

# STRUCTURAL ENGINEERING

Technically and Aesthetically Excellent.



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At KC Engineering and Land Surveying, P.C. (KC), our interdisciplinary team ensures responsible solutions tailored to planning challenges and specific clients' needs.

KC's structural engineering group consists of our structural engineers who, combined with our civil and geotechnical engineering and surveying professionals, provide extensive capabilities in the rehabilitation and replacement of existing structures and the design of new steel and concrete structures.

We have extensive experience in designing highways, small to mid-size residential and office buildings, water supply and sewer treatment plants, and mechanical equipment for buildings. We are committed to creative, ingenious solutions that provide the best possible design services on complex projects. KC's design experts are practiced in rehabilitation design and in the design of new bridges, from simple span bridges to complex structures with curved girder design. KC's design experts are practiced in the design of new and replacement structures and the rehabilitation of existing structures with simple to complex geometric features. We utilize a broad range of modern building materials and have developed bridge superstructure and substructure designs for highways, railroads, and light rail applications.

Our engineers are well versed in the latest code requirements and specifications to deliver quality structures meeting safety, durability, economical, aesthetic, and environmental requirements. KC's structural engineering group contains many seasoned structural and geotechnical engineers providing various structural design services, including foundation design, seismic and guiderail and foundation design, seismic and wind vulnerability analyses, and structural integrity and load rating design for bridges, culverts, temporary structures, buildings, gantries, sign structures, and more.

#### Services

- Code Compliance
- Community Liaising
- Demolition Design
- Design and Analysis of Bridges, Culverts, Buildings, Facilities, Gantries, & Sign Structures
- Drainage Design
- Environmental & Geotechnical Analyses
- Fatigue Evaluation
- Foundation Design & Analysis
- Geotechnical Engineering
- Load Ratings & Structural Analysis
- Retaining Wall Design & Analysis
- Seismic Vulnerability Assessment
- Special Structures Design
- Stormwater Management
- Traffic Engineering
- Utility Design & Relocation



NYCEDC Contract 33610002: East Midtown Greenway (EMG), New York, NY | The intent of this project was to construct a continuous public waterfront esplanade over the East River in Manhattan, NY. The EMG's southern and northern termini are East 53rd Street and East 61<sup>st</sup> Street. The project also included a new pedestrian bridge that provides access to the esplanade at 54<sup>th</sup> Street and Sutton Place South. KC actively coordinated with a bridge architectural firm to provide bridge design. The primary structure is a steel tied arch bridge with one arch on either side of the walkway. These arches have a rise of 18 feet and are inclined 6 degrees outward. The walkway is a concrete deck with a clear width of 14 feet between railings. Lighting fixtures are mounted directly onto the arches to provide ample lighting onto the bridge deck.





NYSTA Design-Build Contract D800002: Cashless Tolling, Statewide, NY | The scope of work for this design-build project included demolition of existing toll booths at each toll plaza location and construction of cashless tolling gantries from approximately Exits 16 to 61, as well as all associated signing, striping, landscaping, and electrical work. KC was Lead Designer for this project. KC led the structural engineering team and provided design for four different types of gantries; generators / mechanical, electrical, and plumbing (MEP); and communication buildings, including tie-in points to existing power and fiber sources, adequate parking space, and safe access for maintenance personnel.



We are committed to creative, ingenious solutions that provide our clients with the best possible design services on complex projects.

Structural Engineering

NYSTA Contract D214568: I-95 Replacement of 2 Bridges and Rehabilitation of 4 Bridges, Westchester **County**, NY | This project completed the final mile of a 15-mile reconstructed segment of I-95. The span included a six-ramp interchange system with the Cross Westchester Expressway and Midland Avenue. The project scope included full replacement of two bridges and rehabilitation of four bridges located on or over I-95. The scope of work also included reconstruction of permanent pavement of the mainline and associated ramps, roadway improvements, and drainage and utility work. KC designed the realignment of a temporary roadway to reduce the width of the temporary bridge carrying the roadway, as well as abutments, piers, and profiles for the temporary bridge.





