efi global

Carl J. Schoenberger, PE, SE | Senior Principal Engineer

2055 W Army Trail Rd, Suite 106, Addison, IL 60101 *800-693-2085*
Midwest District, Chicago, Illinois *carl.schoenberger@efiglobal.com*

Professional Summary:

Mr. Schoenberger has 22 years of diverse civil, structural and forensic engineering, building envelope and roof consulting experience that includes design, forensic investigation, construction administration and expert witness testimony. He has a hands-on approach to manage small-scale projects and a team of professionals to efficiently execute large-scale projects.

As the District Service Line Principal (DSLP) for the EFI Midwest District, Mr. Schoenberger provides technical oversight for structural engineering projects in Illinois as a licensed Structural Engineer (S.E.) and supervises EFI's engineering practice in the Midwest District. As a leader within the Service Line, his input is provided directly to Senior Leadership to improve best practices, use of technology, business development, growth and client relations.

Mr. Schoenberger has investigative experience that encompasses many aspects of civil and structural engineering, which include weather related structural failure, structural evaluation, construction errors and omissions, construction means and methods failures and others. He is knowledgeable with the latest building codes, construction techniques, non-destructive testing methods and many other aspects of forensic engineering.

Licenses and Certifications:

Structural Engineer, IL, #081007629

Professional Engineer, IL, #062065512

Professional Engineer, FL, #80665

Professional Engineer, HI, #18324

Professional Engineer, IN, #11600452

Professional Engineer, IA, #P24870

Professional Engineer, MN, #58148

Professional Engineer, NJ, #24GE04937900

Professional Engineer, NC, #45075

Professional Engineer, NY, #086663

Professional Engineer, SD, #17477

Professional Engineer, WI, #44694-6

National Council of Examiners for Engineering and Surveying:

- Model Law Engineer (MLE)
- Model Law Structural Engineer (MLSE)

International Code Council (ICC)

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Structural Steel and Bolting, Special Inspector #8075887 (inactive)

Structural Welding Inspector, #8075887 (inactive)

FAA Part 107 Small Unmanned Aircraft Systems (sUAS), Remote Pilot Certified

Project Experience:

Structural Engineering Design

Mr. Schoenberger has been the lead design engineer for many different types of structures. Sample projects include:

Commercial Building, Queens, NY – Structural analysis and design using a computer model of new steel frame and pile-supported foundation system. Responsible for preparation of all contract documents and coordination with the architect.

Public School 61M, New York, NY – Evaluation and design of new pile-supported concrete slab in school auditorium to replace settling slab on grade, due to poor soil conditions.

Sandridge Apartments, Calumet City, IL – Evaluation and design of new concrete slab system due to excessive settlement. Was the structural engineer of record (SEOR) for the project; responsible for the preparation of all of the drawings and design documents.

Construction Support and Administration

Mr. Schoenberger has consulted with many residential and commercial contractors regarding shoring bracing and other safeguards during construction. Sample projects include:

Public School 42M, New York, NY – Managed design of repairs for a 9,000 sq. ft. historic arch floor structure with reinforced lightweight concrete. During construction, attended weekly project meetings with the owner and contractor; additional construction administration tasks included the review of change orders and RFI's etc. using Primavera software.

Historic Church Building, Ottawa, IL – Emergency design of temporary shoring scaffolding to support a damaged wood roof frame approximately 25 feet high. Shoring was placed to prevent movement and collapse of the roof structure and to minimize intrusion to complete the structural repairs. Coordinated shoring design with local building inspector and contractor and supervised onsite inspection of shoring installation.

95th Street Pumping Station, Chicago, IL – Provided an analysis of the building for the General Contractor as part of the construction sequence for removal of the roof deck system on the steel and masonry building. Shoring was installed where needed and computer modeling confirmed other areas would remain stable during the construction process.

Forensic Structural Engineering

Mr. Schoenberger has performed forensic engineering investigations for a variety of structural related failures due to weather conditions and construction errors/omissions. Sample projects include:

Indiana State Fair, Indianapolis, IN – Primary field engineer for an independent investigation of collapse of temporary stage roof structure.

