Birth and Life of the Integrated Building

AEI CONFERENCE
Architectural Engineering Institute of ASCE

The Pfister Hotel
www.asce.org/aeiconference2015
Schedule-At-A-Glance

(Subject to Change)

**Tuesday, March 24**
1:00 - 5:00 p.m.   Exhibitor Move-in
2:00 – 7:00 p.m.   Registration Hours
6:00 – 8:30 p.m.   Student Career Fair, MSOE Kern Center

**Wednesday, March 25**
7:00 a.m. – 5:00 p.m.   Registration Hours
7:30 a.m. – 8:30 a.m.   Continental Breakfast
8:00 a.m. – 5:00 p.m.   AEI Student Design Competition
8:30 – 10:00 a.m.   Opening Plenary Session
8:30 a.m. – 12:00 p.m.   ASHRAE Short Course
10:00 – 10:30 a.m.   Networking Break
10:00 a.m. - 3:30 p.m.   Exhibit Hours
10:30 – 12:00 p.m.   Concurrent Technical Sessions
12:00 – 1:30 p.m.   Lunch and Keynote Lecture
1:30 – 3:00 p.m.   Concurrent Technical Sessions
3:00 – 3:30 p.m.   Networking Break
3:30 – 5:00 p.m.   Concurrent Technical Sessions
3:30 – 5:00 p.m.   Decisions Today Influencing Careers Tomorrow – An Integrative Panel Discussion
6:00 – 8:00 p.m.   Welcome Reception, MSOE Grohmann Museum

**Thursday, March 26**
7:00 a.m. – 5:00 p.m.   Registration Hours
7:30 – 8:30 a.m.   Continental Breakfast
8:30 – 10:00 a.m.   Concurrent Technical Sessions
8:30 a.m. – 12:00 noon   Workshop for Student Chapter Leaders (WSCL)
10:00 – 10:30 a.m.   Networking Break
10:00 a.m. - 3:30 p.m.   Exhibit Hours
10:30 a.m. – 12:00 p.m.   Concurrent Technical Sessions
12:00 – 1:30 p.m.   Lunch and Keynote Lecture
1:30 – 3:00 p.m.   Concurrent Technical Sessions
1:30 – 3:00 p.m.   Student Competition Jury Feedback
3:00 – 3:30 p.m.   Networking Break
3:30 – 5:00 p.m.   Concurrent Technical Sessions
3:30 – 5:00 p.m.   Professional Project Award Presentations
3:30 - 6:00 p.m.   Exhibitor Move-out
6:30 – 9:00 p.m.   Awards Banquet

**Friday, March 27**
8:00 a.m. – 12:00 p.m.   Technical Tours – Johnson Controls & Marquette University
12:00 p.m. – 5:00 p.m.   Committee Meetings

**Saturday, March 28**
8:00 a.m. – 12:00 p.m.   Board of Governors Meetings

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**Seismic Design of Curtain Wall Systems**
June 18, 2015
11:30 a.m. - 1:00 p.m.
http://goo.gl/5PVv61

**Future AEI Meetings**

**AEI Forum 2016**
Worcester Polytechnic Institute

**AEI Conference 2017**
University of Oklahoma

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**Building Security Rating System**
Checklists to Assess Risks, Consequences, and Security Countermeasures
www.asce.org/building-security-MOP
Invitation
To Attend

Dear Colleagues,

On behalf of the Architectural Engineering Institute of the American Society of Civil Engineers, it is my privilege to welcome you to the AEI Conference 2015 in Milwaukee, Wisconsin. Our theme this year is Birth and Life of the Integrated Building.

The conference program is one you will surely enjoy. Whether you’re a building mechanical engineer, building electrical systems engineer, structural engineer, architect, or construction manager, there are sessions that will be of interest to you. You will have the opportunity to network with industry leaders, and you will hear keynote lectures from experts in their fields. In between sessions, make sure to stop by the AEI Student Competition and see your future colleagues in action!

I hope you will allow yourself some time to explore the great city of Milwaukee. Several places of interest are within walking distance of the conference venue, including the Milwaukee Art Museum (whose building was designed by world renowned engineer and architect Santiago Calatrava), the corporate headquarters for Johnson Controls and Northwestern Mutual Life Insurance, and several excellent old-world German restaurants. If you’re willing to take a short trip by taxi, you can visit the Harley-Davidson Museum or take a tour of Miller Brewing Company. And, don’t forget to stop by Milwaukee School of Engineering and see the amazing Lego architectural creations that were designed and built by the Architectural Engineering students. They are located in the MSOE Walter Schroeder Library right next to the world’s largest light bulb!

I look forward to meeting you at the conference. It’s easy to find me – just look for the bow tie!