NYSDOT Contract D031472-06: Ocean Parkway Shared-Use Path (SUP), Nassau and Suffolk **Counties**, NY | This project included the design and construction of a 10-mile SUP adjacent to Ocean Parkway in the Towns of Oyster Bay, Babylon, and Islip. The project included four pre-fabricated pedestrian bridges at Tobay Beach, West Gilgo Beach, Cedar Beach, and Gilgo Beach. The scope of work included final design services (Phases V and VI) associated with the SUP, including the design of traffic calming measures, speed tables, flexible delineators, signing, and striping, as well as bike parking areas. KC provided structural design and survey services for the project, including development of the profile and Digital Terrain Model (DTM) for the proposed SUP alignment; design of the wingwalls for the pedestrian bridges, including the excavation and embankment details and bar lists; and project management and oversight.



NYSTA Contract D214941: I-87 over Wallkill River Bridge Rehabilitation, Ulster County, NY | The project scope includes the rehabilitation of I-87 over Wallkill River at Milepost 81.72 in Ulster County. KC is performing preliminary and detailed bridge design, environmental studies, and project reporting and coordination. KC's scope of work also includes site inspection of existing substructures and documenting deterioration; reviewing record plans, inspection reports, and seismic analysis reports; preparing a CSi bridge model for seismic analysis of an existing bridge; and preparing repair details for existing substructures in accordance with the latest inspection and biennial inspection reports.



NYSDOT Contract D037603: Widening of the Van Wyck Expressway (VWE) from the Kew Gardens Interchange (KGI) to John F. Kennedy (JFK) Airport, **New York, NY** | The VWE is the major gateway into and out of JFK International Airport. It was originally constructed in the early 1950s and is unable to handle current and projected traffic volumes. The design included relocating the existing pier to accommodate future VWE widening, strengthening abutments, reconstructing in place the existing center pier, removing some existing piers, rapidly replacing the superstructure, and installing new bearings. KC was responsible for the accident analysis, utility relocation, and preliminary design of five structures that are part of the VWE and Belt Parkway Interchange.

Contract CY-XS-0001-19: Replacement of County Bridge No. H0910 Ferguson Road over Dock Watch Hollow Brook, Warren Township, NJ | The project scope included the replacement of a 20-footlong, 25-foot-wide County Bridge. The existing superstructure was in serious condition due to severe rusting and advanced section losses exhibited by girders, while the substructure was in fair condition due to missing masonry stones, deteriorated pointing in the west abutment, and severe scaling in the east abutment wingwalls. KC designed the replacement bridge to carry unrestricted legal loads and provide a clear roadway width to accommodate two lanes of traffic.



Contract CY-XS-0001-17: Replacement of County Bridge No. H0401 Cortelyous Bridge over Nine Mile Run, Somerset County, NJ | The project scope included the design and construction of a new bridge capable of carrying unrestricted legal loads and providing a clear roadway for two lanes of traffic. KC was responsible for investigating and recommending the most suitable structure for the proposed bridge, including a precast rigid frame culvert with cast-in-place parapets, veneer, and cast-in-place footings or a precast arch bridge with fascia veneer, guide rails, and cast-in-place footings. Drainage design was required for the roadway approaches, including determination and evaluation of runoff areas contributing to roadway drainage as well as identification of drainage boundaries. KC also provided field survey of the project site.





#### Diversified. Multidisciplined.

KC Engineering and Land Surveying, P.C. (KC) is a diversified, multidisciplined consulting engineering firm. Since 1983, KC has provided our public and private sector clients with a comprehensive range of professional services using only the latest technical equipment. The corporate headquarters of the firm is located in New York City, with branch offices in Newburgh and Albany, NY. KC has extensive experience with government agencies, municipalities, and private clients; a diverse, professional staff; and an impeccable record of services rendered.

## New York City

7 Penn Plaza, Suite 1204 New York, NY 10001

(212) 947-4945

# Hudson Valley

15 Governor Drive, Second Floor Newburgh, NY 12550

(845) 931-2900

### Albany

100 Great Oaks Boulevard, Suite 122 Albany, NY 12203

(518) 209-7489

kcepc.com



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