

WELCOME TO THE 2011 INTERNATIONAL CONCRETE SUSTAINABILITY CONFERENCE

The National Ready Mixed Concrete Association welcomes you to the 2011 International Concrete Sustainability Conference. The Conference provides learning and networking opportunities on the latest advances, technical knowledge, continuing research, tools and solutions for sustainable concrete manufacturing and construction. Experts from all over the world will present on the latest developments related to design, specifying, manufacturing, testing, construction, maintenance, and research of concrete as it relates to sustainable development. The 2011 International Concrete Sustainability Conference is being held in conjunction with the MIT Concrete Sustainability Hub 2011 Industry Day.



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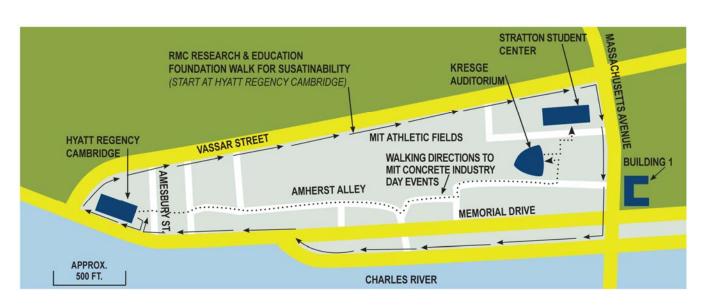
ORGANIZATIONAL PARTNERS

American Concrete Institute | American Coal Ash Association | American Concrete Pumping Association | American Society of Concrete Contractors | The Concrete Centre (UK) | Concrete Reinforcing Steel Institute | Concrete Sawing & Drilling Association Connecticut Concrete Promotion Council | Expanded Shale, Clay & Slate Institute | Interlocking Concrete Pavement Institute International Grooving & Grinding Association | Massachusetts Concrete & Aggregate Producers Association | Northern New England Concrete Promotion Association | Portland Cement Association | Precast/Prestressed Concrete Institute | Ready Mixed Concrete Research & Education Foundation | Silica Fume Association | Slag Cement Association | Wire Reinforcement Institute

HYATT REGENCY CAMBRIDGE FLOOR PLAN



MIT CAMPUS MAP



SCHEDULE-AT-A-GLANCE

2011 INTERNATIONAL CONCRETE SUSTAINABILITY

CONFRENCE Events take place at the Hyatt Regency Cambridge unless otherwise noted.

MONDAY, AUGUST 8

| 12:30pm – 5:00pm | NRMCA Audit & Finance Committee Mtg—Charles |
|------------------|---|
| | Sumner (closed mtg, lunch at 12:00 pm) |
| 5:00pm – 7:00pm | Registration—Courtyard Reception |
| 6:00pm – 7:00pm | Opening Reception—Empress Ballroom |

TUESDAY, AUGUST 9

| 7:00am – 7:00pm | Registration—Courtyard Reception |
|-------------------|--|
| 7:00am – 8:15am | Continental Breakfast—Outdoor Courtyard |
| 8:30am – 10:00am | Opening General Session—President's D |
| 10:00am - 10:30am | Break—Outdoor Courtyard |
| 10:30am - 12:00pm | Technical Sessions—3 concurrent, see program |
| 12:00pm – 1:15pm | Lunch—Outdoor Courtyard |
| 1:30pm – 3:00pm | Technical Sessions—3 concurrent, see program |
| 3:00pm – 3:30pm | Break—Outdoor Courtyard |
| 3:30pm – 5:00pm | Technical Sessions—3 concurrent, see program |

WEDNESDAY, AUGUST 10

Reception—Empress Ballroom

| 5:30am – 6:00am | RMCREF Walk for Sustainability Reg—Lobby |
|-------------------|--|
| 6:00am – 7:00am | RMCREF Walk for Sustainability—See map page 2 |
| 7:00am – 7:00pm | Registration—Courtyard Reception |
| 7:00am – 8:15am | Continental Breakfast—Outdoor Courtyard |
| 8:30am – 10:00am | Technical Sessions—3 concurrent, see program |
| 10:00am - 10:30am | Break—Outdoor Courtyard |
| 10:30am – 12:00pm | Technical Sessions—3 concurrent, see program |
| 12:00pm – 1:15pm | Lunch—Riverside Pavilion |
| 1:30pm – 3:00pm | Technical Sessions—3 concurrent, see program |
| 2:00pm – 6:00pm | MIT Industry Advisory Council Mtg—MIT Campus, |
| | Spofford Room, Building 1, Room 236 (closed mtg) |
| 3:00pm – 3:30pm | Break—Outdoor Courtyard |
| 3:30pm – 5:00pm | Closing General Session—President's D |



6:00pm - 7:00pm

6:00pm - 7:00pm

MIT CONCRETE SUSTAINABILITY HUB 2011 INDUSTRY DAY Events take place on the

MIT Campus, unless otherwise noted.

