

## Gregory Lee Kelly, PE, SE, SER, LEED® AP

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Over 25 years of structural preservation and restoration experience informs a novel approach to our built environment. Areas of practice include forensic engineering, coastal design, historic preservation, and blast engineering. Active in the community at large; teaching, speaking, and working with government agencies such as Mayor Bloomberg's Green Codes Task Force to shape policy and effect change. Projects have been featured in National Geographic, Scientific American, and many regional and industry publications. Mr Kelly's structural engineering projects represent a total construction cost of 8 billion dollars, and a floor area of more than 20 million square feet.

### **Expertise**

**Litigation Support and Forensic Engineering** – Expert witness and structural engineering consulting 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 1st and 2nd parties and private, commercial, and government entities. Defects in concrete, steel, masonry, and timber construction have been addressed. In 2023, Mr. Kelly helped resolve over 100 million dollars in disputes. So far this year, SFE and Mr. Kelly have already been retained in matters totalling more than 100 million dollars.

**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 retro-fits 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 over 15 million sqft of building renovations with a value of over 5 billion dollars.

**Hurricane Shelters & Coastal Design** – Expertise in the design of critical facilities, buildings intended to be fully operational during hurricane events. Among these are the Ft 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 FDR Four Freedoms Park, which is designed for a 500-year service life and is able to resist 27 foot waves and winds in excess of 200 mph.

**Power Generation and 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.

**Government Contracts** – Clients have included the Department of State, Homeland Security, CIA, Army, Navy, Air Force, Marine Corps, Coast Guard, New York Stock Exchange, Dept. of Justice, Social Security Admin, General Services Admin, and the United Nations. Designs have included the protection of buildings from blast and forced entry and the mitigation of blast hazards inside explosives storage and bomb inspection facilities.

**Campus and Development 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 structures: Department of Homeland Security Headquarters, Ft Lee VA, Social Security Headquarters, Wyndham Convention Center Kissimmee, The United Nations Headquarters, Silver Street Development, The Wharf, Ft Eustis VA, and The Hudson Yards.

## **Featured 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 honey combing. We found that the inspector and 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 the use of the site, and thus prohibited 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 wall structure 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 2 days of trial.

**Investigation of Defective Wood Trusses** – This investigation revealed that the floor and roof trusses did not meet the code. Further, we uncovered that the engineer of record had been deceased for some time and that 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 which was formerly a tobacco processing facility. The historic timber and brick masonry structures dated to the mid-1800’s 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 Florida, Alabama, North Carolina, and Virginia. On one project, the opposing counsel submitted evidence of wind speed and storm surge data that was presented in different time zones. Our research revealed that the wind data had been presented in GMT while the flood data was in 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 that 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 the dismissal of the building official and several staff.

**Douglas Battery** – The steel structures that comprised 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 due to corrosion, and several areas of the facility had to be closed to permit emergency shoring and bracing of the collapsing structure.

**DOD Building Inspections (Ft Lee, Ft Eustis, Langley AFB)** – Evaluation of over 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 the 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 UN Headquarters Campus renovation, which encompassed over 2.6 million square feet. Mr. Kelly managed 4 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 of the effort 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. Walls 6 feet thick; one solid wythe of stone, were integrated with the bedrock below the East River. The Four Freedoms Park was designed for monumental 500-yr service life and is able to 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 to accommodate future sea level rise.

**Hudson Yards Air-rights Development – New York, NY**

Peer review of five proposals for the redevelopment of the MTA's West Side Yards, each designed to create approximately 12 million sq. ft. of mixed-use space. The project is one of the most ambitious ever undertaken in New York City and mandated that the rail yards remain in operation continuously 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 man-made valley, which would be one of New York's largest public spaces. The project is a 25 billion USD effort with a 14 year construction schedule. Guidance was provided on the structural and constructability aspects of each proposal.

### **Professional History**

President and Expert, Structural Forensic Experts, Pensacola, FL (10/2023 - Present)  
Chief Executive Officer, Addison Riley, LLC, Pensacola, FL (2022- 2023)  
President, Northwest Building Consultants, Oregon (2016-2021)  
Chief Structural Engineer, McLaren Engineering Group, New York, NY (2011-2012)  
Director of Sustainable Design, Weidlinger Associates, New York, NY (2007- 2011)  
Senior Project Manager, Woods Peacock Engineering Consultants, Alexandria, VA (2004-2007)  
Design Services Department Head, The Structures Group, Williamsburg, VA (2002-2004)  
Lead Structural Engineer, Hankins and Anderson, Richmond, VA (1999-2002)  
Project Manager, Ronayne & Turner Assoc, Richmond, VA (1996-1999)  
Staff engineer, DSAntlantic, Winston-Salem, NC (1993-1996)

### **Education, Teaching, & Research Engagements**

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 - Instructor, Researcher, Project Manager  
Columbia University - Principal Investigator and Project Manager  
National Society of Professional Engineers - Reviewer

### **Licenses & Certifications**

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, Texas #148079, VA #0402032245  
Structural Engineer (SE) - Illinois 081006338, Georgia SE001741, Florida (SER 95455) Haag (HCI-R)  
Universiteit Leiden (The Haag) - International Law in Action: the Arbitration of International Disputes 2024

### **Professional Societies and Affiliations**

American Council of Engineering Companies (Technical and Contracts Committees)  
National Society of Professional Engineers - International Code Council - American Society of Civil Engineers  
Florida Engineering Society - Society of American Military Engineers

### **Selected Historic Preservation, Renovation, and Forensics Projects**

- Dept. of Homeland Security, St. Elizabeth's Campus Study – Washington, DC (1855, Blast)
- 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, 1800's)
- Silver Street Development – Richmond, VA (1740's – 1920's)
- Heritage Office Building - Richmond, VA (1905)
- Atwater Kent Powerhouse, Gen. Services Adm. – Philadelphia, PA (1924)
- Alice Deal Middle School - Washington, DC (1931)
- GSA Central Plant Renovation – Washington, DC (1933)

**Selected Historic Preservation, Renovation, and Forensics Projects (cont.)**

- 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 VA Power – Yorktown & Chesterfield Plants, VA
- O Street Pumping Station - Washington, DC (c.1900)
- Server Vault – Loudoun, VA (Security)
- Numerous Private Homes - NC, VA, MD, DC (c. 1680, 1692, 1724, 1782, 1800's, 1900's)
- Over 50 NCDOT Bridge Inspections – NC
- Candlewood Suites - Ft Myers, FL (Hurricane Ian)
- Daytona Shores Hotel - Daytona Beach, FL (Hurricanes Ian & Nichol)
- Wyndham Hotel & Convention Center - Kissimmee, FL (Hurricane Ian)
- Phoenix West - AL (Construction Defect, Hurricane)

**Selected New Construction Projects**

- Fort Pierce Federal Courthouse – Fort Pierce, FL (LEED Silver)
- Dept. of Defense C2/CNT Complex – Aberdeen Proving Ground, MD (LEED Silver\*)
- Library of Congress Copyright Deposit Facility – Ft 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
- 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
- Carmax Stores
- Circuit City Stores
- Various Warehouses and Distribution Centers NC & VA
- I-70 Bridges, New Bern, NC
- Connecticut River Bridge Gantry
- Various Highway Overpass Bridges NC & VA

**Publications, Citation, Awards, Etc**

- Past: National Geographic, Scientific American, Modern Steel Construction, Solar Energy, Solar-Thermal
- In 2024: The Structural Engineer, Volume 102, Issue 6, 2024, Page(s) 44