Christopher H. Raebel, Ph.D., P.E., S.E.
Conference Chair, AEI Conference 2015

Committee Members

Conference Chair
Christopher H. Raebel, Ph.D., P.E., S.E., MASCE, Milwaukee School of Engineering, Milwaukee, WI

Local Planning Committee
Scott Campbell, Ph.D., P.E., MASCE, Structural Analysis Consulting Group, Milwaukee, WI
Dawn Rossrsmiller, P.E., MASCE, President, Fox Valley ASCE
Blake Wentz, Ph.D., CPC, LEED AP, A.MASCE, Milwaukee School of Engineering, Milwaukee, WI
Chris Ulm, P.E., LEED AP, Ring & DuChateau Consulting Engineers, Milwaukee, WI
Jason Loffington, P.E., LEED AP, Porforno Architects + Engineers, De Pere, WI

National Conference Steering Committee
Ali Memari, Ph.D., P.E., FASCE, The Pennsylvania State University, University Park, PA
Chimay Anumba, Ph.D., P.E., FASCE, The Pennsylvania State University, University Park, PA
Kenna Chapin, P.E., FAEI, Wallace Engineering, Tulsa, OK
Mohammed Ettouney, Ph.D., P.E., D.MASCE, Weidlinger Associates Inc., New York, NY
Adam Hapij, P.E., MASCE, Weidlinger Associates Inc., New York, NY
Mark McAfee, P.E., FAEI, Dudley Williams and Associates, PA, Wichita, KS
Mark Sarkisian, P.E., S.E., LEED AP, MASCE, Skidmore Owings & Merrill LLP, San Francisco, CA

Technical Proceedings Committee
Christopher H. Raebel, Ph.D., P.E., S.E., MASCE, Milwaukee School of Engineering, Milwaukee, WI
Scott Campbell, Ph.D., P.E., MASCE, Structural Analysis Consulting Group, Milwaukee, WI
Blake Wentz, Ph.D., CPC, LEED AP, A.MASCE, Milwaukee School of Engineering, Milwaukee, WI
Chris Ulm, P.E., LEED AP, Ring & DuChateau Consulting Engineers, Milwaukee, WI
Frank Mohuto, Ph.D., J.D., P.E., Milwaukee School of Engineering, Milwaukee, WI
Tim Wentz, P.E., LEED AP, University of Nebraska, Lincoln, NE
Ali Memari, Ph.D., P.E., FASCE, The Pennsylvania State University, University Park, PA

ASCE Staff
Catherine Tehan, Director, Architectural Engineering Institute
Verna Jameson, Administrator, Architectural Engineering Institute
Elaine V. Watson, Manager, Conferences & Meeting Services
Kaye Hines Matusik, Senior Coordinator, Conferences & Meeting Services
Drew Caracciolo, Manager, Exhibits and Sponsorship Sales
**Special Events & Conference Agenda**

**Tuesday, March 24, 2015**

**Registration Hours**
2:00 – 7:00 p.m., Grand Foyer

**Student Career Fair**
6:00 – 8:30 p.m., Milwaukee School of Engineering (MSOE), Kern Center, 1245 North Broadway

For more information and to register, visit www.mose.edu/careernight.

**Wednesday, March 25, 2015**

**Registration Hours**
7:00 a.m. – 5:00 p.m., Grand Foyer

**Speaker Ready Room**
7:00 a.m. – 5:00 p.m., Empire Room

**Continental Breakfast**
7:30 – 8:30 a.m., Grand Foyer

**AEI Student Design Competition**
8:00 a.m. – 5:00 p.m., Grand Ballroom East

The 2015 AEI Student Design Competition has been created specifically to highlight and showcase the architectural engineering discipline.

The student teams were challenged to address the design, integration, and construction issues that must be considered for an urban commercial farm housed in a five story building with a basement area consisting of about 50,000 total square feet.

The project is more than a vertical urban farm. The Growing Power organization has become a national leader in providing neighborhood-based sustainable agricultural education. The building fills the need for space to support production, classes, meetings, meal preparation, offices, and onsite warehousing while serving as a model of ecological sustainability. Growing Power has a vision to inspire communities to build sustainable food systems that are equitable and ecologically sound, creating a just world, one food-secure community at a time.

The building will include greenhouse spaces for a variety of plants, vegetables and herbs and hydroponic tanks for raising fish. The building will also be used as a training center with educational classrooms, a demonstration kitchen, food processing, and storage freezers. The building will include a retail space and a community kitchen. The concept includes a gathering area able to accommodate more than 400 individuals on the second floor.