THURSDAY, AUGUST 11

Reception—Empress Ballroom

| RMCREF Board of Trustees Mtg—Stratton Student |
|--|
| Center, Mezzanine Lounge (closed meeting) |
| Registration—Kresge Auditorium Lobby |
| General Session—Kresge Auditorium |
| Lunch—Stratton Student Center, Sala De Puerto Rico |
| Registration—Stratton Student Center Balcony |
| NRMCA Exec Comm Mtg—Hyatt Regency Cam- |
| bridge, Aquarium (closed mtg, lunch at 12:00 pm) |
| Breakouts—Stratton Student Center |
| A. Life Cycle Assessment—Mezzanine Lounge |
| B. Green Concrete Science—Twenty Chimneys |
| |

FEATURED SPEAKERS

INTERNATIONAL CONCRETE SUSTAINABILITY CONFERENCE

Karl Watson, Jr., serves as the President of CEMEX USA and Chairman of NRMCA. Prior to his current position, Mr. Watson served as Regional President of the East Region of CEMEX, President of Rinker Materials West, the Chief Executive of Readymix in Australia and Vice President of Florida Materials. Mr. Watson has 20 years of experience in the construction materials industry and holds a Bachelor's of Science degree in Business from Palm Beach Atlantic College and an MBA from Nova Southeastern.



Karl Watson, Jr.

Dr. Sununu is former Governor of New Hampshire (1983–89) and former White House Chief of Staff under President George H. W. Bush. He earned his BS, Master's and Ph.D. from MIT, all in mechanical engineering. From 1968 until 1973, he was Associate Dean of the College of Engineering at Tufts University and Associate Professor of Mechanical Engineering. He served on the Advisory Board of the Technology and Policy Program at MIT from 1984 until 1989. Dr. Sununu is currently serving as industry liaison and advisor for the MIT Concrete Sustainability Hub.



John H. Sununu

Kate Simonen is Assistant Professor in the Department of Architecture at the University of Washington where she teaches structural and architectural courses. Licensed as both an architect and structural engineer, she has over 17 years of professional experience with built projects of diverse types. She is founding director of the Carbon Leadership Forum, an industry-academic collaborative research effort focused on advancing methods and standards for supply chain based product carbon footprints for the building industry. She received a Master of Architecture and Master of Science in Structural Engineering from the University of California, Berkeley and a Bachelor of Science in Architectural Engineering from the University of Colorado, Boulder.



Kathrina Simonen

MIT CONCRETE INDUSTRY DAY

Dr. John Ochsendorf conducts research on the mechanics and behavior of historical structures at MIT. His group is actively researching the dynamics of masonry buildings, the safety of cracked masonry vaults and domes, displacement loading of structures and the design of more sustainable infrastructure. His teaching interests included structural design, limit analysis, history of construction and sustainable construction. He received a Bachelor of Science from Cornell University, Master of Science from Princeton University and Ph.D. from Cambridge University. Dr. Ochsendorf is the lead researcher on the life cycle assessment work at the MIT Concrete Sustainability Hub.



John Ochsendorf

Dr. Franz-Josef Ulm is George Macomber Professor in the Department of Civil and Environmental Engineering at MIT. His research interests are in mechanics and structures of materials, including nano- and micromechanics of porous materials such as concrete, rocks and bones and in the durability mechanics of engineering materials and structures. He received his Master of Science from TU, Munich and his Ph.D. from ENPC, Paris. Dr. Ulm is the lead researcher on the concrete science work at the MIT Concrete Sustainability Hub.



