



STRUCTURAL
ENGINEERING
INSTITUTE
Colorado Chapter



SEAC & SEI Colorado 2025 FALL SEMINAR

6

**THURSDAY
NOVEMBER
2025**

7:00 AM - 9:30 PM

Westin Westminster

10600 Westminster Blvd., Westminster, CO 80020

PRESENTATIONS

Structural Engineering – Indispensable to Civilization

So, Why Don't We Make More Money?

**Presented By Keynote Speaker: Ashraf Habibullah, SE, NAE -
Computers and Structures, Inc.**

It is a fact that a structural engineering education is focused almost exclusively on technical topics with practically no exposure to human engineering. But, according to research published by the Carnegie Foundation, only 15% of your financial success is due to your technical expertise. The other 85% is due to your skills in human engineering, i.e., your ability to deal with people. Could that be the reason why the professional fees and compensation for structural engineers do not even begin to reflect the profession's immeasurable contributions to humanity? Ashraf emphasizes the need for an education based on human engineering. He convincingly argues, with his usual enthusiasm and humor, why it is important to understand the power of human psychology and human behavior. He illustrates how we can leverage our human chemistry to develop lasting human connections and powerful communication skills that allow us to achieve a healthier, happier, and richer existence and empower us to lead, influence, and inspire! As the strategic use of economic power translates into influence, recognition, and work-life balance, perhaps we should take a closer look at the need for an education involving human engineering. Structural engineers, after all, are the ones who are making life better for all of humanity on a daily basis. They preserve the past, build the future, and above all save lives - every time the wind blows or the earth shakes! They deserve it all!

ABOUT THE SPEAKER



Ashraf Habibullah, SE, NAE | President and CEO, Computers and Structures, Inc.

Ashraf Habibullah, SE, NAE is the Founder and CEO of Computers and Structures, Inc. Mr. Habibullah graduated from the University of California at Berkeley in 1970 with a master's degree in structural engineering. He founded CSI in 1975 and has led the development of CSI's products, including SAP2000 and ETABS, for over fifty years. Today, CSI is recognized globally as the pioneer in the development of software for structural and earthquake engineering. CSI's software is used by thousands of engineering firms and is the choice of sophisticated design professionals in over 160 countries. In 2024, Mr. Habibullah was elected a Member of the National Academy of Engineering (NAE) for his distinguished contributions to engineering, for his development of structural engineering software that is used by engineers globally and for his advocacy of the engineering profession. Ashraf Habibullah's legacy is etched into the skylines of major cities worldwide and into the global infrastructure that sustains modern society.

US 36 Emergency Rebuild Project – Providing A Lightweight Geofoam Fill Design to Support Roadway Traffic

Presented By: Ben Arndt, PE - RJ Engineering and Consulting, Inc.

An approximately 35-foot-high wall supporting eastbound US 36 near MP 49.8 experienced a failure of the foundation materials below the wall system which resulted in closure of eastbound US 36 on or about July 12, 2019. Vertical movement of the wall system was in excess of eight (8) feet vertically by the end of July 2019. To assist CDOT in designing a repair option and to facilitate rebuilding the wall system, RJ Engineering Inc. (RJ) worked as a geotechnical sub-consultant designer with David Evans and Associates, Inc. (DEA) to restore traffic within two months of the initial failure. This paper presents our evaluation, analysis and design for the rebuild of the wall system that utilized more than 23,000 cy of geofoam also known as expanded polystyrene (EPS) and 36-inch diameter drilled shafts (caissons) for global stability support.

ABOUT THE SPEAKER



Ben Arndt, PE | Vice President, RJ Engineering and Consulting, Inc.

Ben Arndt, PE, has over 29 years of experience in the geological and geotechnical engineering field. This includes 23 years of working on transportation projects throughout the western U.S., 2 years of forensic engineering, and 5 years of underground mining experience. His areas of expertise include evaluation, analysis and mitigation of: debris flow channels, debris flow mitigation, unstable rock and soil slopes, landslide mitigation, and specialty foundation and retaining wall systems. Mr. Arndt has over 25 national publications through the FHWA, TRB, and ASCE on topics that include: rockfall protection, rockslope stabilization, retaining wall systems, lightweight geofoam fills, and multiple types of landslide mitigation or foundation systems.

