FINAL PROGRAM

ELECTRICAL TRANSMISSION & SUBSTATION STRUCTURES CONFERENCE 2018

Atlanta, Georgia | November 4–8

Dedicated to Strengthening our Critical Infrastructure

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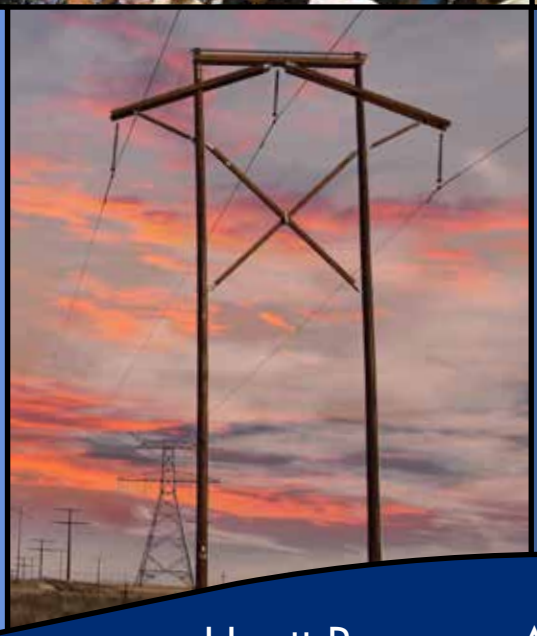

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Hyatt Regency Atlanta Downtown

www.etsconference.org | #ETSC18

@ASCE_SEI

SCHEDULE-AT-A-GLANCE

Subject to change.

SUNDAY, NOVEMBER 4

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

MONDAY, NOVEMBER 5

7:00 a.m. – 6:00 p.m.	Registration & ASCE Bookstore *(Closed 1:30–2:30 p.m. for Lunch)*
7:30 – 8:00 a.m.	Breakfast
8:00 – 9:30 a.m.	Opening Plenary Session with Keynote Address
9:00 a.m. – 4:00 p.m.	Exhibit Hall Hours
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – 12:00 p.m.	Technical Session 1
12:00 – 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
7:00 – 8:30 p.m.	Off-Site Reception–World of Coke

TUESDAY, NOVEMBER 6

7:00 a.m. – 6:00 p.m.	Registration & ASCE Bookstore *(Closed 1:30–2:30 p.m. for Lunch)*
7:30 – 8:00 a.m.	Breakfast
8:10 – 9:30 a.m.	Technical Session 4
9:00 a.m. – 7:00 p.m.	Exhibit Hall Hours
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – 12:00 p.m.	Technical Session 5
12:00 – 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 – 5:30 p.m.	Technical Session 7
5:30 – 7:00 p.m.	Networking Reception in the Exhibit Hall

WEDNESDAY, NOVEMBER 7

7:00 a.m. – 1:30 p.m.	Registration & ASCE Bookstore
7:30 – 8:00 a.m.	Breakfast
8:10 – 9:30 a.m.	Technical Session 8
9:00 a.m. –1:30 p.m.	Exhibit Hall Hours
9:30 – 10:15 a.m.	Refreshment Break in Exhibit Hall
10:15 a.m. – 12:00 p.m.	Technical Session 9
12:00 –1:30 p.m.	Lunch in Exhibit Hall
1:30 – 2:50 p.m.	Technical Session 10
1:45 p.m.	Exhibitor Move-Out
2:50 – 3:35 p.m.	Refreshment Break in Foyer
3:35 – 5:05 p.m.	Technical Session 11
5:05 – 5:20 p.m.	Conference Closing

THURSDAY, NOVEMBER 8

- Southwire Technical Tours – Ticket Required
- First bus departs outside Hyatt Regency at 7:30 a.m.
- Please arrive 15 minutes early. Southwire staff will not be able to hold buses for late arrivals.
- Tour approximately 4.5 hours

Mobile App

Make sure to use the mobile app for full conference schedule, Exhibit and Sponsor information, push notifications of any onsite updates, and more. Download the "eventScribe" app from the Apple Store or Google Play Store. Once the app opens, use the "Search for an Event" field to search for "ETS". Select this event to open the ETS 2018 event app. Once the event opens, select "Login" and enter your username (the email you used to register with) and password (emailed to you on October 23 or November 2). If you do not have an account, select "Create Account" to create an account directly in the app.

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Proceedings

Pick up your proceedings at the Sabre-FWT booth **(#134)** in the Exhibit Hall before Wednesday at 1:30 p.m.

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IS GRID RELIABILITY IMPORTANT TO YOU?

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Engineering software for structural analysis and design of overhead power lines has been our only business for 30 years and it shows. **PLS-CADD** is considered the Industry Standard in over 120 countries worldwide. Combined with **PLS-POLE** and **TOWER**, we pioneered the integration of finite element analysis on complete lines which is proven to reduce costs and competently increase reliability and structural integrity.

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SAG TENSION PROGRAM
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STRUCTURE DESIGN AND ANALYSIS

PLS-POLE rapidly models and analyzes single and multi-pole structures of any voltage using any combination of concrete, steel, wood, laminated wood, and fiber reinforced polymer (FRP) materials. **TOWER** is for the analysis and design of self-supporting and guyed steel latticed towers.