The competition is open to both graduate and undergraduate students in accredited architectural engineering programs and programs actively seeking accreditation by EAC/ABET. Each team shall be supervised and advised by a faculty advisor. Submissions are to be entered in the building systems integration category and additionally one or more of the following four categories: structural systems design, mechanical systems design, electrical systems design, and innovative construction management and construction methods. Students are encouraged to work together in multidisciplinary teams and consider how the engineered systems work with or enhance the architecture of the building.

This year’s competition began in September 2014. The deadline for electronic submissions was February 11, 2015, and the finalists were notified on February 25, 2015. The finalist teams will present their projects to the jury at the conference. The winners and runners-up in each category will be presented with certificates and cash prizes at the Awards Banquet on Thursday, March 26 from 6:30 to 9:00 p.m.

**Opening Plenary Session**
8:30 – 10:00 a.m., Grand Ballroom West

**WELCOME ADDRESS**
Hermann Viets, Ph.D., President and CEO, Milwaukee School of Engineering

**KEYNOTE PRESENTATIONS**
Vince Bertram, Ph.D., President and Chief Executive Officer, Project Lead The Way

Preparing the Future Workforce, Today

Today’s students are tomorrow’s workforce. But too many of these students lack the interest and skills to pursue careers in science, technology, engineering and math-related fields. It is vital that today’s learners understand the relevancy of math and science to their everyday lives and develop problem-solving, critical thinking and collaboration skills necessary to succeed in our global economy. In his keynote address, Dr. Vince Bertram will discuss what Project Lead The Way is doing to prepare the next generation of STEM professionals - including architectural engineers - as well as the challenges and opportunities presenting all engineering professions and how each of us can play a part in shaping the future workforce upon which we depend.

Vic Sanvido, Ph.D., Senior Vice President, Southland Industries

A Lean Approach to Planning, Design, Construction and Operations of Buildings

This presentation will highlight waste and identify several methods to identify and eliminate that waste. It will also explore some of the possibilities through innovation in project delivery, lean operating systems, modeling and prefabrication. Ultimately the building must help its occupants deliver more effective services to their customers.

**ASHRAE Short Course: Energy Management Best Practices**
8:30 a.m. – 12:00 p.m., McKinley Room

**Networking Break**
10:00 – 10:30 a.m., Grand Foyer

**Exhibit Hours**
10:00 – 3:30 p.m., Grand Foyer

Learn about the exciting new developments in the Architectural Engineering Industry.

**Technical Sessions**
10:30 a.m. – 5:00 p.m.

See pages 7-10 for a complete list of presentations and rooms.
Lunch and Keynote Lecture
12:00 – 1:30 p.m., Imperial Ballroom
Mitchel W. Simpler, P.E., Managing Partner, Jaros Baum & Bolles
The Perfect Office Building
For as many years as there have been engineers designing commercial and institutional buildings around the world, all have strived to design the “Perfect Office Building.” This elusive goal has been made even more challenging by the simple fact that the best available technology at the time of design is often yesterday’s news by the time the project actually gets built. Given the simple fact that the mechanical and electrical infrastructure systems occupy upwards of 15% of any building’s built floor area and account for over 25% of the project’s capital budget, it’s time we take these critical infrastructure systems out of the closet and into the forefront where they are better understood.

Networking Break
3:00 – 3:30 p.m., Grand Foyer

Decisions Today Influencing Careers Tomorrow – An Integrative Panel Discussion
3:30 – 5:00 p.m., Richard II Room
Please join this integrative panel to help inform emerging professionals about choices today that influence their careers tomorrow. Professionals with construction, electrical, mechanical, and structural expertise discuss their respective paths to current roles within architectural engineering practice, including a question and answer session.

Margaret Reed, AIA, LEED AP, is currently a Quality and Project Manager based out of the Delaware Valley Regional Office of Gilbane Building Company. Maggie studied architecture at The Pennsylvania State University and has worked in both the design and construction fields during her career. Maggie earned her LEED AP in 2006 and became a registered architect in 2014.

James S. Bates, P.E., is a Project Manager at Architectural Engineering Design Group after working nearly a decade as an Electrical Engineer and Project Lighting Designer at HDR Architecture and later a Senior Electrical Engineer at Ballinger. He studied architectural engineering at the University of Colorado and business at The George Washington University. Jimmy has experience in electrical, lighting, daylighting, and sustainable systems design, including involvement on such technically complex project types as Academic, Civic, Healthcare, Museum, and Science + Technology.

Christopher J. Ahern, P.E., is an Assistant Professor at Kansas State University after working as a Principal at PKMR Engineers, where he remains involved as a consultant. Chris studied architectural engineering at Kansas State University where he now teaches building systems design (MEP), stand-by/emergency power system design, lighting system design and control strategies, and fire alarm/communication system design.

