Gregory L. Kelly PE, SE, NAFE
info@StructuralForensicExperts.com

With more than 25 years of experience in structural design, preservation, and restoration, Mr. Kelly brings a unique perspective to the field. Specializing in areas such as forensic engineering, coastal design, historic preservation, and blast engineering, he actively engages with the community through teaching, speaking engagements, and collaboration with government agencies such as Mayor Bloomberg's Green Codes Task Force to shape policy and effect change. His work has been showcased in National Geographic, Scientific American, and various architecture, construction, and engineering (ACE) industry publications. Mr. Kelly's portfolio includes structural engineering projects totaling 8 billion dollars in construction costs and over 20 million sq. ft. of floor area.

EXPERTISE

- Building Renovations
- Steel Structures
- Government Contracts
- Timber and Masonry
- Design Build Fast-Track
- Power Generation and Industry
- Concrete Design and Construction
- Coastal and High Wind Design
- Campus-Scale Projects
- Protective Design

FEATURED MATTERS & PROJECTS

Litigation Support for Large Hospital Construction
This construction delay claim was two- pronged. The first aspect related to the inspector's evaluation and rejection of concrete frame construction based on weak cores and honeycombing. We found that the inspector and engineer of record (EOR) did not allow the contractor to fully exercise their rights to remediate the work, and that the EOR ultimately required the unnecessary removal and replacement of elements. The second aspect of this claim related to actions of the owner, which limited use of the site, thus prohibiting the storage of critical materials, which delayed the work substantially.

Expansive Fill Investigations
In southern Virginia, fly ash from coal power was used for structural fill under many building projects because it was cheap and compacted easily, providing what appeared to be an excellent building pad. Some types of fly ash were found to be expansive when moisture was introduced, and many buildings were severely damaged by the "uplifting" effects of the fill. The largest project Mr. Kelly evaluated was a newly constructed multi-story public school. The expanding fill had destroyed the concrete slabs on the ground floor, and extensive shoring of the masonry-bearing walls and remedial work was required.

Litigation Support for Construction Vibration Damages
Under this claim, the plaintiff alleged that their ocean front, 29th-floor condo had been damaged by the renovation of the two-story penthouse above. Ultimately, we found that the tools used in the renovation could not have caused the damage claimed, and the dispute was settled after two days of trial.

Investigation of Defective Wood Trusses
This investigation revealed that the floor and roof trusses did not meet the code. Furthermore, we uncovered that the EOR had been deceased for some time and his son had illegally used his father's stamp to seal documents for several years after his death.

Investigation of Defective Roof Tiles
This claim centered around the concrete roof tiles on a large equestrian facility, which exhibited unsightly and unacceptable stains shortly after the roof was completed. Ultimately, it was found that the roof tiles had been manufactured with inclusions of sand. Some of the sand contained enough iron to cause rusting and the observed stains. The contractor was not at fault for the failure of the materials and the matter was settled.

Re-Rig Manufacturing
Evaluation of a modern shopping cart manufacturing facility, housed in a 17-building campus that was formerly a tobacco-processing facility. The historic timber and brick masonry structures dated to the mid-1800s and had been damaged by wind, fire, vehicular impact, and overloading. One structure was overloaded so badly that it had to be evacuated immediately.

Hurricane Forensics and Litigation Support
Evaluation of damage to many large commercial, residential, and governmental complexes during various storms in Alabama, Florida, North Carolina, and Virginia. On one project, the opposing counsel submitted evidence of wind speed and storm surge data from different time zones. Our research revealed that the wind data had been presented in Greenwich Mountain Time (GMT), while the flood data was in Eastern Standard Time (EST).

Residential Construction Defects and Corruption
This evaluation of defective residential construction in a small beach town uncovered a ring of collusion that included local contractors, a surveyor who was stamping structural work, and a cooperative building department. Ultimately, the contractors and surveyor were found liable. The building department's denial of our Freedom of Information Act request, and other charges of corruption, led to investigation by the state and dismissal of the building official and several staff.

Douglas Battery
The steel structures that composed this historic battery manufacturing facility were so badly damaged by corrosion that they were in danger of collapse. One column was found to have

shortened by 12 inches as a result of corrosion, and several areas of the facility had to be closed to permit emergency shoring and bracing of the collapsing structure.

Department of Defense Building Inspections (Fort Lee, Fort Eustis, Langley Air Force Base)
Evaluation of more than 300 existing buildings, representing a variety of uses (warehouses, offices, residences, hangers, classrooms, etc.). Structures included virtually all construction types and structural systems, from wood-bearing walls to moment frames of concrete and steel. The cause of damage included wind, fire, vehicular impact, settlement, termites, and corrosion.

