24 HOURS OF CONCRETE KNOWLEDGE

Hosted by the American Concrete Institute • July 8-9, 2025

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24 HOURS OF CONCRETE KNOWLEDGE

TUESDAY, JULY 8, 2025

Welcome from ACI Global Moderators Maria Juenger and Scott Anderson

9:00 PM-10:00 PM Local Time / 2:00 PM-3:00 PM EDT (New York Time)
Co-Host Organization: ACI Iraq Chapter
- Paving Iraq's Sustainable Future: Local Solutions for Greener Concrete
- Ways to Delay the Development of Reflection Cracks into Composite Pavement

2:00 PM-3:00 PM Local Time / 3:00 PM-4:00 PM EDT (New York Time)
Co-Host Organization: ACI Colombia Chapter
- Bond Behavior of GFRP Bars in Conventional and Ultra-High-Performance Concretes
- From Design Drift to Damage: Return Periods for Repairability Loss in Special Moment Frames

5:00 PM-6:00 PM Local Time / 4:00 PM-5:00 PM EDT (New York Time)
Co-Host Organization: Instituto Brasileiro do Concreto (IBRACON)
- Museum of Tomorrow Structural Design
- Brazilian Innovation in Concrete: Disruptive Technologies Shaping the Future of Construction

3:00 PM-4:00 PM Local Time / 5:00 PM-6:00 PM EDT (New York Time)
Co-Host Organization: ACI Guatemala Chapter & Instituto Cemento y Concreto Guat. (ICCG)
- Largest 3-D Printed Building in Latin America
- Electrical Resistivity in Reinforced Concrete Structures

4:00 PM-5:00 PM Local Time / 6:00 PM-7:00 PM EDT (New York Time)
Co-Host Organization: Fundación ISCYC, El Salvador
- Performance-Based Seismic Design for Post-Tensioned Concrete Bridges: Innovations and Challenges in Latin America
- Industrialized Housing in El Salvador: A Concrete-Based Approach by Nabla

5:00 PM-6:00 PM Local Time / 7:00 PM-8:00 PM EDT (New York Time)
Co-Host Organization: ALCONPAT International
- ALCONPAT International—Past, Present, and Future
- Characterization of Sustainable Nano- and Bio-materials for the Durability of Construction Materials in Yucatán, México

6:00 PM-7:00 PM Local Time / 8:00 PM-9:00 PM EDT (New York Time)
Co-Host Organization: ACI Central & Southern Mexico Chapter
- Concrete Technology: A Science Beyond the Knowledge
- Driving Sustainability through Decarbonization in Construction Materials

WEDNESDAY, JULY 9, 2025

1:00 PM-2:00 PM Local Time / 9:00 PM-10:00 PM EDT (New York Time)
Co-Host Organization: Concrete New Zealand Learned Society
- City Rail Link Te Waihorotiu Station – Sustainability in Design and Construction
- Assessing the Seismic Performance of Earthquake-Damaged and Repaired Reinforced-Concrete Walls

12:00 PM-1:00 PM Local Time / 10:00 PM-11:00 PM EDT (New York Time)
Co-Host Organization: Concrete Institute of Australia (CIA)
- Pathways to Sustainability
- Walking the Pathway to Decarbonization

12:00 PM-1:00 PM Local Time / 11:00 PM-12:00 AM EDT (New York Time)
Co-Host Organization: Korea Concrete Institute (KCI)
- Performance-Based Wind Design of Tall Concrete Buildings
- Surface Strain Analysis of Transverse Cracks on Bridge Decks Detected by Deep CNNs

1:00 PM-2:00 PM Local Time / 12:00 AM-1:00 AM EDT (New York Time)
Co-Host Organization: Japan Concrete Institute (JCI)
- Comparison of Performance-Based Seismic Design Methods for Concrete Structures between the United States and Japan
- From Research to Reality: 3-D Printing Concrete Developments in Japan

12:00 PM-1:00 PM Local Time / 1:00 AM-2:00 AM EDT (New York Time)
Co-Host Organization: Thailand Concrete Association (TCA)
- Sustainable Concrete Innovation through Waste Utilization and Local Resources
- Monitoring and Analysis of Formwork Pressure in Self-Compacting Concrete with Variable Fresh Mix Temperatures

2:00 PM-3:00 PM Local Time / 2:00 AM-3:00 AM EDT (New York Time)
Co-Host Organization: ACI Singapore Chapter
- Recent Applications of SFRC for Underground Infrastructure Construction in Singapore
- Carbon Capture by Waste Cement Slurry and Its Usage as a Sustainable Binding Material

12:30 PM-1:30 PM Local Time / 3:00 AM-4:00 AM EDT (New York Time)
Co-Host Organization: ACI India Chapter
- Voided Slabs for Large Spans and as a Transfer Medium
- Structural Repairs and Rehabilitation of Bridges and Flyovers

12:00 PM-1:00 PM Local Time / 4:00 AM-5:00 AM EDT (New York Time)
Co-Host Organization: ACI UAE Chapter
- Advancing Concrete Performance and Sustainability through Metal-Organic Frameworks
- Innovating for a Greener Future: Steel Fiber-Reinforcement as a Key to Low-Carbon Concrete Construction

12:00 PM-1:00 PM Local Time / 5:00 AM-6:00 AM EDT (New York Time)
Co-Host Organization: ACI Lebanon Chapter
- Effect of Polyethylene Terephthalate, Rubber, and Glass Based on Concrete Properties
- Enhancing Shear Capacity of Recycled Aggregates Concrete Beams

1:00 PM-2:00 PM Local Time / 6:00 AM-7:00 AM EDT (New York Time)
Co-Host Organization: ACI Egypt Chapter
- Top-Down Construction for an Underground Parking Structure
- Boundary Element Method for Analysis and Design of Tall Buildings
- Staged Construction Analysis of Reinforced-Concrete Buildings

2:00 PM-3:00 PM Local Time / 7:00 AM-8:00 AM EDT (New York Time)
Co-Host Organization: Jordan Concrete Association (JCA)
- Concrete Breakout in Steel Fiber-Reinforced Concrete: Database, Evaluation, and Design Recommendations
- The Repairs and Rehabilitation of Old Concrete Floors: Restoring Strength, Safety, and Service Life

3:00 PM-4:00 PM Local Time / 8:00 AM-9:00 AM EDT (New York Time)
Co-Host Organization: ACI Kurdistan Chapter
- Novel Exploration of Chemical Compounds in Mono-Variate, Bi-Variate, and Multi-Variate Scenarios of Waste Glass Powder as a Cement Replacement in Concrete
- The Role of Waste Glass Powder in Alkali-Silica Reaction Mitigation: Transforming Glasscrete Durability through Chemical Composition Dynamics

3:00 PM-4:00 PM Local Time / 9:00 AM-10:00 AM EDT (New York Time)
Co-Host Organization: ACI Italy Chapter
- Bond Behavior Between Metallic and Nonmetallic Bars and Sustainable Concrete—Preliminary Experimental Results
- Retrofitting Reinforced-Concrete Buildings—Exploring the Critical Role of Floor Diaphragms

4:00 PM-5:00 PM Local Time / 10:00 AM-11:00 AM EDT (New York Time)
Co-Host Organization: *fib*
- Polymer Ducts for Improved Durability of Post-Tensioning Tendons (*fib* Bulletin 113)
- BIM in Construction (*fib* Bulletin 115)

4:00 PM-5:00 PM Local Time / 11:00 AM-12:00 PM EDT (New York Time)
Co-Host Organization: Institute of Concrete Technology (ICT)
- Challenges and Considerations when using Calcined Clay as Supplementary Cementitious Material
- Calcined Clays from UK Sources: More Reactive Than We Thought?

6:00 PM-7:00 PM Local Time / 12:00 PM-1:00 PM EDT (New York Time)
Co-Host Organization: RILEM
- Long-Term Performance of Structural Concretes in Marine Exposure Conditions: Report from RILEM TC 289-DCM
- Calcined Clays for Sustainable Concrete

12:00 PM-1:00 PM Local Time / 1:00 PM-2:00 PM EDT (New York Time)
Co-Host Organization: ACI Peru Chapter
- Assessing Residual Energy of Recycled Aggregate Concrete Under Severe Conditions: Insights from Peru
- Seismic and Structural Evaluation of a 70-Year-Old Reinforced Concrete and Masonry Building Structure

Closing remarks

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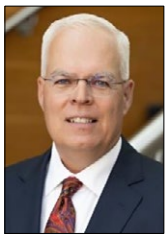
ACI Global Moderators

Maria Juenger, ACI President, University of Texas at Austin



Scott M. Anderson, ACI Vice President, Keystone Structural Concrete

Tuesday, July 8, 2025

9:00 PM-10:00 PM Baghdad Time / 2:00 PM-3:00 PM EDT (New York Time)

Co-Host Organization: ACI Iraq Chapter

Website: https://aci-iraq.com

The ACI Iraq Chapter was established in August 2013. The aim of the Chapter is to promote concrete knowledge through academic institutions and concrete industries. To achieve its objective, the main Chapter activities are education seminars, training workshops, student project competitions, and ACI Certification programs. Recently, the Chapter successfully coordinated between the Iraqi Ministry of Construction, Housing, Municipalities and Public Works and ACI, where they signed an International Partnership Agreement (IPA). The ACI Iraq Chapter started to translate ACI 318 into Arabic to increase the use of this Code in the Arabic world.

Local Moderator: Ali Naji Attiyah, Assistant Professor, University of Kufa

Dr. Ali Naji Attiyah is an Assistant Professor in the Department of Civil Engineering at the University of Kufa, Kufa, Iraq. He graduated from the Department of Civil Engineering in 1986 and completed his higher studies in structural engineering at the University of Baghdad, Baghdad, Iraq. After graduation, he worked in both academic and professional fields and had good experiences in the structural design of concrete buildings and other structures. At the University of Kufa, he was the Manager of the Engineering Consulting Office and, through this mission, was the Director of many important projects. In addition, he taught different courses dealing with concrete, such as concrete technology and concrete design. He succeeded with his colleagues from other Iraqi universities in establishing the ACI Iraq Chapter, where he was elected as the first Executive Director of the Chapter in September 2013. From 2015 to 2016, Attiyah was awarded $50,000 from the U.S. Department of State as a part of the University Linkages Program (ULP). The program was implemented at the College of Engineering and administered by the American organization International Research & Exchanges Board (IREX) and was titled "Move from Traditional Education to Outcomes-Based Education." In mid-2015, he was appointed by the Ministry of Higher Education and Scientific Research as a member of the Iraqi Council of Improving the Quality of Engineering Education. In 2018, the council's name was changed to the Iraqi Council of Accreditation for Engineering Education (ICAEE); Attiyah was appointed Chair from 2018 to 2020.

1st Speaker: Ahmed A. Gheni, PhD, Lecturer, Tikrit University

Dr. Ahmed A. Gheni is a civil engineer specializing in sustainable construction materials, with a strong focus on advancing eco-friendly solutions tailored to local contexts, currently serving as lecture and consultant in civil engineering at Tikrit University, Iraq. With a PhD received from Missouri University of Science and Technology (Missouri S&T), his pioneering work spans sustainable construction materials, including geopolymer concrete, rubberized masonry, and recycled chip seals. Gheni has authored over 30 peer-reviewed papers in leading journals such as the *ACI Materials Journal*, *Construction and Building Materials*, and the *Journal of Cleaner Production*, focusing on eco-friendly alternatives and durability improvements. His contributions to sustainable infrastructure have earned him numerous international awards and prestigious fellowships, including the Chi Epsilon Honor Society Fellowship and multiple competition accolades. Gheni is passionate about creating practical, scalable solutions that address the specific

challenges facing Iraq's construction sector. Through his research, teaching, and collaborations with industry, he aims to guide the transition toward more sustainable building practices and help align Iraq's development with global environmental goals.

Presentation Title: Paving Iraq's Sustainable Future: Local Solutions for Greener Concrete

As the global construction industry accelerates its transition toward low-carbon concrete, many regions rely heavily on industrial by-products like fly ash and silica fume to enhance sustainability. However, Iraq faces a unique challenge: such materials are scarce or unavailable locally. To align Iraq with international sustainability trends, it is essential to pivot toward alternative strategies that capitalize on indigenous resources.

This presentation explores an innovative roadmap for implementing more sustainable concrete in Iraq by using readily available materials. Key opportunities include incorporating recycled concrete aggregate (RCA) and waste clay bricks as alternative aggregates, and adopting high replacement ratios of locally abundant limestone and pozzolanic materials to partially substitute manufactured cement. These methods not only reduce environmental impact but also offer cost-effective, practical solutions tailored to Iraq's market conditions.

By establishing a sustainable concrete framework rooted in local resources, Iraq can reduce carbon emissions, promote circular economy practices, and advance toward global sustainability standards without relying on unavailable materials. This presentation will outline technical approaches, environmental benefits, and strategic recommendations for policymakers, researchers, and industry leaders to foster Iraq's green concrete revolution

2nd Speaker: Dr. Ahmed S. Abduljabbar, Assistant Professor

Dr. Ahmed S. Abduljabbar was born in Baghdad and received his PhD in civil engineering, transportation emphasis, from the University of Missouri, Columbia, MO, USA, in 2018. His research focuses on multiple areas of traffic, highway, pavement, and airport engineering. He has worked recently on an innovative approach of designing and building an accelerated pavement testing facility with the help of two PhD students to investigate various scenarios of flexible and rigid pavement structures using different parameters. In addition, recent work was targeting the possibility of using recycled rubber and recycled concrete aggregates into crating surface course layers for flexible pavement by replaying part of the raw aggerate with recycled ones. His current focus is on airport facilities and the assessment and design of airport runways, taxiways, and aprons for all pavement types, rigid, flexible, and composite pavements.

Presentation Title: Ways to Delay the Development of Reflection Cracks into Composite Pavement

Composite pavements comprise a portion of the paved highway surfaces. They are most commonly the result of concrete pavement rehabilitation. The traditional pavement design approach has been constructing full-depth Portland cement concrete (PCC) pavements, and when they begin to fail years later, they are overlaid with 2 to 6 inches of hot-mix of asphalt (HMA). Compared to traditional flexible or rigid pavements, composite pavements can be a more cost-effective alternative because they may provide better performance levels, both structurally and functionally. Interlayers for asphalt reinforcement are an effective option to enhance pavement service life. In this regard, innovative factory-made composite materials can be designed as interlayer systems that combine reinforcing and stress-relieving properties. This can be accomplished by embedding grids or fabrics in bituminous membranes. This presentation will highlight the outcomes of recent work with graduate students to overcome this ongoing issue locally and globally. The work has proved that incorporating either type of geotextile or the steel mesh has helped to delay the propagation of cracks (represent current joint in PCC slab) through the asphalt concrete layer. The work has been published through a master's thesis and as two articles.

Tuesday, July 8, 2025

2:00 PM-3:00 PM Bogotá Time / 3:00 PM-4:00 PM EDT (New York Time)

Co-Host Organization: ACI Colombia Chapter

Website: https://acicolombia.org.co/

The ACI Republic of Colombia Chapter is a technical and educational society dedicated to promoting the design, construction, manufacture, and maintenance of concrete structures. The Chapter was created in 1977, and since then, it has published quarterly newsletters and held seminars to promote knowledge among its members and professionals or students interested in expanding their research. The Chapter promotes the objectives of ACI, which are to encourage education, technical practice, and scientific research for the development of new techniques.

Local Moderator: Gonzalo Gallo, PhD

Gonzalo Gallo is the Director of the Structural Engineering Division of INGETEC. He has overseen the structural analyses for projects worldwide and has been part of the structural engineering designs for many of INGETEC's main civil works. With over 15 years of experience, he has been involved in the design of hydraulic structures, dams, spillways, powerhouses, water supply systems, water treatment plants, tunnels, pipelines, steel and reinforced concrete structures, warehouses, roads, bridges, transmission lines and switchyards; preparation of technical specifications and terms of reference; coordination of civil designs; and technical advisory for the construction of hydraulic, urban, and industrial works. He has been involved in the ACI Republic of Colombia Chapter for several years. He is also a member of ACI Committee 207, Mass and Thermally Controlled Concrete. Gallo received his bachelor's degree in civil engineering from the Universidad San Francisco de Quito, Quito, Ecuador, and his master's and doctoral degree in structural engineering from the University of Illinois Urbana-Champaign, Urbana, IL, USA. He also completed his postdoctoral studies in mass concrete at the University of Florida, Gainesville, FL, USA, working with the Florida Department of Transportation (FDOT).

1st Speaker: Andrés Guzmán, Associate Professor

Andrés Guzmán is a Civil Engineer from the National University of Colombia, with a master's degree in civil engineering (structures and seismic engineering) and a PhD in engineering (computational biomechanics) from Universidad de los Andes, Bogotá, Colombia. He is an Associate Professor, consultant, and researcher at Universidad del Norte, Barranquilla, Colombia; Coordinator of GIEG – Research Group on Structures and Geotechnics , A1 – Minciencias; Senior Researcher, Minciencias; and Technical Director of the Geotechnical and Construction Materials Laboratory, affiliated with the Department of Civil and Environmental Engineering (DICA) at the Universidad del Norte. Guzmán is a member of ASCE, SEI, ACI, AIS, ICCA, ACIES, AISC, CCCS, ASTM, and ALCONPAT. He is President of the ASCE Colombia Section; an ICCA Board Member and Chair of the ICCA Professors Committee; an ACIES Board Member; and Director of the CCCS Education Committee. Guzmán's research interests include the design of infrastructure for alternative energy systems (wind and solar); the development of sustainable materials; and the design of resilient structures facing climate change challenges.

Presentation Title: **Bond Behavior of GFRP Bars in Conventional and Ultra-High-Performance Concretes**

The use of glass fiber-reinforced polymer (GFRP) bars as reinforcement in concrete structures offers significant advantages in terms of corrosion resistance and durability. However, the bond behavior between GFRP bars and concrete remains a critical factor for structural performance. This presentation explores experimental findings on the bond strength of GFRP bars embedded in concrete mixtures of varying strengths, including ultra-high-performance concrete (UHPC). Emphasis is placed on how concrete quality, matrix densification, and fracture mechanics influence adhesion mechanisms, with implications for design and service life predictions.