Brent G. Vollenweider, A.M.ASCE, is a Senior Associate at Weidlinger Associates, Inc. Brent’s experience includes managing the structural and blast-resistant design of a wide variety of national and international projects for various private sector and government clients. Brent studied architectural engineering at the University of Colorado and structural engineering at the University of California at Berkeley.

Welcome Reception
6:00 – 8:00 p.m., MSOE Grohmann Museum, 1000 North Broadway
Join us for the Welcome Reception at the Grohmann Museum, home to the world’s most comprehensive art collection – more than 1,000 paintings and sculptures – dedicated to the evolution of human work. The museum’s steel and glass-domed entrance welcomes visitors to three floors of exhibits, leading to the rooftop lined with a dozen large, bronze sculptures – men toiling in the field and foundry, heaving hammers or pinching molten metal with hot tongs. Each statue is nine feet tall, weighs in at a thousand pounds and has a commanding view of the city that was built on the hard work they depict. Cash bar.

Sponsored by

Thursday, March 26, 2015
Registration Hours,
7:00 a.m. – 5:00 p.m., Grand Foyer

Speaker Ready Room
7:00 a.m. – 5:00 p.m., Empire Room

Continental Breakfast
7:30 – 8:30 a.m., Grand Foyer

Student Chapter Leaders Workshop
8:30 a.m. – 12:00 p.m., Richard II Room

Technical Sessions
8:30 a.m. – 5:00 p.m.
See pages 7-10 for a complete list of presentations and rooms.

Networking Break
10:00 – 10:30 a.m., Grand Foyer

Exhibit Hours
10:00 a.m. – 3:30 p.m., Grand Foyer

Lunch and Keynote Lecture
12:00 – 1:30 p.m., Imperial Ballroom
Nicholas Holt, AIA, LEED, AP BD+C, Director, Skidmore, Owings & Merrill, LLP
The Performance Imperative: Integration and Innovation in the Build Environment
The shelters and buildings of our distant and recent past were crafted on how they protected us from the harsh realities of the environment, conserved conventionally assembled materials and made us safe and comfortable. We did not measure these metrics in spreadsheets, but in a visceral understanding of function, comfort and performance. Generations of builders saw this as a raw imperative, passing this knowledge down, enhancing it through trial and error along with the occasional moment of genius to create vernacular, fully integrated architecture fit for purpose. We are moving headlong into an era of truly high performance buildings; toward a new and fully integrated vernacular design. It is an era that has already resulted in and has the incredible potential to catalyze some of our most significant design innovations. High performance design fueled by predictive metrics and confirmed in ongoing building performance is once again our imperative.

Sponsored by SOM
Marquette University Engineering Hall
9:00 a.m. – 12:00 p.m.
Marquette University Engineering Hall has received LEED Gold Certification and is a learning laboratory which measures the environmental impacts inherent in the design, construction, operations and management of a building.

Tour Schedule
9:00 a.m. Depart Pfister Hotel
9:30 a.m. Arrive at Marquette University
9:30 – 11:15 a.m. Tour of Engineering Hall
11:15 a.m. Pick up at Marquette
11:45 a.m. Arrive at Pfister Hotel

Meet in the hotel lobby by 8:45 a.m. for a 9:00 a.m. departure.

PDHs: 2

Hotel Floor Plan – 7th Floor

Friday, March 27, 2015

TECHNICAL TOURS. A separate ticket is required for each of these tours. It is not included in your conference registration.

Johnson Controls, Inc. – Glendale Campus
8:00 – 11:00 a.m.
A growing number of companies increasingly measure their performance using the triple-bottom-line indicators of economic, social and environmental impact. Johnson Controls, Inc. demonstrates these values in its products and services. The construction and expansion of its corporate campus in Glendale, Wisconsin provides a showcase for its efforts.

The campus was awarded LEED Platinum certification in September 2010 by the U.S. Green Building Council, the highest such recognition possible. The Glendale campus represents the largest concentration of LEED Platinum buildings, four on one site, ever awarded. The 33-acre complex involves 306,359 square feet of new and completely renovated office space. Two existing buildings with a combined 160,000 square feet were renovated for the corporate headquarters, and three new buildings were constructed: a 114,599 square-foot headquarters for its Power Solutions business; a 31,700 square-foot building that includes a cafeteria, meeting rooms and fitness center; and a new four-level parking structure for more than 400 vehicles including space for plug-in hybrids.

