

FINAL PROGRAM



ELECTRICAL TRANSMISSION & SUBSTATION STRUCTURES CONFERENCE 2015

Branson, Missouri | September 27-October 1

Grid Modernization – Technical Challenges & Innovative Solutions



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SUNDAY, SEPTEMBER 27

8:00 a.m. – 4:00 p.m.	Exhibitor Move-in
11:00 a.m. – 6:00 p.m.	Registration
1:00 – 5:00 p.m.	Pre-Conference Workshop
5:30 – 7:00 p.m.	Grand Opening Reception in Exhibit Hall

MONDAY, SEPTEMBER 28

6:45 a.m. – 6:00 p.m.	Registration
6:45 – 7:30 a.m.	Breakfast
7:30 – 9:30 a.m.	Opening Plenary Session
9:30 a.m. – 4:00 p.m.	Exhibit Hall Open*
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – Noon	Technical Session 1
Noon – 1:30 p.m.	Lunch in Exhibit Hall
1:30 – 3:15 p.m.	Technical Session 2
3:15 – 4:00 p.m.	Refreshment Break in Exhibit Hall
4:00 – 5:30 p.m.	Technical Session 3
5:30 – 7:00 p.m.	Poolside Networking Reception

TUESDAY, SEPTEMBER 29

7:00 a.m. – 6:00 p.m.	Registration
7:25 – 8:10 a.m.	Breakfast
8:10 – 9:30 a.m.	Technical Session 4
9:30 a.m. – 7:00 p.m.	Exhibit Hall Open*
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – Noon	Technical Session 5
Noon – 1:30 p.m.	Lunch in Exhibit Hall
1:30 – 3:15 p.m.	Technical Session 6
3:15 – 4:00 p.m.	Refreshment Break in Exhibit Hall
4:00 – 5:20 p.m.	Technical Session 7
5:30 – 7:00 p.m.	Networking Reception in Exhibit Hall

WEDNESDAY, SEPTEMBER 30

7:00 a.m. – 4:00 p.m.	Registration
7:25 – 8:10 a.m.	Breakfast
8:10 – 9:30 a.m.	Technical Session 8
9:30 a.m. – 1:30 p.m.	Exhibit Hall Open*
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – Noon	Technical Session 9
Noon – 1:30 p.m.	Lunch in Exhibit Hall
1:45 p.m.	Exhibitor Move-out
1:30 – 2:50 p.m.	Technical Session 10
2:50 – 3:35 p.m.	Refreshment Break
3:35 – 5:00 p.m.	Technical Session 11
5:00 – 5:15 p.m.	Conference Closing

THURSDAY, OCTOBER 1 **Technical Demonstration(s) Day**

9:30 – 11:30 a.m.	Demonstrations Open
11:30 a.m. – 1:00 p.m.	Lunch
1:00 – 3:30 p.m.	Demonstrations Open

*Exhibit Hall is closed during all technical sessions.

Welcome to Branson and the Beautiful Ozarks!

On behalf of the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE) and the ETS Conference Steering Committee, it's my pleasure to welcome you to the 2015 Electrical Transmission and Substation Structures Conference.

While others talk smart grids and resilient grids, in Branson this week we will talk about what it takes to make **strong grids**. With the theme "Grid Modernization – Technical Challenges and Innovative Solutions", the 2015 conference promises to be a forward-looking event where transmission and substation engineers gain critical knowledge to design, build, maintain and secure a global grid suited for 21st century expectations.

Beginning with Sunday's panel discussion workshop, "Storm Hardening, Resilience and Security Issues for Utilities," the conference promises four days of targeted technical learning combined with industry specific exhibits, focused forums, and special events ideal for networking and friendly Midwest socializing.

The technical sessions run Monday through Wednesday offering insight into how others in the industry have solved technical challenges and developed innovative solutions. On Wednesday afternoon, ASCE's Leadership gives an update on the ASCE Codes and Standards we all follow in our daily work followed by an update on the upcoming changes in the 2017 NESC.

On Thursday, Quanta Services is sponsoring an exciting construction-oriented outdoor demonstration day. Other companies will also be demonstrating various industry related equipment and activities.

You will also want to take advantage of the numerous social networking events during the week. Most of these events plus the lunches and refreshment breaks are taking place in the exhibit hall giving you plenty of time to spend visiting with innovative exhibitors and your peers and colleagues. The exhibitors are all focused on transmission lines and substation structures at this conference, so take advantage of their expertise and networking opportunities.