2nd Speaker: Carlos A. Arteta, Associate Professor, Universidad del Norte

Carlos A. Arteta is an Associate Professor of civil engineering at Universidad del Norte, Colombia. He is a member of ACI Committee 318, Structural Concrete Building Code, and participates in ACI Subcommittee 318-H - Seismic Provisions. Arteta is the funding president of the Colombian Earthquake Engineering Research (CEER) Network; a member of the Board of Directors of the ACI Colombia Chapter; and a member of the Colombian Association of Earthquake Engineering. His research interests include response and design of buildings to earthquake actions, with expertise in analysis, design and risk evaluation of reinforced concrete structural systems.

Presentation Title: **From Design Drift to Damage: Return Periods for Repairability Loss in Special Moment Frames**

This presentation examines how design story drift limits influence the risk of irreparable beam-end rotations in special reinforced concrete moment frames, using hazard-consistent ground motion analyses. The findings offer strategies to better align seismic design with functional recovery and resilience objectives.

Tuesday, July 8, 2025

5:00 PM-6:00 PM São Paulo Time / 4:00 PM-5:00 PM EDT (New York Time)

Co-Host Organization: Instituto Brasileiro do Concreto (IBRACON)

Website: https://site.ibracon.org.br/

The Instituto Brasileiro do Concreto (IBRACON) is a technical-scientific organization for the defense and enhancement of civil engineering—nationwide, associative, nonprofit, and with unlimited duration. It was founded in 1972 by professionals and stakeholders in the concrete production chain. Its objective is to provide professionals and stakeholders in the national construction sector with information and knowledge on research, development, and innovation in concrete technology and its construction systems. To this end, IBRACON promotes specialization courses, edits technical publications, encourages and supports the formation of technical committees, offers certification programs, and organizes technical events. Every year, IBRACON organizes the Brazilian Concrete Congress, the largest national technical-scientific event on concrete technology and its construction systems, which aims to bring together the national and foreign technical and scientific community to debate and learn more about research, developments, and innovations related to concrete and its constituent materials, structural analysis and design, construction methodologies, management and technical standardization, and other related topics.

Local Moderator and 1st Speaker: Rafael Timerman, Civil Engineering with a Specialization Degree in Structural Design

Rafael Timerman is a Civil Engineer, Director of Engeti Consultoria e Engenharia S/S Ltda, and Professor of postgraduate courses for rehabilitation, reinforcement, and inspection of structures of bridges and viaducts. He has been the Coordinator of the Technical Division of Structures and Materials of the Institute of Engineering since May 2019 and a member of the Deliberative Council of the Institute of Engineering since April 2020. He was the Director of Events for IBRACON from 2019 to 2023. Timerman is a member of ACI Committee 364, Rehabilitation. He graduated from the School of Engineering of Universidade Presbiteriana Mackenzie, São Paulo, SP, Brazil, in 2008.

Presentation Title: Museum of Tomorrow Structural Design

The presentation will show the concept design and main challenges of the Museum of Tomorrow project constructed in Rio de Janeiro and open in 2015.

2nd Speaker: Jéssica Dantas, Civil Engineer

Jéssica Dantas is a Civil Engineer with a master's degree in Innovation in Construction from the University of São Paulo (USP). She serves as Director at both IBRACON and ALCONPAT Brasil and leads sector transformation as Quality and Technological Development Coordinator at Cyrela. Dantas is also the creator of the first postgraduate program in Industrialization of Construction recognized by the Brazilian Ministry of Education (MEC) and teaches in several postgraduate courses focused on Innovation in Construction. With a strong technical and academic background, she actively participated for five years in IBRACON's student competitions, dedicating herself to challenges in concrete technology. In 2018, she represented Brazil at the ACI Bowling Ball Competition held in Salt Lake City, UT, USA, gaining international recognition. Her career includes lectures at national and international events, reinforcing her commitment to the dissemination of knowledge and the sustainable and technological development of the construction sector.

Tuesday, July 8, 2025, 5:00 PM-6:00 PM São Paulo Time / 4:00 PM-5:00 PM EDT (New York Time)
Co-Host Organization: IBRACON - Instituto Brasileiro do Concreto

Presentation Title: Brazilian Innovation in Concrete: Disruptive Technologies Shaping the Future of Construction

Brazil's concrete sector has gained global recognition for adopting and developing innovative solutions that transform traditional construction practices. This presentation will explore a broad overview of the main disruptive Brazilian technologies, from 3-D concrete printing to new materials and advanced construction methods. Real case studies will be showcased to illustrate how these innovations enhance efficiency, versatility, and sustainability of structures, positioning Brazil as a global leader in modern construction. An opportunity to learn about the latest advances in concrete innovation and the practical impacts of these technologies in today's market.

Tuesday, July 8, 2025

3:00 PM-4:00 PM Guatemala City Time / 5:00 PM-6:00 PM EDT (New York Time)

Co-Host Organizations: ACI Guatemala Chapter and Instituto del Cemento y del Concreto de Guatemala (ICCG)

American Concrete Institute
Guatemala Chapter

INSTITUTO DEL CEMENTO Y DEL CONCRETO DE GUATEMALA

Websites: ACI Guatemala Chapter and https://www.iccg.org.gt/

The ACI Guatemala Chapter was founded in 2006 and currently has 31 international members, 30 local members, and 1429 student members. Within their main activities, the Chapter sponsors events targeted to the 24 active Student Chapters in Guatemala—for example, seminars, ACI Certifications (reduced price), and competitions (National Competition of Concrete Cylinders since 2012, Research Award since 2015, and Concrete Soccer Ball Competition since 2019). Chapter members have also been active participants in the National Standardization Technical Committees of Cement and Concrete. The ACI Guatemala Chapter conducts seminars aimed at professionals and technicians and is also a Local Sponsoring Group (LSG) that currently develops six ACI Certification programs. Most of the Chapter activities are developed with the support of the Instituto del Cemento y del Concreto de Guatemala (ICCG), an ACI International Partner with whom ACI has a Memorandum of Understanding.

ICCG was founded on the initiative of the country's cement and concrete industry in November 2006. ICCG is an autonomous, private, civil, nonprofit, nonreligious, and nonpolitical association formed by companies from the cement and concrete industry in Guatemala. ICCG has relationships with entities and associations at a national and international level whose objectives are similar to theirs, including ACI, the Inter-American Cement Federation (FICEM), the Ibero-American Federation of Ready Mixed Concrete (FIHP), ASTM International, and others. ICCG's Mission is to promote and develop the cement and concrete industry in Guatemala. ICCG's Vision is to develop Guatemala as a country with a culture of cement and concrete use and a sustainable future in construction, consistent with the conservation of the environment, safety, performance, durability, and social responsibility.

Local Moderator: Plinio E. Herrera, Concrete R&D Manager, Cementos Progreso, FACI, President, ACI Guatemala Chapter

Plinio E. Herrera is the Concrete Research and Development (R&D) Manager at Cementos Progreso in Guatemala City, Guatemala. During his more than 35 years of experience in concrete materials, he has promoted the research and development of products and solutions related to concrete and its applications and has worked on knowledge transfer to the construction industry and academia in subjects like cement, concrete, aggregates, concrete pavements, housing, and three-dimensional (3-D) printing. He has reviewed and sponsored several theses and experimental projects with students from state and private universities in Guatemala. He has participated in proposing, reviewing, and translating national standards related to cement, concrete, and their applications. He has been a speaker in international seminars and meetings related to cement, aggregates, concrete technology, concrete roads, housing, and 3-D printing. Herrera is an ACI Fellow and President of the ACI Guatemala Chapter. He is also a member of ACI Committees E701, Materials for Concrete Construction; 130, Sustainability of Concrete; 211, Proportioning Concrete Mixtures; 225, Hydraulic Cements; and 237, Self-Consolidating Concrete, and ACI Subcommittees C601-E, Concrete Construction Sustainability Assessor; 130-G, Education; and 211-N, Proportioning with Ground Limestone and Mineral Fillers. He has participated in translation reviews for ACI International Development and ACI University. He is also a member of ASTM International and the American Society of Civil Engineers (ASCE). His research interests include self-consolidating concrete, fiber-reinforced concrete, high-strength/high-performance concrete, ultra-high-performance concrete, and 3-D printing materials and

processes. He received his degree in civil engineering from the Universidad de San Carlos de Guatemala (USAC), Guatemala City, Guatemala, in 1994, and his MBA from the Pontificia Universidad Católica de Chile (PUC), Santiago, Chile, in 2008. He is a licensed civil engineer in Guatemala. Recently, he received the distinction of 25 years of professional service as a civil engineer in Guatemala.

Co-Moderator: Xiomara Sapón-Roldán, Knowledge & Training Manager, ICCG, and Vice President, ACI Guatemala Chapter

Xiomara Sapón is the Knowledge and Quality Manager at the Cement and Concrete Institute from Guatemala, ICCG. Her local and international involvement also includes ASTM International, National Guatemalan Standards Organization (COGUANOR), the Guatemala ALCONPAT (Latin American Association for the Quality Control, Pathology, and Rehabilitation of Buildings) Chapter, Building Commission for the Guatemalan National Council for Science and Technology, the Iberoamerican Ready Mixed Concrete Association (FIHP), and the Housing and Sustainability Committees of the Inter-American Cement Federation (FICEM). She is ACI Board Member, Chair of ACI Subcommittee 13-1, International Certification, and is a member of the Educational Activities Committee and ACI Committees 130, Sustainability of Concrete and C602, International Standards Certification Programs Oversight Committee. She received the 2021 ACI Certification Award and the 2016 ACI Chapter Activities Award. She received her civil engineering degree from San Carlos University, Guatemala, Guatemala, and her master's in engineering and industrial management from Rafael Landívar University, Guatemala, Guatemala. She also completed studies in organizational strategy at the Massachusetts Institute of Technology, Cambridge, MA.

1st Speaker: Ariel Osorio, Concrete Research and Development Technical Advisor, Progreso

Ariel Osorio is a seasoned professional with over 15 years of experience in the concrete industry, specializing in material innovation, sustainable construction technologies, and the development of advanced solutions for the construction sector. He currently serves as Technical Assessor for Concrete Research and Development at Progreso, where he leads initiatives focused on the formulation of high-performance cementitious materials, the development of innovative concrete applications, and the transfer of technical knowledge to both industry professionals and academic institutions. His professional expertise encompasses applied research in environmentally friendly binders, as well as the development and implementation of emerging technologies such as 3D concrete printing. These areas of focus aim to enhance construction processes by improving efficiency, sustainability, and durability. Osorio holds internationally recognized certifications from ACI, including Concrete Field-Testing Technician – Grade I and Concrete Construction Special Inspector, which validate his proficiency in quality control and technical inspection of concrete works. He earned a degree in civil engineering from the University of San Carlos of Guatemala, a master's in structural engineering from the Mariano Gálvez University of Guatemala, and a master's in concrete engineering from the Polytechnic University of Valencia, Spain. He is also an active member of the ACI Guatemala Chapter and the Latin American Association for Quality Control, Pathology, and Restoration of Construction (ALCONPAT) – Guatemala.

Presentation Title: Largest 3-D Printed Building in Latin America

As part of its commitment to innovation, Progreso has completed the construction of the largest 3-D printed building in Latin America—a groundbreaking project that will house Mixto Listo's Dry Mix Operation Offices and Laboratory. Located at Planta San Miguel in Sanarate, the structure represents a turning point in the region's construction practices and stands as a milestone in the ongoing transformation and automation of the construction industry for the years ahead.

Covering a total area of 508 square meters, the building is composed of six functional modules, printed in 32 effective days—equivalent to 154 hours—using COBOD's BOD2 printer. The structure was built using a specially formulated "Dry Mix Mortar," developed by Progreso's Research and Development Center (CID). This cementitious material ensures high precision, structural efficiency, and optimal use of resources.

This achievement is the tangible result of years of applied research, driven by the Alpha and Beta projects led by CID. These initiatives laid the foundation for validating the construction method, developing specialized materials, and mastering 3D printing technology.

The building's curved facade takes inspiration from cacti, which naturally regulate high temperatures, while its overhanging walls are architecturally influenced by Mayan pyramids—highlighting the company's deep commitment to sustainable construction.

2nd Speaker: Benjamín López Manrique, Infrastructure/Research & Development Technical Advisor, Progreso

Benjamín López Manrique currently serves as Infrastructures/Research & Development Technical Advisor at Progreso. He received his master's degree in business administration from Rafael Landívar University, Guatemala City and received his civil engineering degree from the University of San Carlos of Guatemala, Guatemala City. Manrique is an ACI Certified Concrete Flatwork Technician. He has also been trained by the Latin American Association of Quality Control, Pathology, and Recovery of Construction (acronym in Spanish ALCONPAT) in Introduction to Pathological Problems in Concrete; Evaluation and Diagnosis of Pathological Problems in Concrete Structures; and Rehabilitation of Concrete Structures. Manrique has experience in the implementation of ISO/IEC 17025 Standard for the accreditation of material testing laboratories and is a member of the Technical Standards Committee for Cement and Concrete in Guatemala. In pavements and infrastructure, Manrique has developed professional skills in the design of rigid pavements using AASHTOWare ME and functional and structural evaluation of rigid and flexible pavements using a falling weight deflectometer (FWD) and laser profilometer, and is involved in the design and construction of roller-compacted concrete (RCC) pavements and design and construction of lime-and cement-stabilized soils. As member of the ALCONPAT Guatemalan Chapter, Manrique has participated in the evaluation of pathologies in reinforced concrete structures.

Presentation Title: Electrical Resistivity in Reinforced Concrete Structures

This presentation will cover the following aspects:

- Durability requirements according to ACI 318
- Electrical indication test of concrete's ability to resist chloride ion penetration
- Tests used to evaluate voids and permeability
- Determination of density, water absorption, and voids in hardened concrete
- Resistivity of hardened concrete
- Types of resistivity
- How resistivity is measured
- Application case

Tuesday, July 8, 2025

4:00 PM-5:00 PM El Salvador Time / 6:00 PM-7:00 PM EDT (New York Time)

Co-Host Organization: **Fundación Salvadoran Institute of Cement & Concrete (ISCYC), El Salvador**

Website: https://www.iscyc.net/

The Salvadoran Cement and Concrete Institute (ISCYC) is a non-governmental organization (NGO) with 40 years of experience. Its purpose is to promote the appropriate use of cement and concrete, and to spread knowledge about their technologies, research processes, and diverse applications.

The Institute collaborates closely with the construction industry, offering services such as:

- Technical training & consulting.
- Verification of concrete structures
- Laboratory testing
- Equipment calibration
- Quality control

ISCYC is also part of an international network of specialized associations such as: FICEM, and FIHP.

Local Moderator: Karla J. Benítez Medina, Executive Director, ISCYC

Karla J. Benítez Medina is an architect and MBA with specialization in digital marketing, and currently studies artificial intelligence, focused on its application in business management, administration, and project optimization. She has been part of the cement and concrete industry since 2001, and since 2016 has served as Executive Director of ISCYC. During this time, she has played a vital role in strengthening regional and international cooperation, modernizing technical services, and advancing professional development across the sector. She has also been invited to serve as a judge for the prestigious ACI Excellence in Concrete Construction Awards, reflecting her growing recognition in the global concrete community. Medina is passionate about innovation, sustainable development, and the transformation of the construction sector through technology and knowledge. She represents ISCYC at international forums and is committed in fostering a future-oriented vision of construction in Latin America.

1st Speaker: Rodrigo Garay, Founding Member and President, Salvadoran Association of Structural Engineering (ASIES)

Rodrigo Garay is a structural engineer with extensive experience in seismic design and resilient infrastructure. He is the General Manager of INGENYARSE, a consulting firm specializing in structural engineering. As a founding member and current President of the Salvadoran Association of Structural Engineering (ASIES), he has been instrumental in shaping the organization's vision and initiatives. Additionally, he serves on the Board of Directors of ISCYC, where he has made key contributions in supporting professional training activities and promoting the dissemination of construction standards in El Salvador. He is a frequent speaker at national and international conferences and a consultant on high-impact infrastructure projects across the country.

Presentation Title: **Performance-Based Seismic Design for Post-Tensioned Concrete Bridges: Innovations and Challenges in Latin America**

The growth of road infrastructure in Latin America demands highway bridges capable of combining structural efficiency, durability, and high resilience to severe earthquakes and adaptation to the effects of climate change, specifically increasingly frequent river flooding. This conference reviews the latest advances in performance-based design (PBD) applied to segmental and successive segmental bridges in post-tensioned concrete, with an emphasis on high-acceleration regions such as El Salvador. Energy dissipation and supplementary damping strategies (isolators, fluid-viscous devices) will be discussed. Case studies such as the Surf City Bridge (117 m main span), the Manuel José Ace Bridge (173 m main span), and the Titihuapa Bridge (90 m main span) will be presented, detailing nonlinear simulations compliant with AASHTO. Attendees will gain practical guides, recent regulatory references, and lessons learned that can be transferred to projects of any scale.

2nd Speaker: Rafael Escalón, CEO, Construcciones Nabla and President, ISCYC

With over 25 years of experience, Rafael Escalón is a prominent Salvadoran architect and CEO of Construcciones Nabla, a leading construction firm in El Salvador. A graduate of Harvard University, Cambridge, MA, USA, he has led major residential, commercial, and industrial projects such as Torre Avitat Duo, Plaza Mundo Usulután, and Pricesmart San Miguel. Serving as President of ISCYC since 2020 and a Board member of CASALCO, he has become a leading voice in construction innovation and project leadership in the region.

Presentation Title: **Industrialized Housing in El Salvador: A Concrete-Based Approach by Nabla**

In response to the growing demand for fast, safe, and sustainable housing solutions, Nabla presents an innovative industrialized housing model based on concrete. This approach offers a modern alternative to traditional construction methods, significantly reducing building times without compromising quality or durability.

The discussion will showcase how this model combines technology, efficiency, and a social vision to deliver high-standard housing tailored to the Salvadoran context. Through real-world examples, attendees will see how concrete-based industrialization enables rapid project scaling, resource optimization, and improved quality of life for communities.

An ideal solution for developers, public institutions, and strategic partners seeking to transform the housing landscape in El Salvador.

Tuesday, July 8, 2025

5:00 PM-6:00 PM Merida Time / 7:00 PM-8:00 PM EDT (New York Time)

Co-Host Organization: ALCONPAT International

Website: https://alconpat.org/

ALCONPAT International is a non-profit association of professionals dedicated to the construction industry in all its areas, who jointly help to solve the problems that arise in the structures from the planning, design, and project to the execution, construction, maintenance, and repair of the same, promoting professional updating and education as fundamental tools to safeguard the quality and integrity of the services of its professionals.

