Seminar Agenda

Presented by Edward L. Fronapfel, MSCE, PE, CBIE, CFCC, EDI, CBCP

Science of Structures and Soils
- Typical loads on foundations
  - Gravity loads
  - Lateral loads
- Typical loads on basement walls
  - Gravity loads
  - Soil loads
- Typical loads on slabs
  - Soil mechanics and effects on structures
  - Soil properties
  - Bearing capacity
  - Effects on basement walls and retaining walls
  - Soil settlement
  - Effects of water, frost and freeze/thaw cycle

Foundation Design and Construction
- Design and construction of foundations
  - Continuous wall footings, column footings
- Design and construction of basement walls
  - Walk-outs, partially-exposed foundations

Diagnosing Foundation and Slab Damage and Evaluating Repair Methods
- Identifying damage
  - Settlement
  - Expansive soils
  - Piers
  - Underpinning
- Repair methods
  - Frost heave
  - Shrinkage
  - Soil tiebacks
  - Rebuilding

Diagnosing Basement Wall Damage and Evaluating Repair Methods
- Identifying damage
  - Settlement
  - Expansive soils
  - Cracking
  - Failure of connections to supporting diaphragms
- Repair methods
  - Piers
  - Carbon fibers
  - Crack repair methods
  - Frost heave
  - Shrinkage
  - Soil tiebacks
  - Soldier beams

Learning Objectives

You'll be able to:

- **Explain** the types of loads impacting foundations, basement walls and slabs.
- **Identify** the effects of water, frost and the freeze/thaw cycle on foundations.
- **Understand** how to repair foundation and slab damage using piers, soil tiebacks, and underpinning.
- **Diagnose** basement wall damage and evaluate methods for repairing basement wall damage and cracks.

Foundation Damage and Repair:

*Science, Materials and Techniques*

Denver, CO - Thursday, July 14, 2016

Identify typical loads on foundations, basement walls and slabs

Learn about foundation design and construction

Examine foundation and slab damage and evaluate repair methods like piers and underpinning

Recognize damage to basement walls including cracking, frost heaving and shrinkage

Discuss techniques used to repair basement wall damage
### About the Seminar

#### Faculty

**Edward L. Fronapfel, MSEE, PE, CBIE, CFCC, EDI, CBCP, Fellow Member of NAFE**

Mr. Fronapfel holds a Bachelor of Science in Civil Engineering and a Master of Science in Civil Engineering with an emphasis in forensic and structural engineering. He is a Board Certified Building Inspection Engineer through the National Academy of Building Inspection Engineers and a Fellow member of the National Academy of Forensic Engineers. In addition, Mr. Fronapfel is a Level 2 Thermographer, and a Level 2 Post Tension Examiner as well as a National Associate of Certified Home Inspector, and a Third Party Exterior Design Institute Inspector.

He teaches as an Adjunct Professor at the University of Denver in the Burn's School of Real Estate and Construction Management. Courses include Estimating, Project Management and Control, Sustainability in Construction, Residential Systems and Environmental Systems & MEP.

His work experience encompasses geotechnical engineering, hydraulics, hydrology, civil and structural engineering for new development, warranty work, property claim support, repair and rehabilitation design. Mr. Fronapfel's building science work includes interior ventilation control, HVAC sizing and analysis, moisture management systems for attics, crawlspaces and basements for residential and commercial structures. He has additional background in masonry, stucco, EIFS, and many components used for cladding buildings from the foundation systems to the roofing systems.

Mr. Fronapfel's experience includes over 450 deposition testimonies and over 55 trial testimonies, as well as hundreds of mediations, and arbitrations. He is a registered engineer in Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Montana, Missouri, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, and Wyoming.


### Additional Learning

#### Webinar Series

**Registration**

- **Foundation Damage and Repair**
  - Tu., July 12, 12:00 - 1:00 PM EDT
  - Tu., July 12, 1:30 - 2:30 PM EDT
  - Wed., July 13, 12:00 - 1:00 PM EDT
  - Wed., July 13, 1:30 - 2:30 PM EDT
  - Thurs., July 14, 12:00 - 1:00 PM EDT
  - Thurs., July 14, 1:30 - 2:30 PM EDT

**Commercial Energy Conservation Code**

- Tues., July 19, 12:00 - 2:00 PM EDT
- Thurs., July 21, 12:00 - 2:00 PM EDT
- Thurs., July 21, 2:30 - 4:30 PM EDT
- Thurs., July 21, 4:30 - 6:30 PM EDT

**Building Envelope Energy Efficiency**

- Tues., July 19, 3:00 - 4:30 PM EDT

**Heating, Ventilation and Air Conditioning Systems**

- Wed., July 20, 12:00 - 2:00 PM EDT
- Tues., July 26, 2:30 - 4:30 PM EDT
- Wed., July 27, 2:30 - 4:30 PM EDT
- Thurs., July 28, 2:30 - 4:30 PM EDT

**Service Water Heating, Power and Lighting**

- Wed., July 20, 2:30 - 4:30 PM EDT
- Thurs., July 21, 2:30 - 4:30 PM EDT
- Wed., July 27, 2:30 - 4:30 PM EDT
- Thurs., July 28, 2:30 - 4:30 PM EDT

**Energy and Utility Management**

- Wed., August 3, 2:30 - 4:30 PM EDT
- Thurs., August 4, 2:30 - 4:30 PM EDT

**Energy Audits and Energy Management Plans**

- Wed., August 10, 2:30 - 4:30 PM EDT
- Wed., August 17, 2:30 - 4:30 PM EDT

**Wiring Systems & MEP**

- Wed., August 24, 2:30 - 4:30 PM EDT
- Wed., August 31, 2:30 - 4:30 PM EDT

### How to Register

- **Online:**
  - [www.halfmoonseminars.org](http://www.halfmoonseminars.org)

- **Phone:**
  - 715-835-9900

- **Fax:**
  - 715-835-6006

- **Mail:**
  - HalfMoon Education Inc.
  - PO Box 278, Altoona, WI 54720-0278

**Tuition**

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**Register online at [www.halfmoonseminars.org](http://www.halfmoonseminars.org) or by calling 715-835-9900.**

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