Tour Schedule
8:00 a.m. Depart Pfister Hotel
8:30 a.m. Arrive at Glendale Campus
8:30 – 10:15 a.m. Tour of Glendale Campus
10:15 a.m. Depart Glendale Campus
10:45 a.m. Arrive at Pfister Hotel

Meet in the hotel lobby by 7:45 a.m. for an 8:00 a.m. departure

PDHs: 2

Sponsored by SIMPSON GUMPertz & HEGER
**Tuesday, March 24**

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<tbody>
<tr>
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<td>Registration, Grand Foyer</td>
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<td>6:00 - 8:30 p.m.</td>
<td>Student Career Night, MSOE Kern Center, 1245 North Broadway</td>
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**Wednesday, March 25**

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<tr>
<td>8:30 - 10:00 a.m.</td>
<td>Opening Plenary Session, Grand Ballroom West</td>
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<td>Welcome Message from Hermann Viets, Ph.D., Chief Executive Officer and President, Milwaukee School of Engineering (MSOE)</td>
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<td>Keynote Addresses by Vince Bertram, Ph.D., President and CEO, Project Lead the Way</td>
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<td>Victor Sanvido, Sr. Vice President, Southland Industries</td>
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<tr>
<th>TRACK 1, Roosevelt Room</th>
<th>TRACK 2, Kennedy Room</th>
<th>TRACK 3, Louis XIV Room</th>
<th>TRACK 4, Henry VIII Room</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Using High Dynamic Range Photogrammetry for Lumiance Mapping the Sky and the Sun, Hongyi Cai</td>
<td>Advanced Sustainability Concepts for Tall Buildings, Brian Griffith, Teresa Rainey</td>
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<td>The Balance Between Daylighting and Thermal Performance Based on Exploiting The Kaleidoscope Typology in Hot Arid Climate of Aswan, Egypt, Ayman Wagdy, Yomna El-Ghazi, Sahar Mohamed, Asmaa Hassab</td>
<td>Material Optimization for Tall Buildings, Alessandra Bghini, David Shook, Arkadiusz Mazurek</td>
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<td>New Concepts for Exterior Wall Systems for Tall Buildings, Christopher Johnson, Christoph Timm</td>
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| 12:00 - 1:30 p.m. | Lunch and Keynote Address by Mitchel Simpler, P.E., Managing Partner, Jaros, Baum & Bolles, Imperial Ballroom |

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<th>1:30 - 3:00 p.m.</th>
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<td>TRACK 1, Roosevelt Room</td>
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<tr>
<td>Integrated Damping Systems for Tall Buildings, Kyoung Sun Moon</td>
<td>Building Enclosure Challenges and Solutions Faced During Commissioning, William Nash</td>
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<td>A Study on Effect of Water Tanks Modeled as Tuned Mass Dampers on Dynamic Properties of Structures, Dhandy Rupesh Kumar, M. Gopal Naik, Fahimeh Hosein-Zadeh</td>
<td>Building Envelopes; A Comparison of Impacts on Environment, Rahman Azari, Rogelia Paloma-Arias</td>
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<td>Structural Control with Dynamic Façades, Tai Fu, Rui Zhang</td>
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**www.asce.org/aeiconference2015**
3:00 - 3:30 p.m.  Networking Break, Grand Foyer

3:30 - 5:00 p.m.  Technical Sessions

**TRACK 1, Roosevelt Room**  
**SESSION 11:**  
**Energy**  
Moderator: Christine Bratz, MSOE

**SESSION 12:**  
**Multidisciplinary Assessment and Design Considerations for Buildings Subjected to Abnormal Demands**  
Moderator: Adam Gupta, Woolley Assoc.

**SESSION 13:**  
**Utilizing a Lean Design Process and Designing for Prefabrication to Improve Project Outcomes**  
Moderator: Robert Gottschalk, Barton Malow

**SESSION 14:**  
**Advancing Student Engagement of Buildings through Virtual Facility Dissemination**  
Moderator: Ryan Solosky, Ph.D., Penn State

**SESSION 15:**  
**Decisions Today Influencing Careers Tomorrow – An Integrative Panel Discussion**  
Margaret Reed, James Bates, Chris Ahern, Brent Vollenweider

**TRACK 2, Kennedy Room**  
**SESSION 16:**  
**BIM Advances**  
Moderator: John Zachar, Ph.D., MSOE

**SESSION 17:**  
**Technology In Construction**  
Moderator: Sean Hooi, Ph.D., MSOE

**SESSION 18:**  
**Self-Sustaining Building Design**  
Moderator: Dawn Reizes, President, Fox Valley ASCE

**SESSION 19:**  
**Energy Efficient And Advanced Building Enclosures**  
Moderator: Christopher Norton, Simpson Gumpertz & Heger