STORM HARDENING

Grid Reliability is a concern many agencies and authorities have with grid owners. With PLS software determine whether your lines are meeting existing and future requirements for structural adequacy and electrical clearances on your smallest distribution lines through your largest transmission lines.

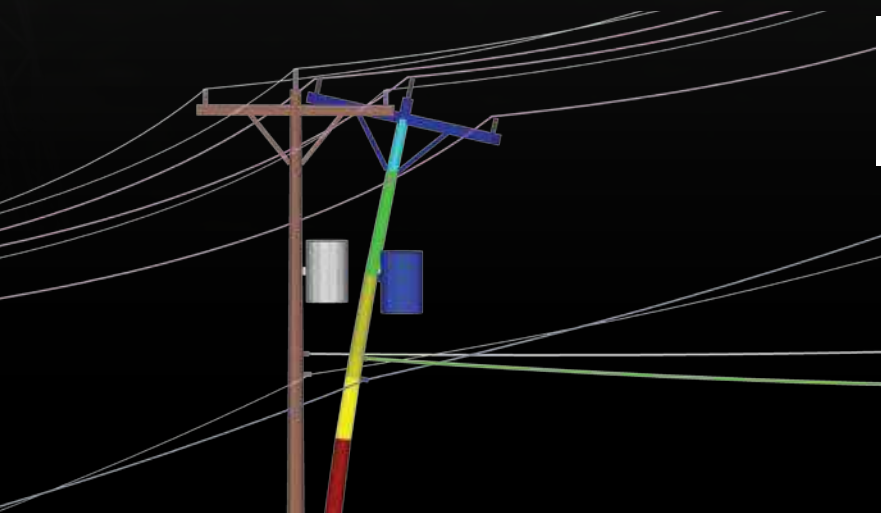
OPTIMIZED LINES & STRUCTURES

PLS-CADD's powerful optimizer quickly generates lowest cost designs that work. Make economical design decisions with confidence based on sound structural engineering principles, not with outdated standards or archaic hand methods.

CODE COMPLIANCE

PLS software is written by overhead line engineers for overhead line engineers. We can help you insure that NESC, GO95, ASCE, IEEE, ANSI, CSA, IEC, CENELEC and most other international code compliances are met.

CONTACT US TODAY TO LEARN HOW PLS WILL HELP YOU MEET THE CHALLENGES OF GRID RELIABILITY AND COMPLIANCE TODAY, AND TOMORROW.



POWER LINE SYSTEMS · INC ·

Email: info@powline.com
Website: www.powline.com
Phone: 608-238-2171

610 N. Whitney Way,
Madison, Wisconsin 53705, USA

SUNDAY, NOVEMBER 4

11:00 a.m. – 6:00 p.m. | Registration, Grand Hall Foyer

1:00 – 5:00 p.m. | Pre-Conference Workshop, Regency VII, 3.5 PDHs

ASCE/SEI Electrical Structure Standards and Guidelines: Technology Advancements

Moderator: **Anthony M. DiGioia**, Jr., Ph.D., P.E., Dist. M.ASCE

The pre-conference workshop will cover the brief history, existing principles, and upcoming changes to each of the ASCE/SEI Standards and Manuals of Practices (MoPs) that directly impact the electric power delivery industry.

Presenters:

- **Thomas Mara**, Ph.D., P.Eng., M.ASCE – Wind Loading Provisions in ASCE/SEI Manual of Practice 74
- **Kathleen Jones**, M.S.E., M.ASCE – Ice Loading Provisions in ASCE/SEI Manual of Practice 74
- **Frank Agnew** – P.E., M.ASCE Chair of ASCE/SEI Manual of Practice 74: Guidelines for Electrical Transmission Line Structural Loading
- **Robert Nickerson**, P.E., F.SEI, M.ASCE – Chair of ASCE/SEI 10 Standard: Design of Latticed Steel Transmission Structures
- **Kenneth Sharpless**, P.E., M.ASCE – Chair of ASCE/SEI 48 Standard: Design of Steel Transmission Pole Structures
- **James McGuire**, P.E., M.ASCE – Chair of New ASCE/SEI Manual of Practice 141: Wood Pole Structures for Electrical Transmission Lines: Recommended Practice for Design and Use
- **Galen Fecht**, P.E., M.ASCE – Chair of ASCE/SEI 104 Manual of Practice: Recommended Practice for Fiber-Reinforced Polymer Products for Overhead Utility Line Structures
- **George Watson**, P.E., M.ASCE – Chair of ASCE/SEI Manual of Practice 113: Substation Structure Design

5:30 – 7:00 p.m. | Grand Opening Reception, Exhibit Hall/ Grand Hall

Sponsored by: MEYER UTILITY STRUCTURES

MONDAY, NOVEMBER 5

7:00 a.m. – 6:00 p.m. | Registration, Grand Hall Foyer, Closed 1:30–2:30 p.m. for lunch

7:30 – 8:00 a.m. | Breakfast, Centennial Foyer

Sponsored by: BLACK & VEATCH

Follow SEI on Twitter @ASCE_SEI

8:00 – 9:30 a.m. | Opening Plenary Session with Keynote Address and Award, Centennial Ballroom

"Engineering a New Frontier – The Next Age of Space Exploration"

NASA Astronaut Scott D. Tingle

Captain Scott D. Tingle was selected by NASA in 2009. Raised in Randolph, Massachusetts, he earned a Bachelor of Science in Mechanical Engineering from Southeastern Massachusetts University, and a Master of Science in Mechanical Engineering from Purdue University, West Lafayette, Indiana. Following graduate school, Captain Tingle spent three years with the Aerospace Corporation, El Segundo, California, as a member of technical staff in their Propulsion Department; and was commissioned as a naval officer in 1991. A veteran test pilot, he has accumulated more than 4,500 flight hours in 51 types of aircraft, 750 carrier arrestments and 54 combat missions. Captain Tingle most recently served as Flight Engineer on the International Space Station for Expedition 54/55. Tingle returned to Earth after 168 days of living and working in low-Earth orbit.