Trump SoHo Hotel Condominium, New York, NY – Primary field engineer for investigation of collapse of concrete formwork during construction of the 42nd floor concrete slab. Prepared various reports and engineering calculations.

Steel Truss Collapse, Peru, IL – Lead structural engineering investigator on behalf of the owner. A 220-foot-long steel truss collapsed several weeks after construction due to improper design and construction. A structural analysis of the truss was performed in addition to metallurgical engineering (laboratory) evaluation of the welded connections.

Hard Rock Hotel, New Orleans, LA – Provided field and technical assistance for investigation of structural collapse. Investigation included a field study of the structural steel frame and curtain wall systems within the collapsed building, which was under construction at the time of failure.

Suspended Scaffolding Failure, Lexington, KY – Analyzed 45 foot long suspended scaffolding platform, which fell to the ground, causing injuries. Tasks included a review of applicable standards (Building Code, OSHA, etc.) and a study of the scaffolding system design and its capacity. It was determined the scaffolding was being used for the staging of construction materials, which overloaded the platform.

Adjacent Construction and Monitoring

Mr. Schoenberger has evaluated many buildings in dense urban environments such as Chicago, Illinois, and New York, New York. Typical projects include the evaluation of adjacent structures which have been affected from excavation and vibrations. Monitoring programs are developed and analyzed throughout the course of the project, or after damage is initially discovered. Sample projects include:

Landmark Building, New York, NY – Prepared a comprehensive structural investigation report, conceptual design and cost estimate related to a $20M lawsuit and subsequent insurance claim due to structural damage that was caused by undermining from adjacent construction.

Mixed Use Building, Union City, NJ – Provided expert testimony on behalf of the insurance company and prepared engineering report related to the cause of a masonry wall collapse during an adjacent construction project. Litigation was required due to the $1M insurance claim and subsequent subrogation.

Three-Story Masonry Building, Chicago, IL – Reviewed available monitoring data and construction documents related to the excavation for an adjacent building. After an initial site assessment, developed additional monitoring protocols to determine if foundation repairs were needed.

New Development, Lake Forest, IL – Reviewed shoring and bracing design for new building and determined that the shoring was not deep enough to support the excavation needed.

Construction Defects

Mr. Schoenberger has evaluated many types of buildings in the process of construction or after construction has been completed for defects that have resulted in structural failure, water infiltration and other damages. Sample projects include:

Single-Family Custom Home, Kenilworth, IL – Reviewed complete file and relevant depositions related to lawsuit after construction of single family custom home (addition) on behalf of rough carpentry sub-contractor. Alleged damages were reported to be from defective work. Site investigation included observations of the reported conditions and documentation of destructive openings in the building to review the framing conditions.

High-Rise Building, Chicago, IL – Analyzed exterior building envelope due to reported deficiencies with the flashing installation of the veneer system. Determined that installation at the time of construction was performed in accordance with industry standards at the time of construction.

Building Envelope, Roofing and Water Intrusion

Mr. Schoenberger has evaluated many types of building construction, cladding systems and roofing systems for the cause and source of water intrusion. In addition to a visual assessment, non-destructive testing (NDT) has been used, which includes moisture meters, infrared thermography and others. Sample projects include:

Three-Story Condominium Building, Union City, NJ – Performed extensive study of exterior roof and cladding (EIFS) system including a visual assessment and spray rack testing with infrared imagery and destructive evaluation. Determined that improper installation had resulted in interior water intrusion.

Single-Family Residence, Chicago, IL – Performed spray testing with accompanying infrared imagery of a masonry wall that was leaking. The investigation determined that there was a deficiency with the base flashing. Upon completion of the investigation, assisted the architect with the repair design details and made observations during construction to ensure the repairs were adequate.

Low Slope Roof Assessment, Indianapolis, IN – Performed a condition assessment of a low slope roof system with post-installed coating for purposes of providing a repair recommendation. In addition to visual observations, thermal imaging via drone and an impedance scanner were used to create a moisture profile, which was confirmed with destructive testing. Once the moisture profile was determined, a building code analysis was performed to determine if repairs would be permitted.

Multi-building Hail Damage Assessment, Aurora, IL – Led engineering investigation of 50+ buildings in Aurora, Illinois, that were impacted by the April 2023 hailstorm. Buildings included single-family homes with asphalt shingles and commercial buildings with a variety of low slope roof coverings.