**TRACK 3, Louis XIV Room**  
**SESSION 12:**  
**Incorporating Service-Life Assessments of Green Building in the Environmental Impact of Construction**  
Moderator: John Zachar, Ph.D., MSOE

**SESSION 13:**  
**Designing Resilient Structures Subjected to Abnormal Loads**  
Mark Sarkisian, Peter Lee, John Gordon, Rupa Garai

**SESSION 14:**  
**Development of the Resilience Management Tool: A Pilot Program at the Port Authority of New York and New Jersey**  
Adam Hapij, Mohammed Ettouney, Najib Abboud, Michael Valletta

**SESSION 15:**  
**Abnormal Demands Committee on Energy Consumption and Emission Production in Commercial Buildings Using Agent-based Approach**  
Mohammad Saeed Bostani, Samayeh Asadi

**TRACK 4, Henry VIII Room**  
**SESSION 16:**  
**LEED Embedded Building Information Modeling System**  
Cheng Zhang, Jia Chen

**SESSION 17:**  
**Mesh: Integrating BIM, Engineering, and Fabrication into the Architectural Design Studio**  
Gil Snyder

**SESSION 18:**  
**Advancing in Building Information Modeling (BIM) Contracting: Demands and Trends in AEC/FM Industry**  
Hamid Abdibrahim

**SESSION 19:**  
**Mapping the Integrated Early Design Process of the Largest Net-Zero Energy Office Building**  
Rajeshwari Wijayarathna, Jon R. Jones

**TRACK 5, Richard II Room**  
**SESSION 16:**  
**LEED Embedded Building Information Modeling System**  
Cheng Zhang, Jia Chen

**SESSION 17:**  
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**SESSION 19:**  
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Rajeshwari Wijayarathna, Jon R. Jones

6:00 - 8:00 p.m.  Welcome Reception, MSOE Grohmann Museum, 1000 North Broadway

**Thursday, March 26**

8:30 - 10:00 a.m.  Technical Sessions

**TRACK 1, Roosevelt Room**  
**SESSION 16:**  
**LEED Building Information Modeling Applications**  
Cheng Zhang, Jia Chen

**SESSION 17:**  
**Information Exchange Standardization for BIM Application to Multi-Story Modular Residential Buildings**  
Issa Ramaji, Ali Memari

**SESSION 18:**  
**Overview of Building Information Modeling applications in Construction Projects**  
Cheng Zhang, Jia Chen

**SESSION 19:**  
**Mapping the Integrated Early Design Process of the Largest Net-Zero Energy Office Building**  
Rajeshwari Wijayarathna, Jon R. Jones

**TRACK 2, Kennedy Room**  
**SESSION 16:**  
**Overview of Building Information Modeling Applications in Construction Projects**  
Cheng Zhang, Jia Chen

**SESSION 17:**  
**State-of-the-Art Review of Virtual Reality Environment Applications in Construction Safety**  
Sneha Bhoir, Behzad Esmaeili

**SESSION 18:**  
**Mapping the Integrated Early Design Process of the Largest Net-Zero Energy Office Building**  
Rajeshwari Wijayarathna, Jon R. Jones

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### Technical Program (continued)