Captain Tingle will provide a captivating account of his recent mission to the International Space Station. He will share details of his training; mission objectives, including his spacewalk; and he will give the audience a look at the future of human space flight. Captain Tingle will share how his engineering background was key to the success of his Expeditions and his career and how each of our engineering backgrounds provide critical leadership in our own area of work.

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:

2018 Award Recipient:
Archie D. Pugh, P.E., PMP, M.ASCE

Archie Pugh has a M.S. and B.S.in Civil Engineering from Virginia Polytechnic Institute & State University. He is a highly regarded leader in transmission engineering at AEP. For over twelve years, Archie had a critical role in the siting, permitting, design and construction of the Wyoming – Jacksons Ferry, 765kV Transmission Line Project; the first 6 conductor bundle 765kV line in North America.

Archie's strong leadership skills, willingness to share his knowledge and experience, and continuous education of his staff and peers in the electric utility industry provide a strong basis for his selection as this year's recipient. These attributes were key to the success of the Wyoming-Jackson Ferry project and continue to be in his current position overseeing operations of AEP 's transmission system in 7 states. Archie has also been an important contributor to the SEI ETS Conference since 2006 (Chair in 2012) and a past member of MOP 113.

As with all past recipients, Archie's contributions to the advancement of the art and science of transmission line engineering make him well worthy of the "Gene Wilhoite Innovations in Transmission Line Engineering Award".

9:30 – 10:15 a.m. | Refreshment Break, Exhibit Hall

Sponsored by: FABRIMET

10:15 A.M. – 12:00 P.M. | Session 1: Structural Analysis 1, Centennial Ballroom

Session Lead: Ron Carrington, P.E., M.ASCE

And they're off! First out of the gate is analysis and design of transmission structures. Coming into the first turn we focus on mitigation of latticed tower deflections during construction and then give guidance on designs requiring non-traditional modeling. In the back stretch we'll look at pole structures. Wood v. Steel – it'll be a photo finish! Then we'll cross the line with a study of steel pole performance in different environments.

Lattice Tower Deflection and Modeling of the Structure and Spans in Practice

Saumya Nag, P.E., M.ASCE; Steve Beilstein, P.E.; Loren Jessen, P.E., Black & Veatch; Jonathan Frantz, P.E., M.ASCE, Black & Veatch; Matthew Nicholson, P.E., Black & Veatch, Khaled Kator, S.E., Los Angeles Department of Water and Power, Kevin Heller, P.E., P.Eng, Black & Veatch

Lattice Transmission Structures: Challenging Modeling Scenarios that Require Non-Traditional Analysis Methods

Kevin M. Wortmann, P.E., S.E., Ryan Z. Hann, P.E., POWER Engineers

Wood v Steel; Dawn of Justice

Otto Lynch, P.E., F.SEI, F.ASCE, Power Line Systems Inc.

Recent Duke Energy's Studies to Develop Transmission Pole Standard

Prasad Yenumula, Ph.D., MBA, P.Eng., M.ASCE; Jimmy Robinson, Jr., P.E. Duke Energy; Neal Murray, MSME, Electric Power Research Institute

12:00 – 1:30 p.m. | Lunch, Exhibit Hall/Grand Hall

Sponsored by: Sabre · FWT

1:30 – 3:15 p.m. | Session 2: Special Design Considerations 1, Centennial Ballroom

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

We all know transmission lines look great in the air, but not so much when on the ground! Luckily this session will provide you with valuable insight on not only how to make them look even better through aesthetic design techniques (I know, hard to imagine) but also additional design guidance on reliability and tornado loading to help them stay upright.

Question: What is an Acceptable Target Reliability for High-Voltage Transmission Lines?

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

Aesthetics AND Infrastructure; Accomplishing Both with Better Overall Results for Power Delivery Projects

Kenneth Sharpless, P.E., M.ASCE, TAPP Inc.; Lynda Kiejko, P.E., M.ASCE, AltaLink

Case Study for Behavior of Transmission Line Structures Under Full-Scale Flow Field of Stockton, Kansas, 2005 Tornado

Ashraf A. El Damatty, Ph.D., MBA, P.Eng., M.ASCE; Nima Ezami, Ph.D. Candidate; Ahmed Hamada, Ph.D., P.Eng., M.ASCE, The University of Western Ontario

Evaluation and Implementation of Alternate Pole Materials to Meet Regulatory Aesthetic Requirements

Clinton Char, P.E., Alaira Bilek, P.E., Southern California Edison

3:15 – 4:00 p.m. | Refreshment Break, | Exhibit Hall/Grand Hall

Sponsored by: FALCON STEEL

4:00 – 5:30 p.m. | Session 3: Special Design Considerations 2, Centennial Ballroom

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

"Whole lot of shakin' going on!" Addressing wind induced vibration is one of the toughest design challenges. This session answers questions; how to analyze and mitigate wind induced vibrations in transmission structures? And, when and how to secure steel davit arms used on tubular steel poles? When and where to use toughened steel for latticed steel towers is also addressed.