Where else but Branson during these next few days can you so easily strike up conversations with peers who could become your next client, employer, or strategic partner on a future project?

So welcome again — I'm excited to be with you here in Branson, Missouri!



Otto J. Lynch, P.E., F.SEI, M.ASCE
Conference Chair

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Ronald Randle, P.E., F.SEI, M.ASCE,
EDM International, Inc.

SUNDAY, SEPTEMBER 27

11:00 A.M. – 6:00 P.M. – REGISTRATION

Concourse Center, 2nd Floor, Branson Convention Center (BCC)

1:00 – 5:00 P.M.

PRE-CONFERENCE WORKSHOP: PANEL DISCUSSION OF STORM HARDENING, RESILIENCY AND SECURITY ISSUES (Earn 3.5 PDHs)

Taneycomo Ballroom, 1st Floor, BCC

Moderator: Anthony M. DiGioia, Jr., Ph.D., P.E., Dist. M.ASCE, President, DiGioia Gray & Associates LLC

The workshop panel includes industry experts who represent federal, state, research and utility perspectives. Brief presentations by panelists on their positions will be shared prior to open discussion and interaction with the audience relating to these key topics:

- Current and trending FERC and NERC regulations
- State regulations, response to federal rules and trends
- Utility emergency response, recovery and mutual assistance during major events
- Updates on current, relevant research for utility applications

Panelists: David Batz, Director, Cyber & Infrastructure Security, *Edison Electric Institute*; Thomas Pearce, Energy and Environment Department, NARUC Committee Member, *Ohio Public Utilities Commission*; Ronald A. Brisé, Commissioner, *Florida Public Service Commission*; Danny Glover, Vice President of Distribution, *Alabama Power Company*

Onsite Registration Fee: \$245

3:15 – 3:45 P.M. – REFRESHMENT BREAK FOR WORKSHOP ATTENDEES

Taneycomo Ballroom, 1st Floor, BCC

Sponsored by ReliaPOLE

5:30 – 7:00 P.M.

GRAND OPENING RECEPTION

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by Trinity Meyer Utility Structures

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MONDAY, SEPTEMBER 28

6:45 A.M. – 6:00 P.M.

REGISTRATION

Concourse Center, 2nd Floor,

Branson Convention Center (BCC)

6:45 – 7:30 A.M.

BREAKFAST

Prefunction, 1st Floor, BCC

Sponsored by

Black & Veatch Corporation

MONDAY, SEPTEMBER 28

7:30 – 9:30 A.M.

OPENING PLENARY SESSION WITH KEYNOTE ADDRESS AND AWARD

Taneycomo Ballroom, 1st Floor, BCC



AN ENGINEER'S APPROACH TO COMMON SENSE REGULATIONS

Congressman David McKinley, P.E., F.ASCE

Hear the Congressman's unique perspective on how to fix the regulatory machine in Washington, DC. Learn how he's using his 40 year career in engineering and construction to get Congress to take a hard look at the federal regulatory process.

As one of two professional engineers in Congress, he has a seat on the Committee on Energy and Commerce, where he has been active on issues related to the coal industry, environmental regulation, energy efficiency, and health care. He serves as the vice-chairman of the Subcommittee on Oversight and Investigations.

GENE WILHOITE INNOVATIONS IN TRANSMISSION LINE ENGINEERING AWARD

Presented to an individual for significant contributions to the advancement of the art and science of transmission line engineering.



2015 AWARD RECIPIENT:

Douglas C. Sherman, P.E., M.ASCE, Past Vice President, Valmont-Newmark

Doug Sherman was one of several early pioneers in the design, manufacturing and use of tubular steel poles and spun concrete poles for electrical transmission structure applications. He presented and published a number of significant technical papers related to the design and use of both steel and spun concrete poles, and is the co-holder of two patents – in Reinforced Concrete Pole with Attachment Mechanism and Splice Locking Device for tubular steel poles. He has actively participated in ASCE and IEEE committee activities for more than 45 years including SEI task committees that created four new or revised ASCE Manuals of Practices on electrical transmission subjects.



ASCE REMARKS

Thomas W. Smith, III, ENV. SP, CAE, F.ASCE, Executive Director, ASCE



INFRASTRUCTURE'S ROLE IN ECONOMIC PROSPERITY

ASCE President Elect Mark W. Woodson, P.E., L.S., D.WRE, F.ASCE



KEYNOTE: FERC ORDER 1000 FROM A UTILITY'S PERSPECTIVE

Maureen A. Borkowski, President, Ameren Transmission Company

Maureen Borkowski will share how the MISO, PJM and SPP RTOs have developed unique rules to implement the planning, bidding and awarding of competitive transmission projects. She will also discuss the challenges that both regulated entities and merchant developers face in this new competitive marketplace.

