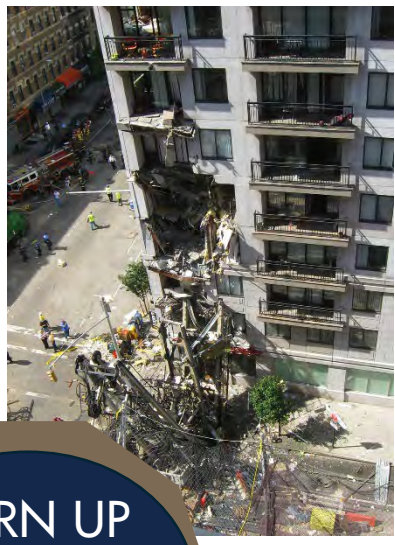
# FINAL PROGRAM

ASCE | FORENSIC ENGINEERING

# 10th FORENSIC ENGINEERING CONGRESS

Seattle, Washington | November 1 – 4, 2024

## FINDING ANSWERS

EARN UP TO 22 PDHs

Renaissance Seattle

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# SCHEDULE-AT-A-GLANCE

## Friday, November 1

| | |
|---|---|
| 7:00 a.m. – 6:00 p.m. | Registration |
| 8:30 a.m. – 5:00 p.m. | Short Courses |
| 5:30 p.m. – 7:00 p.m. | Welcome Reception |

## Saturday, November 2

| | |
|---|---|
| 7:00 a.m. – 5:00 p.m. | Registration |
| 7:30 a.m. – 8:30 a.m. | Continental Breakfast |
| 8:30 a.m. – 10:00 a.m. | Opening Plenary Session |
| 10:00 a.m. – 10:30 a.m. | Networking Break |
| 10:30 a.m. – 12:00 p.m. | Concurrent Technical Sessions |
| 12:00 p.m. – 2:00 p.m. | Lunch |
| 2:00 p.m. – 3:00 p.m. | Concurrent Technical Sessions |
| 3:00 p.m. – 3:30 p.m. | Networking Break |
| 3:30 p.m. – 5:30 p.m. | Concurrent Technical Sessions |
| 5:30 p.m. – 7:00p.m. | Happy Hour Hosted by InspectMind |

## Sunday, November 3

| | |
|---|---|
| 7:00 a.m. – 5:00 p.m. | Registration |
| 7:30 a.m. – 8:30 a.m. | Continental Breakfast |
| 8:30 a.m. – 10:00 a.m. | Plenary Session |
| 10:00 a.m. – 10:30 a.m. | Networking Break |
| 10:30 a.m. – 12:00 p.m. | Concurrent Technical Sessions |
| 12:00 p.m. – 2:00 p.m. | Awards Luncheon and Student Competition |
| 2:00 p.m. – 3:30 p.m. | Concurrent Technical Sessions |
| 3:30 p.m. – 4:00 p.m. | Networking Break |
| 4:00 p.m. – 5:30 p.m. | Concurrent Technical Sessions |

## Monday, November 4

| | |
|---|---|
| 7:00 a.m. – 11:00 a.m. | Registration |
| 7:30 a.m. – 9:00 a.m. | Continental Breakfast |
| 9:00 a.m. – 10:30 a.m. | Concurrent Technical Sessions |
| 10:30 a.m. – 11:00 a.m. | Networking Break |
| 11:00 a.m. – 12:00 p.m. | Concurrent Technical Sessions |
| 2:00 p.m. – 4:30 p.m. | FED ExCom and Chairs Fall Meeting |

## Organizing Committee Members

### Forensic Engineering Division Executive Committee Chair

Laura E. Sullivan-Green, Ph.D., A.M.ASCE, *Associate Professor Civil & Environ Engineering, San José State University*

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### Congress Steering Committee

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Weijin Wang, Ph.D., P.E., M.ASCE, *Structural Engineer, Permasteelisa North America*

## ASCE Staff

Kelly Frere, Senior Manager, Contracts & Event Services
Sean Scully, Senior Manager, Sponsorship and Exhibit Sales
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Dustin Young, Director, Sustainability and Technical Advancement
Abigail Zarfoss, Senior Coordinator, Exhibits & Event Services

# Welcome to Seattle

On behalf of the technical and organizing committees, it is my pleasure to welcome you to Seattle, Washington for the 10th Forensic Engineering Congress.

Organized by ASCE's Forensic Engineering Division (FED), this Congress convenes practicing engineers, academics, and forensic experts from various disciplines to exchange knowledge and experience. Transitioning to a biennial format, this Congress is a long-awaited, in-person opportunity to network, build professional relationships, share critical information, and learn from peers.

Our focus for the 10th Congress is "Finding Answers". To that end, we are pleased to have participation from committees within the Forensic Engineering Division as well as other divisions of ASCE. We anticipate valuable contributions from individuals with diverse expertise and varied career paths, enriching our discussions and enabling us to approach forensic engineering challenges from multiple perspectives.

Through these collaborations, the Forensic Engineering Division continuously strives to disseminate information on failures and their causes, develop practices to mitigate failures, provide guidelines for conducting failure investigations, and offer guidance to the engineering community. By sharing case studies, research findings, and best practices, we aim to advance the field of forensic engineering and enhance the safety and reliability of engineering projects globally.