Embrittlement in T.L. Lattice Steel Structures: Specifying Energy Absorption Criteria

Jonathan Kell, P.Eng., Manitoba Hydro; Katherine Bridwell, P.E., P.Eng., POWER Engineers; Bhargava Vantari, Nucor Steel; Cesar Aguilar, M&S Engineering

Securing Steel Davit Arms: When and How?

Blake Tucker, P.E.; Nancy Z. Fulk, Ph.D., P.E.; Dave Parrish, P.E., American Electric Power

Modeling and Quantifying the Aerodynamic Characteristics of Transmission Line Structures to Avoid and Mitigate Aeolian-induced Vibrations

Erik A. Ruggeri, M.S., P.E., POWER Engineers

7:00 – 8:30 p.m. | Offsite Reception, World of Coke

Join your colleagues for a night out at the World of Coke, where you can sample Coca-Cola flavors from around the world, explore the history of Coke, get a behind-the-scenes look at the bottling process, and hang out with the famous Coca-Cola polar bear! Remember to bring your ticket with you so you can enter the event.

Walking Directions to World of Coke: Exit Hyatt Regency Atlanta onto Baker Street heading towards Peachtree Street NE, walk three blocks and then turn right onto Centennial Olympic Park Drive NW, World of Coke will be on your left. About a six-minute walk.

Address:
121 Baker St NW, Atlanta, GA 30313

Sponsored by: POWER LINE SYSTEMS · INC

TUESDAY, NOVEMBER 6

7:00 a.m. – 6:00 p.m. | Registration, Grand Hall Foyer, Closed 1:30 – 2:30 p.m. for lunch

7:30 – 8:00 a.m. | Breakfast, Centennial Foyer

Sponsored by: PLH GROUP

8:10 – 9:30 a.m. | Session 4: Structural Analysis 2, Centennial Ballroom

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

Modernized methods and tools to analyze single angle latticed tower members for climbing loads, plus we'll step it up and tell you all about how to meet the new OSHA 100% connection requirements for fall protection. Also, you'll hear how design issues, including climbing access, were solved on a 300' tall river crossing structure.

Heel or Toe? The Transmission Engineer's Guide to Single Angles in Flexure

Aaron P. Darby, P.E.; Mary Jane McMillen, P.E., M.ASCE; Nancy Z. Fulk, Ph.D., P.E., American Electric Power; Robert Nickerson, P.E., F.SEI, M.ASCE, Consulting Engineer

Updated Fall Protection Efforts for Transmission Structures

Mark D. Nelson, P.E., S.E., M.ASCE; David E. O'Claire, P.E., M.ASCE, Bonneville Power Administration

Crossing the Delaware with PECO and a 300 ft. Tall H-Frame Structure

Kalpesh Patel, P.E.; Guy Faries, P.E., Trinity Meyer Utility Structures

9:30 – 10:15 a.m. | Refreshment Break, Exhibit Hall/Grand Hall

Sponsored by: BURNS McDONNELL

10:15 a.m. – 12:00 p.m. | Session 5: Foundations, Centennial Ballroom

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

This Foundation session provides an answer to the eternal question "to bore, or not to bore!" You'll also hear how the ATC Bay Lake project team incorporated steel vibratory caisson foundations and how you may be able to do the same, some best practices for selecting the appropriate transmission line foundation when dealing with challenging environmental conditions, and a bold first step towards developing industry guidelines for designing foundations that are practical, reliable and economical.

Practical Collaborative Approach to Alternative T-Line Foundations

Bridget Honsey, P.E.; Jacob Hexum, EIT, Black & Veatch; Cole Vosters, P.E., M.ASCE; Michael Bradley, P.E.; Clifford Van Den Elzen, American Transmission Company

The Value of Structure-Specific Borings: Statistical Analysis of Electrical Transmission Line Structure Foundation Costs Based on Structure-Specific Borings Versus No Borings or Variable Boring Spacing

Darren Ratliff, P.E., Ameren; Dan Whalen, P.E.; Bob Chantome, P.E., S.E.; James Knutelski, P.E.; Kevin Schilling, P.E., Hanson Professional Services Inc.

Guide for Transmission Line Foundations with Least Impact to the Environment

Peter M. Kandaris, P.E.; Ashley E. Evans, EIT, DiGioia Gray, Inc.; Asim Haldar, P.Eng., Ph.D., CEATI International, Inc.

Groundwork for Developing Comprehensive Transmission Line Foundation Design Guidelines

Steve Davidow, P.E., S.E., P.Eng., M.ASCE, Quanta Subsurface; Peter M. Kandaris, P.E., M.ASCE; Ashley E. Evans, EIT, DiGioia Gray, Inc.