CONFERENCE PROGRAM

MONDAY, SEPTEMBER 28

9:30 – 10:15 A.M. – REFRESHMENT BREAK

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Fabrimet Inc.**

10:15 A.M. – NOON

SESSION 1: STRUCTURAL ANALYSIS 1

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Mike Miller, P.E., M.ASCE

The conference kicks off with presentations on our most common engineered structure type: tubular steel poles. First, two projects answer the questions “Will they pass the test?” and “How close does analysis match full-scale testing?” Follow that with an analysis of slip joint connections, and finally the session will close with a challenging project using tripod tubular structures for a long-span lake crossing.

Validation and Testing of Tubular Steel Pole Designs for Southern California Edison’s Tehachapi Renewable Transmission Project

Clinton Char, P.E., Tony Cunha, P.E., *Southern California Edison*; Jerry Lembke, P.E., *Valmont-Newmark*

Design and Testing of 500kV Double Circuit Monopoles for Heartland Transmission Project in Edmonton, Alberta

Kishor Kumar, P.Eng., *SNC Lavalin*; Jason Dwyer, P.Eng., *AltaLink*

Slip Joint Connections – How Do These Things Work?

Richard Solcum, P.E., Mark Fairbairn P.E., M.ASCE, *Trinity Meyer Utility Structures, LLC*

Innovative Structure Designs for Large Spans

Jaron Reay, P.E., Abe Dilworth, P.E., *Electrical Consultants, Inc.*

NOON – 1:30 P.M. – LUNCH

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Sabre-FWT**

1:30 – 3:15 P.M.

SESSION 2: SPECIAL DESIGN CONSIDERATIONS

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Marlon Vogt, P.E., M.ASCE

Dare to be BOLD! See the benefits of getting out of our comfort zone! The development of an innovative line design combining aesthetics with performance, a worldwide view on structure aesthetics (“Pretty Poles” and “Terrific Towers”), the critical role of the engineer in environmental permitting and application of fiber reinforced polymers for structures up to 287kV highlight this session.

Developing a Structure for BOLD™ – Challenges from a Simple Aesthetic Structure Design

Nancy Fulk, Ph.D., P.E., Dave Parrish, P.E, *American Electric Power*; Anthony Hansen, P.E., Jeff Steele, P.E., *Valmont-Newmark*

Aesthetic Transmission Line Structures: Past Present & Future

Mike Khavari, P.E., P.Eng., *ASEC Inc.*; Kenneth Sharpless, P.E., *Valmont-Newmark*

EIS Project Survival Guide: How to Keep the Engineering Choices Alive and Emerge from the NEPA Process with Your Project (Mostly) Intact

Ronald Carrington, P.E., *POWER Engineers, Inc.*

Design of Fiber Reinforced Polymer (FRP) Structures for BC Hydro’s Transmission System

Adelana Gilpin-Jackson, P.Eng., PMP; Ming Lu, P.Eng., Ph.D., *BC Hydro & Power Authority*; George Mathew, B.Eng., Galen Fecht, BA, *RS Technologies*

3:15 – 4:00 – REFRESHMENT BREAK

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Falcon Steel Company**

4:00 – 5:30 P.M.

SESSION 3: MANAGING AGING INFRASTRUCTURE

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Gary Bowles, P.E., F.SEI, M.ASCE

Asset management and inspection have certainly not let technology pass them by. See how leaders in this field and utilities around the globe have embraced the latest tools, technology and techniques. Strap in for a glimpse of the future with drones carrying “smart” vision and data collection technologies.

Celanese – Peters Mountain 138kV Line: A Case Study of One of American Electric Power’s Oldest Weathering Steel Pole Lines

Thomas Christy, P.E., Eric Witt, Mary Jane McMillen, P.E., T. David Parrish, P.E., *American Electric Power*; Wesley Oliphant, P.E., CWI, F.SEI, F.ASCE, *ReliaPOLE Inspection Services Co.*

Generation Drone: The Future of Utility O&M

Grant Leaverton, M.B.A., *Advanced Aerial Inspection Resources*; Wesley Oliphant, P.E., CWI, F.SEI, F.ASCE, *ReliaPOLE Inspection Services Co.*

Best Practices for Transmission Line Inspections and Recommended Inspection Techniques

Andrew Stewart, M.S., Robert Nelson, B.S., Matthew Sinclair, *EDM International, Inc.*; Alex Mogilevsky, Senior Program Manager, *CEATI International Inc.*

5:30 – 7:00 P.M. – POOLSIDE NETWORKING RECEPTION

Pool Deck & Courtyard, 1st Floor, BCC

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TUESDAY, SEPTEMBER 29

7:00 A.M. – 6:00 P.M. – REGISTRATION

Concourse Center, 2nd Floor, Branson Convention Center (BCC)

7:25 – 8:10 A.M. – BREAKFAST

Prefunction, 1st Floor, BCC

Sponsored by **PLH Group, Inc.**

8:10 – 9:30 A.M.