United Nations Major Renovation – New York, NY
Structural engineer and physical security consultant for the United Nations (UN) Headquarters campus renovation, which encompassed over 2.6 million sq. ft. We managed four teams, engineering blast-resistant systems to protect the facility with sophisticated geotextile fabric catch systems and fiber-reinforced polymer composites. The most challenging aspect of the blast design was the integration of the new, more robust, blast-resistant curtain wall into the existing structure. The total cost was 4.8 billion dollars.

Franklin D. Roosevelt Four Freedom Park – New York, NY
This grand stone monument was designed by Louis I. Kahn in 1972, and its construction realized a dream over 40 years in the making, giving New York its first Kahn structure. Constructed at the tip of Roosevelt Island, this 50-million-dollar project employed massive 40-ton granite blocks to resist wave forces from hurricanes and storm surge. The project included an unusual combination of stainless-steel reinforcing rods and massive stones to form a unique reinforced granite structure. Six-foot-thick walls, one solid wythe of stone, were integrated with the bedrock below the East River. The Four Freedoms Park was designed for monumental 500-year service life and can resist 27-foot waves and winds over 200 mph. Appropriately, the structure is a green monument, employing recycled materials and measures to enhance durability and accommodate future sea-level rise.

Hudson Yards Air Rights Development – New York, NY
Peer review of five proposals for the redevelopment of the Metropolitan Transportation Authority (MTA) West Side Yards, each designed to create approximately 12 million sq. ft. of mixed-use space. The project, one of the most ambitious ever undertaken in New York City, mandated that the rail yards remain in continuous operation during construction. Developers proposed to cover the existing MTA yards, creating a 26-acre air rights development and as many as 16 mixed-use tower structures, some projected to be 70 stories tall (1280 feet). One plan proposed to bridge the yards with a cable suspension structure, creating a 19-acre park in the artificial valley, which would be one of New York's largest public spaces. The project is a 25-billion-dollar effort with a 14-year construction schedule. Guidance was provided on the structural and constructability aspects of each proposal.

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PROFESSIONAL EXPERIENCE

Forensic Experts 10/2023–Present
President and Chief Structural Engineer

Addison Riley, LLC, Pensacola, FL 2022–2023
Chief Executive Officer

Northwest Building Consultants, Oregon 2016–2021
President

McLaren Engineering Group, New York, NY 2011–2012
Chief Structural Engineer

Weidlinger Associates, New York, NY 2007–2011
Director of Sustainable Design

Woods Peacock Engineering Consultants, Alexandria, VA 2004–2007
Senior Project Manager

The Structures Group, Williamsburg, VA 2002–2004
Design Services Department Head

Hankins and Anderson, Richmond, VA 1999–2002
Lead Structural Engineer

Ronayne & Turner Assoc, Richmond, VA 1996–1999
Project Manager

DS Atlantic, Winston-Salem, NC 1993–1996
Staff Engineer

EDUCATION & CERTIFICATIONS

- BSCE–University of Illinois, Urbana, IL, 1993, Structures
- ACEC Leadership Academy, 2010, Organizational Psychology, Change Management
- The Cooper Union for The Advancement of Art and Science (past)–Instructor, Researcher, Project Manager
- Columbia University–Principal Investigator and Project Manager
- National Society of Professional Engineers–Reviewer

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info@StructuralForensicExperts.com

Professional Engineer (PE)

- FL 95455
- AL 52098
- IA P28346
- KY 38779
- LA 47362
- MD 05-60813
- NY 89284
- NC 030629
- OH E-89207
- TN 128157
- TX 148079
- VA 0402032245

Structural Engineer (SE/SER)

- Florida SER 95455
- Georgia SE 001741
- Illinois SE 081006338

PUBLICATIONS

- Yin HM, Yang DJ, Kelly G, Garant J. Design and Performance of a Novel Building Integrated PV/thermal System for Energy Efficiency of Buildings, *Solar Energy* 2013*;* 87: 184-195.