We are excited to offer a comprehensive program featuring plenary sessions, technical sessions, workshops, and panel discussions. These sessions will cover a wide range of topics, including structural failures, material defects, legal aspects of forensic engineering, and innovative investigative techniques. We encourage you to actively participate, ask questions, and engage with your peers to maximize this unique learning opportunity.

Celebrating our 10th edition, and 27 years after our first Congress, we look forward to continuing the tradition of networking, learning, and technical sharing. We are grateful to our sponsors, editors, volunteers, ASCE staff, authors, and participants who have contributed in various ways to make this conference a success.

Thank you for joining us in Seattle. We hope you find the Congress both informative and inspiring, and we look forward to the valuable insights and connections that will emerge from our time together.

Juan Carlos Araiza, Ph.D., P.E.
EFI Global
Austin, TX

## Proceedings of the 10th Forensic Engineering Congress

As an exclusive benefit for conference registrants, eligible attendees can claim the complete collection of proceedings papers through ASCE Library for 60 days, beginning the day the conference opens. Once you have claimed the proceedings, you can access the papers whenever you want.

Go to:
https://ascelibrary.org/forensics24-token for full instructions.

# Short Courses & Congress Agenda

## Friday, November 1

### Champlain Towers South: Unveiling Punching Shear Deficiencies and Strengthening Strategies in Flat Plate Construction

*8:00 a.m. – 12:00 p.m., Location: South*
***4.0 PDHs***

**Instructors:** Matthew Fadden, Andrea Shear

In the early morning of June 24, 2021, the eastern half of the 12-story Champlain Towers South Condominium collapsed, killing 98 residents of the 40-year-old building in Surfside, Florida. WJE was retained by attorneys representing the condominium association to determine the cause of the collapse and provide litigation support. Based on document review, field investigation, material testing, and analysis, WJE determined that the collapse was initiated by punching shear failures in the pool deck slab, which caused the failure of columns at the south face of the building, leading to the collapse.

This collapse has emphasized the importance of identifying, evaluating, and correcting punching shear deficiencies in flat plate construction. In practice, punching shear-related cracking can be challenging to identify, as cracking is usually concealed. Current and previous code equations are of limited use for evaluating the punching shear capacity of slabs with excessive top cover and low reinforcement ratios.

This short course details WJE's investigation and findings regarding the tragic collapse of Champlain Towers South. Subsequently, we will present approaches to screening for punching shear deficiencies, field evaluation of existing conditions, and punching shear strength evaluation. Additionally, we will discuss approaches for cost-effective retrofits to strengthen slab/column regions where deficiencies have been identified.

### Pre-Construction Surveys of Adjoining Structure – Guidelines for Practicing Engineers: An interactive review of the proposed guidelines

*1:00 p.m. – 5:00 p.m., Location: South*
***4.0 PDHs***

**Instructors:** Nathaniel B. Smith, P.E., M.ASCE; John Wylie, P.E., M.ASCE

The Committee on Forensic Investigations noted a need within the industry to develop guidelines for performing preconstruction surveys of structures adjacent to proposed construction sites. Members of the committee have found that the extent and quality of pre-construction surveys varies throughout the industry and has drafted a publication titled Pre-Construction Surveys of Adjoining Structure – Guidelines for Practicing Engineers to outline best practices for performing these surveys. This workshop will provide an interactive review of the proposed guidelines and will teach participants best practices.

### Advanced Computing for Safer Structures

*8:00 a.m. – 5:00 p.m., Location: East*
***8.0 PDHs***

**Instructors:** Rui Liu, Ph.D., P.E., M.ASCE; Mike Drerup, P.E., M.ASCE; Pingbo Tang, Ph.D., P.E., M.ASCE; Pengkun Liu, Ph.D., Aff.M.ASCE

Artificial intelligence (AI) is likely to transform practices of architecture, engineering and construction (AEC). Drawing on lessons from past transformative technologies, we can expect that AI will assist architects, engineers, and builders in gaining productivity significantly. However, uses of AI in the AEC sector may be tempered by new types of failures. Forensic engineers have already started to explore the potential applications of deep learning and emerging advanced computing technologies in investigating building and infrastructure defects and collapses. Images can be analyzed to identify defects in civil infrastructure, enhancing the safety and longevity of these structures. Natural disasters can be simulated and experienced through virtual environments, providing valuable insights for disaster preparedness and response. Extended reality technologies have the potential to allow inspectors to "visualize" hidden construction components, improving the accuracy and efficiency of inspections. Furthermore, large language models are beginning to show potential in reasoning tasks, opening new avenues for advanced problem-solving and decision-making. The workshop explores how to leverage AI and emergent technologies to improve health, safety, and welfare in the built environment.

### Welcome Reception – Sponsored by LERA Consulting Structural Engineers

5:30 – 7:00 p.m.
*Location: Madison Ballroom*

What a terrific way to kick off the Congress! Enjoy hors d'oeuvres, meet old and new colleagues, and make plans to enjoy the nightlife that Seattle has to offer.

