

Agenda

Introduction to Composite Steel and Concrete Structures

T. Welt

Brief history and overview of architectural styles
Composites: materials, components and systems
Mechanics of composite action
Design philosophy and optimization

Repairing and Protecting Concrete Structures

G. Seegebrecht

– An Overview

New construction to deterioration - how/why does it happen?
Common concrete problems
Concrete repair process
Concrete protection

Mass Timber Design using Composite Beams

J. Riley

Benefits of using slim floor structures to reduce floor-to-floor height
Composite beam long span capabilities will enhance design flexibility
Reduction of building wall area with slim floor structures to reduce construction and energy costs
Composite beam complies with ULI fire-rating requirements

Composite Components: Beams, Columns, Walls and Slabs

D. Dudley

Composite steel deck slabs: typical design and new long span capabilities
Composite beam and joists framing systems
Composite columns: a combination of structural steel and structural concrete
Composite concrete tilt-up panels

Case Studies of Composite Buildings in High Seismic Zones

A. Abdelnaby

Essential elements for the design of multi-story buildings
Seismic considerations for design and assessment
Seismic repair and retrofit of existing buildings

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Composite Steel, Concrete and Mass Timber Buildings

Live, Interactive Webinar - Friday, March 26, 2021

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Learning Objectives

You'll be able to:

Explore composite materials, components and systems.

Examine the design philosophy for composite construction.

Consider common concrete problems and explore methods of concrete protection.

Discuss the benefits of mass timber design using slim floor structures and composite beams.

Consider composite components, including beams, columns, walls and slabs.

Review case studies of composite buildings in high-seismicity zones.



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Examine mechanics of composite action

Analyze the concrete repair process and discuss concrete protection

Explore mass wood timber design using composite beams

Learn about composite components, such as beams, columns, walls and slabs

Examine case studies of composite buildings in high seismic zones

Continuing Education Credits

Professional Engineers
6.5 PDHs

Architects
6.5 HSW CE Hours

AIA
6.5 LU | HSW

International Code Council
.65 CEUs (Building)



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Faculty

Travis Welt *Assistant Professor at the University of St. Thomas, Minnesota*
Professor Welt has spent his professional career working on projects ranging from single-family residential design to design of floating offshore production facilities, specifically focused on steel stiffened plate hull design. As a structural design engineer (Shell International Exploration and Production), he developed a risk-based inspection philosophy for the largest (upon installation) floating production facility in the Gulf of Mexico. Professor Welt’s research career has focused specifically on seismic behavior of reinforced concrete structural walls. Through large-scale experimentation, he has isolated inconsistencies with classical analytical models for confined concrete as compared with modern design, and influenced changes in the building code accordingly. He is a member of ACI 369 (Seismic Rehabilitation of Existing Concrete Frame Buildings) and ACI 374 (Performance-Based Design of Concrete Buildings), and is a registered professional engineer.

George W. Seegebrecht
PE, FCI Owner of Concrete Consulting Engineers (CCE), PLLC in Westchester, IL
Mr. Seegebrecht is a graduate of Valparaiso University (BSCE) and has been an engineer in the concrete industry for 40 years. Initially he served as assistant project manager and then branch manager for a national material testing firm. Thereafter for 25 years he worked for the Portland Cement Association (PCA) and its subsidiary Construction Technology Laboratories (CTL) in Skokie, Illinois, as research engineer and then senior evaluation engineer. In 2009, Mr. Seegebrecht started consulting practice (CCE), and activities includes evaluation of concrete/shotcrete issues related to design, materials or workmanship deficiencies and subsequent repair recommendations and litigation support. He is a member and fellow of the American Concrete Institute (ACI) and a voting member on numerous committees. Mr. Seegebrecht serves as examiner of record for the ACI-IL Chapter Concrete Certification Program. He is the 2019 ACI-Illinois recipient of the Henry Crown Award. Mr. Seegebrecht is a member of the International Concrete Repair Institute (ICRI) and American Shotcrete Associate (ASA).