Local Moderator: Dr. Jorge Alberto Briceño-Mena

Dr. Jorge Alberto Briceño-Mena works as a Researcher for Mexico at Secihti México since 2024. His primary areas of interest include local materials and revaluation, housing and urban environment, corrosion, durability, and sustainability of reinforced concrete. Mena serves as the deputy director of technical recommendations for ALCONPAT International. He is a member of the National Organization for Standardization and Certification of Construction and Building, S.C. (ONNCCE). Mena has received some national and international awards, such as Outstanding or Productive Young Researcher from ALCONPAT International.

1st Speaker: Pedro Castro Borges, PhD

Dr. Pedro Castro Borges has worked at CINVESTAV-IPN Unidad Merida, Yucatán, México since 1986 where he is a researcher. His main areas of interest are corrosion, durability, and sustainability of reinforced concrete. Castro is Past President of the Mexican Section of NACE, ALCONPAT, and past Honorary President of RILEM. He has been the Chair of prestigious conferences like CONSEC, GORDON Conference, and Rilem Annual week. Castro is a Fellow of NACE and Alconpat, as well as Honorary Member of IBRACON and ALCONPAT. He is also Doctor Honoris Causa of the University of Alicante, Spain.

Presentation Title: ALCONPAT International—Past, Present, and Future

ALCONPAT International is a non-profit association that brings together professionals from all areas of the construction industry. Its main focus is to promote and develop quality, pathology, and recovery in construction. The association organizes notable events such as the CONPAT congresses, held internationally every two years, which address key issues in the sector. Additionally, it offers a wide range of products and services, including specialized publications like its scientific journal, technical recommendations, and informative bulletins that keep professionals updated on the latest advances and discoveries in the industry. The Education Department of ALCONPAT International provides continuous training programs, including courses, workshops, and seminars, offering learning and professional development opportunities. ALCONPAT International also promotes research and development through collaborative projects, research seminars, refresher courses, and webinars with internationally renowned specialists, fostering excellence, knowledge exchange, and continuous progress in the sector.

2nd Speaker: Montserrat Soria Castro, PhD

Dr. Montserrat Soria Castro received her PhD in physical-chemical sciences from the Department of Applied Physics at CINVESTAV-Mérida, Merida, Yucatan, Mexico. Soria has completed two postdoctoral fellowships and was awarded with the SNII 1 distinction. Her field of research is materials science, particularly nanotechnology and its application, which has allowed her to publish scientific and divulgation articles and book chapters, and collaborate in obtaining a patent, in addition to participating in conferences and national and international academic research stays. Soria is the Director of the ALCONPAT/PENETRON International Youth Seminar and editor of the newsletter “Entre Patólogos” (Among Pathologists).

Presentation Title: Characterization of Sustainable Nano- and Bio-Materials for the Durability of Construction Materials in Yucatán, México

The research work discusses the use of sustainable nano and biomaterials in cement mortars as a method to obtain durability of construction materials of the Yucatan region. The natural product comes from the organic extraction of the bark of Albizia tomentosa, a native tree. Characterization of the extract by NMR and TGA revealed the presence of phenols such as epicatechin and carbohydrates such as sucrose. The inorganic material is calcium zinc hydroxide dehydrate [$Ca(Zn(OH)_3)_2 \cdot 2H_2O$] nanoparticles synthesized by the sol-gel method and were characterized by DRX, TGA, SEM, and BET. Other physicochemical techniques were employed for cement and aggregates to determine their mineralogical composition (XRD) and elemental analysis (SEM-EDS). The organic extract and inorganic nanoparticles were applied at a concentration of 5 mg/ml during the hydration and curing processes of the mixture. The electrical resistivity, capillary water absorption and ultrasonic propagation velocity properties of the cement mortars were measured and compared with the reference mortar, at a curing time of 7, 28, and 96 days. The results showed that the use of the tested nano and biomaterials can improve the durability of concrete structures.

Tuesday, July 8, 2025

6:00 PM-7:00 PM Mexico City Time / 8:00 PM-9:00 PM EDT (New York Time)

Co-Host Organization: ACI Central & Southern Mexico Chapter

Sección Centro y Sur de México

American Concrete Institute

Website: https://acimexico-centro.org/

The first American Concrete Institute (ACI) chapter in Mexico was legally established on August 17, 1990, under the name of the ACI Mexico City Chapter. Beginning on February 3, 1994, the chapter expanded its territorial operations, achieving official recognition as the ACI Central and Southern Mexico Chapter. Thanks to teamwork, characterized by the quality performance of the Institute's members and directors, they have achieved the distinction of being recognized, among the 99 existing chapters in the world (including the USA), as an “ACI Outstanding Chapter” in 1992, 1993, 1996, 1997, 2007, 2009, 2013 and 2015; and an “ACI Excellent Chapter” in 1995, from 1998 to 2006, and in 2008, 2010, 2011, 2012 and 2014. The Chapter’s activities extend through Aguascalientes, Colima, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico City, Mexico State, Michoacan, Nayarit, Oaxaca, Puebla, Queretaro, Tlaxcala, and Veracruz, Mexico.

Local Moderator: Esteban Astudillo de la Vega, Managing Director, MAISE

Esteban Astudillo de la Vega graduated from the Escuela Superior de Ingeniería y Arquitectura (ESIA – IPN) in Mexico. He received his master's degree from the École Normale Supérieure Paris-Saclay, Gif-sur-Yvette, France, and his doctorate from the École Normale Supérieure Paris-Saclay and the Université Paris 6, Paris, France. He has worked as a structural engineer for over 25 years, designing concrete structures throughout the country. Among these are the "University Tower," a concrete structure built in the former lake area of Mexico City, the area with the highest seismic coefficient in the center of the country. It is a 200 m tall structure with 45 m deep basements, and the “Torre T.OP” in Monterrey, Mexico, a 305 m tall concrete building, currently the tallest in Latin America. Recently, in collaboration with Colaco Engineers Inc., he worked on the structural design of the “RISE Tower,” a 400 m tall concrete building also in Monterrey, Mexico, currently under construction. His professional practice has been characterized by the implementation and optimization of innovative structural systems and solutions with architectural quality through the use of high-performance concrete. He received the 2024 Best Engineering Practice Award from the Mexican Society of Structural Engineering (SMIE). In collaboration with M.Sc. Arturo Gaytán, he worked on the winning project of the 2024 ACI Excellence in Concrete Construction for Low-Rise Concrete Structures. He served as President of the Mexican Society of Structural Engineering (SMIE) from 2019 to 2020. He is Member of the Review Subcommittee of the Complementary Technical Standard for the Design and Construction of Concrete Structures for Mexico City; a member of the French Association of Civil Engineering (AFGC) and ACI; and a member of the ACI Mexico Central-South Chapter Board of Directors (2023 to 2025).

1st Speaker: Alma Reyes, Principal, AURAC Consulting & Construction

Alma Reyes is a civil engineer, graduating with honors from the National University Autonomous of Mexico. She received her master’s degree in civil engineering in applied science from the University of Sherbrooke, Quebec, Canada, where she received the Leonard Da Vinci merit medal. Reyes is an international specialist in concrete and cement advanced technology, high performance, microstructure, pathology, repair, and durability of concrete structures. She has broad experience in the development, implementation, and specifications of avant-garde technologies in the United States, Canada, Mexico, and Latin America. Reyes is Principal of

AURAC Consulting & Construction where she has collaborated in multiple projects in Mexico, Latin America and the United States. She actively participates in various Mexican civil engineering and construction-related organizations such as the Society of Structural Engineers (SMIE), where she is past President, being the first woman to occupy such position and also the first materials-related specialist to collaborate as President. SMIE is one of the most prestigious civil engineering organizations in Mexico with close to 50 years of service. Reyes has actively participated in ACI technical committees such as ACI 212, Chemical Admixtures; 223, Shrinkage-Compensated Concrete; 237, Self-Consolidating Concrete; and 544, Fiber-Reinforced Concrete. She has also participated in the selection for ACI awards for outstanding papers and young professionals. Reyes was also President of the ACI Central-South Mexico Chapter; Vice President of Technology Development of the National Precast and Pre-stress Association of Mexico (ANIPPAC); and also lead the elaboration of concrete-related standards at the Mexican Standard Organism (ONNCCE).

Presentation Title: Concrete Technology: A Science Beyond the Knowledge

Concrete technology has been well-received in prestigious university programs and important projects in various countries. However, it is time to take further steps to recognize the importance of concrete as a valued material; that, when taking into consideration all avant-garde related technologies, exalts a wise use of natural resources due to its durability and sustainable attributes. Furthermore, concrete technology applications are a must at all levels of civil engineering and opportunities to unify efforts to make a more sustainable planet.

2nd Speaker: Armando Marines Muñoz, Value Proposition and Innovation Business Developer, Holcim Mexico

Armando Marines Muñoz is the Value Proposition Coordinator for Holcim México's RMX and Industrial Business. He received his degree in civil engineering from the Universidad Autónoma de Nuevo León, Nuevo León, Mexico, and his master's degree in industrial technology from Texas State University in San Marcos, TX, USA. His experience includes working as a Project Engineer on hydraulic infrastructure projects in the Valley of Mexico. Muñoz joined Holcim Mexico in 2013 as a Project Coordinator at the Holcim Mexico Center for Technological Innovation for Construction. Prior to his current role, he served as Coordinator of Strategic Solutions and Projects, where he was responsible for sustainability and digital initiatives, training and standardization activities, and the Escuela Mexicana de la Construcción (Mexican School of Construction). Currently, he is the Marketing Coordinator for the Ready-Mix Concrete and Bulk Cement businesses at Holcim Mexico, overseeing value proposition, sustainability, and innovation.

Presentation Title: Driving Sustainability through Decarbonization in Construction Materials

This presentation will provide an overview of Holcim Mexico's approach to value proposition, sustainability, and innovation in its concrete and cement businesses. It will showcase how these three pillars are interconnected and drive the company's strategy. Specific initiatives and projects related to product development, customer solutions, and sustainable practices will be highlighted.

Wednesday, July 9, 2025
1:00 PM-2:00 PM Auckland Time / 9:00 PM-10:00 PM EDT (New York Time)

Co-Host Organization:
Concrete New Zealand – Learned Society

Website: https://concretenz.org.nz/page/learned_society_home

The Concrete New Zealand (NZ) – Learned Society is a professional society that sits under the umbrella of Concrete NZ. The Learned Society facilitates the sharing of industry knowledge, participates in the development of concrete and construction, and provides a foundation for building valuable business networks in New Zealand and overseas. The Learned Society aims to encapsulate the wealth of expertise of its membership and to output this in the form of seminars, technical publications, and conferences for the betterment of the concrete and construction industry at large. With an emphasis on 'Learned', the Society is focused on technical excellence and is not influenced by any external commercial interests. The Concrete NZ Learned Society maintains strong relationships with affiliated organizations internationally, including the American Concrete Institute (ACI), the Concrete Institute of Australia (CIA), and the Federation Internationale du Beton (*fib*).

Local Moderator: Rick Henry, Associate Professor

ACI member Rick Henry is an Associate Professor in the Department of Civil and Environmental Engineering at the University of Auckland, Auckland, New Zealand, where he teaches the design of concrete structures. His research interests include the seismic design and assessment of reinforced concrete structures and in particular precast concrete construction and low-damage design. Henry is the President of the Concrete NZ – Learned Society. He has served as a member of the technical committee for the NZ Concrete Structures Standard (NZS 3101:2006) and is a current member of ACI Subcommittee 318-H, Seismic Provisions.

1st Speaker: Ethan Page, Senior Structural Engineer, WSP

Ethan Page is a Senior Structural Engineer with 10 years of professional experience in residential and commercial structural and civil infrastructure engineering projects with WSP. Page has comprehensive experience with various construction materials using design codes from New Zealand and international sources. Page has spent the last four years seconded to Auckland's City Rail Link project as a Senior Design Engineer and the CPS structural lead at the Waihorotiu Station, supporting its design and construction.

Presentation Title: City Rail Link Te Waihorotiu Station—Sustainability in Design and Construction

The City Rail Link is a $4.4 billion underground metro extension project In Auckland, New Zealand, and the largest public transport infrastructure project ever to be undertaken in New Zealand. It is estimated that it will allow the current rail network to at least double in capacity to cope with 54,000 passengers an hour at peak travel times, and is the catalyst for reshaping a vibrant and sustainable city for people to live in. The structures include two new underground rail stations: Te Waihorotiu is located beneath Albert Street, extending between Wellesley and Victoria Streets, and Karanga-a-Hape, between Beresford Square and Cross Street. This presentation focuses on the sustainability objectives of the City Rail Link project and aligning these with cultural, industry, and global initiatives to positively contribute to the environment and society. It describes the controls adopted to achieve the project's sustainability targets during the design and construction of Te Waihorotiu Station's concrete underground structure, and review the lessons learnt that can inspire the future of sustainable concrete design in major infrastructure projects.

2nd Speaker: Gonzalo Munoz, Research Fellow, University of Canterbury

Gonzalo Muñoz is a postdoctoral researcher at the University of Canterbury, working on the development of design guidelines for the seismic retrofit of RC buildings. He received his PhD from the University of Auckland, Auckland, New Zealand, where he studied the post-earthquake assessment of damaged and repaired reinforced concrete wall buildings. He received his master's degree from the Universidad de Chile, Santiago, Chile, focusing on quantifying the influence of door-type discontinuities on the seismic performance of reinforced-concrete walls. His research interests include the seismic design and assessment of reinforced-concrete structures, experimental testing, and modelling of reinforced-concrete structural systems.

Presentation Title: Assessing the Seismic Performance of Earthquake-Damaged and Repaired Reinforced-Concrete Walls

This study investigates the seismic capacity of earthquake-damaged reinforced concrete (RC) walls and evaluates repair techniques to restore their seismic performance. Following the 2010-2011 Canterbury Earthquake Sequence in New Zealand, about 60% of multistorey RC buildings in Christchurch's central business district were demolished, often despite only minor damage. This high demolition rate, partly driven by uncertainty around residual structural capacity, motivated the study.

The research involved a two-phase experimental program. In the first phase, three walls were tested: two with pre-cyclic loading to simulate earthquake damage, and a third wall repaired using epoxy injection and mortar. Comparisons with a control wall showed reduced stiffness in damaged walls and partial recovery after repair. While surface damage like cracking and spalling did not reduce residual strength, buckled longitudinal reinforcement significantly reduced displacement capacity. The second phase tested repair of heavily damaged walls by replacing concrete and reinforcing steel. Welded connections were used to join new and existing bars at various locations. These repairs successfully restored stiffness, strength, and displacement capacity to levels comparable with undamaged walls, despite minor differences in local behavior.

Data from this study and existing literature were used to provide recommendations for replacement of concrete and reinforcing steel bars in RC components. Part of the recommendations were implemented in the recently published FEMA P2335 report Guidelines for Post-Earthquake Repair and Retrofit of Buildings Based on Assessment of Performance-Critical Damage.

Wednesday, July 9, 2025

12:00 Noon-1:00 PM Sydney Time / 10:00 PM-11:00 PM EDT (New York Time)

Co-Host Organization: Concrete Institute of Australia (CIA)

Website: https://concreteinstitute.com.au/

The Concrete Institute of Australia is an independent, not-for-profit professional association made up of members who share a common interest in staying at the forefront of concrete research, technology, application, design, construction, and sustainability in Australia. The Concrete Institute of Australia's vision is for excellence in concrete.

Local Moderator: David Millar, Chief Executive Director, Concrete Institute of Australia

ACI member David Millar is the Chief Executive Officer of the Concrete Institute of Australia (CIA). As a civil engineering graduate from the University of Sydney, Sydney, Australia, Millar began his career in the concrete aggregates industry, before expanding into precast concrete, construction chemicals, and concrete materials. With a great appreciation of what industry and professional associations can provide to the concrete industry, Millar has been, and is still, an active member on a number of concrete-related committees as a volunteer. He was also the Executive Director of the Concrete Pipe Association of Australasia from 2005 to 2013 before commencing his current role with the CIA in 2014. In his time as CEO with the CIA, Millar has convened five major conferences for the Institute, been at the forefront of the transition to online education products, introduced focus groups related to NEXGen and Women in Concrete, and overseen significant growth in membership, particularly with Young Professionals. He has had numerous positions on standards and technical committees and currently is the CIA representative on BD10 Portland and Blended Cements, as well as being an elected member of the Standards Australia Membership Committee. Millar is also a graduate of the Australian Institute of Company Directors and a member of the Australasian Society for Association Executives. Millar's 30 years in the construction industry, including 20 years as an association executive, has revolved entirely around concrete, and through this experience he understands the importance this most traditional, but ever evolving material has on society and the environment.

1st Speaker: Clare Tubolets, Chief Executive Officer, SmartCrete CRC

Clare Tubolets is CEO of SmartCrete Cooperative Research Centre (CRC), an organization designed to support the concrete sector to undertake research and development to facilitate transition to a sustainable future. Tubolets has extensive CRC expertise, having been involved in CRCs as an industry and research participant, CRC Manager, and Government Program Manager. She is an agile practitioner, passionate about unlocking collaborative potential by bringing together world leading research and industry specialists to solve real-world problems.

Presentation Title: Pathways to Sustainability

Australia has set ambitious net-zero targets which will require collaboration and participation across all sectors and supply chains. The pathways to net-zero are multi-faceted, with many challenges yet to be overcome in the technical development and market adoption of sustainable products, processes and services. This presentation will provide an overview of the Australian concrete sector's decarbonization roadmap, as well as the market barriers and enablers to net-zero. Effective collaboration across research,

government, materials, design, engineering, and construction to address the pathways outlined in the roadmap will empower the Australian built environment's transition to net-zero.

2nd Speaker: Dr. Warren South, Director, Valkokivi, and CIA National President

Dr. Warren South has worked in the heavy construction materials industry for over 37 years. He started his career in cement in 1985 with Blue Circle Southern Cement at Berrima. In 1996, he moved to New Zealand to become Technical Manager for Golden Bay Cement, and then back to Australia to receive his doctorate in civil engineering from the University of Wollongong, Wollongong, New South Wales, Australia, in 2010. South was the Director – Research and Technology, for the Cement Concrete and Aggregates Australia, followed by the position of CEO of SmartCrete. South is also an Associate Professor at the University of Wollongong and an Adjunct Associate Professor at the University of Technology – Sydney, Sydney, Australia, and is also the current National President of the CIA

Presentation Title: Walking the Pathway to Decarbonization

Four years after the publication of the cement and concrete industry decarbonization plans, it is timely to look at what progress has been made in moving to lower carbon products. In the original document, materials and composition were to provide up to 20% of the total savings needed to achieve net-zero by 2050, and there have been some interesting developments to enable these savings to be realized. There are still further developments in training to continue this effort. Pleasingly, the "Standards and Codes" landscape is also responding, allowing wider use and application of these innovative developments. This presentation will present a "state-of-the-art" synopsis of where the Australian industry stands.

