

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

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 comprise more than 20 million square feet.

Expertise

Litigation Support and Forensic Engineering – Expert witness and structural engineering consulting design errors and construction defects, and for damage due to wind, flood, fire, overloading, thermal movements, blast. Clients have included both 1st and 2nd parties and private, commercial, and government entities. In 2023 alone, Mr. Kelly helped resolve over 100 million dollars in disputes.

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 and The Department of Homeland Security Headquarters (St Elizabeth's Campus) 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 is 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.

Protective Design – Clients have included the Department of State, Homeland Security, CIA, Army, Navy, Air Force, Marine Corps, 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.

Featured Projects

Expansive Fill Investigations – During the 1990's, fly-ash from coal power was used for structural fill in southern Virginia. 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 I 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 Large Hospital – 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 materials, which delayed the work.

Investigation of Defective Wood Trusses – This investigation revealed that the floor and roof trusses of the residence 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.

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.

VA Hurricane Forensics and Litigation Support – Evaluation of damage to many residences and commercial structures during various storms in 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.

NC Hurricane Forensics and Litigation Support – This evaluation of defective residential construction 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, hangars, 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, 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.

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

Franklin D. Roosevelt Four Freedom Park – New York, NY

This grand stone monument was designed by Louis I. Kahn in 1972 and its construction realizes 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 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

Founder 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, DSAtlantic, 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)

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)
- 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 (1680, 1692, 1724, 1782, 1800's, 1900's)
- Over 100 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*)