SESSION 4: STRUCTURAL ANALYSIS 2

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Robert E. Nickerson, P.E., F.SEI, M.ASCE

We begin this "blast from the past" with a discussion on how the graphical method for lattice tower analysis is still relevant for new tower design. Next we'll hear about the challenges in analysis and testing of eccentric connections. And we'll finish this session with an overview of the development of a lattice tower family for a design-build project.

Graphical Analysis: Obsolete Method or a Compliment to Modern Design Techniques?

Philip Bryant, P.E., M.ASCE, *CenterPoint Energy*

The Effect of Eccentricity on the Design of Towers for Transmission Lines – A Case Study with Finite Elements Approach

Angelo Fabri, P.E., *Brametal S.A.*

Considerations in Development of Lattice Tower Structure Family

Jondy Britton, P.E., Travis Bouslog, BSCE, *Burns & McDonnell*

9:30 – 10:15 A.M. – REFRESHMENT BREAK

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Burns & McDonnell**

10:15 A.M. – 12:00 P.M.

SESSION 5: CASE STUDIES

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Frank Agnew, P.E., M.ASCE

Four case studies are highlighted in this session. Hear how the challenges presented by the Troy Meadows wetlands, the open water of the Albemarle Sound, the steep Gallatin Canyon and the constraints of Florida development were addressed with innovative design solutions using micropiles, concrete piles, pile caps, hand holes for concrete piers, helicopters and integrated line design.

Trowbridge-Winfall Transmission Line Foundation Design

Jason Truckenbrod, P.E., Steven Miller, P.E., Bruce Roth, P.E., *GAI Consultants, Inc.*; Robert Smith, P.E., *Dominion Technical Solutions, Inc.*

Micropile Design and Construction in Limited Access Wetland Habitat

Steven Davidow, P.E., S.E., *Crux Subsurface, Inc.*; David Carr, P.E., *Burns & McDonnell*

Jack Rabbit-Big Sky 161kV National Forest Canyon Construction

Anders Fiske, P.E., Heather Dell, *HDR Engineering*

Taft-Lakeland 230kVTL

Chuck Easterling, P.E., *Orlando Utilities Commission*; Curt Smith, P.E., Rishi Moghe, P.E., *Black & Veatch*

12:00 – 1:30 P.M. – LUNCH

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Sabre-FWT**

1:30 – 3:15 P.M.

SESSION 6: FOUNDATIONS

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: David Todd, P.E., M.ASCE

Foundations are more than just a hole in the ground that you fill with money. As described by these four projects, foundations may be the most important element in the transmission line. Learn about deflection criteria, long-term soil creep, nondestructive testing of deep foundations, and no concrete, 100% steel foundations.

Recommendations for Steel Pole and Drilled Shaft Deflection Criteria Based on a Parametric Study of a 138kV Double Circuit Transmission Line

Adam Bowland, P.E., Ph.D., Paul Cass, P.E., Anthony DiGioia, P.E., Ph.D., Dist.M.ASCE, *DiGioia Gray & Associates LLC*

Foundation Designs for a 345kV Transmission Line Constructed in the Lakebed of Glacial Lake Agassiz

David Wedell, P.E., *POWER Engineers, Inc.*; Gerald Chezik, P.E., P.M.I., *Xcel Energy*; Bret Anderson, P.E., *Northern Technologies, Inc.*

Deep Foundations – Combining Construction Methods, Engineering, Inspection and Testing

Shane Watson, P.E., Bruce LaMeres, P.E., *Electrical Consultants Inc.*

Ameren Transmission Company's Illinois Rivers Transmission Line River Crossings Foundation Design

Kasey Woods, P.E., PMP, *Ameren*; Darren Ratliff, P.E., *Ameren Services*; Terry Barnett, P.E., S.E., Danielle Mullendore, CAPM, Daniel Whalen, P.E., *Hanson Professional Services Inc.*

3:15 – 4:00 P.M. – REFRESHMENT BREAK

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **EDM International Inc.**

4:00 – 5:20 P.M.