Progress Report on NIST's Investigation of the Partial Collapse of Champlain Towers South

Presented By: Jim Harris, PE, PhD - J.R. Harris & Company

NIST is investigating the partial collapse of Champlain Towers South (CTS) in Surfside, Florida, under the authority of the National Construction Safety Team (NCST) Act. The partial collapse of the condominium building is one of the most tragic structural failures in US history. The ultimate goals of the NCST investigation are to determine the likely technical cause or causes of the failure, and make recommendations for changes in building codes, standards, and practices, or other appropriate action to improve the structural safety of buildings. The NCST investigation is using advanced technologies and a highly integrated, interdisciplinary approach to investigate the failure and is organized across six projects: (1) history of the site, the building, and relevant codes and standards; (2) collection, preservation, and analysis of evidence; (3) remote sensing and data visualization; (4) materials science; (5) geotechnical engineering; and (6) structural engineering. This presentation will describe the Team's systematic approach to analyzing its hypotheses of the causes of the failure through investigation at the collapse site, examination and testing of physical evidence extracted from the collapsed building, collection and analysis of documents, scans and reviews of other imagery, interviews and focus groups of eyewitnesses and other stakeholders, reconstruction of the condition of the structure at the time of collapse, laboratory testing of full-scale replicas of components of the building, and advanced computer simulations of the collapse initiation and progression. The talk will conclude with potential implications of the investigation's findings for building design, construction, maintenance, and evaluation.

ABOUT THE SPEAKER



Jim Harris, PE, PhD | Principal, J.R. Harris & Company

Jim Harris, PE, PhD, is well versed in structural engineering practice and research. He has designed or evaluated thousands of structures ranging from dwellings to high-rise building, industrial facilities, buildings in the highest seismic zones, excavation bracing, renovations of historic buildings, and many others. This background spans nearly all types of construction and structural materials and includes responsibility for management of all design disciplines. His experience includes six years of full time research. His research has focused on the loading and response of structures, particularly for earthquake, snow, and expansive soils. A second focus is on improving the formulation and use of engineering standards. Mr. Harris has written over 40 reports and

journal articles on the results of his research and practice. Jim Harris is an active member of several committees that produce national standards for structural engineering practice, and his expertise there was recognized by his election to the National Academy of Engineering.

Engineering Excellence in Post-Tensioned Slabs: Logical Steps, Key Considerations, and Must-Have Resources

Presented By: Kyle Boyd, PE, SE - KSB Engineers

This presentation covers the key considerations and essential reference materials for designing elevated post-tensioned concrete slabs. Structured to mirror the logical progression of a real-world design process, it begins with conceptual narratives, moves through important design logic, and concludes with practical considerations for construction. Along the way, attendees will gain insight into recent code developments, including the new ACI/PTI 320-25 standard and updates that affect tendon layout - such as the newly approved use of dual-banded tendon distributions. Whether you're new to post-tensioned design or have decades of experience, this session offers valuable takeaways: a clear, logical design framework, critical technical resources, and a deeper understanding of what makes post-tensioned concrete truly excellent.

ABOUT THE SPEAKER



Kyle Boyd, PE, SE | KSB Engineers

Kyle Boyd, PE, SE, is a licensed Professional Engineer and Structural Engineer, currently registered in 24 states. He actively practices consulting engineering and development services at KSB Engineers. Kyle began his career in the construction industry, overseeing large post-tensioned concrete (PT) projects. During that time, he earned his Level 2 Unbonded PT Inspector Certification and was ultimately responsible for the successful installation of post-tensioned concrete on several complex projects. He later transitioned into structural engineering, bringing his field expertise to lead economical and constructible designs. Over his career, Kyle has contributed to the construction and design of more than 10 million square feet of elevated post-tensioned concrete. Mr. Boyd is an active member of the Post-Tensioning Institute (PTI), where he has co-authored publications on design examples, dual-banded tendon distributions, restraint-to-shortening, and other PT-related topics. Kyle currently serves as a voting member of the PTI Building Design Committee and Chair of the PTI Education Committee.