Wednesday, July 9, 2025
12:00 PM-1:00 PM Seoul Time / 11:00 PM-12:00 AM EDT (New York Time)

Co-Host Organization: Korea Concrete Institute

Website: https://www.kci.or.kr/eng/

The Korea Concrete Institute (KCI) is an institution composed of professionals from all fields of concrete research, education, industry, and applications in the areas of concrete material, structural analysis and design, construction, repair and strengthening, and concrete-related manufacturing and production. In the past century, rapidly advanced concrete knowledge and technology have greatly contributed in construction of various buildings, roads, bridges, offshore structures, dams, and other civil infrastructures. Especially, in the past two decades, technology associated with concrete quality and production have seen incredible growth and transformation all over the world in the areas of material, design, construction, repair and strengthening, manufacturing, and so on. The advancement of concrete technology will only gain momentum for achieving better and newer concrete technology in the future. Therefore, to maintain Korea's concrete technology at the world-class level, everyone associated with the field of concrete, ranging from businessmen to professors and from practicing engineers to researchers, must cooperate and collaborate. To achieve this endeavoring task, KCI was found to develop, supply, and advance concrete-related technology. KCI is an association of professionals working in the field of concrete. The institution's main goal is to advance knowledge, technology, applications of concrete materials, structural analysis and design, construction, repair and strengthening, and manufacturing. The goal can be made possible by active participations in KCI by academic institutions, industries, research laboratories, and government branches on fundamental research, international collaborations, technical instructions, and other programs. By everyone in the concrete field working together as one and as partners, we can surely advance concrete technology, research, applications, and industry-academia collaborations in Korea.

Local Moderator: Hyeon-Jong Hwang, Associate Professor, Konkuk University

Dr. Hyeon-Jong Hwang is an Associate Professor in the School of Architecture at Konkuk University (KU), Seoul, Korea. Before that, he was an Associate Professor in the College of Civil Engineering at Hunan University, Hunan, China. He received his BE, MS, and PhD from the Department of Architecture & Architectural Engineering of Seoul National University in 2008, 2010, and 2014, respectively. His research interests include reinforced concrete and precast concrete structure, steel-concrete composite structure, inelastic analysis and design of building structures under static and extreme loads, and machine learning. He has published 123 international journal papers, including 23 in the *ACI Structural Journal*, with an h-index of 27 and a total of 2,643 citations. He has published 12 textbooks and registered 7 patents. Hwang has won the top 1% reviewer award (2019) in Web of Science. He has worked as a member of ACI Committees 352, Joints and Connections in Monolithic Concrete Structures; 369, Seismic Repair and Rehabilitation; and 408, Bond and Development of Steel Reinforcement, as well as ACI Subcommittees 318-L, International Liaison; and 369-0A, General Provisions, Frames, and Diaphragms.

1st Speaker Name: Thomas Kang, Professor, Seoul National University

Dr. Thomas Kang, FACI, PE, is a Professor in the Department of Architecture and Architectural Engineering at Seoul National University (SNU) in Seoul, Korea. Prior to joining SNU, he served as a Professor in the School of Civil Engineering and Environmental Science at the University of Oklahoma, Norman, OK. He has also held visiting and affiliated positions at institutions across the United States, Japan, and South Africa, including the University of Illinois Urbana-Champaign, University of Hawaii at Mānoa, University of Tokyo, and University of Cape Town. Kang received his BS from SNU in 1998, his MS from Michigan State University, East Lansing, MI, USA, in 2000, and his PhD from the University of California, Los Angeles in 2004. He is a Fellow of ACI, the Post-Tensioning Institute

(PTI), and the Korean Academy of Science and Technology (KAST). Kang's contributions have been recognized with numerous awards, including the T.Y. Lin Award from ASCE (2025), the Wason Medal for Most Meritorious Paper from ACI (2009), the Kenneth B. Bondy Award for the Most Meritorious Technical Paper from PTI (2013 and 2023), and the Martin P. Korn Award from PCI (2023). He currently serves as Editor-in-Chief of Wind and Structures and as an Associate Editor for the PTI *JOURNAL*. Kang has authored over 200 international journal papers, including more than 60 in the *ACI Structural Journal*. His research focuses on the design and behavior of reinforced, prestressed, and post-tensioned concrete structures, as well as the wind effects on structural systems.

Presentation Title: Performance-Based Wind Design of Tall Concrete Buildings

Mitigating wind-induced loads is a critical challenge in tall building design due to their impact on serviceability and strength, especially when wind loads exceed seismic demands. Traditional passive solutions, such as aerodynamic corner modifications (e.g., chamfered and recessed corners), have proven effective in reducing wind-induced effects by up to 30%. Recently, performance-based wind design (PBWD) has introduced controlled inelastic behavior as a means to reduce design wind forces, particularly by dissipating resonant components. This study evaluates and compares the effectiveness of aerodynamic treatments and inelastic wind design on three 160 m (525 ft) tall concrete buildings with varying corner configurations. Using wind tunnel data and both linear and nonlinear time history analyses, results showed that inelastic systems (with a wind load reduction factor of 2) can achieve similar or greater reductions in design forces compared to elastic systems with corner modifications—especially at higher wind speeds. Combining both strategies yielded even greater force reductions, up to 40% in the across-wind direction. While inelastic design resulted in increased displacements (up to 20%), it remained within acceptable performance limits and showed sufficient ductility and safety. The findings support the practical implementation of PBWD, highlighting its potential to limit damage while maintaining structural resilience.

2nd Speaker: Chungwook Sim, Associate Professsor, Konkuk University

Dr. Chungwook Sim is an Associate Professor at the Department of Civil and Environmental Engineering at Konkuk University, South Korea. He received his BS from Yonsei University, South Korea; MS from the University of Texas at Austin; and PhD from Purdue University, Lafayette, IN, USA. His research interests include modeling and testing of structural concrete members under various load events (earthquake, blast, corrosion, etc.), development of data repositories for multi-hazards, and building Big Data pipelines for monitoring the health of aging infrastructure. While previously working at the University of Nebraska-Lincoln, Dr. Sim received external funding from the National Science Foundation, US Department of Defense, Nebraska Department of Transportation, Nevada Department of Transportation, ACI, and the Precast/Prestressed Concrete Institute. He is a member of ACI Committee 133, Disaster Reconnaissance, with the mission to report on the effects of major disasters on concrete construction worldwide. Sim received the 2022 ASCE T.Y. Lin Award, and the journal article co-authored received the 2021 George D. Nasser Award from PCI.

Presentation Title: Surface Strain Analysis of Transverse Cracks on Bridge Decks Detected by Deep Convolutional Neural Networks

Concrete cracking is one of the most common defects found in concrete bridge structures. Quantifying and classifying these cracks provide valuable data for bridge inspectors and engineers to assess the level of deterioration. However, the traditional bridge inspection process is often subjective, time-consuming, and labor-intensive, with defects potentially being overlooked or located in areas that are not easily accessible.

While many existing studies on AI-based inspection methods focus primarily on detecting cracks and improving the accuracy of detection models, their practical application to real-world bridge inspections requires a broader approach. Specifically, data collection should encompass the entire bridge deck rather than relying on a limited number of localized images.

This presentation introduces a case study involving a pedestrian bridge where deep convolutional neural networks (CNNs) were employed to detect cracks. Based on the detected cracks, crack widths and spacing were measured, and surface strain values were estimated. This presentation will explore how AI-based inspection methods can quantify damage-related information and contribute to structural condition assessments.

Wednesday, July 9, 2025

1:00 PM-2:00 PM Tokyo Time / 12:00 AM-1:00 AM EDT (New York Time)

Co-Host Organization: Japan Concrete Institute (JCI)

Website: https://www.jci-net.or.jp/index-e.shtml

The Japan Concrete Institute (JCI) has been striving to develop the science and technology of concrete in Japan. As of 2025, the number of members is approximately 7000. Since 1979, JCI has been holding an annual convention once a year (over 3 days), which concrete researchers and engineers from various fields attend. The 46th Annual Convention was be held in Matsuyama, Ehime, in June 2024. JCI publishes the monthly *Concrete Journal* and presents a multifaceted range of information, including commentaries, technical reports, construction records, and international information regularly. *Concrete Research and Technology* and *Journal of Advanced Concrete Technology* (*JACT*) are posted on the Japan Science and Technology Information Aggregator, Electronic (J-STAGE) website at the same time they are published for uncharged access. JCI awards include the Honorary Membership Award, Lifetime Membership Award, JCI Fellow, the JCI Awards (Meritorious Deed Award, Best Paper Award, Technology Award, Encouragement Award, and Work Award), as well as other awards bestowed under the independent award schemes of JCI chapters. To raise concrete engineers' technical skills and ability, JCI has been administering Authorized Concrete Engineer qualification examinations since 1970 and Authorized Chief Concrete Engineer qualification tests since 1971, certifying approximately 61,130 people thus far. JCI has been holding Concrete Diagnosis & Maintenance workshops and Authorized Concrete Diagnosis & Maintenance Engineer qualification examinations every year since 2001, certifying approximately 14,860 people.

Local Moderator: Koichi Kusunoki, Vice Director, ERI/Professor, University of Tokyo

1997-2000, Assistant Professor, Institute of Industrial Science, University of Tokyo, Tokyo, Japan; 2000-2001, Researcher, Building Research Institute, Ministry of Construction, 2001-2006, Senior Researcher, Building Research Institute, Ministry of Construction; 2006-2014, Associate Professor, Yokohama National University, Yokohama, Japan; 2014-2018, Associate Professor, Earthquake Research Institute, the University of Tokyo; 2018-present, Professor, Earthquake Research Institute, the University of Tokyo; 2025-Present, Vice Director, Earthquake Research Institute, the University of Tokyo.

1st Speaker: Toshikazu Kabeyasawa, Associate Professor

2008-2009, Postdoctoral Fellow, Tokyo Institute of Technology; 2009-2010, Project Assistant Professor, The University of Tokyo; 2010-2012, Researcher, Building Research Institute; 2012-2016, Senior Researcher, National Institute for Land and Infrastructural Management, MLIT; 2016, Associate Professor, Tokyo Metropolitan University; 2019, Visiting Researcher, Building Research Institute.

Presentation Title: Comparison of Performance-Based Seismic Design Methods for Concrete Structures between the United States and Japan

Since 2020, JCI's research technical committee TC204A TC233A has been comparing design methods using nonlinear time history response analysis of concrete structures in Japan and the United States. In collaboration with the ACI Committee 374, Performance-Based Seismic Design of Concrete Buildings, a full-scale 10-story test specimen from a previous shaking table experiment was used as a prototype to create and compare US and Japanese trial design examples. Throughout the comparison of the two cases, issues to the Japan design that could be improved have been identified, such as 1) an obvious lack of explicit evaluation

of collapse probability under an extremely large earthquake, 2) an inconvenience when it is applied to the core wall system due to rigorous criteria of Japan on the maximum response story drift ratio, and 3) over-sized safety margin, necessary for Japan design if applied to low-rise buildings with Japan's time history response analysis. The report by the technical committees also mentions that the Japan design, which does not require explicit evaluation of collapse by nonlinear modeling under an extremely large earthquake, may hinder the motivation of the technical capabilities of designers and researchers.

2nd Speaker: Tetsuya ISHIDA, Professor, University of Toykyo

Tetsuya Ishida is a Professor in the Department of Civil Engineering and Vice Dean of the Graduate School of Engineering at the University of Tokyo, Tokyo, Japan. He received his PhD in 1999 and conducted postdoctoral research at the University of Toronto, Toronto, ON, Canada. Since 2023, he has also served as Director of the Academic Strategy Office and the Office for the Promotion of Industry-Academia Collaboration. Ishida's research focuses on the lifecycle performance of concrete structures. He has developed a unified, multiscale, multiphysics simulation platform that integrates over 20 governing equations and 500 variables, enabling predictive modeling from early-age behavior to long-term deterioration. His approach eliminates reliance on empirical formulas and is recognized for its scientific rigor and practical relevance. A key focus of his recent work is the development and field implementation of 3-D concrete printing (3DCP). He chaired the Technical Committee on 3D Printing Technology at JCI (2019–2021) and currently leads the 3DP Subcommittee of the Japan Society of Civil Engineers, contributing to national design and construction guidelines. His laboratory collaborates with major construction companies and public agencies to test and deploy 3DP technologies in real structures such as bridges and retaining walls. Ishida is a Principal Investigator in the "Cross-ministerial Strategic Innovation Promotion Program (SIP)," funded by the Cabinet Office of Japan. His contributions to SIP Phase 3—titled "Smart Infrastructure Management System" support the integration of digital construction technologies, such as 3DCP, to accelerate social implementation and infrastructure resilience. He has received awards from JSCE, JCI, *fib*, and IABSE, including the inaugural *fib* Achievement Award for Young Engineers and the IABSE Prize. His research also supports national goals in circular economy and carbon-neutral construction.

Presentation Title: From Research to Reality: 3-D Concrete Printing Developments in Japan

This presentation highlights recent advancements in 3-D concrete printing (3DP) in Japan, with a particular focus on its rapid transition from research to practical implementation. Since around 2022, the number of construction sites adopting 3DP has grown rapidly, projected to reach approximately 150 projects annually by 2024. This acceleration is largely driven by a serious shortage of skilled labor, particularly formwork carpenters, due to Japan's aging construction workforce.

One promising solution is the use of 3-D printed permanent formworks for reinforced concrete structures. These formworks—often produced with high-strength, fiber-reinforced mortar—offer significant improvements in ductility and durability through enhanced crack distribution and confinement. Experimental studies on reinforced concrete columns using 3-D printed formworks have shown outstanding structural performance, which has been validated through FEM-based simulations developed at the University of Tokyo. These columns are modeled as composite members composed of printed layers and core concrete, demonstrating the feasibility of practical applications.

Japan's seismically active environment further underscores the need for highly resilient structural systems, where 3DP offers a viable approach. Applications now span from pedestrian and road bridges to roadside retaining walls. In parallel with this growing adoption, the Japan Society of Civil Engineers has developed comprehensive guidelines for the design and construction of 3-D printed permanent formworks. These guidelines were approved for publication in March 2025 and are currently in preparation for printing. The presentation will also introduce the structure and content of these forthcoming guidelines, which are expected to play a key role in standardizing and expanding 3DP technology in civil infrastructure.

Wednesday, July 9, 2025
12:00 PM-1:00 PM Bangkok Time / 1:00 AM-2:00 AM Time EDT (New York Time)
Co-Host Organization: Thailand Concrete Association

สมาคมคอนกรีตแห่งประเทศไทย
Thailand Concrete Association

Website: https://thaitca.or.th

Thailand Concrete Association (TCA) was founded in January 2004. TCA has been recognized as one of the leading professional organizations in Thailand. TCA has focused on three groups of work in the field of concrete and related materials: structural concrete engineering, concrete and mortar materials, and repair and maintenance. Their objectives are to strengthen the advanced research, practice, and innovation in cement, mortar, and concrete technology in Thailand. Tasks include organizing the Annual Concrete Conference and international conference; conducting training and seminars; writing manuals, standards and books; and hosting the award programs for promoting the advanced knowledge and the use of concrete for professionals and students. TCA has been associated with several international cement and concrete organizations including ACI, Asian Concrete Federation (ACF), International Congress on the Chemistry of Cement (ICCC) Permanent steering committee, and Global Cement and Concrete Association (GCCA).

Local Moderator: Phongthorn Julphunthong, PhD, Associate Professor, Naresuan University

Dr. Phongthorn Julphunthong is an Associate Professor in the Department of Civil Engineering at Naresuan University, Thailand. He serves as Director of the Research Unit for Innovative Construction Materials and is a leading expert in sustainable construction technologies and advanced cement-based materials. His research focuses on the development of eco-friendly cementitious systems incorporating industrial by-products, including biomass ash, calcium carbide residue, and marble dust, to promote circular economy principles and reduce carbon emissions in the construction sector. Julphunthong received his PhD in applied physics from Naresuan University in 2013, following his M.Eng in civil engineering from Chiang Mai University, Thailand, and B.Eng (second-class honors) from Naresuan University. His extensive research spans sustainable cement, high-performance concretes, radiation shielding materials, and smart construction applications, such as piezoelectric cement composites for structural health monitoring. Beyond academia, Julphunthong plays a significant role in national professional organizations. He is the Chairman of Academic Committees for Concrete Materials and Structures at the Thailand Concrete Association (TCA) and serves on the Structural Engineering and Bridge Division of The Engineering Institute of Thailand under H.M. the King's Patronage. Julphunthong continues to bridge applied research and practice to drive forward low-carbon construction solutions and enhance the performance, durability, and sustainability of civil infrastructure.

1st Speaker: Pitcha Jongvivatsakul, PhD, Associate Professor, Chulalongkorn University

Dr. Pitcha Jongvivatsakul is an Associate Professor in the Department of Civil Engineering at Chulalongkorn University, Thailand. Her areas of expertise include sustainable construction materials, concrete structures, and infrastructure repair. She received her Bachelor of Engineering in Civil Engineering from Chulalongkorn University in 2008, and subsequently received her Master of Engineering (2010) and Doctor of Philosophy (2013) in civil engineering from the Tokyo Institute of Technology, Japan. Jongvivatsakul has published extensively on geopolymer and alkali-activated concrete, self-healing concrete using microbially induced calcium carbonate precipitation (MICP), and concrete incorporating advanced nanomaterials. Her research focuses on developing net-zero emission construction materials and promoting sustainable infrastructure solutions. In addition to her academic contributions, she serves as the Head of the Centre of Excellence in

Innovative Construction Materials and the Deputy Head of the Civil Engineering Department at Chulalongkorn University. Recognized as a leading researcher in low-carbon and eco-friendly construction, she continues to bridge cutting-edge research with practical applications to advance sustainability in the built environment.

Presentation Title: Sustainable Concrete Innovation through Waste Utilization and Local Resources

The transition toward sustainable concrete practices requires innovative strategies that reduce dependence on high-emission Portland cement while maximizing the use of waste and locally available resources. This presentation explores emerging approaches in sustainable concrete design that leverage agricultural and industrial byproducts to minimize environmental impact and promote a circular economy in construction.