Franz-Josef Ulm



2011 INTERNATIONAL CONCRETE SUSTAINABILITY CONFERENCE PROGRAM

AUGUST 8 – HYATT REGENCY CAMBRIDGE

5:00 PM - 7:00 PM CONFERENCE REGISTRATION (Courtyard Reception, Lobby Level)

6:00 PM - 7:00 PM PRE-CONFERENCE RECEPTION (Empress Ballroom, 14th Floor)

AUGUST 9 – HYATT REGENCY CAMBRIDGE

7:00 AM - 7:00 PM CONFERENCE REGISTRATION (Courtyard Reception, Lobby Level)

7:00 AM – 8:15 AM BREAKFAST (Outdoor Courtyard, Lobby Level)

8:30 AM – 10:00 AM OPENING GENERAL SESSION (President's Ballroom D, Lobby Level)

- ◆ Karl Watson, Jr., President, CEMEX USA and Chairman, NRMCA: Opening Remarks
- ◆ John H. Sununu, Former Governor of New Hampshire: Sustainability and the Political Landscape
- Kathrina Simonen, Assistant Professor of Architecture, University of Washington: Concrete Carbon Footprints—Developing Rigorous and Applicable Standards

10:00 AM - 10:30 AM BREAK (Outdoor Courtyard, Lobby Level)

10:30 AM - 12:00 PM CONCURRENT TECHNICAL SESSIONS T1

A. LIFE CYCLE ASSESSMENT (President's Ballroom D, Lobby Level)

- ◆ The Effect of Wall Construction Materials on the Air Leakage of Single-Family Houses, Durschlag, H. and Norford, L.
- Thermal Performance of Concrete Facades, Love, A. and Norford, L.
- From Cradle to Grave: Life Cycle Assessment and Carbon Benchmarking of Buildings, Hsu, L., Love, A., Norford, L. and Ochsendorf, J.

B. GREEN INFRASTRUCTURE (William Dawes, Lobby Level)

- ◆ EPA's Pourous Pavement Research Center in Edison, N.J., Justice, K.
- Potential Climate Change Impacts on Stormwater Infrastructure: Grey vs. Green Approach, Ghosh, I
- ◆ Laboratory Evaluation of Coal Combustion By-Products on Raveling Potential of Pervious Concrete, Offenberg, M.

C. GREEN CONCRETE (Thomas Paine, Lobby Level)

- ◆ Recovered Mineral Component's Impact on Lowering the Carbon Footprint of Concrete and Providing Material Resilience - Furthering Sustainability Through Long-Term Durability, Bühler, E.
- Making Concrete with a Lower Environmental Footprint, Obla, K.
- Achieving Differential Durability and Extended Service Life with Blended Cements, Buffenbarger, J. and Miltenberger, M.

12:00 PM - 1:15 PM LUNCH (Riverside Pavilion, Lobby Level)

1:30 PM – 3:00 PM CONCURRENT TECHNICAL SESSIONS T2

A. SUSTAINABILITY INITIATIVES (President's Ballroom D, Lobby Level)

- ♦ FHWA Sustainable Highways Self Evaluation Tool: Pilot Version Offers Improved Accounting of Key Pavement Attributes, Abdo, F.
- Sustainable Pavement Design and Construction Practices in Ontario, Canada, Lane, B.
- ◆ The FHWA Sustainable Pavements Program, Ahlstrom, G., Van Dam, T. and Smith, K.

B. CASE STUDIES (William Dawes, Lobby Level)

- ◆ From Surface to Microstructure: Investigating the Causes of In-Service Pervious Concrete Raveling Distresses, Vancura, M., MacDonald, K. and Khazanovich, L.
- Use of Performance Based Portland Based Limestone Cements in Colorado and Utah: Laboratory Durability Testing and Case Studies, Smartz, B., Laker, T. and Van Dam, T.
- Improving Sustainability of Concrete Construction The Role of High Strength Concrete, Fidjestol, P.

C. GREEN CONCRETE (Thomas Paine, Lobby Level)

- Use of Pitchstone Fine as a Partial Replacement of Portland Cement for Sustainable Concrete, Tuladhar, R., Smith, M., Raj Pandey, G. and Joyce, P.
- Recycled Concrete Aggregates for Use in New Concrete European Experiences, Vestergaard Nielsen, C.
- Concrete Pavement Sustainability Current Success and Future Opportunities, Grove, J., Vanikar, S. and Tayabji, S.