A Seemingly Improbable Crisis: The Perfect Storm at Oroville Dam

Presented By: Jeremy Begley, PE - MAPEI Corporation

The 2017 Oroville Dam crisis was a pivotal moment in U.S. dam safety, representing a complex failure of infrastructure, decision-making, and risk communication. This presentation examines the multifaceted chain of events that led to the partial failure of the main spillway and the emergency activation of an untested auxiliary spillway. With over 188,000 downstream residents evacuated and infrastructure threatened, the crisis underscored vulnerabilities in aging dams, the limitations of prior inspection regimes, and the dangers of complacency in the face of unusual conditions. The presentation traces the physical, geological, and human factors that coalesced into a near-catastrophic incident, shedding light on lessons learned and risk-based strategies for dam safety moving forward. In the aftermath, a comprehensive reconstruction effort transformed the Oroville spillways through advanced engineering, modern design-build delivery, and the use of cutting-edge technologies including CFD modeling, RCC placement, and large-scale physical modeling. This presentation highlights how failure mode mitigation was incorporated into the rebuild, resulting in a structure better equipped to withstand future hydrologic challenges. Beyond the technical reconstruction, the incident sparked widespread reform in dam safety practices, with new regulatory frameworks, heightened emphasis on PFMA limitations, and expanded roles for independent oversight. The session concludes with lessons learned applicable across many structural engineering fields. It offers some insights for extending service life, improving emergency preparedness, and elevating the standard for infrastructure durability and resilience with more societal demands and a changing climate.

ABOUT THE SPEAKER



Jeremy Begley, PE | Business Development Leader - Hydropower & Dams, MAPEI Corporation

Jeremy Begley, PE, serves as Business Development Leader for Hydropower and Dams Projects at MAPEI Corporation, a global manufacturer of chemical products for the construction and restoration industry. He is based out of the Denver Metropolitan Area. He has over 11 years of structural design and analysis experience with the last eight years focusing on concrete dams and their associated reinforced concrete hydraulic structures. His prior experience includes design engineering of residential, industrial process, and nuclear facilities. Mr. Begley holds a Bachelor of Science in Civil Engineering from Colorado State University and Master of Science in Structural Engineering from the University of Colorado Denver.

Takeaways from the SEAC SE3 Mental Health Workshop

Presented By: Chad Mitchell, PE, SE - KPFF & Meg Riley, PE - Martin/Martin

This presentation will provide key takeaways from the SEAC SE3 Mental Health Workshop ('Mental Health = Business Health | Creating a Resilient Workforce'), held in September of 2025. The goal of the workshop is to educate leaders on how to promote and improve mental health in their firms. As an industry, we need to set up our company culture for success and have a plan in place for supporting employees having mental health issues. This presentation will also describe how individual firms can implement a similar workshop using the work and resources already completed by the SEAC SE3 Committee.

ABOUT THE SPEAKERS



Chad Mitchell, PE, SE | Senior Project Manager, KPFF

Chad Mitchell, PE, SE, is Co-Lead of KPFF Denver with over 20 years of experience in consulting structural engineering and is currently a member of the NCSEA Board of Directors. Driven by a deep passion for architecture and the built environment, he partners with architects and owners to bring visionary spaces to life - creating places that enrich communities and serve the people within them. Mr. Mitchell believes that thoughtful design strengthens human connection, enhances daily life, and fosters a sense of belonging. His work is grounded in collaboration, innovation, and a commitment to advancing the impact of structural engineering. In addition to his design leadership, Chad Mitchell is a vocal advocate for mental health in the AEC industry. He is dedicated to building a vibrant, supportive structural engineering community - one that embraces new ideas and prioritizes well-being in a demanding profession.