Key focus areas include the adoption of hydraulic cement as a low-carbon alternative, and the development of alkali-activated and geopolymer binders incorporating waste-derived materials. Agricultural residues such as rice husk ash, sugarcane bagasse ash, and corn-stalk ash have demonstrated strong potential in producing high-performance, eco-friendly concrete. These materials not only lower embodied carbon but also enhance mechanical strength and durability.

Recycled aggregates—including granite waste, plastic waste, and crumb rubber—are also being incorporated into concrete mixtures to reduce the consumption of virgin raw materials and support sustainable waste management. In addition, advanced additives such as graphene quantum dots (GQDs), graphene nanoplatelets (GNPs), and porous carbon are being investigated for their ability to improve mechanical performance and enhance carbon capture in sustainable mortar systems.

By using waste streams and regionally sourced materials, this presentation demonstrates how sustainable concrete solutions can be both locally grounded and globally applicable. The findings highlight scalable pathways to reduce the carbon footprint of concrete production without compromising structural performance or cost-efficiency.

2nd Speaker Name: Thanyarat Buasiri, PhD

Dr. Thanyarat Buasiri is a postdoctoral researcher at Luleå University of Technology (LTU) in Sweden, specializing in building materials with a particular focus on smart cementitious composites and sustainable infrastructure. Her academic journey began in Thailand, where she received her bachelor's degree in civil engineering from Thammasat University, Thailand, followed by a master's degree in structural engineering from Chulalongkorn University, Thailand. These foundations paved the way for her advanced research in Sweden. She received her PhD from LTU in 2023, with doctoral research focused on the development and sensing capabilities of nanomodified Portland cement composites—aimed at advancing real-time structural health monitoring. Her research involves integrating carbon nanofibers into cement matrices to develop self-sensing materials capable of monitoring key structural parameters such as stress, strain, temperature, and humidity. This work contributes significantly to the development of more resilient and intelligent infrastructure systems. Among her notable achievements is the SmartCem initiative, which implemented sensor-based monitoring systems on full-scale concrete bridges, demonstrating the practical applications of her innovations. Buasiri also has expertise in the formwork pressure of self-compacting concrete (SCC), a critical area in modern concrete construction. Her studies examine how factors such as casting rate, concrete properties, and environmental conditions affect the lateral pressure exerted on formwork during casting. By combining experimental research with advanced sensor technologies, she supports the creation of more accurate pressure prediction models and safer, more efficient formwork designs. In addition to her technical research, Buasiri is actively engaged in projects aimed at developing climate-reduced concrete suitable for cold-climate infrastructure, in alignment with global efforts to reduce the carbon footprint of construction materials.

Presentation Title: Monitoring and Analysis of Formwork Pressure in Self-Compacting Concrete with Variable Fresh Mix Temperatures

The formwork pressure exerted by self-compacting concrete (SCC) is a key consideration in the design and safety of formwork systems, particularly in temperature-sensitive environments. Current formwork designs

often err on the side of overdesign, resulting in increased material usage and construction costs. This study investigates the effects of variable fresh mix temperatures on the development and dissipation of formwork pressure in SCC to provide insights for more accurate and efficient formwork design.

A monitoring system was developed to measure real-time pressure exerted by SCC mixtures prepared and placed under controlled temperature conditions at 10°C and 20°C. The results demonstrate that temperature significantly influences the rheological behavior and setting time of SCC, which in turn affects pressure profiles. Higher temperatures accelerate hydration, leading to faster pressure decay and potentially reducing the need for overdesigned formwork. Conversely, lower temperatures prolong fluidity, maintaining higher pressure over extended periods and necessitating more robust formwork solutions.

The study explores the interplay between temperature, concrete composition, and pressure dynamics, providing actionable insights for optimizing both mixed designs and formwork systems. This research emphasizes the importance of real-time monitoring and data-driven design in ensuring construction safety and efficiency while minimizing costs. The findings aim to advance guidelines for SCC applications, enabling more precise formwork designs that balance safety with resource optimization in varying environmental conditions.

Wednesday, July 9, 2025

2:00 PM-3:00 PM Singapore Time / 2:00 AM-3:00 AM EDT (New York Time)

Co-Host Organization: ACI Singapore Chapter

Website: https://www.concrete.org.sg/

The ACI Singapore Chapter (ACI-SC) was founded in 1985. The purpose of this chapter is to further the chartered objectives for which ACI was organized: to further education and technical practice, scientific investigation, and research by organizing the efforts of its members for a nonprofit, public service in gathering, correlating, and disseminating information for the improvement of the design, construction, manufacture, use, and maintenance of concrete products and structures. The chapter continues to support the National University of Singapore's Endowment Fund and proceeds are used for an annual medal and book prize to be awarded to the best civil engineering graduate in concrete technology-related subjects leading to the degree of civil engineering. Every year, the chapter organizes the Performance-Controlled Concrete Competition, where ready-mixed concrete companies, concrete admixture suppliers, universities, and polytechnics are invited to produce and send their best concrete cubes for testing under the various criteria.

Local Moderator: Tao Nengfu, Senior Specialist, Singapore Polytechnic

Dr. Tao Nengfu received his BSc, Master of Engineering, and PhD in earthquake engineering from Tongji University, China. He also received his Master of Computing (Computer Science) from the National University of Singapore (NUS) in 2007 and a Specialist Diploma in Building Information Modelling (BIM) from BCA Singapore in 2019. Since 2000, he has served as a Senior Specialist (Sustainable Design) at the School of Architecture and the Built Environment, Singapore Polytechnic, where he teaches Steel Design and CAD, Structural Inspection and Repair, and BIM. Nengfu previously held academic and industry roles at Tongji University, Hehai University, Nanyang Technological University, and SembCorp Construction. His expertise spans structural engineering, BIM, and sustainable green building materials. He is the President of the ACI Singapore Chapter and a member of the Singapore Concrete Institute (SCI). A prolific researcher, he has published over 30 journal and conference papers, contributed to a book on engineering failure case studies, and received over a dozen awards for teaching and research excellence during his 25 years at Singapore Polytechnic.

1st Speaker: Daneti Saradhi Babu, Technical Manager – Concrete Specialist, Alliance Concrete Singapore Pte. Ltd.

Dr. Daneti Saradhi Babu is currently serving as a Technical Manager – Concrete Specialist at Alliance Concrete Singapore (ACS) Pte. Ltd. He received his PhD from NUS (2009) and a master's degree from the Indian Institute of Technology Madras (2002). Before transitioning to the ready-mixed concrete industry in 2011, Daneti worked as a Research Engineer and Research Fellow at NUS for four years. Daneti has published over 25 research papers in international journals and conferences, focusing on areas such as cement and concrete composites, lightweight concrete, fiber-reinforced concrete, low-carbon concretes and sustainability. He is also an active member of the ACI Singapore Chapter, serving on its Board of Directors. Additionally, he is a member of the Institution of Engineers Singapore (IES) and the Singapore Concrete Institute (SCI). Daneti has been recognized with awards for his exceptional papers at conferences such as OWICS 2015 in Singapore and ConMat'2005 in Vancouver, Canada. In 2023, he achieved certification as a Construction Environmental Product Declaration (EPD) Specialist.

Presentation Title: Recent Applications of SFRC for Underground Infrastructure Construction in Singapore

With superior ductility and toughness provided by steel-fiber reinforcement to flexural elements compared to other kinds of fibers, use of steel fiber-reinforced concrete (SFRC) in many general and underground infrastructure constructions in particular are increasing in recent years. The increased use of SFRC is also in many folds, such as better acceptance of designer/consultants and owners in construction projects with improved design guidance through standards, robust equipment availability and/or better methods for construction, new developments in materials technology, innovative techniques at ready mixed plants for SFRC production with higher quality controls suitable for wide range of applications, improved post cracking residual flexural tensile strength and durability performance of SFRC. This presentation covers the typical SFRC specifications of underground infrastructure tunnels construction from Singapore projects. Project specifications of SFRC concretes and some of the trial and/or production testing results of compressive strength, splitting tensile strength and residual flexural tensile strength of after cracking and the results are discussed to further understand the behavior of SFRC.

2nd Speaker: Guoqing Geng, Assistant Professor, National University of Singapore

Dr. Guoqing Geng received his Doctoral degree in CEE of UC Berkeley in 2017. His PhD work focused on the microscale chemistry of modern construction materials. He was awarded a postdoctoral fellowship at the Paul Scherrer Institute (Switzerland), where he studied the durability of concrete both as a construction material and hosting material for radioactive waste. Since joining the CEE department at the National University of Singapore in 2019, he has led a research group focusing on sustainability and performance-based designing of modern construction materials. Currently, he is a Board member of the ACI Singapore Chapter;, of the Singapore Concrete Institute; and the convener of East Asia for RILEM.

Presentation Title: Carbon Capture by Waste Cement Slurry and Its Usage as a Sustainable Binding Material

Singapore relies substantially on imported materials for its busy construction practice. There is a constant need to recycle local waste materials for sustainable construction. This report shares our research experience at the National University of Singapore on the carbon mineralization in local concrete slurry waste and the end-product used as an alternative binder. Our work suggests that the carbon mineralization in slurry waste produces calcite and silica gel, which can replace up to 50% when used together with calcined kaolinitic clay. Controlling the pH of the carbonatation chamber leads to the formation of vaterite instead of calcite, which further improves the strength behavior. This work opens a possibility of both reducing the carbon footprint of the Singapore concrete industry and reusing local solid waste instead of landfilling.

Wednesday, July 9, 2025

12:30 PM-1:30 PM Mumbai Time / 3:00 AM-4:00 AM EDT (New York Time)

Co-Host Organization: ACI India Chapter

INDIA CHAPTER OF ACI

Website: https://icaci.com

The ACI India Chapter was established on December 26, 1979, by a few enthusiastic concrete technologists with ACI for the "development and advancement of good practices in concrete technology" in India. Today, the Chapter membership consists of over 2000 concrete professionals and organizations, including consulting civil and structural engineers, concrete practitioners, academicians, researchers, materials scientists, constructors, students, and more. They are driven by the Chapter's motto, "Progress through Knowledge." The Chapter is distinctly active in organizing seminars, symposiums, technical lectures, meetings, and workshops with the participation of experts in the field and associated professional bodies.

Local Moderator: Dr. Surendra Manjrekar, ACI Honorary Member; Past President, ACI India Chapter; CMD, Sunanda Global, India

ACI Honorary Member Surendra Manjrekar is CMD of Sunanda Specialty Coatings Pvt. Ltd., which manufactures a range of construction chemicals and has offered consulting services in related fields for the past 45 years. Sunanda Global has operations in India along with an international presence in the United Arab Emirates (UAE), Oman, Nepal, Africa (Tanzania), and the United States. Manjrekar is currently a Visiting Professor working with international universities as a knowledge partner. He is a Visiting Professor at the University of Leeds, Leeds, UK, in the field of carbon footprint reduction; a Vice-Chancellor appointee on the "Internal Quality Assurance Cell" at Dr. Homi Bhabha State University, Mumbai, India, as an industry representative; and a Special Signatory to the Memorandum of Understanding (MOU) for technical cooperation between India, Singapore, Vietnam, and Malaysia, which was organized by ACI in Singapore in 2019. Manjrekar received ACI's highest honor—Honorary Membership—in 2018. He was elected an Honorary Fellow of the Institute of Concrete Technology (United Kingdom) in 2022. The International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM), an international association of 90 countries, honored him with a "Lifetime Achievement Award" in Vancouver in 2023 as an acknowledgment of his scholarship and service to the fraternity. At the 9th CIDC Vishwakarma Awards in March 2017, he was honored with the prestigious Achievement Award for Industry Doyen by the Construction Industry Development Council (CIDC) (Government of India), the highest recognition of the construction industry in India. He is active in research and development in the fields of corrosion prevention in reinforced and prestressed concrete structures, with special emphasis on infrastructure, newer-generation corrosion-inhibiting admixtures, internal curing, repairs of dams, bridges, irrigation canals, water-related structures, polymers, underwater concreting, CO_2 sequestration in polymers, nano-molecule soil stabilization, waterproofing, antifreezing admixtures in concrete, and fire resistance of concrete and steel.

1st Speaker: **Mr. Gururaj T.S., Managing Director, Innotech Structural Consultants, Bangalore**

Bio not available.

Presentation Title: **Voided Slabs for Large Spans and as a Transfer Medium**

Abstract not available.

2nd Speaker: **Mr. Rajan Mogha, Superintending Engineer, Public Works Department, National Capital Territory of Delhi**

Bio not available.

Presentation Title: **Structural Repairs and Rehabilitation of Bridges and Flyovers**

Abstract not available.

Wednesday, July 9, 2025

12:00 Noon-1:00 PM Dubai Time / 4:00 AM-5:00 AM EDT (New York Time)

Co-Host Organization: ACI UAE Chapter

UAE CHAPTER

Website: www.aci-uae.com

The ACI UAE Chapter is an organization for anyone with an interest in concrete. The chapter's mission is aligned with ACI's mission: to develop, disseminate, and advance the adoption of ACI consensus-based knowledge of concrete and its uses. The ACI UAE Chapter operates in the United Arab Emirates to support students, engineers, contractors, and materials suppliers in the concrete industry across the United Arab Emirates. The ACI UAE Chapter hosts seminars, conferences, and meetings, which are professional networking opportunities for members to meet with others in the concrete industry, maintain professional relationships, exchange ideas, identify best practices, and stay on the cutting edge of construction technology and new business trends.

Local Moderator: Ahmad Khartabil, Technical Manager, Transgulf Readymix Concrete Co., LLC

Ahmad Khartabil is a Technical Manager of Transgulf Readymix Concrete Co., LLC, in the United Arab Emirates. He joined Transgulf Readymix as a design engineer, was promoted to Assistant Technical Manager in 2014, and then to Technical Manager in 2016. He is an ACI member, Chair of the ACI UAE Chapter Events Committee, and a Certified Concrete Professional in concrete technology by the National Ready Mixed Concrete Association (NRMCA). He was a winner of the 1st fib-UAE Graduate Fellowship Award in 2018, which was an initiative supported by the UAE Society of Engineers and the fib-UAE Chapter. In January 2019, his paper titled "Carbonation Resistance of Sustainable Concrete Using Recycled Aggregate and Supplementary Cementitious Materials" won the Best Presentation Award at the 3rd International Conference on Civil and Building Materials (ICCBM 2019) in Singapore. He is continuously involved in different research projects. His research interests include hot weather concreting, concrete durability and service life, sustainable construction materials, and the rheology of cement paste and concrete. Khartabil is a civil engineer and received his degree from Abu Dhabi University, Abu Dhabi, UAE, with the honor of magna cum laude in 2012. In 2022, he received his master's in civil engineering from Abu Dhabi University.

1st Speaker: Dr. Hilal El-Hassan, Associate Professor, United Arab Emirates University

Dr. Hilal El-Hassan is an Associate Professor of Concrete Technology at the Department of Civil and Environmental Engineering at the United Arab Emirates University (UAEU). He received his PhD degree from McGill University, Montréal, Canada. His research is in the area of sustainable civil engineering materials. El-Hassan's most recent work has focused on enhancing the sustainability of the construction industry through the integration of novel materials and industrial wastes in concrete products. His research has resulted in over 150 publications and the granting of five patents by the US Patent and Trademark Office. He is among the Stanford University's list of top 2% most cited scientists in his field.

Presentation Title: Advancing Concrete Performance and Sustainability through Metal-Organic Frameworks

The integration of metal-organic frameworks (MOFs) into concrete presents a transformative advancement in the design of multifunctional, durable, and sustainable construction materials. This presentation explores recent innovations in employing MOFs to enhance key concrete properties, including electrical

conductivity, chloride ion penetration resistance, self-curing capability, and carbon sequestration potential. Recent studies have demonstrated the ability of MOFs to significantly improve the electrical conductivity of concrete without compromising its mechanical performance. MOF-enhanced electrically conductive concrete opens new avenues for applications in structural health monitoring, de-icing, and cathodic protection. Parallel research reveals that MOFs can adsorb chloride ions, thereby reducing chloride penetration and delaying corrosion onset in reinforced concrete structures, ultimately extending service life. Additionally, MOFs offer novel self-curing solutions through internal water retention mechanisms, addressing critical challenges in arid and resource-scarce regions. Furthermore, the integration of MOFs in accelerated carbonation curing systems promotes CO sequestration in concrete, aligning with global efforts to mitigate carbon emissions associated with cement production. Results and findings related to these experimental studies will be discussed in this presentation. The synergistic interaction between MOFs and cement-based concrete matrices represents a pivotal step toward the development of smart, resilient, and eco-efficient infrastructure.

2nd Speaker: Ahmad Mandalawi, Regional Structural and Specification Engineer

Ahmad Mandalawi is a Senior Structural Engineer with extensive experience in the design and delivery of concrete and steel structures. With a proven track record in value engineering, project design management, and technical leadership, he is recognized for his ability to drive innovation and excellence across complex engineering projects. He is proficient in using advanced design and modeling tools, including finite element analysis (FEM), Revit, BIM 360, and AutoCAD. Mandalawi has successfully led multiple projects as both a Design Lead and Project Manager, consistently ensuring high design quality, cost efficiency, and strict adherence to project timelines. He is a certified Project Management Professional (PMP), accredited by the Project Management Institute. Mandalawi received his bachelor's degree in civil engineering with honors and is licensed by Dubai Municipality (G+12), Abu Dhabi Municipality, and Sharjah Municipality. He is also a Graduate Member of several esteemed professional organizations, including the Institution of Structural Engineers (IStructE), the Institution of Civil Engineers (GMICE), the Project Management Institute (PMI), ACI, ASTM International, the UAE Society of Engineers, and the Saudi Council of Engineers. Driven by a deep commitment to sustainable development, Mandalawi aligns his engineering practice with the UN Sustainable Development Goals and integrates LEED principles into his design approach. He is an active member of the U.S. Green Building Council and holds a CPD Certificate in Sustainable Construction from Holcim Academy. Currently, he serves as a global leader in steel wire transformation and green concrete technologies, where he champions the adoption of sustainable construction materials and methods. Passionate about low-carbon engineering solutions, Mandalawi focuses particularly on flooring systems and raft foundations, contributing to a more environmentally responsible built environment.