John Riley *BSc (For Eng.) CPMR, Canada*
Mr. Riley is the Western Canadian sales representative for Peikko Canada. He represents DELTABEAM®, a specialty composite beam system used in midrise office buildings throughout Canada. As a professional speaker, Mr. Riley shares his insights into green construction with architects, engineers and contractors via “lunch and learns,” seminars and accredited workshops across Canada. He has also spoken at AIA events throughout the United States. He received his bachelor of science degree in Forestry Engineering from Lakehead University in Ontario and a Certified Professional Manufacturers Representative certification from Arizona State University’s renowned W.P. Carey School of Business. From his undergraduate work comes a

life-long commitment to sustainability, environmental responsibility and green building. Mr. Riley’s success-oriented attitude, positivity, and unwavering focus on the environment have earned him the respect of major North American corporations, including W.R. Grace, Hydrotech, BASF and OCFC. Additionally, he is an active member of many industry organizations, including the Alberta Building Envelope Council, the BC Building Envelope Council and Construction Specifications Canada, Canadian Professional Sales Association and Manufacturers Agents of North America.

Drew Dudley
PE, SE Principal at Dudley Dunham Engineering | Adjunct Professor at Texas A&M University
Mr. Dudley started out his career as the project structural engineer on the renovation to Kyle Field which at \$500M was the largest stadium renovation and expansion in the world. After working at the esteemed engineering company Walter P Moore, Mr. Dudley opened up his own structural engineering practice in 2017 which has quickly developed into a fast-growing structural engineering firm with offices in College Station, Austin and Houston. Dudley Dunham Engineering services commercial, industrial, municipal and multi-family projects with notable projects including the Oscar Johnson Jr. Community Center in Conroe which when completed will the largest, municipal, mass timber project in the State of Texas. In addition to this, Mr. Dudley serves as an adjunct professor at Texas A&M in both the College of Architecture – Construction Science Department and the College of Engineering – Architectural Engineering Department. He is a recipient of the 2020 NSPE-TX Young Engineer of the Year Award, the 2019 ENR Top Young Professional and the 2018 Civil + Structure Magazine Rising Star in Structural Engineering.

Adel Abdelnaby *Ph.D., S.E., P.E., Associate Professor at the University of Memphis*
Dr. Abdelnaby holds a Ph.D. from the University of Illinois at Urbana-Champaign (2012). He has been on the faculty of the Department of Civil Engineering at The University of Memphis since the fall of 2012. Dr. Abdelnaby has more than 15 years of experience in the field of failure analysis of buildings and bridges. He has assessed, repaired, and designed high-profile structures in the US and overseas, including 3,000+ years old large historical buildings in Egypt, where he conducted non-destructing testing and helped provide repair and retrofit plans to limit further deterioration of structural components and prevent possible structural failure. He teaches graduate and undergraduate courses related to the behavior and design of steel, reinforced concrete, wood and masonry structures, earthquake engineering, nonlinear analysis of structural systems, and mechanics of materials. Dr. Abdelnaby has extensive knowledge of current structural engineering design and assessment codes and standards, including the International Residential and Building Codes, ASCE 7-16, ACI 318-14, AISC Manual and Specifications, NDS 2018, TMS 402/602, and AASHTO. Dr. Abdelnaby is a licensed structural engineering at the states of Illinois and Oklahoma and licensed professional engineer in the states of Tennessee, Arkansas, Mississippi and Oklahoma.

Webinar Information

Log into Webinar 8:30 - 9:00 am CDT	Break 1:00 - 1:30 pm CDT
Morning Session 9:00 am - 1:00 pm CDT	Afternoon Session 1:30 - 4:25 pm CDT

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This webinar offers 6.5 PDHs to professional engineers and 6.5 HSW continuing education hours to architects licensed in all states.

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The International Code Council has approved this event for .65 CEUs in the specialty area of Building (Preferred Provider No. 1232).

Completion certificates will be awarded to participants who complete this event, respond to prompts and earn a passing score (80%) on the quiz that follows the presentation (multiple attempts allowed).

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Registration

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How to Register	Registrant Information Name: _____ Company/Firm: _____ Address: _____ City: _____ State: _____ Zip _____ Occupation: _____ Email: _____ Phone: _____ Additional Registrants: Name: _____ Occupation: _____ Email: _____ Phone: _____ Name: _____ Occupation: _____ Email: _____ Phone: _____ Email address is required for credit card receipt, program changes, and notification of upcoming seminars and products. Your email will not be sold or transferred. () I need special accommodations. Please contact me.
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Tuition () I will be attending the live webinar. Single Registrant - \$289.00 . Three or more registrants from the same company registering at the same time - \$199.00 each. () I am not attending. Please send me the webinar recording: ☐ Streamable MP4 Video/PDF Manual for \$299.00 . ☐ USB Video/PDF Manual for \$299.00 .
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