SESSION 7: SUBSTATION DESIGN ISSUES

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Jerry Wong, P.E., F.SEI, M.ASCE

Shaking and gunshots are the oldest and newest concerns in substation design. Two presentations take on earthquake design by discussing nonlinear analysis, seismic isolation and seismic retrofit options with applications. The session closes with a broad overview and real world applications to address physical security, the newest threat to substations.

Seismic Base Isolation of a High Voltage Transformer

Robert Cochran, P.E., S.E., *Seattle City Light*

Innovative Analysis and Seismic Retrofit of 500kV Flexible Bus Substation Support Structures

Scott Howard, P.E., *WRK Engineers*; Craig Riker, P.E., *San Diego Gas & Electric*; Brian Knight, S.E., P.E., Sarah Knoles, EIT, *WRK Engineers*

NERC CIP-014-01: Physical Security – Regulatory Compliance and Real World Implementation

Jeffrey Boucher, P.E., Katherine Bentley, P.E., *HDR Engineering*

5:30 – 7:00 P.M. – NETWORKING RECEPTION

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Electrical Consultants, Inc.**

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CONFERENCE PROGRAM

WEDNESDAY, SEPTEMBER 30

7:00 A.M. – 4:00 P.M. – REGISTRATION

Concourse Center, 2nd Floor, Branson Convention Center (BCC)

7:25 – 8:10 A.M. – BREAKFAST

Prefunction, 1st Floor, BCC

Sponsored by **Beta Engineering**

8:10 – 9:30 A.M.

SESSION 8: CONSTRUCTION CHALLENGES

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Dana Crissey, P.E., M.ASCE

It's just never easy! Hear the stories of three teams forced to think outside the box to solve a myriad of construction challenges. Whether finding solutions in high-temperature; low-sag conductor; large-diameter vibratory caissons; or developing fall protection methods for a system-wide implementation, these project teams just "got 'er done"!

Design & Construction Challenges from One Utility's CREZ Transmission Lines

Donald Cannon, M.ASCE, MSCE, David Hancock, P.E., M.ASCE, Burns & McDonnell; Neal Chapman, MSCE, P.E., Cross Texas Transmission, LLC

CapX2020 Brookings to Hampton 345kV River Crossing Foundation Challenges

Lucas Karels, P.E., Stanley Consultants, Inc.

Fall Protection Efforts on Lattice Transmission Towers

David O'Claire, P.E., David Hesse, P.E., Bonneville Power Administration

9:30 – 10:15 A.M. – REFRESHMENT BREAK

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **Underground Devices, Inc.**

10:15 A.M. – 12:00 P.M.

SESSION 9: LINE DESIGN

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Wesley Oliphant, P.E., F.SEI, F.ASCE

This is your chance to hear from the experts on line design. Topics in this session include an overview of design practices for 115kV to 230kV lines, broken-wire loading including full-scale testing, development of an online historical ice storm map application, and the theory behind the revisions to the weather-related load section of the 4th Edition of ASCE-74.

Best Practices for the Design of 115kV to 230kV Overhead Transmission Lines

Leon Kempner Jr., P.E., Ph.D., F.SEI, M.ASCE, Bonneville Power Administration; Asim Haldar, P.E., Ph.D., CEATI

Dynamic Transmission Line Loading

Bryan Williams, P.E., Onco Electric Delivery Company; Erik Rugeri, P.E., Jason Pfaff, D.M., POWER Engineers, Inc.

Compilation of Damaging Ice Storms in the United States

Kathleen Jones, M.S.E., Richard Bates, B.S., Cold Regions Research and Engineering Laboratory

Updating ASCE Manual No. 74: Guidelines for Electrical Transmission Line Structural Loading

Thomas Mara, P.Eng., Ph.D., Boundary Layer Wind Tunnel Laboratory; Roberto Behncke, Ph.D., POWER Engineers, Inc.

12:00 – 1:30 P.M. – LUNCH

Exhibit Hall A-B, 1st Floor, BCC

Sponsored by **POWER Engineers**

1:30 – 2:50 P.M.

SESSION 10: RERATING AND UPGRADING

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Tim Cashman, P.E., M.ASCE

Is this line really a fixer-upper or should I tear it down and rebuild? This session will highlight three upgrade projects that overcame the congestion of a narrow ROW owned by a railroad, the complexities of raising lattice towers, and the challenges of increasing the ampacity of a 500kV line crossing a lake and state park.