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<tr>
<td>TRACK 1,</td>
<td>SESSION 21: Wood, Timber, Light Gauge Steel And Composites</td>
<td>Roosevelt Room</td>
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<tr>
<td>Roosevelt Room</td>
<td>SESSION 22: Concrete, Formwork &amp; Reinforcing</td>
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<td>Review of CLT Seismic Resistance and New Connection Concepts, Benton Johnson, Joshua Schultz,</td>
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<td>David Horos, William Baker</td>
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<td>The Effect of Rigid Board Insulation on Screw Connections in Cold-Formed Steel, Anthony</td>
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<td>GFRP Design Using Structural Shapes, Douglas Reed, Bhryav Muturi</td>
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<td>Acoustic Emission Performances of Stressed-GFRP Bars Embedded in Concrete Under Accelerated</td>
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<td>Aging Conditions, Yearho Park, Guillermo Ramirez, Ali Abolmaali, Young Hoon Kim</td>
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<td>Achieving a Net-Zero Energy (NZE) Goal, Bass Abushakra</td>
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<td>Fundamentals of Geothermal Systems – From Basics to Design Considerations, Daniel Rehbein</td>
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<td>Case Study – Fuel Diversification for Flexibility and Reliability of a U.S. Federal Hospital</td>
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<td>Campus, Joe Witcher</td>
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<td>12:00 - 1:30 p.m.</td>
<td>Lunch and Keynote Address by Nicholas Holt, Director, Skidmore, Owings &amp; Merrill, LLP,</td>
<td>Grand Ballroom East</td>
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<td>1:30 - 3:00 p.m.</td>
<td>Student Competition Jury Feedback, Grand Ballroom East</td>
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<td>Landmark on the Lake Tower, Slope Stabilization, Jason Gross</td>
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<td>Resilient Structural Systems – Using Mechanisms to Optimize Performance, Mark Sarkisiz,</td>
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<td>Neville Mathias, Peter Lee, John Gordon, Rupa Garai</td>
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<td>Progressive Collapse Mitigation: Geometrically Nonlinear</td>
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<td>Challenges in the Integrated Design of Non-Structural Components, Lindsay Hu, Mark Sarkisiz,</td>
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<td>Innovative Facade Stabilization, Brett Loureys</td>
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<td>Design of Compressed Stabilized Earth Wall Systems for High-Wind Resistant Residential Unit</td>
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<td>Progressive Collapse, Ariel Kousgaard, Ece Erdogmus</td>
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<td>Simulation of the 2013 Solar House for Missouri S&amp;T, Stuart Baur</td>
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<td>Energy Efficiency and Sustainability Attribute of the Solar Decathlon Projects, Ehsan Kamel,</td>
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<td>Creating a New Design Build Program, Eric Weber</td>
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<td>in Labs for Architecture Students, Rob Whitehead</td>
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<td>Evaluation of High School Pre-Engineering Curricula on Freshman Architectural Engineering</td>
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<td>Student Performance, Blake Wentz, Chris Raebel</td>
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<td>Sustainable Roofing – Considering Roof Function, Durability, and Integration with Building Use,</td>
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<td>3:00 - 3:30 p.m.</td>
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<td>3:30 - 5:00 p.m.</td>
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**AEI BUILD**
- AEI Deliver
- AEI Enclose
- AEI Learn
- AEI Modular
- AEI Perform
- AEI Resilient
- AEI Secure
- AEI Sustain
### Technical Sessions

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<td>SESSION 31: Smart Buildings</td>
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<td>Moderator: Tat Fu</td>
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- **Current Practices of Best Value Approach**, Sogand Mohammadhasanzadeh, Behzad Esmeeili
- **Relational Contracting in the Construction Industry: Mapping Practice to Theory**, Yongjian Ke, Thiyaparavan Gojendran, Peter Davis
- **Accelerators to Occupancy: Expediting the Design and Construction Process for Large-Scale Projects**, Anwar Hakim
- **An Alternate Approach to Complex Construction**, George Barker
- **Integration of Building Information Modeling (BIM) and Laser Scanning in Construction Industry**, Sceprh Alizadehshalehi, Ozan Koseoglu, Murude Celikag

- **Your Building May Be Smart, Is It Smart Enough?** James Nannini
- **Wireless Occupancy Detection with Dynamic Schedules**, Tat Fu, Travis Adams, Nicholas Kirsch
- **Cold Weather Condensation Problems – Utilizing Computer Thermal Simulations and Data Collection Monitoring to Evaluate Repair Approaches**, Kevin Kalata, Michael Hultola
- **Debugging Technology Design**, Craig Merkes
- **Preparing for Climate Change with Computation and Resiliency**, Matthew Shaxted, Amaia Puras-Ustarroz, Arathi Gowda

- **Effectiveness of Using Shelves with Cantilever Retaining Walls**, Hany Farouk
- **Validation of using Modulus of Subgrade Reaction to Consider the Soil Structure Interaction**, Hany Farouk, Mohamed Farouk
- **Applications of Newly Devised and Calibrated Analytical Models in the Analysis of Shallow and Deep Foundations**, Asrat Worku
- **Soil, Foundation, and Superstructure Interaction for Plain Two-Bay Frames**, Hany Farouk, Mohamed Farouk

- **Extending the Service Life of Historic Terra Cotta Roofing with Fluid-Applied Waterproofing Coatings**, Christina Parker, Niklas Vigener
- **Common Causes of Flooring Failures on Concrete Slabs and How to Prevent Them**, Emily O’Keefe, Emily Hoppes
- **Architectural Concrete: Design and Construction Strategies to Maintain Appearance and Limit Water Intrusion**, Amy Hackney, James McDonald

### Friday, March 27

- **8:00 - 11:00 a.m.** Technical Tours: Johnson Controls Marquette University
- **1:00 - 5:00 p.m.** Committee Meetings:
  - Committee to Develop Building Integration Solutions for Abnormal Demands on Buildings, Richard II Room
  - Construction Environment Preservation Engineering Committee, Louis XIV Room
  - AEI Board of Governors, Roosevelt Room
  - Academic Council, Taft Room

### Saturday, March 28

- **8:00 a.m. - 12:00 p.m.** Committee Meetings:
  - AEI Board of Governors, Twenty-Three Room
  - Committee to Develop Building Integration Solutions for Abnormal Demands on Buildings, Richard II Room
ADA Compliance
The Pfister Hotel is barrier-free in compliance with the Americans with Disabilities Act (ADA). ASCE/AEI will make every reasonable effort to accommodate your needs. If you require special assistance, please contact us no later than 20 business days prior to the event. ASCE/AEI cannot ensure the availability of appropriate accommodations without prior notification.