LERA
Consulting Structural Engineers

## Saturday, November 2

### Continental Breakfast – Sponsored by Exponent

7:30 – 8:30 a.m.
*Location: Courtyard Pre-Function*

Exponent®
Engineering and Scientific Consulting

## Saturday, November 2 (continued)

### Opening Plenary Session
8:30 – 10:00 a.m.
Location: *Courtyard Ballroom*

**KEYNOTE ADDRESS**

**Glenn Bell,** P.E., S.E., C.Eng, F.SEI, F.ASCE, FIStructE – **1.5 PDHs**
Update from NIST on Surfside Collapse

At NIST, Glenn Bell is Associate Lead of the National Construction Safety Team Investigating the partial collapse of the Champlain Towers South in Surfside, Florida. Glenn is Past-President of the ASCE Structural Engineering Institute, a Director of the Confidential Reporting on Structural Safety - US, and a member of the Board of Directors of the Charles Pankow Foundation. He is a registered Professional Engineer in nine states and D.C., a registered Structural Engineer in IL, and a Chartered Engineer in the UK.

### Morning Networking Break – Sponsored by Dolhon Forensics
10:00 – 10:30 a.m.
*Location: Courtyard Pre-Function*

DOLHON FORENSICS | INVESTIGATION CONSULTING EXPERT WITNESS

### Technical Sessions – **1.5 PDHs**
10:30 a.m. – 12:00 p.m.
See page 6 for a list of presentations and rooms.

### Networking Lunch – Sponsored by Envista Forensics
12:00 – 2:00 p.m.
*Location: Courtyard Ballroom*

ENVISTA FORENSICS

### Technical Sessions – **1.0 PDHs**
2:00 – 3:00 p.m.
See page 6 for a list of presentations and rooms.

### Afternoon Networking Break – Sponsored by Walker Consultants
3:00 – 3:30 p.m.
*Location: Courtyard Pre-Function*

WALKER CONSULTANTS

### Technical Sessions – **1.5 PDHs**
3:30 – 5:00 p.m.
See page 7 for a list of presentations and rooms.

## Sunday, November 3

### Continental Breakfast
7:30 – 8:30 a.m.
*Location: Courtyard Pre-Function*

### Plenary Session
8:30 – 10:00 a.m.
*Location: Courtyard Ballroom*

**Sarah Johnson**, J.D. – **1.5 PDHs**
The Role of the Forensic Engineer as Expert for Insurance-related Cases

Sarah A. Johnson is partner at Karbal Cohen Economou Silk & Dunne LLC. During her professional career, Ms. Johnson has focused her practice in insurance coverage, construction contracts, professional liability, and personal injury. She has represented insurance companies in declaratory judgment actions and with respect to other coverage issues and coverage investigations. She has also been involved with drafting professional liability insurance policies.

### Morning Networking Break
10:00 – 10:30 a.m.
*Location: Courtyard Pre-Function*

### Technical Sessions – **1.5 PDHs**
10:30 a.m. – 12:00 p.m.
See page 7 for a list of presentations and rooms.

### Awards Luncheon and Student Competition – Sponsored by Simpson Gumpertz & Heger
12:00 – 2:00 p.m.
*Location: Courtyard Ballroom*

