

## Colby J. Hietbrink | Structural Engineer

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### Professional Summary:

Mr. Hietbrink has nine years of residential and commercial construction experience and eight years of engineering experience in structural forensics and new design of residential and commercial structures. Mr. Hietbrink has an extensive knowledge of building envelope construction methods, construction materials, and their material properties. Mr. Hietbrink's forensic expertise includes origin and cause (O & C) investigations related to structural failures and damages, hail and wind damage, foundation displacement, vehicle impact, fire damage, and structural repair design. Mr. Hietbrink has performed structural design for residential and large commercial buildings as well as nuclear power plants.

Mr. Hietbrink has extensive experience on the evaluation of damaged and failed structures, building code violations, construction defects, building foundation damage, retaining wall failure, and OSHA structural load ratings.

- Structural Failures of Building Components and Systems
- Commercial Roofing Systems
- Hail / Wind Damage to Roofs – Commercial and Residential
- Construction Defect Evaluation
- Building Code Compliance Evaluation
- Wind, Seismic, and Snow Load Analysis A
- Design and Analysis of Steel, Concrete, Wood, and CMU Structures
- Design and Analysis of Cold-Formed Steel Structures
- General Crane Design Using CMAA and ASME Standards

### Licenses and Certifications:

Professional Engineer, North Carolina, #045304

Professional Engineer, South Carolina, #35346

Professional Engineer, Florida, #84781

Professional Engineer, Virginia, #059138

General Contractor, North Carolina, #76285

### Project Experience:

#### **Engle Martin and Associates, Charlotte, NC** **Water Intrusion Cause and Origin Assessment**

Conducted a moisture intrusion assessment of a commercial retail facility in Boone, NC. Performed a visual assessment of the building and surrounding area. Determined that the source of moisture intrusion was due to poor maintenance of a gutter downspout and the surrounding asphalt pavement which created excessive ground water infiltration coupled with the lack of apparent water proofing and drainage.

**American Claims Management, Tampa, FL**  
**Structural Tree Impact Assessment**

Conducted a structural assessment of a residential home subjected to multiple tree impacts due to an EF-1 Tornado in Columbia, SC. Performed a visual assessment of the structural framing and foundation members to determine the extent of structural damage to the residence. Determined that the structural damage to the residence was localized to the general tree impact area with no displacement or permanent deformation of the structure in its entirety.

**Allstate Insurance, Tigerville, SC**  
**Structural Vehicular Impact Assessment**

Conducted a structural assessment of a residential home subjected to a vehicular impact in Conover, NC. Performed a visual assessment of the structural framing and foundation members to determine the extent of structural damage to the residence. Determined that the impact was largely to the brick masonry curtain wall of the foundation with no real impact to the structural wood framing members above. The damage was determined to be localized to the general vehicle impact area to the foundation with no damage to the structural framing of the residence or permanent displacement or deformation of the structure.

**Kemper Insurance, Clinton, IA**  
**Structural Basement Wall Failure Assessment**

Conducted a structural assessment of a failed basement foundation wall of a residential home in Yadkinville, NC. Performed a visual assessment of the structural CMU foundation wall and wood framing members to determine the extent of structural damage to the residence. Determined that the damage was due to the lack of a waterproofing membrane which caused the leaching of the binders within the mortar over a prolonged period of time coupled with the lack of reinforcing or grout filled CMU cores and a recent increase in the hydrostatic pressure on the wall.

**Liberty Mutual, Wausau, WI**  
**Pipe Coupling Failure Assessment**

Conducted an assessment of a failed 8" pipe coupling within a fire suppression test header at a high-rise hotel in Charlotte, NC. Performed a visual assessment as well as a review of security footage and data downloads of the fire suppression control equipment to determine the cause of failure to the pipe coupling. Determined that the damage was due to water hammer effect as a result of the failure to isolate the fire pump when draining the first-floor lines in order to perform maintenance activities.

**Sedgwick, Gastonia, NC**  
**Water Intrusion Assessment**

Conducted an investigation of a 35,000 square foot building comprised of office and warehouse space. Performed a visual assessment as well as product research regarding the aluminum clad wood windows and determined that the damage was primarily due to a product defect within the aluminum-clad wood windows coupled with poor maintenance of the exterior building envelope. There was a class action lawsuit against the window manufacturer regarding the specific type of aluminum clad wood windows claiming water intrusion through the aluminum cladding which caused premature deterioration of the wood window and/or surrounding framing.

**FedNat Insurance, Sunrise, FL  
Structural Assessment**

Conducted a structural assessment of a failed brick veneer and brick shelf along the gable end of a residential home in Litchfield, SC. Performed a visual assessment of the structural wood framed gable end wall and dislodged brick veneer to determine the cause and origin of the observed damages to the residence. Determined that the damage was due to improper attachment of the steel angle brick shelf and brick ties to structural framing members. Although no failure of the brick veneer was observed, this condition was present at two other locations around the perimeter of the residence as verified from the attic.

**Professional Experience:**

EFI Global, Structural Forensic Engineer, January 2018 - Present  
K2M Design, Structural Design Engineer, June 2017 – January 2018  
AECOM, Structural Engineer, July 2012 – June 2017

**Specialized Education:**

Roof Science and Technology II, IIBEC, Scott Hinesley, 2020  
Wall Technology and Science I, IIBEC, Keith Davis & Scott Singleton, 2019  
Roof Science and Technology I, IIBEC, Jeremiah Webster, 2019  
AHERA-OSHA O&M, AAA Environmental, Pamela Smith, 2019  
Infrared Roof Inspections, Infrared Training Center, Bill Schwahn, 2018  
EVS/R Certification, EFI Vale Specialist, David Amori, 2018

**Education:**

Bachelor of Science (B.S.), Civil Engineering, University of North Carolina at Charlotte, Charlotte, NC, 2011

**Publications and Presentations:**

Whelan, M.J. and Hietbrink, C. (2012) "Wireless Sensor Network Deployments for Structural Identification in a Tied Arch Bridge," NDE/NDT for Highways and Bridges: Structural Materials Technology, New York, NY, August 23

**Court Qualifications/ Depositions:**

Litigation CV available upon request.