Presentation Title: Innovating for a Greener Future—Steel Fiber-Reinforcement as a Key to Low-Carbon Concrete Construction

Reducing embodied carbon in concrete construction is no longer optional but a pressing necessity, particularly in regions such as the Gulf States, where countries like the UAE have launched initiatives to enforce sustainable practices within the concrete industry. Steel fiber-reinforcement has emerged as a promising alternative to traditional steel reinforcing bars due to its superior sustainability profile and mechanical performance. Not only does it exhibit high ductility, but it also significantly enhances tensile strength, flexural capacity, and crack control by mitigating concrete brittleness and providing post-cracking resistance. Compared to conventional steel reinforcement, steel fibers have a notably lower environmental product declaration (EPD) rate, making them an environmentally favorable choice. Their integration into structural elements—such as isolated footings, strip footings, and raft foundations—either as a complete or partial replacement for reinforcing bars, enables structural optimization. When used in hybrid systems with traditional reinforcement, steel fibers contribute to improved punching shear resistance and reduced crack widths, facilitating a reduction in overall material use. This dual-function approach not only boosts performance but also substantially lowers embodied carbon, positioning steel fiber-reinforced concrete as a pivotal solution for sustainable construction in the near future.

Wednesday, July 9, 2025
12:00 Noon-1:00 PM Beirut Time / 5:00 AM-6:00 AM EDT (New York Time)
Co-Host Organization: ACI Lebanon Chapter

Website: https://acts-int.com/

The ACI Lebanon Chapter consists of a group of professional contractors, consultants, suppliers and others. This chapter is a non-profit organization. The chapter activities consist of local and regional conferences, regular training courses accompanied with ACI certificates, networking, university lectures, technical assistance to its members, and much more. Competitions are held regularly, encouraging the participation of different parties.

Local Moderator: Dr. Faten Abi Farraj, Head of R&D and Technical Services, ACTS, and Secretary, ACI Lebanon Chapter

Dr. Faten Abi Farraj is the Head of Research and Development and Technical Services at Advanced Construction Technology Services (ACTS). She is currently managing the research and development department of the group by keeping up with the latest innovations in the construction field and by creating innovative methods to upgrade ACTS' business functions and the services provided to its clients. She is able to initiate and lead advanced research related to concrete technologies, materials, innovative concrete mixtures, and sustainability. Additionally, she manages the consultancy department in Lebanon and provides technical services for ACTS clients in different branches. Her work focuses on providing condition assessment for existing buildings and supporting the whole group with consultancy services. Moreover, as an ACI examiner, she provides training and ACI certifications for construction professionals on aggregate and concrete testing throughout the Middle East and supervises Masters and PhD theses for students at the Lebanese University, Beirut, Lebanon.

1st Speaker: Dr. Milad Khatib, Assistant Professor

Dr. Milad Khatib is a structural and geotechnical engineering expert who earned his PhD from Beirut Arab University, Beirut, Lebanon, in 2018. He also holds a special diploma in strategic and security analysis from the American University of Science and Technology, Lebanon (2022). He has registered two patents: one in 2023 for an economic vessel that cleans water from floating waste, and a second in 2025 for the “Food Collector,” aiding individuals with neuromuscular or orofacial impairments. Khatib has published 35 articles in international journals and achieved notable recognition when one of his papers was featured on the cover of *PCI Journal* in 2023 for its contribution to composite structures. With a Research Interest Score of 201.4, he has 45 citations and an h-index of 4. He serves as a jury member for 20 international journals and has participated in numerous engineering and economic conferences worldwide, including in China, Thailand, India, Cyprus, and Vietnam. Khatib has been awarded over 40 professional certificates from institutions such as OMSAR and the KAYA Humanitarian Leadership Academy and holds reviewer certifications from Publons and Peeref. He is recognized for his contributions to sustainability, water treatment, civil engineering, and multidisciplinary innovation.

Presentation Title: Effect of Polyethylene Terephthalate, Rubber, and Glass Based on Concrete Properties

The integration of solid waste materials into concrete has emerged as a promising approach for enhancing sustainability in structural design. This study investigates the effects of incorporating three types of waste—PET flakes, rubber, and glass—on the mechanical properties of concrete, with a focus on compressive strength, tensile strength, and resistivity. The experimental program involved varying replacement

levels of fine and coarse aggregates with waste materials, aiming to assess performance across different mix designs. Results showed that substituting up to 20% of coarse aggregates with PET flakes or glass either preserved or improved compressive strength while replacing sand with rubber reduced it. Tensile strength improved with 10 to 20% replacement of coarse aggregates by plastic or glass but declined with 15 to 20% rubber substitution for sand. Flexural strength decreased in all waste substitution scenarios compared to control samples. Despite some reductions, optimal replacement levels were identified as 20% PET or glass for coarse aggregates and 10% rubber for sand, demonstrating that solid waste can serve as a viable, eco-friendly alternative in concrete production. This research supports the use of recycled materials as a pathway to environmentally responsible construction without significantly compromising structural performance.

2nd Speaker: Dr. Nariman Khalil, Associate Professor, ULF, and Vice President, ACI Lebanon Chapter

Dr. Nariman Khalil is a Professor of Civil Engineering. She received her PhD degree in reinforced concrete structures from the University of Leeds, Leeds, West Yorkshire, England. She has more than three decades of experience in teaching structural analysis and reinforced concrete design and providing consultancy for private and governmental sectors in the Middle East. Her technical publications in refereed journals and peer-reviewed conferences span multiple areas and disciplines including structural engineering and reinforced concrete design, rehabilitation of concrete structures, concrete sustainability, highway materials, laboratory and in-situ experimental investigation, and engineering education. She is an Order of Engineers licensed consultant in Lebanon. She is a member of the American Society of Civil Engineers (ASCE) and ACI, and a member of ACI Committee 555, Concrete with Recycled Materials. She is a founder and Board member of the Middle East Society of Asphalt Technologists (MESAT). Founder of the ACI student chapter at the University of Balamand and Advisor (2016-2023). Currently, she is serving as Vice President of the ACI Lebanon Chapter. Khalil is a recipient of many national and international awards.

Presentation Title: Enhancing Shear Capacity of Recycled Aggregates Concrete Beams

To promote concrete sustainability and support the circular economy, the reuse of construction and demolition waste for producing recycled concrete aggregates (RCA) has gained growing interest among researchers. This study explores several strategies to enhance the shear capacity of beams composed entirely of RCA. These strategies include reducing the water-to-cement (w/c) ratio, incorporating glass fibers (GF) or polypropylene fibers (PP), or adding styrene-butadiene rubber (SBR). For this purpose, a total of six beams with a 1.5 m span length and shear span-to-depth ratio a/d=3.5 were cast and tested under four-point loading. The results indicated that lowering the w/c ratio from 0.51 to 0.41 effectively reduced matrix porosity. Incorporating 0.27% GF or PP fibers (by weight of cementitious materials) helped restore the shear strength of recycled aggregate concrete (RAC) beams. The addition of 15% SBR latex (of mixing water) significantly improved beam ductility.

Wednesday, July 9, 2025

1:00 PM-2:00 PM Egypt Time / 6:00 AM-7:00 AM EDT (New York Time)

Co-Host Organization: ACI Egypt Chapter

Website: https://www.concrete.org/chapters/findachapter/chapterhome.aspx?cid=C0C08600

The ACI Egypt chapter was founded in 1989. The chapter has held several technical events nationally and internationally and has received several awards from ACI. The ACI Egypt Chapter co-hosted and shared in the first 24 hours of Concrete Knowledge conference in 2021 and subsequent conferences and other ACI events, and works in close collaboration with similar local and international organizations and the Egyptian Concrete Society.

Local Moderator: Dr. M. Nasser Darwish, Professor Dr. Eng., ACI Fellow, ACI Egypt Chapter Organizing Chair

ACI Fellow Dr. M. Nasser Darwish is a Professor of concrete structures and bridges at Alexandria University, Alexandria, Egypt. He is Chair of the ACI Egypt Chapter; Chairman of the Egyptian Concrete Society; member of the Egyptian Concrete Code Committee, Egyptian Repair & Strengthening Code Committee, Egyptian FRP Code Committee, and Egyptian High-Rise Buildings Code Committee; member of ACI Committee 325, Concrete Pavements; and a Structural Consultant with vast experience and Arbitrator and Appraiser.

1st Speaker: Dr. Asharaf El Zanaty, Cairo University

Dr. Asharaf El Zanaty is a Professor of Concrete Structures, Cairo University, Egypt, where he received his BSc. He received his MSc and PhD in civil engineering from Cornell University, Ithaca, New York, USA. He is member of the Egyptian Concrete Code Committee, Egyptian High-Rise Buildings Code Committee; Vice Chair of Egyptian Repair & Strengthening Code Committee, and Chair of the Egyptian Loads Code Committee. He is a registered Structural Consultant with vast experience.

Presentation Title: Top-Down Construction for an Underground Parking Structure

This presentation outlines the reasons behind the top-down construction of an underground parking structure—the challenges, methodology, design concept, and construction sequence. The presentation also addresses the problem of waterproofing and other construction and design constraints. The details of the pilling system, top slab, and bottom slab are presented.

2nd Speaker: Dr. Youssef Rashed, Cairo University

Dr. Youssef Rashed is a Professor of Structural Engineering, Cairo University, where he received his BSc and MSc. He received his PhD in civil Engineering from the University of Wales, UK, in 1997. He is an expert in boundary element methods (BEM) for structural engineering. His research interests include its application to dynamics, soil-structure interaction, tall buildings, post-tensioned slabs, rafts and piled-rafts modelling. Besides, he is the main developer of PLPAK software BEM based package to analyze and design tall buildings. He has published numerous

international publications and received several scientific research prizes. He was the former General Secretary of the Supreme Council of Egyptian Universities.

Presentation Title: Boundary Element Method for Analysis and Design of Tall Buildings

Currently, most analyses and design of tall buildings are carried out using finite element methods and related software packages. This presentation demonstrates the use of the boundary element method (BEM) as a robust alternative, allowing better modelling especially the area between floors and vertical elements. This will affect the analysis of tall buildings and consequently relevant design, allows zooming-in at local zones of stress concentrations, for example punching analysis for columns having irregular cross sections. It also allows having auto generation of post-tensioned cables in post-tensioned slabs. The use of BEM will also facilitate modelling rafts and piled-rafts over advanced soil-structure interaction models with no extra modelling effort.

3rd Speaker: Dr. Ahmed A. El Ansary, Associate Professor, Cairo University

Dr. Ahmed A. El Ansary is an Associate Professor of structural engineering at Cairo University, Egypt, where he received his BSc and MSc. He was a Research Associate at the University of Western Ontario (UWO) Canada where he completed his PhD and a recipient of the Ontario Trillium Scholarship. His research specializes in the behavior of reinforced-concrete structures using recycled aggregates, staged construction analysis, and AI applications in structural engineering. He has over 15 years of practical experience and contributed to some major construction projects. El Ansary is a PEng in Ontario, Canada, and PE in Nevada, USA.

Presentation Title: Staged Construction Analysis of Reinforced-Concrete Buildings

Practitioners traditionally use one-step analysis (OSA), assuming all loads to act on a completed reinforced-concrete (RC) building. However, staged-construction analysis (SCA) may better reflect real construction, where loads are applied sequentially. A nonlinear finite element model (FEM) for SCA was developed, considering creep, shrinkage, and aging effects. The model was validated and used to study RC buildings with both traditional and post-tensioned slabs considering various lateral load resisting systems. Results showed large differences in deformations and straining actions between staged construction and one step analysis approaches.

Wednesday, July 9, 2025

2:00 PM-3:00 PM Amman Time / 7:00 AM-8:00 AM EDT (New York Time)

Co-Host Organization: Jordan Concrete Association (JCA)

جمعية الخرسانة الأردنية
Jordan Concrete Association

Website: https://jca-concrete.com/

The Jordanian Concrete Association was established on January 14, 1981. The signatories to its Constitution and those who may be elected to join them in the Hashemite Kingdom of Jordan established an association named "The Jordanian Concrete Association." Its headquarters are in Amman and the field of its activities covers the Hashemite Kingdom of Jordan and it may establish offices and branches in other cities. The association carries out its activities with the aim of achieving the following goals: 1. Advancing the standards of the concrete industry and its applications in the Hashemite Kingdom of Jordan; 2. Establishing connections between professionals in the concrete sector and relevant regional and international institutions to enhance the competencies of engineers and technicians; 3. Developing effective solutions to address the technical and practical challenges facing the concrete industry in its various forms; 4. Fostering collaboration with key engineering stakeholders, including the Jordan Engineers Association, the Contractors Union, the Ministry of Public Works, the Royal Scientific Society, and the Jordan Standards and Metrology Organization; 5. Organizing and conducting specialized conferences, lectures, and workshops with a focus on critical topics such as green concrete, concrete quality and its components, natural pozzolana, pozzolanic cement, and environmentally friendly green building materials; and 6. Supervising graduation projects for civil engineering students in the field of sustainable concrete, in alignment with the mission of the Joint Concrete Association to support innovation and sustainable development.

Local Moderator: Reham Al Sharef, Deputy Technical Manager, CORINTHI Testing

Reham Al Sharef, a civil engineering graduate from the University of Jordan, Amman, Jordan, has more than 17 years of experience in materials testing, quality control, and lab management. She currently serves as Deputy Technical Manager at CORINTHI Testing. Engineering. Consulting Company, where she leads the evaluation and analysis of materials performance for large-scale projects. Al Sharef holds a master's degree in quality management in business, which complements her engineering expertise with a strong foundation in systematic process improvement. She is certified by ACI as a Concrete Field Testing Technician – Grade I, and serves as an official examiner, supporting the advancement of professional capabilities in the field. In addition to her industry role, Al Sharef is a technical auditor for ISO/IEC 17025 with the Jordanian Accreditation System (JAS), where she evaluates laboratory competence and compliance with international standards. Her expertise ensures the reliability and accuracy of testing procedures critical to construction quality. Al Sharef is also a Board member of the Jordan Concrete Association, which partners with ACI to promote best practices and technical development across the region. Her commitment to training, and industry collaboration reflects her dedication to raising the awareness and performance in construction engineering.

1st Speaker: Ahmad Tarawneh, PhD, PE, Associate Professor of Structural Engineering, The Hashemite University

Dr. Ahmad Tarawneh is an Associate Professor in the Department of Civil Engineering at The Hashemite University, Zarqa, Jordan. He received his PhD from Clemson University, Clemson, SC, USA, in 2019. His research interests include anchorage to concrete, fiber-reinforced polymer (FRP)-reinforced concrete, machine learning applications in structural engineering. Tarawneh is the former Director of the Built Environment and Structural Systems Center at The Hashemite University and currently serves as the Vice Dean for the Scientific Research Deanship.

Presentation Title: Concrete Breakout in Steel Fiber-Reinforced Concrete: Database, Evaluation, and Design Recommendations

This study investigates the anchorage breakout capacity of steel fiber-reinforced concrete (SFRC) under tensile and shear loading, addressing gaps in existing knowledge through a comprehensive analysis of 765 experimental tests. The compiled database encompasses cast-in-place and post-installed anchors, varied fiber contents (0 to 2%), deformed and straight fibers, edge effects, anchor groups, and a range of embedment depths (h_{ef}) and concrete strengths. The analysis showed an increase in the concrete breakout capacity due to the presence of steel fibers. A modification factor (ψ_{fiber}) is proposed to integrate fiber contributions into the Concrete Capacity Design (CCD) method, enabling capacity increase up to 1.5 times higher than plain concrete breakout. The factor is applicable to tensile/shear breakouts and edge-affected anchors but requires restraint for post-installed anchors with $h_{ef}/d > 4.5$ due to mixed failure modes. Anchors with shallow embedment (h_{ef}, $c_1 < 0.78l_f$) show negligible fiber contribution due to anisotropic fiber distribution (wall-effect), revising previous recommendations. Notably, straight fibers enhance capacity comparably to hooked-end fibers, and anchor groups exhibit higher fiber contributions than single anchors, attributed to load redistribution. This work advances SFRC anchor design by validating fiber efficiency across diverse conditions, offering a robust predictive framework, and clarifying limitations for practical implementation.

2nd Speaker: Salah Abuobaid, CEO of Yibna Construction & Contracting Est

Salah Abuobaid received his degree in civil engineering from the Middle East Technical University in Ankara, Turkey, in 1985. Throughout his career, he has worked across a wide range of sectors in the construction industry, including structural design, dam construction, and both industrial and residential building projects. Over the past 18 years, he has focused his expertise on the construction of concrete floors. This specialization has allowed him to deepen his understanding of floor design, durability, and performance—particularly in challenging industrial environments. Abuobaid is an active member of several professional associations that support the advancement of construction practices in Jordan and beyond. These include the Jordan Engineers Association, the Jordan Contractors Association, and ACI. He also serves as a Board member of the Jordan Concrete Association and a member of ACI Committee 302, Construction of Concrete Floors. His passion lies in delivering long-lasting, high-performance concrete flooring solutions and sharing knowledge with others in the field to help elevate the standards of construction across the region.

Presentation Title: The Repair and Rehabilitation of Old Concrete Floors: Restoring Strength, Safety, and Service Life

Concrete floors are built to last—but like anything, they show signs of age over time. From cracks and surface wear to joint failures and structural issues, old concrete floors can become a real headache if left untreated. The good news? In many cases, they don't need to be replaced; they just need the right kind of care.

In this talk, we'll dive into the world of concrete floor repair and rehabilitation. We'll walk you through the most common problems we see in older floors, what causes them, and how to properly assess the damage before jumping into a fix. We'll talk about real solutions that work—from simple surface repairs to more advanced strengthening techniques—along with how to choose the right materials and methods based on how the floor is used and what kind of traffic it supports.

We'll also share lessons learned from real projects—what worked, what didn't, and how small decisions can make a big difference in long-term performance. Whether you're a contractor, engineer, or facility owner, you'll come away with clear, practical insights you can apply right away.

This isn't about over-engineering or quick fixes—it's about doing the right repair, the right way, at the right time to extend the life of your concrete floor and avoid bigger issues down the line.

Wednesday, July 9, 2025

3:00 PM-4:00 PM Erbil Time / 8:00 AM-9:00 AM EDT (New York Time)

Co-Host Organization: ACI Kurdistan Chapter

Website: https://www.aci-krd.com/

The ACI Kurdistan Chapter was recently established and covers the geographic region of the Southern Kurdistan which is so called (Iraqi Kurdistan region). The main goal of the chapter is to merge knowledge about concrete with the most recent standards and specifications. The Kurdistan chapter makes a strong tie between the universities across the Kurdistan region.