AUGUST 9 – HYATT REGENCY CAMBRIDGE

3:00 PM - 3:30 PM BREAK (Outdoor Courtyard, Lobby Level)

3:30 PM - 5:00 PM CONCURRENT TECHNICAL SESSIONS T3

A. SUSTAINABILITY INITIATIVES (President's Ballroom D)

- A Sustainability Performance Index for Concrete, Bhattacharjee, B.
- Sustainability Rating Systems Why Bragging Rights Aren't Enough, Demich, G.
- Service Life Design Guidelines for Underground Facilities, Chen, W.
- B. PERFORMANCE-BASED SPECIFICATIONS (William Dawes, Lobby Level)
 - Role of Performance Based Specifications in Sustainable Development, Lobo, C.
 - ◆ Hydraulic Cement Specifications: Enhancing Concrete Sustainability, Tennis P. and Melander, J.
 - Concrete Sustainability Versus Constructability—Closing the Gap, Cost, T.
- C. GREEN CONCRETE (Thomas Paine, Lobby Level)
 - Mechanical and Durability Properties of Concretes Made with Different Levels of Recycled Concrete as Coarse Aggregates, Verian, K., Jain, J., Whiting, N. and Olek, J.
 - A Study Showing The Influence of Differing Percentage of Coarse RCA Containing Gypsum on Properties of Concrete, Hedayatnasab, A. and Limbachiya, M.
 - Obtaining High Strength Concrete Using Recycled Aggregate Concrete by Matching Its Gradation with Normal Aggregate Concrete Power Gradation Curve, Mahgoub, M. and Bassiouny, M.

6:00 PM – 7:00 PM RECEPTION (Empress Ballroom, 14th Floor)

AUGUST 10 – HYATT REGENCY CAMBRIDGE

5:30 AM - 6:00 AM WALK FOR SUSTAINABILITY REGISTRATION (Hyatt Regency Cambridge Lobby)*

6:00 AM - 7:00 AM WALK FOR SUSTAINABILITY (MIT Campus—see map on page 2)*

7:00 AM - 7:00 PM CONFERENCE REGISTRATION (Courtyard Reception, Lobby Level)

7:00 AM – 8:15 AM BREAKFAST (Outdoor Courtyard, Lobby Level)

8:30 AM - 10:00 AM CONCURRENT TECHNICAL SESSIONS T4

- A. INNOVATIVE PAVEMENTS (President's Ballroom D, Lobby Level)
 - Full Depth Reclamation with Cement A Sustainable Solution to Reconstructing Failed Asphalt Roads, Martin, J.R.
 - Precast Prestressed Concrete Pavements for Long-Life, Low-Cost, and Sustainable Pavement Rehabilitation, Tyson, S., Tayabji, S. and D. Merritt
 - Legislating a Sustainable Roadway Infrastructure, Kuebler, T.
- B. PERFORMANCE-BASED SPECIFICATIONS (William Dawes, Lobby Level)
 - Performance Based Concrete in Ontario, Schell, H. C. and Konecny, J.
 - When Worlds Collide: Project Specifications vs. Sustainable Initiatives. Szecsy. R.
 - Sustainable Concrete Design in the Green Revolution: A Producer's Perspective, Henkensiefken, R.and Donovan, J.M.
- C. GREEN CONCRETE (Thomas Paine, Lobby Level)
 - Chemical Admixtures of the Future: Opportunities and Challenges for Sustainable Concrete Production, Placement, and Service Life, Jeknavorian, A.
 - Durability of Ternary Cementitious Blends Containing Precipitated Calcium Carbonates Manufactured from Sequestered CO2, Stone, G., Patterson, J. and Clodic, L.
 - Sustainable Concrete Practices: Using a Hydration-Controlling Admixture to Improve Your Economic and Environmental Position, Bury, M. and Ryan, R.

10:00 AM – 10:30 AM BREAK (Outdoor Courtyard, Lobby Level)

^{*} The Walk for Sustainability is sponsored by the RMC Research & Education Foundation. For more detail see page 7.

AUGUST 10 – HYATT REGENCY CAMBRIDGE

10:30 AM - 12:00 PM CONCURRENT TECHNICAL SESSIONS T5

- A. CASE STUDIES (President's Ballroom D, Lobby Level)
 - The Tenant Avenue Bridge, Built with Environmentally Friendly Concrete, Donovan, M.
 - The Use of Sustainable, High-Performance Concrete in New York City, Pirozzi, M.
 - The Sum of the Parts Equals Sustainability, Constantino, C. and Bury, M.