Attendee Packets
The packet you will receive at the on-site registration desk includes your name badge, this final program, a lanyard, tickets for events you have ordered, PDH information, and general announcements.

Attire
The dress code for the Conference is business casual (i.e. slacks, casual dresses) to business attire (i.e., neckties, business suits). Meeting room temperatures will vary, so wear layered clothing to ensure your personal comfort. We also recommend attendees wear comfortable shoes. Please note that certain events may have specific details on attire and you should refer to the event for more information.

Badge Policy and Ribbons
Your Conference registration name badge is your admission to the educational sessions. Please wear your badge at all times. Tickets are required for the special events, meals, and tours. Please be sure to bring your tickets with you to each event as you will not be admitted without a ticket. Ribbons will be available at the Registration Desk. ASCE/AEI does recommend you remove your badge when leaving the hotel.

Cancellations
To receive a refund of the registration fee, less $100 for processing, requests for cancellations were due in writing at ASCE headquarters by February 25, 2015 via fax at (703) 295-6144; e-mail at registrations@asce.org, or mail to ASCE Attn: Customer Service, 1801 Alexander Bell Drive, Reston, VA 20191-4400, USA. NO REFUNDS are granted after February 25, 2015.

Conference Proceedings
The Conference proceedings will be available as a CD. One copy is included with each full registration. Additional copies may be purchased for $100. To pick up your copy, present the ticket you received in your registration packet to an ASCE staff member at the Registration Desk. You must claim your CD by April 24, 2015. To purchase a copy after the Conference, call ASCE at (800) 548-ASCE (2723), or send a fax to (703) 295-6211; or order online at www.pubs.asce.org.

Conference Surveys
A survey will be e-mailed to all attendees at the conclusion of the conference. Hearing your opinions and suggestions helps plan future conferences.

Medical Emergencies
ASCE/AEI hopes that your visit to Milwaukee and AEI Conference 2015 will be free of medical incident. However, if you become ill at The Pfister Hotel, please contact the front desk and tell them you have a medical emergency that requires immediate attention.

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No Smoking Policy
ASCE/AEI supports a “No Smoking” Policy. Smoking is prohibited at The Pfister Hotel and all venues hosting ASCE/AEI events.

Professional Development Hours (PDHs)
You may earn PDHs, which are nationally recognized units of record, by attending conference technical sessions and short courses. Please note there are differences from state to state in continuing education requirements for professional engineering licensure. ASCE follows NCEES guidelines on continuing professional competency. Since continuing education requirements for P.E. license renewal vary from state to state, ASCE strongly recommends that individuals regularly check with their state registration board(s) on their specific continuing education requirements that affect P.E. licensure and the ability to renew licensure. Get details on your state’s requirements by going to http://ncees.org/about-ncees.

Program and Session Cancellation
ASCE/AEI reserves the right to cancel programs and/or sessions because of low registration. In the unlikely event of a cancellation, all registrants will be notified and will receive a full refund, if applicable. Programs and sessions are subject to change, and ASCE/AEI reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill the educational requirements.

Recording Policy
Photographic, video or audio recording of any education session is strictly prohibited without prior written permission from both ASCE and the session presenter(s).

Recycle Your Badge Holder
Please help ASCE stay green by returning your badge holder at the end of the conference in the receptacles provided by the Registration Desk.

Registration Benefits

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Release/Waiver
Photograph Release: By attending the conference, I hereby release any photographs that may be incidentally taken of me by ASCE/AEI during these events to be used for any purpose.

Liability Waiver: I agree and acknowledge that I am participating in ASCE/AEI events and activities at my own free and intentional act, and I am fully aware that possible physical injury might occur to me as a result of my participation. I give this acknowledgement freely and knowingly that I am, as a result, able to participate in ASCE/AEI events, and I do hereby assume responsibility for my own well-being. I also agree not to allow any other individual to participate in my place.

Weather in Milwaukee, Wisconsin
The average high at the end of March is 45° F / 8° C and average low is 30° F / 0° C.
The AEI Conference 2015 thanks its Cooperating Organization, Exhibitors, and Sponsors for helping to make this event possible.

EXHIBITORS

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