Local Moderator: Barham Haidar Ali, PhD, Tishk International University

Barham Haidar Ali, PhD, is the Head of the Civil Engineering Department at Tishk International University (TIU) in Erbil, Kurdistan Region, Iraq. He received his PhD in civil engineering and has cultivated a career that bridges academia, research, and professional consultancy. Ali is a co-founder of the ACI Kurdistan Chapter, reflecting his commitment to advancing concrete technology and professional development in the region. He has also played a pivotal role in establishing and advising the ACI student chapter at TIU, fostering student engagement in engineering practices. His research encompasses structural engineering, sustainable materials, and retrofitting. Published studies include topics such as high-strength concretes with metakaolin and steel fibers, and assessments of retrofitting methods for reinforced concrete buildings against progressive collapse.

1st Speaker: Dr. Ahmed Salih Mohammed, Associate Professor

- The University of Sulaimani, College of Engineering, Civil Engineering Department
- American University of Iraq, Sulaimani, Engineering Department
- Postdoctoral Research at the University of Houston, Houston, TX, USA (2016)
- PhD received from the University of Houston (2010-2014)
- MSc. in civil engineering, University of Technology, Baghdad, Iraq, 2003
- BSc. in building and construction engineering, University of Technology, Baghdad, Iraq, 2000
- No. of Citations: 11000+ / No. of Publications: 279 / h-index: 63
- Research areas: nanotechnology, geotechnical engineering, drilling engineering, rock mechanics, material characterization, smart materials, rheology, grouting, fracture mechanics, cement mortar, concrete technology, geopolymer, and modeling.
- Top Iraqi researcher in the construction field and building materials from 2021-2023 based on the Scopus database
- Awarded by the Ministry of Higher Education-KRG and the University of Sulaimani as the most active researcher in the Engineering Colleges, 2 February 2019
- Reviewer in more than 40 international journals and guest editor and academic editor in five international journals with an impact factor of 5.3, 3.9, and 3.24
- Selected as one of the World's Top 2% Scientists by Stanford University (Top 10 universities worldwide) per an announcement released by Elsevier in 2020-2021-2024
- Top-ranked Iraqi Construction and Building Engineering researchers for 2021–2025, as per the Scopus database
- Chair of the Certificate Committee in the ACI-Kurdistan Chapter, 2023-present
- The most active researcher award of 2019 in Kurdistan-Iraq out of 30 universities

Presentation Title: Novel Exploration of Chemical Compounds in Mono-Variate, Bi-Variate, and Multi-Variate Scenarios of Waste Glass Powder as a Cement Replacement in Concrete

The sustainable development of construction materials has become a priority in the face of increasing environmental concerns and the depletion of natural resources. This study explores the chemical interactions and performance implications of waste glass powder (WGP) as a partial cement replacement in concrete. The research investigates WGP's influence under mono-variate, bi-variate, and multi-variate chemical scenarios, focusing on key oxides such as SiO_2, Al_2O_3, and CaO, which are instrumental in the pozzolanic and hydration processes. The mono-variate analysis evaluated the effect of individual chemical oxides in WGP on compressive strength and durability. The bi-variate approach examined the synergistic or antagonistic effects of oxide pairings (e.g., SiO_2–Al_2O_3 and SiO_2–CaO), revealing critical thresholds and nonlinear behaviors. The multi-variate scenario employed statistical modeling techniques—including regression analysis and response surface methodology—to assess the combined influence of multiple oxides and mixture variables, such as WGP content, water-to-binder ratio, and curing duration. Results showed that WGP significantly enhances long-term compressive strength and durability when used at optimal replacement levels (10 to 20%) and with favorable oxide balances. Notably, SiO_2 emerged as the most influential oxide, followed by Al_2O_3, particularly in multi-variate interactions. The study also identified the importance of oxide ratios, such as the Silica Modulus (SM) and Aluminate Modulus (AM), as key predictors of concrete performance. This comprehensive investigation contributes to developing predictive models for optimizing WGP usage in concrete formulations, promoting sustainable construction practices while maintaining or enhancing material performance. The findings support the valorization of glass waste in cementitious applications, aligning with circular economy principles and offering a viable path toward low-carbon concrete technologies.

2nd Speaker: Maryam Basil Ishaq

The University of Sulaimani, College of Engineering, Civil Engineering Department

Presentation Title: The Role of Waste Glass Powder in Alkali-Silica Reaction Mitigation: Transforming Glasscrete Durability through Chemical Composition Dynamics

The alkali-silica reaction (ASR) poses a significant challenge to the durability of concrete structures, primarily due to the reaction between alkaline pore solutions and reactive silica in aggregate, generating hygroscopic gel that leads to cracks and concrete deterioration in the presence of moisture. Waste glass powder is selected due to its high silica content, pozzolanic reactivity, and potential to bind alkalis, which can mitigate ASR-induced expansion. Additionally, its use promotes sustainability by reducing cement consumption and repurposing industrial waste, aligning with the principles of green construction. Using waste materials in optimal dosage offers sustainable concrete with balanced durability and performance. In this study, models were generated to predict alkali-silica reaction. Expansion for concrete modified with waste glass as cement replacement, such as linear, pure quadratic, and M5P-tree models based on the chemical composition of glass and cement, and other input parameters such as w/b, cement, fine aggregate, glass replacement, and immersion time. The findings indicate that incorporating glass powder effectively reduces expansion (%), with optimal dosages identified through the expansion-time optimizing technique. Comparative assessments reveal that while glass powder demonstrates notable ASR mitigation at lower dosages, fly ash exhibits superior long-term performance across all replacement levels, particularly after 28 days of immersion in NaOH solution. Additionally, slag performs competitively at higher dosages, indicating its potential utility in ASR reduction. Higher SiO_2/CaO ratios lead to reduced ASR expansion, particularly with increased GP (%) and more extended curing periods. Higher GP (%) also results in higher ASR expansion, rising from 0.05% in plain mortar to 0.2% with 40% GP.

Wednesday, July 9, 2025

3:00 PM-4:00 PM Italy Time / 9:00 AM-10:00 AM EDT (New York Time)

Co-Host Organization: ACI Italy Chapter

Website: www.aciitaly.com

The ACI Italy Chapter is the Italian chapter of ACI, one of the most important associations in the world in developing knowledge and practice in concrete materials and structures. The chapter pursues many objectives, among which are dissemination of scientific research and organization of educational events promoting useful relationships between academic and industrial representatives. The scientific divulgation takes place through publications, conferences and conventions, workshops, educational courses, awards, and any other suitable initiatives. These activities aim at collecting, developing, and promoting knowledge to improve design, development of new construction cementitious-based materials and techniques, conservation, and maintenance tools for existing reinforced and prestressed concrete buildings and infrastructures. The ACI Italy Chapter was founded in 2003 by some eminent personalities of academic and industrial institutions. The first President was Professor Mario Alberto Chiorino, Professor Emeritus of the Polytechnic University of Turin, Honorary President of the Chapter. The present Board of Directors was elected in February 2017: Professor Luigi Coppola (University of Bergamo) and Professor Liberato Ferrara (Milan Polytechnic) are the President and the Vice President, respectively, since January 1, 2019. The ACI Italy Chapter has about seventy individual members and 43 students/young members.

Local Moderator: Gennaro Magliulo, Associate Professor, University of Naples Federico II

Gennaro Magliulo has been an Associate Professor at the Department of Structures for Engineering and Architecture at the University of Naples Federico II since 2018, where he teaches two master's degree courses: Precast Structures and Healthcare Facilities. Since 2019, he has been charge of the quality certification of the master's course in structural and geotechnical engineering at the University of Naples Federico II. In the frame of this master course, he has been a tutor of more than 90 internships and about 130 theses. He has been an affiliate researcher at the Construction Technologies Institute of the National Research Council since 2025. Magliulo received his degree in civil engineering, branch Structures, in 1997, with laude and received his PhD in structural engineering in 2001. He is currently a tutor of three PhD students, and he has been a tutor of another 10 PhD students. He also taught a course on Seismic Analysis of Buildings within the doctorate in Seismic Risk. He is currently a member of the Board of doctorate professors of the doctorate in Biology and Applied Sciences at the University of Molise. Magliulo holds seven patents and has written more than 250 articles, 70 of them published by international peer-reviewed journals. His research concerns earthquake engineering and dynamics of structures, nonstructural components, r/c structures and precast structures, in the fields of theoretical modelling, numerical analysis, experimental research and code activity. He has been principal investigator of 36 international and national research projects, funded by either public or private entities. Magliulo is founder and member of the Board of the ACI Italy Chapter, founder and President of the Seismic Performance of Nonstructural Element Association, and member of the fib committee TG 6.17 "Retrofitting and Repairing of Precast Structures in Seismic Areas." He is also a member of ACI and of the European Association of Earthquake Engineering (EAEE).

1st Speaker: Annalisa Napoli, Associate Professor, University of Salerno, Italy

Annalisa Napoli received her master's degree in environmental engineering from the University of Salerno (Italy) in 2006. She received her Master of Science in civil engineering from the University of Miami, FL, USA, in 2008, and a PhD in structural engineering from the University of Salerno in 2010. From July 2010 to September 2021, she conducted research at the Department of Civil Engineering at the University of Salerno in the disciplinary sector ICAR/09 (formerly CEAR-07/A) through postdoctoral fellowships. In October 2021, she was appointed Assistant Professor in the same disciplinary sector at the Department of Civil Engineering at the University of Salerno, and since October 2024, she has been serving as an Associate Professor in the same department. Napoli currently co-teaches the courses "Construction Techniques" (bachelor's program in civil and environmental engineering and master's program in civil engineering) and "Testing and Monitoring of Existing Structures" (master's program in civil engineering). Her research focuses on topics such as seismic design, strengthening reinforced concrete and masonry structures using composite materials (FRP/FRCM), the bond behavior of steel and FRP bars in concrete, and the durability of concrete structures. Her work has contributed to the development of design formulas included in Italian guidelines such as CNR-DT 200 R2/2025, CNR-DT 215/2018, and CNR-DT 203 R1/2025.

Presentation Title: Bond Behavior Between Metallic and Nonmetallic Bars and Sustainable Concrete—Preliminary Experimental Results

Steel is the most widely used material for internal reinforcement in reinforced concrete (RC) structures due to its excellent mechanical properties, including high-tensile strength, elastic modulus, and ductility. However, as a metallic material, it is prone to corrosion—an electrochemical process that leads to rust formation on the reinforcement surface.

Fiber-reinforced polymer (FRP) bars represent a promising alternative to steel reinforcement, as they are electrochemically inert and therefore immune to corrosion. In addition, they offer high tensile strength, low weight, wear resistance, improved fatigue performance, and low thermal expansion, making them suitable for both internal and external strengthening of RC structures.

Considering growing environmental awareness, the use of FRP bars also supports sustainability. Their production process has a lower environmental impact compared to steel, and their long-term durability reduces the need for maintenance interventions.

Sustainability can also be addressed in concrete production. Ordinary Portland cement (OPC) concrete, while commonly used, entails a high environmental cost due to its energy-intensive manufacturing process and consumption of natural resources. A viable alternative is the use of ground granulated blast furnace slag (GGBFS), a by-product of iron production, which can partially or fully replace OPC as a binder. GGBFS offers similar mechanical properties to cement while mitigating waste disposal issues and reducing energy and raw material usage.

This presentation reports preliminary results from a collaborative experimental study involving three Italian universities. The University of Bergamo focuses on the development and characterization of "green concrete," while the Universities of Salento and Salerno investigate the bond behavior between FRP bars and green concrete. Direct pull-out tests have been performed, and results are presented in terms of bond stress–slip curves, bond strength, and failure modes, with comparisons to conventional OPC-based concrete reinforced with steel bars.

2nd Speaker: Chiara Passoni, PhD, Assistant Professor, University of Bergamo, Italy

Chiara Passoni received her PhD in "Rehabilitation of historical and contemporary buildings" at the University of Brescia, Brescia, Italy, in 2016 and is currently an Assistant Professor of Structures at the Department of Engineering and Applied Science at the University of Bergamo, Bergamo, Italy. Her primary research interest lies in the sustainability of the built environment, broadly encompassing aspects such as safety and resilience. Building on a deep understanding of structural design across various building types and their seismic vulnerabilities, including the role of existing floor diaphragms, she has contributed to the development of structural

reinforcement solutions (dissipative, over-resistant, or adaptive) that can be integrated into holistic rehabilitation strategies for existing buildings, such as exoskeleton systems applied externally. With the goal of enhancing the sustainability of the built environment, these solutions were designed according to criteria such as dry assembly, prefabrication, reparability, demountability, flexibility, and adaptability, all aimed at reducing a building's environmental impact over its life cycle. Passoni also contributed to developing a multi-performance-based design framework grounded in a life-cycle thinking (LCT) approach. This framework includes a protocol for estimating the residual service life of reinforced concrete structures, multi-criteria decision-making tools for evaluating alternative solutions during early design stages, newly defined performance objectives in LCT terms, and simplified tools for calculating environmental impacts based on environmental product declarations (or EPDs). Passoni is a co-author of about 40 publications, including 18 international journal papers. She is a member of national and international working groups, including the fib Special Activity Group on Sustainability, particularly for the groups: TG.SAG.1- Fib Database and TG. SAG.2- Sustainable Concrete Structures; the Working Group 15 "Combined seismic and environmental upgrading of existing buildings" of the European Association for Earthquake Eng. (EAEE); and the ERIES Group "DICABE - DIaphragm CApacity of Beam and block Existing floors".

Presentation Title: **Retrofitting Reinforced-Concrete Buildings—Exploring the Critical Role of Floor Diaphragms**

Ensuring the sustainability of the built environment cannot rely solely on constructing new, more sustainable buildings—it critically depends on the renovation of the existing building stock. However, increasing the renovation rate requires overcoming significant barriers, foremost among them the need to temporarily dismiss the building functions, which remains one of the main causes of renovation failure.

Within this context, floor systems play a pivotal role. Traditional strengthening techniques, often applied to the top surface of floor slabs, typically necessitate the evacuation of interior spaces, posing a major disruption to residents. This highlights a dual challenge: first, to accurately assess the out-of-plane and in-plane capacity and demand of existing floor systems to determine when strengthening is genuinely needed; and second, to develop retrofit solutions that minimize disturbance to occupants.

This contribution focuses particularly on hollow clay block–concrete composite floors, which are widely used across Mediterranean countries and also present in the modern building stock of the United States and Latin America. Recent advancements in research aimed at addressing these challenges are presented, including simplified methodologies for the assessment of in-plane capacity, based on numerical and experimental campaigns, and innovative retrofit techniques designed to enhance both structural performance and renovation feasibility, while maintaining low impact on building use during construction.

Wednesday, July 9, 2025
4:00 PM-5:00 PM Lausanne Time / 8:00 AM-9:00 AM EDT (New York Time)

Co-Host Organization:
International Federation for Structural Concrete (*fib*)

Website: https://www.fib-international.org/

The International Federation for Structural Concrete (*fib*) is a not-for-profit association formed by 40 national member groups in more than 100 countries and approximately 2500 corporate and individual members. The *fib*'s mission is to develop at an international level the study of scientific and practical matters capable of advancing the technical, economic, aesthetic, and environmental performance of concrete construction. The knowledge developed and shared by the *fib* (*fib* Bulletins, *fib* events, *fib* workshops, *fib* courses, and so on) is entirely the result of the volunteer work provided by *fib* members.

Local Moderator and 1st Speaker: Hans Rudolf Ganz, Consultant

Hans Rudolf Ganz received his civil engineering and PhD degree from ETH Zurich, Zurich, Switzerland. In 1985, he joined the specialist contractor VSL International Ltd. as a structural engineer, working on the preliminary and final designs of prestressed structures. In 1989, he moved to the state of California, USA, and became a registered professional engineer in California. Following the Loma Prieta earthquake, he participated in the retrofit of masonry and concrete buildings using prestressing technology. In 1990, he became Chief Technical Officer of the VSL Group and a member of the Board of Directors, responsible for the technical centers in the United States, Europe, and Singapore, as well as for research and development. He held this position until 2011, following projects around the world. Ganz then established his own consulting firm in Switzerland, serving as an expert for the technical approval of post-tensioning systems. His primary focus, however, was providing services related to prestressed structures and tendon condition assessments. In 2011, he joined the Swiss standards committee for structural concrete, which he chaired until 2014. He then became Chairman of the Swiss committee for structural standards, a role he held until the end of 2024. In 2011, he also joined the CEN/TC 250 Sub-Committee responsible for Eurocode 2, Concrete Structures, serving as its Chair from 2014 to 2023 during the preparation of the second-generation Eurocode 2. Ganz's involvement with the *fib* began in 1989 in the FIP Commission on Practical Design. In 1991, he became a member of the FIP Commission for Prestressing Materials and Systems, which he chaired from 1996 to 2007. In 2002, he was invited to join the *fib* Presidium as a co-opted member and was later elected President for the 2007–2008 term. Ganz was a Co-Chair of the *fib* task group which prepared the *fib* Bulletin 113.

Presentation Title: Polymer Ducts for Improved Durability of Post-Tensioning Tendons (*fib* Bulletin 113)

Around the beginning of the 1990s, thick-walled corrugated polymer ducts were introduced for use with internal profiled prestressing tendons. They were mainly introduced for their positive characteristics, such as the improved corrosion protection of the tendons, the reduced friction losses during stressing of the tendon, the increased fretting fatigue resistance of the tendon as well as their feasibility for the electrical monitoring of the leak tightness of the tendon duct and anchorage encapsulation. The use of polymer ducts has expanded since the early 1990s in Europe, the United States, and India and, to a lesser degree, elsewhere in Asia. Since there were no product standards available for such polymer ducts, the *fib* published at the end of the 1990s a first technical report with information about testing of and performance specifications for plastic ducts for internal bonded tendons [*fib* 7 (2000)]. This bulletin was later amended with extensive background information and updated test procedures [*fib* 75 (2014)] and recently again [*fib* 113 (2024)].

The presentation will initially present the product, such as polymer ducts for internal post-tensioning tendons and auxiliary components, and the main benefits of the polymer duct systems. This will be followed with brief information and selected background on specified material properties, performance characteristics, test procedures and acceptance criteria provided in *fib* Bulletin 113 to assess the performance of the polymer ducts and their suitability for use as ducts for internal post-tensioning tendons. The content of *fib* Bulletin 113 provides the know-how and experience developed and collected over more than 30 years with polymer ducts for internal bonded post-tensioning tendons. It is an essential source for owners who issue product specifications for post-tensioned infrastructure, for those who design and detail post-tensioned structures exposed to aggressive environment, and for construction companies building post-tensioned structures.