12:00 – 1:20 p.m. | Lunch, Exhibit Hall/Grand Hall

Sponsored by: SA-RA GROUP www.sara.com.tr

1:30 – 3:15 p.m. | Session 6: Structural Failure Analysis and Investigation , Centennial Ballroom

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

This session is a presentation of important results of studies on the performance of arm-to-pole connections on tall slender tapered steel pole structures that have experienced problems from wind induced vibration, fatigue and welding defects. The possible causes for these performance problems will be reviewed and suggestions presented to develop more robust arm-to-pole connections and new design standards that specifically address wind induced vibration and fatigue problems.

Evaluation of Typical Arm-to-Pole Connections in Slender Steel Pole Transmission Structures for Wind Induced Vibration and Fatigue

Lawrence G. Griffis, P.E., M.ASCE, Walter P Moore and Associates, Inc.; Karl H. Frank, Ph.D., P.E., M.ASCE, Consultant

Fatigue Testing and Finite Element Modeling of Arm-to-Pole Connections in Steel Transmission Pole Structures

Francisco J. Bonachera Martin, Ph.D.; Jason B. Lloyd, P.E.; Robert J. Connor, Ph.D.; Amit Varma, Ph.D., Purdue University

Welding Challenges in Typical Connections Used in Steel Pole Transmission Structures

Jim Merrill, P.E., ENV SP, TRC; Wesley J. Oliphant, P.E., AWS-CWI, F.SEI, F.ASCE, Exo Group, LLC

Challenges in the Design and Mitigation of Wind-Induced Vibration for Slender Steel Transmission Structures

Daryl Boggs, Ph.D., P.E., Boggs Engineering and Technical, LLC

3:15 – 4 :00 p.m. | Refreshment Break, Exhibit Hall/Grand Hall

Sponsored: Osmose

4:00 – 5:30 p.m. | Session 7 Substation Design Issues, Centennial Ballroom

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

Substation structural design takes center stage with great information on design of underground to overhead riser structures, a better way to efficiently design bus and insulators for those pesky, but important, short circuit forces and case studies on how to use prefabricated foundations (basically anything not poured on site) to your benefit.

Design and Construction of Riser Structures in Alberta

Kishor Kumar, P.Eng., AltaLink Management Ltd; Andrew Rees, P.Eng., POWER Engineers

Prefabricated Foundations – Construction Efficiencies and Economic Impacts

Daniel S. Cuffman, P.E.; Aaron P. Darby, P.E.; Olivialin A. Miller, P.E., American Electric Power

Going Against the Current: Short Circuit Force Background

Alex J. Kladiva, P.E., S.E., Burns & McDonnell

5:30 – 7:00 p.m. | Networking Reception, Exhibit Hall/ Grand Hall

Sponsored by: ECI ELECTRICAL CONSULTANTS, INC.

WEDNESDAY, NOVEMBER 7

7:00 a.m. – 1:30 p.m. | Registration, Grand Hall Foyer,

7:30 – 8:00 a.m. | Breakfast, Centennial Foyer

Sponsored by: BETA

8:10 – 9:30 a.m. | Session 8: Seismic, Centennial Ballroom

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

Whole lot of "quakin" going on! See how Seattle City Light has implemented an innovative tiered approach to seismic resiliency. Get the historical perspective of how real-world earthquakes helped shape industry codes, company standards and emergency protocol from Southern California Edison experts. Finally, an overview of IEEE Standard 693 for substation equipment and their supports.

Seismic Resiliency: What Utilities Should Know to Keep the Lights On

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

Evolution of Electrical Grid Seismic Resiliency

Roderick Dela Cruz, P.E.; John Dai, P.E.; Florizel Bautista, P.E., Southern California Edison; John Eidinger, G&E Engineering Systems, Inc.

Seismic Design of Substations—IEEE Std 693 Gets a Major Update

Brian Knight, S.E., M.ASCE, WRK Engineers; Eric Fujisaki, P.E., M.ASCE, InfraTerra, Inc.; Leon Kempner, Jr., Ph.D., P.E., F.SEI, M.ASCE, Bonneville Power Administration; Craig Riker, P.E., M.ASCE, San Diego Gas and Electric Company

9:30 – 10:15 a.m. | Refreshment Break, Exhibit Hall/Grand Hall

Sponsored by: NV5 Delivering Solutions Improving Lives

10:15 a.m. – 12:00 p.m. | Session 9: Construction Challenges, Centennial Ballroom

Session Lead: Joel Bryant, P.E., M.ASCE

No battle plan ever survives first contact with the enemy, and sometimes neither does construction plans in the real world. Hear the stories of four teams forced to solve a myriad of construction challenges. Whether performing emergency field modifications on vibratory caissons, updating aging infrastructure on an island paradise, performing the delicate dance needed to rebuild a brownfield circuit or successfully splicing anchor bolt cages, these project teams just 'got er done'!

KEEPING THE PROJECT ON SCHEDULE – A Case Study About Emergency Weld Repairs Required on a Newly Installed Vibratory Caisson

Zachary J. Oliphant; Justin W. Curtis, Exo Group, LLC; Benjamin S. Jessup; Christopher W. Schnetzler, Pepco Holdings

Construction Challenges in Paradise – Hawaiian Electric Company: 138kV System Rebuild

Mitch Cowen, HDR; Garett Muranaka, P.E., Hawaiian Electric Co.