Catastrophe Response

Mr. Schoenberger has responded to and inspected residential and commercial buildings that have been damaged as a result of catastrophe events. Sample catastrophes include:

Super Storm (Hurricane) Sandy, New York and New Jersey (2012) – Performed over 50 inspections that included large commercial losses and shoreline structures for wind and flood related damages.

Hurricane Matthew (2016) – Performed over 20 inspections in Florida of homes and buildings affected by the Category 5 Hurricane. Structural evaluations included structures along the Florida coastline with direct exposure to the storm.

Hurricane Irma (2017) – Performed over 50 on-site inspections of homes and buildings affected by the Category 5 Hurricane in the Miami, Florida, area. Also provided senior technical review for more than 300 engineering reports prepared by EFI Global engineers.

Hurricane Florence (2018) – Evaluated 10+ commercial buildings in North Carolina for wind related damage to the components and cladding and structural evaluation of the framing systems.

Hurricane Michael (2018) – Evaluated more than 100 properties in Florida (residential and commercial) for wind related damage and structural damage as a result of the storm. Homes along the gulf coast were also evaluated for a percentage of damage attributable to the storm surge compared to the high velocity wind.

Hurricane Ida (2021) – Evaluated more than 30 properties for wind storm damage and flood related damage. Flood evaluations were performed in accordance with NFIP federal requirements.

Midwest Iowa Derecho (2020) – As the District Engineering Principal, managed local catastrophe response for the inspection of more than 150 properties. Performed on-site evaluations in addition to the review and supervision of the engineering effort for the entire catastrophe event.

Tornadoes - Washington, Illinois (November 17, 2013), Coal City, Illinois (June 22, 2015), Woodridge, Illinois (June 21, 2021) – Performed inspections of homes and buildings within the path and close to the path of the tornadoes. Evaluated structural framing and foundation systems of remaining buildings for structural integrity and possibility of re-use, including requirements from the local Building Code Official.

Explosions - Long Grove, Illinois (April 25, 2014), Marengo, Illinois (June 11, 2017), Waukegan, Illinois (May 3, 2019) – Evaluated multiple residences and buildings within close proximity of the blast center for related structural damage.

Premises Liability

Mr. Schoenberger has investigated property conditions and provided expert testimony as part of premises liability disputes, such as trip and fall, property maintenance requirements and general building code and construction standards. As part of the EFI Global Trip and Fall Group, Mr. Schoenberger has participated in an internal training program, which included multiple seminars related to the slip/trip and fall industry including human ambulation, potential hazards in the incident area, required code research including ADA, potential legal implications, and biomechanics.

Sidewalk Trip Accident, Naperville, IL – Provided expert testimony related to the sidewalk conditions that contributed to an injury that occurred to a runner that tripped on the sidewalk. The existing conditions, previous conditions, maintenance standards and local requirements were analyzed.

Stairwell Trip Accident, Chicago, IL – Provided expert testimony related the existing stair construction in a historic building; worked with EFI Tribometrist to review surface conditions of stairs for slip resistance. Both current and historic buildings codes were analyzed for conformance of existing stairwell construction where accident occurred.

Unnatural Accumulation of Ice, Lincolnwood, IL – Provided consulting expert opinions on the driveway surface conditions as they related to the unnatural accumulation of ice. The ground surface and environmental conditions were reviewed in conjunction with video footage of the accident that occurred.

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Handrail Accident, Glenview, IL – Provided expert testimony related to the height, placement and condition of handrails and guardrails as they were related to a fall that occurred inside of a retail store. Both current and historic building codes were reviewed and site measurements were taken of the elevated retail area that was being accessed at the time of the accident.

Bicycle Speed Bump Accident, Barrington Hills, IL – Provided Expert Disclosure related to the condition, construction and placement of a speed bump that was placed on a private road, where a bicycle accident occurred. Requirements for the size, placement and warning signs were reviewed as they related to the accident.

Excavation and Utility Strike Damage

Mr. Schoenberger has investigated construction site conditions as they relate to damage caused from excavation or directional drilling. This includes knowledge and assessment of the standard of care for excavation and "Call before you dig", which varies from state to state.