Meg Riley, PE | Martin/Martin

Meg Riley, PE, is a structural engineer at Martin/Martin, Inc. with 11 years of experience in the AEC industry. She provides structural design for new and existing buildings, with an emphasis on the investigation and analysis of existing structures to design repairs, renovations, and retrofits. Before transitioning to structural engineering, she spent 6 years working for General Contractors in the commercial construction industry. Meg Riley leverages this diverse background to promote innovative solutions and enhance her engineering practice. She is actively involved with the Structural Engineers Association (SEAC) as the Chair of the Colorado Structural Engineering, Engagement, and Equity (SE3) Committee.

Wood-Frame Shear Wall and Diaphragm Design

Presented By: Emmy Tran, PE & Alex Dukeman, PE - WoodWorks

This course is intended for structural engineers and building designers seeking an overview of design steps, considerations and detailing best practices related to the wind- and seismic-resistive design of wood-frame diaphragms and shear walls. It provides an overview of relevant International Building Code (IBC) provisions and American Wood Council (AWC)-referenced standards, a discussion of common design errors, and guidance related to load path continuity. Discussion will cover diaphragm load paths, chords, collectors and openings, as well as shear wall components, construction options, overturning restraint systems and detailing considerations. Design examples will be used to illustrate key principles and code provisions.

ABOUT THE SPEAKERS



Emmy Tran, PE | Regional Director, WoodWorks

Emmy Tran, PE, is a licensed professional engineer in Colorado with experience in structural design for multi-family, commercial, and mixed-use projects. Driven by her passion for sustainable construction, Emmy Tran is focused on helping AEC+D professionals explore opportunities in light-frame and mass timber design for the betterment of the environment and society. She is a proud alumna of the Colorado School of Mines, holding BS and MS degrees in Civil Engineering.



Alex Dukeman, PE | Technical Director, WoodWorks

Alex Dukeman, PE, is a Licensed Professional Engineer in Colorado. She received a Bachelor of Science in Civil Engineering – Structures from the University of Alabama and a Master of Science in Civil Engineering –Structures from Colorado State University. Alex Dukeman joined WoodWorks with over a decade of experience as a project engineer, passionate about cultivating the next generation of engineers and building lasting relationships with project partners. She has extensive expertise in multi-family wood design, having worked on numerous multi-family, mixed-use, and senior living projects throughout Colorado.

Introduction to Railway Bridge Engineering

Presented By: Dave Fitzwater, PE - RailPros, Inc.

An introduction to AREMA's Manual for Railway Engineering, specifically Volume 2: Structures. An overview of various sections will be made with an emphasis on concrete and steel bridge loadings and design methodology. Common bridge types for concrete, steel, and legacy bridges will be reviewed. Rules of thumb for preliminary design will be provided. The ratings of concrete and steel structures will be reviewed. Recent updates to the manual will be noted, and common designer missteps for temporary structures during construction and railway structures will be discussed. Design reference documents for steel and concrete Railway Bridges will also be noted.

ABOUT THE SPEAKER



David Fitzwater, PE | Senior Project Manager, RailPros, Inc.

David Fitzwater, PE, brings over 32 years of engineering and management experience, with the past 20 years concentrated in the heavy freight railway sector. Mr. Fitzwater has managed many large multi-discipline, multi-million dollar projects for both public and private clients throughout the United States. David Fitzwater joined the RailPros Field Services team from another national railroad engineering firm, where he served as associate vice president. Mr. Fitzwater is an active member of the American Railway Engineering and Maintenance-of-Way Association (AREMA), providing leadership on Committee 8, Reinforced Concrete Design and Foundations. He earned a Master of Science in Structural Engineering from the University of Nebraska, Lincoln and a Bachelor of Science in Civil Engineering from Iowa State University. David Fitzwater holds professional engineer licenses in Iowa, Colorado, California and Utah. In addition, Mr. Fitzwater is a certified trainer for bridge climbing and fall protection awareness.