B. SUSTAINABLE MANUFACTURING (William Dawes, Lobby Level)

- ◆ Measuring Sustainable Concrete Production Practices, Lemay, L.
- ◆ Effect of In-Boiler Additions to Coal Combustion on Composition, Compressive Strength Development and Durability of Resulting Combustion Products, Drimalas, T., Kruse, K., Bentivegna, A., Folliard, K., Brown D. and Sandberg, P.
- Energy Management and Corporate Sustainability The Practical Approach, Bayne, C.

C. GREEN CONCRETE (Thomas Paine, Lobby Level)

- The Evaluation and Selection of Natural Supplementary Cementitious Materials for Blended Cements, Morrical, S., Laker, T. and Descheneaux, B.
- Use of Limestone Fillers in Portland Cement Binders: A Study of the Potential for Thaumasite Sulfate Attack, Farrington, S.A. and Luciano, J.J.
- ◆ Mechanical Behavior of Concrete Made from Marginal Aggregates, Bekoe, P., Tia, M. and Shoucair, J.

12:00 PM - 1:15 PM LUNCH (Riverside Pavilion, Lobby Level)

1:30 PM - 3:00 PM CONCURRENT TECHNICAL SESSIONS T6

- A. MEASURING SUSTAINABILITY (President's Ballroom D, Lobby Level)
 - Minimizing Cementitious Content for Performance and Sustainability in Rigid Pavements, Yurdakul, E., Taylor, P., Ceylan, H. and Bektas, F.
 - ◆ Consideration of Economic and Environmental Factors Over the Concrete Pavement Life Cycle A Michigan Study, Van Dam, T., Meijer, J., Ram, P., Smith, K. and Belcher, J.
 - ◆ Design of Sustainable Reinforced Concrete Infrastructure Using Probabilistic Life Cycle Assessment and Durability Methods, Lepech, M., Geiker, M. and Stang, H.

B. SUSTAINABLE MANUFACTURING (William Dawes, Lobby Level)

- Update on the PCI Sustainable Plant Program for Precast Concrete Plants, Frank, D.
- Connecting People to Nature through Biodiversity at Cement and Concrete Plants, Wiles, E. and Ingerson, D.
- Role of Process Control in Improving the Sustainability of Concrete Production, Koehler, E. and Groh, D.

C. GREEN CONCRETE (Thomas Paine, Lobby Level)

- Use Sustainable Concrete with Increased SCM Content while Shortening Curing Time with Advanced Heat Control for Hydronic Cured Concrete Directed by Laboratory Established Maturity Curves, Anderson, E.
- Feasibility Study of Using Recycled-Concrete Fine Aggregate in Self Consolidation Concrete, Hu, J.
- ◆ Performance of Slag-Cement Concrete Subject to Early Carbonation Curing, Shao, Y., Monkman, S. and He, Z.

3:00 PM - 3:30 PM BREAK (Outdoor Courtyard, Lobby Level)

3:30 PM - 5:00 PM CLOSING GENERAL SESSION (President's Ballroom D, Lobby Level)

- Green Infrastructure for Stormwater Management, Hair, L.
- Greenroads in Concrete Shoes: How a Roadway Rating System Can Help the Sustainable Concrete Cause, Muench, S.
- Closing Remarks: Rodney Grogan, President of MMC Materials and Chairman of the NRMCA Sustainability Committee



2011 MIT CONCRETE SUSTAINABILITY HUB INDUSTRY DAY *

AUGUST 11 – MIT CAMPUS

7:00 AM—12:00 PM REGISTRATION (Kresge Auditorium Lobby, MIT Campus)

9:00 AM – 12:00 PM GENERAL SESSION (Kresge Auditorium Main Floor, MIT Campus)

This session will feature presentations on year two results of the MIT Concrete Sustainability Hub* research. Lead investigators will present findings on the two main research areas:

A. THE EDGE OF CONCRETE: A LIFE-CYCLE INVESTIGATION OF CONCRETE AND CONCRETE STRUCTURES

B. FROM LIQUID TO STONE: THE GENESIS OF CONCRETE

The event is an opportunity for construction industry stakeholders to see first-hand the progress being made at MIT and to meet the lead researchers.