SGH

### Technical Sessions – **1.5 PDHs**
2:00 – 3:30 p.m.
See page 8 for a list of presentations and rooms.

### Afternoon Networking Break
3:30 – 4:00 p.m.
*Location: Courtyard Pre-Function*

### Technical Sessions – **1.5 PDHs**
4:00 – 5:30 p.m.
See page 8 for a list of presentations and rooms.

## Monday, November 4

### Continental Breakfast
7:30 – 9:00 a.m.
*Location: Compass Foyer*

### Technical Sessions – **1.5 PDHs**
9:00 a.m. – 10:30 a.m.
See page 9 for a list of presentations and rooms.

### Morning Networking Break
10:30 – 11:00 a.m.
*Location: Compass Foyer*

### Technical Sessions – **1.0 PDHs**
11:00 a.m. – 12:00 p.m.
See page 9 for a list of presentations and rooms.

# Technical Program Grid

## Saturday, November 2nd

| Track A | Track B | Track C | Track D | Track E | Panel Discussions |
|---|---|---|---|---|---|
| Room: Spring | Room: West | Room: Courtyard Ballroom | Room: South | Room: East | Room: North |
| 10:30 a.m. – 12:00 p.m.<br>PDHs 1.5 | | | | | |
| Professional Practice in Forensic Engineering | Natural Disasters and Extreme Conditions | Forensic Engineering Education | Construction Performance and Safety | Building Enclosure (roof, facades, foundation) | Important Lessons Learned from CROSS-US |
| Moderator: Aaron Freidenberg | Moderator: Travis Ebisch. | Moderator: Ravi Mullapudi | Moderator: Ziad Salameh | Moderator: Ralph Moon | |
| **Overbilling in Urban Pavement Works – Case Study of a City in the Brazilian Amazon**<br>Alan Lopes<br><br>**Ethics of Engineers in the Public Discourse when Catastrophes Occur**<br>Elisabeth Malsch, Jon Abruzzo, Margerite Pinto, Stephanie Nussbaum<br><br>**Forensic Engineering Practice Lessons – A Case Study of Cladding Failures in New Zealand**<br>Brian Hubbs, Graham Finch | **Post-Fire Structural Assessment Considerations of Buildings and Parking Structures**<br>David Amori, Eric Lalli<br><br>**Damage Assessment and Repair after Large Construction Fires**<br>Kaat Ceder, Zander Danto, Kent Sasaki<br><br>**Post-Fire Structural Investigation: Case Study of Fire-Induced Damage Assessment and Remediation of a Steel-Frame Parking Garage**<br>Jenny Sideri, Stephen Pessiki, Ali Ashrafi, Ph.D., P.E., CFEI, Grace Lee, P.E., Reyhaneh Abbasi, Ph.D., William Kane | **The Collapse of Champlain Towers South – Review of A Forensic Engineering Investigation**<br>Benjamin Cornelius, James Simpson<br><br>**Surfside Collapse Investigation Initial Findings**<br>Lauren Millman, Elisabeth Malsch, Liling Cao, John Abruzzo, Nicholas Saenz<br><br>**Use of the Champlain Towers South (Surfside) Condominium Collapse to Teach Engineering and Construction Ethics**<br>Tara Cavalline, Alison Sears, Stephanie Pilkington | **Review of Fatal Fall-From-Height Accidents in Dubai Due to GRP Skylight Sheet Breakage (2018-2022)**<br>Raneem Ewiss, Mohammad Alqassim, Sulaiman Alzarooni<br><br>**Assessing and Mitigating Occupational Risks for Outdoor Workers in Post-Catastrophe Infrastructure Rebuilding**<br>Voloshkina Olena, Rostyslav Sipakov<br><br>**Vibration Evaluation and Remediation of Air Cooled Condenser Units**<br>Mohamed El Batanouny, Art Hortua, Luke Traver | **Evaluation of Localized Differential Movement of Slabs-On-Ground: Curvature is Not Deflection**<br>Ryan Kalina, Chris B. Kahanek, P.E., S.E., AIA<br><br>**Slab-on-Ground Foundation Performance Evaluation**<br>Brian C. Euban.ks, P.E., D-IBFES, DFE, MASCE, Robert Pierry, Dean R. Read, M.ASCE, P.E.<br><br>**Concrete Slab-On-Grade Foundation Damage Assessment for Residential Structures**<br>Gayatri Thakre, Mohammad Najafi, Vinayak Kaushal<br><br>**A Checklist for the Investigation of Concrete Slab-on-Grade Cracking**<br>Thanh Do | **Important Lessons Learned from SEI's Collaborative Reporting for Safer Structures, CROSS-US, and ASCE's Forensic Engineering Division**<br>Norb Delatte, Mike Drerup, Glenn Bell |
| 2:00 p.m. – 3:00 p.m.<br>PDHs: 1.0 | | | | | |
| Professional Practice in Forensic Engineering | Natural Disasters and Extreme Conditions | Forensic Engineering Education | Construction Performance and Safety | Technologies for Forensic Investigation | Litigation and Learning from the Past |
| Moderator: Chantell Cornett | Moderator: Casey Hemmatyar | Moderator: Rebecca Bowman | Moderator: Chad Williams | Moderator: David Sparks | Moderator: JC Araiza |
| **Unique Challenges Associated with Builders' Risk Claims**<br>Alan Mullenix<br><br>**Resulting Damage: Tales from the Builder's Risk**<br>Lisette Terry, P.E. | **A Comparison of Simplified Approaches to Estimate the Explosive Overpressure Yield of LI Battery Thermal Runaway in a Confined Environment**<br>Brian Katz<br><br>**Sudden Impact: A Case Study of Explosion Damage to Residential Structures**<br>Amanda Ramirez<br><br>**Repair Scope Creep**<br>Kenneth Simons, Jonathan Hatlee, Nicholas Sansone, Esquire | **Review of Core Channel Connection Failures as a Probable Source of Cascading Failure of the World Trade Center Twin Towers**<br>Wayne Coste<br><br>**Playing with Fire: A Case Study Highlighting the Dangers of Misinterpreting Code Requirements for Fire-Rated Partition Walls**<br>James Plantes | **Averting Disaster – Investigating and Repairing Column Failures at a High-Rise Building Under Construction**<br>Sami S. Matar, Benjamin Cornelius<br><br>**Walking on Water: The Adverse Effects of Moisture on Flooring**<br>Travis Ebisch | **Sensitivity Analysis of Ground Penetrating Radar Data to the Relative Dielectric Constant Used in Forensic Evaluations of Concrete Slab-on-Ground Thickness**<br>Nathan Mayercsik, Mat Radlinski<br><br>**A State-of-the-Art Surface Wave Analysis Technique for Investigating the Root Cause of a Cracking Slab: A Case History**<br>Antonios Vytiniotis, Seda Gokyer Erbis, Gail Lollis, Masoud Mousavi, Lilas Vivin, Thomas Bardainne, Justin Riley | **Civil Litigation and Dispute Resolution during Urban Tunnel Construction**<br>Paolo Provenzano, Giueseppe Iddas<br><br>**Stories from the Pasture**<br>Leonard Morse-Fortier |