IN THE MEDIA

- Greenemeier L, Hybrid Solar Panels Combine Photovoltaics with Thermoelectricity, *Scientific American*, 12/30/2009.
- Columbia University Developing Hybrid Integrated Solar Energy System, *Solar Thermal Magazine*, 1/1/2010.
- *TechPulse360*, Mark Boslet, Columbia University Builds Hybrid Solar Cell, *TechPulse360*, 1/5/2010.
- *ASCE Civil Engineering Magazine*, Nancy Pontius, Integrated Solar Panel Generates Electricity and Heats Water, *ASCE Civil Engineering Magazine,* February 2010, pp. 38-39.
- Matthew Kahn, Hybrid Solar Cells: How University Research Causes 'Green' Innovation, *The Christian Science Monitor*, February 25, 2010.
- "Novel Building Integrated Photovoltaic Thermal System," *6th Annual New Energy Symposium,* August 1, 2011*,* New York Academy of Sciences, New York, NY.
- "Design and Development of a Multifunctional Hybrid Solar Roofing Panel," Second International Congress on Sustainability Science and Engineering, January 9–12, 2011, Tucson, AZ.
- *ASCE-Civil Engineering Source,* online, 3/6/2025.

- *Modern Steel Construction,* January 2011, P. 48.
- *Inhabitat*, Lori Zimmer, Liberty Island's Retail Pavilion is NYC's Fifth LEED Platinum Building, *Inhabitat*, 10/12/11.

PROFESSIONAL, CIVIL, & CHARITABLE ACTIVITIES

- National Academy of Forensic Engineers
- American Society of Civil Engineers, Structural Engineering Institute, Performance-Based Design Committee
- American Council of Engineering Companies (Technical and Contracts Committees)
- National Society of Professional Engineers
- International Code Council
- Florida Engineering Society
- Society of American Military Engineers
- Post-Tensioning Institute
- American Concrete Institute Committee 364, Rehabilitation

APPENDIX

Select Historic Preservation, Renovation, and Forensics Projects

- Department of Homeland Security, St. Elizabeth's Campus Study–Washington, DC (1855)
- Pier A–Battery Park City, NY (1882, LEED Gold*, Coastal Design)
- US Embassy–Bratislava, Slovakia (1900, Security)
- Frontier Culture Museum, Bowman House–VA (1820, Deconstruction/Reconstruction)
- Alexander Black House–Blacksburg, VA (1897, Relocation, Forensic Engineering)
- St. Margaret's School–Tappahannock, VA (c. 1692, 1729, 1740, 1800s)
- Silver Street Development–Richmond, VA (1740s–1920s)
- Heritage Office Building–Richmond, VA (1905)
- Atwater Kent Powerhouse, General Services Administration–Philadelphia, PA (1924)
- Alice Deal Middle School–Washington, DC (1931)
- GSA Central Plant Renovation–Washington, DC (1933)
- Social Security Administration Headquarters Feasibility Study–Woodlawn, MD (Blast)
- White House Communications Agency, Photo Lab–Anacostia Annex, DC
- Renovation of US Embassy–Islamabad, Pakistan (Blast)
- College of William and Mary, Phi Beta Kappa Memorial Hall–Williamsburg, VA
- Explosives in Transit Storage–Dover AFB, DE (Blast)
- Theater for the New City–New York, NY (Green Roof)
- Dominion Virginia Power–Yorktown, VA
- Dominion Virginia Power–Chesterfield, VA
- Dominion Virginia Power–Mount Storm, WV
- Various Dam Outfall and Hydraulic Structures–US

- O Street Pumping Station–Washington, DC (c. 1900)
- Server Vault–Loudoun, VA (Security)
- Douglas Battery–NC (Corrosion)
- Rehrig Manufacturing Facility–Richmond, VA
- Numerous Private Homes–DC, MD, NC, VA (c. 1680, 1692, 1724, 1782, 1800s, 1900s)
- More than 50 NCDOT Bridge Inspections–NC
- Federal Executive Institute Campus, New Facilities and Renovations–VA
- Trojan Factory HVAC Improvements–Chesterfield, VA
- Candlewood Suites–Fort Myers, FL (Hurricane Ian)
- Daytona Shores Hotel–Daytona Beach, FL (Hurricane)
- Wyndham Hotel and Convention Center–Kissimmee, FL (Hurricane)
- Phoenix West–AL (Construction Defect, Hurricane)
- Phoenix East–AL (Hurricane)
- The Wharf–Orange Beach, AL (Hurricane)