Structural Design and Construction Challenges on the South and West of Edmonton Area Development Project

Jondy Britton, P.E., M.ASCE; Meagan Moeller, P.E., M.ASCE, Wellan Cowan; Jacob Merriman, P.E., P.Eng., M.ASCE; Chih-Hung Chen, P.E., P.Eng., Burns & McDonnell Engineering

Mechanically Spliced Full Length Anchor Bolts – Bringing it all Together

Kolleen L. Backlund, P.E., Kleinfeider; Adam G. Bowland, Ph.D., P.E., DiGioia Gray, Inc.; Aaron P. Darby, P.E.; Keith S. Yamatani, P.E.; Nancy Z. Fulk, Ph.D., P.E., American Electric Power

12:00 – 1:30 p.m. | Lunch, Exhibit Hall/Grand Hall

Sponsored by: ASECINC.

1:30 – 2:50 p.m. | Session 10: Structure Upgrading, Centennial Ballroom

Session Lead: Mary Jane McMillen, P.E., M.ASCE

Hey, everybody starts to show wear and tear over time, and transmission lines are no exception! See how challenges like a rogue tractor assault and a "mere" 5-inch rime ice buildup are handled. Next, learn about modern hardware and conductors installed to spruce up a "very mature" river crossing. Finally, we'll close out with a riveting (sorry, no rivets were actually used) story about reinforcing existing steel poles for new loads.

Great River Energy Transmission Line Tower Repairs

Kerby Nester, P.E., M.ASCE, Jim McGuire, P.E., M.ASCE, Great River Energy

Teaching an Old Line New Tricks

Jimmy Buker; Debby Knudtzon, HDR Engineering Inc.

Steel Transmission Pole Structural Capacity Uprating for High Voltage Transmission Line and Substation Upgrade Projects

Chad Hines, P.E., S.E., M.ASCE; Paul J. Ford and Company; Matthew Lohry, P.E., Christopher Facklam, P.E., American Transmission Company

2:50 – 3:30 p.m. | Refreshment Break, Centennial Ballroom Foyer

Sponsored by: IEEE Standards Association IEEE | NESC

3:35 – 5:05 p.m. | Session 11: Evolving the Grid: The Confluence of Regulation, Technology, Economics, Reliability, and Resilience, Centennial Ballroom

Session Lead: Otto J. Lynch, P.E., F.SEI, F.ASCE
Panel Facilitator: O.H. Dean Oskvig, PJM

The electric-utility grid of the future will likely be vastly different than what it currently looks like today. Rapidly changing technologies, rapidly growing distributed energy resources, omnipresent economic demands, and the growing public expectation to be "constantly connected" to reliable and economical electric power, will inherently bring dramatic changes to how our grid is designed, constructed, and operated. This session promises to be an informative and insightful panel discussion by industry leaders from five different industry perspectives.

Panelists: *Commissioner Tim Echols, Vice-chairman, Georgia Public Service Commission; John Moura, Director of Reliability Assessment, North American Electric Reliability Corporation (NERC); Kristin Munsch, Deputy Director, Illinois Citizens Utility Board; Archie Pugh, Managing Director Transmission Field Operations, American Electric Power; Lawrence Willick, Senior Vice President, LS Power Development, LLC*

5:05 – 5:20 p.m. | Conference Closing, Centennial Ballroom

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

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MONDAY, NOVEMBER 5 | 9:30 AM – 4:00 PM

- **Human Performance: Event Learning Process for Transmission Lattice Tower Failure Event,** Joseph Godwin, P.E., M.SCE, Southern Company Services
- **Flexural Buckling Strength of Steel Angle Member with Eccentric Joint,** Mitsui Kazuya, Nippon Steel Sumitomo Metal Corporation, Sato Atsushi, Nagoya Institute of Technology
- **Effective Length Factor of Leg Member in Latticed Steel Tower,** Ming Lu, Ph.D., P.Eng., Michelle Hao, Dipayan Chakrabarti, BC Hydro
- **Program Considerations for Analysis of Drilled Shaft Foundations,** Sanchit Chitre, Joel Coker, Brian Sedgwick, Leidos
- **Flood Design of Substation Structures,** Jared Augustine, P.E., ENV SP, M. ASCE, Emily Bonini, Emily Larson, P.E., Burns & McDonnell
- **Consideration of Sustained Loads and Creep Effects in Specifying and Designing Fiber Reinforced Polymer (FRP) Utility Poles,** Diego Arabbo, P.E., M.ASCE, M.ACI, Matthew Richie, P.E., M.ASCE, Scott DiFiore, Simpson Gumpertz & Heger
- **Updating ASCE 113 Substation Structure Design Guide, Connection to Foundations: To Bend or Not to Bend? Evaluating Anchors with Leveling Nuts,** Ross Twidwell, P.E., John Humphries, P.E., Beta Engineering
- **A Full-Scale Crash Test for a Transmission Wood Pole,** Haijian Shi, Ph.D., P.E., PMP, Pepco Holdings