## Saturday, November 2nd

| Track A | Track B | Track C | Track D | Track E | Panel Discussions |
|---|---|---|---|---|---|
| Room: Spring | Room: West | Room: Courtyard Ballroom | Room: South | Room: East | Room: North |
| 3:30 p.m. – 5:30 p.m. PHDs 1.5 | | | | | |
| | Natural Disasters and Extreme Conditions | Infrastructure Performance | Construction Performance and Safety | Building Enclosure (roof, facades, foundation) | Standard of Care and Engineering Judgement – Duty to Warn |
| | Moderator: Jason Gregorie | Moderator: Laura Sullivan-Green | Moderator: Amr Helal | Moderator: Robert Gunter | |
| | **Hurricane Damage to Residential Structures: Wind Damage Overview**<br>Kasra Ghahremani, Bob Bailey, Samuel D. Amoroso<br><br>**Assessing Hurricane-Induced Structural Damage: Implications for Building Resilience and Design Standards**<br>Ravi Mullapudi<br><br>**Analysis of Floodwater Entry to Corporate Campus**<br>Bob Bailey, Dave Peraza | **Structural Safety, Efficiency and Expressiveness**<br>Rui Liu<br><br>**Dynamic Analysis and Remediation Strategies for Railroad Bridge Vibrations**<br>Akshay Beniwal, Byoung-Jun Lee, Brian Green-Cariño, Rhett Whitlock<br><br>**Specialized Inspections in Post-Tensioned Bridges**<br>Paul Parfitt, Travis Green | **Brittle Cracking of HSS Tube Steel**<br>Kent Sasaki, Hayley Proctor, Kaat Ceder, Tim Kern<br><br>**Load and Capacity Considerations for Stringers in Shoring Towers**<br>Aaron Freidenberg, Vijay Saraf, Jeffrey Hunt, Brian McDonald, John Osteraas<br><br>**It's 2024, Do You Know What's Going on Under Your Sidewalk? - Subgrade Column Corrosion in Midrise Steel Buildings**<br>Damian Moser, William Kane, Jonathan Rivera<br><br>**Metal Corrosion: Chemical Exposure Testing**<br>Nolan Wells, Adam Waters | **Assessing and Addressing Spontaneous Window Shatter in a Converted Industrial Building**<br>Benjamin Cornelius, Stephen Pfund<br><br>**Directionality Considerations in Building Facade Assessments for Distress due to Storms and Construction Defects**<br>Nathan Mayercsik, Paul Bennett<br><br>**Post-Breakage Performance of Glass with Safety Film**<br>Mark Schmidt | **Standard of Care and Engineering Judgement – Duty to Warn**<br>Derrick Hancock, Josh Kardon, Len Morse-Fortier, Mike Drerup, Anthony Dolhon |

## Sunday, November 3rd

| Track A | Track B | Track C | Track D | Track E | Panel Discussions |
|---|---|---|---|---|---|
| Room: Spring | Room: West | Room: Salon A | Room: South | Room: East | Room: North |
| 10:30 a.m. – 12:00 p.m. PDHs 1.5 | | | | | |
| Professional Practice in Forensic Engineering | Natural Disasters and Extreme Conditions | Forensic Engineering Education | Construction Performance and Safety | Building Enclosure (roof, facades, foundation) | Forensics and the Applicability of Ethical Standards |
| Moderator: Clemens Rossell | Moderator: John Cleary | Moderator: Weijin Wang | Moderator: Josh Kardon | Moderator: Laura Sullivan-Green | |
| **Residential Foundations Experiencing Differential Movement: A Case Study Approach to the Application of Building Codes, Practice Standards, and Engineering Judgement**<br>Michael Staley, Tan Qu, Michael Holden<br><br>**To Build (to Code) or Not to Build (to Code), That is the Question**<br>Kerry Lee, Shasta G. Good<br><br>**The Importance of Remodeling Supervision in Condominiums and the Ethics Practices**<br>Thiago Maron | **"It's Like Tagging a Building DURING the Earthquake": A Proposed Building Safety Tagging Criteria for Winter Storm Events**<br>David Ojala, Samantha Eng<br><br>**Determining tornado velocity for tornado force coefficients for a thin-cylinder structure and comparison to ASCE 7**<br>Quentin Ragan, R. Panneer Selvam<br><br>**Weather or Not - Weather Research for Hail and Wind Damage Claims**<br>Frank Griffin, F. Dirk Carvajal, P.E., M.ASCE | **Regulations for Condition Assessment of Parking Structures**<br>Ibrahim Erdem<br><br>**Learning from Mistakes: A Glimpse at How Failures Shape the Engineering Profession**<br>Chris Lehman, Kacie D'Alessandro, Adam D'Alessandro<br><br>**Flexural Strengthening of Non-Uniformly Corroded RC Bridge Piers Using Ultra High-Performance Concrete Layers**<br>Rajib Kumar Biswas, Takahiro Saito, Takashi Misawa, Mitsuyasu Iwanami<br><br>**Collapse of a Stell-Framed Farm Building Under Construction**<br>Nabi Goudarzi, Ph.D., P.Eng., Adam Lohonyai, M.Eng., P.Eng., DFE, M.ASCE | **Adjacent Construction Vibration - Perception vs Reality**<br>Antonio De Luca, Elisabeth Malsch, John Abruzzo, Liling Cao, Michele Stein<br><br>**Shake, Rattle & Roll: A Guide to Construction Vibration Investigations**<br>Alan Mullenix, Jonathan Thomas | **Investigation of Widespread Cracking and Bowing of Bathroom Wall Ceramic Tile Installations**<br>Mat Radlinski, Rene Sachs, Amal Jayapalan<br><br>**It's a crack, it's a spall, what's the problem with the wall?**<br>Hannah Rakowski, Scott Chamberlain<br><br>**Evaluation of the Failure of Adhered Thin-Brick Veneer**<br>Randall Bernhardt | **Forensics and the Applicability of Ethical Standards**<br>Rebecca Bowman |