Utility Strike, Minneapolis, MN – Provided an expert report related to damage that occurred to underground electrical conduit that ran between two buildings. Photographs of the incident site, plans showing the utilities and photographs of the mark-outs were used to determine if the damaged utilities were marked prior to the directional drilling and if the damage was reported in accordance with the local requirements.

Chiller Line Damage, Madison, WI – Investigated the cause of damage to below-grade chiller lines, that serviced multiple buildings on a university campus. Utilities had been "daylighted" prior to excavation but were still struck and damaged during excavation. Drawings and site conditions were reviewed, along with the documented conditions on the date of the accident.

Professional Experience:

EFI Global, Inc., Addison (Chicago Branch), IL District Engineering Principal, 2018 – Present

EFI Global, Inc., Addison (Chicago Branch), IL Senior Engineer, 2013 - 2018

EFI Global, Inc., Piscataway, NJ (New Jersey Branch), Senior Engineer, 2013

Feld, Kaminetzky & Cohen, P.C., New York, NY, Associate (Senior Engineer), 2007 -2013

Boston & Seeberger, P.C., Pennsville, NJ, Project Engineer, 2004 – 2007

Education:

Bachelor of Science, Civil Engineering, Syracuse University, Syracuse NY, 2004

Affiliations:

Building Safety Professional – International Code Council (ICC)
American Society of Civil Engineers (ASCE)
American Institute of Steel Construction (AISC)
American Concrete Institute (ACI)
National Council of Examiners for Engineering and Surveying (NCEES)
National Roofing Contractors Association (NRCA)

Courses Instructed/ Guest Lecturer:

EFI/Vale Advanced (EVS/R™) Certification – Instructor (multiple sessions). One of several EFI Engineers who have provided technical content and instruction for the three-day course, which includes detailed information on steep and low slope roofs, including construction, coverings,

storm damage assessment, damage estimating, product identification and repair methods. For hands-on experience, this course also includes simulated hail mockups to illustrate impact dynamics on different roofing systems

Structural Forensic Engineering, Wheaton, IL, HalfMoon Education, presented two sections, "Preparing the Forensic Engineering Report" and "Understanding the Causes of Structural Failures," September 30, 2014

Publications and Presentations:

Schoenberger, Carl and McGrath, Sean, EFI Global, Inc. "Navigating Steep Slope Roof Repair Assessments", ASCE 10th Congress on Forensic Engineering, November 2024.

Schoenberger, Carl and McGrath, Sean, EFI Global, Inc. "Repair Recommendations After a Forensic Investigation", ASCE 9th Congress on Forensic Engineering, November 2022.

Schoenberger, Carl and Kraus, Joseph, EFI Global, Inc., "Hidden Moisture in Low Slope Roof Systems: Can Lead to Structural Failure" ASCE 8th Congress on Forensic Engineering, November 2018.

Kraus, Joseph and Schoenberger, Carl EFI Global, Inc., "Fire Retardant Treated (FRT) Lumber (circa 1960 to 1980) Can Experience Sudden Structural Failure When Exposed to High Humidity" ASCE 8th Congress on Forensic Engineering, November 2018.

Schoenberger, Carl and Kraus, Joseph, "Funneling Your Resources", Claims Management, April 20, 2016. Article discussed structural assessment of damages due to tornadoes.

Lavon, Benjamin and Schoenberger, Carl, Feld, Kaminetzky & Cohen, P.C., "How was a SoHo Building Undermined?" ASCE 6th Congress on Forensic Engineering, October 2012.

Honors and Awards:

EFI Global – Pinnacle Award – 2018
Awarded to individuals in Investigations and Engineering that contributed significantly to the success of others and the organization through their pursuit of our Five Must Wins and by living out our Values while carrying significant individual workloads during 2018.

Wilmot Scholarship, Syracuse University
Awarded to outstanding student in civil engineering, 2003-2004

Chi Epsilon – Member, Syracuse University Civil Engineering Honors Fraternity, 2002-2004

Golden Transit – Syracuse University Department of Civil Engineering, For outstanding work in surveying, 2002.

Court Testimony and Depositions:

Available Upon Request