TUESDAY, NOVEMBER 6 | 9:30 AM – 4:00 PM

- **Seismic Design of Substation Steel Structures: What Code Should I Follow?** Hannah Hillegas, B.S.C.E., E.I.T., Paul Somboonyanon, P.E., P.Eng, Burns & McDonnell
- **Foundations for River Crossing Transmission Line Structures,** Bruce Roth, P.E., GAI Consultants, John R. Klotz, P.E. – Dominion Technical Solutions, Fatma Ciloglu, P.E., Ph.D., GAI Consultants
- **Dynamic Design of Substation Rigid Bus: Is it the right tool for me?** Paul Somboonyanon, P.E., P.Eng, Burns & McDonnell
- **Analysis, Prediction, and Mitigation of Vortex Induced Vibrations in Substation Structures,** Hossein Qarib, M.Sc., American Electric Power, Diaaeldin Mohamed, Ph.D., Anthony Hansen, P.E., William Reisdorff, P.E. Valmont Utility
- **Shake Table Testing of 500kV Bus Support with Spring Dampers,** Scott Howard, P.E., WRK Engineers, Inc., Craig Riker, P.E., M.ASCE, San Diego Gas and Electric Company, Brian Knight, S.E., M.ASCE, WRK Engineers
- **Aesthetics: Art + Math,** Joshua J. Jordan, P.E., WorleyParsons
- **Managing Aging Substation Structures,** Harinee Trivedi, P.E., PM, Burns & McDonnell, Stefanie Gille, P.E.,San Diego Gas & Electric
- **Ground Modification Technology: Putting the Grid Back on the Grid,** David Mazzei, P.E., Hayward Baker, Inc., Ken Kniss, P.E., Hayward Baker, Inc., David Finocchio, P.E., Hayward Baker, Inc.

WEDNESDAY, NOVEMBER 7 | 9:30 AM – 1:30 PM

- **Fort McMurray Wildfire Event – River Crossing Structure Replacement,** Anandha Arumugam, P.Eng. ATCO EGBU
- **Failure Analysis on Transmission Tower Struck by Tropical Storm**, Jian Zhang, Tongji University, Qiang Xie, Ph.D., Tongji University
- **Composite Transmission Towers: Analysis, Behavior, Slip Investigation and Interaction Diagrams,** Mustafa Mahamid, PhD, P.E., S.E., F.ASCE, F.SEI, University of Illinois at Chicago, Kamil Bilal, graduate student, University of Illinois at Chicago, Cenk Tort, MITENG
- **Seismic Effects on Transmission Lines and its Major Components,** Scott Schlechter, P.E., GE, GRI. Leon Kempner, Jr., Ph.D., P.E., M.ASCE, F.SEI, Bonneville Power Administration, Asim Haldar, Ph.D., CEATI International
- **Assessment of Corrosion in Weathering Steel Transmission Line Structures,** Fabio Matta, University of South Carolina, Matthew B. Barragan, HNTB, Inc., Kevin Niles, Osmose Utilities Services, Inc.
- **Transmission Pole Foundations using Drilled Pier and Inclined Earth Anchors to Counteract Eccentric Line-Induced Forces,** Andrew Canopy, P.E., PLS, Hanson Professional Services Inc., Darren Ratliff, P.E., Ameren Services Company, Bob Chantome, P.E., S.E., Hanson Professional Services Inc.

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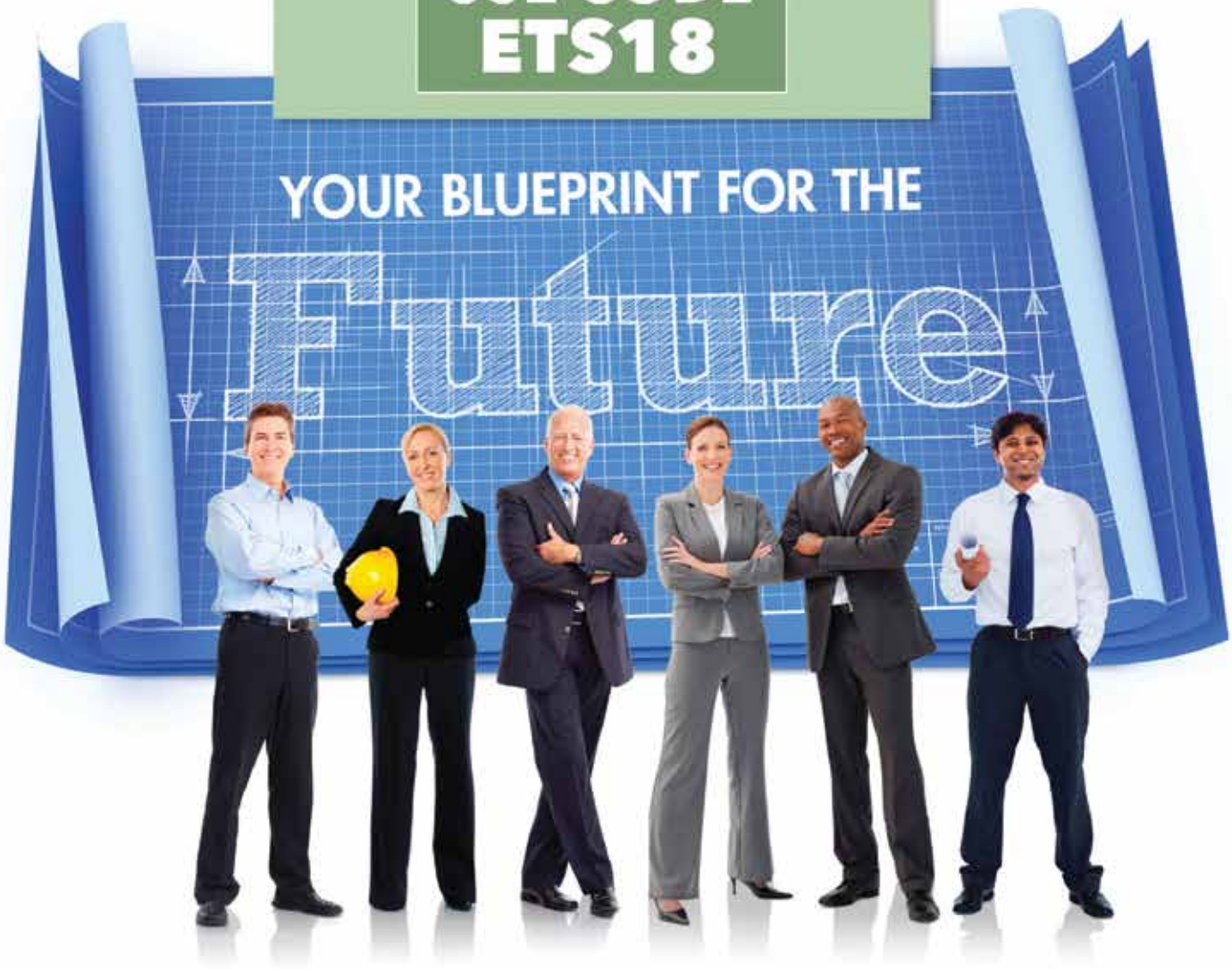