Select New Construction Projects

- Fort Pierce Federal Courthouse–Fort Pierce, FL (LEED Silver)
- Department of Defense C2/CNT Complex–Aberdeen Proving Ground, MD (LEED Silver*)
- Library of Congress Copyright Deposit Facility–Fort Meade, MD (Green Design)
- New York Stock Exchange Security Enhancements–NY, NY
- New Cumberland Public Safety Center–New Cumberland, PA (Green Design)
- Central Intelligence Agency Vehicular Inspection Facility (Blast)
- Williamsburg Community Hospital, Main Hospital–Williamsburg, VA
- James Madison University Student Center–Harrisonburg, VA
- Federal Executive Institute, Fitness Facility–Charlottesville, VA
- US Embassy Perimeter Security–Khartoum, Sudan
- Williamsburg Community Hospital, Ambulatory Care Center–Williamsburg, VA
- Outer Banks Center for Wildlife Education–Corolla, NC (Green Design)
- Liberty Island Retail Pavilion–Liberty Island, NY (LEED Platinum)
- Brooklyn Botanical Gardens, South Garden and Café–Brooklyn, NY (LEED Gold*)
- Jamestown Settlement Collections Building–VA
- Central Intelligence Agency Headquarters, Minor Renovations–Langley, VA
- Belle Isle State Park Visitor Center–Lancaster Co, VA
- Hungry Mother State Park Facilities–VA
- Ashland Middle School Addition–Ashland, VA
- Military Housing–Various domestic and international locations
- CarMax Stores–Various US locations
- Circuit City Stores–Various US locations
- Hampton Inn Hotels–Various US locations
- Tire America Stores–Various US locations
- Krispy Kreme Donut Stores–Various US locations
- Hannaford Supermarkets–VA
- Various Warehouses and Distribution Centers, NC and VA

- I-70 Bridges, New Bern, NC
- Connecticut River Bridge Gantry
- Various Highway Overpass Bridges, NC and VA

SUMMARIES OF SELECT PRACTICE AREAS

Litigation Support + Forensic Engineering – Expert witness and structural engineering consultant for claims relating to construction defects and design errors and for failures and damage due to wind, flood, fire, overloading, thermal movements, blast, and vibration. Clients have included both first and second parties and private, commercial, and government entities. Defects in concrete, steel, masonry, and timber construction have been addressed. In 2023, Mr. Kelly helped resolve more than 100 million dollars in disputes. Structural Forensic Experts and Mr. Kelly were retained in matters totaling more than 150 million dollars in 2024.

Structural Renovation – Experienced in a range of historic materials, including wood, steel, cast and wrought iron, brick, stone, terracotta, and concrete. Expertise includes the testing, analysis, and modification of complex historic systems such as brick arches, wire-reinforced catenary slabs, and heavy timber trusses. The blast retrofits for historic buildings such as the United Nations Headquarters and the Department of Homeland Security Headquarters have achieved protective goals in a novel and cost-effective manner. Mr. Kelly has designed more than 15 million sq. ft. of building renovations with a value of more than 5 billion dollars.

Government Contracts – Clients have included the Department of State; Department of Homeland Security; Central Intelligence Agency (CIA); Federal Bureau of Investigation (FBI); Army; Navy; Air Force; Marine Corps; Coast Guard; Department of Justice; Social Security Administration; General Services Administration; and the United Nations. Designs have included the protection of buildings from blast, ballistics, and forced entry, and the mitigation of blast hazards inside explosives storage and bomb-inspection facilities.

Hurricane Shelters + Coastal Design – Expertise in the design of critical facilities, buildings intended to be fully operational during hurricane events. Among these are the Fort Pierce Federal Courthouse and the United Nations Headquarters. Other coastal design projects have included the preservation and renovation of historic Pier A and historic Pier 57, the Outer Banks Center for Wildlife Education, and the Franklin Delano Roosevelt (FDR) Four Freedoms Park, which was designed for a 500-year service life and is able to resist 27-foot waves and winds in excess of 200 mph.

Power Generation + Industry – Expertise in the design and analysis of industrial, power generation, and utility-scale heating and cooling facilities. Structural engineering of concrete and steel structures for equipment loads, including dynamic loads, vibration, and shock. Fuel sources have included coal, oil, and natural gas.

Campus-Scale Projects – Extensive experience in the evaluation of large multi-building campuses with many different types of construction and with structures of widely varying ages. These campuses typically cover many acres and feature a vast network of aging utility infrastructure. The Department of Homeland Security Headquarters; Fort Lee; Social Security Headquarters; Wyndham Convention Center (Kissimmee, FL); the United Nations Headquarters; Silver Street Development (Richmond, VA); The Wharf (Orange Beach, FL); Fort Eustis; and Hudson Yards are examples of Mr. Kelly's campus-scale projects.