Squeezing 21st Century Demand into 20th Century Right of Way

Bill Rusciollelli, P.E., Sean Crandall, EIT, POWER Engineers

Raising Transmission Line Steel Towers

Ashley Dupree, ITC Holdings Corp; Fang Liu, P.E., Jonathon Rumble, P.E., Ricardo Ortegon, P.E., Black & Veatch;

Thinking Outside the Box: Tennessee Valley Authority Uses ACCR Conductor on 500-kV Transmission Line

Jeffery Phillips, P.E., Tennessee Valley Authority; Mark Ryan, 3M; Doyle Glass, Hubbell Power Systems

2:50 – 3:35 P.M. – REFRESHMENT BREAK

Prefunction, 1st Floor, BCC

Sponsored by **IEEE-SA**

3:35 – 5:00 P.M.

SESSION 11: CODES AND STANDARDS

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Otto Lynch, P.E., F.SEI, M.ASCE

"Fun facts that are sure to impress your colleagues!" What's going on at ASCE? Hear updates on standards ASCE 48 for Design of Steel Transmission Pole Structures and ASCE 10 for Design of Latticed Steel Transmission Structures, as well as updates on the following Manuals of Practices: Substation Design; Transmission Structure Loadings; FRP Structures; Concrete Structures; Wood Structures; and Aesthetic Structures. As a bonus, find out what's new with the 2017 NESC.

ASCE Manuals of Practices Update

Michael Miller, P.E., M.ASCE, SAE Towers Ltd., Chair of ASCE SEI Electrical Transmission Structures Committee

Update on ASCE 48-16: Design of Steel Transmission Pole Structures

Kenneth L Sharpless, P.E., ASEC, Inc., Chair of ASCE 48

Update on ASCE 10-15: Design of Latticed Steel Transmission Structures

Robert E. Nickerson, P.E., F.SEI, M.ASCE, Consulting Engineer, Chair of ASCE 10

Upcoming Changes to the 2017 National Electrical Safety Code

Sue Vogel, IEEE Standards Association, Senior Manager of National Electrical Safety Code

5:00 – 5:15 P.M. – CONFERENCE CLOSING

Taneycomo Ballroom, 1st Floor, BCC

Session Lead: Otto Lynch, P.E., F.SEI, M.ASCE

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DEMONSTRATION DAY SCHEDULE



THURSDAY, OCTOBER 1

The Structural Engineering Institute of ASCE is pleased to have **Quanta Services** sponsor Demonstration Day for the Electrical Transmission and Substation Structures 2015 Conference. This event will offer participants unique opportunities to witness several overhead power line construction and supplier demonstrations in a single day.

DEMONSTRATION ITINERARY

Demonstrations will take place in the Branson Convention Center parking lot.

Special requirements for Demonstration Day:

- > Individuals are required to sign the demonstration waiver form in advance of their participation.
- > Closed toe shoes.
- > Long pants.
- > Eye, ear, hard hat, and other protection will be provided on site as needed.
- > Please dress appropriately for the weather and possible cooler temperatures.

The exhibits will be open throughout the day but some demonstrations and activities may have specific times. Times will be posted and, if necessary, attendees will be provided schedules for attendance.

DEMONSTRATION HOURS

- **9:30 – 11:30 A.M.** – Demonstrations Open
- **11:30 A.M. – 1:00 P.M.** – Lunch
- **1:00 – 3:30 P.M.** – Demonstrations Open

Lunch and refreshments throughout the day will be provided by Quanta Services.

Demonstration events currently planned are:

- > High-Voltage Scaffolding Substation
- > Energized Pulling Zone with Suits
- > Crux Steel-Cap Micropile Setup
- > UT Weld Inspection
- > Substation Switch Demonstration
- > Pallet-Mounted Display Robotic Arm
- > B.H. Aerial Lift Truck Setup
- > Video of Training Facility / Energized Work
- > Inspection Drone Demonstration
- > Steel Pole Slip Joint / Pole Jacking Demonstration
- > Hybrid Pole Assembly Joining Spun Concrete and Tubular Steel Poles
- > Terrestrial LiDAR Demonstration
- > Aerial LiDAR Demonstration
- > Composite Pole Jacking Assembly Demonstration
- > Substation Switch Demonstration

Companies involved in Demonstration Day include:

Quanta Services
Quanta Services Operating Companies:
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All outdoor demonstration activities are subject to WEATHER conditions and may be cancelled or modified due to inclement weather.