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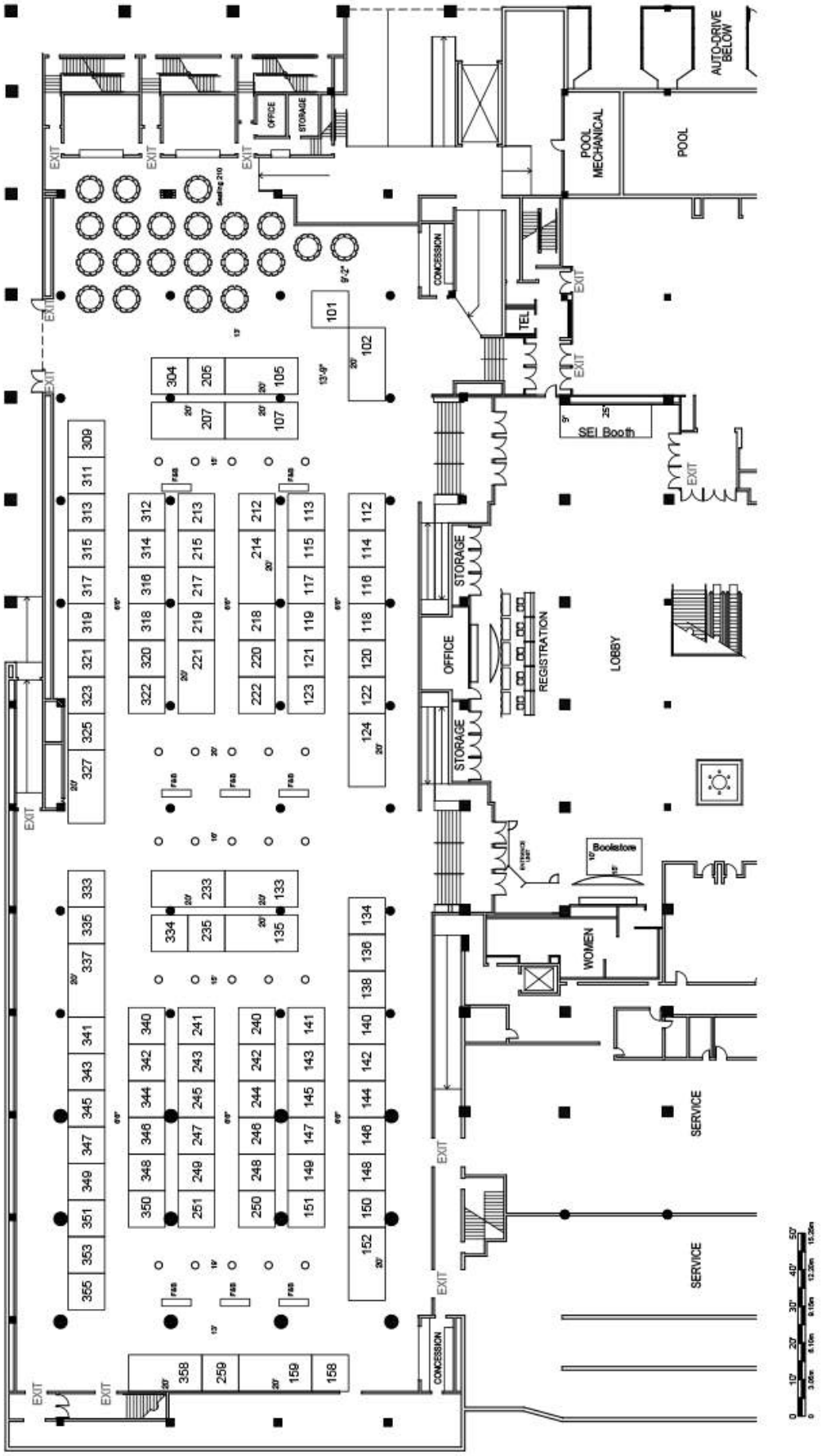
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