# Technical Program Grid (continued)

## Sunday, November 3rd

| 2:00 p.m. – 3:30 p.m.<br>PHDs 1.5 | | | | | |
|---|---|---|---|---|---|
| Professional Practice in Forensic Engineering | Natural Disasters and Extreme Conditions | Infrastructure Performance | Construction Performance and Safety | Technologies for Forensic Investigation | Ethical Consideration On Qualifications of Forensic Engineering Experts |
| Moderator: Stewart Verhulst | Moderator: Travis Ebisch | Moderator: Ravi Mullapudi | Moderator: Ziad Salameh | Moderator: JC Araiza | |
| **Comparison of Different Analysis Approaches Used in Evaluating the Design of Concrete Core Wall System per Concrete Design Standards**<br>Vahid Barzegar, Liling Cao, Athina Spyridaki<br><br>**Conducting the Right Investigation to Prevent Champlain Tower Like Collapses**<br>James McDonald, Zachariah Bettner, Joseph T. Moody<br><br>**Data for Data's Sake Does Not a Better Strategy Make: A Strategic Approach to Risk-Based Asset Management**<br>Kurt Holloway, Oana Whalen | **The Vulnerability of Tilt-up Buildings**<br>Randall Bernhardt, Al Schweickhardt<br><br>**Alewife Lobby Roof Damage – Urgent Response and Repairs**<br>Matthew McDermott, Connor Bruns, Dominic Kelly<br><br>**Evaluation of Urban Sinkholes**<br>James Pyatt, Kurt Bergman | **UG Water Storage Tank: Lessons Learned w/ Helical Anchors**<br>James Jordan, Ross A. Kimble, P.E.M.ASCE, Stephen M. Kleps, Ph.D., P.E., M.ASCE<br><br>**Collapse of a Large Steel Surge Bin at a Phosphate Mine**<br>Terence Taylor<br><br>**When Small Cracks Can Lead to Big Problems: Investigation of Cracking in Subterranean Concrete Lift Stations**<br>Cliff Bishop, William Locke | **Evaluation of Risks from Adjacent Construction**<br>Michele Stein, Antonio De Luca<br><br>**Stories from the Pasture – Part 2**<br>Leonard Morse-Fortier | **Sometimes You Just Have to Break Things - Understanding the Applications and Value of Destructive Testing for Forensic Analysis**<br>Erin Regan, Sean O'Brien<br><br>**Using Technology to Speed Up Inspection and Reporting - Panelized Roof Case Study**<br>John Abruzzo, Elisabeth Malsch<br><br>**Comparative Analysis of Permeability in Compacted Clay Soil Using Various Standard Methods: Experimental and Field Test Investigation**<br>Sina Kazemian, Stefan Waldek | **Ethical Consideration On Qualifications of Forensic Engineering Experts**<br>Anthony Dolhon, Joshua Kardon, Rebecca Bowman, Tara Hoke |
| 4:00 p.m. – 5:30 p.m.<br>PDHs 1.5 | | | | | |
| Professional Practice in Forensic Engineering | Repairs and Remediation | Forensic Engineering Education | Construction Performance and Safety | Building Enclosure (roof, facades, foundation) | |
| Moderator: Richard Barrow | Moderator: Rui Liu | Moderator: David Sparks | Moderator: Chantell Cornett | Moderator: Rebecca Bowman | |
| **Unraveling Project Pitfalls: A Forensic Exploration of Communication, Coordination, and Collaboration Breakdowns in Construction**<br>William Locke, Gayathri Shetty, David Anderson, Cliff Bishop<br><br>**Hanging Overhead: A Case Study and Proposed Standards of Care for The Installation, Inspection, and Testing of Suspended Building Systems and Components**<br>Suzanne Arambel, Deepak Ahuja, M.S., P.E. | **Evaluating Structural Damage to Wood-Framed Mid-Rise Structures from Long-Term Deterioration: Determining Repair vs. Replacement Scope**<br>Chase Anderson, Sean Long<br><br>**Column Removal of Arch Roof Truss Framing Structure**<br>Akshay Beniwal, Byoung-Jun Lee<br><br>**Partial Reclad of a Mid-Atlantic Mid-Rise**<br>Nicholas Cramsey<br><br>**Assessment, Analysis, and Repair of Precast Hollow Core Planks**<br>Karim Kazemi Bidokhti, Ph.D., P.E., Robert Antes, Nathaniel B. Smith, P.E., M.ASCE | **Concrete Cancer and the Central Texas Pool Crisis**<br>Bradley East<br><br>**Cast Iron Pipe Failure: Elements of a Forensic Investigation**<br>Ralph Moon, Donald Dunn<br><br>**Arecibo Telescope Collapse Investigation**<br>John Abruzzo, Liling Cao, Pierre Ghisbain, Reyhaneh Abbasi, Ph.D., Xin Chu, Zhi Zhang<br><br>**National Academies' Arecibo Failure Investigation**<br>Habib Tabatabai, Ph.D., P.E., S.E.<br><br>**Emergency Forensic Investigation - Chester Dam**<br>Jonathan Sproul, Tom Caldwell | **No need to hire a structural engineer for your pool house? An evaluation of wood-frame construction**<br>Xiaomeng Ge, Rick Nelson<br><br>**Case Study of a Tall Timber Building Subjected to Ground-Floor Column-Loss Scenarios**<br>Alex Sixie Cao, Andrea Frangi, Silvan Ullmann<br><br>**Assessment of Water Damage Effects on Wood Components: Impacts and Considerations**<br>Ravi Mullapudi<br><br>**Static Load Test of a Baluster-Supported Wood Guardrail**<br>Randall P. Bernhardt | **Assessing the Waterproofing Performance and Repairability of Spray Polyurethane Foam Roofing Distressed by Hail or Debris Impact**<br>Justin Donaldson, J. Nicholas Seader, M.S., P.E., M. ASCE<br><br>**Hail Impact Documentation to Asphalt-Composition Shingles**<br>Chad Williams, Mathew Mulholland, Justin Van De Weile, Matthew Phelps, John Senac<br><br>**Hail Impact Performance of Thermoplastic Single-Ply Membranes**<br>Stewart Verhulst, Justin Donaldson, Amanda Nogay<br><br>**Assessment of Hail Damage for Tile Roofing System: A Technical Review**<br>Gayatri Thakre, Mohammad Najafi and Vinayak Kaushal | |