POSTERS ARE LOCATED IN THE EXHIBIT HALL MONDAY, SEPTEMBER 28 TO WEDNESDAY, SEPTEMBER 30.

Modification of Single-Circuit 765 kV Lattice Steel Towers for a Double-Circuit 345 kV Application

Todd Edwards, P.E., MS, *ITC Transmission*; Joe Pattison, P.E., *Burns & McDonnell*

Tools for Evaluation of the Capacity and Durability of New or Existing Transmission Tower Foundations

Bernard Hertlein, FACI, M.ASCE, *GEI Consultants, Inc.*

New Approach for Upgrading an Existing 115 kV Transmission Line

Karen Callery-Broomfield, P.Eng, B.A., B.Sc.E., M.Sc.E., Ibrahim Hathout, Ph.D., P.Eng., *Hydro One*

Examination of Yawed Wind Loading on Transmission Towers

Thomas Mara, P.Eng., *Boundary Layer Wind Tunnel Laboratory*; Roberto Behncke, Ph.D., *POWER Engineers, Inc.*

Updated Gust Response Factors for Transmission Line Loading

Thomas Mara, Ph.D., P.Eng., *Boundary Layer Wind Tunnel Laboratory*

Transmission Pole Drilled Pier Foundation Using Inclined Earth Anchors to Counteract Eccentric Forces

Andrew Canopy, P.E., Darren Ratliff, P.E., *Ameren*; Robert Chantome, P.E., S.E., *Hanson Professional Services Inc.*

Drilled Shafts and Design-Build Micropiles for Environmentally Sensitive Wood-to-Steel Project

Rick Walsh, P.E., G.E., Mike Kennedy, B.S., *Hayward Baker Inc.*

Transmission Pier Foundation QC/QA

Gina Beim, P.E., M.ASCE, *Pile Dynamics, Inc*; Robert Kluge, P.E., Matthew Lohry, P.E., *American Transmission Company LLC*; Daniel Belardo, *GRL Engineers, Inc.*

Design and Construction Challenges in Transmission Line and Structures in Crossing a River for Bridge Relocation

Rengaswamy Shanmugasundaram, P.E., ASCE Life Member, W.Greg Ford, P.E., Rodger Calvert, P.E., *Mesa Associates Inc.*

Impact of Extreme Weather on Transmission Line Structures

Ibrahim Hathout, Ph.D., Karen Callery, M.Sc.E., *Hydro One Inc.*

The Evolution of Large Diameter Helical Piles for Transmission Line Foundations

Thomas Bradka, M.Eng., P.E., Ashref Alzawi, Ph.D., P.Eng., Alvin Pyke, P.Eng., *Helical Pier Systems*

Drilled Shafts for 138KV Tower Foundations

Aaron Waldren, Mike Kennedy, *Anderson Drilling*; Rick Walsh, P.E., G.E., *Hayward Baker Inc.*

Study of Electric Transmission Line Deep Foundation Design

Peter Kandarlis, P.E., *DiGioia Gray & Associates*; Steve Davidow, P.E., S.E., *Crux Subsurface, Inc.*

Highland City Repurposing of Existing Substation Property for Upgrade to New Substation Facilities

David Thornton, P.E., *Southern Company*

Structural Performance of Bolted Connectors in Retrofitted Transmission Tower Leg Members

Chenghao Lu, Ph.D candidate, Xing Ma, Ph.D, Julie E. Mills, Ph.D, *University of South Australia*

WAPA 230kV Transmission Line and Substation: Reconductor Project with ACCR

Ross Clark, P.E., Josh Ross, B.S., *Western Area Power Administration*

Effective Application of NERC CIP-014-1 Provisions To Existing Transmission and Substation Facilities

James Taylor, P.E., S.E., M. ASCE/SEI, Robert Parker, CPP, PSP, Cris DeWitt, CISSP, GIAC, *ABS Consulting*

Repair of Corrosion-Damaged Substation Structures

Mo Ehsani, PhD, P.E., S.E., *University of Arizona*; Gannon McGhee, P.E., *Tucson Electric Power Co.*

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REGISTRATION CATEGORY	Sunday Pre-Conference Workshop	Grand Opening Reception	Sessions and Exhibit Hall	Monday Lunch	Poolside Networking Reception	Tuesday Lunch	Tuesday Networking Reception	Wednesday Lunch	Proceedings
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MEMBER/NON-MEMBER	ADDL. FEE	✓	✓	✓	✓	✓	✓	✓	✓
SPEAKER	ADDL. FEE	✓	✓	✓	✓	✓	✓	✓	✓
STUDENT	ADDL. FEE	ADDL. FEE	✓	✓	ADDL. FEE	✓	ADDL. FEE	✓	✓
DAILY REGISTRATION									
MONDAY			✓	✓	✓				✓
TUESDAY			✓			✓	✓		✓
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GENERAL

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Staging Room 1, 1st Floor, BCC

SUNDAY	11:00 A.M. – 4:00 P.M.
MONDAY, TUESDAY	7:00 A.M. – 6:00 P.M.
WEDNESDAY	7:00 A.M. – 3:00 P.M.