12:00 PM – 1:15 PM LUNCH (Sala de Puerto Rico, Stratton Student Center, 2nd Floor, MIT Campus)

12:00 PM - 3:00 PM REGISTRATION (Stratton Student Center Balcony, 3rd Floor, MIT Campus)

1:30 PM - 3:00 PM CONCURRENT BREAKOUT SESSIONS

These sessions will provide construction industry steakeholders an opportunity to ask questions and provide input to the research being conducted at the MIT Concrete Sustainability Hub.

- A. LIFE CYCLE ASSESSMENT (Mezzanine Lounge, Stratton Student Center, 3rd Floor, MIT Campus)
- A. GREEN CONCRETE SCIENCE (Twenty Chimneys, Stratton Student Center, 3rd Floor, MIT Campus)

*The Concrete Sustainability Hub is a research center at the Massachusetts Institute of Technology (MIT) that was established by the RMC Research & Education Foundation and the Portland Cement Association (PCA). Both organizations are committing significant effort and resources with the goal of accelerating emerging breakthroughs in concrete science and engineering and transferring that science into practice.



AUGUST 10 – HYATT REGENCY CAMBRIDGE AND MIT CAMPUS



This year, the RMC Research & Education Foundation* will hold its first-ever Walk for Sustainability to help raise awareness of the Foundation's large body of sustainability-focused research reports and to raise additional funds to help the Foundation continue this important work. The walk will take place on August 10, 2011, 6:00 am – 7:00 am leaving from the Hyatt Regency Cambridge and touring a part of the MIT campus along the Charles River. This event requires separate registration. Visit the RMC Research & Education and Foundation Booth in the Hyatt Regency Cambridge lobby to register in advance. On the day of the event, registration for the walk is from 5:30 am – 6:00 am in the Hyatt Regency Cambridge lobby. See page 2 for the walk route.

The RMC Research & Education Foundation is putting the generous contributions of the concrete and construction community members to work to fund programs that are helping to improve an already superior product in an industry committed to excellence. The research and educational programs supported by the RMC Research & Education Foundation represent a broad system of projects that are helping to keep the concrete industry on the cutting edge. Please visit www.rmc-foundation.org for more information on the work of the Foundation.



UPCOMING NRMCA-SPONSORED EVENTS





Join colleagues from around the country for this informative showcase of trends and developments in the ready mixed concrete industry. For the first time, NRMCA is co-locating the Fall NRMCA Board of Director's Meeting with NRMCA's ConcreteWorks. NRMCA's ConcreteWorks has a reputation for delivering information ready mix concrete professionals can take home and put to work immediately to improve their operations, quality and efficiency. Six separate educational tracks will be presented, including technology, environmental, safety, promotion, business and sustainability. NRMCA's Concrete-Works offers the opportunity to learn from industry leaders

and discuss the issues the ready mixed concrete industry faces every day. The event will also feature the 6th Annual National Mixer Driver Championship. This event is certainly a highlight of the conference and shows off the best drivers in the industry. Visit www.nrmca.org for details.







Join the National Ready Mixed Concrete Association and Grey Matters Consultancy for the 2011 International Concrete Sustainability Conference, November 15-16, 2011, in Doha, Qatar. The Conference provides learning and networking opportunities on the latest advances, technical knowledge, continuing research, tools and solutions for sustainable concrete manufacturing and construction. Experts from all over the Middle East and the world will present on the latest developments related to design, specifying, manufacturing, testing, construction, maintenance, and research of concrete as it relates to sustainable development. Visit www.ConcreteSustainabilityConference.org for information.

Future Concrete 2011 2ND INTERNATIONAL CONFERENCE December 12-14, 2011 DUBAI, UAE





The International Conference on Future Concrete 2011 presents the opportunity for Middle Eastern construction stake-holders to meet with international experts on a comprehensive platform that will combine a variety of topics related to advanced concrete design, production and construction. Regional and international speakers will thoroughly discuss, elaborate and analyze a rich combination of modern, challenging themes, including: Concrete of the 21st Century, Smart Construction, Advanced Materials Technologies, Innovative Construction Practices, Carbon Accounting and Sustainability Standards. The conference is sponsored by Advanced Technology Construction Services. NRMCA is an Organizational Partner. Visit www.futureconcrete.com for additional details.

