

# Agenda

## Designing and Constructing to Prevent Failures

- Purpose of forensic engineering
- Importance of standards and codes
- Design professional duties and the design process
- Understanding the standard of care
- Legal and economic impacts of failures
- Case study – a question of ethics

## Understanding Causes of Structural Failures

- Lessons learned from historic failures
- Design errors
- Defective construction
- Material deficiencies
- Excessive loadings
- Deterioration and degradation

## Forensic Examination of Structures

- Investigation of steel structures
- Investigation of wood structures
- Investigation of concrete structures
- Investigation of masonry and building facades
- Load testing and instrumentation of existing structures

## Understanding the Forensic Engineering Process

- Conducting investigation and research
- Documenting the failure
- Sampling and collection of evidence
- Determining causation and responsibility

## Using Forensic Engineering Information

- Examining the forensic engineering report
- Impact of forensic engineering information on post-failure disputes
- Use of forensic engineering information in mediation, arbitration and litigation
- The forensic engineer as consultant, expert and witness
- Mediation case study – engineer as a murderer?

**Structural Forensic Engineering**  
Middleburg Heights, OH - Tuesday, April 30, 2019



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## Learning Objectives

### You'll be able to:

**Understand** the importance of building codes and standards.

**Explore** the forensic engineering process including research, evidence collection and analysis.

**Investigate** steel, wood, concrete, and masonry structures.

**Review** lessons learned from historic failures.

**Discuss** the use of forensic engineering in mediation, arbitration and litigation.



# Structural Forensic Engineering

Middleburg Heights, OH - Tuesday, April 30, 2019



**Get** tips on designing and constructing structures to prevent failures

**Review** the causes of structural failures

**Learn** the process for forensic examination of a variety of different types of structures

**Discuss** how to document failures and determine causation and responsibility

**Understand** how to use forensic engineering information in your practice

## Continuing Education Credits

### Professional Engineers

7.0 PDHs

### Contractors

Non-Credit Continuing Ed.

### Architects

7.0 HSW Continuing Ed. Hours

7.0 AIA HSW Learning Units



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# Faculty

## Paul A. Bosela, Ph.D., P.E., ASCE Fellow

Bosela Forensic Engineering Consultants, LLC

Dr. Paul Bosela is a professor emeritus of Civil & Environmental Engineering at Cleveland State University and partner in Bosela Forensic Engineering Consultants, LLC. He retired from CSU after 28 years of service, including ten years as department chair. Dr. Bosela has extensive forensic engineering experience in the investigation of structural failures. He has investigated hundreds of failure cases for private clients, including the determination of the cause and extent of damages to structures, such as roof collapse, foundation failure, beam failure, collapse during construction, building envelope problems, etc. He has served on the American Society of Civil Engineers (ASCE) Forensic Engineering Division (FED), formerly the Technical Council on Forensic Engineering (TCFE) since 1986, including terms as chairman of both the Executive and Education Committees. He has lectured on forensic engineering throughout the U.S., and in Costa Rica, Ecuador, India, Italy, and Great Britain, and he strives to bring lessons learned from failures into the civil engineering curriculum. Dr. Bosela was a co-editor of the Proceedings of the 2nd, 3rd and 4th ASCE Forensic Engineering Congresses, and co-editor of *Failure Case Studies in Civil Engineering: Structures, Foundations and the Geo-Environment* (ASCE 2013), as well as numerous journal articles and conference presentations.

## Paul Bosela Jr., P.E., LEED AP

Bosela Forensic Engineering Consultants, LLC

Mr. Bosela is a licensed professional engineer (Ohio and Pennsylvania) and is an accredited professional in Leadership in Energy & Environmental Design (LEED). He has investigated numerous failure cases and/or performance-related problems for private clients and is responsible for determining the cause and extent of damage to structures, including, but not limited to, roof truss failures, roof collapses, foundation failures, storm-related damage, etc. He earned his bachelor's and master's degrees in Civil Engineering from Cleveland State University and previously worked in the construction industry for a prominent construction manager/general contractor on some high-profile projects, such as The Cleveland Museum of Art and the Cleveland Cavaliers Training Facility. In addition, Mr. Bosela worked as a structural engineer providing design and analysis for structural products for the construction sector and as a structural design engineer for sports, commercial and industrial markets. Some of the construction products include, adjustable steel columns, telescoping posts and insulated concrete form (ICF) bracing. For the telescoping posts, he developed a design approach for providing a safe load capacity. Mr. Bosela has also worked with several product evaluation and testing agencies in the U.S. and Canada.

