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The International Code Council has approved these events for .6 CEUs in the specialty area of Building (Preferred Provider No. 1232).

Attendance will be monitored, and attendance certificates will be available after the webinar for those who attend the entire course and score a minimum 80% on the quiz that follows the course (multiple attempts allowed).

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Live, Interactive Webinars

- Structural Forensic Engineering Case Studies
- Cold-Formed Steel Design in Load-Bearing and Nonload-Bearing Applications

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Live, Interactive Webinars

Structural Forensic Engineering Case Studies

- Wednesday, November 20, 2024 | 9:00 am - 4:00 pm CST

Cold-Formed Steel Design in Load-Bearing and Nonload-Bearing Applications

- Monday, November 25, 2024 | 9:00 am - 4:00 pm CST

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AIA: 6.0 LU | HSW | International Code Council: .6 CEUs (Building)



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Monday, November 25, 2024 | 9:00 am - 4:00 pm CST

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Structural Forensic Engineering Case Studies

Wednesday, November 20, 2024 | 9:00 am - 4:00 pm CST

Tuition: \$339 per registrant
\$237 per attendee for group registrations of two or more people registering at the same time for the same program. ***That’s a savings of 30 percent!***

Presented by
James D’Aloisio P.E., LEED AP *Principal with Klepper, Hahn & Hyatt in Syracuse (please see full presenter biographies online)*

Agenda:
Learning from Catastrophe: The Importance of Studying Structural Failures

- Structural problems and failures throughout history
- Construction disasters
 - Design flaws
 - Construction flaws
 - Damage, distress, deterioration
 - Unusual loads
- The development and enforcement of building codes and standards
- Lessons learned from failures
- Historical failures
- 27 AD: Fidenae, Italy, Stadium Disaster, 20,000 dead
 - 140 AD: Circus Maximus, Rome, Italy, 13,000 dead
 - 1860: Pemberton Mill, Lawrence, MA, 1860 88-145 dead

Forensic Case Studies

- 1907: Quebec River Bridge Construction Collapses
 - Inadequate design; ignored evidence of problems
- 1919: Molasses Tank Failure, Boston, MA
 - Development of material standards and building codes
- 1922: Knickerbocker Theater Collapse, Washington DC
 - Heavy snow loading – high occupancy building
- 1968: Ronan Point Tower Collapse, East London, UK
 - Progressive collapse
- 1973: Skyline Towers Construction Collapse, Fairfax County, VA
 - Premature concrete shoring removal
- 1973: John Hancock Tower Window Failure, Boston, MA
 - Wind-induced building flexure; thermal stresses
- 1978: Hartford Civic Center Roof Collapse, East Hartford, CT
 - Flawed computer design approach
- 1978: Willow Island Cooling Tower Construction Collapse, WV
 - Premature concrete shoring removal. Worst construction disaster in U.S.
- 1979: Kemper Arena Roof Collapse, Kansas City, MO
 - Hanger failure; lack of three-dimensional analysis
- 1981: Kansas City Hyatt Regency Walkway Collapse, Kansas City, MO
 - Flawed hanger connections modified during construction
- 1987: L’Ambience Plaza Construction Collapse, Bridgeport, CT
 - Unstable lift-slab construction system
- 1989: East Coldenham Elementary School Cafetorium Wall Collapse, Newburgh, NY
 - Wall not designed to resist wind loading

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Forensic Case Studies Continued

- 1994: Smith Road Elementary School Cafetorium Roof Collapse, North Syracuse, NY
 - Low-capacity, undersized glued-laminated timber beam
- 1995: Sampoong Dept Store Collapse, South Korea
 - Inadequate structural design; excessive loading; ignored warning signs
- 2003: Chicago Balcony Collapse, Chicago, IL
 - Low-capacity, underdesigned wood framing
- 2007: Interstate 35W Bridge Collapse, Minneapolis, MN
 - Undersized steel gusset plates
- 2013: Rana Plaza Building Collapse, Savar, Bangladesh
 - Most fatal building collapse since 1st Century A.D. Warning signs ignored.
- 2015: Wilson Hospital Picciano Parking Garage Collapse, Johnson City, NY
 - Inadequate structural design; construction flaws
- 2018: Florida International University Pedestrian Bridge construction collapse
 - Inadequate design and shoring sequencing; inadequate peer review
- 2021: Champlain Towers South Collapse, Surfside, FL
 - Theories of possible causation

Summary

A concatenation of lessons learned
Structural condition reviews and failure risk reduction

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Presented by
Zane Clark, P.E., S.E. *Consulting Engineer*

Josh Garton, P.E., S.E.
Project Manager and Team Leader, McClure’s Enclosures and Interiors (please see full presenter biographies online)

Agenda:
Cold-Formed Steel Construction Fundamentals

- Short history and definitions of light frame construction
- ISI specification and framing standards
- | | |
|------------------------------------|---|
| Relevant IBC and ASCE 7 provisions | Project conception and material choices |
| Delegated design and shop drawings | Design tools and software |

AISI S100 Member Design

- | | |
|-------------------------------|-----------------------------|
| Chapters A, B, and C overview | Chapter D - Tension |
| Chapter E - Compression | Chapter F - Flexure |
| Chapter G - Shear etc. | Chapter H - Combined Forces |
| Acknowledge chapters K, L, M | Appendices (EWM vs. DSM) |

AISI S240 and AISI S400 Framing Design

- | | |
|------------------------|---------------------------|
| S240 Chapter B. Design | Floor and ceiling framing |
| Wall framing | Roof framing |
- Brief overview of S240 Chapter C - Installation requirements
- Brief overview of S240 Chapter D - QC and QA requirements
- Brief overview of S240 Chapter E - Trusses
- S400 Applicability and overview of requirements

Lateral Systems

- Review applicable information on seismic force resisting systems from ASCE 7
- Shear walls (wood panel, steel sheet, other materials)
- | | |
|--------------------|------------------------------|
| Strap-braced walls | Special bolted moment frames |
|--------------------|------------------------------|
- Discussion of common diaphragm construction and design

Connection Design / Connecting Elements

- | | |
|--------------------------|--------------------------|
| Design assumptions | Screw connections |
| Bolted connections | Welded connections |
| Power actuated fasteners | Other connecting methods |
- Connecting element limit states (web crippling, stud bearing on track, rupture)
- Fastening to specific substrate materials

Cold-Formed Steel Best Practices

- Common errors and problems with drawings
- Difficult details (knee walls, parapets, building movement joints etc)
- Coordination and reasonable assumptions
- Overview of expectations of each party on delegated design