2nd Speaker: Dr. Gopal Srinivasan

Dr. Gopal Srinivasan received degrees from Imperial College, London, England, and the University of Cambridge, Cambridge, GB. He is a practicing civil and structural engineer with over 30 years of experience. He is a Fellow of the Institution of Civil Engineers, the Institution of Engineering Designers and a Chartered Engineer in the UK. Srinivasan has experience in the design, checking, and design team management in a range of complex structures and projects particularly segmental and cable-stayed bridges and highspeed rail stations. He was a winner of International Concrete Federation (*fib*) Young engineer award and awards for his projects including *fib* Outstanding structures and Supreme and Transportation structures Awards from the Institution of Structural Engineers, UK. He has worked across UK, Europe, Middle and Far East with particular focus on the positive interaction between design and construction in civil engineering projects to enable safe, efficient and sustainable completion. Srinivasan is a member of a number of *fib* commissions, in particular the Commission on Construction. As part of this Commission, he has acted as editor on a number of published documents including Bulletins on Precast Segmental Bridges and on BIM.

Presentation Title: BIM in Construction (*fib* Bulletin 115)

In recent years, building information modelling (BIM) methodology has seen exponential growth in its adoption within the construction industry. Despite its tentative beginnings in a sector traditionally resistant to major changes, the undeniable advantages it offers have made all stakeholders, from designers to builders, including government authorities and facility maintainers, aware of the need to embrace the full implementation of BIM standards in the sector.

The presentation outlines some key themes from the recently published fib Bulletin 105, “BIM in Construction.” The Bulletin was produced by *fib* Task Group 1.7 as a guide to good practice by an international group of designers and contractors to promote the benefits of BIM in construction to a wider audience. The presentation will set out some of the benefits and opportunities using BIM.

Attempting to compile a comprehensive document on the state of the art of BIM methodology would be a daunting and potentially unproductive task, given that new papers with innovative BIM applications and uses emerge practically every week and with the increasing number of specialized books.

Therefore, the objective of the Task Group has been to present concepts that enable readers to gain a basic understanding of the methodology that is sufficiently up-to-date, along with specific examples of its use in various types of structures with varying degrees of complexity. The aim has been to show that BIM usage can range from a specific element of a project to the complete life cycle of a structure, allowing stakeholders to choose what suits their needs best.

Wednesday, July 9, 2025

4:00 PM-5:00 PM London Time / 11:00 PM-12:00 PM EDT (New York Time)

Co-Host Organization: The Institute of Concrete Technology (ICT)

The Institute of Concrete Technology

Website: https://www.theict.org.uk/

The Institute of Concrete Technology (ICT) was formed in 1972. Full membership is open to all those who have obtained the Diploma in Advanced Concrete Technology and MSc in Advanced Concrete Technology (University of Leeds). The Institute is internationally recognized, and the Diploma and MSc have worldwide acceptance as the leading qualification in concrete technology. The Institute sets high educational standards and requires its members to abide by a Code of Professional Conduct, thus enhancing the Professional Affiliate body of the UK Engineering Council. The Institute's mission is to preserve and promote concrete technology as a recognized engineering discipline and to consolidate the professional status of practicing concrete technologists worldwide. Membership of The Institute of Concrete Technology is open to a wide range of people with a professional interest in concrete—from students to those who have worked in the industry for many years.

Local Moderator: John Reddy, President, The Institute of Concrete Technology

John Reddy is a Chartered Civil Engineer with a master's degree in advanced concrete technology from Queen's University Belfast. He has over 20 years of experience working with low-carbon cement and concrete. He is the current President of the Institute of Concrete Technology (ICT), taking office in May and will serve a two year term. Working with Ecocem since 2004, he has held a variety of technical roles. He is now working on the deployment of Ecocem ACT, Low Carbon Concrete Technology.

1st Speaker: Aine Black, Materials Research Technician, Queen's University Belfast

Aine Black is a Materials Research Technician at Queen's University Belfast since 2025. Black is currently working on a collaborative project with Cemcor, assessing the capability of using calcined clay as supplementary cementitious materials. She completed her PhD at the University of Liverpool in materials science and engineering, focusing on the storage of nuclear waste in borosilicate glass and assessing the radiation damage to the glass structure that may occur. She has extensive experience in characterization techniques such as nuclear magnetic resonance spectroscopy, thermal gravimetric analysis, Raman spectroscopy, and ion beam analysis.

Presentation Title: Challenges and Considerations when using Calcined Clay as Supplementary Cementitious Material

Calcined clay is used as a supplementary cementitious material to produce low-carbon cement. Calcined clays can improve concrete mixture's performance, durability, and sustainability. Many aspects need to be determined when using calcined clay in blended cements including; optimum calcination temperature for maximum reactivity, the variation in size of the raw clay nodules and the impact the replacement of clinker

with clay has on the strength of the concrete. This work addresses the first two challenges by forming raw clay into 10- and 15- mm nodules to determine the size effect. A maximum calcination temperature of 875°C was sufficient to fully calcine both the 10 and 15 mm nodules. The 10 mm nodule had a homogenous clay color throughout whereas the 15 mm possessed a grey center, attributed to oxidation as the X-Ray diffraction patterns of both nodules illustrated that the nature of the minerals remained the same with no significant difference noted.

2nd Speaker: Muzzamil Shakil, PhD, CEMEX UK

Dr. Muzzamil Shakil is a civil engineer specializing in cement chemistry and concrete technology. He received his PhD from the University of Bath, UK, where his research focused on tailored calcium-silicate-hydrates in Portland cement systems. He is a member of both ICT and the Institute of Materials, Minerals and Mining (IOM3). His main interests include cement-based binder systems, microstructural properties, and the long-term performance of concrete. In his current role at CEMEX UK, he manages the technical functions related to the design, manufacture, and sustainability-driven deployment of concrete for demanding projects, particularly within the complex performance and commercial environment of the London market.

Presentation Title: Calcined Clays from UK Sources: More Reactive Than We Thought?

Kaolinitic clays are typically found in tropical/subtropical regions. In colder climates such as the UK, clays display low kaolinite contents and mostly comprise of illites, chlorites, smectites (montmorillonite), and mixed-layer clay minerals. It is known, calcined kaolinitic clays are considerably more reactive than calcined smectite or illite, with calcined illitic, or mixed layer illite/smectite clays being least reactive. From a SCM point of view, a kaolinite content of 40 wt% has been previously suggested as optimal. However, research on calcined clays from UK sources provides compelling evidence for being able to exploit additional reactivity through the activation of 2:1 clay minerals in mixed clays comprising of relatively low kaolinite (17 to 22 wt%). Indeed, blended mortars of CEM II/A-L 52.5N and 30 wt% calcined clays reached 28-day strengths of 65 MPa, exceeding the control by 15% (10 MPa). Blended mortars with 50 wt% calcined clays reached comparable 28-day strengths to the control without excessive compromise on consistence.

Wednesday, July 9, 2025

6:00 PM -7:00 PM Paris Time / 12:00 Noon-1:00 PM EDT (New York Time)

Co-Host Organization: **RILEM**

Website: https://www.rilem.net/

The International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM, from the name in French) was founded in June 1947, with the aim to promote scientific cooperation in the area of construction materials and structures. Today, the new meaning of the acronym RILEM (Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages) emphasizes its dominant focus on people as well as its worldwide activities, covering 90 countries.

Local Moderator: Dimitri Feys, Associate Professor, Missouri S&T

ACI member Dimitri Feys is an Associate Professor at the Missouri University of Science and Technology, Rolla, MO, USA. He has been the Regional Convenor for RILEM for North America and the Caribbean since 2018 and has facilitated a strong collaboration between ACI and RILEM. He is Chair of the ACI Student and Young Professional Activities Committee (SYPAC) and is a member of ACI Committees 237, Self-Consolidating Concrete; 238, Workability of Fresh Concrete; and 309, Consolidation of Concrete. He has been a RILEM member since 2004 and is active in several technical committees. He served as Deputy Chair of RILEM Technical Committee 266-MRP, Measuring Rheological Properties of Cement-Based Materials, from 2015 to 2023. The committee recently published its state-of-the-art report and a topical collection in *Materials and Structures* on a round-robin concrete rheometer testing campaign held in France. Feys' research interests include the mixture design, rheology, and placement of cement-based materials, and the consequences of placement on the performance of concrete. He received his combined BSc and MSc from Ghent University, Ghent, Belgium, in 2004, and his PhD at the same university in 2009.

1st Speaker: Kefei Li, Professor, Tsinghua University

Dr. Kefei Li is a tenured full professor in the civil engineering department at Tsinghua University, Haidian, Beijing, China, and principal investigator (PI) of the research group of building materials. He received his PhD degrees from Tongji University, Shanghai, China (2000) and Ecole Nationale des Ponts et Chaussées, Paris, France (2002). His research interests include the physical and mechanics of cement-based materials, the durability of concrete materials and structures and the life-cycle engineering of concrete structures. He leads multiples national projects of research, publishes 100+ peer-reviewed papers, heads the draft team of the durability standards of China (CCES01, T/CCES 57 and GB/T 50476), and serves as Associate Editor for *Cement and Concrete Research* and *Materials and Structures*. He leads the RILEM TC 289-DCM and has been Cluster convener of TAC (Cluster D) and regional convener of China Region of RILEM. He is also active member of IABSE (deputy executive member of China group), *fib* (COM8), and ISO TC71/SC4.

Presentation Title: Long-Term Performance of Structural Concretes in Marine Exposure Conditions: Report from RILEM TC 289-DCM

Nowadays, structural concretes are required to fulfil their expected performance during long service lives, such as 50 years for buildings and more than 100 years for large-scale infrastructures. The marine exposure stations/sites provide unique data sources to investigate the long-term performance of concretes.

These data support also the design, assessment, and prediction of long-term durability of concrete structures and infrastructures. That is the very reason that the engineering community values the practice of long-term field exposure. Since the 1930s, long-term exposure practice has been engaged in engineering practice and the obtained knowledge can be witnessed by the extended design working lives for concrete structures exposed in severe marine environments. Albeit these achievements, the exploitation of long-term field data is not yet satisfactory, and the added value of these data has not been fully generated. The data collection from exposure stations is rather intuitive, and a systematic format for data collection/presentation is missing; more deepened interpretation of these data, obtained through both labor and budget demanding procedures, are expected to provide more information for durability performance; and more formalized guideline is expected for the operation of exposure stations and the support for life-cycle management of concrete structures and infrastructures. The RILEM TC 289-DCM is committed to providing solutions and tools for these needs. This lecture gives a comprehensive review on the TC activities including the deterioration mechanisms of concretes in marine environments, the presentation of long-term filed exposure data, the interpretation and modelling from these data, and the exploitation of these data. From the return of experiences of major reviewed exposure sites, it is expected that the practice of field exposure in marine environments can be shared in wider scope for both research and practical purposes.

2nd Speaker: Fernando Martirena, Professor

Dr. Fernando Martirena received his degree in civil engineering in 1983. He received his PhD degree in 1988 and Doctor in Sciences (Dr.Sc.) in 2004, in subjects related to construction and materials. Part of his post-graduate education has taken place in Central Europe (Germany and Switzerland) as Fellow of the Alexander von Humboldt Foundation. Martirena is the Director of the Centro de Investigación y Desarrollo de Estructuras y Materiales, CIDEM (Centre for Research & Development of Structures and Materials) at the Universidad Central de las Villas in Cuba. As a RILEM Senior Member he chairs the TC on Calcined Clays, created in 2018. Martirena has strong connections with the industry, mostly related to the swift introduction of low carbon cement LC3 in commercial practice through the Swiss-based company Ecosolutions.

Presentation Title: Calcined Clays for Sustainable Concrete

The cement industry is in the pursuit of sustainability. With over 8% of global carbon emissions worldwide, the industry is challenged to lower its carbon footprint. Sound research proved that kaolinitic clays with as low as 40% kaolinite can have a high reactivity as SCM. Further research studies found a synergy between the aluminates in calcined clays and the carbonates in limestone that led to the proposal of a ternary binder called limestone calcined clay cement (LC3), consisting of 50% Portland cement, 30% calcined clay, and 15% limestone. TAs SCM, (calcined) clays have been looked at mostly, as clays are widely available worldwide, with special emphasis on the tropical belt, where most of current cement production takes place. The reserves of the material are huge, often as a waste of industrial processes for extraction of high grade clay minerals such as kaolin. This lecture presents the results of the work of a group of several institutions under the umbrella of RILEM, working to compile and publish relevant information about the use of calcined clays in sustainable production.

Tuesday, July 9, 2025

12:00 PM-1:00 PM Lima Time / 1:00 PM-2:00 PM EDT (New York Time)

Co-Host Organization: ACI Peru Chapter

Website: www.aci-peru.org

The ACI Peru Chapter was founded in 1984. Today, the chapter has about 300 members and 700 student members. The ACI Peru Chapter is very active on both a local and international level. There are about 40 student chapters in Peru. During the last 40 years, the ACI Peru Chapter has earned ACI's Outstanding Chapter Award several times. The ACI Peru Chapter earned ACI's Excellence Chapter Award in 2024.

Local Moderator: Julio Higashi Luy, President, ACI Peru Chapter; CEO Higashi Ingenieros SAC- Structural Engineers; Professor, Civil Engineering Department, Pontificia Universidad Catolica del Peru

Julio Higashi Luy is a civil engineer with 30 years of specialized experience in structural engineering. He graduated from the Pontificia Universidad Católica del Perú (PUCP), where he currently teaches Reinforced Concrete in the Structural Engineering, a specialization in the Department of Civil Engineering. He is President of the ACI Peruvian Chapter and CEO of Higashi Ingenieros S.A.C. In addition, he manages Concrettus SAC, a company focused on the management and design of concrete pavements. Luy is an active member of the committees responsible for key Peruvian building codes, including the E-060 Reinforced Concrete Standard, E-020 Loads Standard, and E-032 Seismic Dissipators. He has served as a municipal delegate for the Boards of Engineers of Peru for over 20 years. His extensive portfolio includes the evaluation and strengthening of structures, as well as the design of numerous projects in the residential, industrial, and retail sectors.

1st Speaker: Christian Roberto Huamani Cala, Researcher, National University of Engineering (UNI)

Christian Huamani Cala is a Researcher at the National University of Engineering (UNI) in Lima, Peru. He holds a Bachelor of Science in Civil Engineering from UNI. He specializes in quality control and research and development (R&D) within the ready-mix concrete industry. He has contributed to the design of specialized concrete mixtures, including high-strength, pumpable, pervious, and shrinkage-compensated concretes for industrial slab applications. An active member and researcher at ACI Peru, he served as Past President of the ACI Student Chapter at UNI in 2023. Cala has presented his research on cementitious materials at the ACI 123 Concrete Research Session during the ACI Concrete Conventions in Philadelphia, PA, USA (2024) and Toronto, ON, Canada (2025). He is the recipient of the 2024 Regular Training Grant from UNI's Vice-Rectorate for Research and achieved second place in the Mortar Workability Competition (Overall Efficiency, Ecological Design, Economical Design) at the ACI Concrete Convention in New Orleans, LA, USA. He is also an Associate Member of ACI Committee 544, Fiber-Reinforced Concrete. His professional focus centers on applied research, innovative concrete mixture design, and continuous process improvement in the construction industry. Cala is dedicated to developing sustainable solutions that reduce the carbon footprint and promote circular economy practices in construction materials

Presentation Title: Assessing Residual Energy of Recycled Aggregate Concrete Under Severe Conditions: Insights from Peru

This presentation will provide an overview of an investigation on the performance of concrete incorporating recycled coarse aggregate (RCA) under severe environmental conditions, with the objective of reducing the carbon footprint. The influence of RCA on concrete was evaluated through residual energy and compressive strength tests, aiming to develop more sustainable concrete mixes. Conventional concrete served as the control for performance comparison.

To assess durability, specimens were subjected to sulfate attack following ASTM C1012 procedures, using a magnesium sulfate solution during the exposure period. Results indicate that, at later ages, concrete with recycled aggregate demonstrated superior residual energy and compressive strength compared to conventional concrete. This enhanced performance under aggressive conditions underscores the potential of recycled aggregate concrete as a sustainable and eco-friendly alternative, contributing to carbon footprint reduction by partially replacing virgin materials.

These findings support the broader adoption of recycled aggregates in concrete production, promoting circular economy practices and advancing the sustainability of the construction industry.

2nd Speaker: Guillermo David Huaco Cardenas, PhD, PE, Professor, National University of Engineering (UNI)

Dr. Guillermo Huaco Cardenas, PhD, is a structural and seismic engineering specialist with over 20 years of experience in Peru and the United States. He is a professor in the civil engineering department at UNI in Lima, Peru. He received his Doctor of Philosophy (PhD) and a Master of Science in engineering from the University of Texas at Austin, Austin, TX, USA, where he was awarded the Ferguson Endowed Presidential Scholarship for 2011-2012. He has postgraduate studies in Peru, North Macedonia, and Japan, focusing on infrastructure repair and disaster mitigation. He is also a licensed professional engineer in Texas and Peru. Cardenas has authored numerous scientific articles and presented at international conferences, including recent World Conference on Earthquake Engineering (WCEE) events. He has served as a speaker and as a member of Ad-hoc and Technical Committees at international symposia and conventions. His expertise encompasses the design and rehabilitation of reinforced concrete, masonry, and structural steel structures, including high-rise buildings, essential facilities such as schools and hospitals, and long-span industrial and commercial structures. He has extensive experience in post-earthquake structural assessments and seismic evaluations of diverse infrastructure. His project portfolio includes the rehabilitation of century-old buildings, such as facilities for the Congress of the Republic of Peru, and structural evaluation studies for critical infrastructure like the underground gas distribution line in Lima.

Presentation Title: Seismic and Structural Evaluation of a 70-Year-Old Reinforced Concrete and Masonry Building Structure

This presentation will describe the structural evaluation of a 70-year-old university building in Lima, Peru, exposed to a high-humidity environment. The building is designated as critical infrastructure for post-earthquake safety and emergency aid storage. The building, constructed in the early 1950s, is a reinforced concrete structure with masonry walls made from artisan bricks. A comprehensive assessment was conducted using both destructive and nondestructive testing methods. Destructive tests included extracting masonry cores and performing tensile tests on steel reinforcement, while auscultation techniques were applied to the foundation, concrete, and steel reinforcement. Nondestructive testing assessed frame joints and measured moisture in the steel bars. Results indicate that several reinforced concrete columns and beams do not meet the capacity requirements of Peruvian and international codes. Furthermore, the building's overall drift performance under seismic loading exceeds code allowances, indicating nonlinear structural behavior under the demands of the Peruvian seismic code. These findings highlight the need for targeted retrofitting to ensure the building's safety and functionality following seismic events.