application of ACI 351 Report on Foundations for Dynamic Equipment

William Bounds, Fluor Corp; and Silky Wong, Dow Chemical Company

2:50 pm: Adapting ACI 351.3R for Explicit Representation of Piles and Pile-Cap Interaction, with Model Validation and Application to Retrofit Analysis

Tim Hogue, Hargrove Engineers + Constructors; David Kerins, ExxonMobil; and Matthew Brightman, Exxon

3:10 pm: Dynamic Analysis of a Pile-Supported Steam Turbine Generator: Modeling Simplifications and Pitfalls

Carlos Coronado, Bechtel OG&C; and Mansour Tabatabaie, MTR & Associates



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PDH Codes: _____

1:30 pm – 3:30 pm

Prestressed FRP Reinforcement, Hybrid Systems and Fire—Honoring Distinguished Professor Emeritus Sami Rizkalla, Part 2 of 2—C-303A

Sponsored by ACI Committee 440

Moderated by Amir Fam, Queen’s University; and Raafat El-Hacha, University of Calgary

The session description for this session may be found in the Part 1 listing; refer to page 52.

1:30 pm: Fire Safety and Fiber-Reinforced Polymers: From Prohibition to Acceptance

Mark Green, Queen’s University

1:50 pm: Behavior of Carbon FRP Prestressed Cored Slabs

Rudolf Seracino, North Carolina State University

2:10 pm: Strengthening Concrete Structures Using Prestressed FRP—Over 20 Years of R&D

Raafat El-Hacha, University of Calgary

2:30 pm: Development of AASHTO Design Specifications for Girders Using CFRP Prestressing Systems

Abdeljelil Belarbi, University of Houston; and Mina Dawood, University of Houston

2:50 pm: Seismic Retrofit of RC Columns Using Nanomodified FRP

Mahmoud Reda Taha, University of New Mexico

3:10 pm: Effect of Tube Damage on Flexural Strength of Concrete-Filled FRP Tubes

Amir Fam, Queen’s University



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PDH Codes: _____

6:30 pm – 8:00 pm

President’s Reception—H-Palais

ACI President David Lange 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 beverages will be available.

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