# Seminar Information

## Crowne Plaza Cleveland Airport

7230 Engle Road  
Middleburg Heights, OH 44130  
(440) 243-4040

Registration  
8:00 - 8:30 am  
Morning Session  
8:30 am - 12:15 pm  
Lunch (On your own)  
12:15 - 1:15 pm  
Afternoon Session  
1:15 - 5:00 pm

## Tuition

**\$289** for individual registration

**\$269** for three or more simultaneous registrations.

**Included with your registration:** Complimentary continental breakfast and printed seminar manual.

## How to Register

- Visit us online at [www.halfmoonseminars.org](http://www.halfmoonseminars.org)
- Mail-in or fax the attached form to 715-835-6066
- Call customer service at 715-835-5900

**Cancellations:** Cancel at least 48 hours before the start of the seminar, and receive a full tuition refund, minus a \$39 service charge for each registrant. Cancellations within 48 hours will receive a credit toward another seminar or the self-study package. You may also send another person to take your place.

## Continuing Education Credit Information

This seminar is open to the public and offers 7.0 PDHs to professional engineers and 7.0 HSW continuing education hours to architects in all states, excluding Florida architects. Educators and courses are not subject to preapproval in Ohio.

HalfMoon Education is an approved continuing education sponsor for engineers in Florida, Indiana (License No. CE21700059), Maryland, New Jersey (Approval No. 24GP00000700), New York (NYSED Sponsor No. 35), North Carolina, and North Dakota. HalfMoon Education is deemed an approved continuing education sponsor for New York architects.

This seminar is approved by the American Institute of Architects for 7.0 HSW Learning Units (Sponsor No. J885). Only full attendance can be reported to the AIA/CES.

This course offers a non-credit continuing education opportunity to contractors. It has not been approved by any state contractor licensing entity for licensing maintenance.

Attendance will be monitored and attendance certificates will be available after the seminar for most individuals who complete the entire event. Attendance certificates not available at the seminar will be mailed to participants within fifteen business days.

# Additional Learning

## Webinar Series

### Structural Forensic Engineering

#### • Introduction to Forensic Engineering Process

Wed., March 27, 2019, 11:00 AM - 1:00 PM CDT

#### • Causes of Failures and the Forensic Engineering Report

Wed., March 27, 2019, 1:30 - 3:30 PM CDT

#### • Forensic Examination of Structures and Use in Litigation

Thurs., March 28, 2019, 11:00 AM - 1:00 PM CDT

For more information visit:  
[www.halfmoonseminars.org/webinars/](http://www.halfmoonseminars.org/webinars/)

## Can't Attend? Order the Manual and Audio from the Live Seminar as a Self-Study Package!

Audio recordings of this seminar are available for purchase starting at \$269. See registration panel for more information and please refer to specific state licensing rules or certification requirements to determine if this learning method is eligible for continuing education credit.

# Registration

## Structural Forensic Engineering

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### How to Register

#### Online:

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PO Box 278, Altoona, WI  
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#### Complete the entire form.

Attach duplicates if necessary.

### Registrant Information

Name: \_\_\_\_\_

Company/Firm: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Occupation: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

#### Additional Registrants:

Name: \_\_\_\_\_

Occupation: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_


Name: \_\_\_\_\_

Occupation: \_\_\_\_\_

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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.

## Tuition

( ) **I will be attending the live seminar.** Single Registrant - **\$289.00**. Three or more registrants from the same company registering at the same time - **\$269.00** each.

( ) **I am not attending.** Please send me the self-study package:

Downloadable MP3 Audio/PDF Manual for **\$269.00**.

CD/Manual Package for **\$289.00**.

(Please allow four weeks from seminar date for delivery)

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