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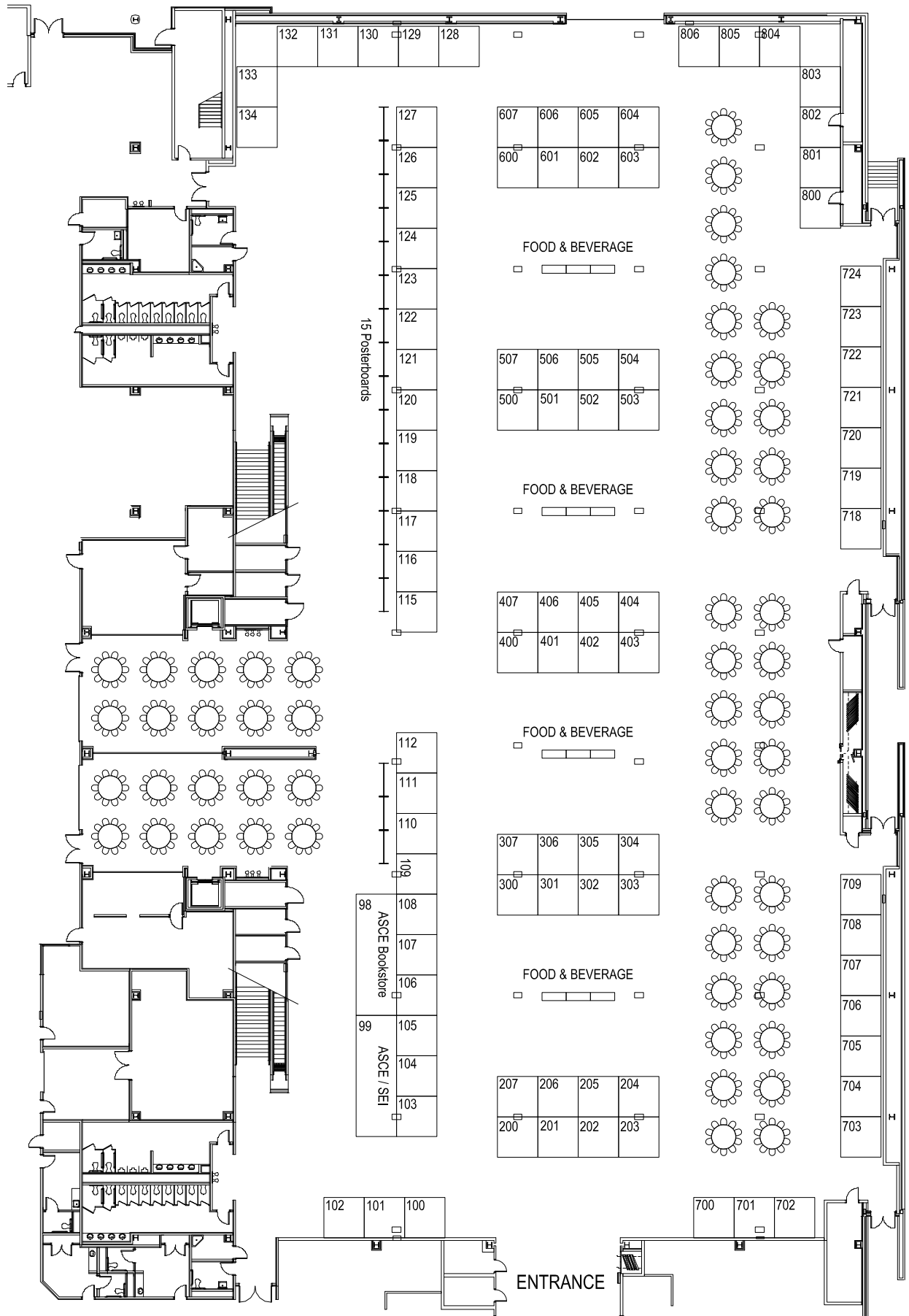
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