## Monday, November 4th

| 9:00 a.m. – 10:30 a.m.<br>PDHs 1.5 | | | | | |
|---|---|---|---|---|---|
| Professional Practice in Forensic Engineering | Natural Disasters and Extreme Conditions | Infrastructure Performance | Construction Performance and Safety | Building Enclosure (roof, facades, foundation) | Forensic in High Heels - Breaking the Mold |
| Moderator: David Peraza | Moderator: Chad Williams | Moderator: Stewart Verhulst | Moderator: Jason Gregorie | Moderator: Josh Kardon | |
| **The Distinctions Between Standard of Care and Standard of Practice**<br>Serena Hendon<br><br>**When Does a Construction Defect Become Defective?**<br>Kenneth Simons, Donna Friis, Chris Pressey, Chad Dinsmore | **Investigation Techniques and Analysis of Damage Patterns in Building Structures due to Wildfires**<br>Mehrdad Shokrabadi, Lisa Shusto, Jeffrey Hunt, Amir Jokar, John Osteraas<br><br>**Complexities in Building Repair after Urban Wildfires**<br>George McCluskey, Ryan Sandstrom<br><br>**Ashes to Answers: Understanding Fire-Related Structural Damage**<br>Charles Hammond, Anirudh Goel | **Why Wait for Failure: Risk Management Practices of the Dam and Levee Industry**<br>Elizabeth Landowski<br><br>**Tell Me Wye: How Cold Weather, Extreme Tides, and a Challenging Site Contributed to a Seawall Breach**<br>David Ojala<br><br>**Transbay Transit Center - Response to Fractured Girders over Roadway**<br>John Abruzzo, Blake Berger | **A Review on the State of Knowledge of Ettringite-Based Binder for Assessing Distress Conditions of Self-Leveling Underlayment**<br>Zhengqi Li<br><br>**Two-Way, Conventionally Reinforced Concrete Slabs – Performing as Expected**<br>Terrence Paret, Gwenyth Searer, Hayley Proctor, Prateek Shah<br><br>**Investigation of Prestressed Concrete Slab Response Under Settlement**<br>Zhi Zhang, Liling Cao, Anurag Bura, Chanjuan Zhou, Lisa Davey | **Podium Deck Waterproofing: Failure to Slope**<br>Shasta G. Good, Kerry Lee, Ryan Kalina<br><br>**Investigating Water Leakage in Windows and Doors After Windstorm**<br>Jason Bondurant, Paul Beers<br><br>**Addressing Incompatibility Challenges in Roofing and Wall Assemblies: A Forensic Analysis**<br>Anya LaRoche, Michael Narcis<br><br>**Navigating Steep Slope Roof Repair Assessments**<br>Sean McGrath, Carl Schoenberger | **Forensic in High Heels - Breaking the Mold**<br>Weijin Wang, Alicia Diaz de Leon, Laura Sullivan-Green |
| 11:00 a.m. – 12:00 p.m.<br>PDHs 1.0 | | | | | |
| Professional Practice in Forensic Engineering | Repairs and Remediation | Infrastructure Performance | Construction Performance and Safety | Technologies for Forensic Investigation | |
| Moderator: Richard Barrow | Moderator: Robert Gunter | Moderator: Clemens Rossell | Moderator: Sakshi Singh | Moderator: Weijin Wang | |
| **The Sky Is Falling: Investigating Intumescent Fireproofing Coating Failures**<br>Kevin Black<br><br>**A Picture is Worth a Thousand Words: Effective Use of Storytelling and Visualization in Forensic Investigations and Construction Litigation**<br>Thanh Do | **Post-Tensioning Deterioration in Buildings and Parking Garages: Investigations and Repair Techniques**<br>Paul Parfitt, Travis Green<br><br>**Rehabilitation of the Bollinger Canopy of Peace at the National WWII Museum**<br>Luciana Balsamo, Ph.D., Boris Weinstein, Reyhaneh Abbasi, Ph.D., Marguerite Pinto, P.E. | **Forensic Evaluation of Retaining Walls and Slope Failure in North Texas**<br>Rendon Rieth, Amr Helal, Yasser Abdelhamid, John T. Bryant<br><br>**Forensic Investigation of The Impact of Unsaturated Clays on Buried Pipelines**<br>Kourosh Tamizdoust, Amr Helal, Saman Farzi Sizkow, Yasser Abdelhamid, John T. Bryant | **Effects of Cyclic Testing on Welded Aluminum Davits**<br>Kurt Holloway, Gwenyth Searer, William Rosenblatt, Daniel Wetherington, Jonathan Lewis<br><br>**Forensic Analysis of High-Strength Steel Boom Failure in a Mobile Elevating Work Platform**<br>Gorkem Okudan, Daniel Wojnowski, Jeong Hong, Safiya Nezar Abraham | **Application of an Unknown Substance to Imitate Water Damage**<br>Jeremy Beagle<br><br>**Challenges for Forensic Investigation of Airport Pavement Failures**<br>Greg White | |

# Award Winners

## Forensic Engineering Awards

The ASCE Forensic Engineering Division (FED) has announced the recipients of the 2022 and 2023 Forensic Engineering Awards. The Forensic Engineering Award recognizes individuals for outstanding contributions to the field of forensic engineering.

### 2022 Forensic Engineering Award

Paul A. Bosela, Ph.D., P.E., F.ASCE, *Principal, Bosela Forensic Engineering Consultants*

### 2023 Forensic Engineering Award

Navid Nastar, Ph.D., P.E., S.E., F.ASCE, *President, Nastar Group, Inc. and Adjunct Professor, USC*

### Forensic Engineering Awards Committee

**Jason Gregorie**, P.E., M.ASCE, *Principal, Applied Building Sciences, Division First Past Chair*
**Stewart M. Verhulst**, P.E., M.ASCE, *Vice President and Executive Technical Director, Nelson Forensics, Division Second Past Chair*
**Benjamin Michael Cornelius**, P.E., M.ASCE, *Partner, LERA Consulting Structural Engineers, RLLP, Division Third Past Chair*

Stop by our exhibit area and visit VCS Engineering, the ASCE Book Display, and the Forensic Engineering Division.

## Forensic Division Student Failure Case Studies Competition

Students have three minutes to present one failure case study of a civil infrastructure or a building failure with three PowerPoint slides.

APPLIED BUILDING SCIENCES

### Student Competition Finalists

**Sarah Berger**, Case Western Reserve University,
*Fern Hollow Bridge Collapse*
**Yasmine AL Moghrabi**, Florida International University
*2020 Beirut Explosion*
**Emma Miernicki**, Widener University
*The Engineering Failures of the New Orleans Levees*
**Trevor Salmi**, Illinois Institute of Technology
*FIU Pedestrian Bridge Collapse*

### Student Competition Committee

**Rui Liu**, Ph.D., P.E., M.ASCE, *Associate Professor, Kent State University*
**Juan Carlos Araiza**, Ph.D., Ing., P.E., M.ASCE, *Senior Vice President, Forensics, EFI Global*
**Michael J. Drerup**, P.E., F.ASCE, *Principal Engineer, Drerup Building Performance Engineering, PLLC*
**John Cleary**, Ph.D., P.E., F.SEI, M.ASCE, *Associate Professor, University of South Alabama*
**Paul A. Bosela**, P.E., F.ASCE, *Principal, Bosela Forensic Engineering Consultants*
**Alicia E. Diaz de Leon**, P.E., S.E., R.A., F.ASCE, *Principal, Drerup Building Performance Engineering, PLLC*

# General Information

**ADA Compliance**
The Renaissance Seattle is fully accessible to the disabled. While ASCE will make every effort to meet the needs of the disabled, accommodations cannot be guaranteed without prior notification.

**Attendee Packets**
The packet you received at the on-site Registration Desk includes your name badge, the tickets for events you have ordered, PDH information and general announcements.

**Badge Policy and Ribbons**
Your name and badge is your admission to the Congress. Please wear your badge at all times while in the hotel. ASCE recommends you remove your badge when leaving the hotel. Where tickets are required, please bring them with you as you will not be admitted without them. Ribbons will be available at the Congress registration desk.

**Congress Attire**
The dress code for the Congress is business casual (i.e. slacks, casual dresses). Meeting room temperatures will vary, so wear layered clothing to ensure your personal comfort. We also recommend attendees wear comfortable shoes.

**Congress Proceedings**
The conference proceedings will be available online. One copy is included with each full registration.

**City Information**
For more information on Seattle or the surrounding area, please contact Visit Seattle Convention & Visitors Bureau directly or visit the destination page at **https://www.visitseattle.org/**

**Medical Emergencies**
ASCE hopes that your visit to Seattle and the 10th Forensic Engineering Congress will be free of medical incident. However, if you become ill at the Renaissance Seattle, please contact the front desk and tell them you have a medical emergency that requires immediate attention.

**No Smoking Policy**
ASCE supports a "No Smoking" policy. Smoking is prohibited at the Renaissance Seattle and all venues hosting ASCE events.

**Post-Congress Evaluations**
An electronic evaluation will be sent out to all attendees immediately following the Congress.

**Professional Development Hours (PDH)**
You may earn up to 22.0 PDHs, which are nationally recognized units of record, by attending Congress concurrent 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.

Because 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. For details on your state's requirements, please go to **www.ncees.org/licensure/licensing-boards**.

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**Recycle your name badge holder!**
Please help ASCE stay "green" by leaving your name badge holder in the registration area when you leave the conference. If you are concerned about privacy, you are welcome to remove your badge from the holder and take that with you.

. **Registration Hours**

- Friday, November 1 7:00 a.m. – 6:00 p.m.
- Saturday, November 2 7:00 a.m. – 6:00 p.m.
- Sunday, November 3 7:00 a.m. – 5:00 p.m.
- Monday, November 4 7:00 a.m. – 10:00 a.m.

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